

**A66 Northern Trans-Pennine Project  
TR010062**

**3.4 Environmental Statement  
Appendix 8.5 Geophysical Survey  
Report**

**APFP Regulations 5(2)(a)**

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(Applications: Prescribed  
Forms and Procedure)  
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A66 Northern Trans-Pennine Project  
Development Consent Order 202x

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**3.4 ENVIRONMENTAL STATEMENT  
APPENDIX 8.5 GEOPHYSICAL SURVEY REPORT**

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## **8.5 Geophysical Survey Report**

ATPU21



# A66 Transpennine Upgrade

DRAFT GEOPHYSICAL SURVEY REPORT

PLANNING REF. pre-application

Headland Archaeology Yorkshire & North  
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for Amey/ARUP

31/03/2022

## PROJECT INFORMATION:

PROJECT NAME	A66 Transpennine Upgrade
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HAS. NO (HEREFORD ONLY)	n/a
NGR	various
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## PROJECT SUMMARY

Headland Archaeology (UK) Ltd was commissioned by AMEY/Arup, on behalf of Highways England, to carry out geophysical (magnetometer and earth resistance) surveys on agricultural land at selected Scheme locations along the route of the A66 Transpennine Upgrade. The surveys were undertaken in two main phases in late 2020 and 2021 and are part of a wider programme of investigations all of which will provide information in support of a future DCO application. In particular, the surveys will help determine the impact of the proposed upgrades on the historic environment, including both known and potentially currently unknown heritage assets. The surveys covered land parcels both parallel with the existing carriageway and feeder roads (online) as well as on new (offline) sections. During the first phase of survey in 2020 approximately 256 hectares was surveyed with a further 255 hectares in 2021. Earth resistance survey covering 6.5ha was also carried out at three scheduled sites at Brougham, Redlands Bank and Carkin Moor.

The surveys have generally interpreted very few anomalies as being of probable archaeological origin outside of scheduled areas and their immediate environs. Two notable exceptions to this finding are the identification of a large ring ditch or circular enclosure at Crackenthorpe and a square enclosure containing three ring ditches north-west of Greta Bridge. The surveys have confirmed the presence of archaeological features associated with the Roman fort and civil settlement at Brocavum and nearby Roman marching camp. Anomalies locating the Roman fort and possible associated features are also identified at Carkin Moor. Magnetometer survey at the sites of Roman camps at Redlands Bank and Warcop meanwhile remain difficult to interpret due to the likely spreading of 'green' waste at Redlands Bank and a variable natural magnetic background found at the Warcop site.

Outside of the scheduled areas in multiple locations across the Upgrade Scheme isolated linear/curvilinear or small clusters of discrete anomalies have been interpreted as of uncertain or possible archaeological origin depending on the local context. However, most of the identified anomalies that do not relate to the prevailing variable local natural magnetic background or geological patterns, are linear trends due to agricultural activity, primarily recent and post-medieval (ridge and furrow) ploughing and land drains which are assessed as of limited archaeological potential, but which may be of local historical interest. A small number of former field boundaries are identified but the field layout generally seems to have remained relatively unchanged since the late 19th century. Much of the survey parallel with the existing A66 carriageway is dominated by magnetic disturbance either due to ferrous debris, fences or by recent ground disturbance such as adjacent to embankments and around farm access tracks. High magnitude linear anomalies caused by services and drains are also commonly recorded adjacent to the current road. Notwithstanding the fact that magnetometry is not likely to detect anomalies/features of certain types, sizes/depths and period it should be stated that in no location is modern disturbance, or any other limiting

factor (excluding possibly 'green' waste), considered to be of such high magnitude that extensive archaeological remains, particularly Roman settlement or roadside activity, could not have been detected, if present. Overall, taking account of the limitations detailed above, the magnetometer surveys carried out to date have identified a range of anomalies, both archaeological and non-archaeological, where survey has been possible.

The results from the earth resistance survey complement the findings of the magnetometer surveys at Brougham and Carkin Moor. Several ditch and pit like features have been recorded at Brougham as well as the Roman fort ditches at Carkin Moor. However, the resistance surveys provided little if any extra detail or resolution beyond what was identifiable in the magnetometer survey at these locations. The survey at Redlands Bank did not identify any anomalies which could likely relate to the Roman camp only a linear anomaly of uncertain origin.

The results of the geophysical surveys together with the other information submitted in support of the DCO application will allow a thorough contextualisation and evaluation of the archaeological resource along the Upgrade Schemes. Nevertheless, it is concluded that the results of the geophysical surveys provide a good indication of the extent of the below ground archaeological resource and that the likelihood is low that there are extensive or significant archaeological remains within the surveyed areas, excluding the scheduled areas and the two sites at Crackenthorpe and Greta Bridge. These conclusions are supported by the results of the evaluation trenching undertaken by Wessex Archaeology and by Wardell Armstrong along the Scheme. The trenching covered both areas surveyed as part of this report and areas not previously surveyed. Archaeological remains were generally limited to known 'hotspots' predominantly in or immediately adjacent to scheduled sites with a good correlation between the 'significant' archaeological remains and the magnetic anomalies. Where archaeological features were recorded that were not identified in the magnetometer survey the features were overwhelmingly shallow ephemeral ditches or gullies or small discrete pits and post-holes, features that are either too small or too shallow to be realistically identified by remote sensing.

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# A66 Transpennine Upgrade

## GEOPHYSICAL SURVEY REPORT

### 1. INTRODUCTION

Amey/ARUP have been engaged by Highways England to undertake the PCF Stage 3 design and assessment of proposed upgrades to the A66 between J40 of the M6 at Penrith and the A1 at Scotch Corner. The Upgrade will see eight separate Schemes undertaken in four work packages (A-D). As part of the assessment process Headland Archaeology (UK) Ltd was commissioned by Amey/ARUP (the Consultant) on behalf of Highways England (the Client) to undertake a series of geophysical (magnetometer and earth resistance) surveys at selected Scheme locations (Illus 1 to Illus 6 inclusive). The Phase 1 surveys (see below) were carried out to inform PCF Stage 3, based on Model Freeze A, and the results used to inform the trenching programme. The Phase 2 surveys were based on the design for statutory consultation at locations where the design is not fixed.

The surveys were undertaken in two phases as part of a wider programme of investigations all of which will provide information for an Environmental Statement which will be used to support a future DCO application. In particular, the surveys will help determine the impact of the proposed upgrades on the historic environment, including both known and currently unknown heritage assets. The surveys were undertaken in accordance with the A66 Transpennine Upgrade Geophysical Survey Scope of Service (Highways England 2020), with guidance within the National Planning Policy Framework (MHCLG 2019) and in line with current best practice (Chartered Institute for Archaeologists 2014, Europae Archaeologia

Consilium 2016). The results of the surveys will also help inform future archaeological strategy.

During the Phase 1 fieldwork, which took place between October 26th and November 19th, 2020, 256 hectares was surveyed. However, access was not available in some land parcels and others were unsuitable for survey including small areas of plantation or woodland, road embankments, farms, and outbuildings, partially overgrown or areas of scrub vegetation. A few fields were also under fodder crops and so also not suitable for survey.

Phase 2 of the magnetometer survey was mostly undertaken between October 11th and December 9th, 2021 and covered approximately 255 hectares with a final couple of days survey carried out on February 15th and February 16th, 2022, expanding the survey area in and around the scheduled site at Carkin Moor. A tree plantation, areas where the topography was too steep and/or slippery or where trial trenching had already been undertaken were omitted.

Whilst recognising that magnetometry is unlikely to identify all archaeological features from all periods even under ideal circumstances it is generally considered to be the best method for evaluating large areas quickly and efficiently particularly when ground conditions are less than perfect. Magnetometry was therefore selected as the most effective technique when considering the time constraints and wider project goals.

In Phase 2 of the survey earth resistance survey totalling 6.5ha was also undertaken at three of the

four scheduled sites; Brougham Roman marching camp (ID 1007187) and settlement (ID1007203), Redlands Bank Roman camp (ID 1007189) and Carkin Moor Roman fort ID 1015418) to supplement and enhance the magnetic data and to understand the potential archaeological resource more fully at these sites.

### 1.1. LOCATION, TOPOGRAPHY AND LAND-USE

The A66 Upgrade Scheme extends from Penrith in the west through to the intersection with the A1 at Scotch Corner in the east (Illus 1 to Illus 6). Geophysical survey was carried out at locations on the named Schemes below.

M6 Junction 40 to Kemplay Bank Roundabout

Penrith to Temple Sowerby (Center Parcs)

Temple Sowerby to Appleby

Appleby to Brough (Warcop)

Bowes Bypass (A66/A67)

Cross Lanes to Rokeby

Stephen Bank to Carkin Moor

The survey covered both areas where new sections of road are proposed (offline) whilst others covered strips of land parallel with the existing carriageway (online) where the road will be widened to become a dual carriageway. Some of the Phase 2 survey also comprised areas where the route design is yet to be finalised and to cover other areas where additional works, not identified at the Phase 1 stage, are now proposed.

Ground cover comprised a mix of permanent pasture, grazed either by sheep or dairy cattle, and arable crops (mostly winter wheat) with a few fields of beet or other fodder crops.

Ground conditions during both phases of work were variable being generally good on the areas of sheep grazed pasture, less so on the cattle pasture and poor on the recently sown arable fields where the soils were extremely wet and heavy. Nevertheless, only one area was omitted due to unsuitable conditions underfoot and here the steepness of the slope allied with the wet ground conditions made surveying unsafe.

The survey covered parts of six Scheduled Monuments. Section 42 license approval was sought and approved by Historic England prior to survey. The approval documents are included in Appendix 7.

### 1.2. GEOLOGY AND SOILS

The solid bedrock geology beneath all the Schemes comprises wholly sedimentary formations. Guidance (English Heritage 2008, Table 4) indicates that magnetometer survey can be recommended over any sedimentary geology as there are few significant distorting factors although a wide range of magnetic susceptibility in the parent rock results in a very variable background response to survey. Quaternary deposits overlying the solid geology are a primary consideration as they often show a high degree of local variation, and the magnetic response is usually dependent on the magnetic mineralogy of the parent solid geology.

At the western end of the Upgrade (between Penrith and Brough) the bedrock comprises Penrith Sandstone which is overlain by superficial deposits of Devensian Till (Diamicton) except for a small area of alluvium just south-east of Kirkby Thore and another small area of River Terrace Deposits near to Warcop.

At the eastern end of the Upgrade (from Bowes to Scotch Corner) the bedrock comprises Stainmore and Alston Formation (Limestone, Sandstone, Siltstone and Mudstone) around Bowes, Great Limestone Member south of Barnard Castle, and Alston Formation again in near to Scotch Corner. Throughout the eastern end of the Upgrade the bedrock is again overlain by superficial deposits of glacial till (Diamicton) (NERC 2021).

The prevailing soils within the Schemes are categorised in six soil associations (SA's). Around Penrith the soils are described as freely draining, slightly acid loams (SA6) or sands (SA10). Loams are also present between Appleby and Brough, and from Bowes, eastwards. Slowly permeable, seasonally wet acid loams and clays (SA17) make up the other soils recorded at the far eastern end of the Upgrade. Between Temple Sowerby and Appleby, the soils are either slowly permeable, seasonally wet slightly acid but base rich loams and clays (SA18) or loamy and clayey floodplain soils with high groundwater (SA20), these latter soils

present on the alluvial superficial deposits (Cranfield University 2021).

Overall, it was considered that, whilst the results may well be variable depending on local conditions, a magnetometer survey is an entirely appropriate technique to apply on the prevailing geology and soils throughout the Schemes.

### 1.3. ARCHAEOLOGICAL BACKGROUND

A full Cultural Heritage Baseline and Gazetteer included within the A66 Northern Trans-Pennine Project Environmental Statement, contains comprehensive information on the known archaeological resource in and around the current Scheme options. It is therefore not intended to repeat the information contained therein except to provide summary details on the six Designated Archaeological Remains (Scheduled Monuments), where they are located within or immediately adjacent to the current Scheme boundaries and hence fall within the current areas of survey, and their archaeological significance as currently understood.

The entirety of the route of the A66 is considered to have historic and archaeological interest as it follows the route of the Roman road providing an east/west route close to the northern end of Roman territory in Britain. The road also linked the many Roman military installations in this part of the country, several of which may be impacted by the proposed A66 Upgrade, and which are briefly described, from west to east, in Scheme order. There are three designated sites that date to the Roman period which are all primarily associated with military activity. They are therefore of high value and archaeological interest for their potential to provide evidence for the Roman military presence within the region.

Nb All locational information is given based on proposed Scheme layouts as of the commencement of the surveys in October 2020 (Design Freeze A), unless stated otherwise.

*Brougham Roman Fort, civil settlement, and Brougham Castle (ID1007186)*

Brougham Roman Fort (Brovacum) and civil settlement and 13th century Brougham castle centred at NY 53774 28619 is situated directly adjacent to the proposed route. These assets relate to the continued historic military and civilian

activity within the area and are of high archaeological value and interest.

*Brougham Roman marching camp (ID1007187) and settlement (ID1007203)*

A Roman marching camp and settlement is located at NY 54295 29114 immediately north of the present carriageway on high ground overlooking the River Eamont to the west approximately 410m north-east of Brovacum fort.

*The Countess Pillar (ID1007122)*

The Countess Pillar, centred at NY 54616 28957, is of post-medieval date and is interpreted as of high value due to its historic, artistic, and architectural interest. It is located immediately adjacent areas surveyed in the second phase of works.

*Roman camp east of Redlands Bank (ID1007189)*

A Roman camp, 350 metres east of Redlands Bank, is located within the option alignment's boundary, centred at NY 65217 23745. These heritage assets are all high value and of archaeological interest due to their potential to provide information relating to the development of Roman occupation within this area with the establishment of a Roman fort, camp, and settlement.

*Warcop Roman camp (ID1019208)*

The Roman camp is located immediately north of the present carriageway at NY 74105 16748 on the gentle south-facing slope of a spur which descends gradually to the south-east. Visible as crop marks on an aerial photograph it measures approximately 60m west-northwest/east-southeast by 50m north-northeast/south-southwest and is rectangular with each corner rounded in a broad arc. The monument includes the buried remains of a Roman camp, together with the earthworks and buried remains of a 200m length of Roman road running along the south side of the camp. A curvilinear feature immediately to the east of the camp is also mentioned and included in the scheduling.

*Roman fort and enclosed prehistoric settlement (ID1015418)*

This is the Roman fort and prehistoric enclosed settlement 400 metres west of Carkin Moor Farm which is currently bisected by the A66, centred at NZ 16151 08380. The Roman Fort at Carkin Moor High Level Information Paper' (HLIP 2019), produced to inform Historic England's initial consultation response to the proposed option alignments, concluded that the site of the Roman Fort at Carkin Moor is within an area of high archaeological potential and that it is an important feature within the multi-period landscape with evidence for the utilisation of the wider A66 routeway and adjacent settlement and occupation from the prehistoric period up until the present day. The road forms an intrinsic part of the setting of the fort, and they are both key features in the wider historic landscape. Previous investigations have confirmed evidence of archaeological features of Roman date surviving within the boundary of the scheduled monument as well as immediately outside the scheduled monument boundary and within the vicinity. Overall, this asset is interpreted as of high value and archaeological interest due to its potential to provide evidence for the development of settlement activity from the prehistoric period up until the Roman period, and evidence of Roman military activity in the region.

## 2. AIMS, METHODOLOGY AND PRESENTATION

Linear developments are complicated by the large and extended areas of land that will be impacted and by the variety of geological and soil conditions along the route corridor and by the types of archaeological remains that might be encountered. Geophysical surveys usually play a key role in the evaluation of archaeological remains in linear schemes. In this Scheme the general aim of the geophysical surveys was to provide enough information to corroborate, identify and characterise sub-surface anomalies that may have an archaeological origin, including defining the spatial limits of already known or suspected heritage assets, within the defined survey areas. This information will form part of a much larger body of evidence from a variety of sources that, taken as a whole, will enable an assessment to be made of the impact of the proposed Scheme on any sub-surface archaeological remains, where

present and therefore help determine an appropriate mitigation strategy.

The specific archaeological objectives of the geophysical survey were:

- ② to gather enough information to inform the extent, condition, character, and date (as far as circumstances permit) of any archaeological features and deposits within the specified Scheme areas,
- ② to obtain information that will contribute to an evaluation of the significance of the Scheme upon cultural heritage assets, and
- ② to prepare a fully illustrated report on the results of the survey that is compliant with all relevant standards, guidance, and good practice.

To achieve the objectives (and comply with relevant guidance and good practice) magnetometry was selected as the best general-purpose methodology for assessing the survey areas given the variation in ground conditions along the corridor, the sub-surface remains most likely to be encountered and the project time constraints. However, it is acknowledged that magnetometry has limitations and that certain types of sub-surface remains may, under certain circumstances, be more likely to be identified by other techniques such as earth resistance, ground penetrating radar or electro-magnetic methods. Consequently, earth resistance survey was also used at specific locations particularly those likely to contain building remains.

### Magnetometer survey

Magnetic survey methods rely on the ability of a variety of instruments to measure very small magnetic fields associated with buried archaeological remains. A feature such as a ditch, pit or kiln can act like a small magnet, or series of magnets, that produce distortions (anomalies) in the earth's magnetic field. In mapping these slight variations, detailed plans of sites can be obtained as buried features often produce reasonably characteristic anomaly forms and strengths (Gaffney & Gater 2003). Further information on soil magnetism and the interpretation of magnetic anomalies is provided in Appendix 1.

## Instrumentation

The surveys were undertaken using four Bartington Grad601 sensors mounted at 1m intervals (1m traverse interval) onto a rigid frame. The system was programmed to take readings at a frequency of 10Hz (allowing for a 10-15cm sample interval) on roaming traverses (swaths) 4m apart. These readings were stored on an external weatherproof laptop and later downloaded for processing and interpretation. The system was linked to a Trimble R8s Real Time Kinetic (RTK) differential Global Positioning System (dGPS) outputting in NMEA mode to ensure a high positional accuracy for each data point.

MLGrad601 and MultiGrad601 (Geomar Software Inc.) software was used to collect and export the data. Terrasurveyor V3.0.35.1 (DWConsulting) reporting.

## Earth resistance survey

Whilst earth resistance survey can identify ditches and pits because they retain more (or sometimes less) moisture than the surrounding soil the chances of detecting these types of sub-surface features are generally higher with a magnetometer and this more rapid technique is consequently used when the archaeological potential of an area is largely unknown, as in this case. However, earth resistance survey is generally better at locating structural remains such as building foundations and other masonry features, ecclesiastical and other medieval buildings, defensive works, and particularly Roman sites, and is most often (and most appropriately used) when there is already a strong presumption that such features exist within the survey area. In this Scheme the use of resistance survey was limited to scheduled areas.

Anomalies are defined as either high resistance or low resistance. High resistance anomalies may be caused by structural remains, spreads of rubble or by differential compaction of the plough soil, for example tractor wheelings can often present as high resistance anomalies. Low resistance anomalies may be due to ditches or pits with more general areas of low resistance often indicative of waterlogging or more general moisture retention in the plough soil.

Further information on earth resistance and the interpretation of resistance anomalies is provided in Appendix 2.

## Instrumentation

The earth resistance survey was undertaken using Geoscan RM15 and RM85 data loggers and integral multiplexer set up as a parallel twin probe array, to take readings at 0.5m intervals on traverses 1m apart within 30m x 30m grid squares, allowing 1800 readings to be recorded in each grid square. The mobile probe spacing was 0.5m with the remote probes 20m apart. This probe spacing of 0.5m gives an approximate depth penetration of 1m for most archaeological features. These readings were stored in the memory of the instrument and later downloaded for processing and interpretation. Geoplot 4 (Geoscan Research) software was used to process and present the data.

An overall location plan of the Upgrade is presented at a scale of 1:250,000 in Illus 1, being broken down into the different Schemes at a scale of 1:35,000 in Illus 2 to Illus 6 respectively. The individual parcels of land are referred to by Scheme name followed by the GIS ID parcel number as provided to Headland Archaeology at the commencement of the project and also by Field Number. These plots display all the GIS ID plot numbers/outlines whether the area was fully or partly surveyed or not surveyed at all. The magnetometer data is displayed in fully processed greyscale format, minimally processed X-Y trace plot format with accompanying interpretation plots at both 1:2,500 and 1:1,000 scales in Illustrations 7 to Illus 762 inclusive. The earth resistance data from the three scheduled sites is presented in unprocessed and processed formats, with accompanying interpretation plots at a scale of 1:2,000 in Illustrations 763 to Illus 771 inclusive.

Technical information on the magnetometer and earth resistance equipment used, data processing and survey methodologies is given in Appendices 1 and 2 respectively. Details of the survey location information are in Appendix 3. A note on the format of the geophysical data archive is present in Appendix 4. Data processing details for the magnetometer survey are presented in Appendix 5. The OASIS Archive entry is included as Appendix 6. Appendix 7 comprises the Section 42 licenses.

The survey methodology, report and any recommendations comply with the Scope of Service (Highways England 2020), guidelines outlined by Europae Archaeologia Consilium (EAC 2016) and by the Chartered Institute for Archaeologists (CIfA 2014). All Illustrations from Ordnance Survey (OS) mapping are reproduced with the permission of the controller of Her Majesty's Stationery Office (© Crown copyright).

The illustrations in this report have been produced following analysis of the data in 'raw' (minimally processed) and processed formats (see above) and over a range of different display levels. All illustrations are presented to display and interpret the data from this site to best effect based on the experience and knowledge of management and reporting staff.

### 3. RESULTS

#### 3.1. MAGNETOMETER SURVEY

me/GIS ID No.	Archaeological Anomalies	Survey Interpretation
<p>M6 Junction 40 to Kemplay Bank Roundabout</p> <p>4391</p> <p>Illus 496, 585, 674</p>	<p>Yes?</p>	<p>The origin of five parallel linear and discrete anomalies at Skirsgill Park between the River Eamont and M6 carriageway are uncertain and therefore a possible archaeological cause must be considered. Ferrous disturbance surrounds two discrete magnetically enhanced anomalies of uncertain origin approximately 40m from a Bronze Age standing stone (ID 1007626) at the northern limit of the survey.</p> <p>Parallel linear anomalies to the north and south of this parcel are due to ridge and furrow ploughing.</p>
<p>M6 Junction 40 to Kemplay Bank Roundabout</p> <p>ID No. 2.1</p> <p>Illus 7, 170, 333</p>	<p>No</p>	<p>Linear striations parallel with current field boundaries in westernmost part of 2.1 are due to ploughing.</p> <p>Similar trends on the same broad north-west/south-east alignment in the easternmost part are also agricultural, probably also recent ploughing or ridge and furrow cultivation. Magnetically enhanced linear and curvilinear anomalies which do not share an alignment with cultivation patterns or correspond to known former boundaries may be archaeological in origin.</p> <p>Three parallel field drains are recorded to the east and former boundary in the western part of this parcel.</p>
<p>M6 Junction 40 to Kemplay Bank Roundabout</p> <p>4511-4512</p> <p>Illus 498, 587, 676</p>	<p>Yes?</p>	<p>Magnetic disturbance is widespread in the northernmost parcel approximately half of which was overgrown at the time of survey.</p> <p>A roughly circular arrangement of discrete magnetically enhanced anomalies approximately 23m in diameter at the western boundary of the field are cautiously interpreted as possibly archaeological in origin, though it remains difficult to separate anomalies from a variable background and are largely identified based on their arrangement. Further discrete magnetically enhanced anomalies towards the south-west corner and centre of the field are distinctive from the variable background and an archaeological origin remains plausible. A service pipe oriented north-northwest/south-southeast lies parallel to the eastern boundary.</p>
<p>M6 Junction 40 to Kemplay Bank Roundabout</p> <p>ID Nos. 2.2, 2.3 and 2.4</p> <p>Illus 7, 8, 171, 333, 334</p>	<p>N/A</p>	<p>No access.</p>



<p>M6 Junction 40 to Kemplay Bank Roundabout</p> <p>4052</p> <p>Illus 008, 171, 334</p>	<p>Yes?</p>	<p>Several linear anomalies including two sets of parallel anomalies are recorded towards the western end of this parcel situated between the River Eamont and the A66 carriageway may be archaeological in origin. A Roman road and enclosures south-east of Frenchfield (ID 1007180) are located approximately 400m to the east.</p> <p>A service pipe cuts the north-west corner of the parcel and cultivation effects parallel to the direction of the river are also recorded.</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>ID Nos. 3 - 3.5, 3.6, 3.9</p> <p>Illus 9, 10, 172, 335</p>	<p>Yes</p>	<p>Additional magnetic survey between Brocavum Roman fort (ID 1007186) and the Roman marching camp (ID 1007187) located immediately south of the carriageway and north of Castle Farm failed to identify any anomalies of archaeological or possible archaeological origin and largely recorded widespread magnetic disturbance.</p> <p>Further survey in neighbouring fields to the south and east (3.5 and 3.6) of Brocavum Roman fort have identified a range of linear, curvilinear, and magnetically enhanced discrete anomalies, representing ditches, enclosures and a possible trackway indicative of archaeological activity associated with the Roman fort and civil settlement known to exist to the south and south-east of the fort.</p> <p>Less certainty surrounds isolated discrete and linear anomalies slightly further east in 3.7 immediately south of the Countess Pillar scheduled monument (ID 1007122) due to the level of magnetic disturbance adjacent to the road embankment and around a large pylon base. An archaeological cause remains likely for the linear anomalies here which lay parallel to those north of the carriageway associated with the Roman marching camp (ID 1007187).</p> <p>An expansion of the area surveyed at 3.9 north of the existing carriageway further details clear linear, curvilinear, and discrete anomalies within the scheduled area of a Roman marching camp (ID 1007187) and settlement (ID 1007203). Four or five parallel rectangular structures measuring approximately 16m x 6m are likely present at the western extent of the survey. Two adjoining perpendicular ditches share an alignment with the rectangular anomalies, possibly enclosing them and are connected to further linear and curvilinear anomalies, presumably ditches forming small enclosures immediately to the east.</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>ID Nos. 3.7</p> <p>4390</p> <p>Illus 500, 589, 678</p>	<p>Yes?</p>	<p>Two parallel linear anomalies aligned roughly north/south are identified in the south-east corner of 4390 and may relate to archaeological features associated with the Roman marching camp and settlement are approximately 450m to the north-west. The cause of nearby discrete anomalies with magnetic enhancement above levels recorded across the variable magnetic background remains uncertain and may be natural, archaeological, or associated with an adjacent service pipe.</p> <p>A former boundary recorded as a faint linear anomaly aligned north-northwest/south-southeast is identified in the western half of 4390.</p>

<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>ID Nos. 3.8, 3.9, 3.10, 3.11 and 3.12</p> <p>4455, 4386, 4445, 4462</p> <p>Illus 11 -12, 64- 72, 172-176, 335-338</p>	<p>No</p>	<p>Magnetic disturbance, sub-surface pipes and natural curvilinear and magnetically enhanced discrete geological trends predominate. Further isolated anomalies or clusters of magnetically enhanced anomalies, above the level of the variable magnetic background, are of uncertain origin are recorded in 3.11 and 4445. Probable land drains in 3.8 aligned north-northwest/south-southeast are also recorded</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>4140, 4477</p> <p>Illus 11, 174, 337</p>		<p>Access was denied to these two adjacent parcels south and west of Whinfell Park.</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>ID Nos. 3.13 and 3.14</p> <p>4357</p> <p>Illus 12, 175, 338</p>	<p>No</p>	<p>Ploughing trends aligned east/west in the small block at the western end of 3.13 are recorded.</p> <p>A former boundary is recorded as a linear spread of enhanced discrete anomalies in the western half 4357, marking the continuation of an existing boundary extending eastwards from a barn located towards the centre of the field.</p> <p>The origin of a cluster of discrete enhanced anomalies in the south-west corner of the small central field of 3.14 south of Highbarn Farm remains uncertain. A natural cause is most likely given the natural variable magnetic background though an archaeological cause cannot be ruled out.</p> <p>The dense speckled appearance of the data in neighbouring fields is due to the spreading of 'green waste' as a soil improver. The masking effect of this material may preclude the identification of 'weaker' archaeological anomalies if present.</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>ID Nos. 3.15 and 3.16</p> <p>Illus 14-16, 176-179, 340-342</p>	<p>No</p>	<p>Magnetic disturbance is present throughout adjacent to the current carriageway. The occasional linear trend of agricultural origin and a pipe at the eastern end of 3.16, east of Winderwath House, are the only other anomalies of note in these two areas.</p>
<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>4509, 4498</p> <p>Illus 501-502, 590-591, 679-670</p>	<p>No</p>	<p>Findings are limited to a natural variable magnetic background, geological trends, and a service pipe in the eastern half of 4498.</p> <p>Access was denied for the remainder of 4509.</p>

<p>Penrith to Temple Sowerby (Centre Parcs)</p> <p>3-11, 3-17,</p> <p>Illus 173 -175, 336-338</p>	<p>No</p>	<p>Linear trend anomalies caused by ploughing, magnetic disturbance along field boundaries and discrete magnetically anomalies arising from natural geological patterns/trends are recorded in all fields. Two service pipes are evident in the north-western part of 3-11 and southern half of 4196 immediately south of a linear spread of discrete high magnitude anomalies marking the location of a former boundary. The remainder of 3-11 was waterlogged, boggy and unsuitable for survey.</p>
<p>Temple Sowerby to Appleby</p> <p>ID Nos 4 -4.17, 4.18 and 4.19</p> <p>Illus 17, 180, 343</p>	<p>Yes?</p>	<p>A linear anomaly oriented north-northwest/south-southeast and likely cut by the current carriageway is recorded in fields immediately south-west of Spitals Farm and approximately 125m from a Roman milestone (ID 1007172). Two neighbouring discrete high magnitude anomalies are of uncertain origin and may be examples of more magnetically enhanced natural features or may be associated with the magnetic disturbance in the corner of the field. Their location adjacent to the Roman road and to the unidentified linear anomaly means an archaeological cause cannot be discounted.</p> <p>Linear trend anomalies parallel to current boundaries are indicative of modern ploughing effects. An extensive area of magnetic noise is recorded adjacent to the road and around the animal underpass.</p>
<p>Temple Sowerby to Appleby</p> <p>ID No. 4.20</p> <p>Illus 17, 180-181, 343-344</p>	<p>Yes?</p>	<p>Linear agricultural trend anomalies parallel to current field boundaries indicate a ploughing origin.</p> <p>The origin of multiple linear, curvilinear, and discrete anomalies opposite Lowmoor Row is uncertain. The less regular form and nature of the anomalies closer to the present A66 suggests a natural cause as opposed to those nearer Priest Lane further north where a possible archaeological cause is considered more likely. Neither group of anomalies appear to respect former boundaries identified as perpendicular linear anomalies in this area. Slightly curving parallel anomalies in the fields at the east of 4.20 either side of Priest Lane are due to ridge and furrow ploughing.</p>
<p>Temple Sowerby to Appleby</p> <p>4373, 3962</p> <p>Illus 19, 182, 345</p>	<p>No</p>	<p>Findings are limited to linear trend anomalies indicative of modern cultivation techniques, magnetic disturbance around field boundaries and discrete and curvilinear responses natural in origin.</p>
<p>Temple Sowerby to Appleby</p> <p>ID No. 4.21</p> <p>Illus 18-19, 181-182, 344-345</p>	<p>No</p>	<p>A small system of land drains is present in the smallest field to the west and a former boundary is identified as a magnetically weak linear anomaly oriented east-southeast/west-northwest in the southernmost field. Other vague trends are likely to be agricultural in origin. A large concentration of magnetic disturbance is present in the easternmost part of 4.21.</p>

<p>Temple Sowerby to Appleby</p> <p>ID No. 4.22</p> <p>Illus 18-20, 181-184, 344-347</p>	<p>No?</p>	<p>An angular linear anomaly at the southern boundary in the west of 4.22 is of uncertain origin. The denser spread of discrete high magnitude anomalies in this field, likely the result of the spreading of 'green waste', prohibits a more accurate or confident interpretation of this anomaly.</p> <p>Elsewhere a service pipe, a herringbone pattern of land drains, agricultural trends, former field boundaries and ridge and furrow cultivation are all recorded in these fields on the north side of Kirkby Thore.</p> <p>Also recorded is a broad curving anomaly probably marking the continuation of a former lane. Spreads of discrete magnetically enhanced anomalies located in lower lying parts of the fields are interpreted as natural in origin.</p>
<p>Temple Sowerby to Appleby</p> <p>ID Nos. 4.23 and 4.24</p> <p>Illus 22, 184-185, 347-348</p>	<p>No</p>	<p>Magnetic disturbance is recorded around the Town Head and Bowrang crossing. A pipe and disturbance caused by overhead cables are also recorded in 4.24. A curving irregular area of variable reading is likely due to geological variation.</p>
<p>Temple Sowerby to Appleby</p> <p>4446, 4491</p> <p>Illus 506, 595, 684</p>	<p>No</p>	<p>Field 4446, off Sleastonhow Lane contains a dense spread of high magnitude anomalies indicative of the spreading of 'green waste'. A service pipe can still be seen extending towards the farm in the northern corner of the field though it remains unlikely any magnetically faint anomalies of archaeological or possible archaeological potential would be identifiable given the level of magnetic contamination across this field.</p> <p>Curvilinear, discrete anomalies and areas of high magnitude anomalies in the southern part of F 4446 are all likely natural in origin, being due to the deposition of material during episodes of flooding of Trout Beck.</p> <p>The northernmost part of F4491, adjacent to Sleastonhow Lane was subdivided by fences into smaller paddocks (visible as gaps in the data) and/or lines of ferrous 'spike' anomalies. Linear trend anomalies are indicative of ploughing parallel with the current field boundaries.</p> <p>The unsurveyed parcel of land in 4491, adjacent to 4446 and Trout Beck contained a young tree plantation and was unsuitable for survey.</p> <p>Further curvilinear and discrete low magnitude anomalies at the eastern end of 4491 are all likely natural in origin, again likely resulting from flooding of Trout Beck.</p>

<p>Temple Sowerby to Appleby</p> <p>4418, 4113</p> <p>Illus 25, 188, 351</p>	<p>No?</p>	<p>A continuation of curvilinear and discrete low magnitude anomalies in proximity to Trout Beck are evident in 4418 to the north-west of Powis House. A faint low magnitude circular anomaly approximately 30m in diameter of uncertain origin is tentatively interpreted towards the centre of the westernmost field of 4418 adjacent to the A66 carriageway. Discrete high magnitude anomalies, also of uncertain origin, are recorded nearby these are again likely due to flooding (see above). Further clusters of magnetically enhanced discrete anomalies are identified in the northern field of 4418 to the east of the Beck. A faint rectangular anomaly, approximately 20m in diameter, with a cluster of small discrete high magnitude anomalies in one corner is distinct from the typical natural responses recorded elsewhere on the floodplain. Other groupings of much more magnetically enhanced anomalies are again different in their nature to neighbouring anomalies likely resulting from floodplain deposits though a lack of any recognisable form inhibits a more confident interpretation.</p> <p>Two service pipes leading to Powis House, linear agricultural trend anomalies, linear field drain arrangements, a former field boundary and magnetic disturbance surrounding field boundaries are recorded in 4418. Except for two short perpendicular anomalies of uncertain origin at the very boundary with Long Marton Road, no anomalies likely to be associated with the neighbouring Roman road or Roman camp 350m east of Redlands Bank (ID 1007189) to the south could be identified.</p> <p>The north-east portion of the scheduled Roman camp 350m east of Redlands Bank (ID 1007189) lies partly within 4113 between the present carriageway and former railway embankment south of Powis House. The magnetic data for this area shows a moderately dense spread of discrete enhanced and high magnitude anomalies across the entire field indicative of the spreading of 'green' waste. It is not certain whether any archaeological remains, if present, could be identified against this magnetic background. The archaeological potential of this area remains uncertain and cannot therefore be assessed based on the magnetometer data alone.</p>
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<p>Temple Sowerby to Appleby</p> <p>ID Nos. 5 - 5.27</p> <p>4398</p> <p>Illus 30, 193, 356</p>	No?	<p>A small sliver of land adjacent to Powis Cottages falls within the scheduled Roman Camp (ID 1007189) at the western end of 5.27. Here a large high magnitude anomaly and nearby smaller discrete isolated anomalies are most likely natural in origin or an effect of the magnetic disturbance within the adjacent field boundary. However, an archaeological cause cannot be completely ruled out.</p> <p>Other anomalies in the fields adjacent Long Marton Road include field drains, a service pipe and areas of magnetic disturbance.</p>
	No?	<p>Further east in 5.27 and towards the centre of the parcel multiple amorphous discrete 'splodges' are identified. The westernmost of these 'splodges' is located between the line of the Roman road and the disused railway in a broadly linear configuration. Its origin is uncertain but most likely either due to disturbance when the railway was constructed or again to more strongly magnetically enhanced natural features/variation. Further similar clusters or groupings of anomalies distinguishable from the natural background based on magnetic form and strength are present sporadically across 5.27 and a cause remains uncertain.</p>
	Yes?	<p>Towards the southern end of 5.27 parallel linear trends running broadly north/south away from the line of the Roman road are noted. These anomalies are oblique to the orientation of the current field layout. An archaeological origin, perhaps a road or track, cannot be discounted given a Roman fortlet (ID 1007174) is located approximately 180m to the north-west. A low magnitude circular anomaly approximately 13m in diameter adjacent to the possible trackway is tentatively interpreted as uncertain and may simply be a circular arrangement of the variable background magnetic anomalies spread across this area, although an archaeological origin cannot be discounted.</p>
	No	<p>Additional survey at 4398 adjacent to the southern tip of 5.27 and the railway has identified a large, seemingly random spread of high magnitude anomalies, interpreted as likely modern activity associated with construction of the steep railway embankment at this location.</p>

<p>Temple Sowerby to Appleby</p> <p>4394</p> <p>Illus 508, 597, 686</p>	No	<p>No archaeological or possible archaeological anomalies are identified in the smaller survey area to the west adjacent to the River Eden. Linear and curvilinear trends are either natural channels in the floodplain of the river or are agricultural in origin. Short, parallel broad magnetic anomalies at the southern extent of this parcel is probably indicative of ridge and furrow cultivation.</p>
	Yes	<p>The larger survey area extending east from Crackenthorpe Hall on higher ground overlooking the river contains a range of magnetic anomalies. The most striking is a large ring ditch or circular enclosure 80m in diameter approximately 300m south-east of Crackenthorpe Hall and 100m north of an old mill race depicted on early 20th century mapping which links to a weir on the river Eden to the east. Due to the strength and frequency of curvilinear cultivation patterns and the presence of a likely former boundary or trackway cutting this feature it remains difficult to confidently interpret any discrete magnetic anomalies of possible archaeological origin associated with this feature. Anomalies which do not reflect these patterns have been highlighted both within and outside of the feature and include short linear anomalies and clusters of discrete enhanced anomalies of uncertain origin.</p> <p>In the north-east corner of the field a small spread of seemingly random high magnitude responses is recorded at the former site of St. Giles's Chapel depicted on early 20th century OS maps. The magnetic responses are likely the fragmentary or demolished remains of the chapel.</p> <p>Elsewhere in the field different patterns of parallel, broad, curvilinear responses identify ridge and furrow and cultivation effects set within field boundaries pre-dating earlier 20th OS maps. Service pipes are evident in the north-west corner of the field adjacent to Crackenthorpe Hall and patches of magnetic disturbance or gaps in the data indicate the presence of trees often with protective iron (magnetic) fencing surrounding them.</p>





<p>Appleby to Brough</p> <p>ID Nos. 6.34</p> <p>3748, 4454, 3938, 4276, 4488</p> <p>Illus 35, 199, 362; 510, 599, 688</p>	<p>Yes?</p>	<p>The parcel at 4454 immediately north of the carriageway contains the scheduled area of a Roman camp and length of Roman road 285m south-west of Moor House (ID 1019208). The variable magnetic background in this area has hindered the interpretation of any magnetically enhanced, discrete pit-like anomalies, if present, from the similar strength anomalies typical of the natural background. The Roman camp is located on the gentle south-facing slope towards the south-west corner of this land parcel where several discrete anomalies of uncertain or possible archaeological origin have been identified. No continuous linear or curvilinear anomalies identifying the camps defensive ditches are recognisable. Just east of centre a vaguely circular arrangement of discrete magnetically enhanced anomalies approximately 40m in diameter surrounding a higher magnitude central isolated anomaly is identified. An archaeological cause remains uncertain, but the anomaly (or series of anomalies) may correlate with a curvilinear feature seen in aerial photos which is mentioned in the scheduled monument listing.</p> <p>Further clusters of discrete anomalies of uncertain origin are recorded in the adjoining field to the east, 3938. Here a vaguely rectangular arrangement of discrete anomalies 20m in diameter include a high magnitude anomaly indicative of burning at the northern edge of the field. These anomalies may be archaeological in origin.</p> <p>Responses south of the carriageway to the west and east of the scheduled area are limited to isolated discrete enhanced anomalies of uncertain (but most likely natural) origin, possible ridge and furrow and modern cultivation trends, a former boundary and service pipes.</p> <p>The unsurveyed area in 4488 was marshy and overgrown and therefore unsuitable for survey.</p>
<p>Appleby to Brough</p> <p>ID No. 6.35</p> <p>35, 198, 361</p>	<p>N/A</p>	<p>No access.</p>
<p>Appleby to Brough</p> <p>ID No. 6.36</p> <p>Illus 38, 201</p>	<p>N/A</p>	<p>Geology only.</p>
<p>Appleby to Brough</p> <p>ID No. 6.37</p> <p>38-39, 201-202, 364-365</p>	<p>N/A</p>	<p>No access.</p>

<p>Appleby to Brough</p> <p>ID No. 6.38, 6.39 and 6.40</p> <p>4025, 3762</p> <p>Illus 39, 202, 365</p>	No	<p>Two vague linear trends of likely agricultural origin are recorded at the eastern ends of 6.38 and 3762. Low magnitude, broad discrete and curvilinear anomalies in 4025 and 3762 are natural in origin and reflect the low-lying location of these parcels next to Lowgill Beck.</p> <p>Access was not given to 6.39 and 6.40.</p>
<p>Appleby to Brough</p> <p>4234, 4296</p> <p>Illus 40-41, 203-204, 366-367</p>	No	<p>Anomalies are limited to discrete, linear, and curvilinear trends, either agricultural or natural in origin, reflecting the location adjacent to Lowgill Beck and large areas of magnetic disturbance due to 'green' waste.</p>
<p>Appleby to Brough</p> <p>4207, 4182, 4185, 3754</p> <p>Illus 41, 204, 367; 511, 600, 689</p>	No?	<p>No anomalies of archaeological potential are evident in these fields north of the carriageway except for two perpendicular linear anomalies of uncertain origin recorded at the eastern end of 4182. These anomalies are straighter and better defined than both the low magnitude (weaker) trend anomalies indicative of agricultural activity and the less regular curvilinear response typical of a former channel recorded in the same field to the west, therefore an archaeological cause cannot be ruled out.</p> <p>Ridge and furrow cultivation anomalies are recorded in 3754.</p>
<p>Bowes Bypass (A66/A67)</p> <p>4250</p> <p>Illus 42, 205, 368</p>	No	<p>No anomalies of archaeological potential are recorded in this field north of the present carriageway, west of Bowes. The unsurveyed areas were marshy or overgrown and unsuitable for survey.</p>
<p>Bowes Bypass (A66/A67)</p> <p>ID Nos. 7.41, 7.42 and 7.43</p> <p>Illus 41-42, 204-205, 67-68</p>	N/A	No access.
<p>Bowes Bypass (A66/A67)</p> <p>ID No. 7.44</p> <p>Illus 42, 206, 369</p>	No	<p>Tiny, highly magnetically disturbed area probably due to construction of slip road on A66/A67 interchange.</p>
<p>Bowes Bypass (A66/A67)</p> <p>ID No. 7.45</p> <p>Illus 43, 206, 369</p>	No	<p>Ridge and furrow cultivation is recorded on a north/south alignment parallel with current field systems north of the carriageway in Bowes.</p>

Bowes Bypass (A66/A67)  ID No. 7.46  Illus 43-44, 206-208	No?	North of the carriageway ridge and furrow cultivation on north-northwest/south-southwest alignment is recorded at the west of this parcel but not detected at the eastern end. A single curvilinear anomaly perpendicular to the ridge and furrow is of uncertain origin although a natural cause is most likely.
Bowes Bypass (A66/A67)  ID No. 7.47  Illus 43-44,206-207, 369-370	No	South of the carriageway ridge and furrow cultivation matching that to the north is recorded in fields at the western end of the area. Anomalies at the eastern end are natural/geological in origin.
Bowes Bypass (A66/A67)  ID Nos. 7.48 and 7.50  Illus 44-45,207-208, 370,371	N/A	No access.
Bowes Bypass (A66/A67)  ID No. 7.49  Illus 45, 208, 371	No	Very small survey area with multiple discrete anomalies of uncertain origin but most likely natural.
Bowes Bypass (A66/A67)  4379	N/A	No access.
Cross Lanes to Rokeby  ID No. 8.51  Illus 47, 210, 373	N/A	No access.
Cross Lanes to Rokeby  ID No. 8.52  Illus 48 ,211, 374	No	Parallel trends in the southern field are likely land drains. Ferrous disturbance is recorded around the boundary along Moorhouse Lane.

<p>Cross Lanes to Rokeby</p> <p>ID No. 8.53</p> <p>4480</p> <p>Illus 46-49, 209-211, 372-374</p>	<p>No</p>	<p>Magnetic anomalies are limited to linear agricultural ploughing trends throughout. Magnetic disturbance is present along the boundary with the present carriageway and across the small parcel at the eastern end.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.54</p> <p>Illus 47-48, 210-211, 373- 374</p>	<p>No</p>	<p>Linear anomalies all oriented roughly north/south are a combination of former boundaries, land drains and ridge and furrow or modern agricultural ploughing anomalies.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.55</p> <p>Illus 48-50, 211-213, 374-376</p>	<p>No?</p>	<p>A circular arrangement of low magnitude discrete anomalies approximately 21m in diameter is tentatively interpreted towards the eastern end of the 8.55. A coincidental arrangement of discrete natural anomalies remains the most likely cause however the presence of linear anomalies south of the present carriageway/Roman road means an archaeological interpretation remains plausible.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.56</p> <p>Illus 50, 213, 376</p>	<p>No</p>	<p>Linear trend anomalies indicative of modern ploughing are recorded parallel with the current field boundary and road leading to Rokeby Grange.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.57</p> <p>Illus 48-49, 211-212, 374-375</p>	<p>Yes?</p>	<p>A linear anomaly aligned oblique to the ploughing trends (oriented roughly north-south) at the eastern end of 8.57 is interpreted as probably archaeological. Also, fragmentary linear anomalies and several discrete anomalies are interpreted as of possible archaeological origin and may indicate a continuation of archaeological activity in 8.58, 8.59 and that revealed by additional surveys to the east in 4468.</p> <p>Elsewhere linear trend anomalies parallel to the modern field boundaries are agricultural plough marks with one example of a former boundary recorded on early 20th century OS maps.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.58</p> <p>Illus 49-50, 212-213, 375-376</p>	<p>Yes</p>	<p>North/south linear trends are indicative of recent and post-medieval ploughing. More coherent but isolated linear anomalies, possibly ditches, are visible oblique to the cultivation patterns and may relate to potential archaeological anomalies in 8.57 to the east and archaeological activity in the eastern part of 8.58 and in 4468.</p> <p>In the eastern part of this parcel two parallel linear anomalies aligned north-east/south-west (possible ditches either side of a trackway?) have been interpreted as probably archaeological.</p>

<p>Cross Lanes to Rokeby</p> <p>ID No. 8.59</p> <p>4468</p> <p>Illus 50-51, 213-214, 376-377</p>	<p>Yes</p>	<p>Anomalies due to ridge and furrow ploughing oriented roughly north/south and more recent ploughing oriented east/west are identified at Ewebank. Oblique to the ploughing, are two parallel widely spaced (approximately 20m) curvilinear anomalies (aligned north-east/south-west) which can now be seen to extend to the north-west corner of a square enclosure containing multiple ring-ditches in adjacent field 4486. Additional linear anomalies oblique to the cultivation are more likely to be archaeological in origin than the less regular curvilinear responses marking the location of former channels and geological trends.</p> <p>A clear area of archaeological activity consisting of two adjoining square/rectilinear enclosures oriented west-northwest/east-southeast measuring approximately 65m along the north-east/south-west axis and containing a central ring ditch and two further less well-defined ring ditches is present towards the northern part of 4468. The presumed western side of the square enclosure is entirely missing as a service pipe runs almost exactly parallel to the enclosure in this location. There appears to be a gap or entrance in the eastern side of the enclosure ditch which is shared with the adjoining rectilinear enclosure. The enclosures are set between the Roman road to the north and a former channel identified in the data as a broad curvilinear response extending into 8.59 and 8.58 to the west and to the south-east beyond parcel 4468. The scheduled area of Greta Bridge Roman fort, vicus, and section of Roman road (ID 1019074) lies approximately 440m east from the centre of the square enclosure. No indication of this activity is identifiable in the initial area surveyed immediately to the north marking the eastern extent of 8.59 and few convincing discrete pit-like anomalies can be seen outside of the ring-ditches and enclosures.</p>
<p>Cross Lanes to Rokeby</p> <p>4486</p> <p>Illus 49-51, 212-213, 375-376; 513, 602, 691</p>	<p>Yes?</p>	<p>Two straight parallel linear anomalies cut the north-west corner of 4486 and line up with foot paths recorded on early 20th century OS maps and cropmarks visible on Google earth. A linear anomaly in the southern part of the field is likely a continuation of a ditch-like feature south of the present carriageway in 8.59. The origin of two clusters of linear and discrete magnetically enhanced anomalies, only slightly distinguishable from the natural magnetic background at the northern terminus of this linear and separately close to the western boundary of the field is uncertain. Given the level of archaeological activity nearby an archaeological cause remains plausible.</p> <p>Elsewhere four service pipes are recorded in addition to predominantly north/south oriented linear trend anomalies which are due to modern ploughing.</p>
<p>Cross Lanes to Rokeby</p> <p>ID No. 8.60</p> <p>Illus 51, 214, 377</p>	<p>No</p>	<p>Only magnetic disturbance from a service pipe and the proximity to the present carriageway and field boundary is identifiable in this narrow parcel.</p>

<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.61</p> <p>Illus 52, 215, 378</p>	<p>Yes?</p>	<p>Broad areas of magnetic disturbance are interpreted as indicative of possible localised extraction and natural geological features. Old quarry pits are recorded on early 20th century OS maps though it remains unclear from what period these date to.</p> <p>Linear anomalies south of the possible quarrying appear on the same alignment as the contour lines and may be caused by the slight build-up of material at the base of, or at the break of, a slope. A former boundary is identified towards the centre of the parcel.</p>
<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.62</p> <p>Illus 52, 215, 378</p>	<p>Yes?</p>	<p>A second area of geological variation, possibly also indicative of extraction, is identified alongside discrete anomalies of uncertain origin adjacent to the road. It is unclear whether these could be archaeological or more likely due to variation in the soils or geology or possible extraction or a combination of these factors. Nevertheless, an archaeological origin cannot be dismissed.</p>
<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.63, 9.64, 9.65 and 9.66</p> <p>Illus 52-57, 215-220, 378-383</p>	<p>No</p>	<p>Two clusters of discrete magnetically enhanced anomalies slightly distinct in character from the natural magnetic background are interpreted as uncertain towards the centre of 9.63. Natural variation of the magnetic background is still considered the most likely cause of these anomalies.</p> <p>Service pipes, land drains and ridge and furrow cultivation are recorded in the fields adjacent to Layton Manor. Also, more recent linear ploughing trends and land drains are recorded in 9.64, 9.65 and 9.66, south of Monks Rest Farm. Former field boundaries are recorded as linear anomalies in 9.65 and 9.66 opposite Mainsgill Farm.</p>
<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.67</p> <p>Illus 57, 219, 383</p>	<p>Yes</p>	<p>Although outside the scheduled area of the Roman fort (ID 1015418) located immediately to the east (see 9.69 below), faint linear and curvilinear anomalies oblique to the current field system are suggestive of archaeological features and possibly relate to a prehistoric enclosed settlement mentioned in the monument listing identified 200m north-west of the fort. Isolated and clusters of discrete magnetically enhanced anomalies surrounding these features have been interpreted as uncertain in origin as it remains difficult to differentiate these possible pit-like anomalies from the natural magnetic background in most cases. A rectilinear anomaly approximately 16m in diameter located immediately to the west of the scheduled area is a possible small enclosure.</p>
<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.68</p> <p>Illus 57-58, 220-221, 383-384</p>	<p>N/A</p>	<p>No access.</p> <p>It seems highly likely that there will be archaeological activity in this area given that it is located within the scheduled area and that features are identified in 9.69, immediately to the south on the other side of the A66.</p>

<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.69</p> <p>Illus 58,220-221,383-384</p>	<p>Yes</p>	<p>Linear ditch-type anomalies, aligned south-west/north-east, have been identified which clearly align with the footprint of the Roman fort, confirming its location. Several pit-type anomalies and short linear anomalies are also identified just outside the fort on its north-western side. Some of these anomalies are likely part of the natural magnetic background though it remains difficult to distinguish but given the proximity to the fort an archaeological cause is possible.</p> <p>Additional survey encompassing the full extent of the scheduled area and a buffer zone beyond have clearly identified the south-western side of the monument showing it to be located very close to the edge of the scheduled area and may in fact extend slightly beyond the current scheduled area.</p> <p>Magnetic disturbance is present along the boundary of the present carriageway and other linear anomalies identify land drains and agricultural ploughing trends both within and outside the ditches of the Roman fort.</p>
<p>Stephen Bank to Carkin Moor</p> <p>ID No. 9.70</p> <p>Illus 58, 221, 384</p>	<p>No</p>	<p>Two faint linear anomalies of uncertain origin are identified at the southern end of these parcels. These may be further examples of other liner trend anomalies identifying ploughing trends largely consistent with the current field boundaries.</p>

### 3.2. EARTH RESISTANCE SURVEY

*Brougham Roman marching camp (ID 1007187) and settlement (ID1007203) Illus 763 to Illus 765)*

The data quality from this site is very good and several features can be clearly discerned against a very variable background. However, the magnetometer data does still provide greater resolution and is more straightforward to interpret. Low resistance linear anomalies LRD<sub>1</sub>, LRD<sub>2</sub>, LRD<sub>3</sub> and LRD<sub>4</sub> are indicative of ditches and correspond with the magnetic data. Several low resistance pit-like features are also recorded (LRP<sub>1</sub> to LRP<sub>7</sub> inclusive), and these anomalies also correspond with magnetic anomalies. All these features present as low resistance anomalies because the material infilling the feature is likely to be less compact and hence more moisture retentive than the surrounding subsoil and consequently less resistive to current flow. A large circular low resistance anomaly also matches with a magnetic anomaly and is likely to be archaeological although its cause is uncertain.

A small area of low resistance recorded at the western end of the survey area at the entrance to the field off the A66 is likely a result of the saturated ground conditions here during the survey.

Areas of high resistance are mostly recorded in the east of the survey area and there is little correlation with the magnetometer data. The anomalies have no form or pattern and could be caused by spreads of compacted material or near surface bedrock, but their origin is uncertain. The field slopes down from east to west with the bedrock geology close to the surface at the eastern end where in parts it was difficult to insert the mobile probes into the ground. Bedrock close to the surface could account for the high resistance readings but given the location an archaeological cause cannot be dismissed.

*Redlands Bank Roman camp (ID 1007189) Illus 766 to Illus 768)*

No clear or coherent anomalies likely to be associated with the Roman camp have been recorded in this area.

High resistance linear trends parallel with the road and broader bands of high resistance on the same alignment are likely to be agricultural in origin, probably due to soil compaction along the seed rows.

Areas of low resistance around the field margins are likely to reflect areas of poor drainage/water accumulation.

*Carkin Moor Roman fort ID 1015418) (Illus 769 to Illus 771)*

Two broader areas of high resistance can be distinguished in the data collected north of and bordering the A66. The larger area is at the western end of the survey area and here a vague rectilinear, L-shaped, anomaly (Illus 504 - HRD1) can just be distinguished amongst the larger area of high resistance. This anomaly partly corresponds to a ditch like anomaly recorded in the magnetometer data and is therefore interpreted as of possible archaeological origin. In the centre of the survey area three amorphous patches of higher resistance are identified. These resistive anomalies are in the location of the small rectilinear enclosure recorded in the magnetometer data and so are also tentatively interpreted as of archaeological origin. Two vague high resistance linear trends are interpreted as of likely agricultural origin.

The earth resistance survey within the scheduled area of the fort immediately south of Street Plantation and the present carriageway has identified several parallel high and low resistance linear anomalies aligned at right angles to the road. It can be seen from the graphic (Illus 504) that these anomalies are on the same alignment as, and in some cases correlate with, the tractor wheelings visible on the satellite imagery. Unfortunately, these anomalies are on the same alignment as the plan of the fort and it is unclear which, if any, of these anomalies may correspond with any remains of the bank and ditch surrounding the fort. In this respect the expanded magnetometer survey encompassing the whole of the scheduled area provides a much clearer picture of the extent of the monument.

Two areas of high resistance of uncertain origin are also recorded.

## 4. DISCUSSION

### 4.1. CONSTRAINTS/LIMITATIONS

There are several limitations or constraints which could potentially have reduced the possibility of identifying archaeological features, if present, during the magnetometer survey and these factors are reviewed below.

The first is the overall effectiveness of magnetometry as a technique. Magnetometry is the most widely used geophysical survey technique in archaeology as it can quickly evaluate large areas and, under favourable conditions, identify a wide range of archaeological features including infilled cut features such as large pits, gullies and ditches, hearths, and areas of burning and kilns and brick structures. It is therefore good at locating settlements of all periods, prehistoric field systems and enclosures and areas of industrial or modern activity, amongst others. It is less successful in identifying smaller features such as post-holes and small pits (except when using a non-standard sampling interval), unenclosed (prehistoric) settlement sites and graves/burial grounds. It is noticeable that virtually all the 'archaeological' features identified during the trial trenching that were not recorded (or interpreted) by the magnetometer survey were small and shallow ditches or gullies or small pits or post-holes. However, magnetometry is by far the single most useful technique. All the other techniques are useful and can provide good results but on a smaller range of features and so are generally only used when a particular type of feature or target is likely to be encountered or when using a suite of techniques to identify the widest range of potential features.

Magnetometer survey is also susceptible to the potential 'masking' effect from concentrations of ferrous debris which is particularly prevalent in field boundaries (fencing material such as barbed and mesh wire in and forming the boundary) and from sub-surface pipes. Modern disturbance from construction activity around embankments and junctions could also cause areas of high magnetic readings which could potentially mask weaker responses from archaeological features if present. However, it should be stated that at no location is modern disturbance considered to be so extensive that any extensive archaeological remains (notwithstanding the limitations of magnetometry



as a technique set out above) could not still be identifiable. However, small scale, isolated or ephemeral features probably would not be detected under such circumstances. However, it was considered that the overwhelming benefits of magnetometry outweighed any potential disbenefits in this regard.

Another potential masking effect is that due to the recent practice of spreading 'green' waste on fields as a soil improver or conditioner. This material doesn't always comprise solely organic matter but often includes ferrous debris. It can also be highly magnetic itself due to the breakdown of the organic material during the decomposition process, although this effect is thought to dissipate over time. A small number of fields along the Upgrade have clearly been spread to varying extents with this material, based on the magnetic data. As is the case with the sources of ferrous disturbance smaller, ephemeral features may not be identified against this elevated magnetic background but areas of dense or extensive archaeology are less likely to be completely masked although loss of resolution is highly likely.

The narrow corridor width also has an impact, not in identifying anomalies but in reducing the confidence that can be placed on an archaeological interpretation; it is very difficult to determine whether a single 30m linear anomaly in isolation is caused by ploughing, a field drain, an infilled 19th century boundary ditch or a much older archaeological ditch that might be part of a prehistoric field system or settlement, without either other lines of evidence or a wider archaeological context. During this survey it has been assumed that linear anomalies oblique to the current field pattern are more likely to be archaeological than agricultural and have so been interpreted as of uncertain or possible archaeological origin. In most cases a non-archaeological cause is considered most likely unless stated otherwise; it is noteworthy that many of the linear features excavated during the trial trenching were undated and so may be of post-medieval agricultural rather than archaeological origin.

Anomalies caused by ridge and furrow cultivation are noted in numerous locations throughout the Scheme. Again, there is the potential for this ploughing activity to have produced anomalies of higher magnitude than those which might be

caused by earlier underlying archaeological features, if present, and so 'mask' them. Again, it is not thought likely that any extensive remains would not still be detectable under these circumstances. As discussed previously the evidence from the trial trenching is that there are few features that haven't been recorded by the magnetometer survey so the balance of probability would suggest that this probably is not a major concern.

## 5. CONCLUSIONS

The surveys overall have generally identified few anomalies that have been interpreted as being of probable archaeological origin, outside of the scheduled areas. This is the case both along the offline sections and where the Roman road and current A66 diverge in course as well as where the two follow the same route. The two main exceptions to this finding are the identification of a large ring ditch or circular enclosure south-east of Crackenthorpe Hall and a square enclosure containing three ring ditches north-west of Greta Bridge.

In the location of scheduled areas within the Scheme the surveys have confirmed the presence of a range of archaeological features associated with the Roman fort and civil settlement at Brocavum and nearby Roman marching camp and settlement north of the present carriageway. The results of additional survey work in 2021 including the earth resistance survey in this area supports the archaeological interpretations of the first phase of survey and has provided greater detail of the layout and extent of the archaeological activity, possibly extending as far east as the Countess Pillar scheduled monument.

Linear anomalies locating the east and west ditches of the Roman fort and possible associated features are also identified in both the magnetometer and earth resistance data at Carkin Moor although in general the resistance data has provided very little additional detail to that provided by the magnetic survey.

The results are less clear from the Roman camps sited at Warcop and Redlands Bank. No continuous linear or curvilinear anomalies identifying the camps defensive ditches are recognisable at the

Warcop site where findings are limited to vague arrangements of discrete anomalies difficult to separate from the variable magnetic background within and immediately adjacent to the scheduled area.

The magnetic data for the area partly within the Redlands Bank Roman camp shows a variable spread of discrete high magnitude anomalies across the entire field indicative of the spreading of 'green' waste. The archaeological potential of this area cannot be assessed based on the magnetometer data though it is not thought likely that any extensive activity would remain undetected. The earth resistance survey at Redlands Bank did not identify any anomalies which could likely relate to the Roman camp only a strip of low resistance adjacent to the carriageway and a linear anomaly of uncertain origin oblique to the plan of the Roman camp.

In multiple locations across the Upgrade isolated linear/curvilinear or small clusters of discrete magnetic anomalies have been interpreted as of uncertain origin or of possible archaeological origin, depending on the local context. The limitations and constraints of the magnetic survey method and particulars of the Scheme discussed herein however restricts more confident interpretation of these anomalies.

The overwhelming majority of the magnetic anomalies that have been identified that do not relate to the prevailing variable local natural magnetic background or geological patterns, are linear trends that are likely due to post-medieval and modern agricultural activity. These primarily consist of recent and post-medieval (ridge and furrow) cultivation and land drains that are of limited archaeological significance although they may be of local historical interest. Several former field boundaries are identified across the Scheme, but the field layout seems to have remained relatively unchanged since the first edition Ordnance Survey mapping was published.

Much of the survey parallel with the existing A66 carriageway is dominated by magnetic disturbance either due to ferrous debris in hedge bottoms, fencing wire etc or caused by recent ground disturbance due to embankment construction or improvements around minor junctions and farm access tracks.

High magnitude linear anomalies caused by services and drains are also commonly recorded adjacent to the current road. Notwithstanding the fact that magnetometry is not likely to detect anomalies/features of certain types, sizes or depths and period it should be stated that in no location is modern disturbance, or any other limiting factor (excluding possibly 'green' waste), considered to be of such high magnitude that extensive archaeological remains, particularly Roman settlement or roadside activity, could not have been detected, if present. Overall, taking account of the limitations detailed above, the magnetometer surveys carried out to date have identified a range of anomalies, both archaeological and non-archaeological, where survey has been possible.

The results from the earth resistance survey complement the findings of the magnetometer surveys at Brougham and Carkin Moor. Several ditch and pit like features have been recorded at Brougham as well as the Roman fort ditches at Carkin Moor. However, the resistance surveys provided little if any extra detail or resolution beyond what was identifiable in the magnetometer survey at these locations. The survey at Redlands Bank did not identify any anomalies which could likely relate to the Roman camp only a linear anomaly of uncertain origin.

The results of the geophysical surveys together with the other information submitted in support of the DCO application will allow a thorough contextualisation and evaluation of the archaeological resource along the Upgrade Schemes. Nevertheless, it is concluded that the results of the geophysical surveys provide a good indication of the extent of the below ground archaeological resource and that the likelihood is low that there are extensive or significant archaeological remains within the surveyed areas, excluding the scheduled areas and the two sites at Crackenthorpe and Greta Bridge. These conclusions are supported by the results of the evaluation trenching undertaken by Wessex Archaeology and by Wardell Armstrong along the Scheme. The trenching covered both areas surveyed as part of this report and areas not previously surveyed. Archaeological remains were generally limited to known 'hotspots' predominantly in or immediately adjacent to scheduled sites with a good correlation between

the 'significant' archaeological remains and the magnetic anomalies. Where archaeological features were recorded that were not identified in the magnetometer survey the features were overwhelmingly shallow ephemeral ditches or gullies or small discrete pits and post-holes, features that are either too small or too shallow to be realistically identified by remote sensing.

## 6. REFERENCES

Chartered Institute for Archaeologists (CIfA) 2014 Standard and guidance for archaeological geophysical survey (Reading) [redacted] accessed 12th January 2022

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Ministry of Housing, Communities and Local Government MHCLG) 2019 National Planning Policy Framework [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1005759/NPPF\\_July\\_2021.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf) accessed 12th January 2022

## 7. APPENDICES

### APPENDIX 1 MAGNETOMETER SURVEY *Magnetic susceptibility and soil magnetism*

Iron makes up about 6% of the earth's crust and is mostly present in soils and rocks as minerals such as maghaemite and haematite. These minerals have a weak, measurable magnetic property termed magnetic susceptibility. Human activities can redistribute these minerals and change (enhance) others into more magnetic forms so that by measuring the magnetic susceptibility of the

topsoil, areas where human occupation or settlement has occurred can be identified by virtue of the attendant increase (enhancement) in magnetic susceptibility. If the enhanced material subsequently comes to fill features, such as ditches or pits, localised isolated and linear magnetic anomalies can result whose presence can be detected by a magnetometer (fluxgate gradiometer).

In general, it is the contrast between the magnetic susceptibility of deposits filling cut features, such

as ditches or pits, and the magnetic susceptibility of the topsoil, subsoil and rock into which these features have been cut, which causes the most recognisable responses. This is primarily because there is a tendency for magnetic ferrous compounds to become concentrated in the topsoil, thereby making it more magnetic than the subsoil or the bedrock. Linear features cut into the subsoil or geology, such as ditches, that have been silted up or have been backfilled with topsoil will therefore usually produce a positive magnetic response relative to the background soil levels. Discrete feature, such as pits, can also be detected.

The magnetic susceptibility of a soil (clay) can also be enhanced by the application of heat. This effect can lead to the detection of heat affected features such as hearths, kilns or areas of burning.

### *Types of magnetic anomaly*

In most cases anomalies are termed 'positive'. This means that they have a positive magnetic value relative to the magnetic background on any given site. However, some features can manifest themselves as 'negative' anomalies that, conversely, means that the response is negative relative to the mean magnetic background.

Where it is not possible to give a probable cause of an observed anomaly a '?' is appended.

It should be noted that anomalies interpreted as modern in origin might be caused by features that are present in the topsoil or upper layers of the subsoil. Removal of soil to an archaeological or natural layer can therefore remove the feature causing the anomaly.

The types of response mentioned above can be divided into five main categories that are used in the graphical interpretation of the magnetic data:

#### *Isolated dipolar anomalies (iron spikes)*

These responses are typically caused by ferrous material either on the surface or in the topsoil. They cause a rapid variation in the magnetic response giving a characteristic 'spiky' trace. Although ferrous archaeological artefacts could produce this type of response, unless there is supporting evidence for an archaeological interpretation, little emphasis is normally given to such anomalies, as modern ferrous objects are common on rural sites, often being introduced into the soil during manuring.

#### *Areas of magnetic disturbance*

These responses can have several causes often being associated with burnt material, such as slag waste or brick rubble or other strongly magnetised/fired material. Ferrous structures such as pylons, mesh or barbed wire fencing and buried pipes can also cause the same disturbed response. A modern origin is usually assumed unless there is other supporting information.

#### *Lightning-induced remnant magnetisation (LIRM)*

LIRM anomalies are thought to be caused in the near surface soil horizons by the flow of an electrical current associated with lightning strikes. These observed anomalies have a strong bipolar signal which decreases with distance from the spike point and often appear as linear or radial in shape.

#### *Linear trend*

This is usually a weak or broad linear anomaly of unknown cause or date. These anomalies are often caused by agricultural activity, either ploughing or land drains being a common cause.

#### *Areas of magnetic enhancement/positive isolated anomalies*

Areas of enhanced response are characterised by a general increase in the magnetic background over a localised area whilst discrete anomalies are manifest by an increased response (sometimes only visible on an XY trace plot) on two or three successive traverses. In neither instance is there the intense dipolar response characteristic exhibited by an area of magnetic disturbance or of an 'iron spike' anomaly (see above). These anomalies can be caused by infilled discrete archaeological features such as pits or post-holes or by kilns. They can also be caused by pedological variations or by natural infilled features on certain geologies. Ferrous material in the subsoil can also give a similar response. It can often therefore be very difficult to establish an anthropogenic origin without intrusive investigation or other supporting information.

#### *Linear and curvilinear anomalies*

Such anomalies have a variety of origins. They may be caused by agricultural practice (recent ploughing trends, earlier ridge and furrow regimes

or land drains), natural geomorphological features such as palaeochannels or by infilled archaeological ditches.

## APPENDIX 2 EARTH RESISTANCE SURVEY

### *Soil and electrical resistance*

The electrical resistance of the upper soil horizons is predominantly dependant on the amount and distribution of water within the soil matrix. Buried archaeological features, such as walls or infilled ditches, by their differing capacity to retain moisture, will impact on the distribution of sub-surface moisture and hence affect electrical resistance. In this way there may be a measurable contrast between the resistance of archaeological features and that of the surrounding deposits. This contrast is needed for sub-surface features to be detected by a resistance survey.

The most striking contrast will usually occur between a solid structure, such as a wall, and water-retentive subsoil. This shows as a resistive high. A weak contrast can often be measured between the infill of a ditch feature and the subsoil. If the infill material is soil it is likely to be less compact and hence more water retentive than the subsoil and so the feature will show as a resistive low. If the infill is stone, the feature may retain less water than the subsoil and so will show as a resistive high.

The method of measuring variations in ground resistance involves passing a small electric current (1mA) into the ground via a pair of electrodes (current electrodes) and then measuring changes in current flow (the potential gradient) using a second pair of electrodes (potential electrodes). In this way, if a structural feature, such as a wall, lies buried in a soil of uniform resistance much of the current will flow around the feature following the path of least resistance. This reduces the current density in the vicinity of the feature, which in turn increases the potential gradient. It is this potential gradient that is measured to determine the resistance. In this case, the gradient would be increased around the wall giving a positive or high resistance anomaly. In contrast a feature such as an infilled ditch may have a moisture retentive fill that is comparatively less resistive to current flow. This will increase the current density and decrease the

potential gradient over the feature giving a negative or low resistance anomaly.

### *Survey Methodology*

The most widely used archaeological technique for earth resistance surveys uses a twin probe configuration. One current and one potential electrode (the remote or static probes) are fixed firmly in the ground a set distance away from the area being surveyed. The other current and potential electrodes (the mobile probes) are mounted on a frame and are moved from one survey point to the next. Each time the mobile probes make contact with the ground an electrical circuit is formed between the current electrodes and the potential gradient between the mobile and remote probes is measured and stored in the memory of the instrument.

Geoscan RM15 and RM85 resistance meters were used during this survey, with the instrument logging each reading automatically at 0.5m intervals on traverses 1m apart. The mobile probe spacing was 0.5m with the remote probes 30m apart and at least 30m away from the grid under survey. This mobile probe spacing of 0.5m gives an approximate depth of penetration of 1m for most archaeological features. Consequently, a soil cover in excess of 1m may mask, or significantly attenuate, a geophysical response.

### *Data Processing and Presentation*

All the illustrations incorporating a digital map base were produced in AutoCAD LT 2021 (Autodesk).

The resistance data is presented in this report in greyscale format with a linear gradation of values and was obtained by exporting a bitmap from the processing software (Geoplot v4.0; Geoscan Research) into AutoCAD LT 2021. The data has been processed and has also been interpolated by a value of 0.5 in Y axis using a sine wave  $(x)/x$  function to give a smoother, better-defined plot.

## APPENDIX 3 SURVEY LOCATION INFORMATION

An initial survey base station was established using a Trimble VRS differential Global Positioning System (dGPS). The magnetometer data was georeferenced using a Trimble RTK differential Global Positioning System (Trimble R8s model).



## APPENDIX 6 OASIS ARCHIVE

## OASIS ID: headland5-414445

## Project details

Project name	A66 Transpennine Upgrade
Short description of the project	Headland Archaeology (UK) Ltd undertook a geophysical (magnetometer) along the route of the A66 where upgrades to this main arterial east/west route are proposed. The surveys covered approximately 256 hectares. The surveys have identified very few anomalies that have been interpreted as being either of possible or probable archaeological origin, outside of scheduled areas and their immediate environs. The surveys have confirmed the presence of archaeological features likely associated with the Roman fort and civil settlement at Brocavum and anomalies locating the Roman fort and possible associated features are also identified at Carkin Moor. Most of the Redlands Bank Roman camp was inaccessible at the time of survey. No obvious anomalies adjacent to the Countess Pillar have been identified. Outwith the scheduled areas several linear anomalies oblique to the current field layout and of uncertain origin have been interpreted as of possible or probable archaeological origin (depending on the local context) and several discrete anomalies and possible areas of localised extraction (potentially to extract material to construct the Roman road) are also identified immediately adjacent to the line of the old Roman road. However, most of the identified anomalies are linear trends due to agricultural activity, primarily recent and post-medieval (ridge and furrow) ploughing and land drains. It is considered likely that the surveys carried out so far have successfully evaluated those parts of the Upgrade where survey has been possible.
Project dates	Start: 26-10-2020 End: 19-11-2020
Previous/future work	No / Yes
Any associated project reference codes	ATPU - Contracting Unit No.
Type of project	Field evaluation
Site status	None
Current Land use	Cultivated Land 2 - Operations to a depth less than 0.25m
Monument type	CROPMARKS Roman
Monument type	NONE None
Significant Finds	NONE None
Significant Finds	NONE None
Methods & techniques	"Geophysical Survey"
Development type	Road scheme (new and widening)
Prompt	National Planning Policy Framework - NPPF
Position in the planning process	Pre-application
Solid geology (other)	various
Drift geology (other)	various

Techniques Magnetometry

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### Project location

Country England  
Site location CUMBRIA EDEN PENRITH A66 Upgrade  
Postcode CA10 2BQ  
Study area 350 Hectares  
Site coordinates NY 5202880 5200520 54.860441958083 -2.747406492862 54 51 37 N  
002 44 50 W Point  
Height OD / Depth Min: 120m Max: 130m

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### Project creators

Name of Organisation Headland Archaeology  
Project brief originator Highways Agency  
Project design originator Consultant  
Project director/manager Alistair Webb  
Project supervisor Bishop, R  
Type of sponsor/funding body Highways Agency  
Name of sponsor/funding body Highways Agency

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### Project archives

Physical Archive Exists? No  
Digital Archive recipient Headland Archaeology  
Digital Contents "other"  
Digital Media available "GIS", "Geophysics"  
Paper Archive Exists? No

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Entered by alistair. webb [REDACTED]@headlandarchaeology.com)  
Entered on 3 February 2021



## APPENDIX 7 SECTION 42 LICENCES



Mr Alistair Webb  
 Headland Archaeology Yorkshire & North  
 Units 23 25 Acorn Business Centre  
 Balme Road  
 Cleckheaton  
 BD19 4EZ

Mobile: [REDACTED]  
 Our ref: SL00234045

Dear Mr Webb

**Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey**

**BROUGHAM ROMAN FORT (BROCAVUM) AND CIVIL SETTLEMENT AND BROUGHAM CASTLE, BROUGHAM, CUMBRIA**

Case No: SL00234045  
 Monument no: CU 241; HA 1007186

I refer to your application dated 9 October 2020, to carry out a geophysical survey at the above site.

Historic England is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) Historic England hereby grants permission for geophysical survey of BROUGHAM ROMAN FORT (BROCAVUM) AND CIVIL SETTLEMENT AND BROUGHAM CASTLE, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Alistair Webb, Headland Archaeology or his nominated representative and by no other person. It is not transferable to another individual.
2. The permission shall commence on 3 November 2020 and shall cease to have effect on 31 December 2020.
3. A full report summarising the results of the geophysical survey and their interpretation shall be sent in hard copy to Stephen Boyle at the address below and electronic (pdf) format to [REDACTED]@HistoricEngland.org.uk, copied to [REDACTED]@HistoricEngland.org.uk no later than 3 months after the completion of the survey.
4. The enclosed questionnaire shall be completed and appended to the survey



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416



*Historic England is subject to both the Freedom of Information Act (2000) and Environmental Information Regulations (2004). Any information held by the organisation can be requested for release under this legislation.*



Historic England

report. For convenience an electronic version of this questionnaire can be downloaded from [REDACTED]

5. A copy of the report shall also be sent (in their preferred format) to the local Historic Environment Record (HER). The local HER's contact details can be found at [REDACTED]
6. A record signposting your investigation shall be made with the Archaeology Data Service using their online OASIS Data Collection form no later than 3 months after completion of the survey. Please see [REDACTED] for details or contact [oasis@HistoricEngland.org.uk](mailto:oasis@HistoricEngland.org.uk) for information and training.

This letter does not carry any consent or approval required under any enactment, bye-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely

[REDACTED]

**Lee McFarlane**

Inspector of Ancient Monuments

E-mail: [REDACTED]@HistoricEngland.org.uk

cc: Dr Mark Brennand, County Archaeologist, Cumbria County Council



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

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[REDACTED]



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Historic England

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Headland Archaeology Yorkshire & North  
Units 23 25 Acorn Business Centre  
Balme Road  
Cleckheaton  
BD19 4EZ

Mobile: [REDACTED]  
Our ref: SL00234046

Dear Mr Webb

**Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey**

**THE COUNTESS PILLAR, BROUGHAM, CUMBRIA**

Case No: SL00234046  
Monument no: CU 410; HA 1007122

I refer to your application dated 9 October 2020, to carry out a geophysical survey at the above site.

Historic England is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) Historic England hereby grants permission for geophysical survey of THE COUNTESS PILLAR, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Alistair Webb, Headland Archaeology, or his nominated representative and by no other person. It is not transferable to another individual.
2. The permission shall commence on 3 November 2020 and shall cease to have effect on 31 December 2020.
3. A full report summarising the results of the geophysical survey and their interpretation shall be sent in hard copy to Stephen Boyle at the address below and electronic (pdf) format to [REDACTED]@HistoricEngland.org.uk, copied to [REDACTED]@HistoricEngland.org.uk no later than 3 months after the completion of the survey.
4. The enclosed questionnaire shall be completed and appended to the survey report. For convenience an electronic version of this questionnaire can be downloaded from <http://HistoricEngland.org.uk/advice/technical->



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416



Historic England is subject to both the Freedom of Information Act (2000) and Environmental Information Regulations (2004). Any information held by the organisation can be requested for release under this legislation.





Historic England

advice/archaeological-science/geophysics.

5. A copy of the report shall also be sent (in their preferred format) to the local Historic Environment Record (HER). The local HER's contact details can be found at [REDACTED]
6. A record signposting your investigation shall be made with the Archaeology Data Service using their online OASIS Data Collection form no later than 3 months after completion of the survey. Please see <http://oasis.ac.uk/> for details or contact [oasis@HistoricEngland.org.uk](mailto:oasis@HistoricEngland.org.uk) for information and training.

This letter does not carry any consent or approval required under any enactment, bye-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely

[REDACTED]

**Lee McFarlane**

Inspector of Ancient Monuments

E-mail: [REDACTED]@HistoricEngland.org.uk

cc: Dr. Mark Brennand, Cumbria County Council



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416  
[REDACTED]



*Historic England is subject to both the Freedom of Information Act (2000) and Environmental Information Regulations (2004). Any Information held by the organisation can be requested for release under this legislation.*



Historic England

Mr Alistair Webb  
Headland Archaeology Yorkshire & North  
Units 23 25 Acorn Business Centre  
Balme Road  
Cleckheaton  
BD19 4EZ

Mobile [REDACTED]

Our ref: SL00234047

Dear Mr Webb

**Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey**

**ROMAN CAMP, 350M EAST OF REDLANDS BANK, CRACKENTHORPE, CUMBRIA**

Case No:SL00234047

**Monument no: CU 244; HA 1007189**

I refer to your application dated 9 October 2020, to carry out a geophysical survey at the above site.

Historic England is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) Historic England hereby grants permission for geophysical survey of ROMAN CAMP, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Alistair Webb, Headland Archaeology, or his nominated representative and by no other person. It is not transferable to another individual.
2. The permission shall commence on 3 November 2020 and shall cease to have effect on 31 December 2020.
3. A full report summarising the results of the geophysical survey and their interpretation shall be sent in hard copy to Stephen Boyle at the address below and electronic (pdf) format to [REDACTED]@HistoricEngland.org.uk, copied to [REDACTED]@HistoricEngland.org.uk no later than 3 months after the completion of the survey.
4. The enclosed questionnaire shall be completed and appended to the survey report. For convenience an electronic version of this questionnaire can be



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416  
[REDACTED]



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Historic England

downloaded from <http://HistoricEngland.org.uk/advice/technical-advice/archaeological-science/geophysics>.

5. A copy of the report shall also be sent (in their preferred format) to the local Historic Environment Record (HER). The local HER's contact details can be found at <http://www.heritagegateway.org.uk/gateway/chr/default.aspx>.
6. A record signposting your investigation shall be made with the Archaeology Data Service using their online OASIS Data Collection form no later than 3 months after completion of the survey. Please see <http://oasis.ac.uk/> for details or contact [oasis@HistoricEngland.org.uk](mailto:oasis@HistoricEngland.org.uk) for information and training.

This letter does not carry any consent or approval required under any enactment, by-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely



**Lee McFarlane**

Inspector of Ancient Monuments

E-mail: [\[REDACTED\]@HistoricEngland.org.uk](mailto:[REDACTED]@HistoricEngland.org.uk)

cc: Dr Mark Brennand, County Archaeologist, Cumbria County Council



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416



*Historic England is subject to both the Freedom of Information Act (2000) and Environmental Information Regulations (2004). Any Information held by the organisation can be requested for release under this legislation.*



Historic England

Mr Alistair Webb  
Headland Archaeology Yorkshire & North  
Units 23 25 Acorn Business Centre  
Balme Road  
Cleckheaton  
BD19 4EZ

Mobile: [REDACTED]  
Our ref: SL00234049

Dear Mr Webb

**Ancient Monuments and Archaeological Areas Act 1979 (as amended) section 42 - licence to carry out a geophysical survey**

**SETTLEMENT 1/3 MILE (540M) ENE OF BROUGHAM CASTLE, BROUGHAM, CUMBRIA**

Case No:SL00234049  
Monument no: CU 154; HA 1007203

I refer to your application dated 9 October 2020, to carry out a geophysical survey at the above site.

Historic England is empowered to grant licences for such activity and I can confirm that we are prepared to do so as set out below.

By virtue of powers contained in section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) Historic England hereby grants permission for geophysical survey of SETTLEMENT 1/3 MILE (540M) ENE OF BROUGHAM CASTLE, for the areas shown on the map that accompanied your application (copy attached). This permission is subject to the following conditions.

1. The permission shall only be exercised by Alistair Webb, Headland Archaeology, or his nominated representative and by no other person. It is not transferable to another individual.
2. The permission shall commence on 03 November 2020 and shall cease to have effect on 31 December 2020.
3. A full report summarising the results of the geophysical survey and their interpretation shall be sent in hard copy to Stephen Boyle at the address below and electronic (pdf) format to [REDACTED]@HistoricEngland.org.uk, copied to [REDACTED]@HistoricEngland.org.uk no later than 3 months after the completion of the survey.
4. The enclosed questionnaire shall be completed and appended to the survey



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416



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Historic England

report. For convenience an electronic version of this questionnaire can be downloaded from [REDACTED]

5. A copy of the report shall also be sent (in their preferred format) to the local Historic Environment Record (HER). The local HER's contact details can be found at [REDACTED]
6. A record signposting your investigation shall be made with the Archaeology Data Service using their online OASIS Data Collection form no later than 3 months after completion of the survey. Please see <http://oasis.ac.uk/> for details or contact [oasis@HistoricEngland.org.uk](mailto:oasis@HistoricEngland.org.uk) for information and training.

This letter does not carry any consent or approval required under any enactment, by-law, order or regulation other than section 42 of the 1979 Act (as amended).

You are advised that the person nominated under this licence to carry out the activity should keep a copy of this licence in their possession in case they should be challenged whilst on site.

Yours sincerely

[REDACTED]

**Lee McFarlane**  
Inspector of Ancient Monuments  
E-mail: [REDACTED]@HistoricEngland.org.uk

cc: Dr Mark Brennand, County Archaeologist, Cumbria County Council



SUITES 3.3 AND 3.4 CANADA HOUSE 3 CHEPSTOW STREET MANCHESTER M1 5FW

Telephone 0161 242 1416  
[REDACTED]

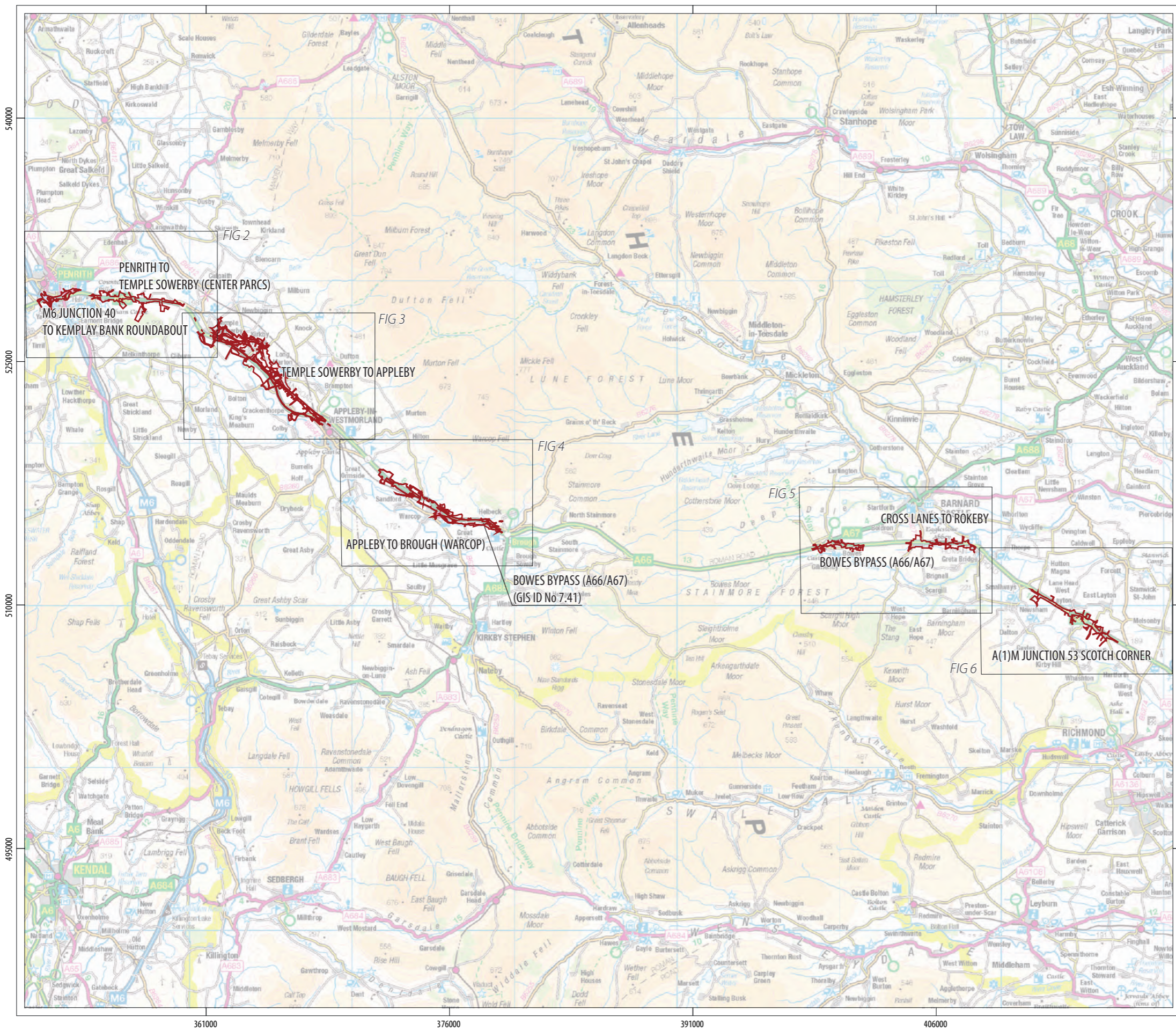


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Author's Note – the nomenclature of the legend describing the geophysical survey areas is currently under review and will be finalised and the illustrations re-issued following consultation.

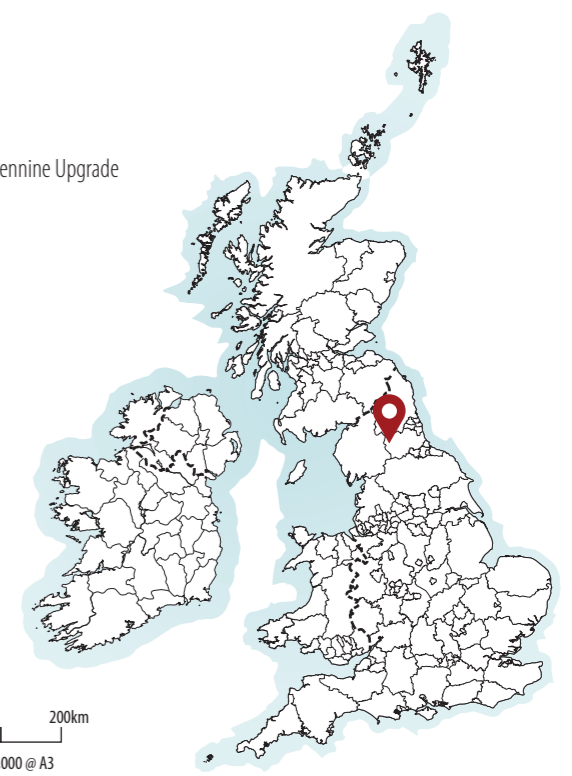




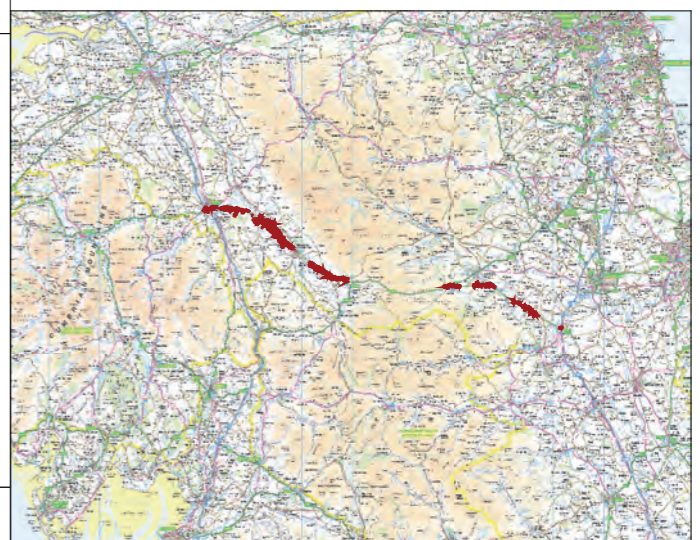
54000  
52500  
51000  
49500

361000 376000 391000 406000

A66 Trans Pennine Upgrade



0 200km  
1:12,500,000 @ A3



**HEADLAND**  
**ARCHAEOLOGY**

Headland Archaeology Yorkshire & North  
Units 23-25 & 15 | Acorn Business Centre | Balme Road | Cleckheaton BD19 4EZ






0 5km  
1:250,000 @ A3

geophysical survey area

ILLUS 1 Site location





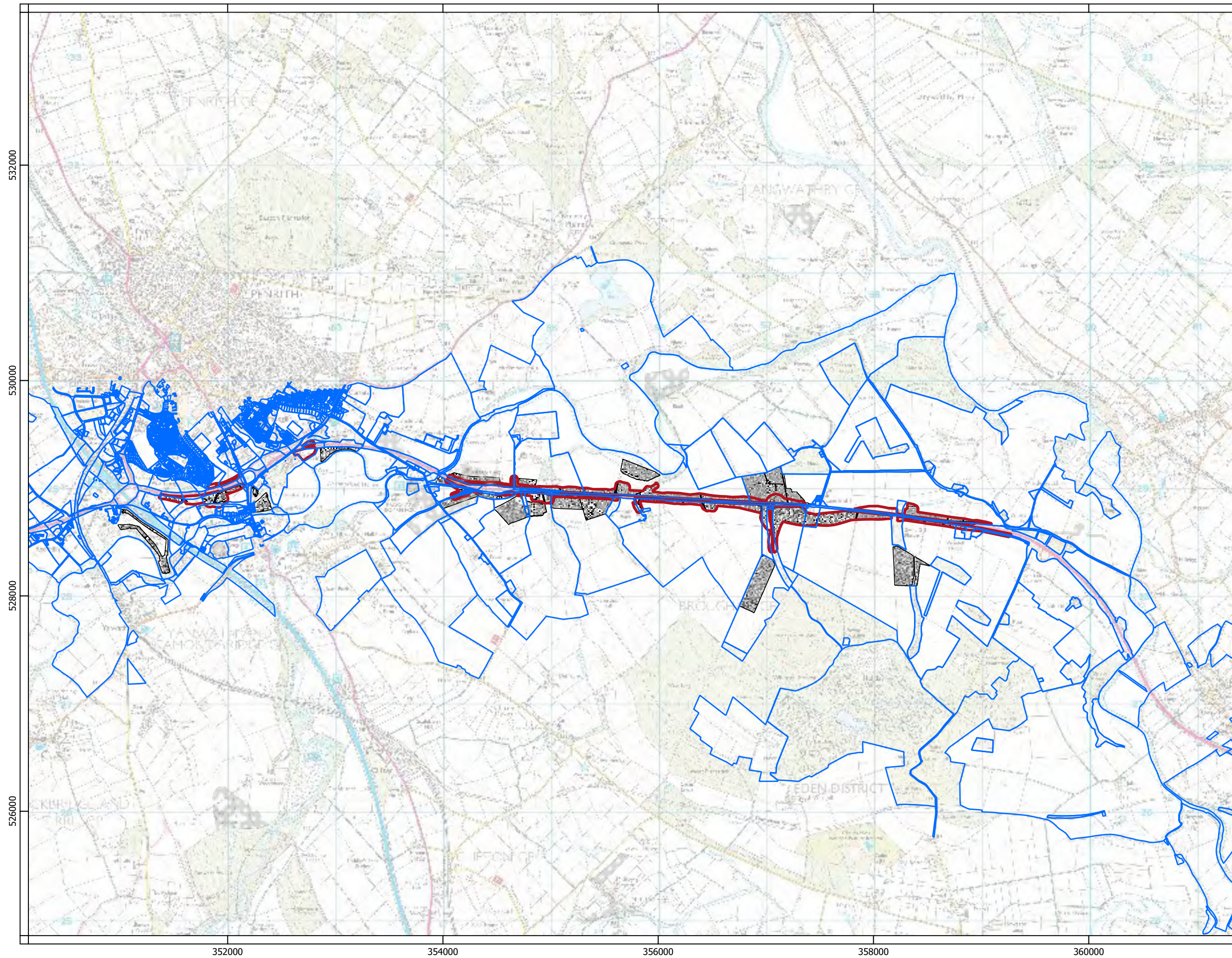
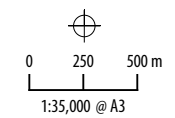
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Scheduled Monument

**PROJECT**

ATPU20 - A66 Trans Pennine Upgrade




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Highways England







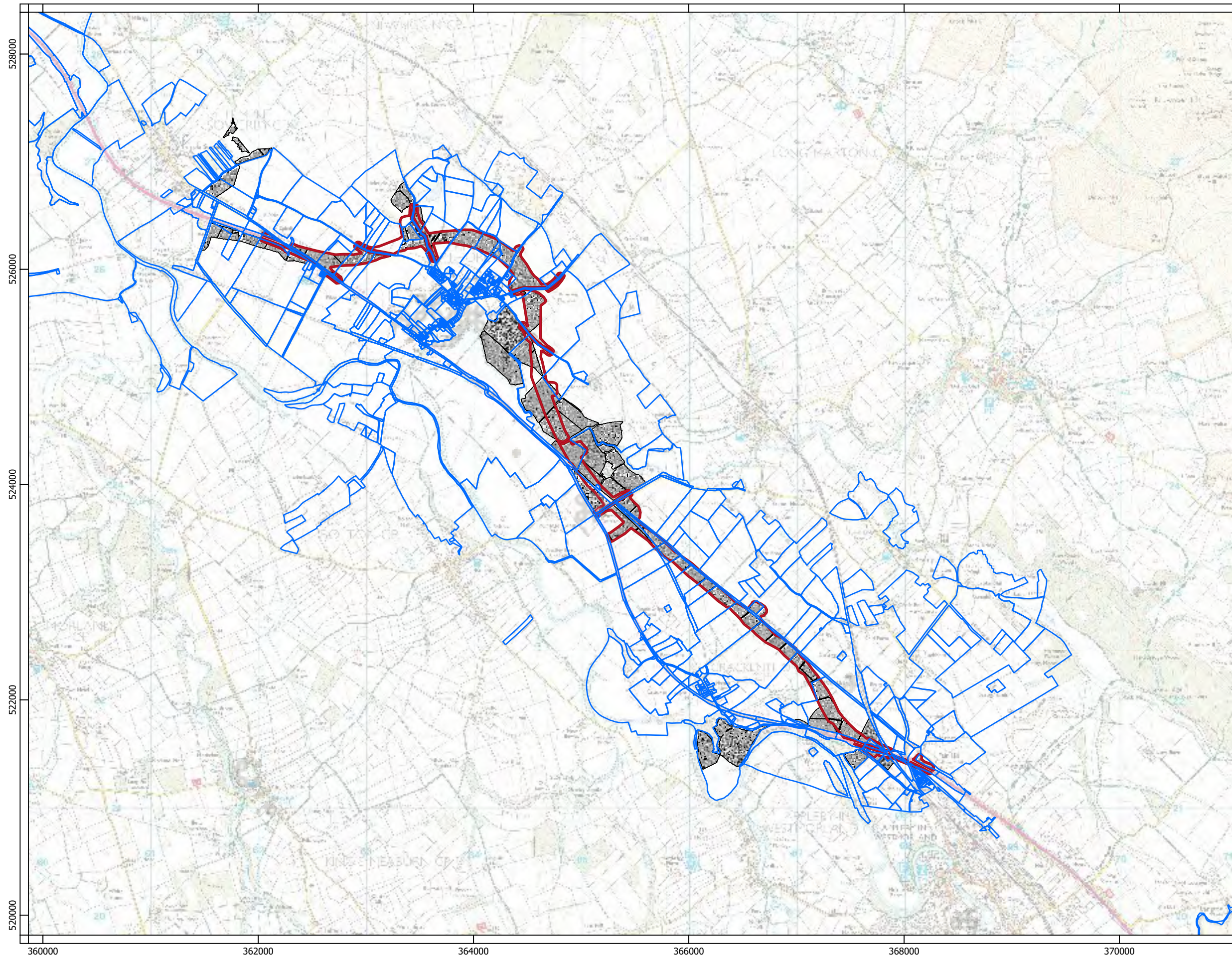
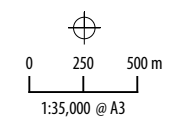
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Scheduled Monument

**PROJECT**

ATPU20 - A66 Trans Pennine Upgrade

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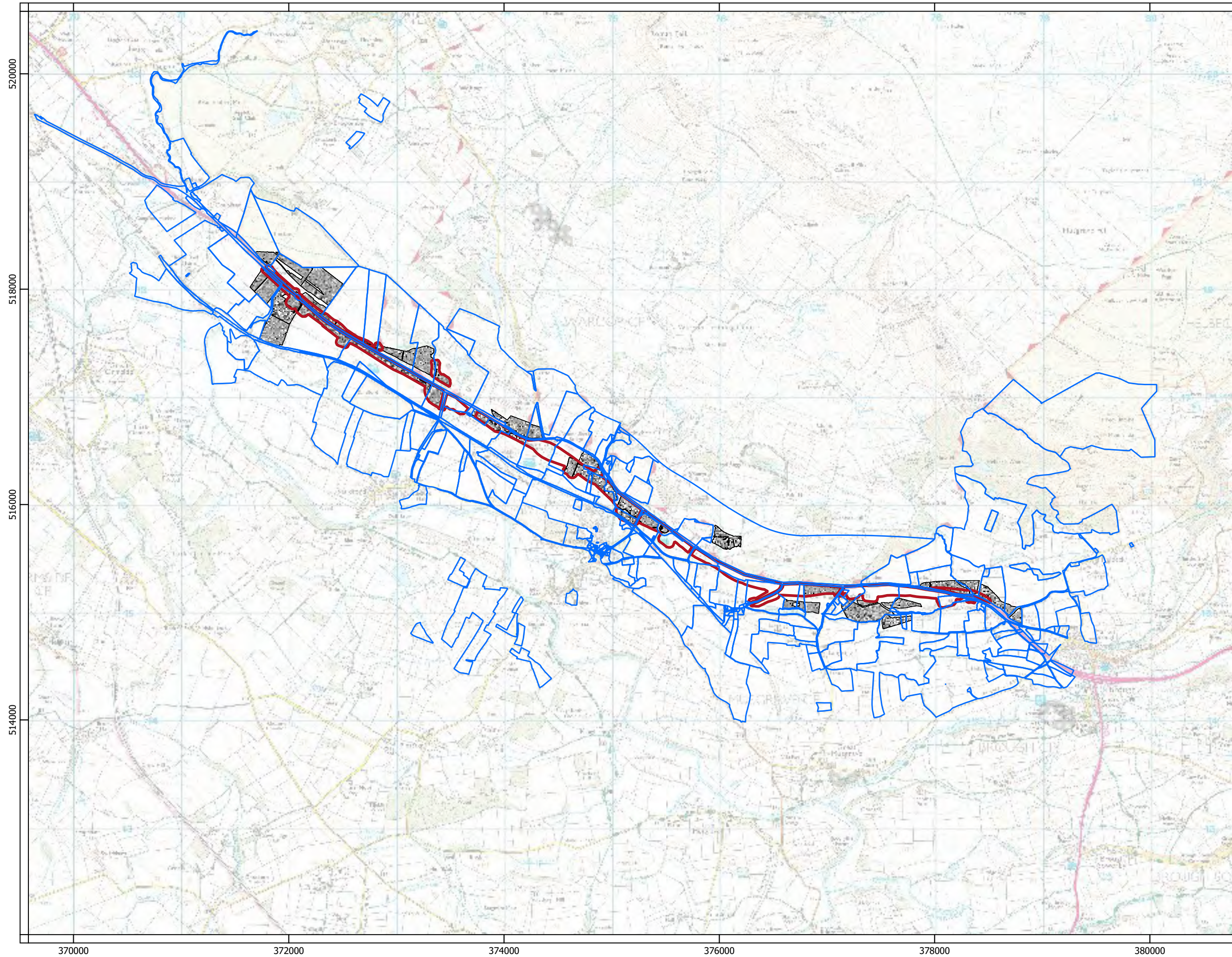
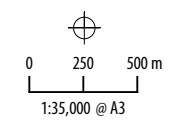




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Scheduled Monument

**PROJECT**  
ATPU20 - A66 Trans Pennine Upgrade

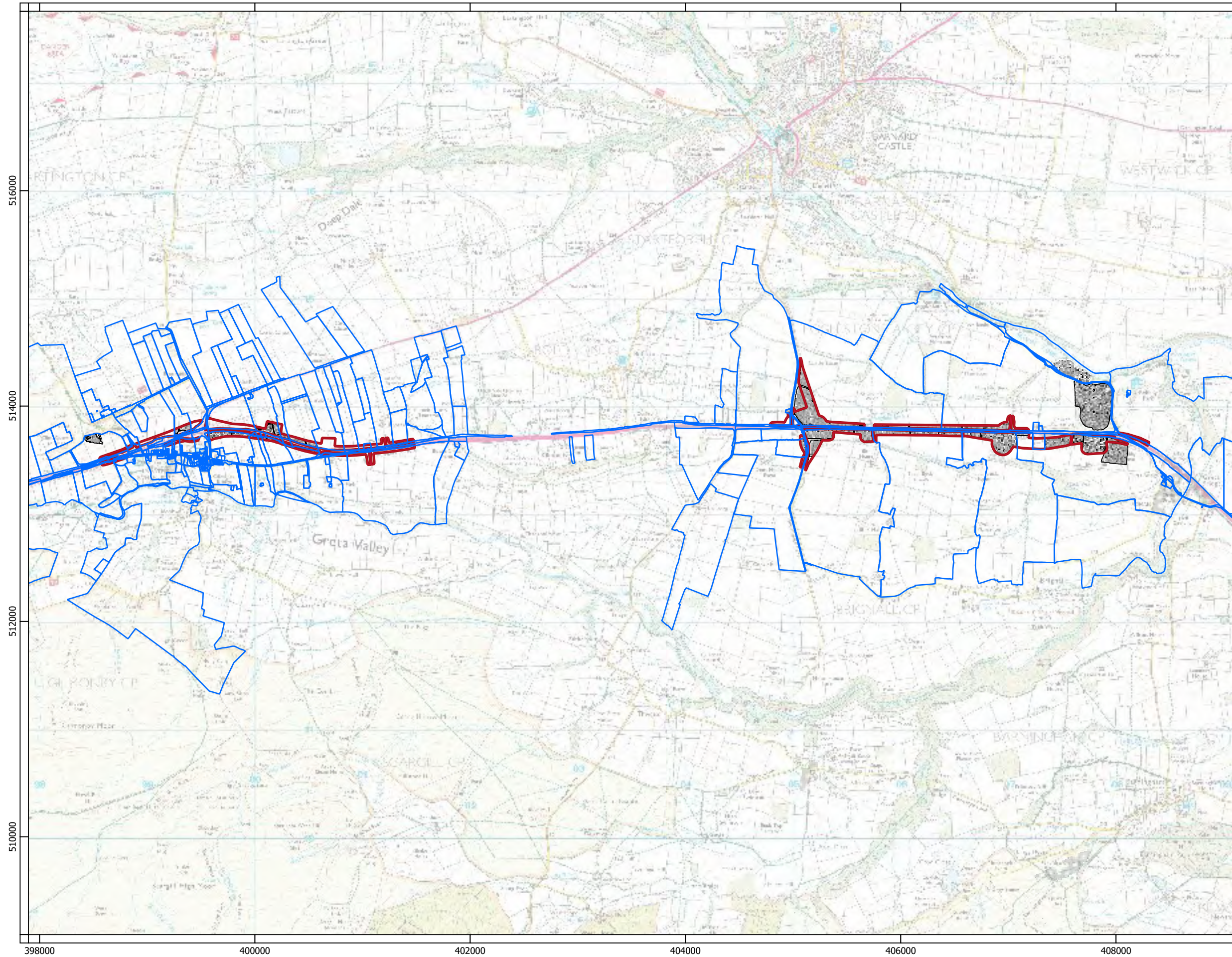
**CLIENT**  
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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Scheduled Monument

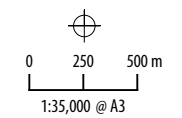


**PROJECT**

ATPU20 - A66 Trans Pennine Upgrade




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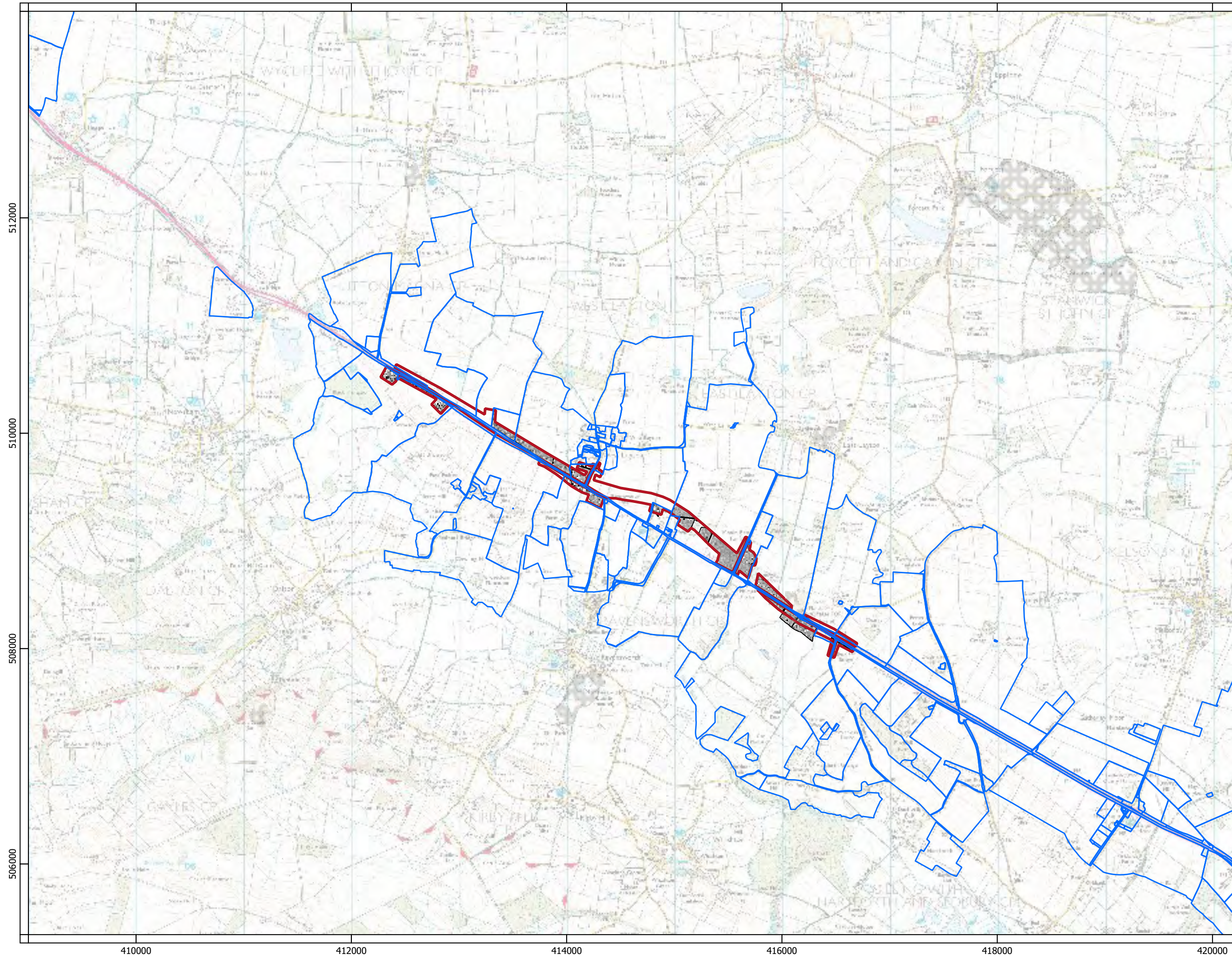
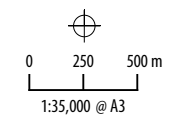
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Scheduled Monument

**PROJECT**

ATPU20 - A66 Trans Pennine Upgrade

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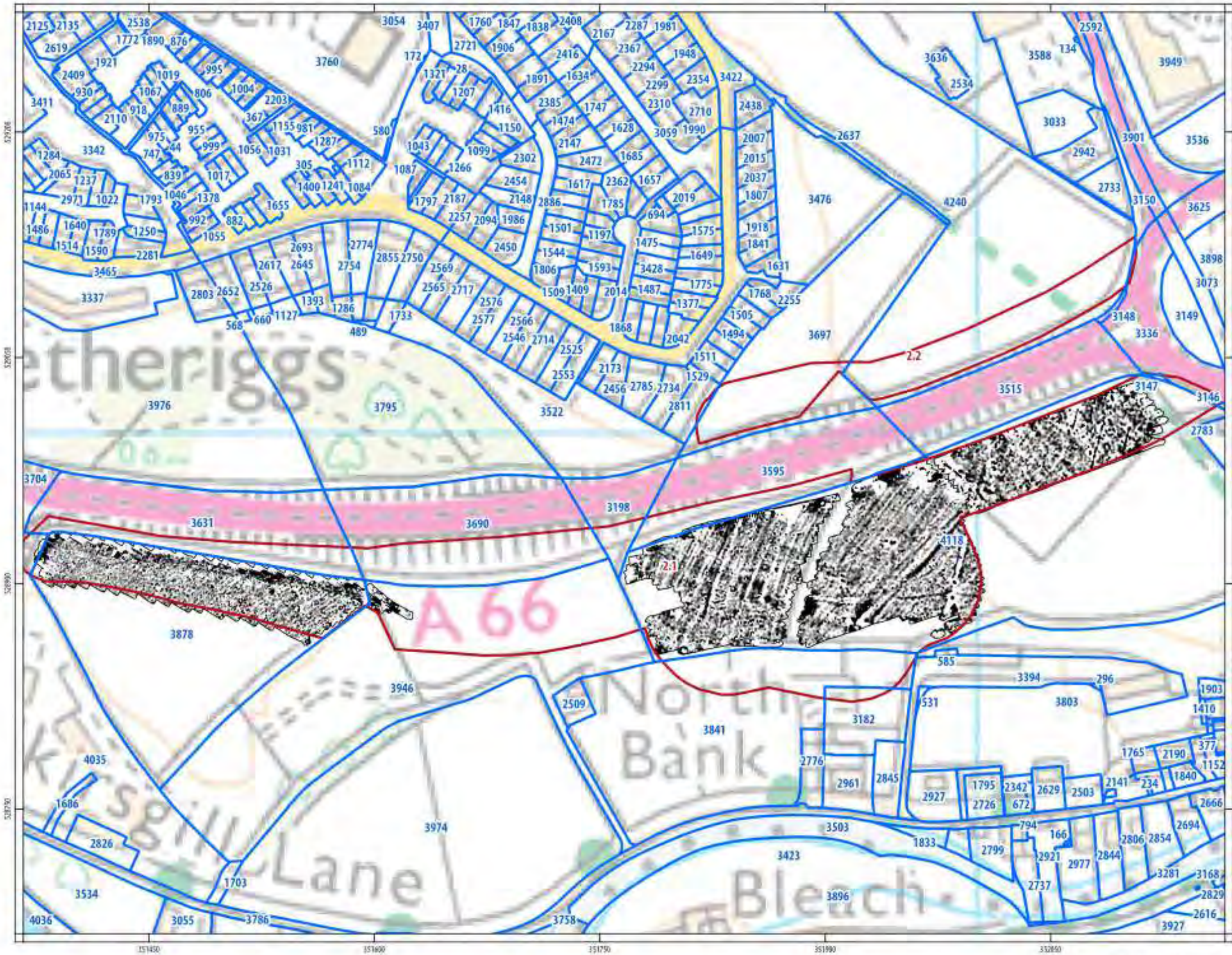


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



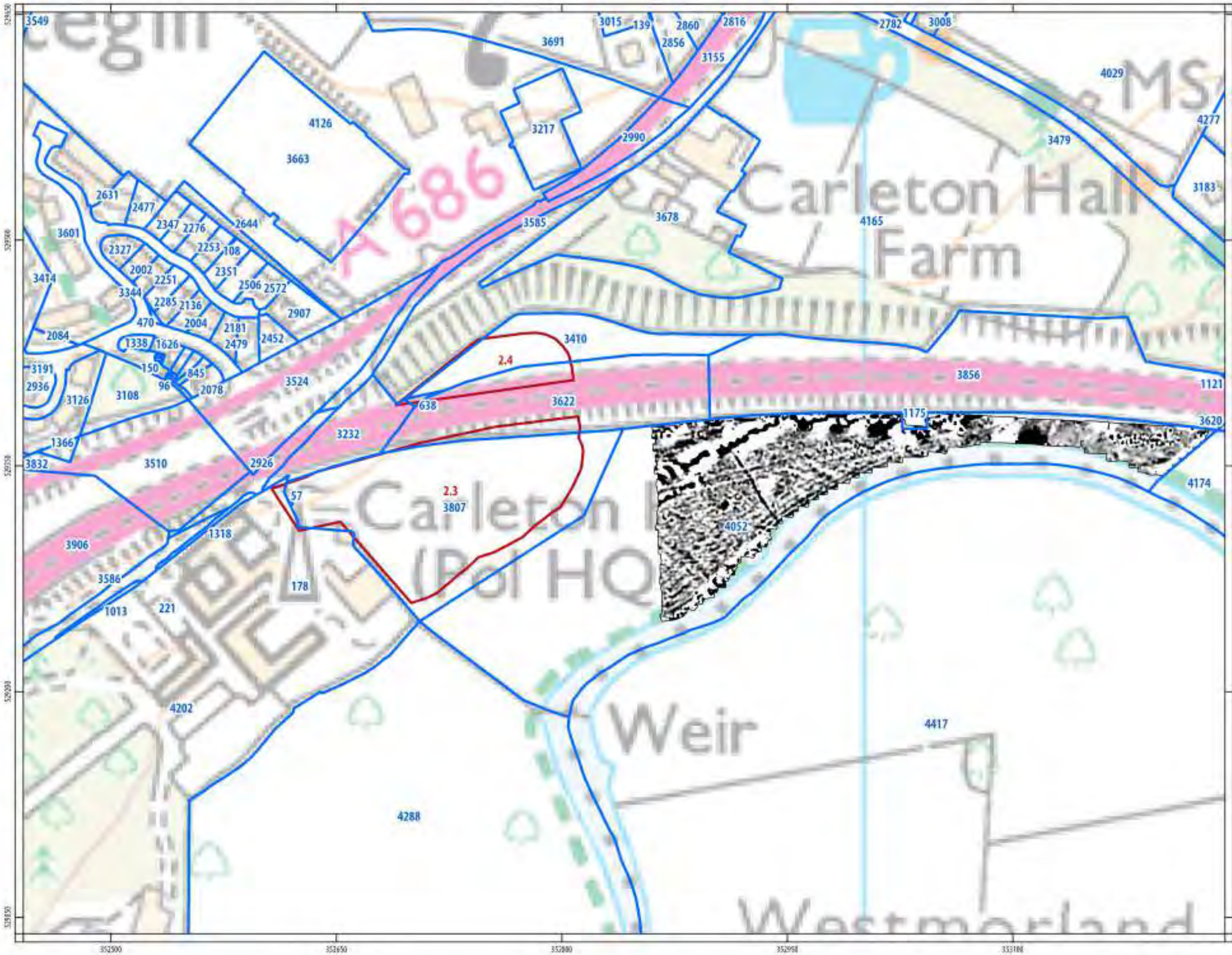
**PROJECT**  
M6/J20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 7 Processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



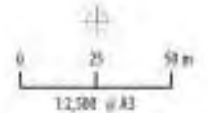


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



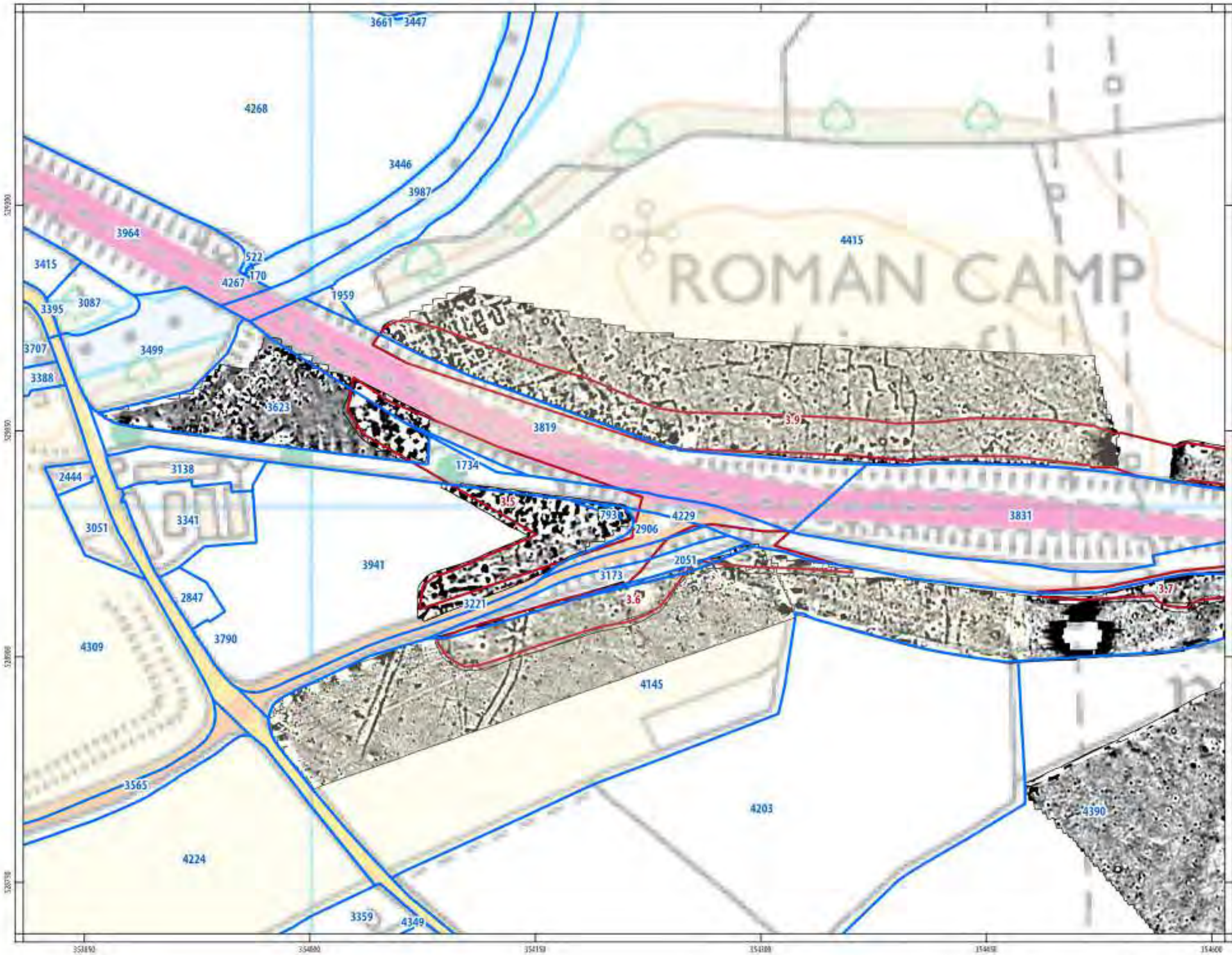
**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



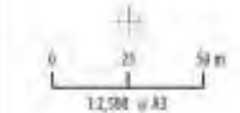


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



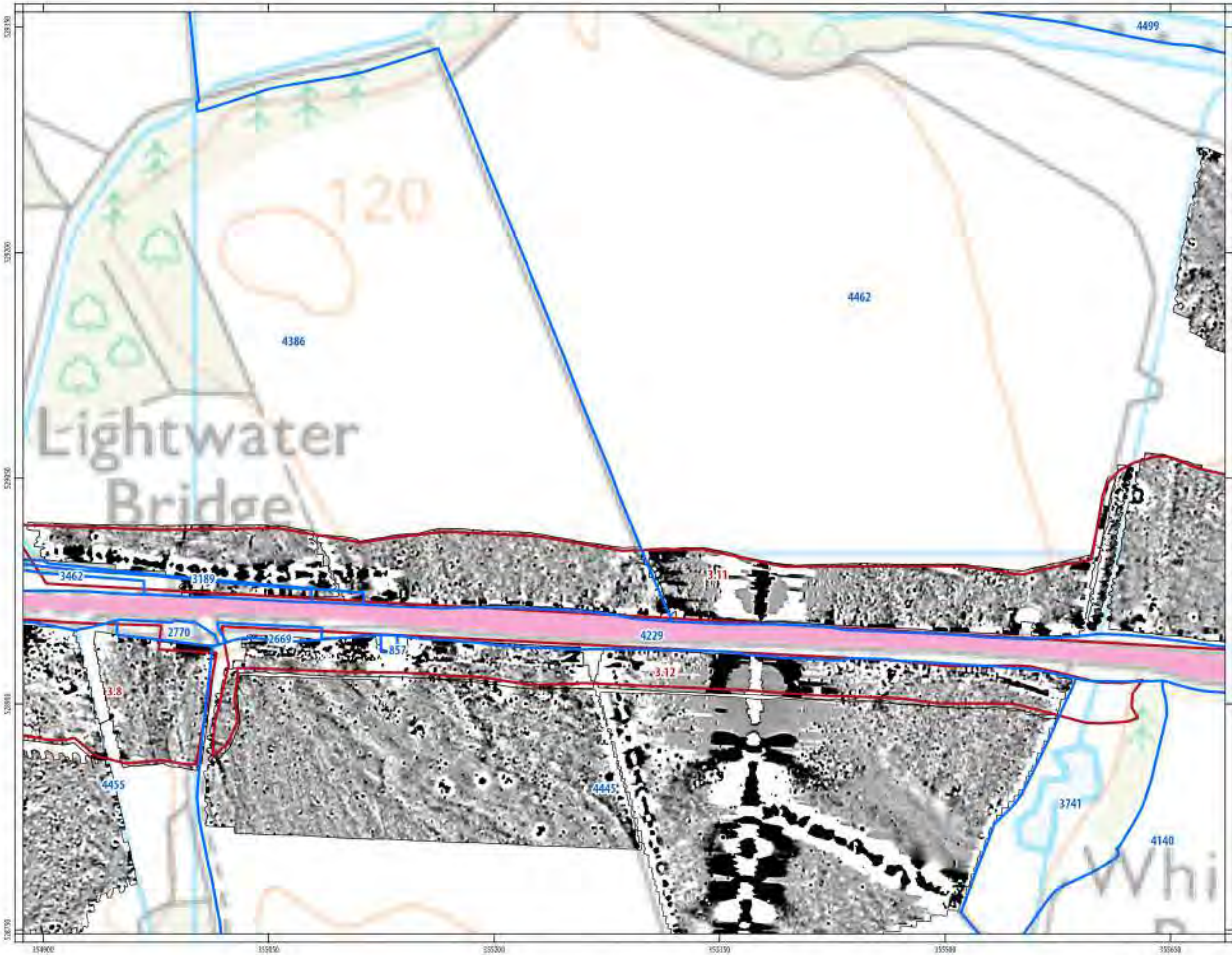
**PROJECT**  
M20-66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 9 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



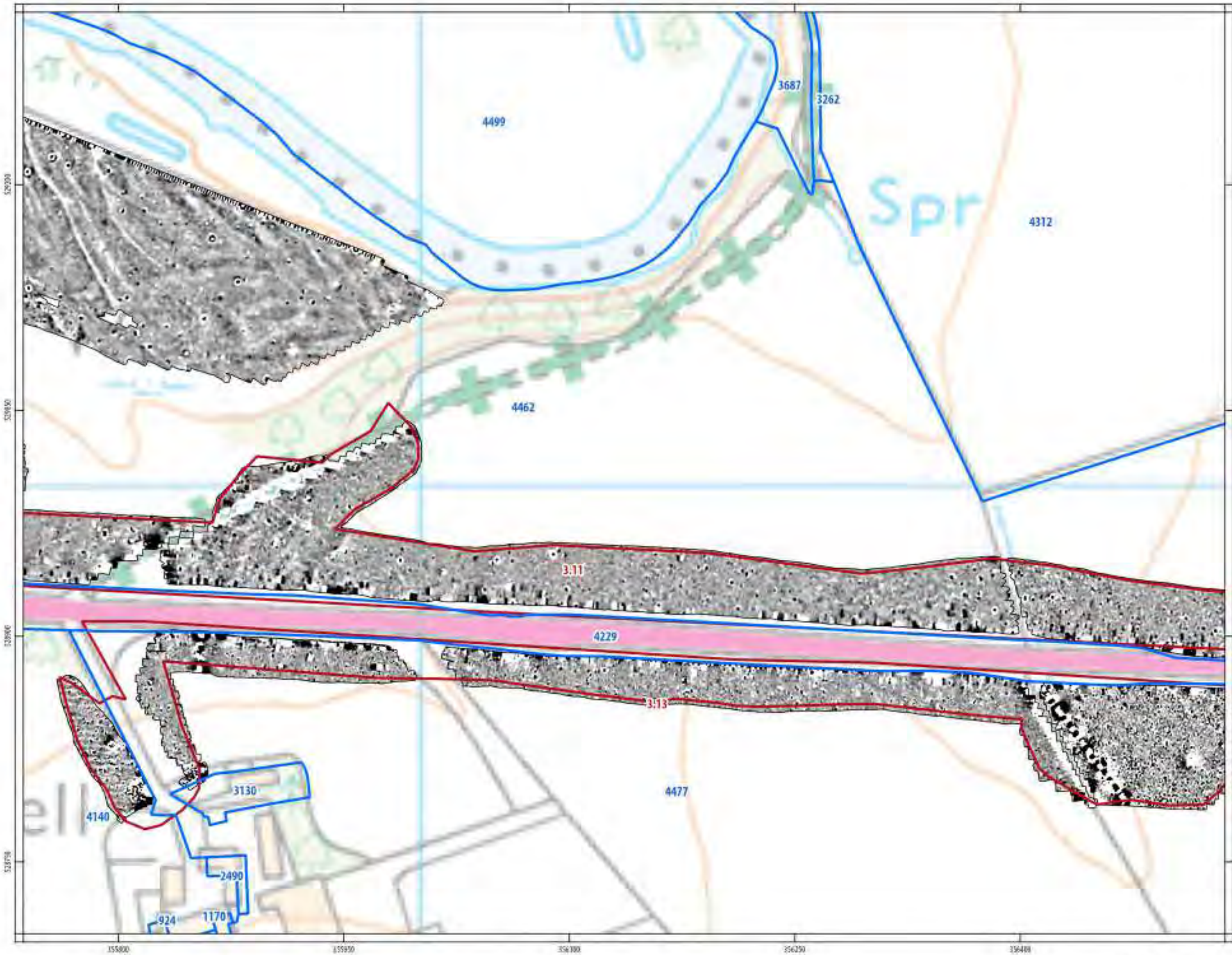
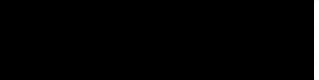
**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 10 Processed magnetometer data, Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
Highways England

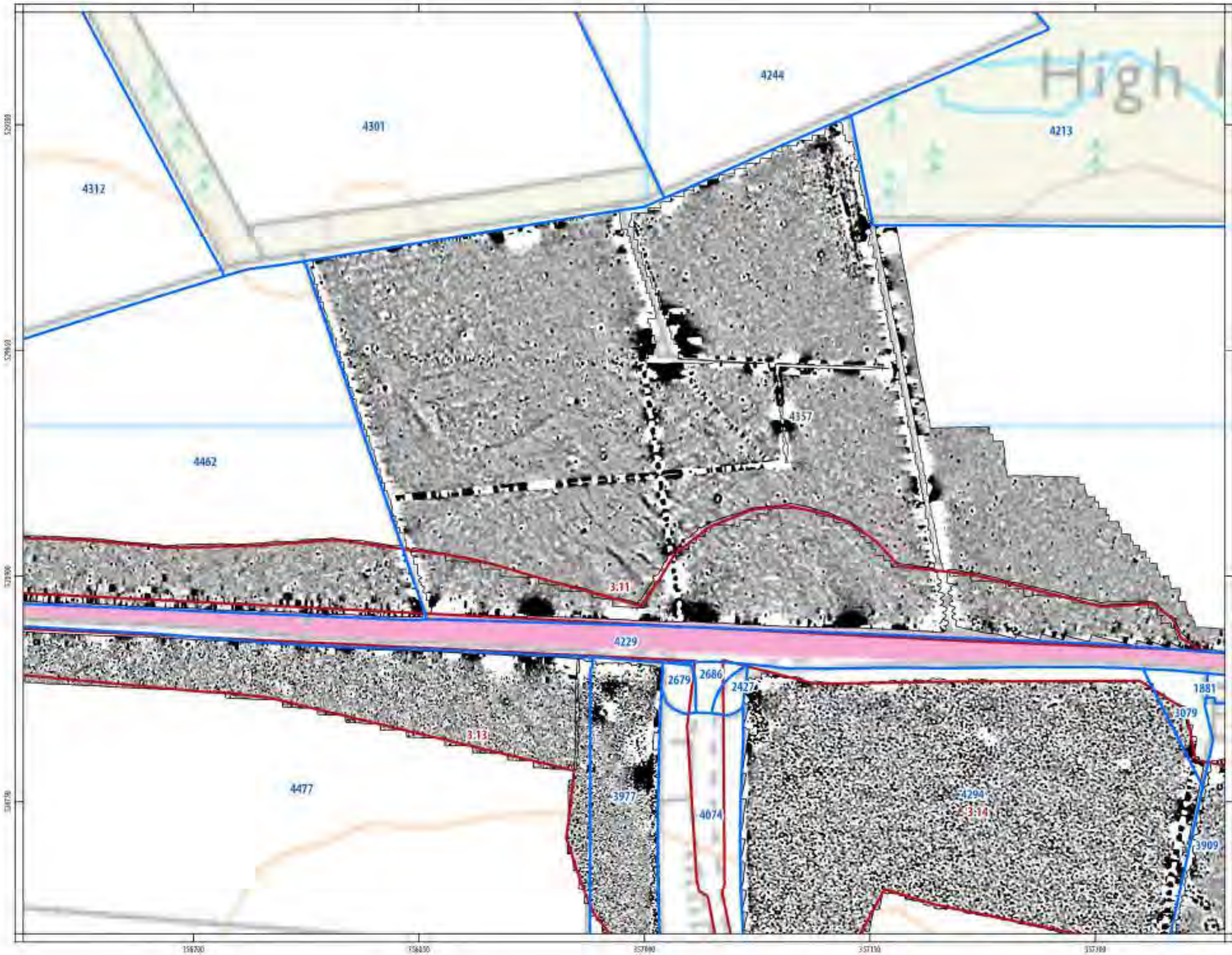


ILLUS 11 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





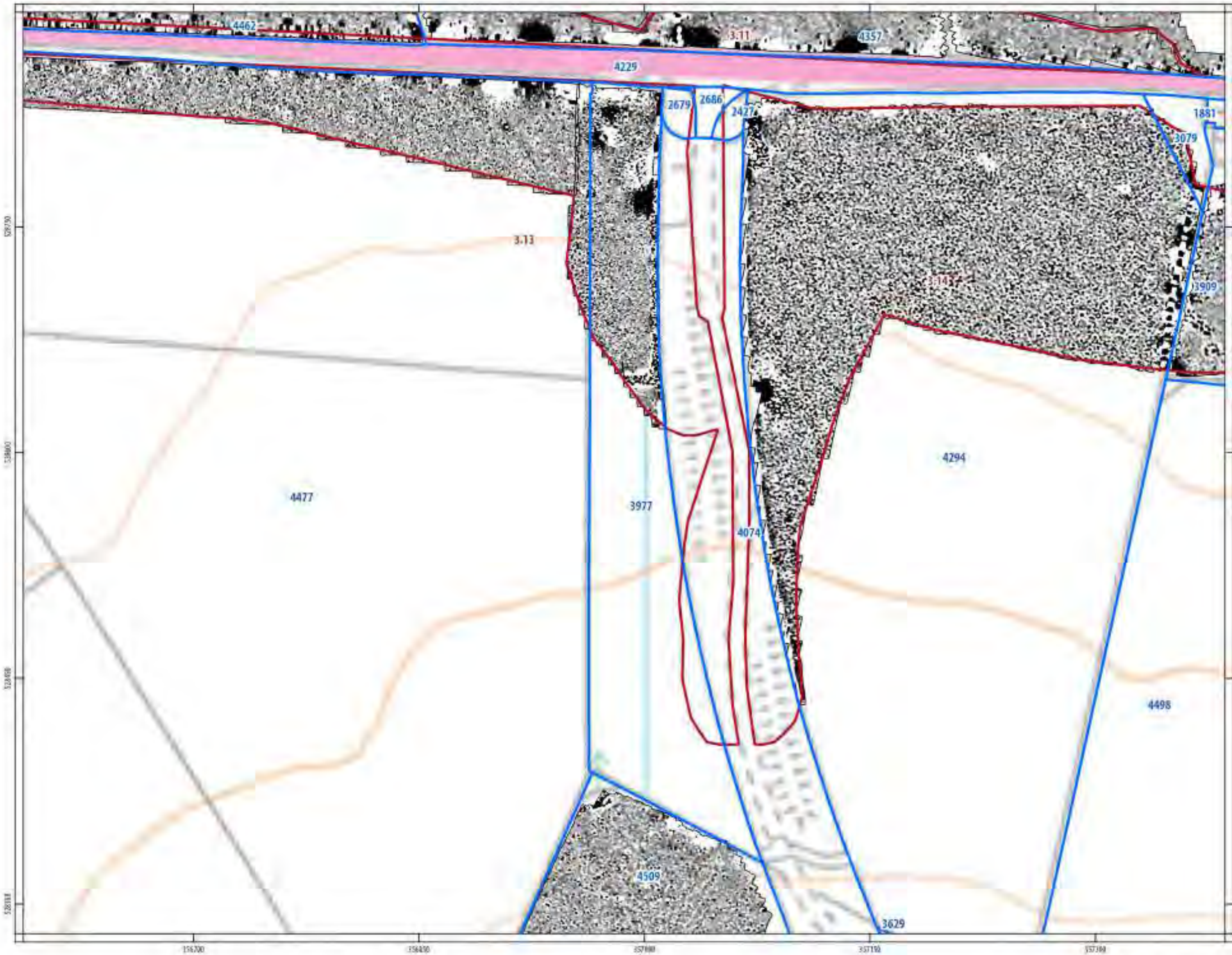


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Efforts
- ▭ Scheduled Monument



**PROJECT**  
M7020 - A66 Transpennine Upgrade

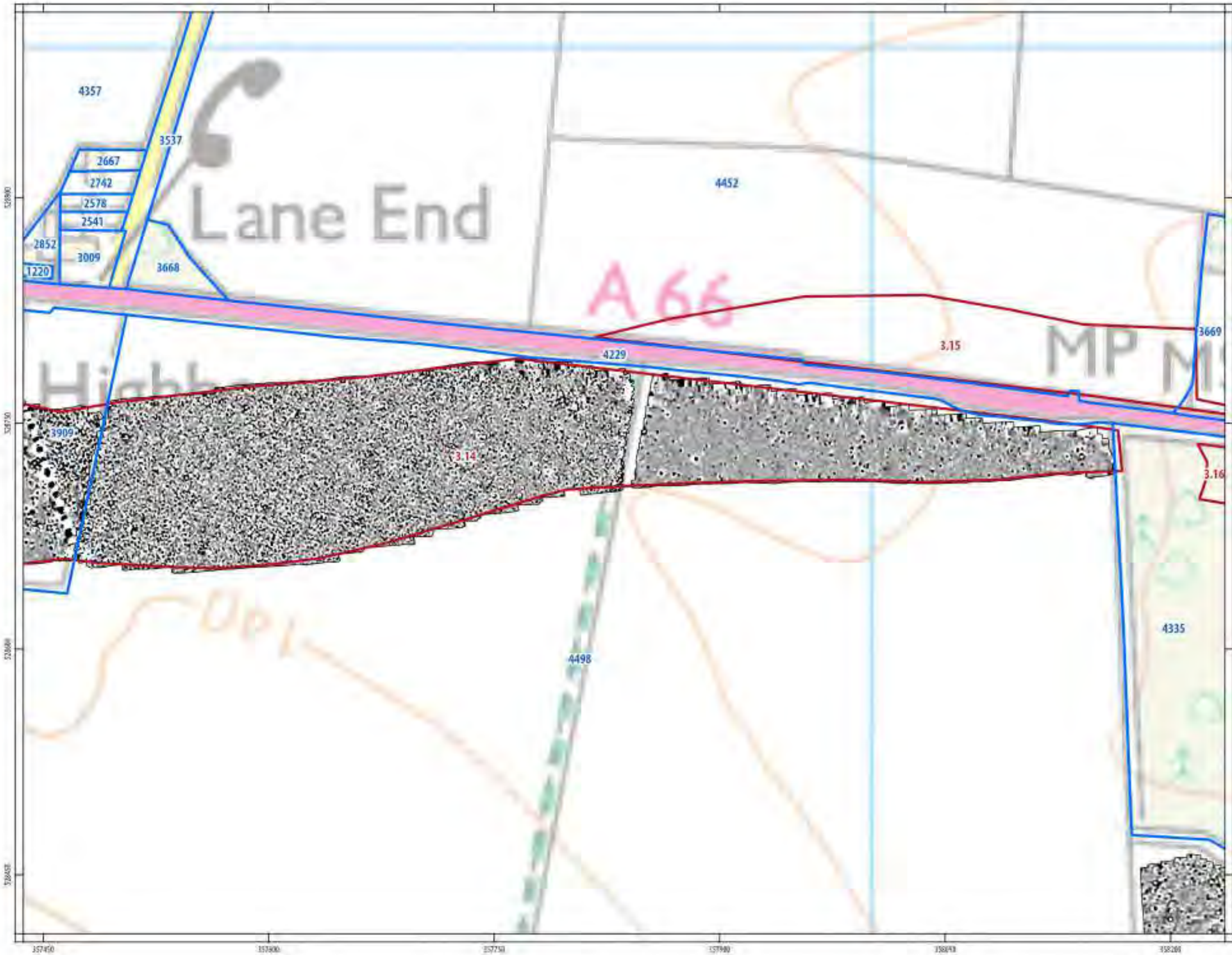
**CLIENT**  
Highways England





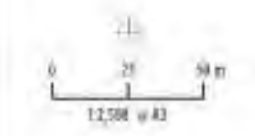


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
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ILLUS 14 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

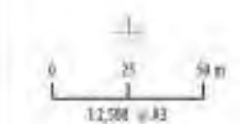


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 15 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

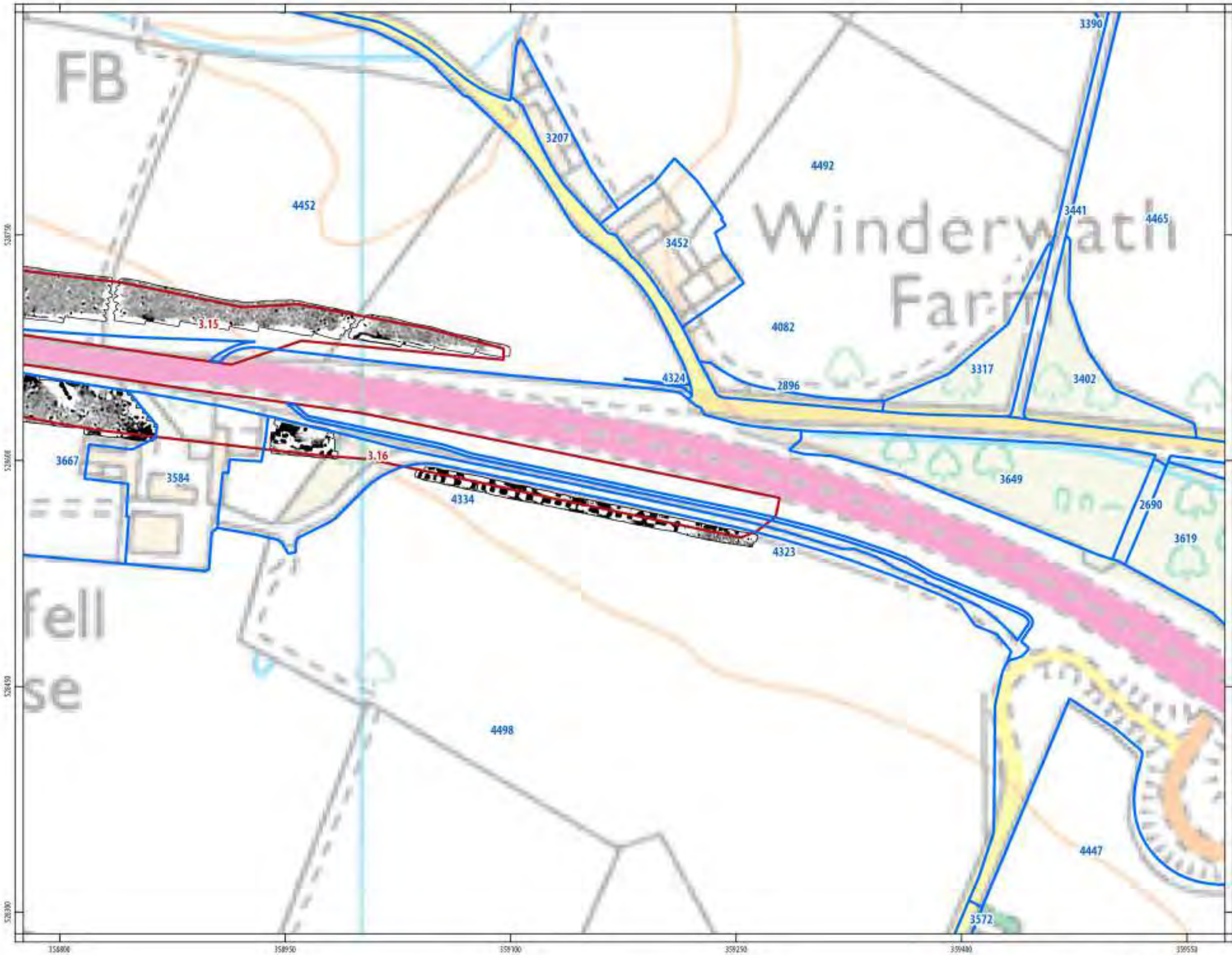
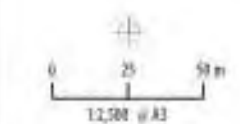


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



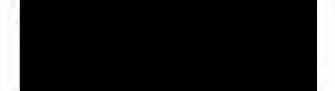
**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England

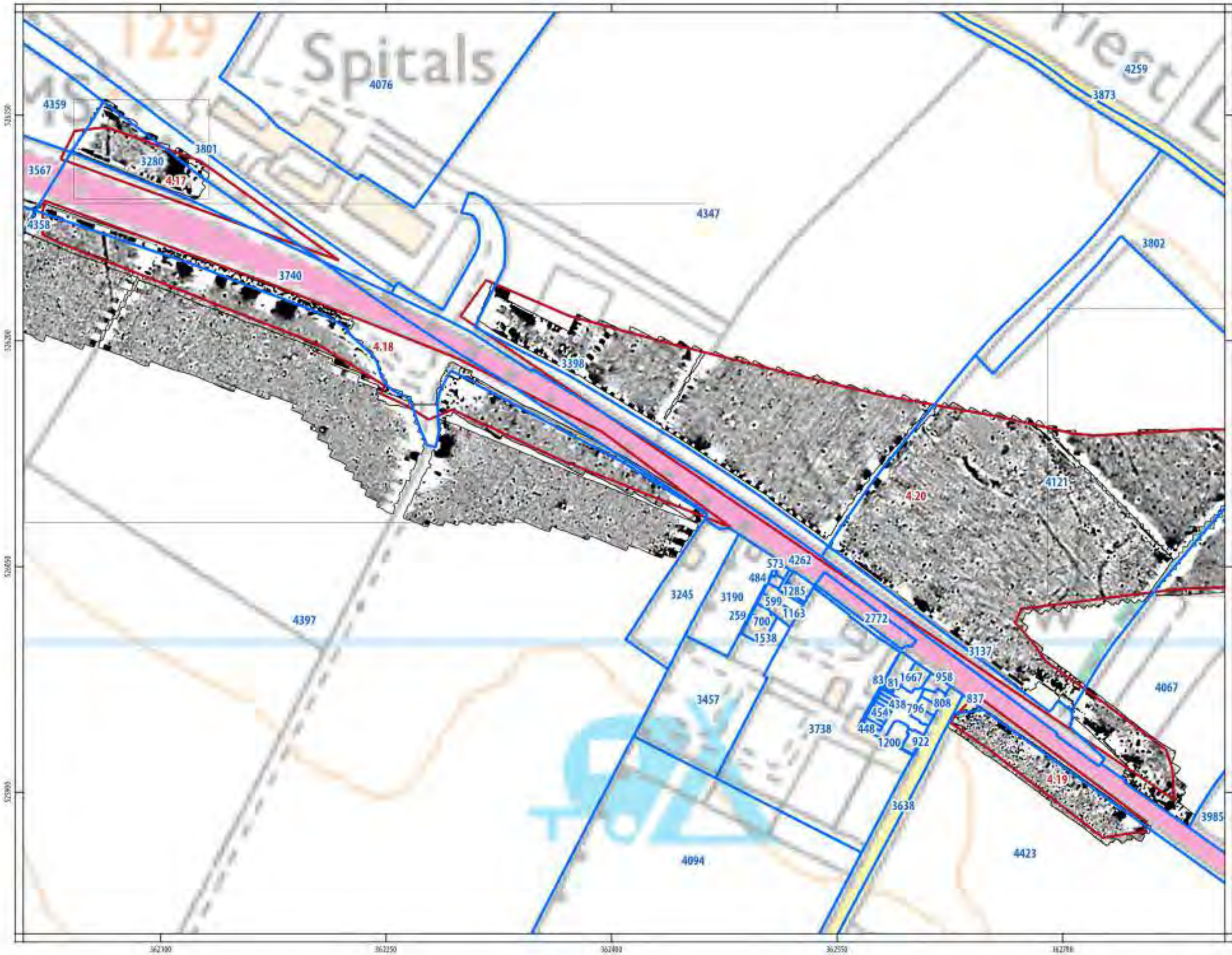


ILLUS 16 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



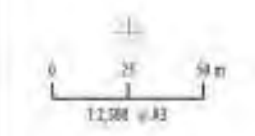


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 17 Processed magnetometer data; Temple Sowerby to Appleby



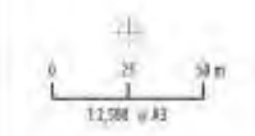


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument



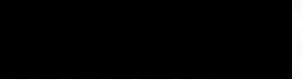
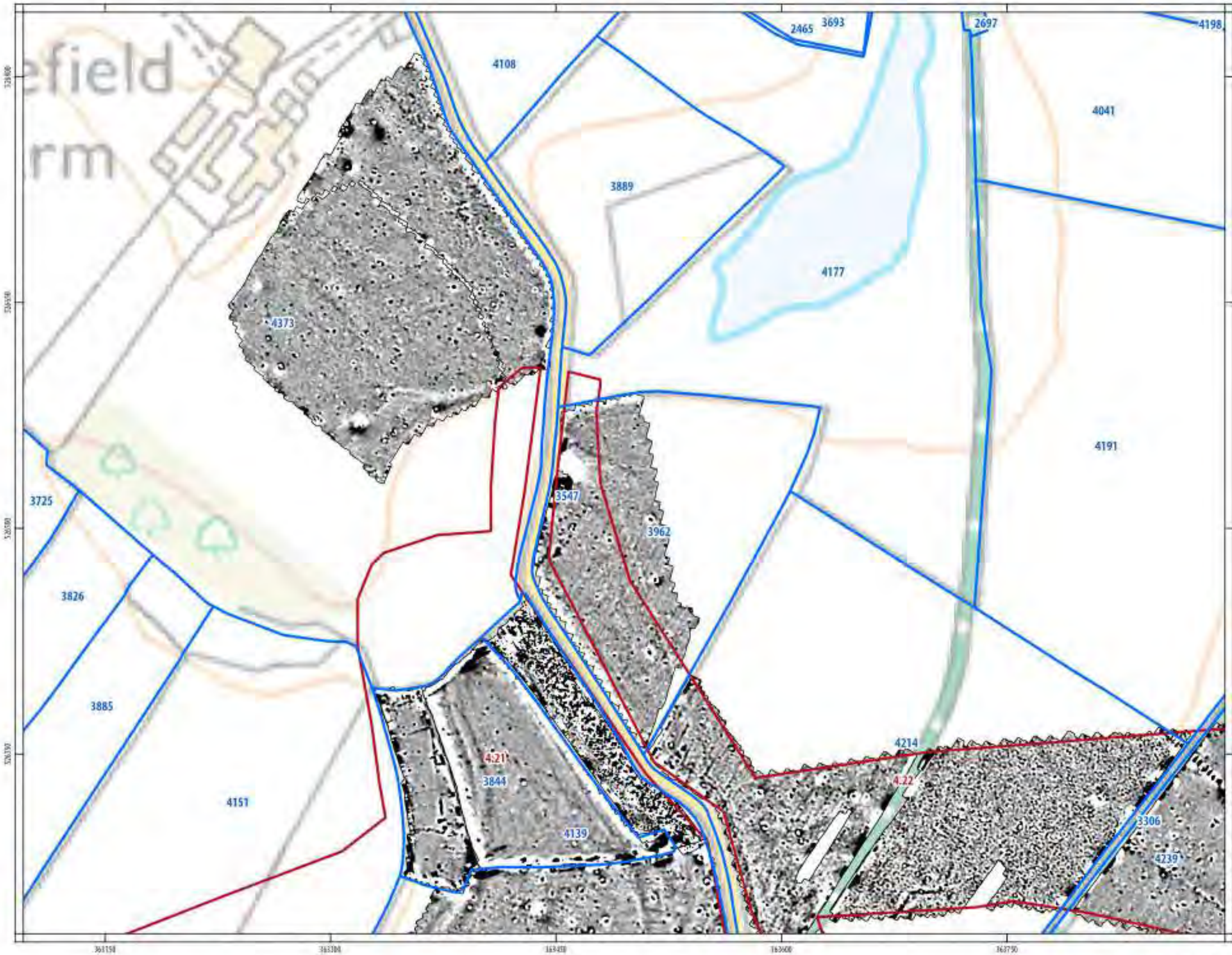
**PROJECT**  
M20-496 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 18 Processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





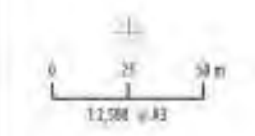


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20-696 Transpennine Upgrade

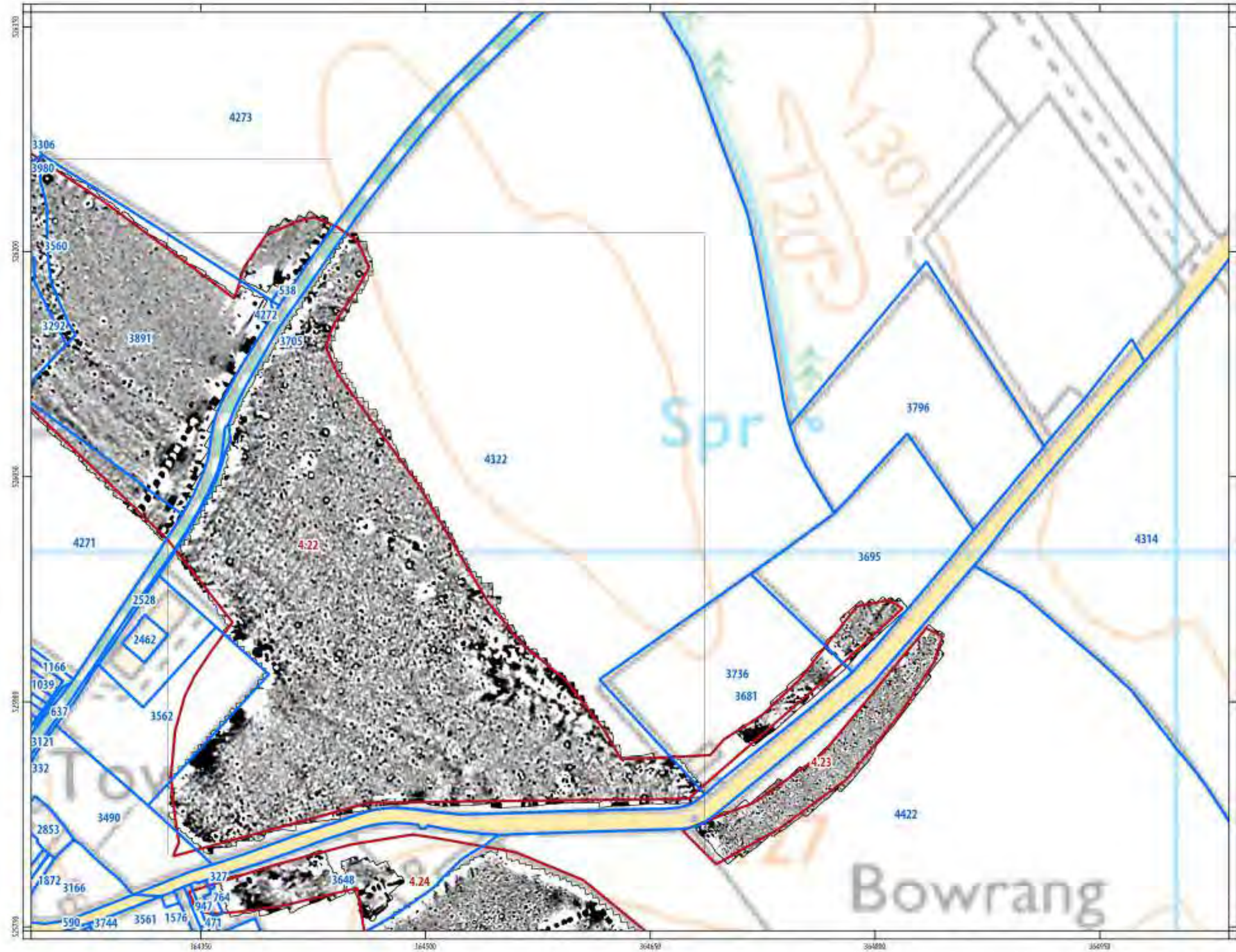
**CLIENT**  
Highways England





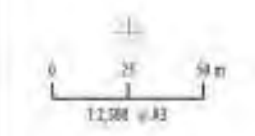


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M10 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







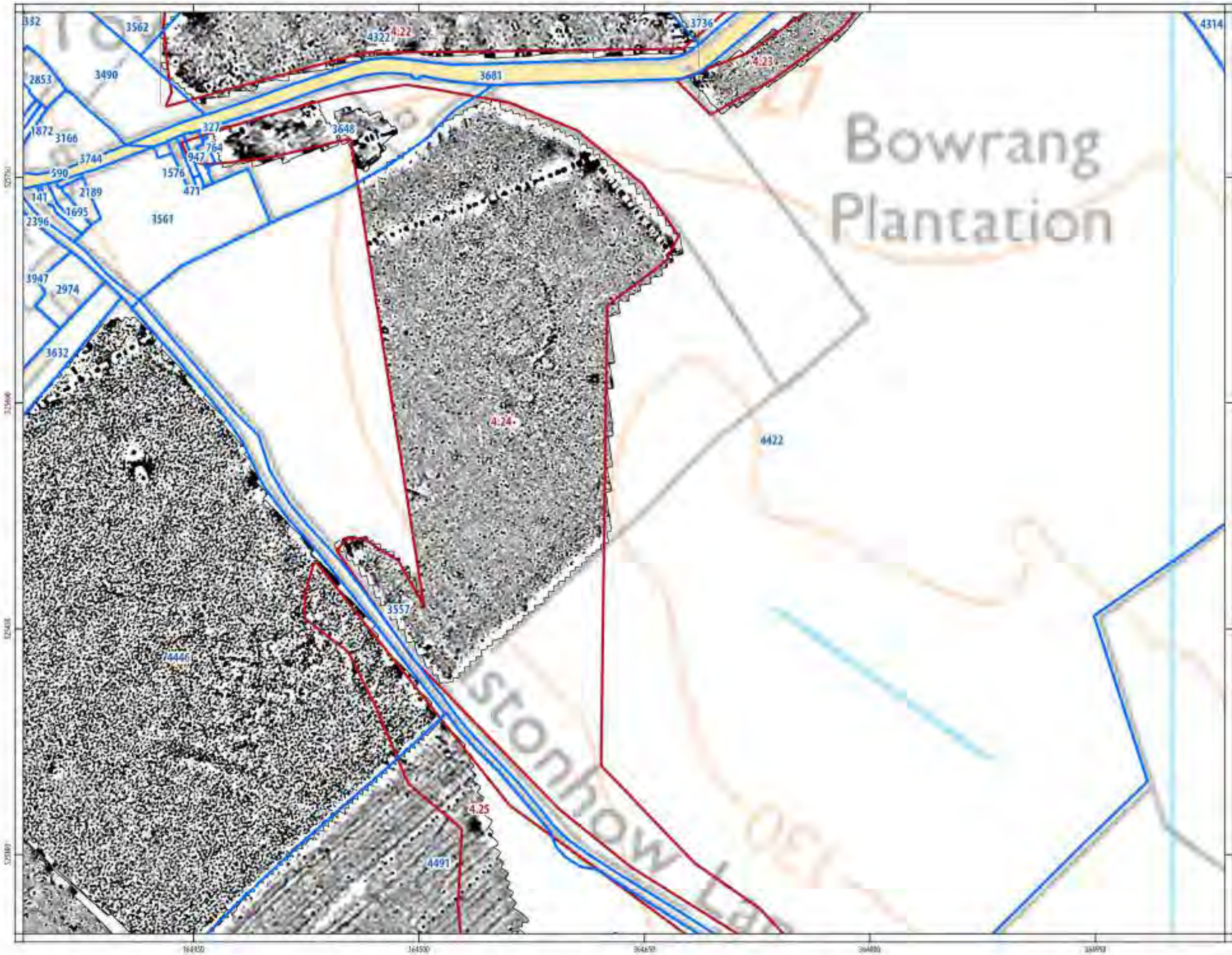
# Bowrang Plantation

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Limits
- ▭ Scheduled Monument

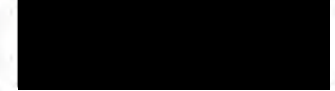


**PROJECT**  
M1020 - A66 Transpennine Upgrade

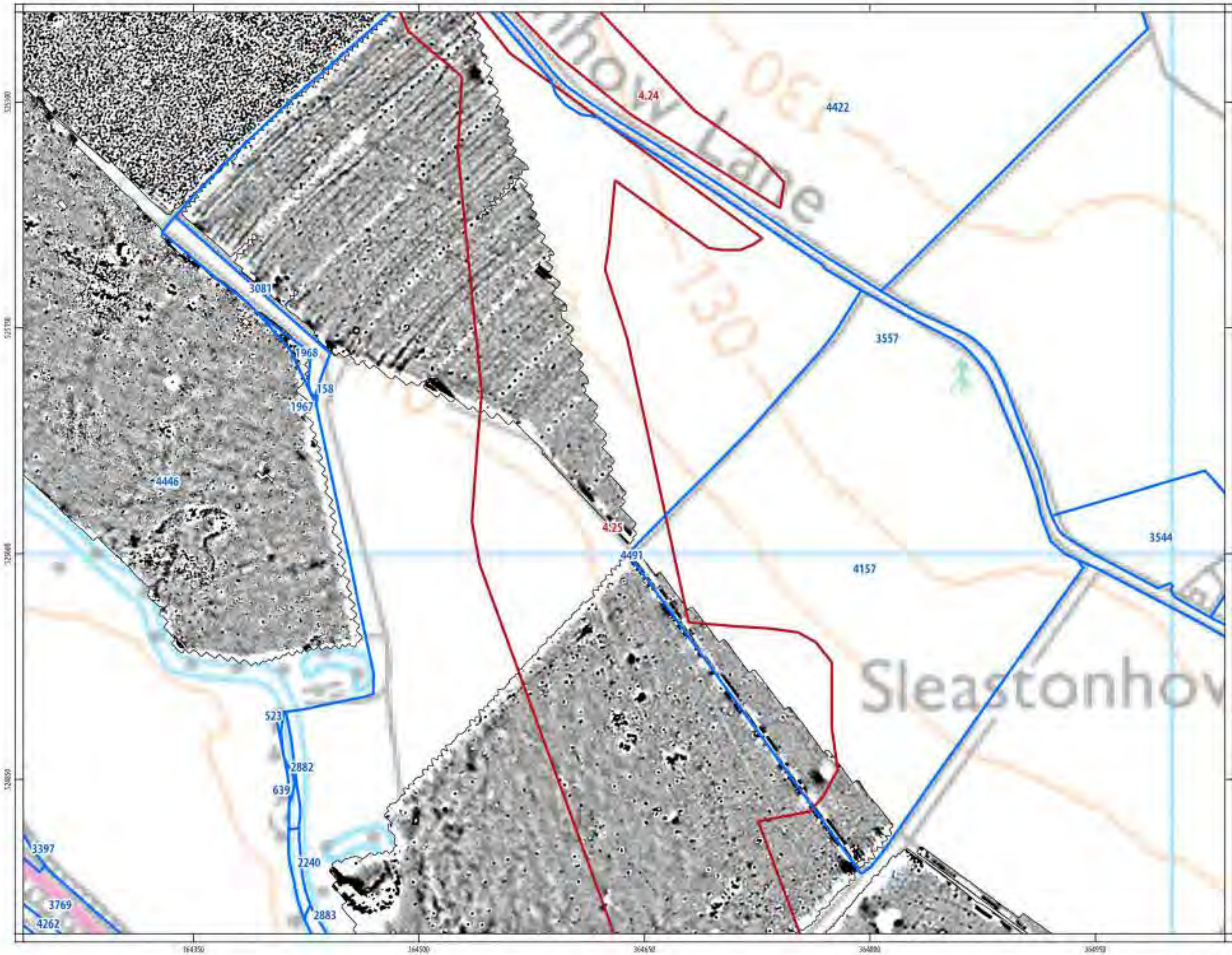
**CLIENT**  
Highways England





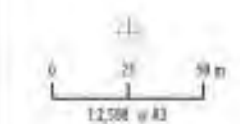


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▬ Scheduled Monument



**PROJECT**  
M20-496 Transpennine Upgrade

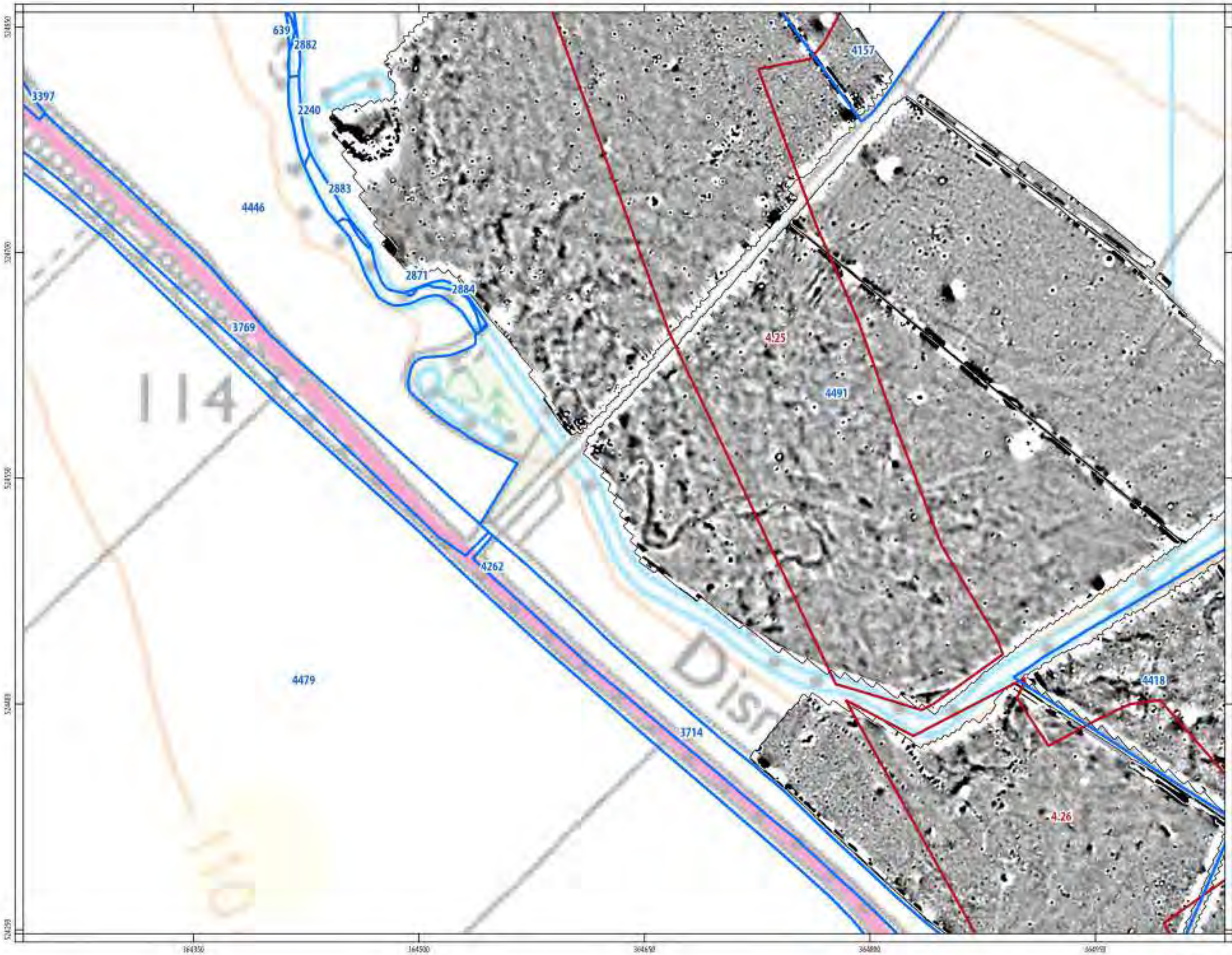
**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
MPO20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





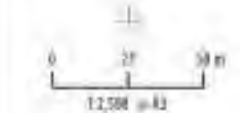


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

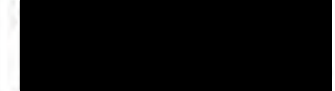


**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





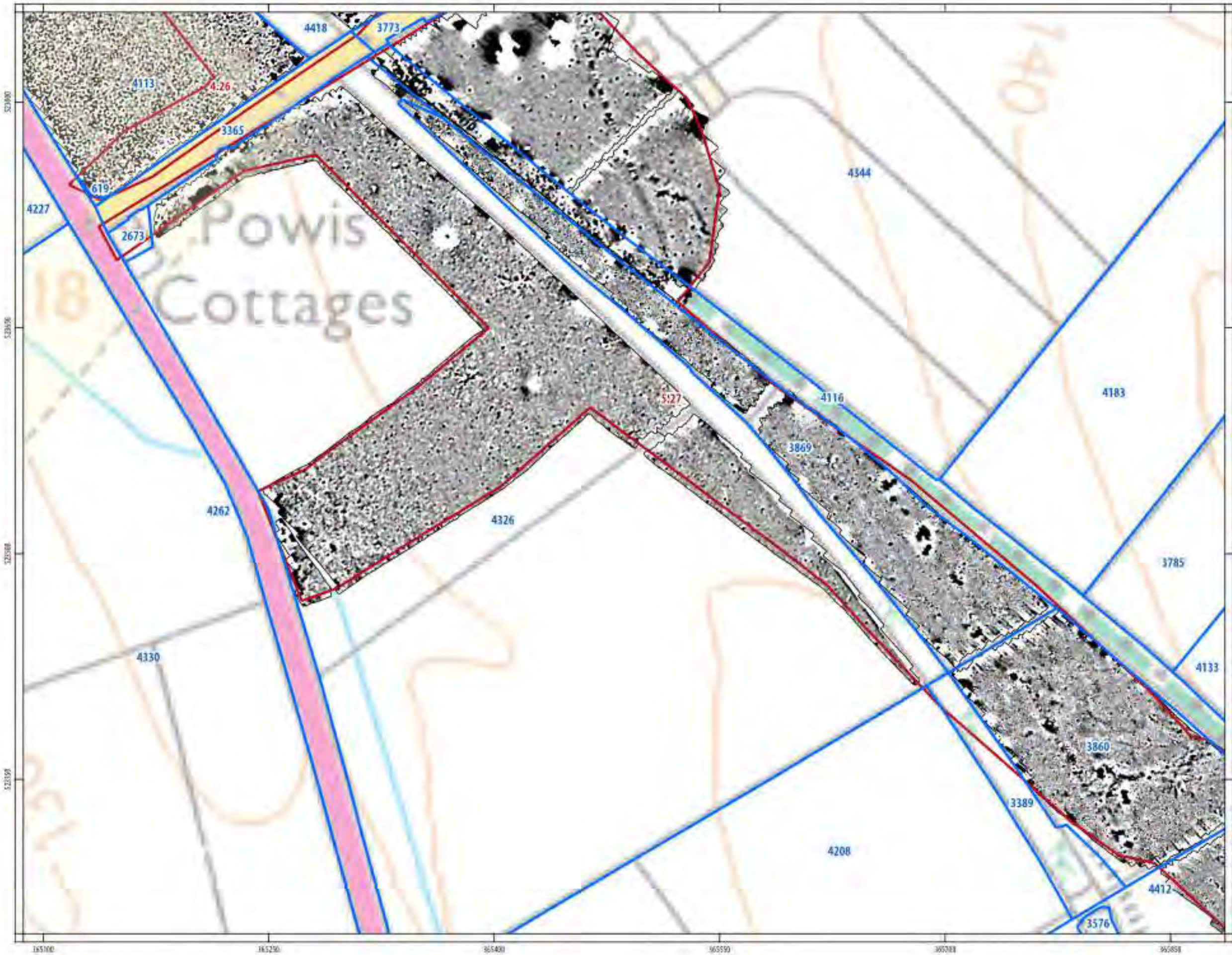


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



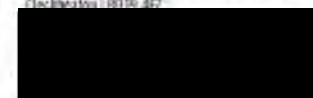
**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 26 Processed magnetometer data; Temple Sowerby to Appleby



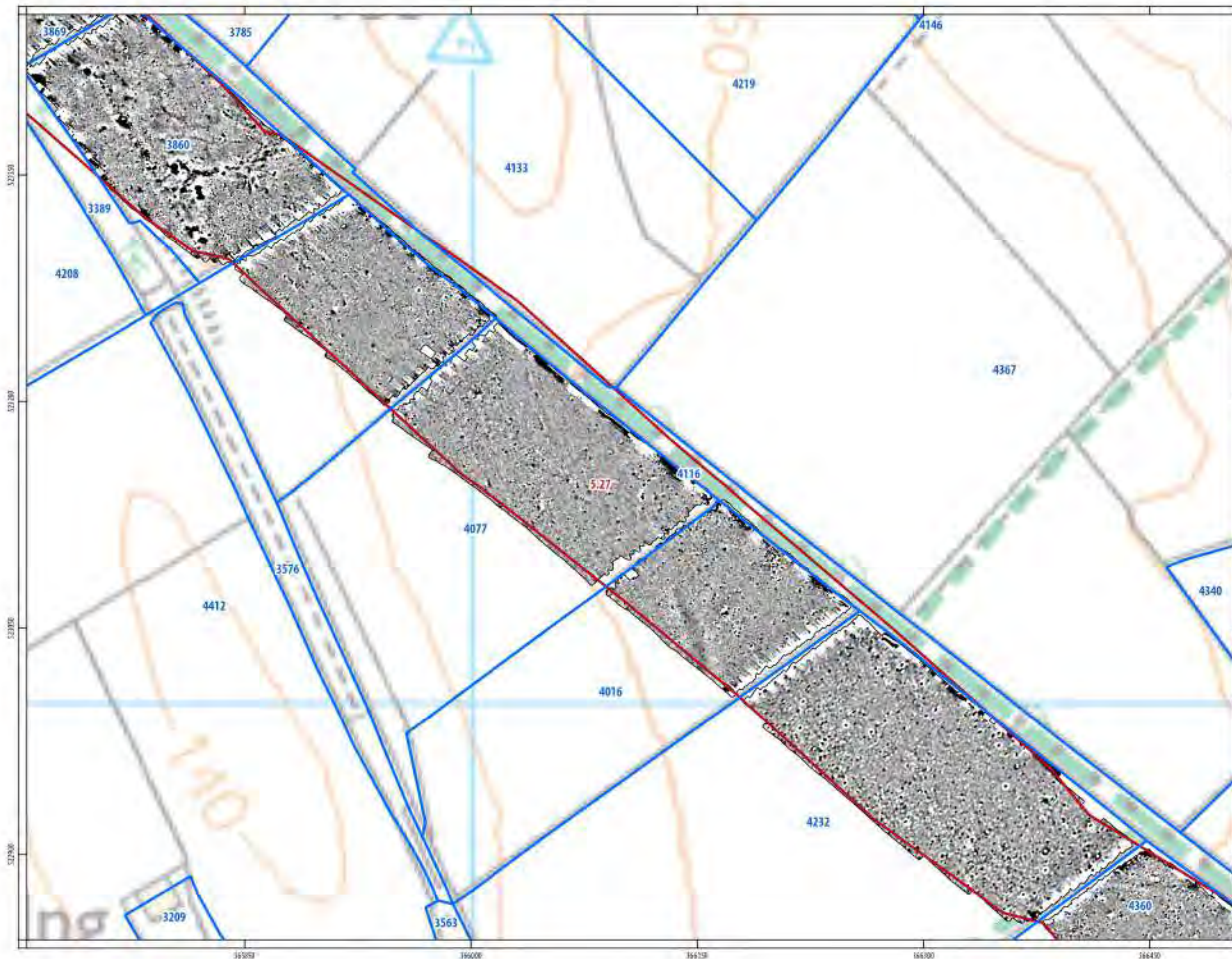


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





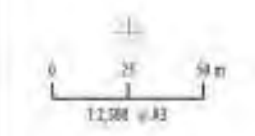


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





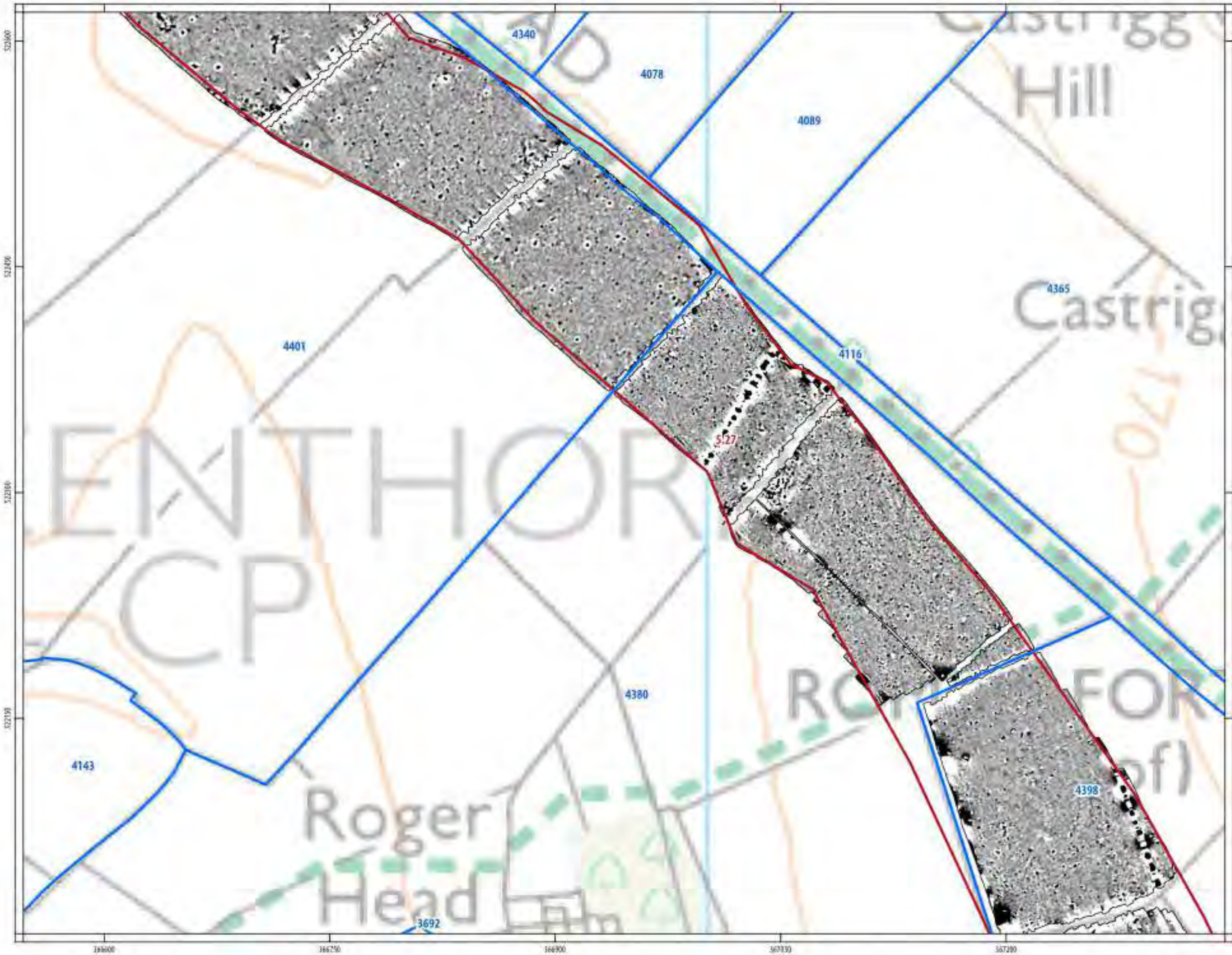
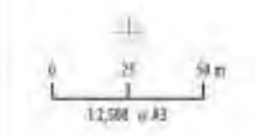


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

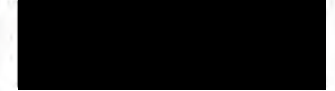


**PROJECT**  
M20 - A66 Transpennine Upgrade

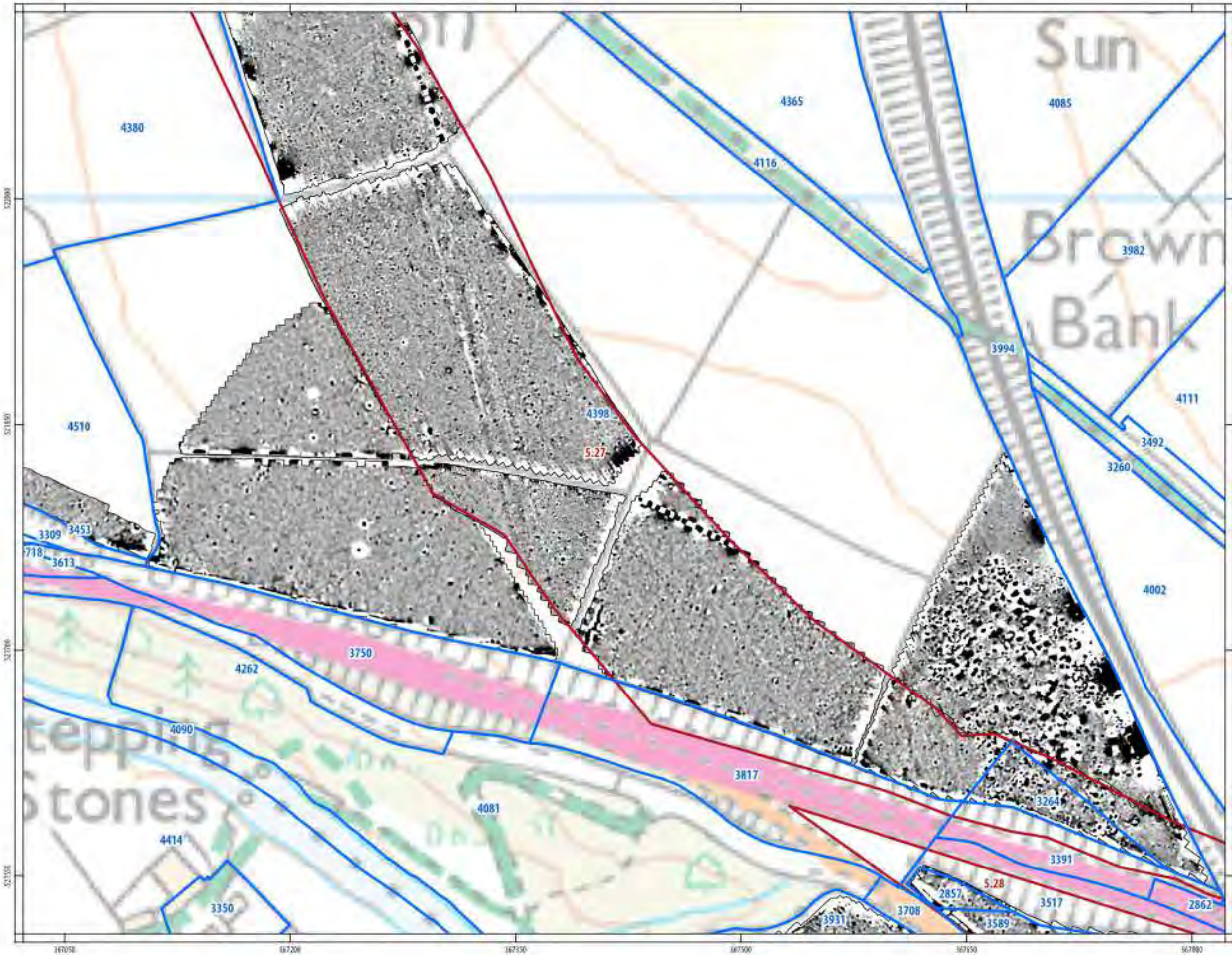
**CLIENT**  
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20-66 Transpennine Upgrade

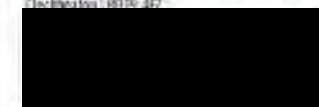
**CLIENT**  
Highways England











- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

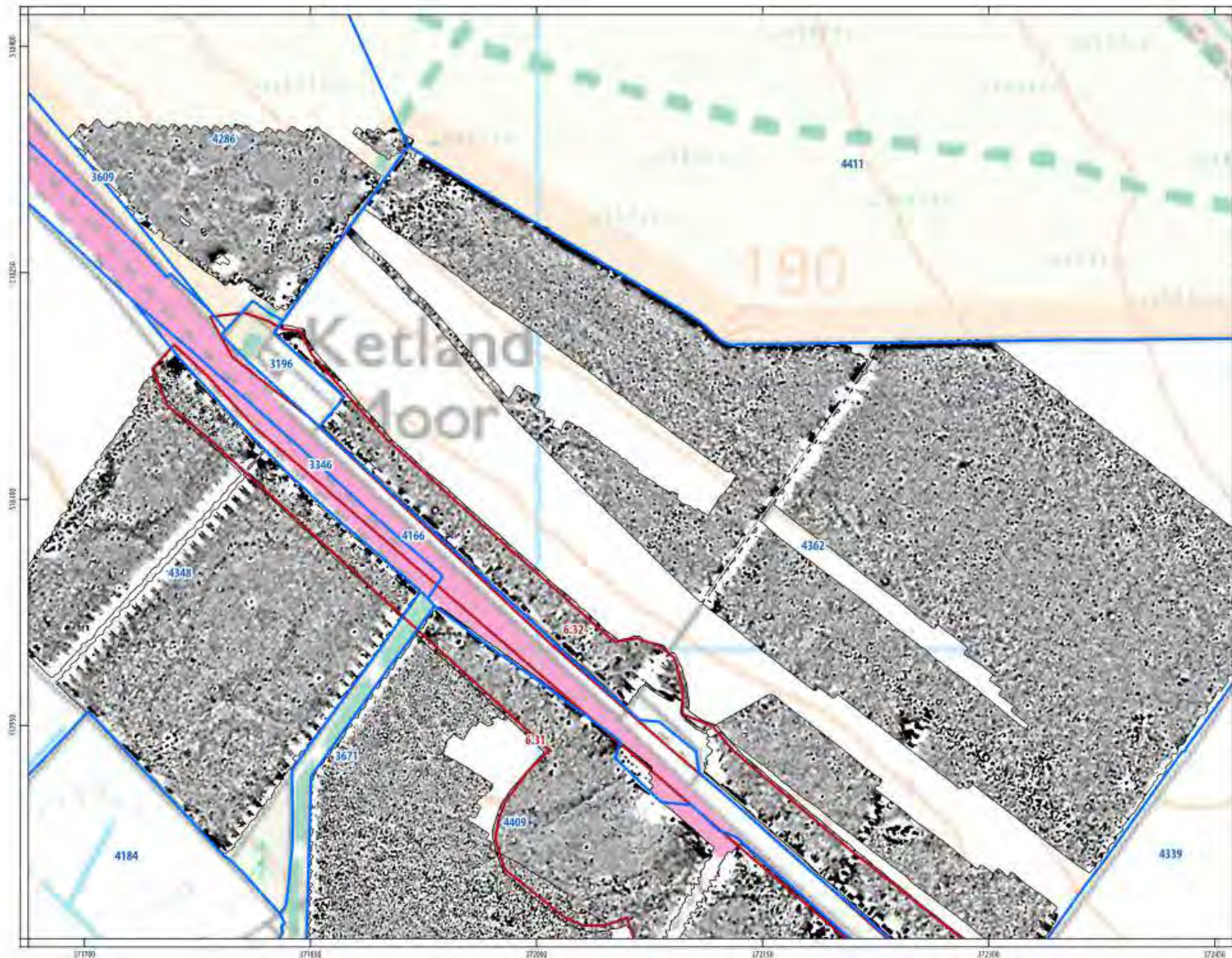


**PROJECT**

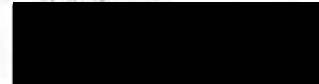
ATPU20-466 Transpennine Upgrade

**CLIENT**

Highways England





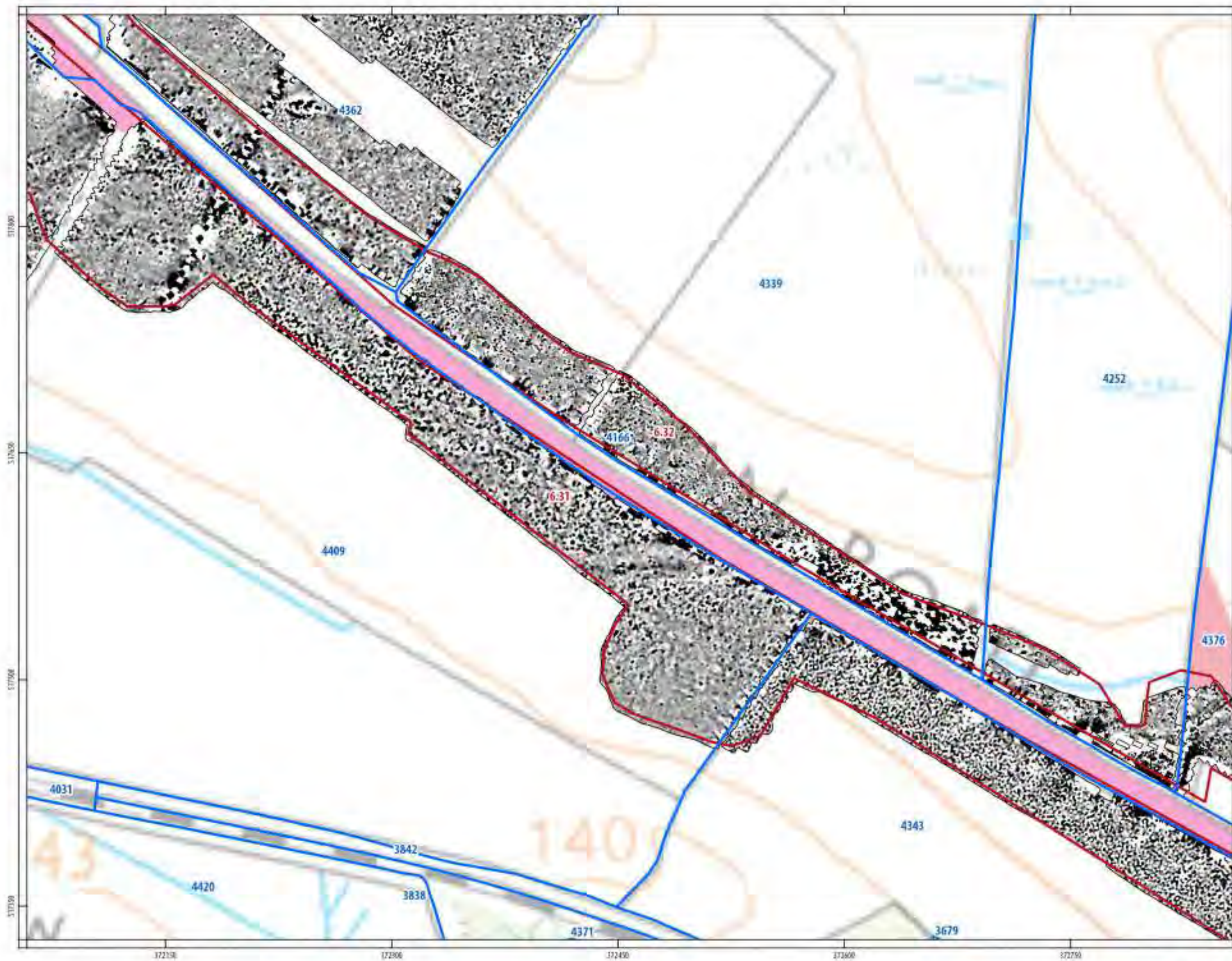


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

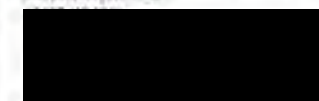


**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

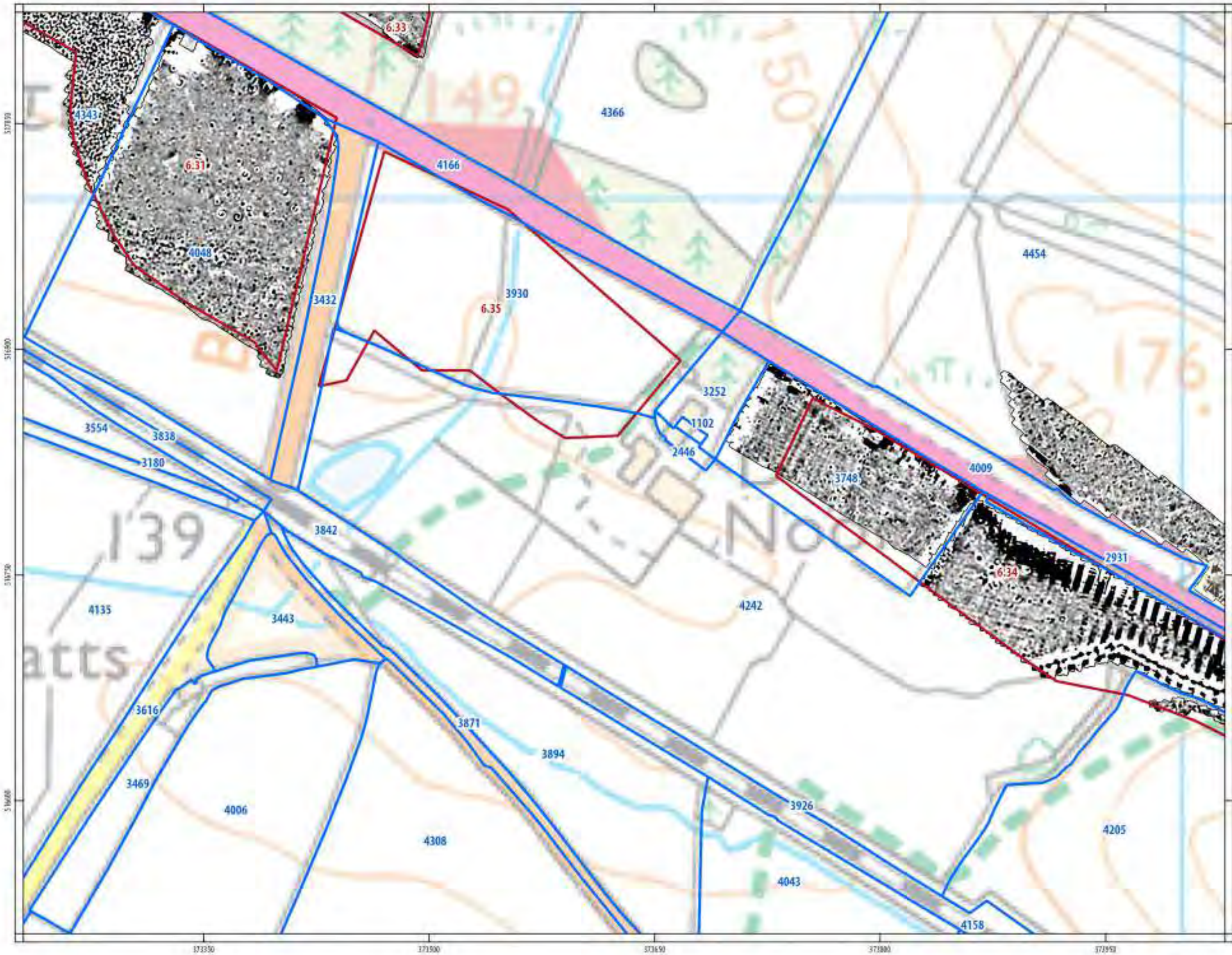
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





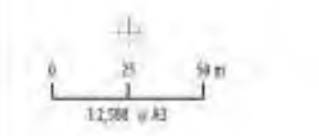


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey External
- ▭ Scheduled Monument

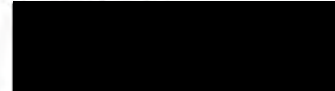


**PROJECT**  
M20-A66 Transpennine Upgrade

**CLIENT**  
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M20-466 Transpennine Upgrade

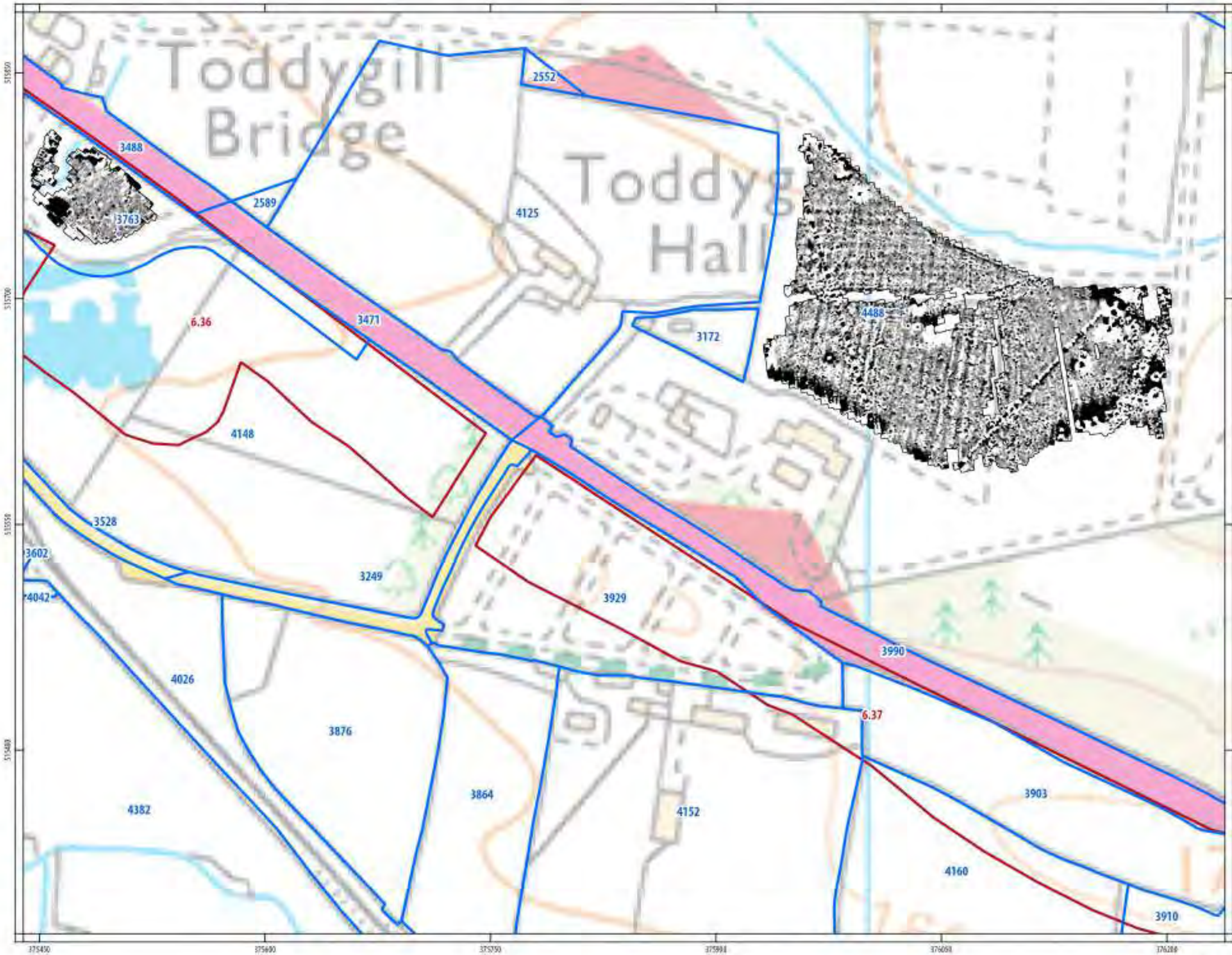
**CLIENT**  
Highways England





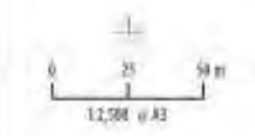


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M20-466 Transpennine Upgrade

**CLIENT**  
Highways England



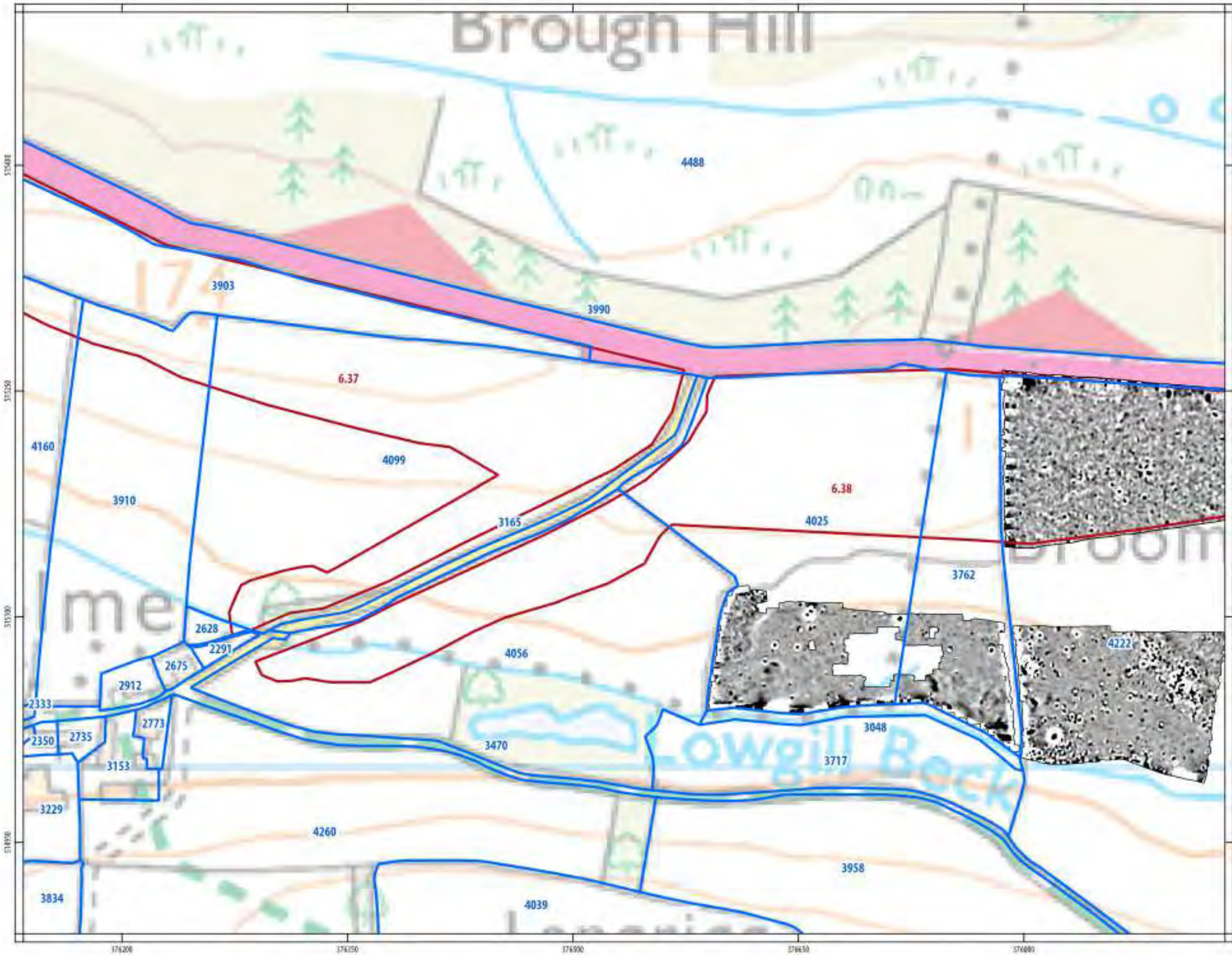
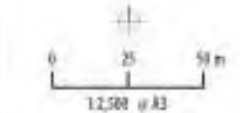


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



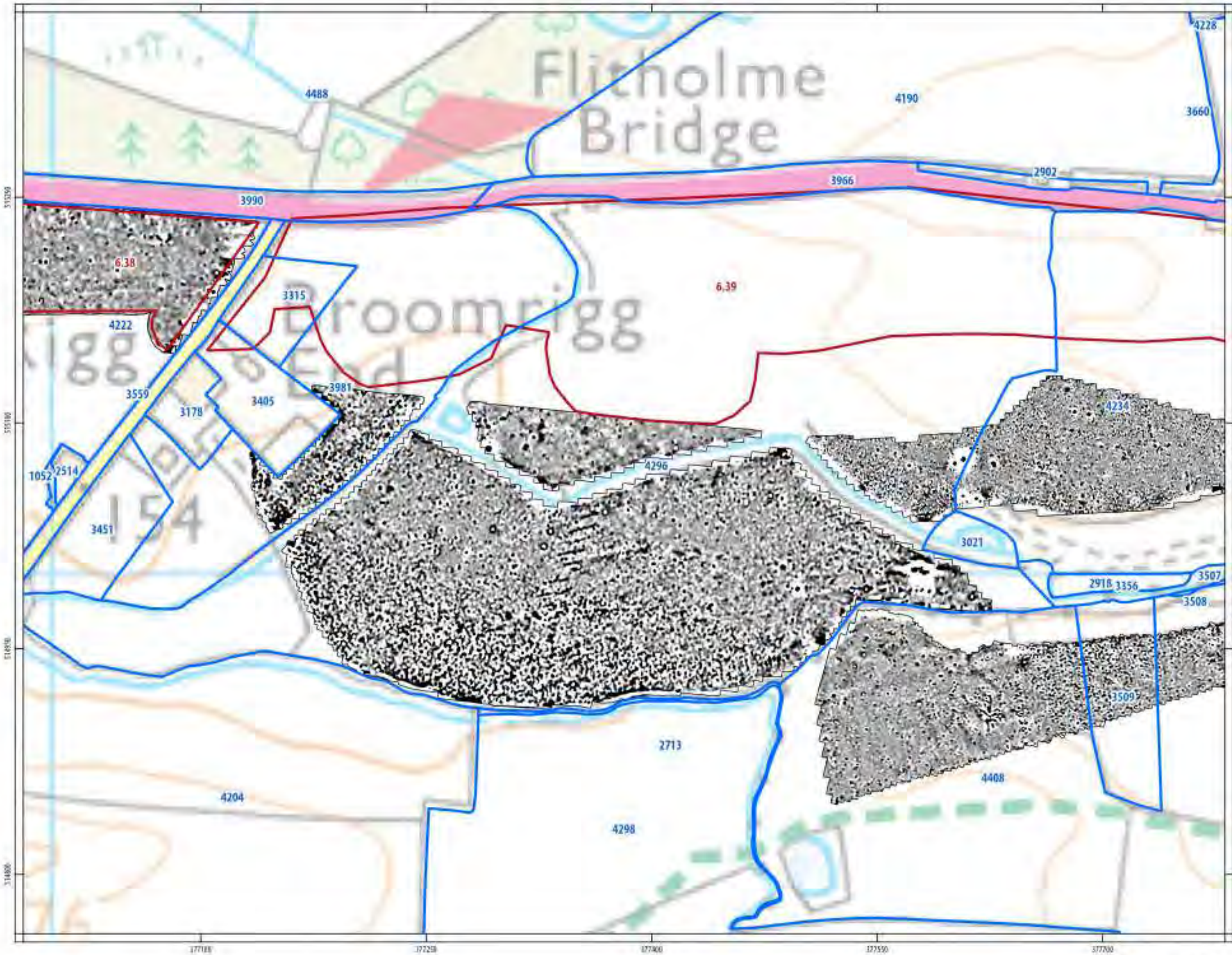
**PROJECT**  
M20-66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 39 Processed magnetometer data: Appleby to Brough (Warcop)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

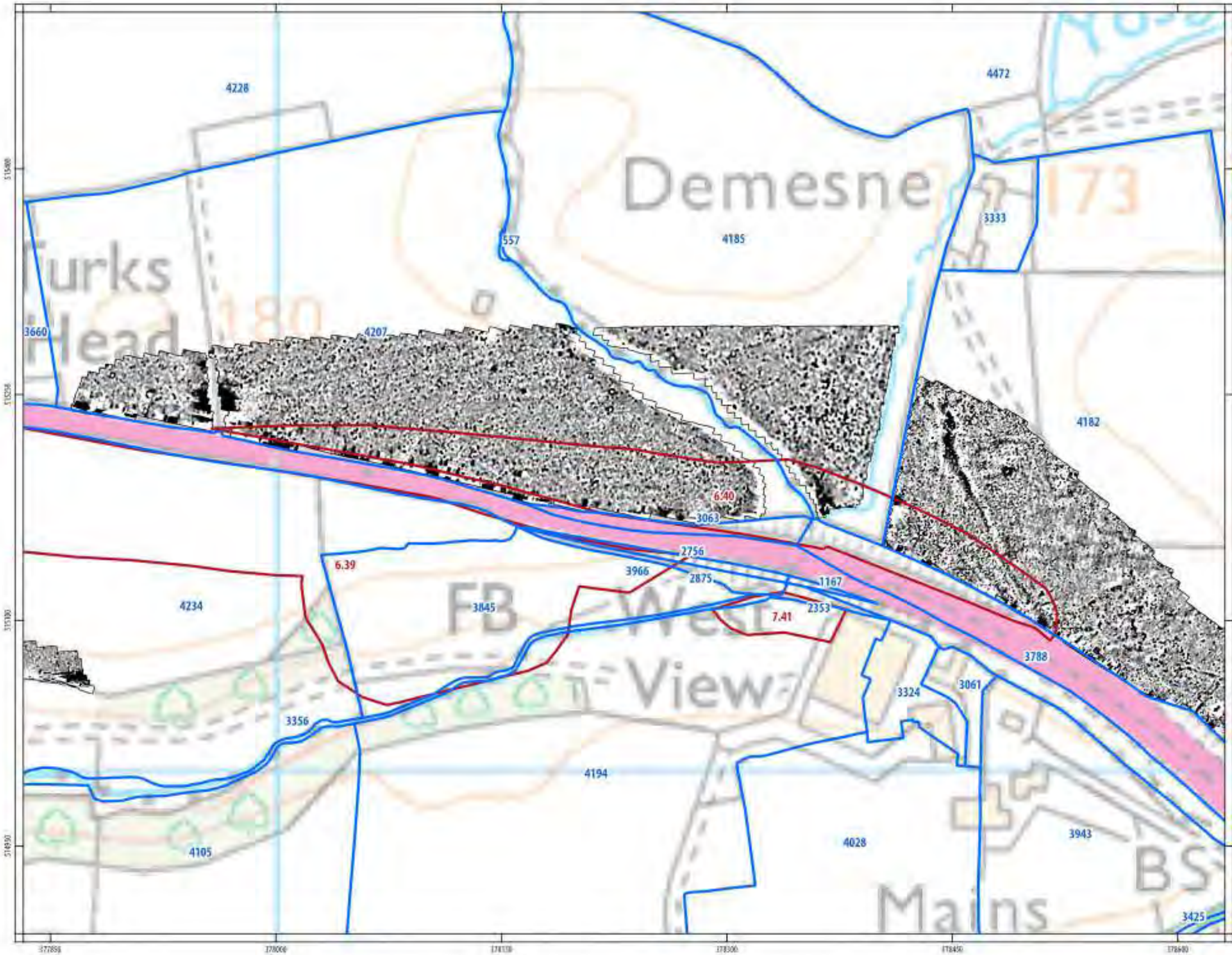
**CLIENT**  
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

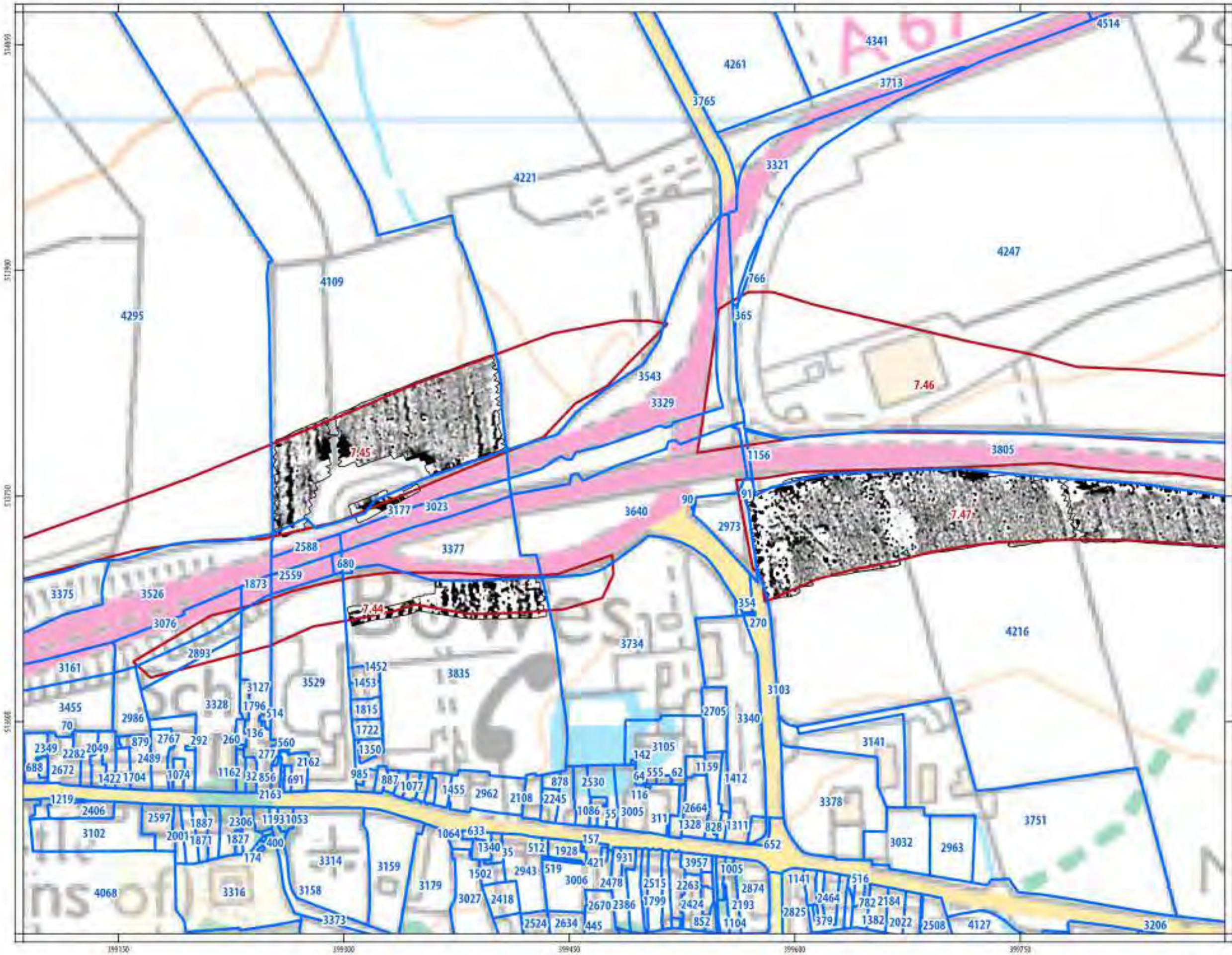








- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M20/A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 43 Processed magnetometer data; Bowes Bypass (A66/A67)



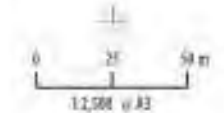


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

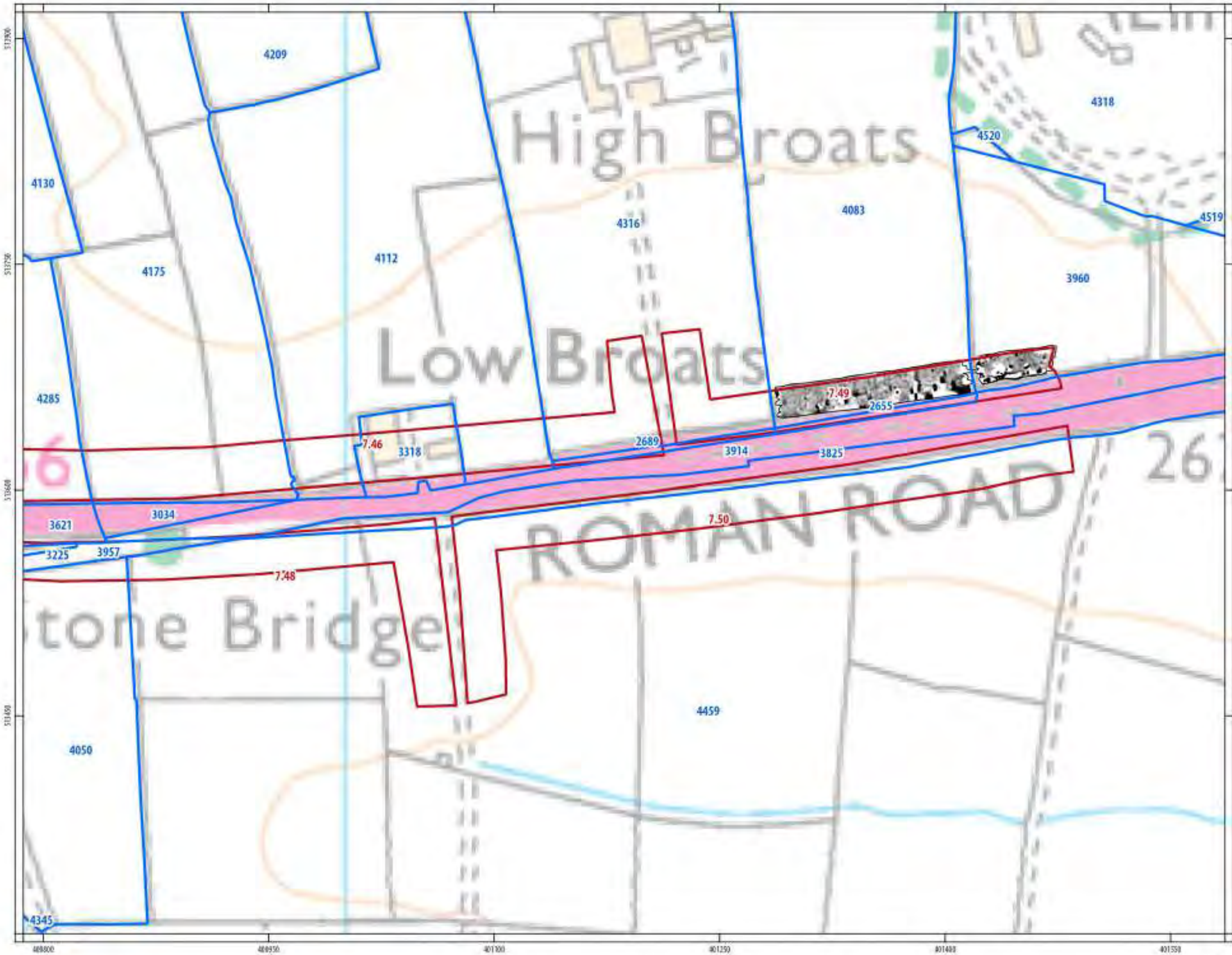


ILLUS 44 Processed magnetometer data; Bowes Bypass (A66/A67)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

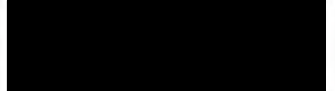


**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





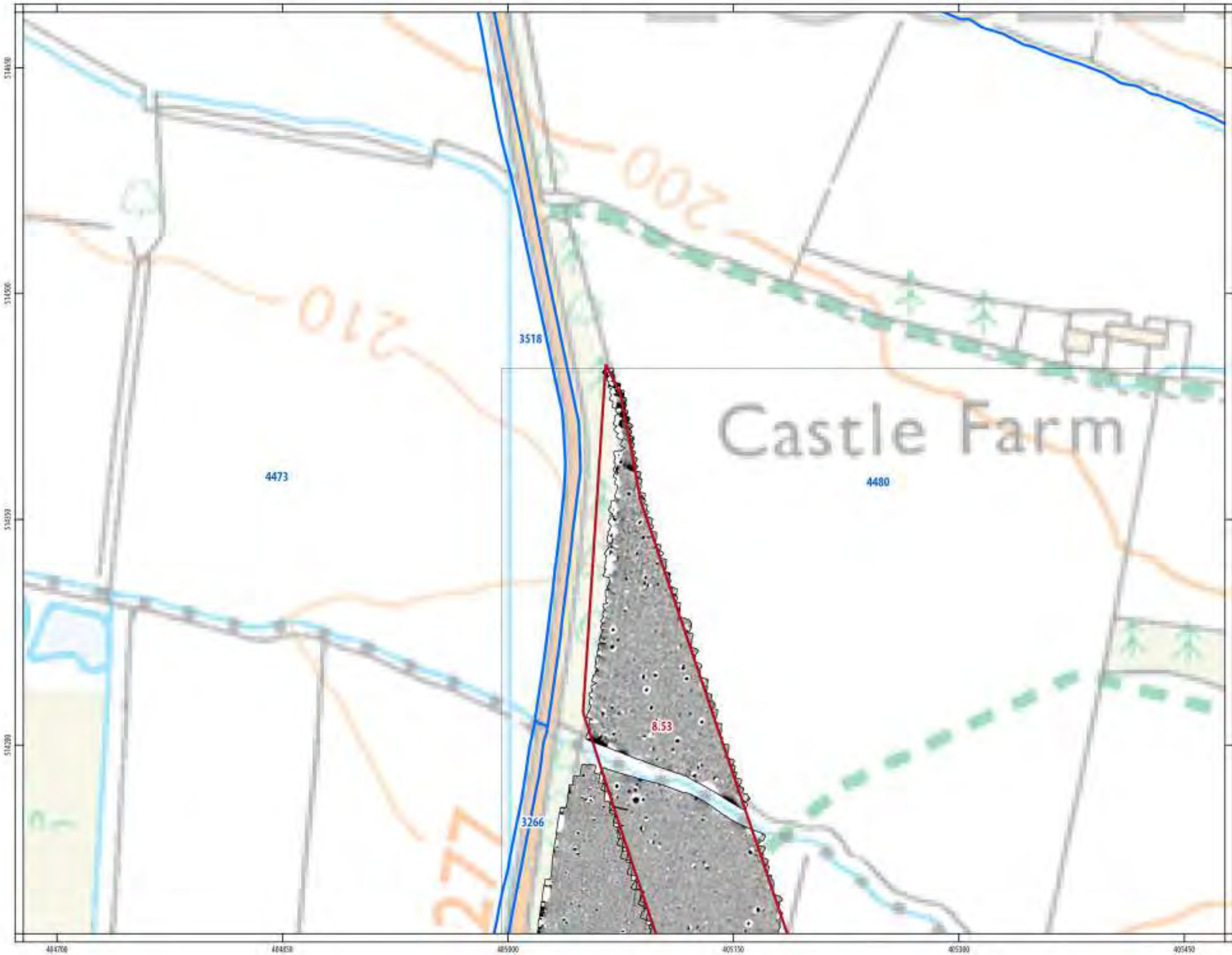
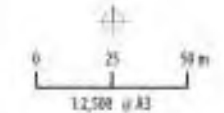


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England

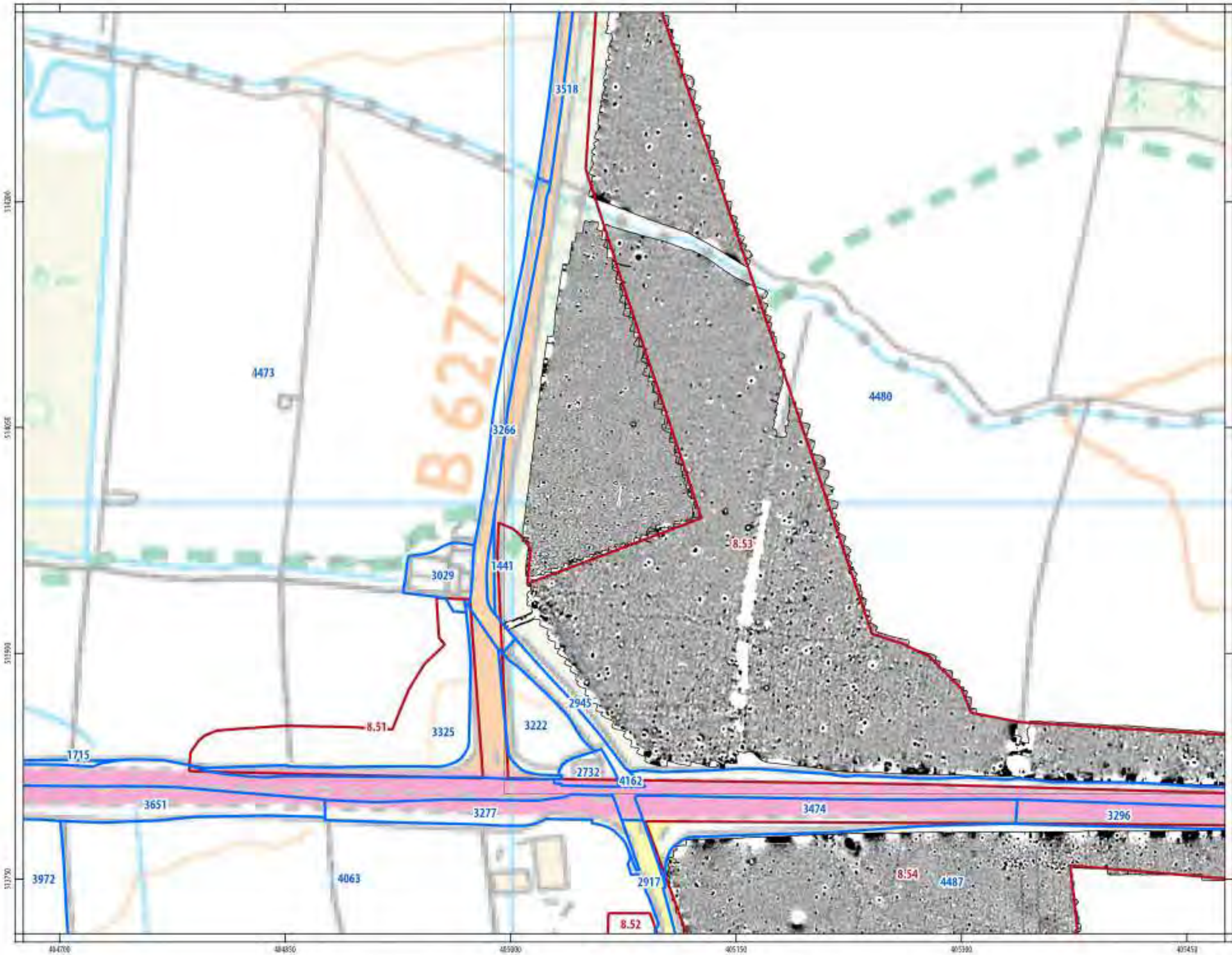


ILLUS 46 Processed magnetometer data; Cross Lanes to Rokeby



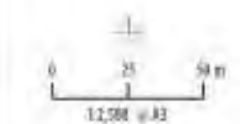


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument



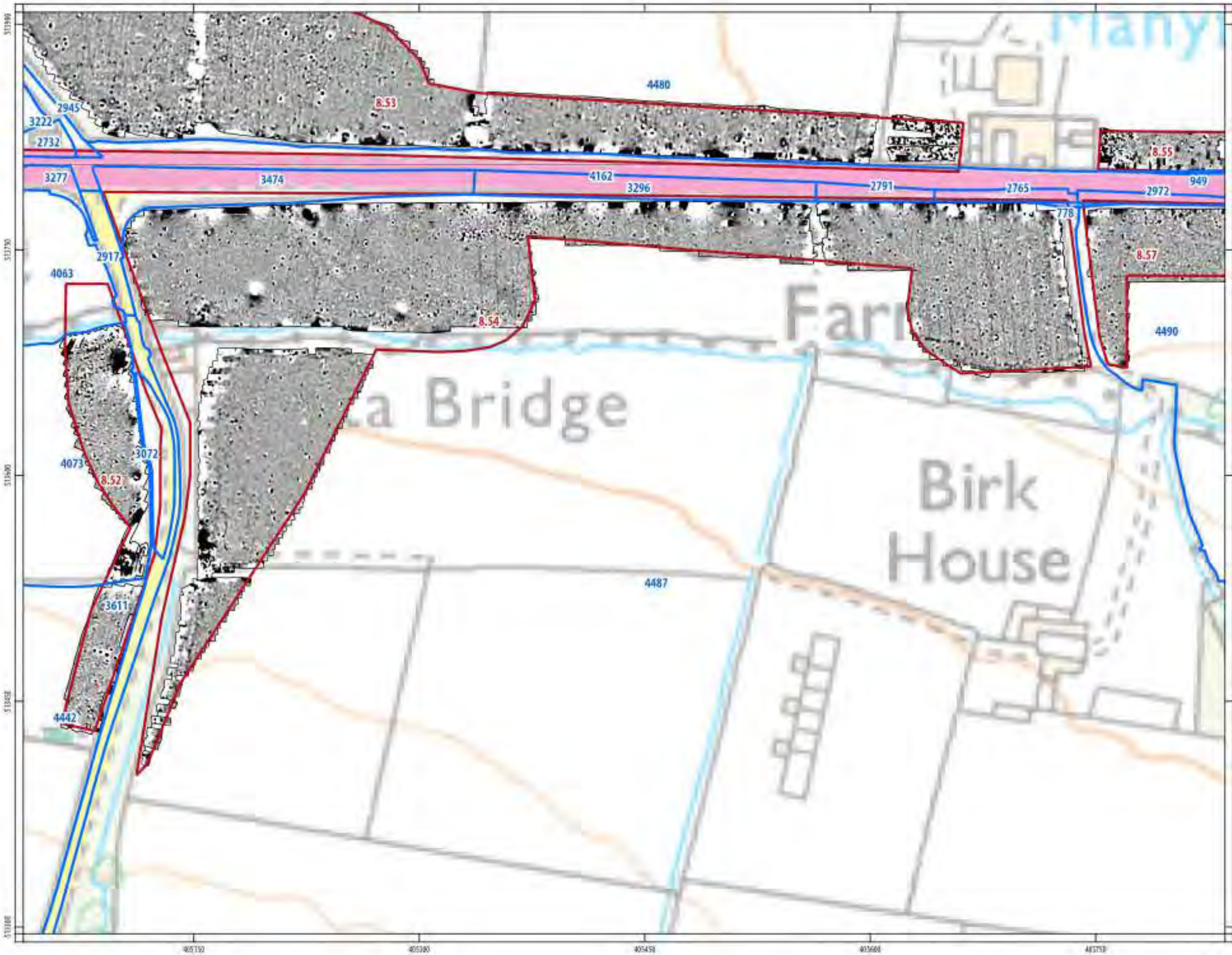
**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 47 Processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20-696 Transpennine Upgrade

**CLIENT**  
Highways England





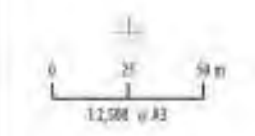


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
AFPU20 - A96 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 49 Processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M100 - A66 Transpennine Upgrade

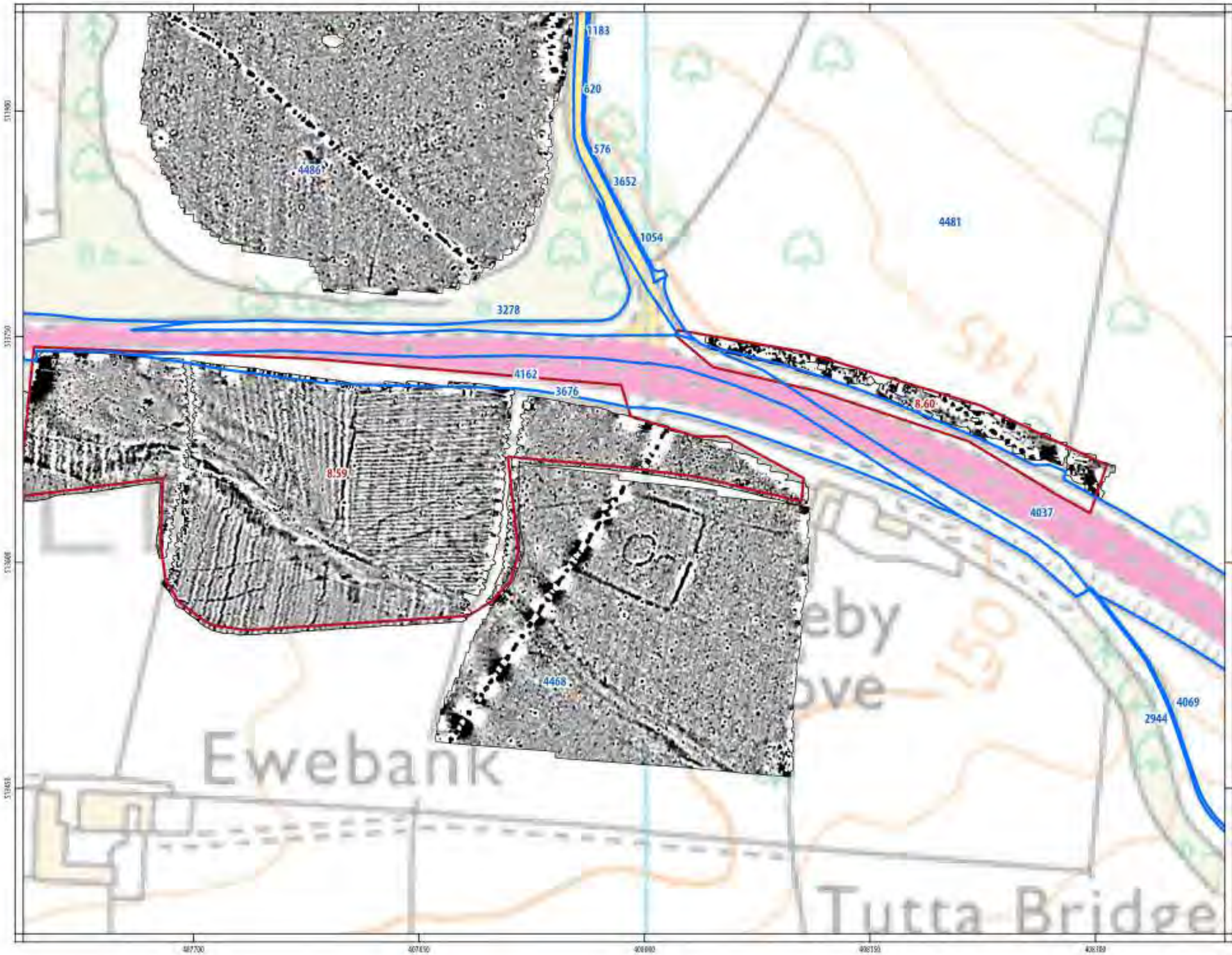
**CLIENT**  
Highways England





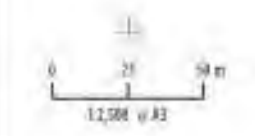


- ▭ Phase 1 Geophysical Survey Area
- ▬ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▬ Scheduled Monument



**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
Highways England



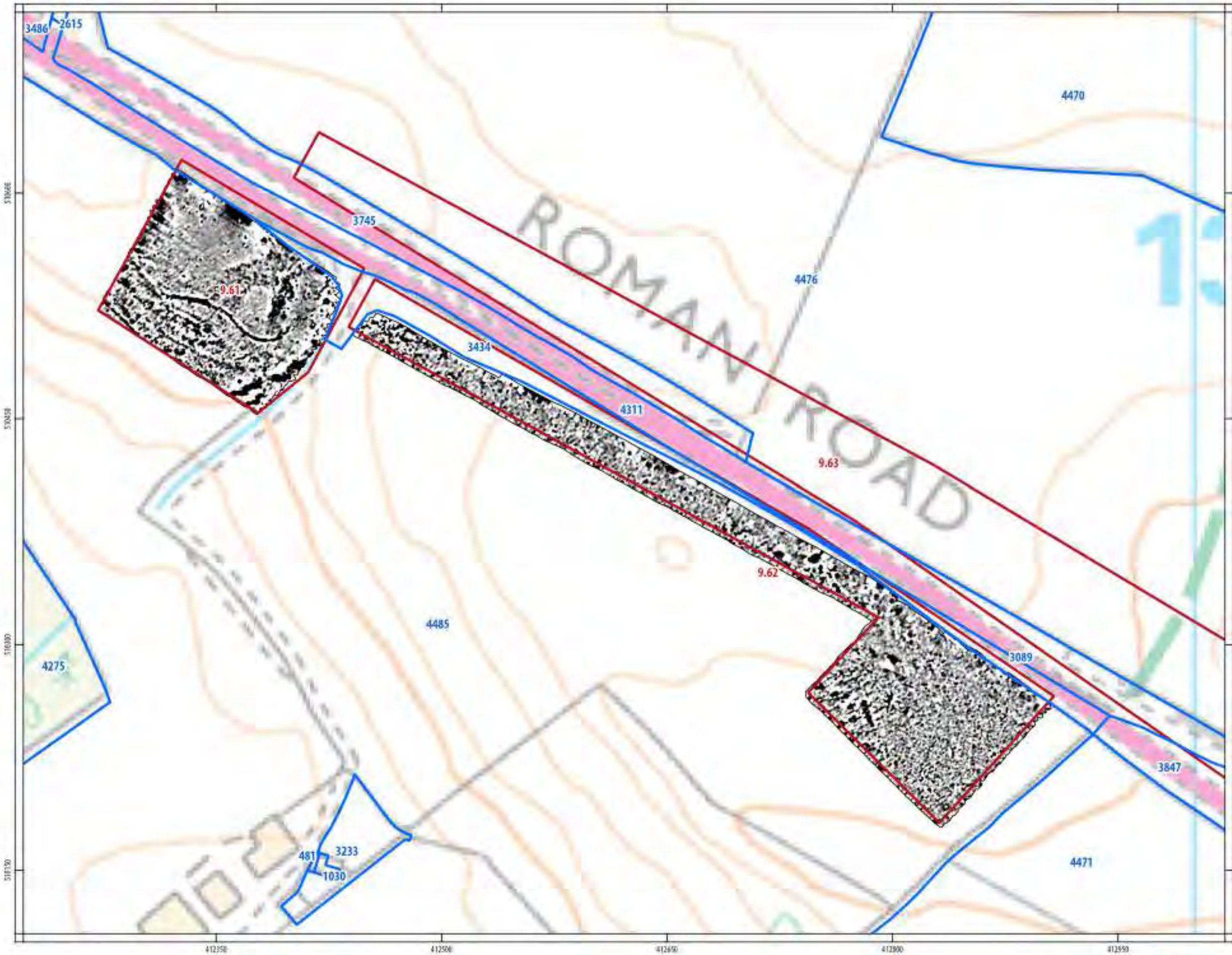
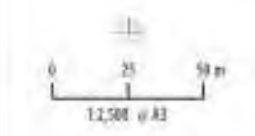


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 52 Processed magnetometer data; Stephen Bank to Carlin Moor



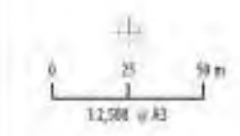


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



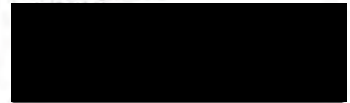
**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 53 Processed magnetometer data; Stephen Bank to Carlin Moor





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



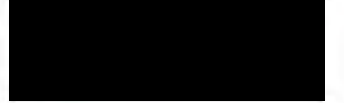
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 54 Processed magnetometer data; Stephen Bank to Carlin Moor



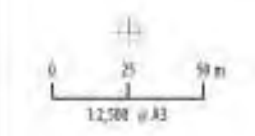


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



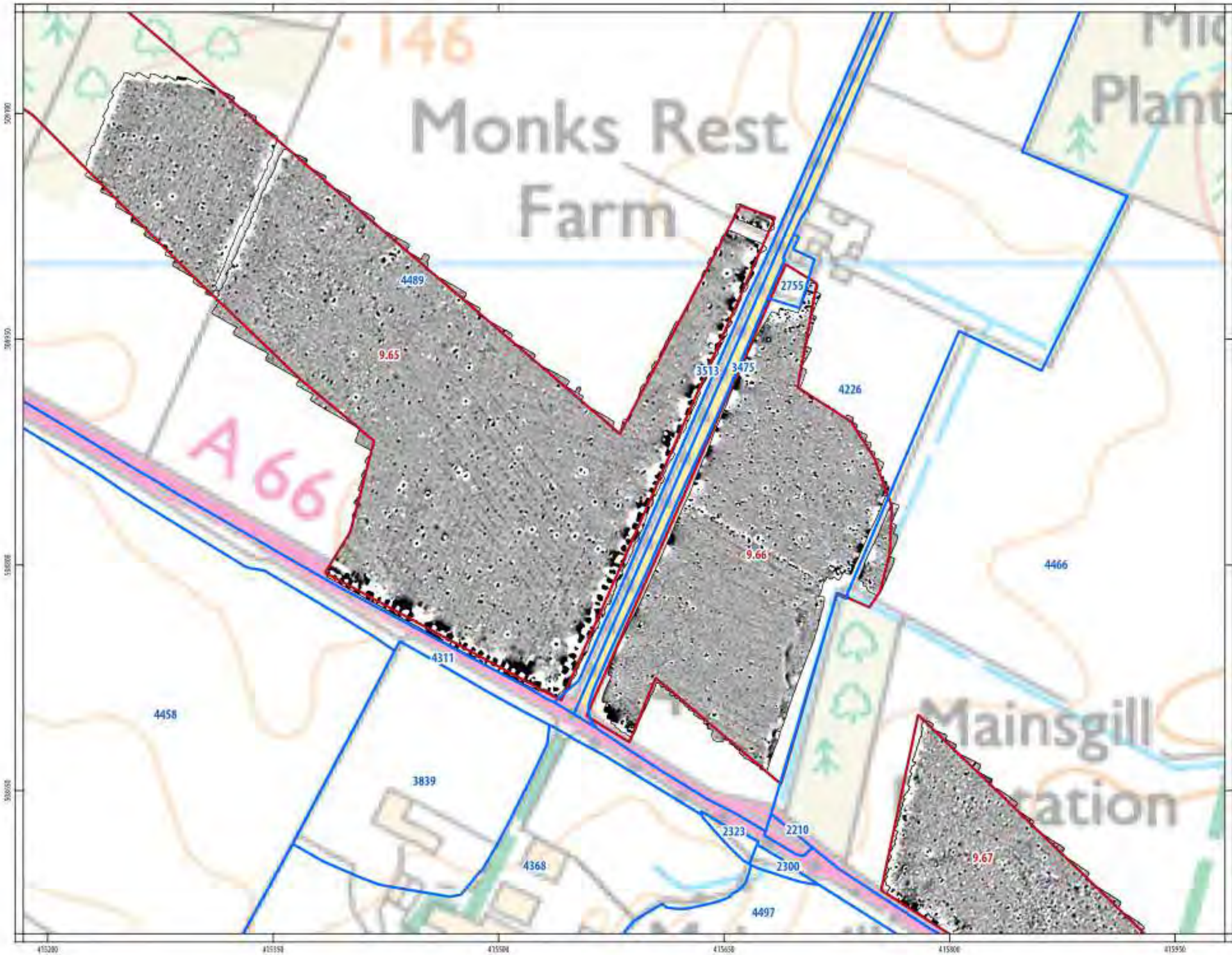
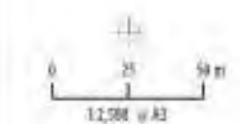


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

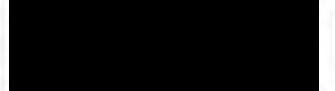


**PROJECT**  
M20-66 Transpennine Upgrade

**CLIENT**  
Highways England





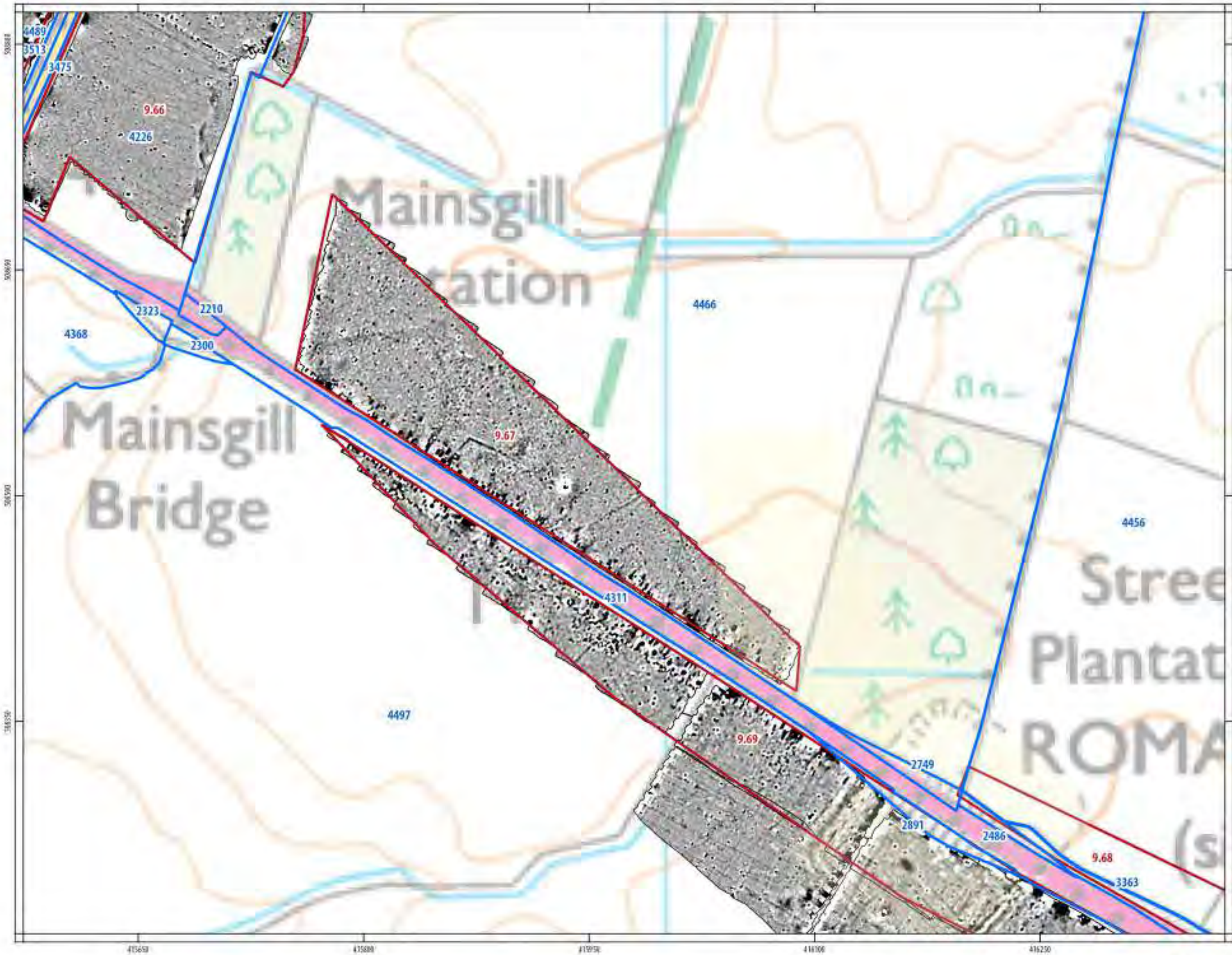
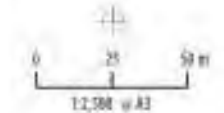


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 57 Processed magnetometer data; Stephen Bank to Carlin Moor

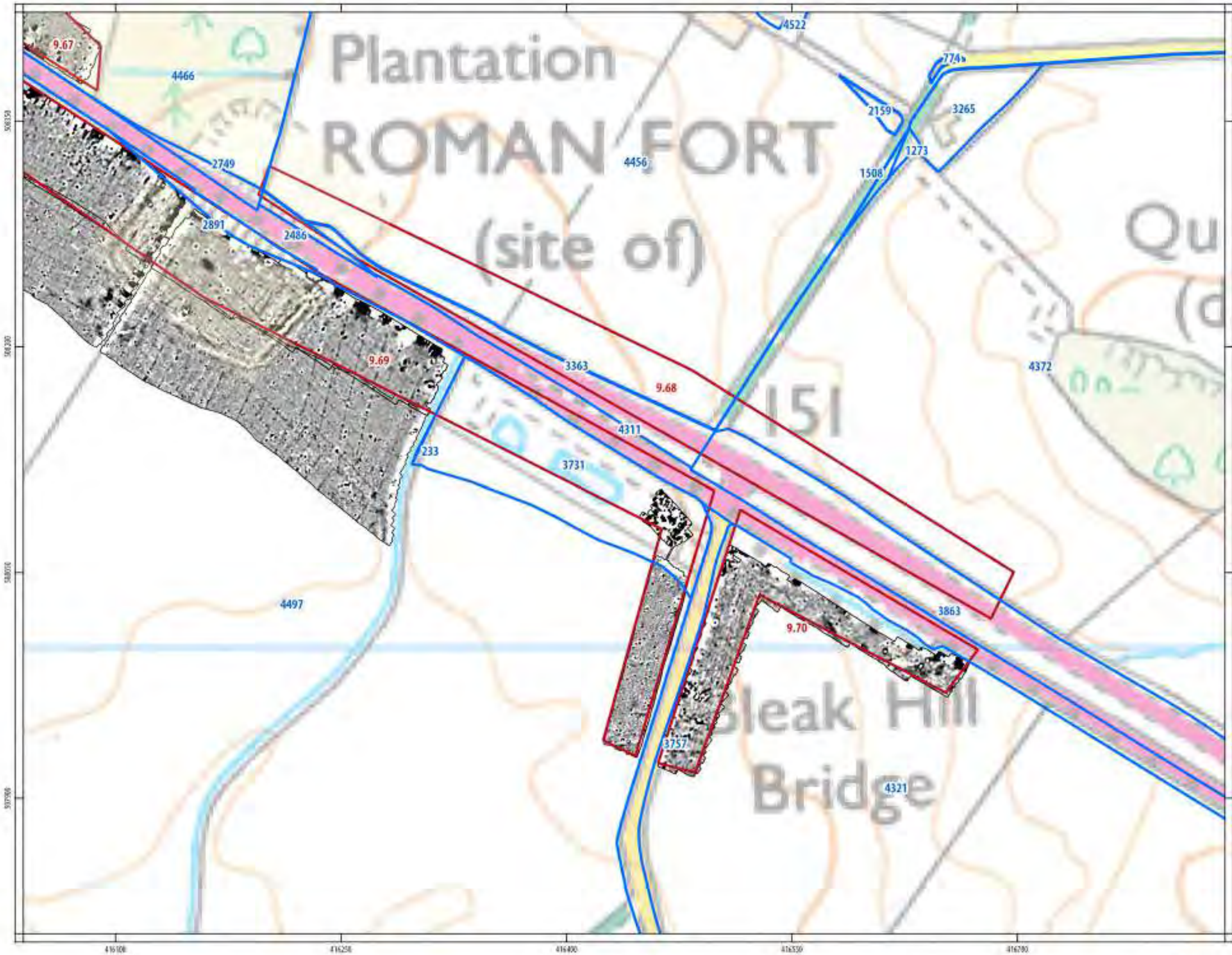
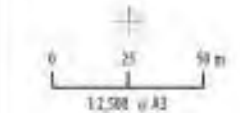


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument







**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



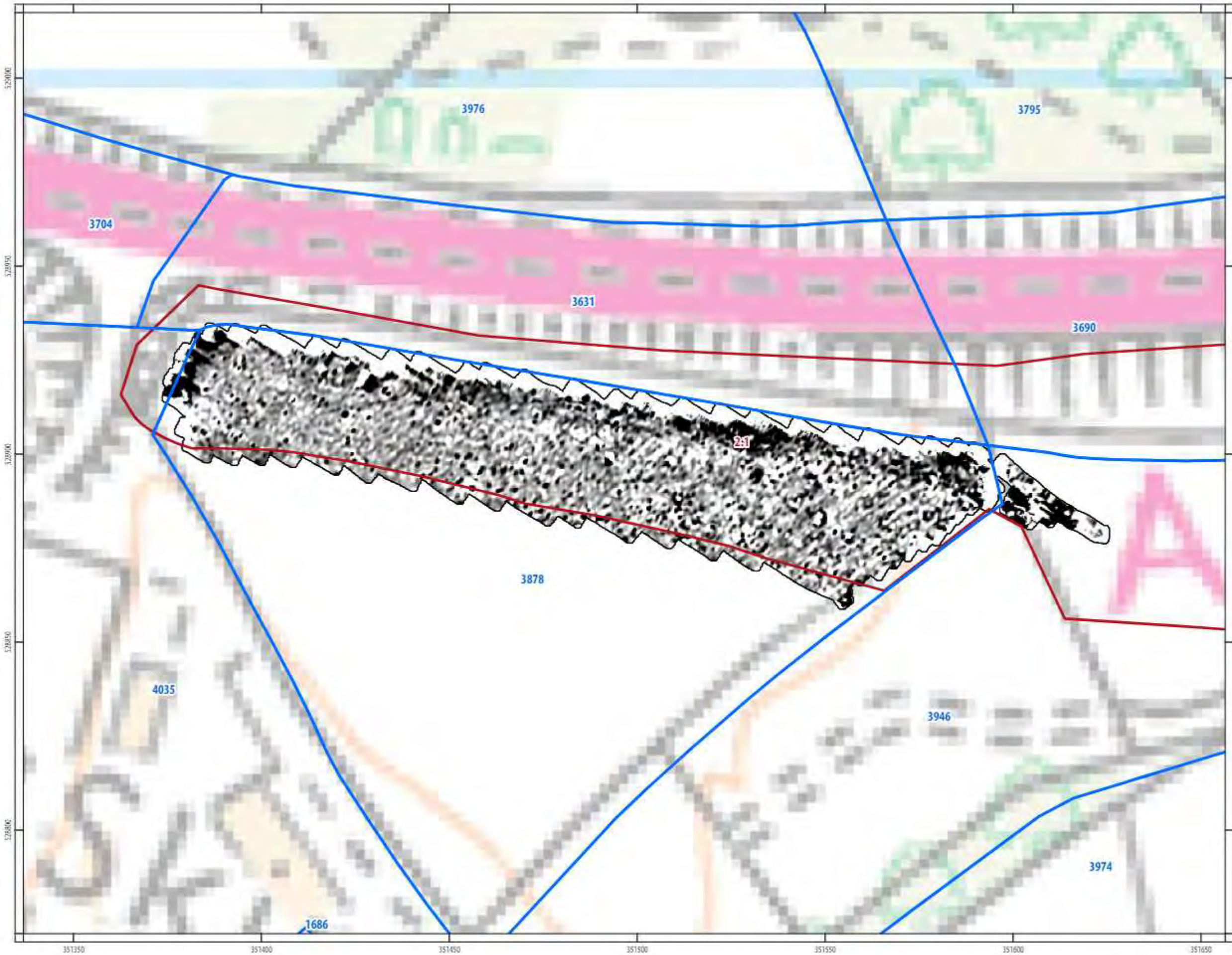


-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

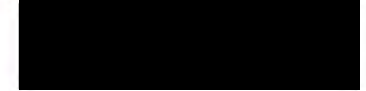


**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





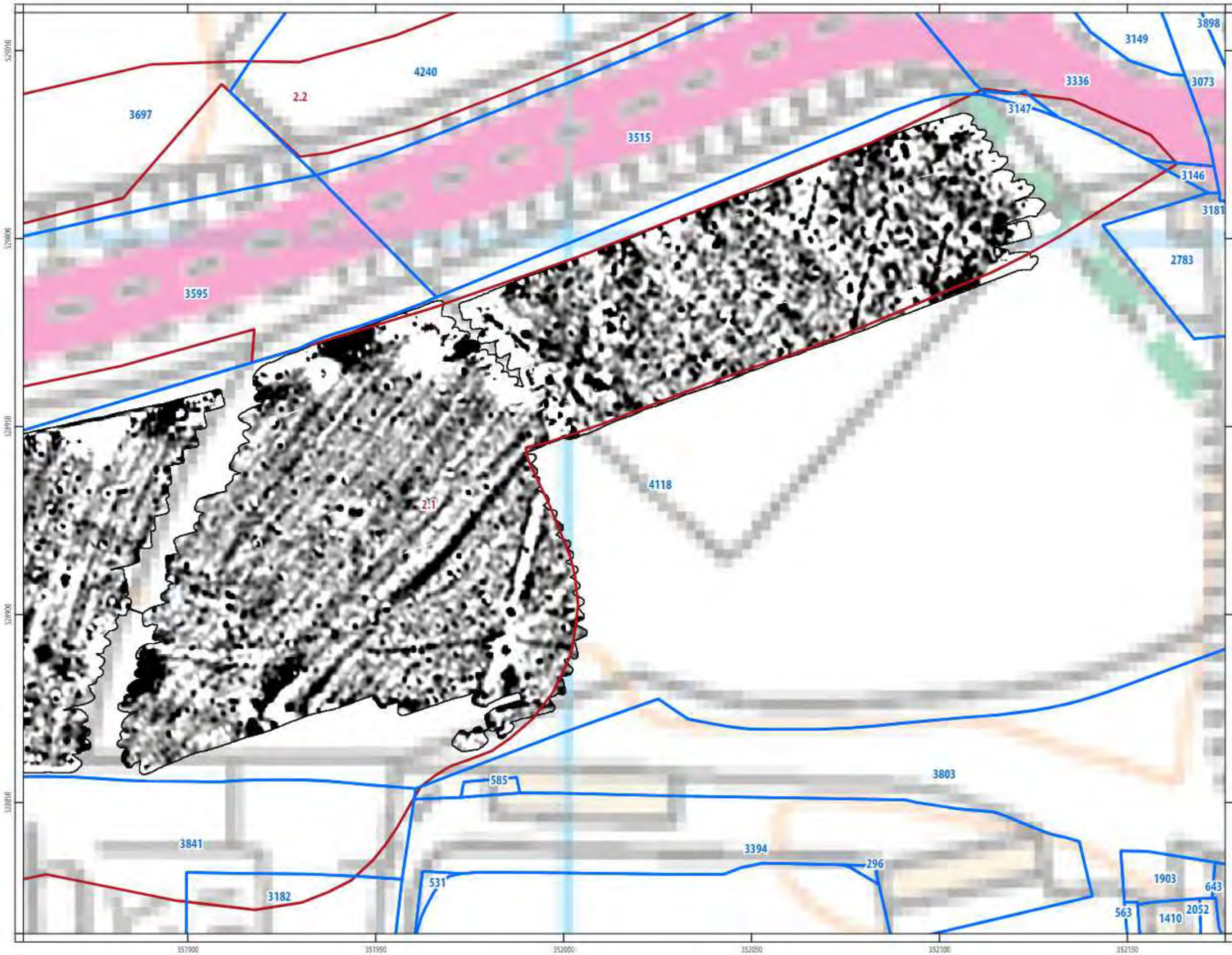


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 61 Processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

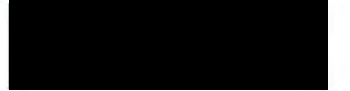


**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

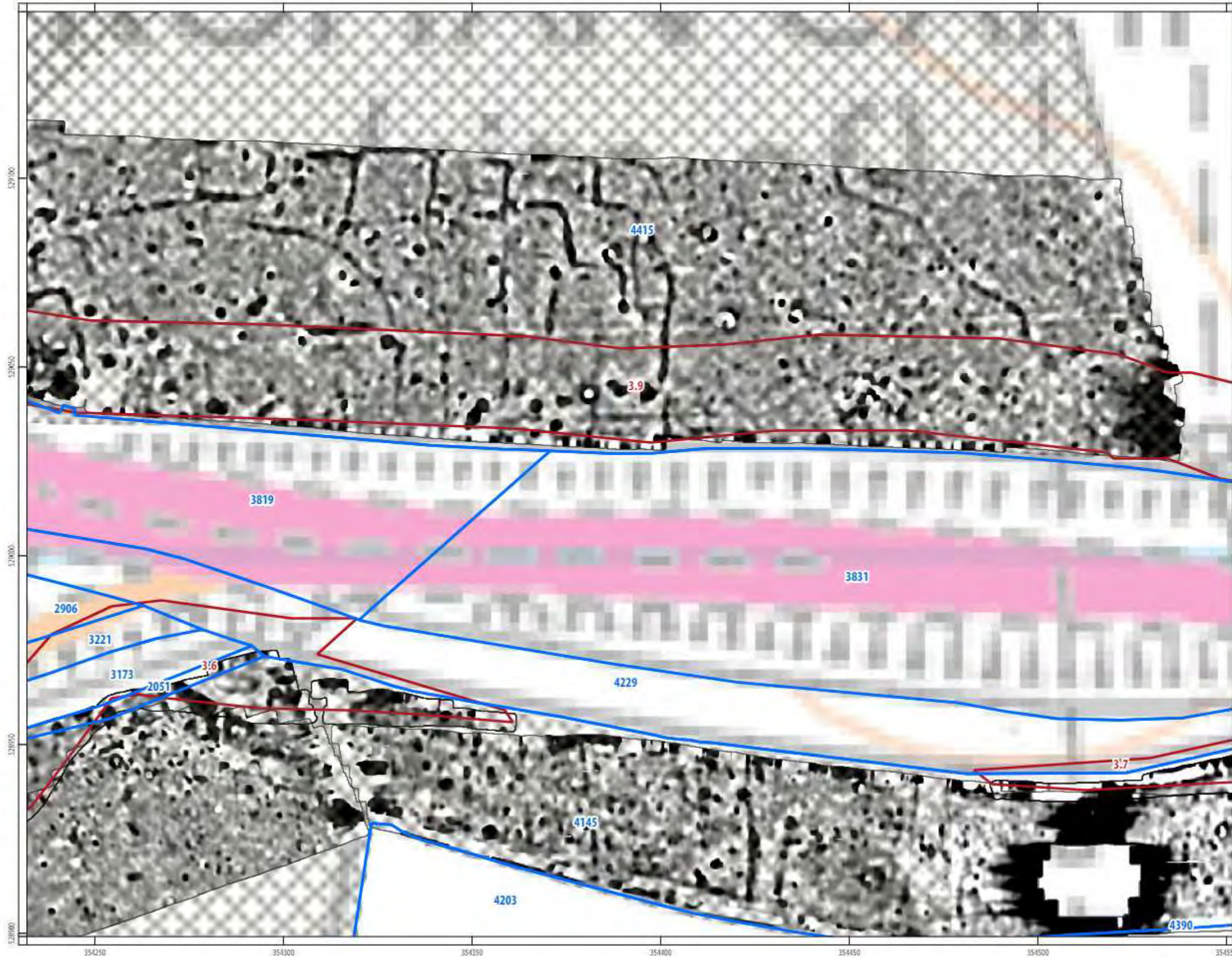


**PROJECT**

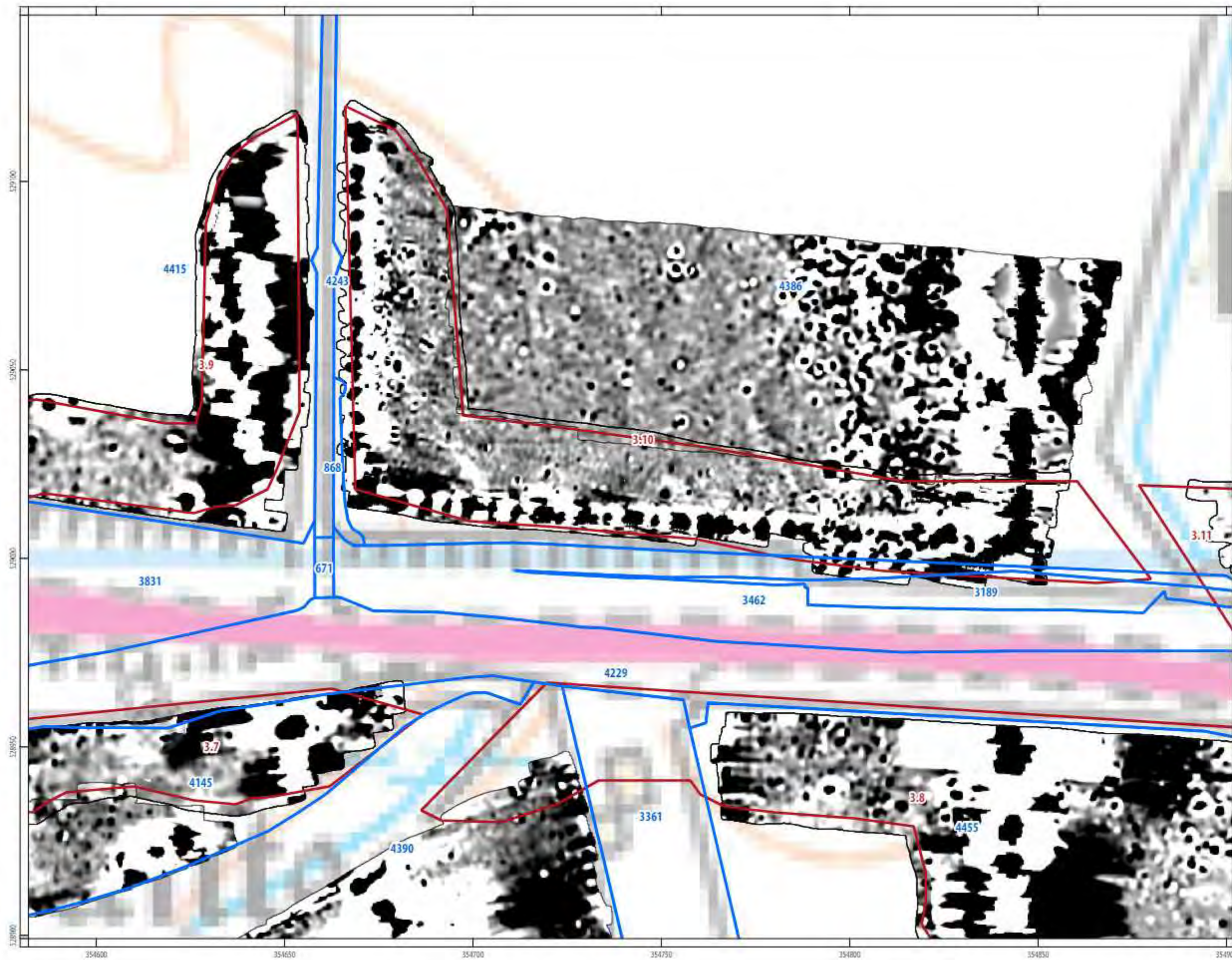
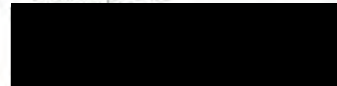
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

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- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

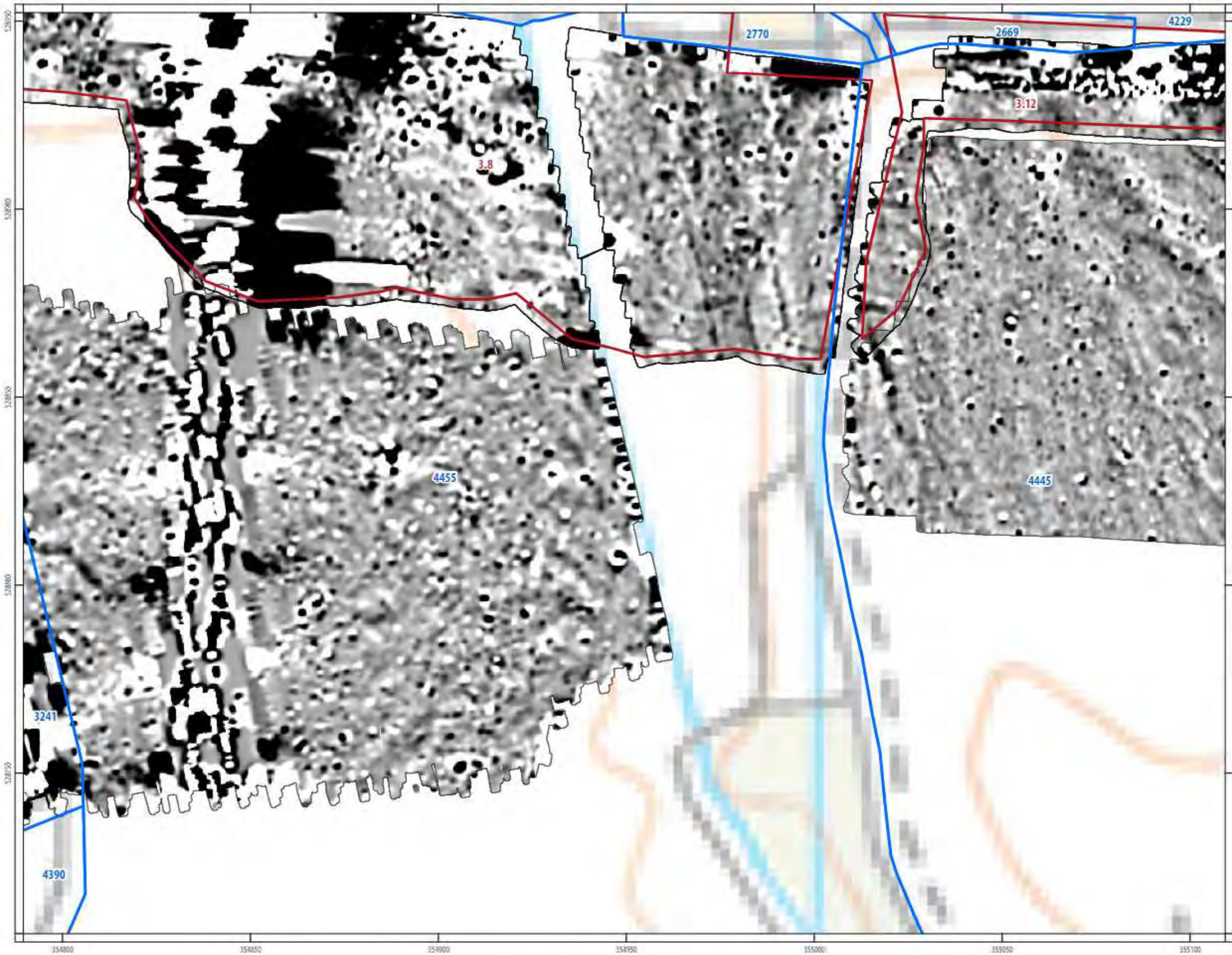


**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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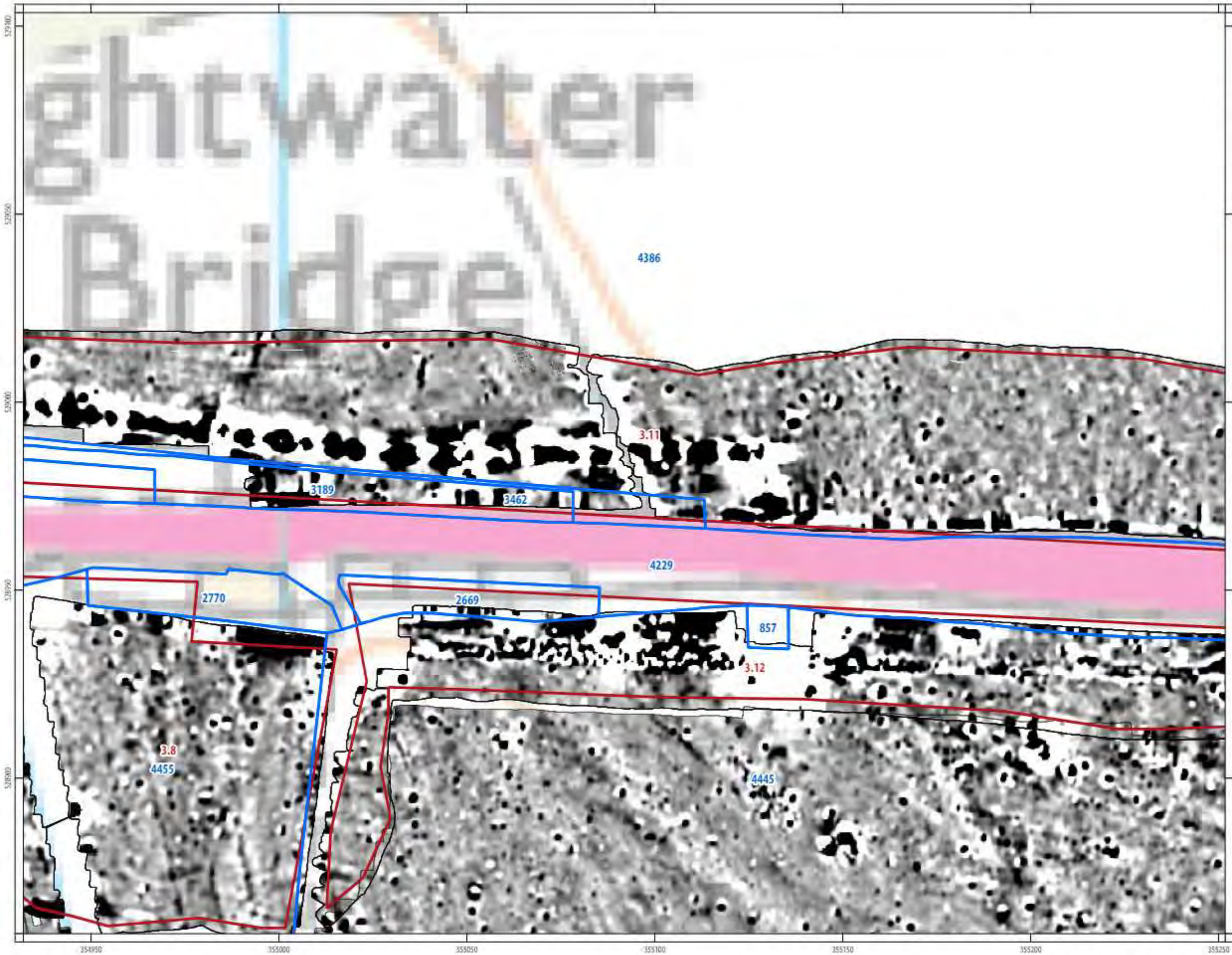


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



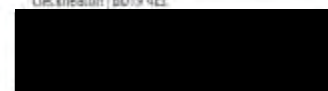
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

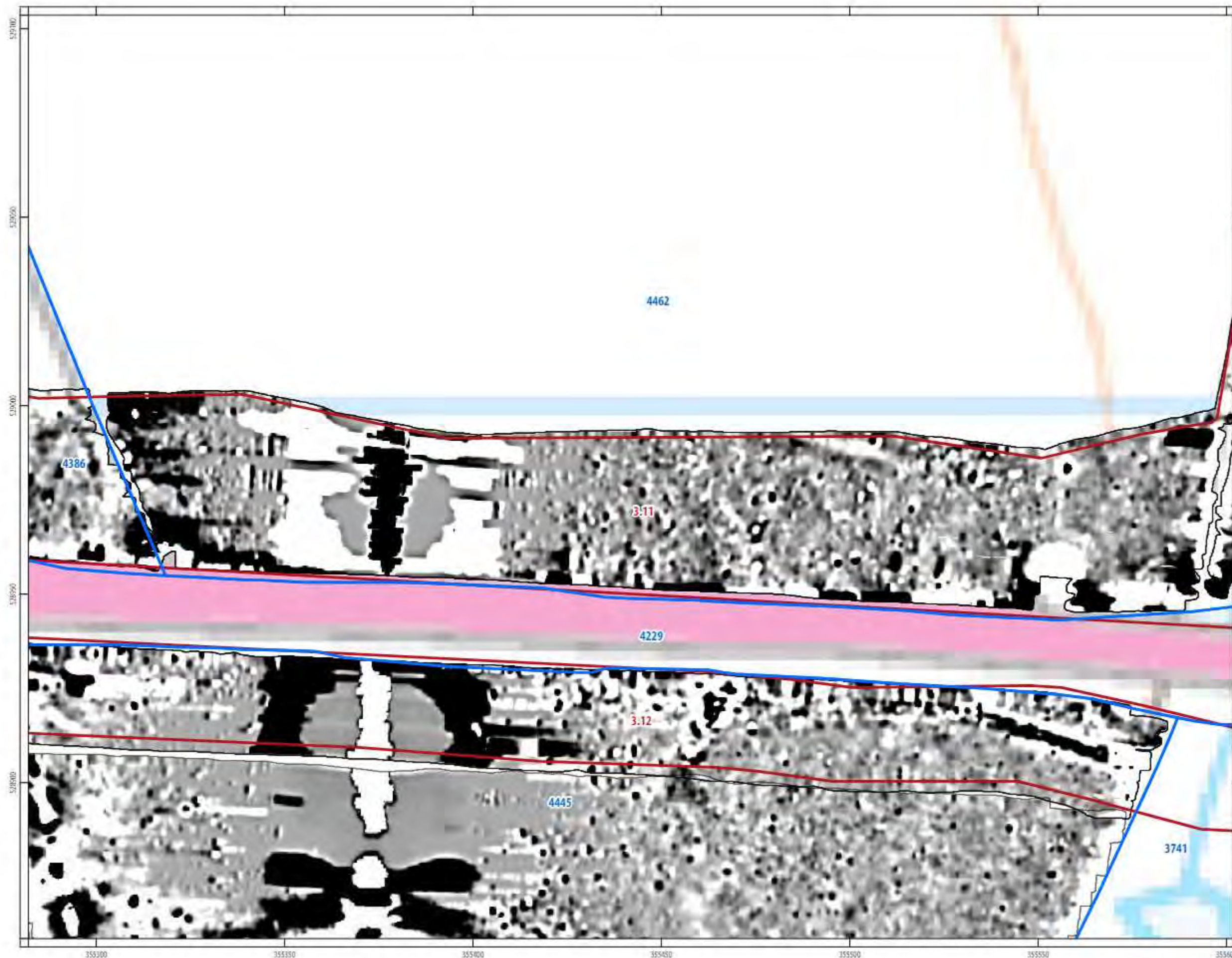


ILLUS 66 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

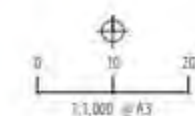


**PROJECT**

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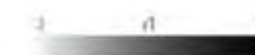
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
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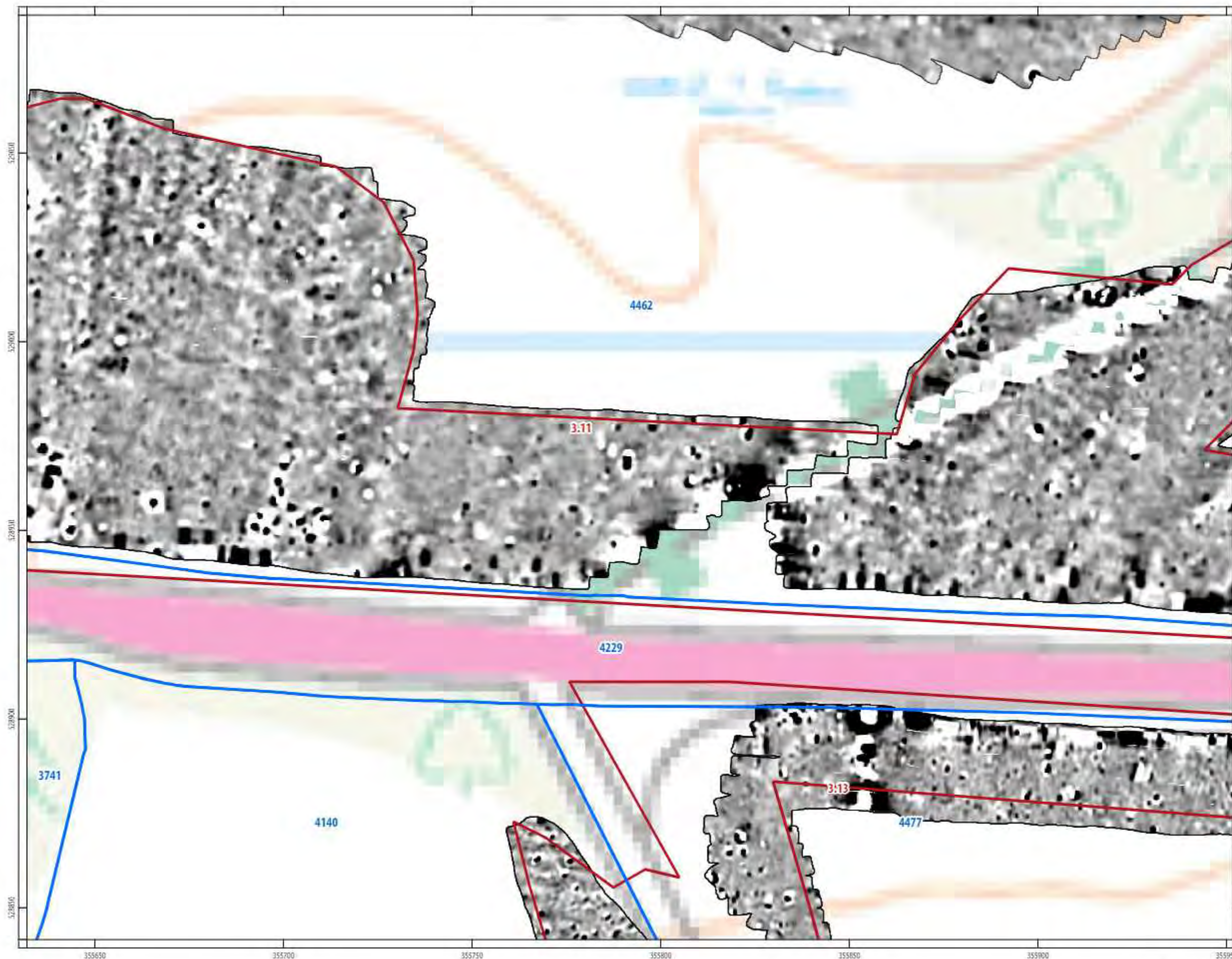
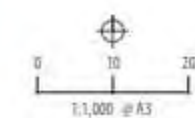


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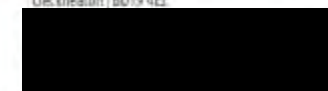
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

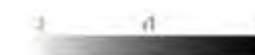
Highways England







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- ▭ Phase 2 Geophysical Survey Area
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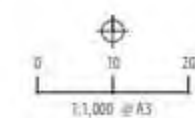


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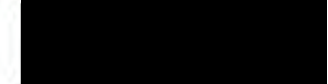
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- ▭ Phase 1 Geophysical Survey Area
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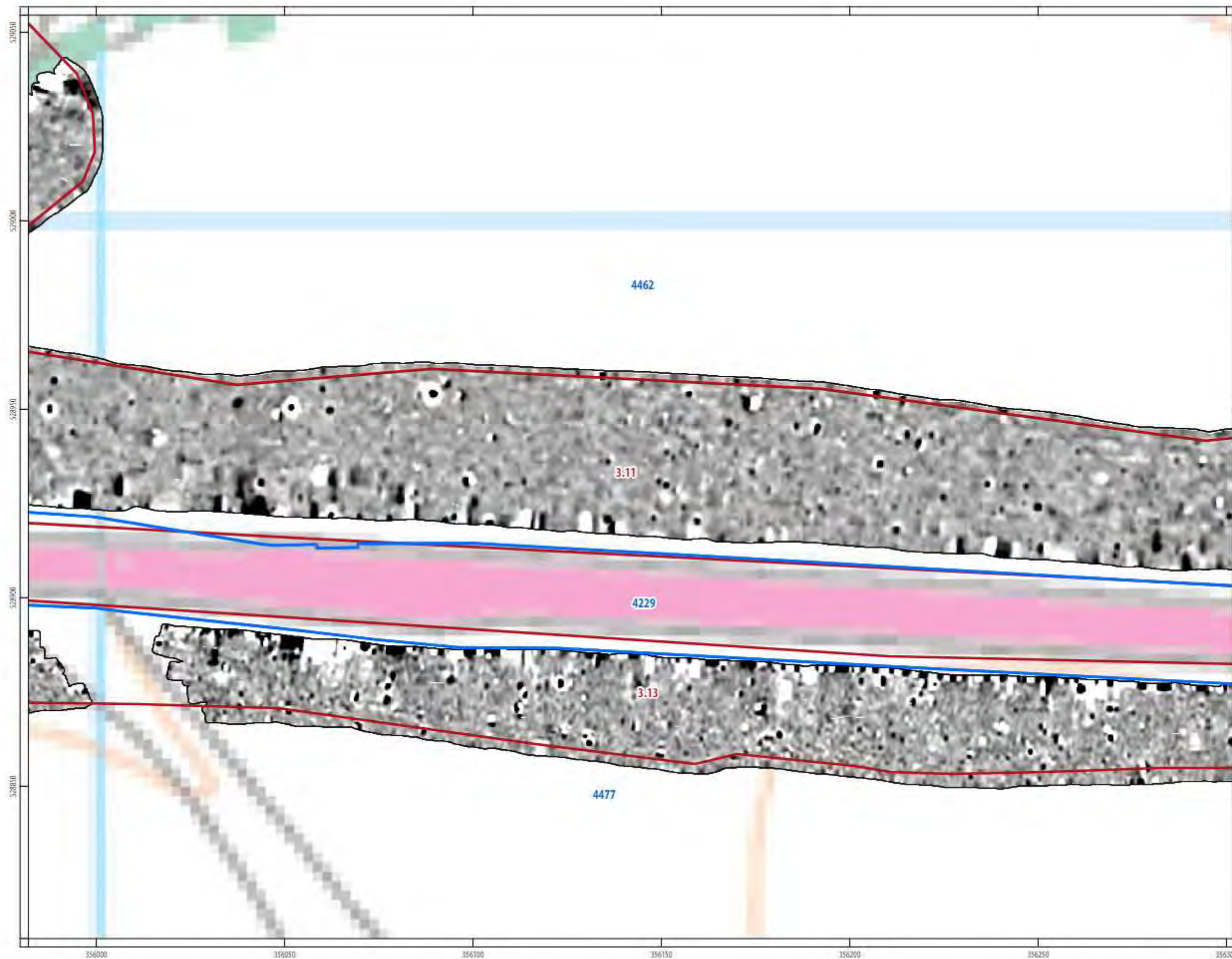
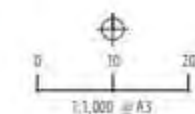


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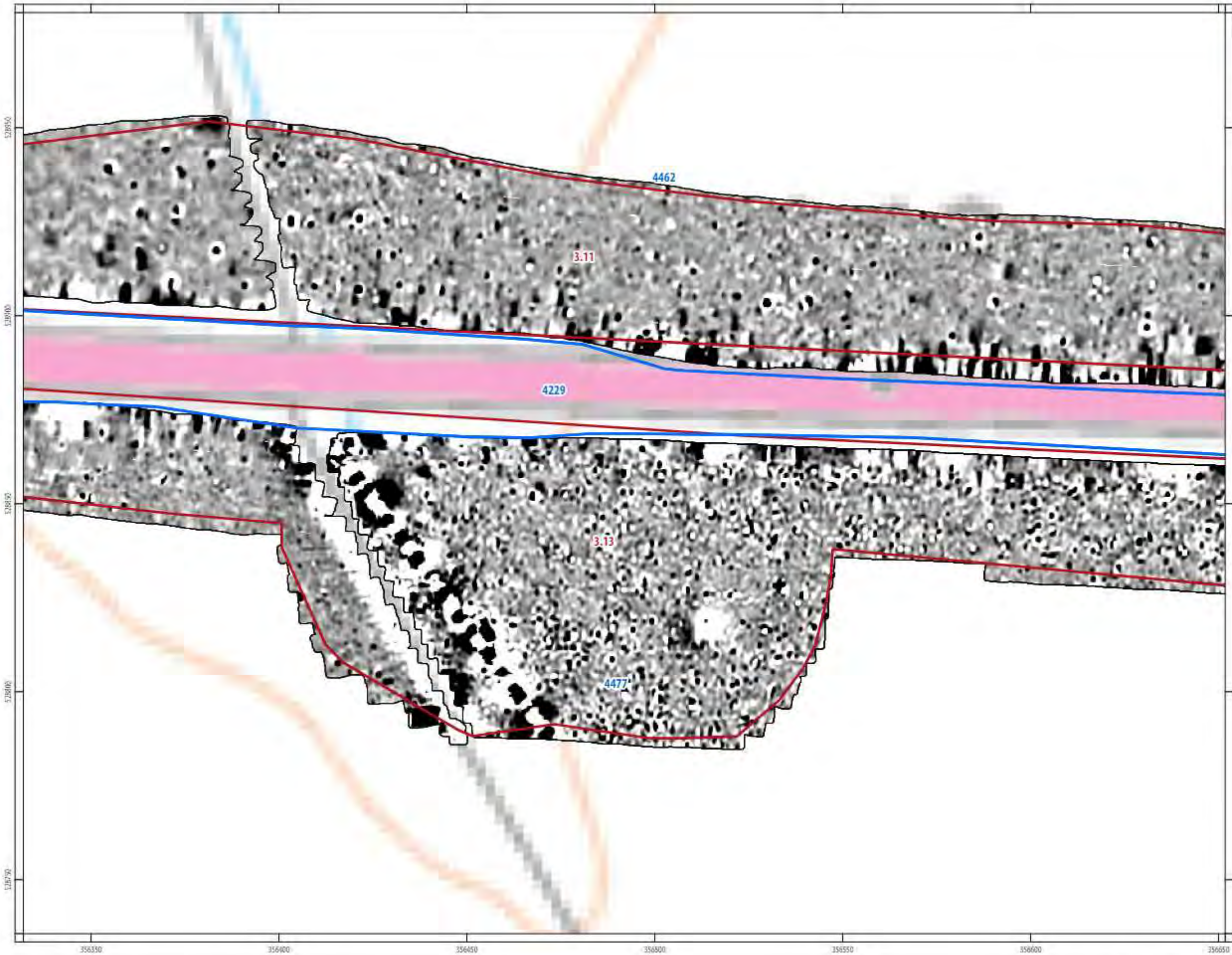
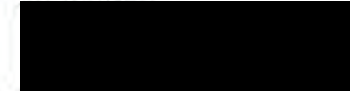
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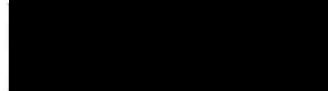


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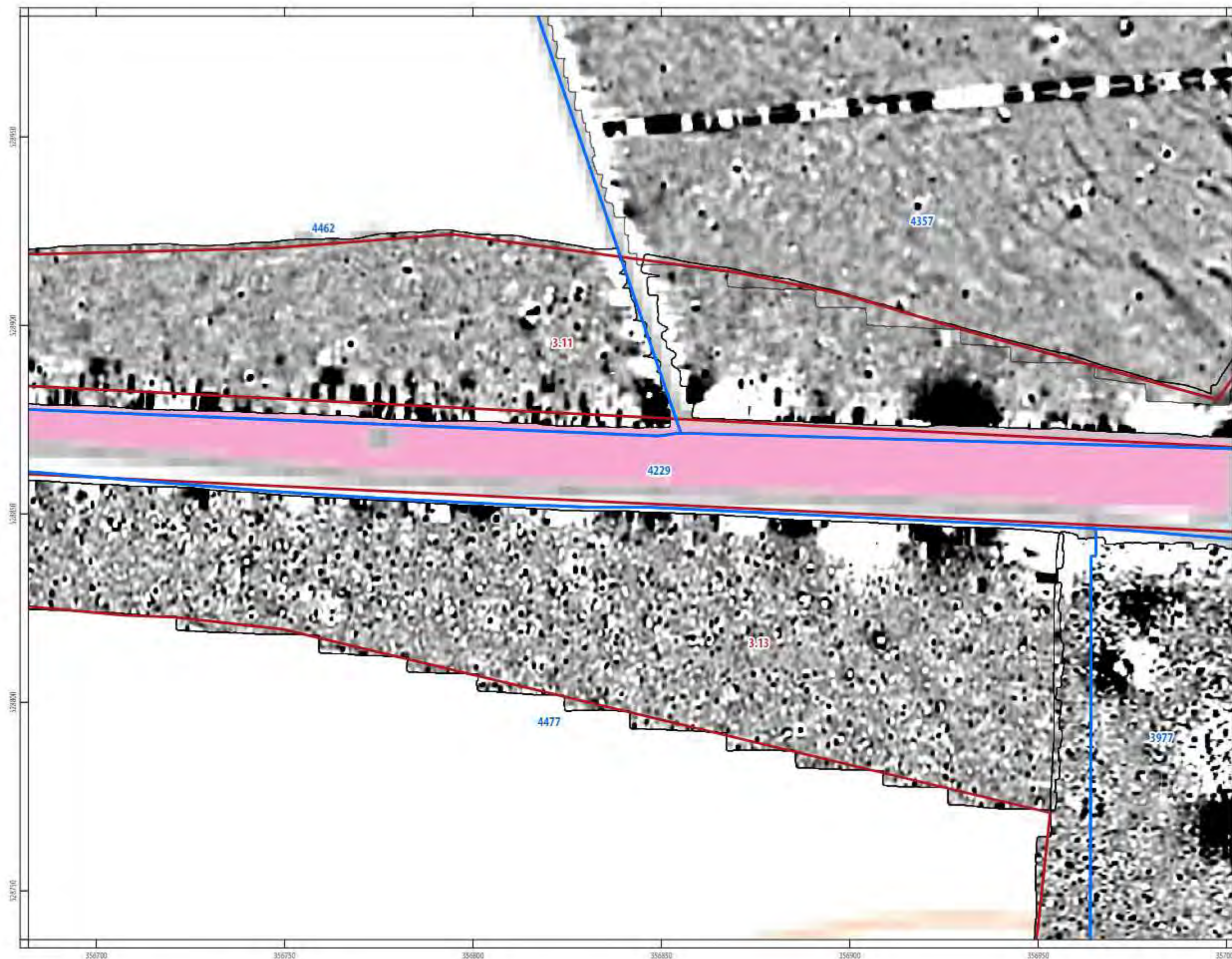
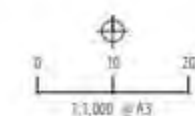


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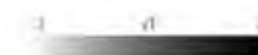
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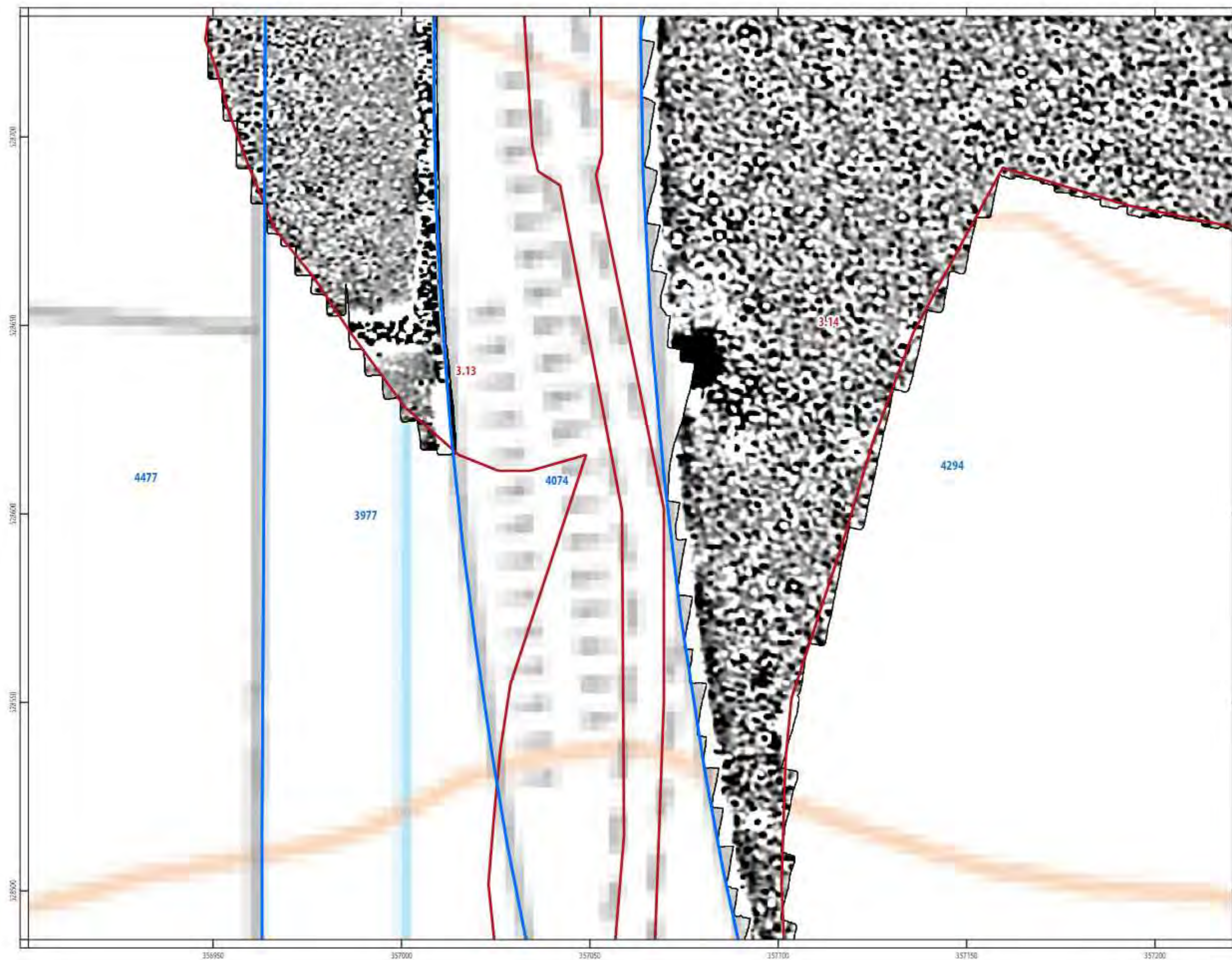
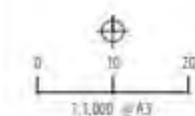


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ATFU20 - A66 Transpennine Upgrade

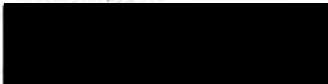
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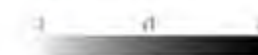


ILLUS 73 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
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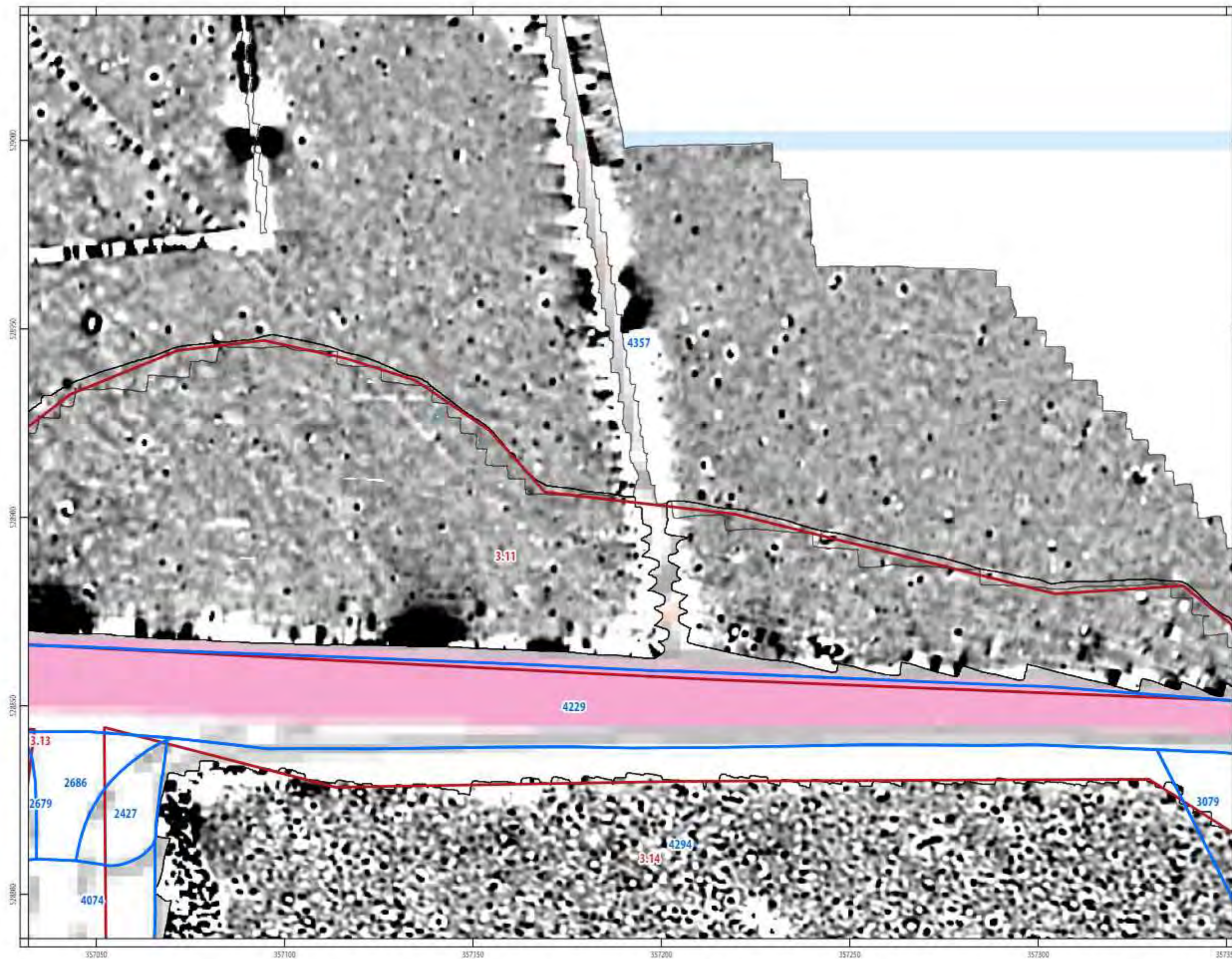
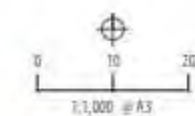


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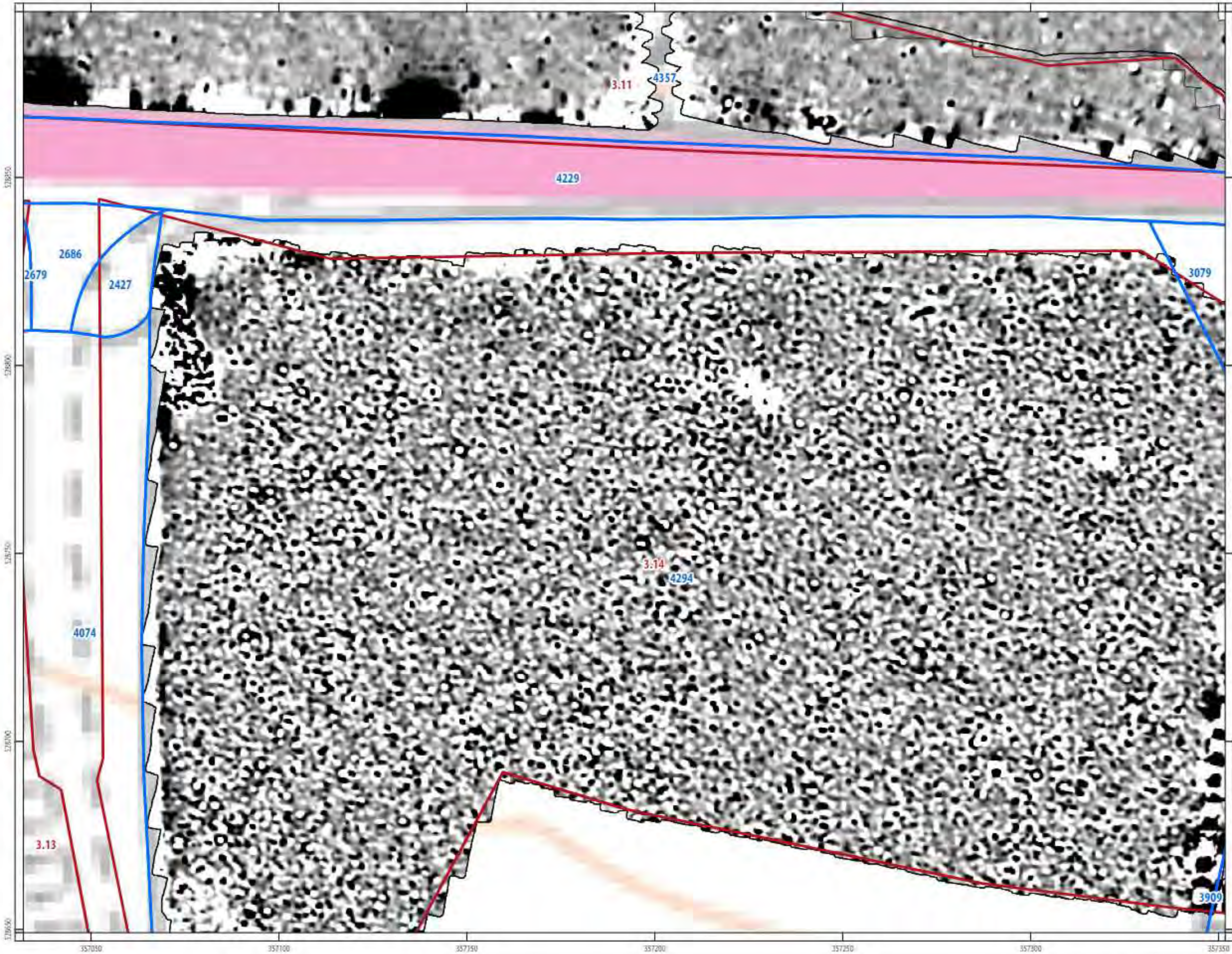
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- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▨ Scheduled Monument



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- Phase 1 Geophysical Survey Area
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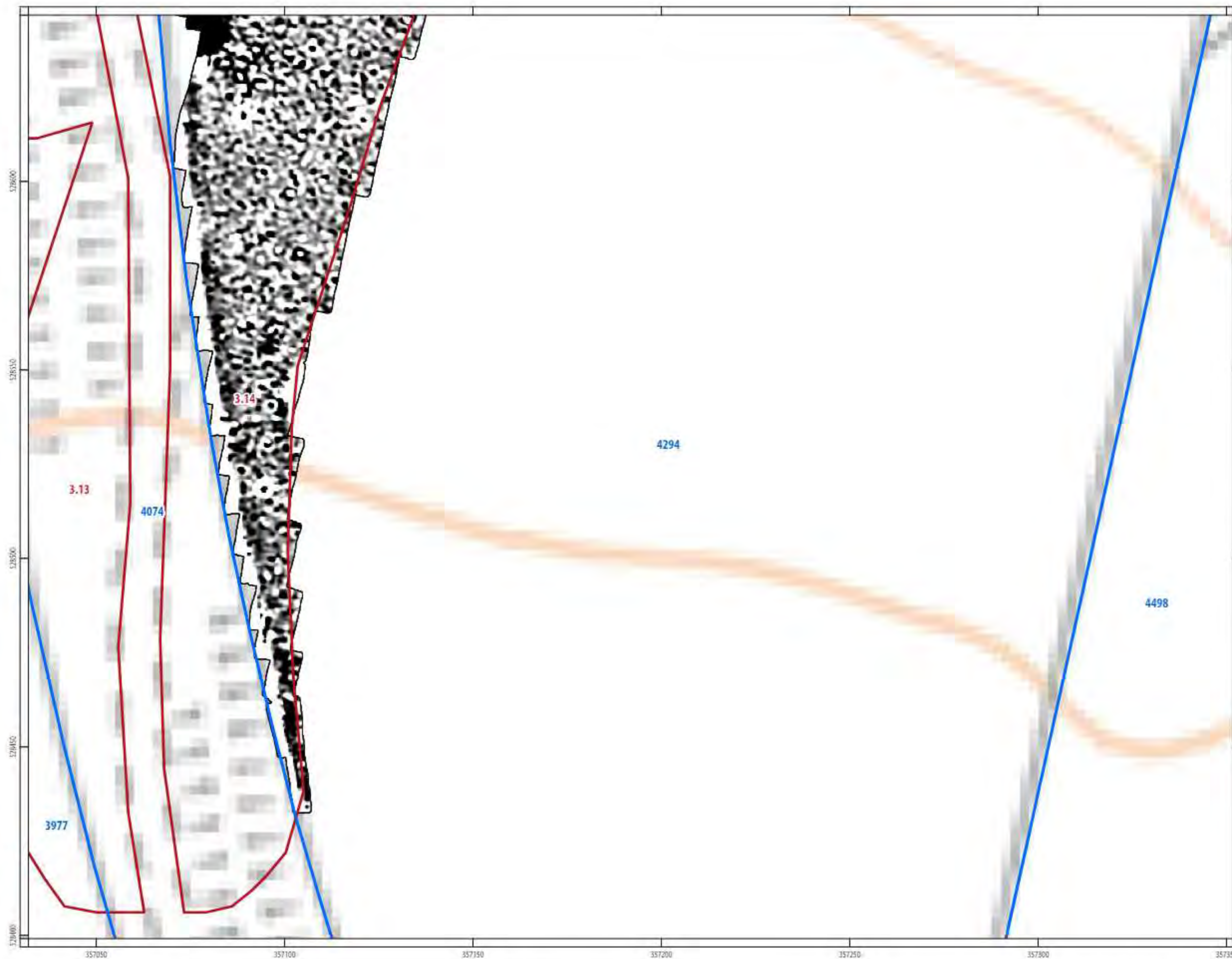
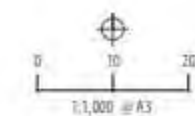


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ATFU20 - A66 Transpennine Upgrade

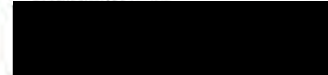
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ILLUS 76 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
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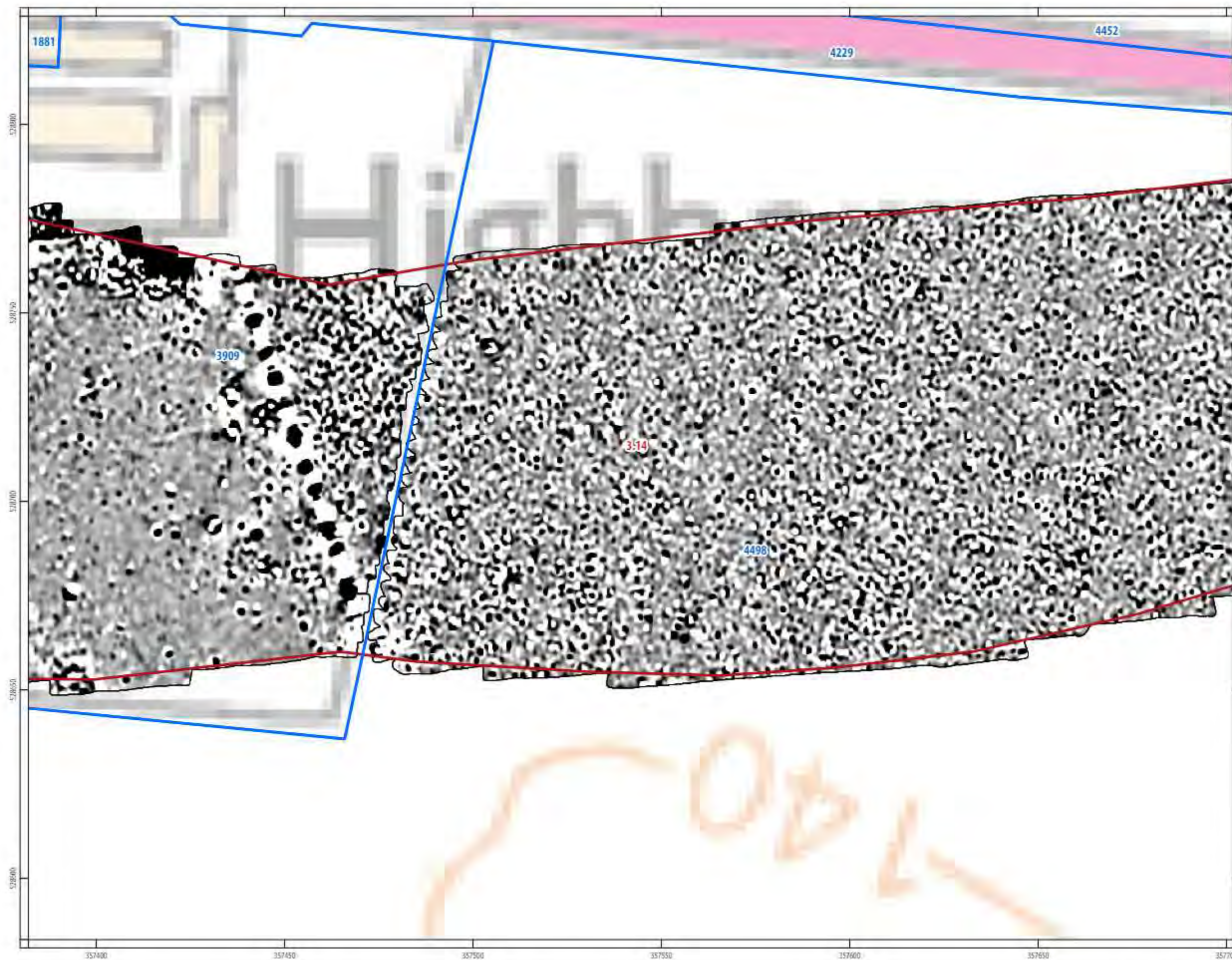
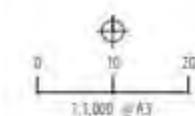


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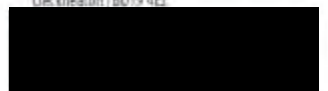
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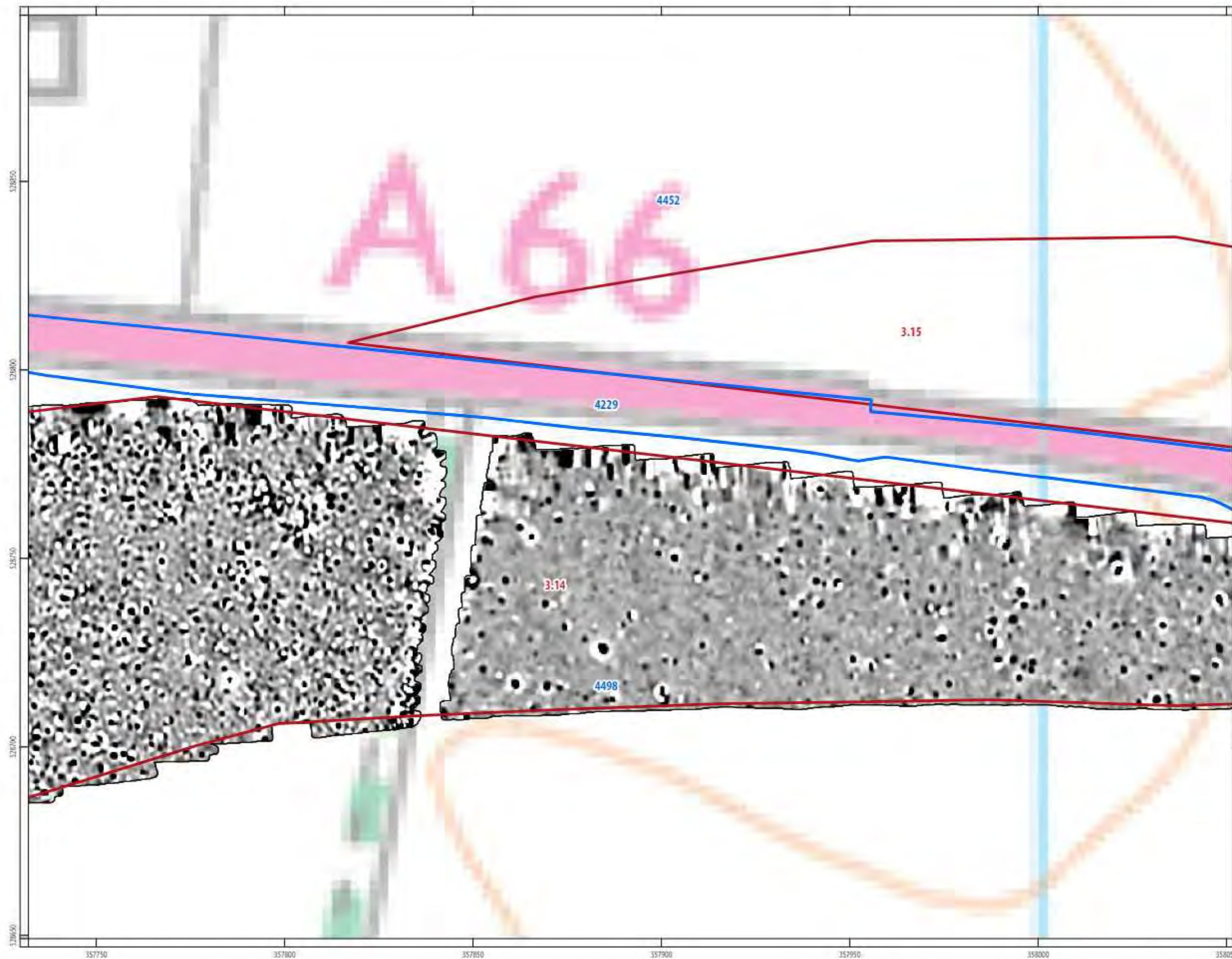
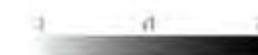
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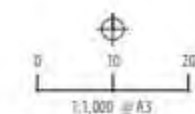


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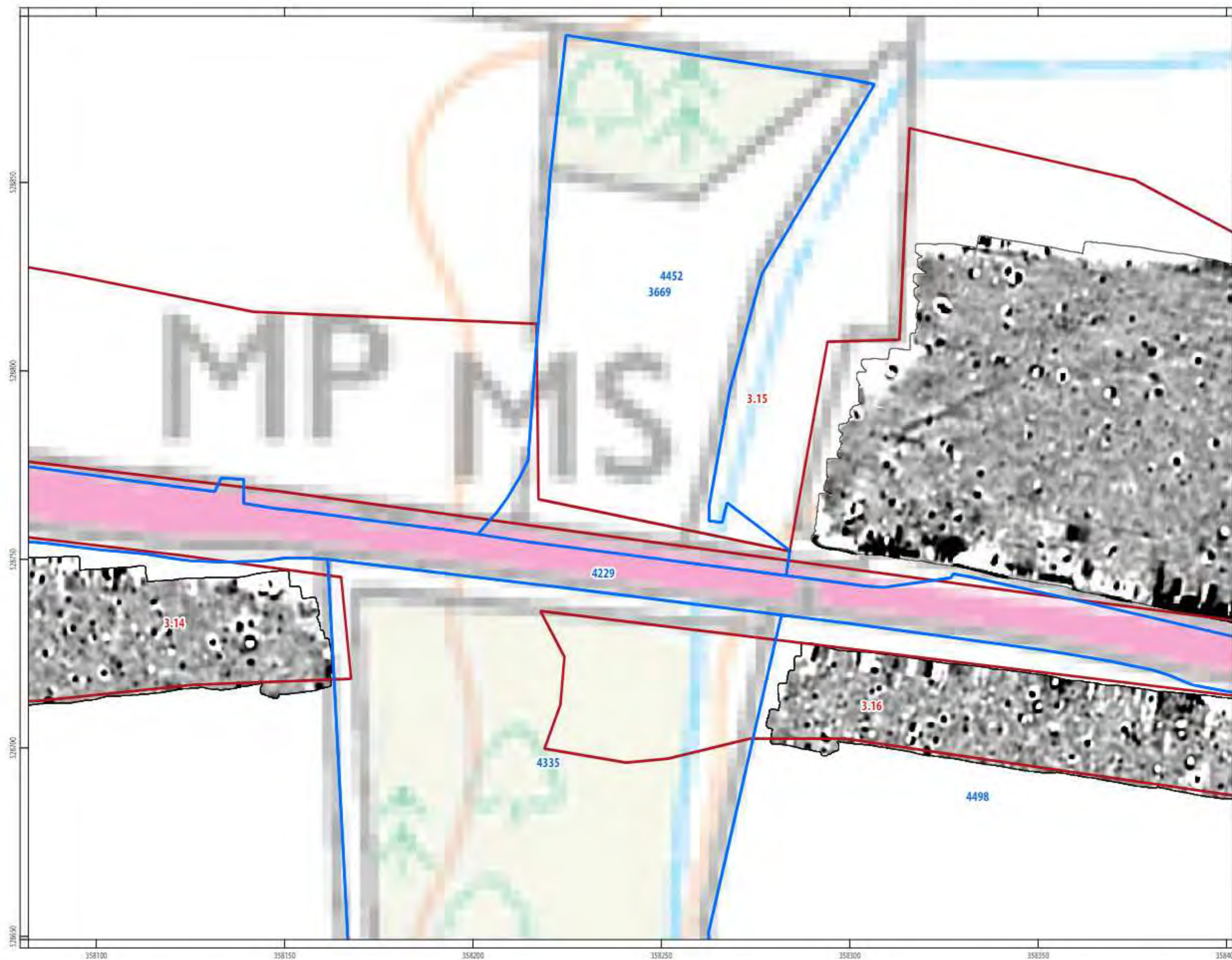
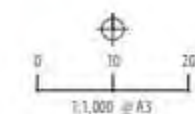


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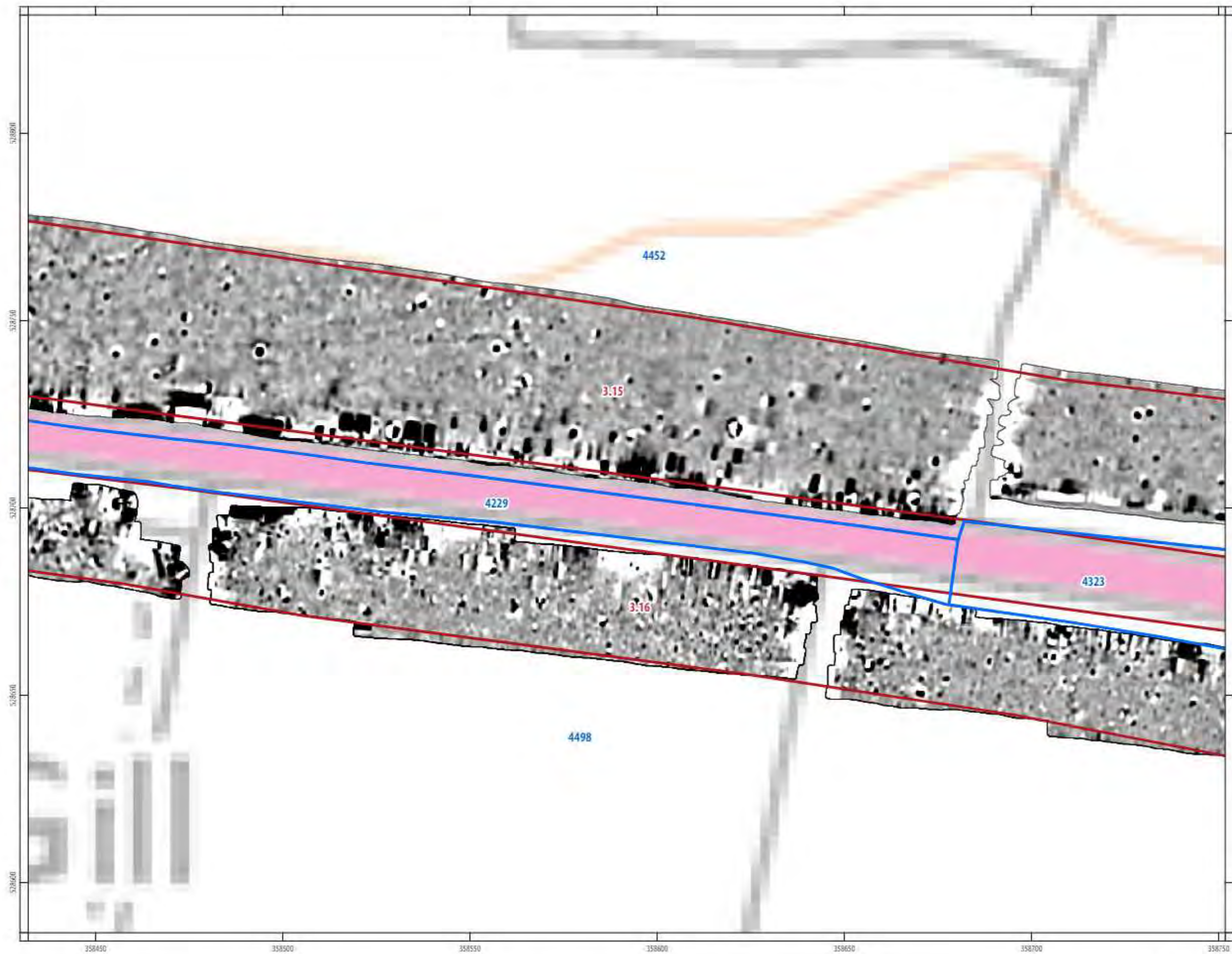
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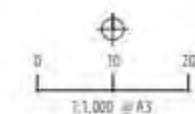


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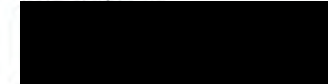
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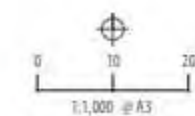


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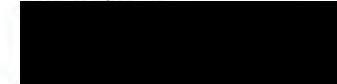
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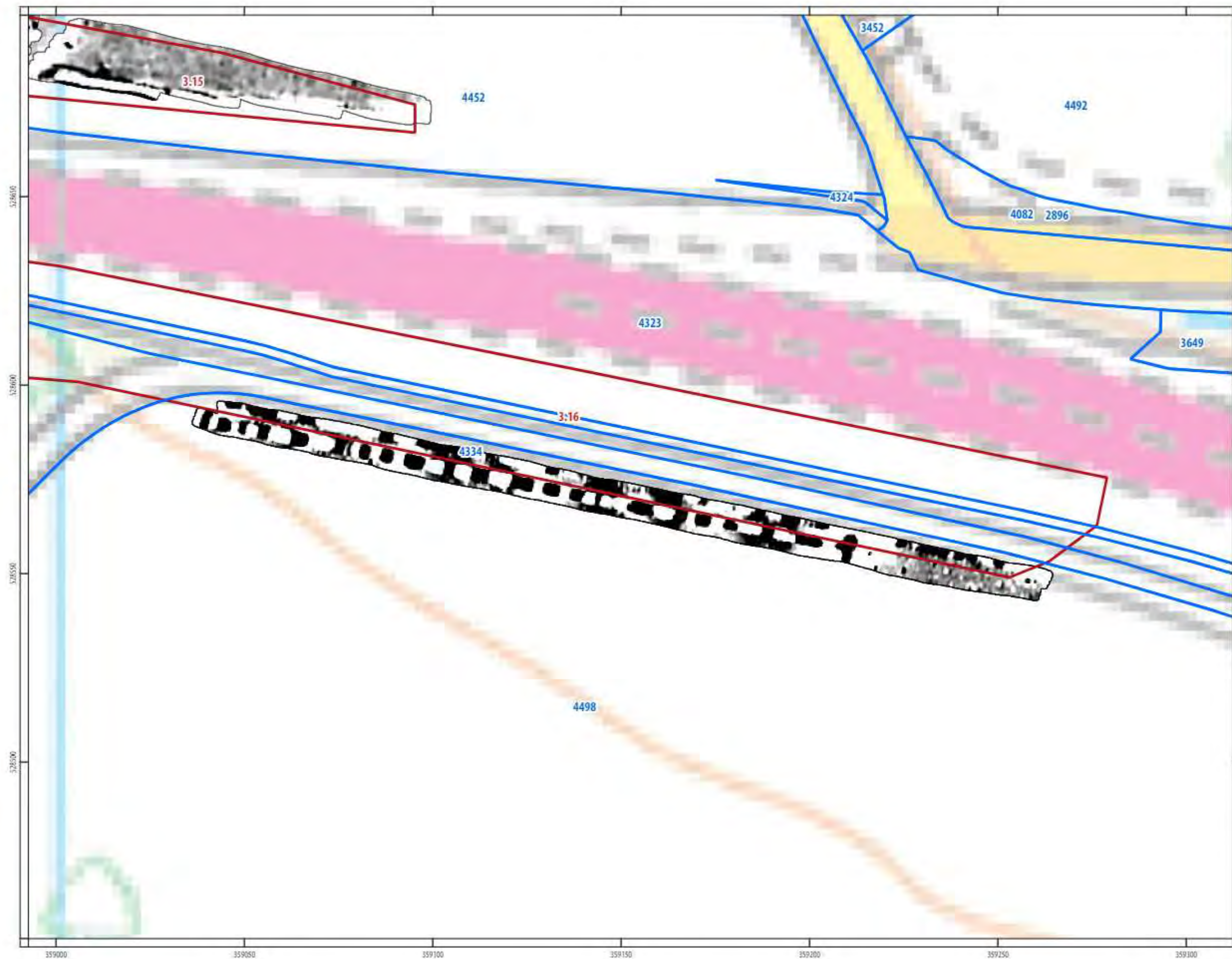
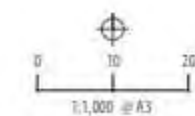


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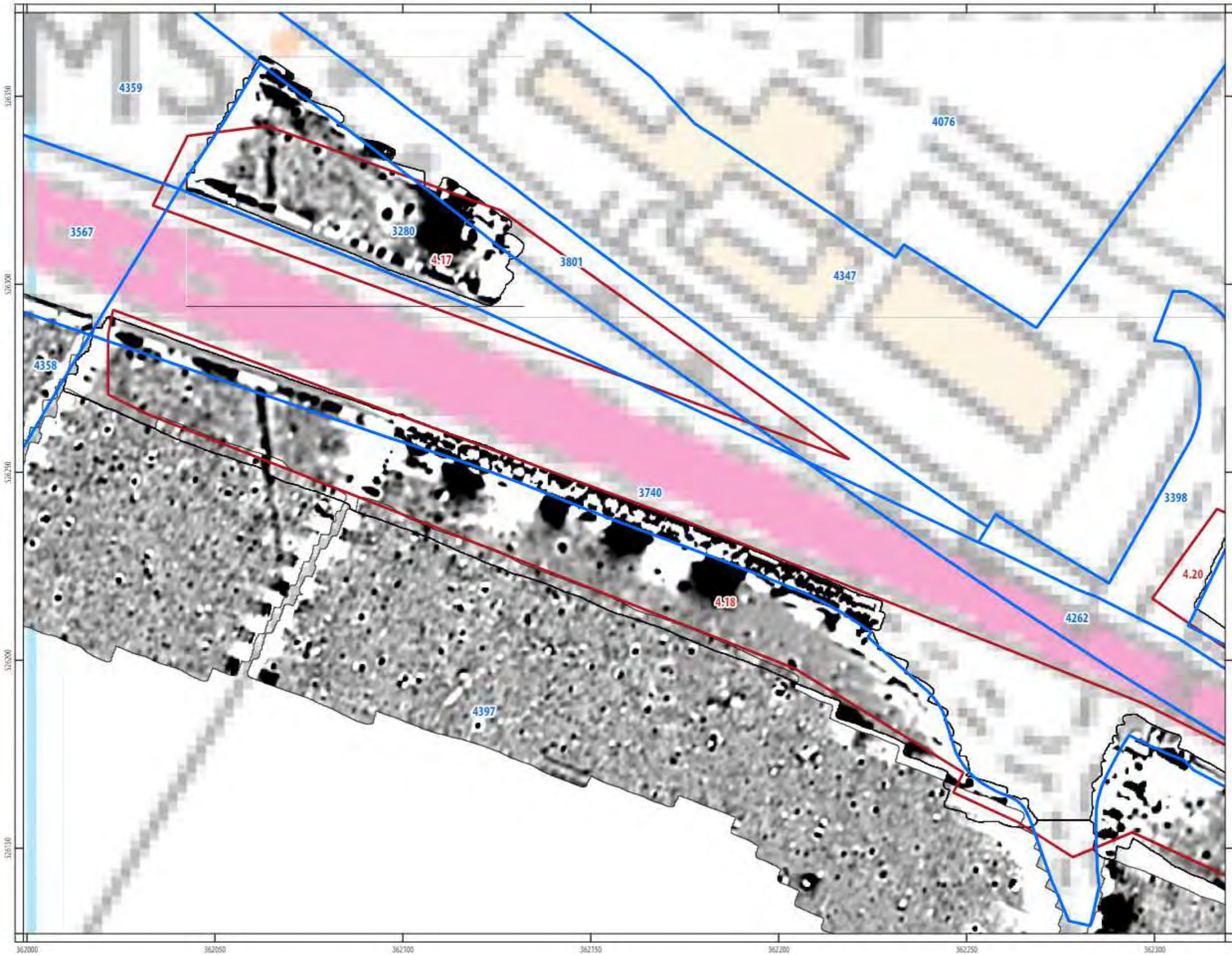
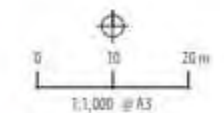


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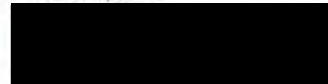


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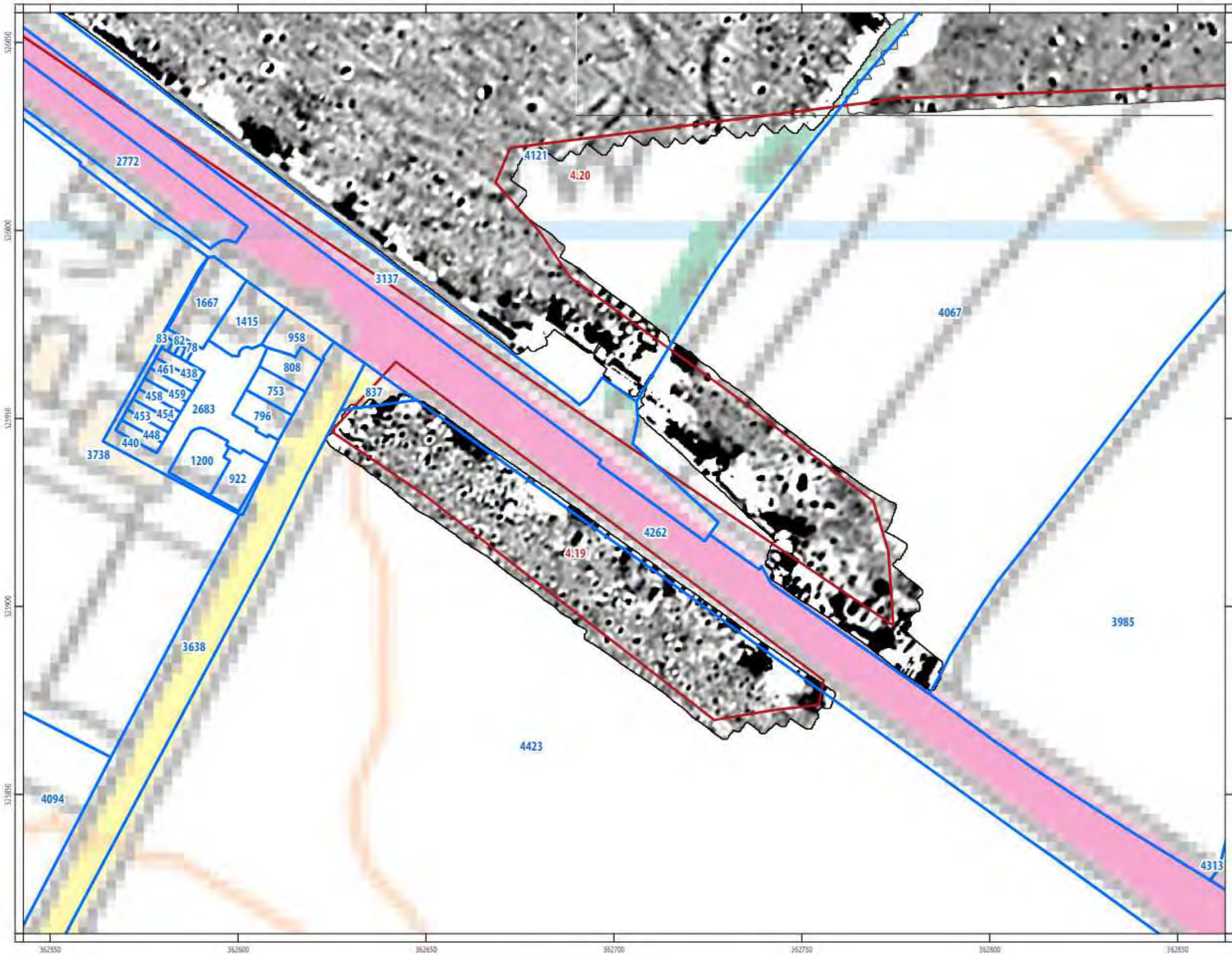


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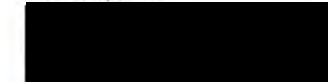


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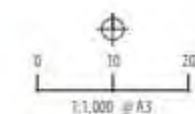


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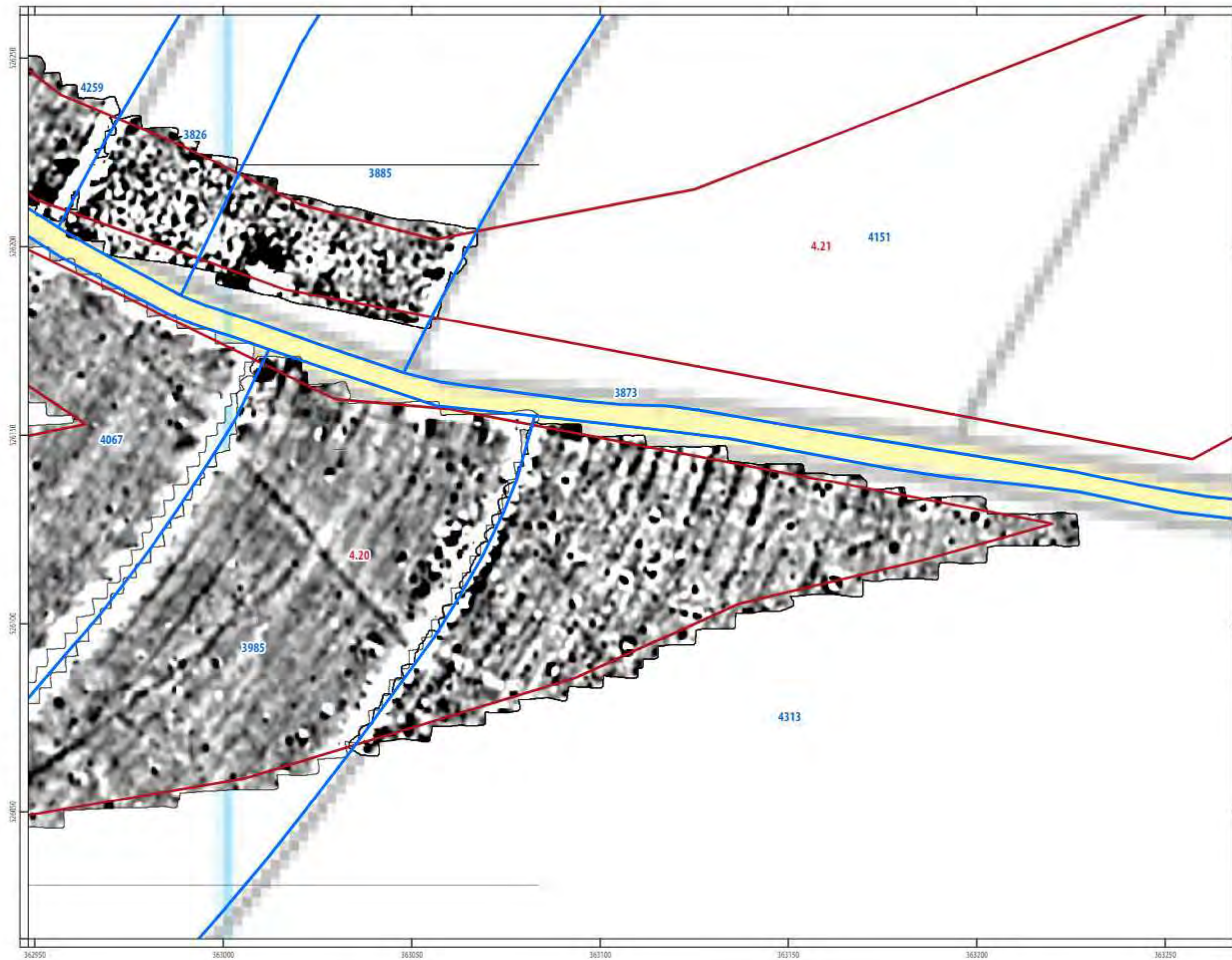
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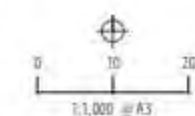


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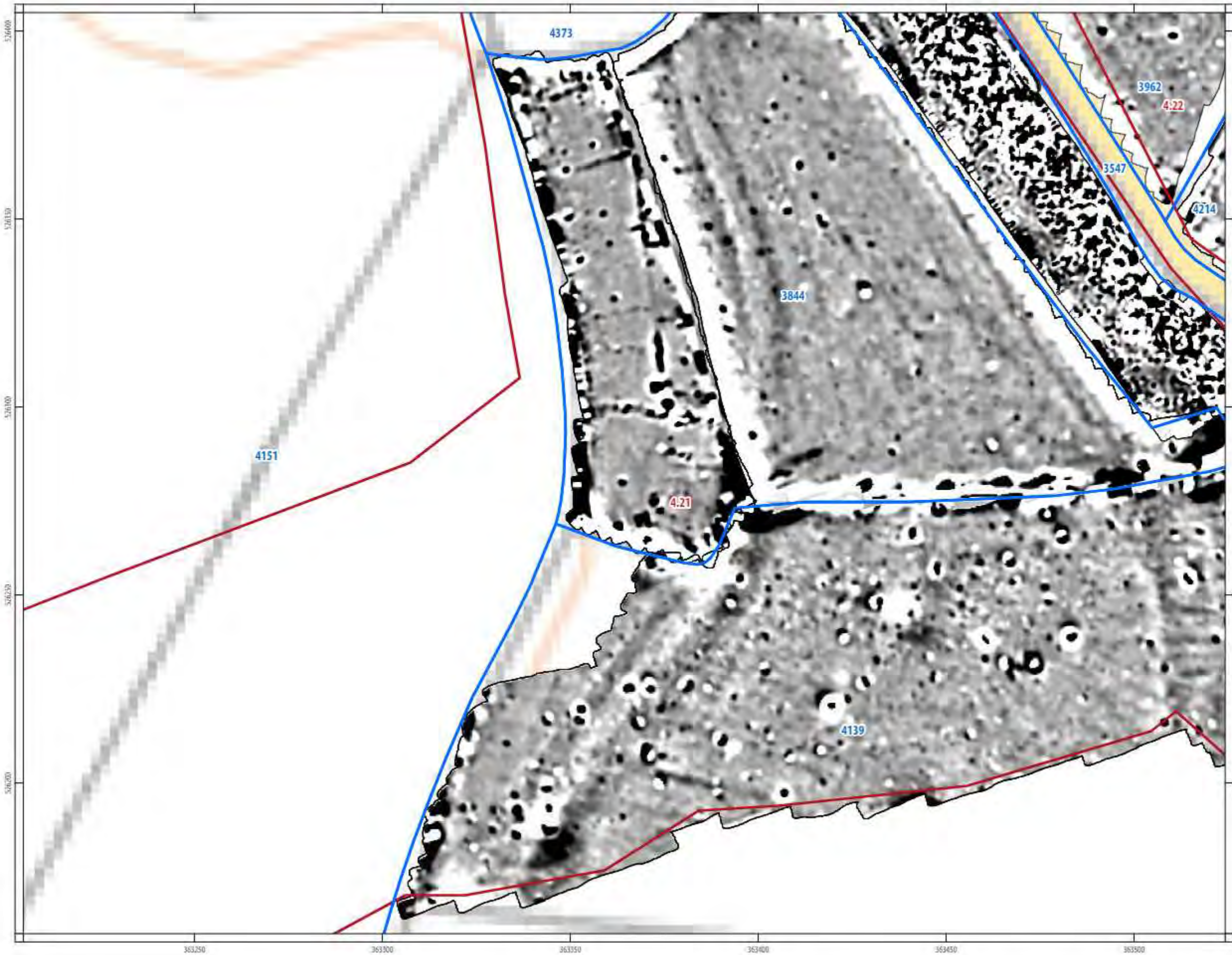
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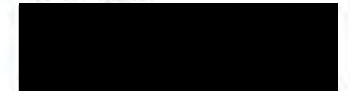
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Headland Archaeology Yorkshire & North  
Units 23-25 | Acom Business Centre | Balme Road  
Uckfield | BN19 4EJ



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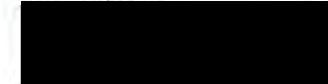


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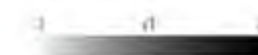
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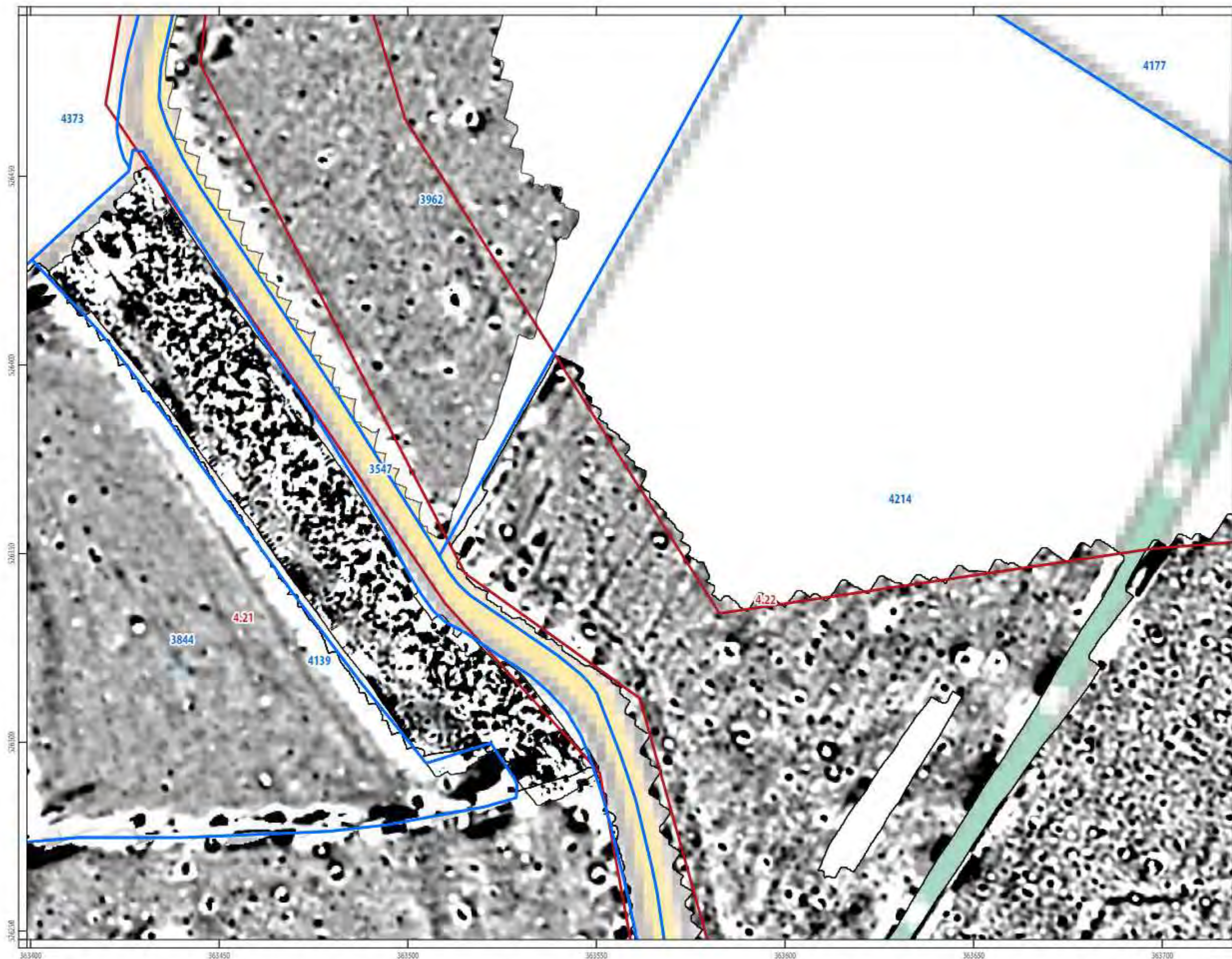
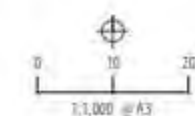


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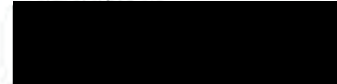
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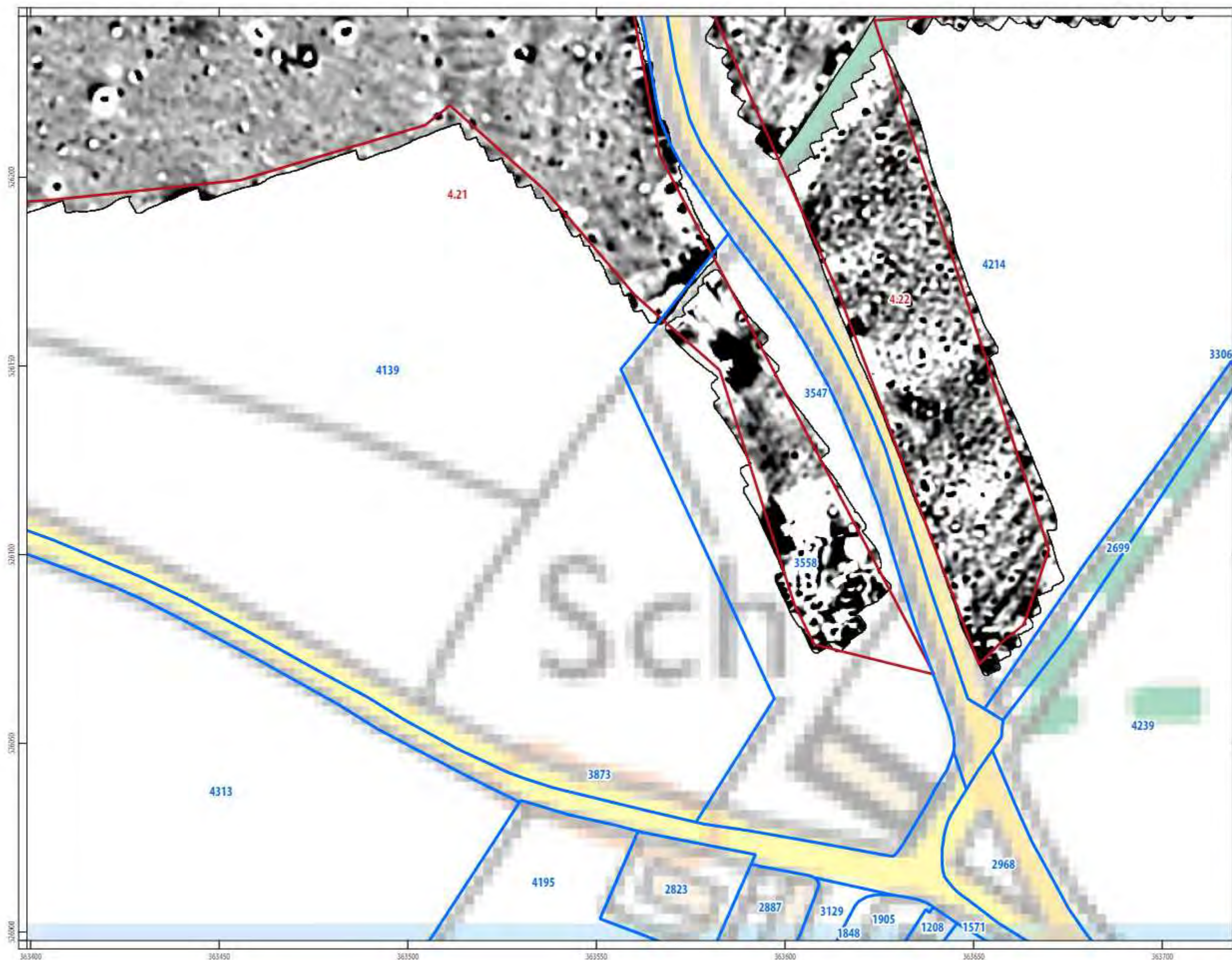
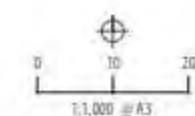


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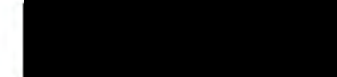


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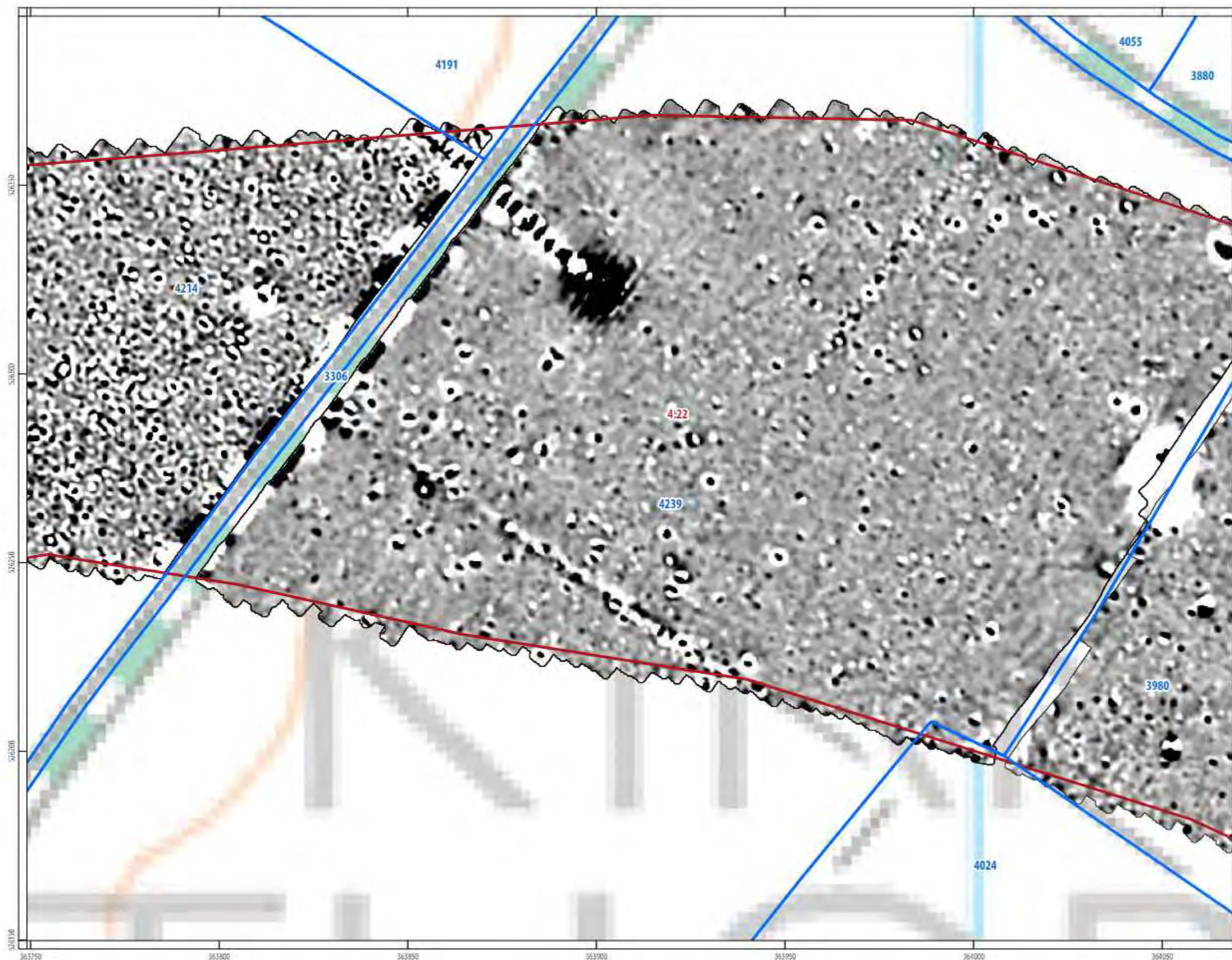
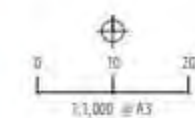


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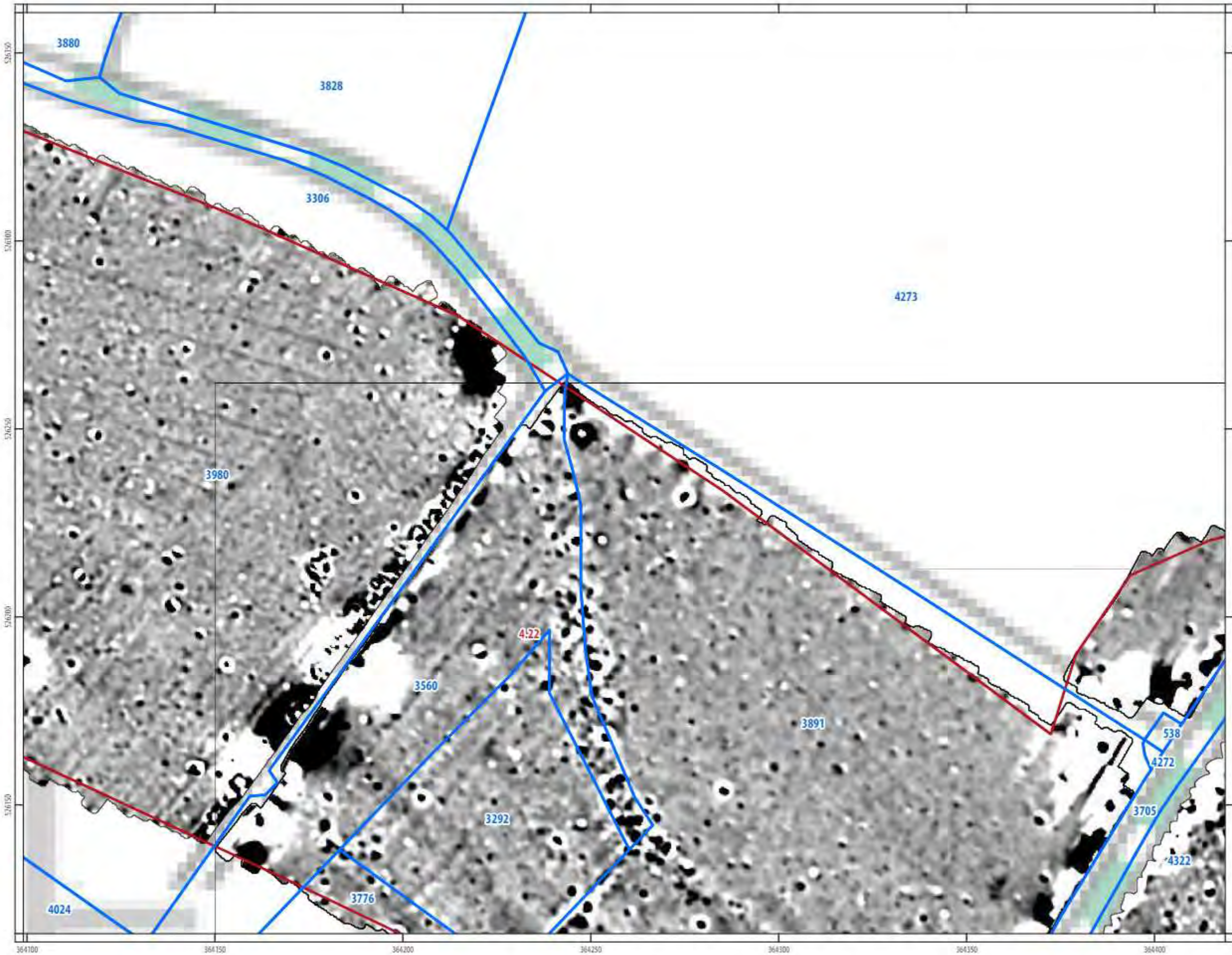
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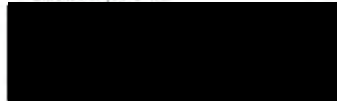


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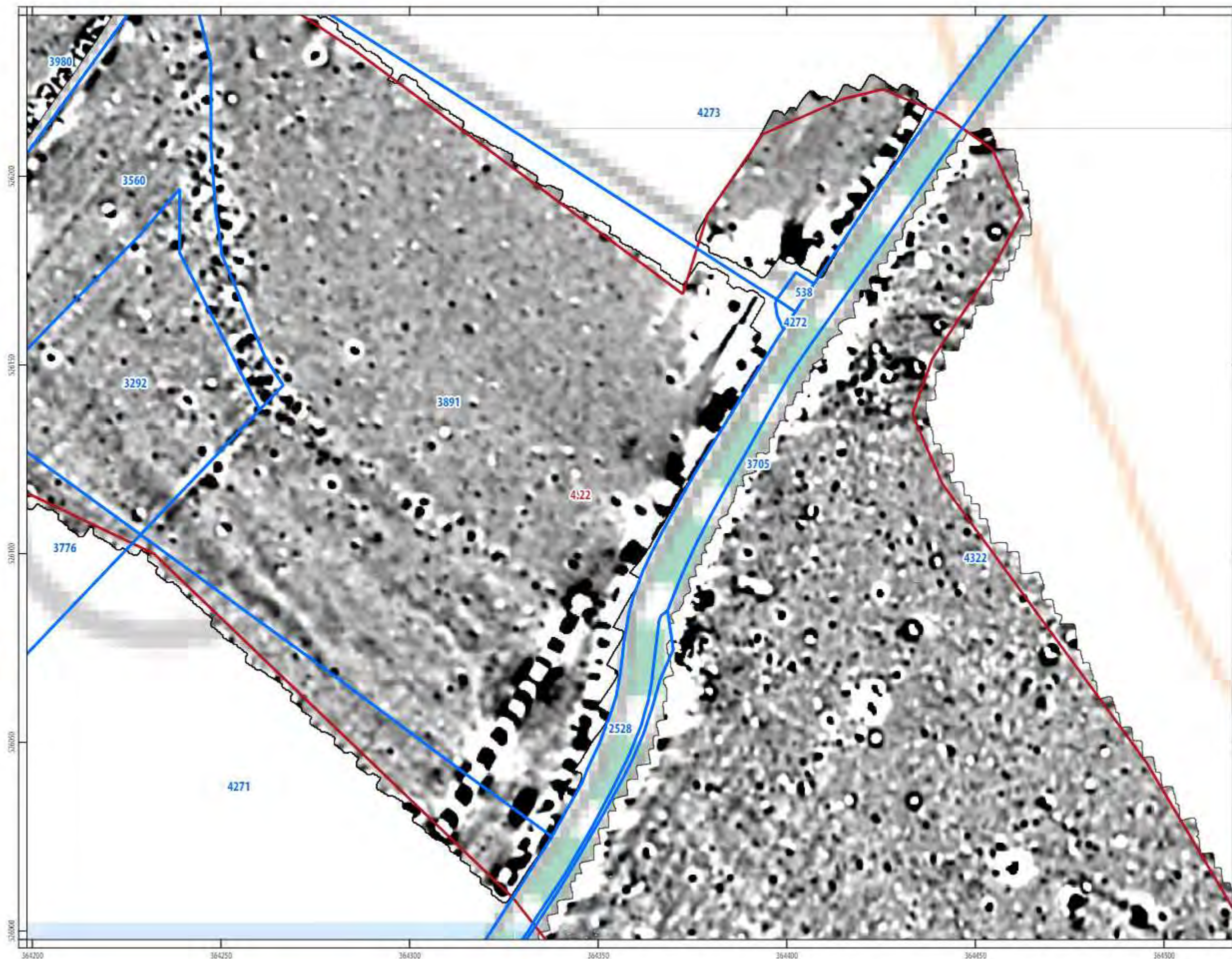
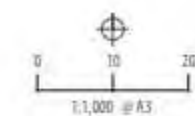


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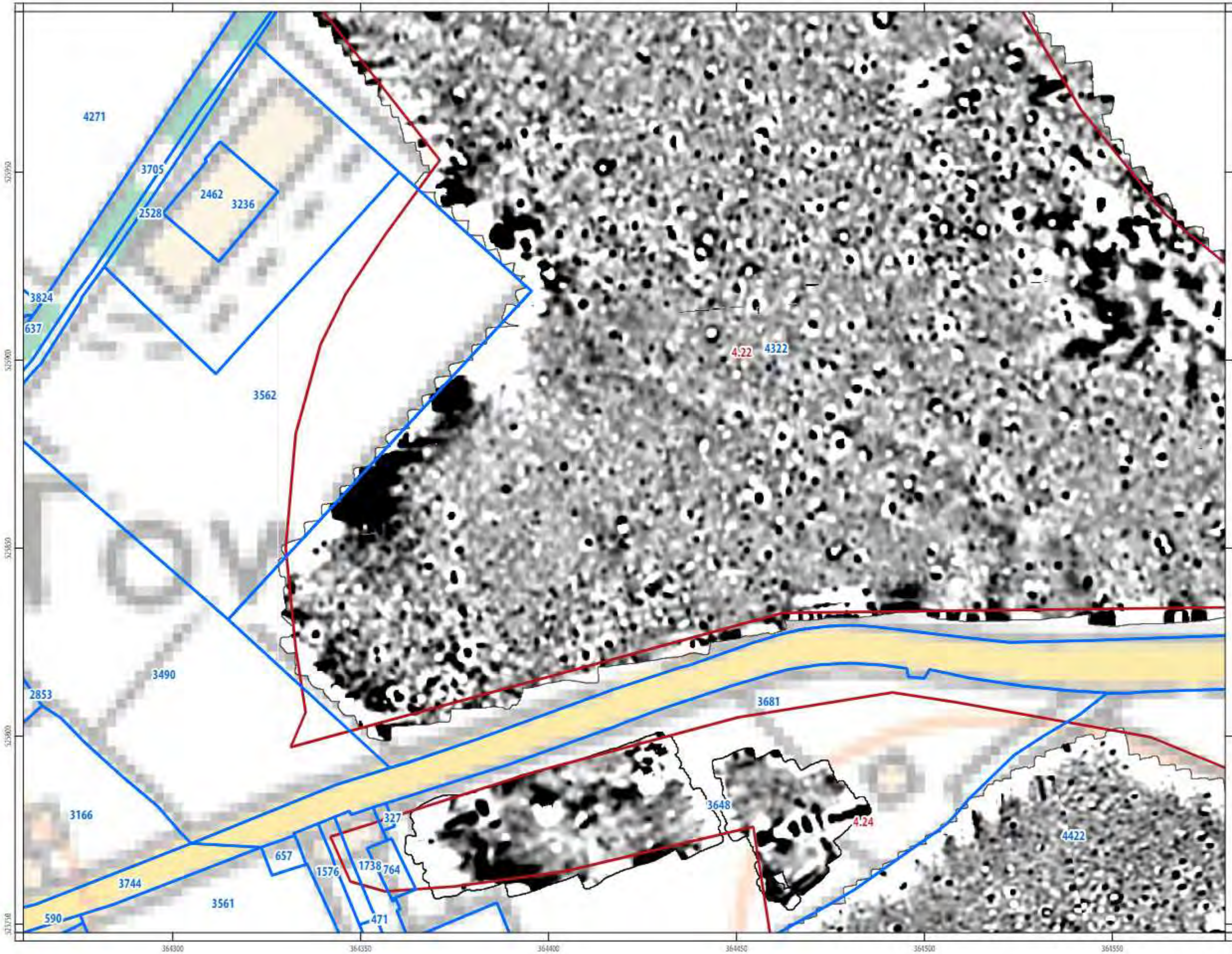
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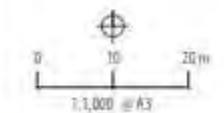


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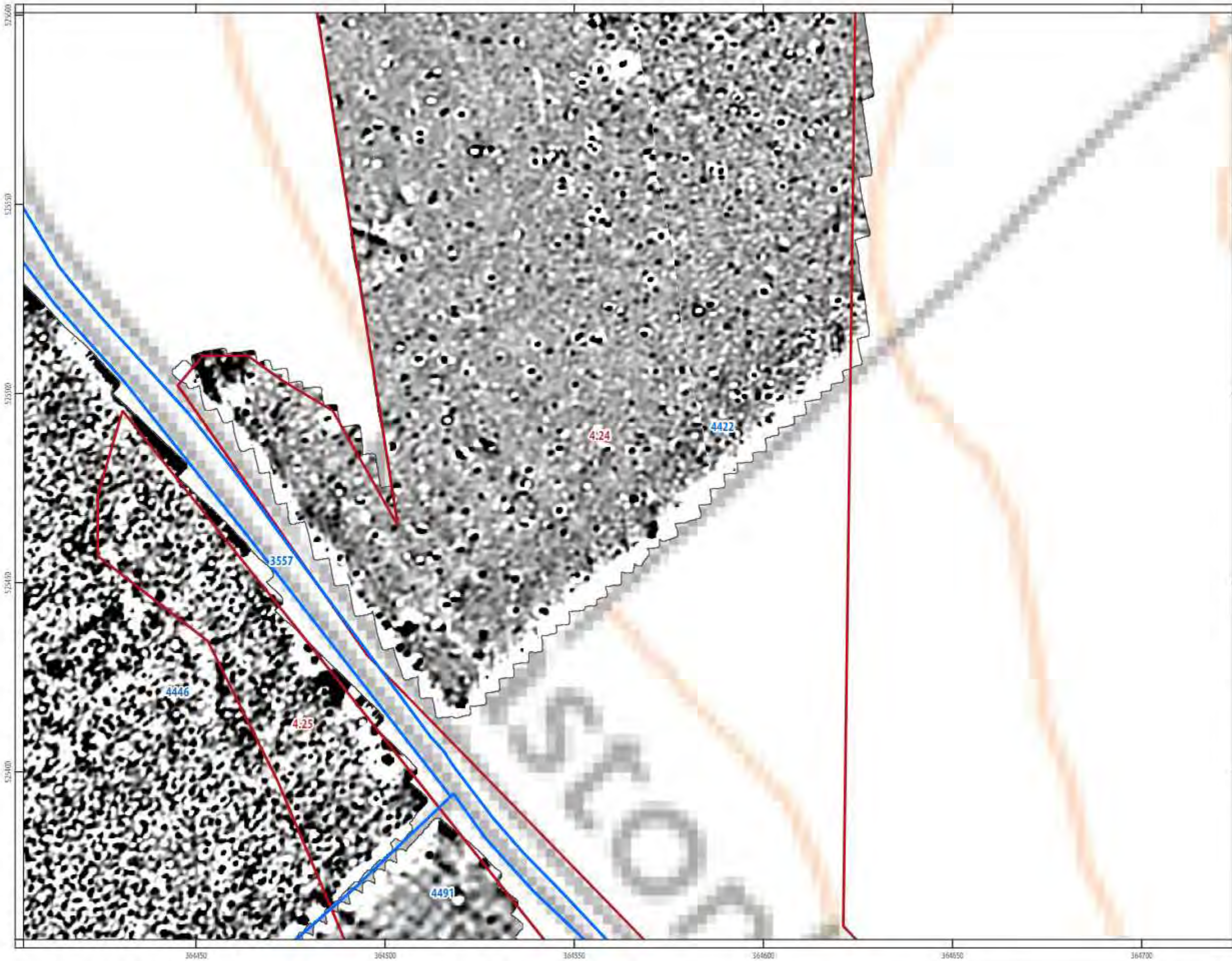


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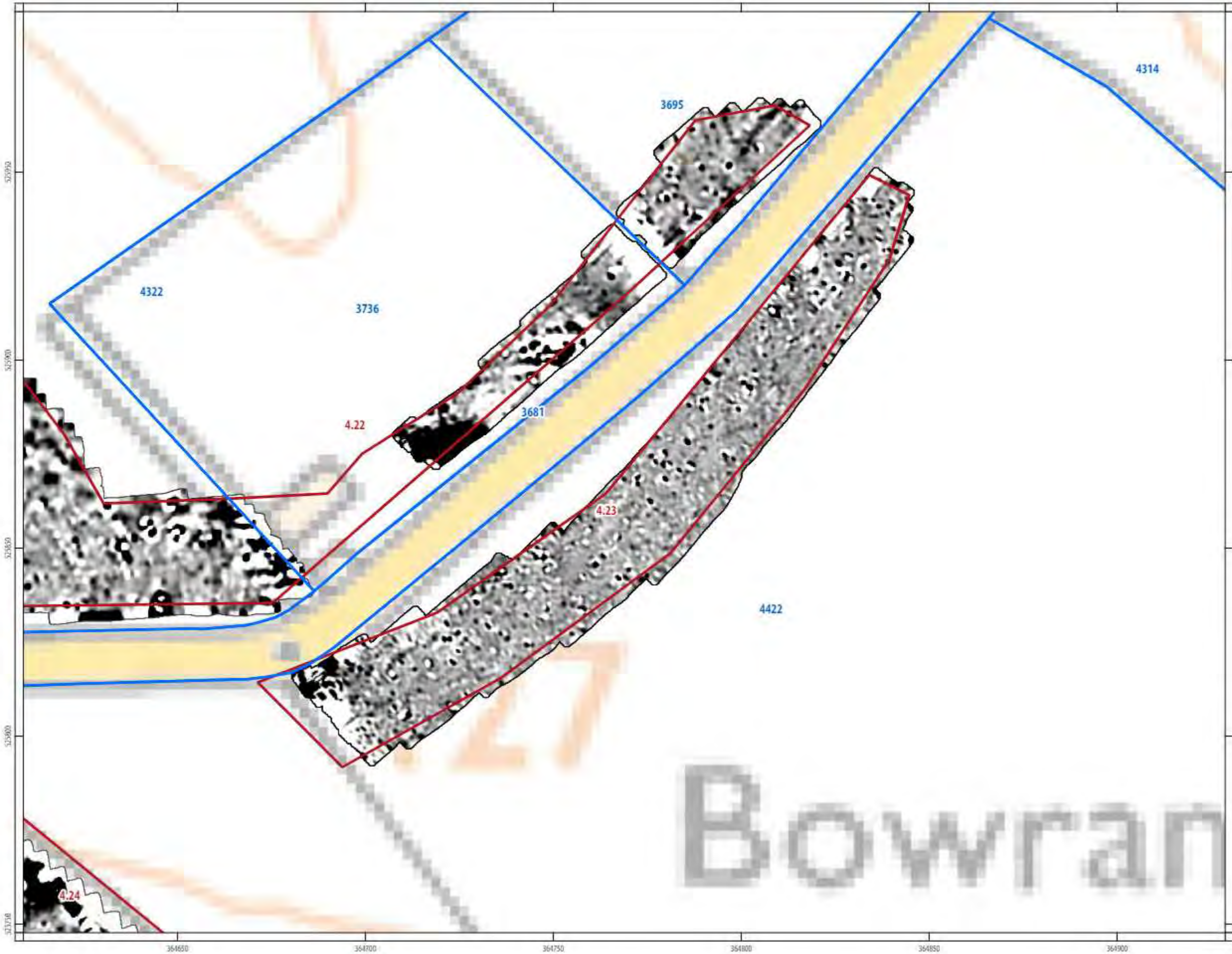
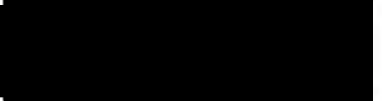
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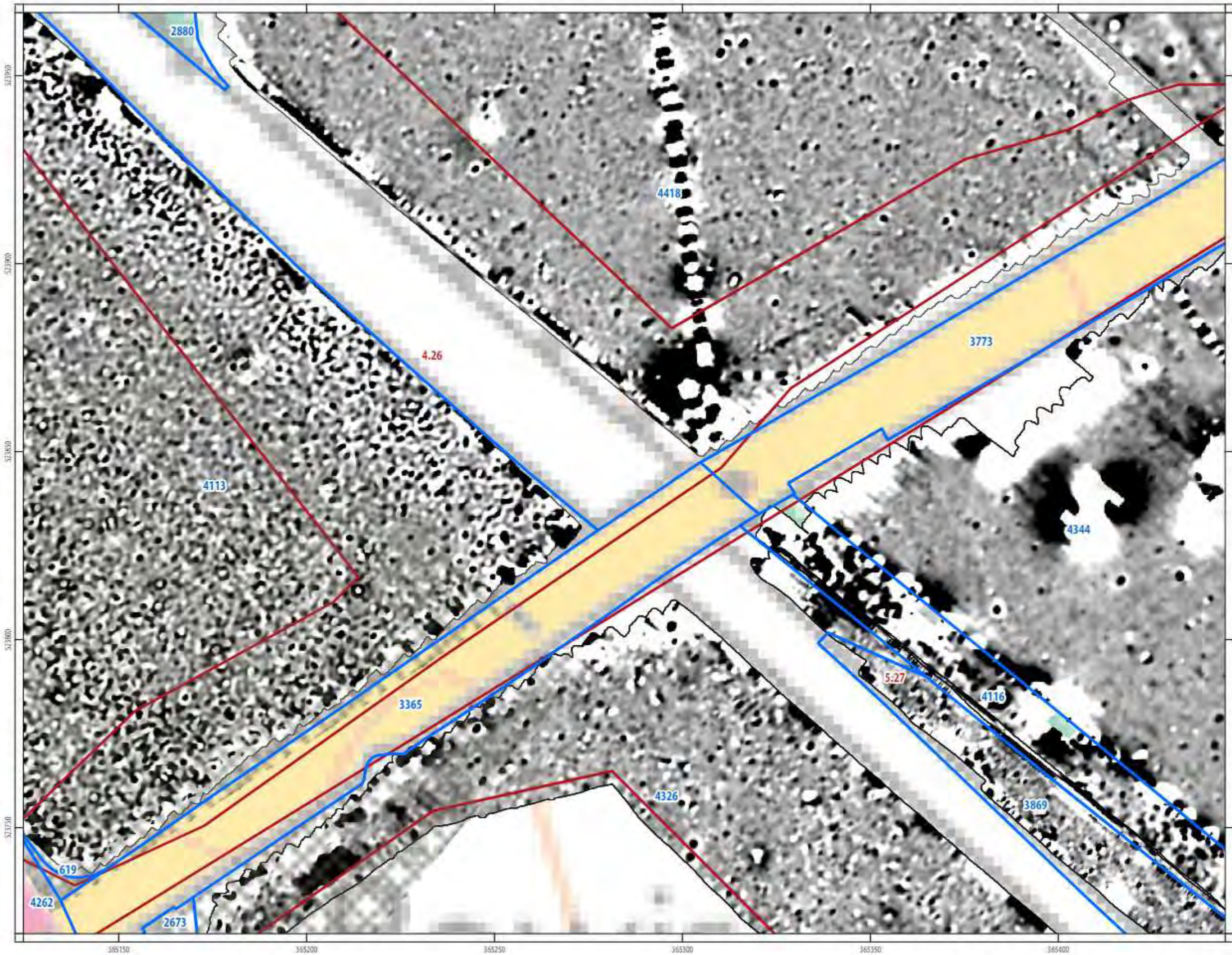


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



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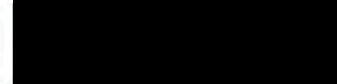
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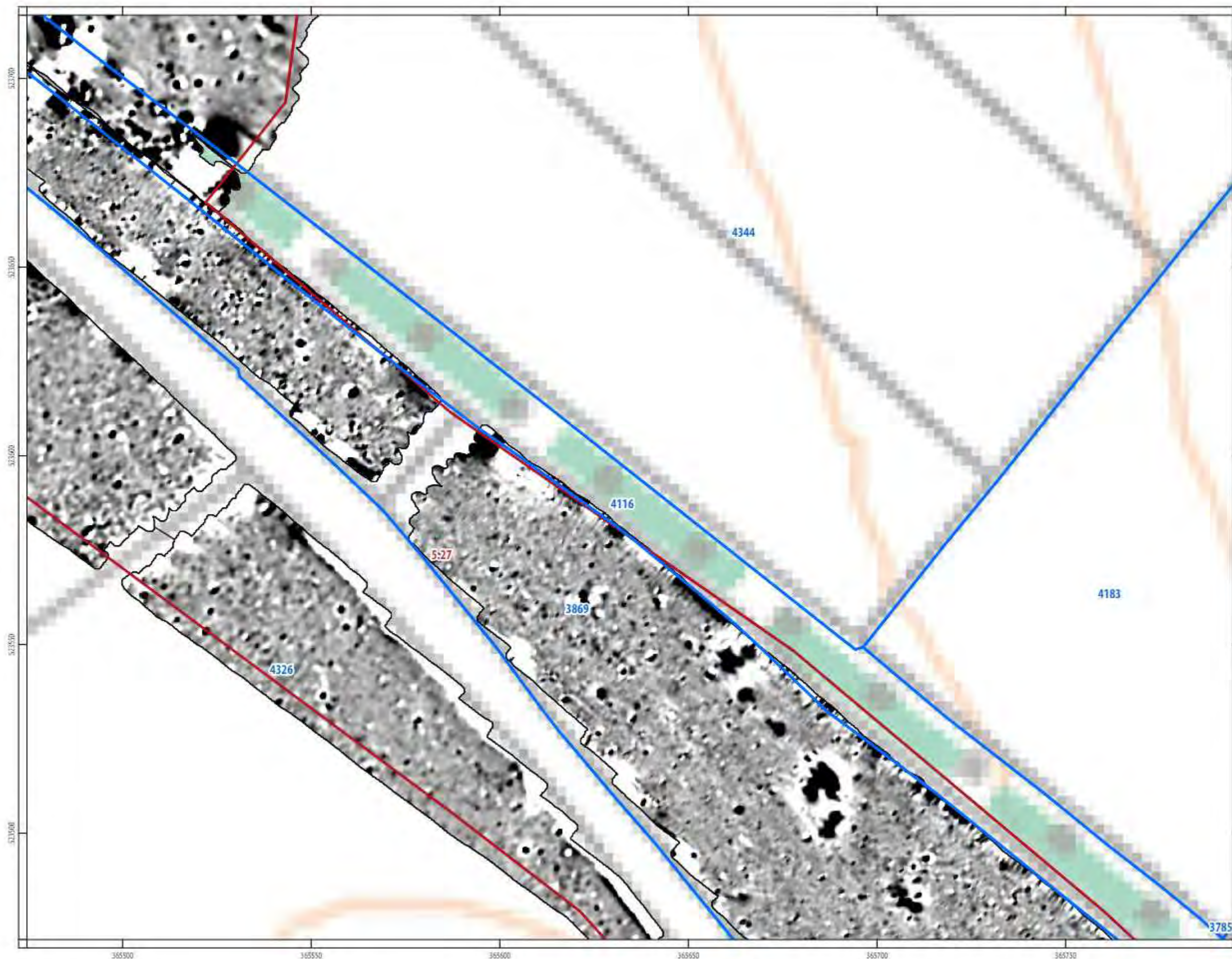
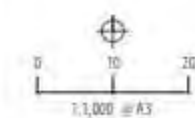


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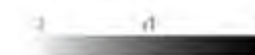
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-  Phase 1 Geophysical Survey Area
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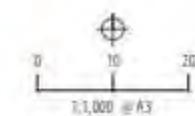


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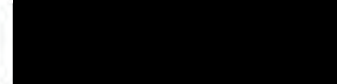
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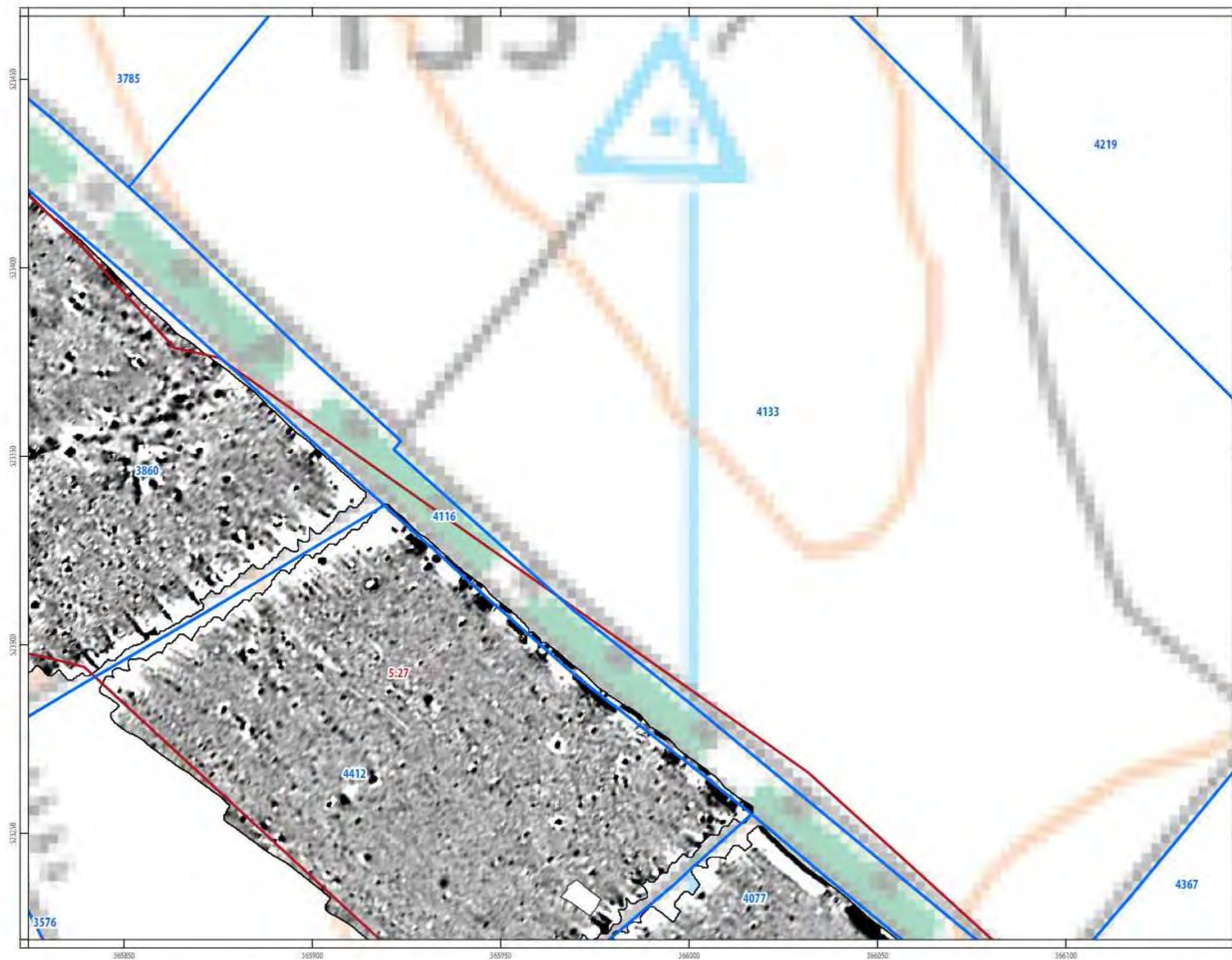
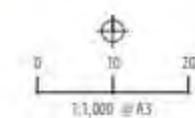


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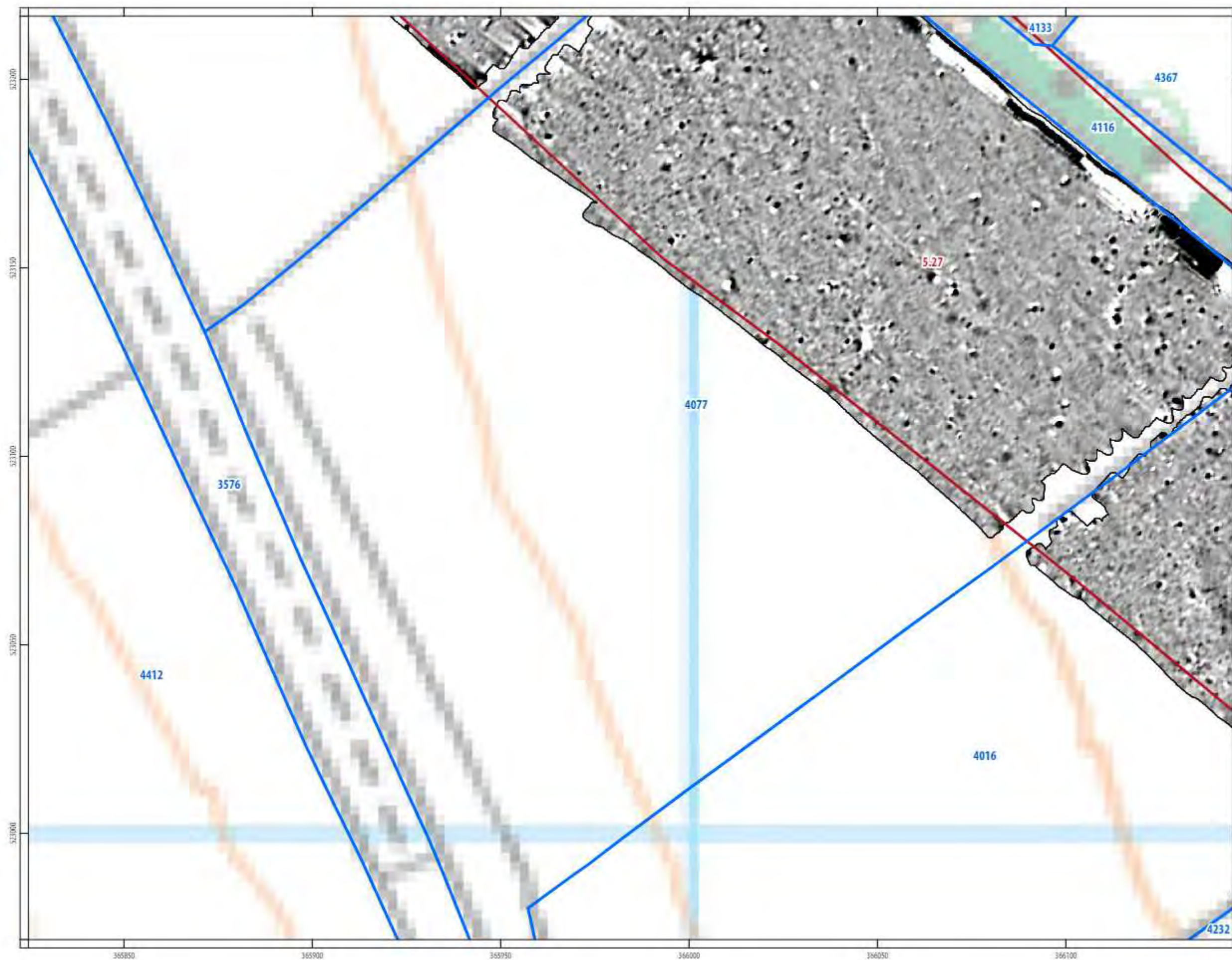
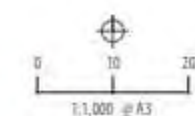


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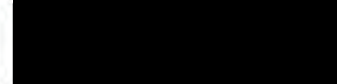
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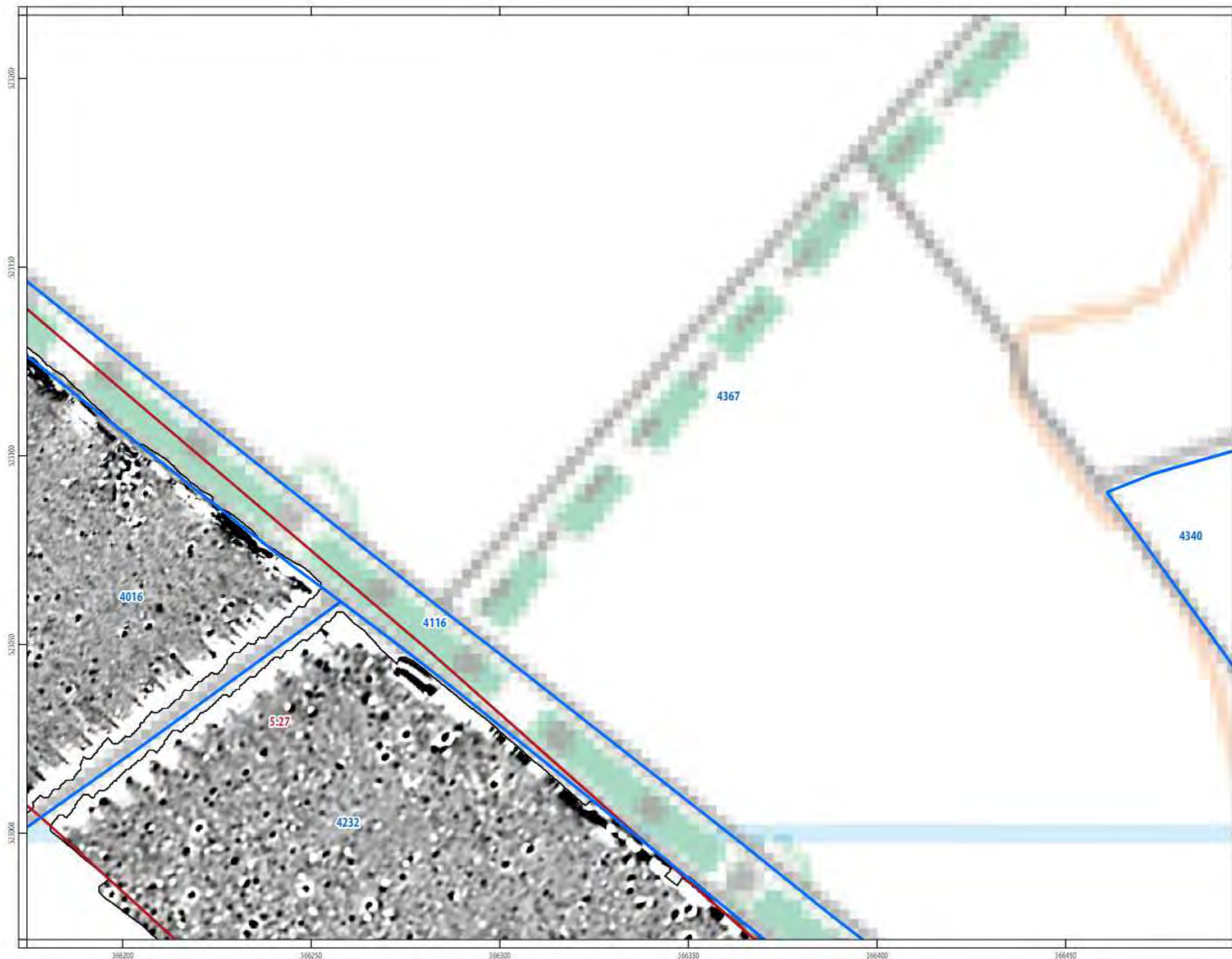
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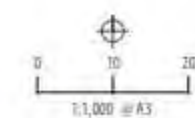


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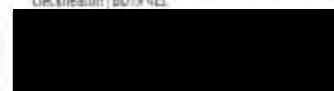
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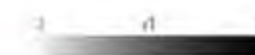
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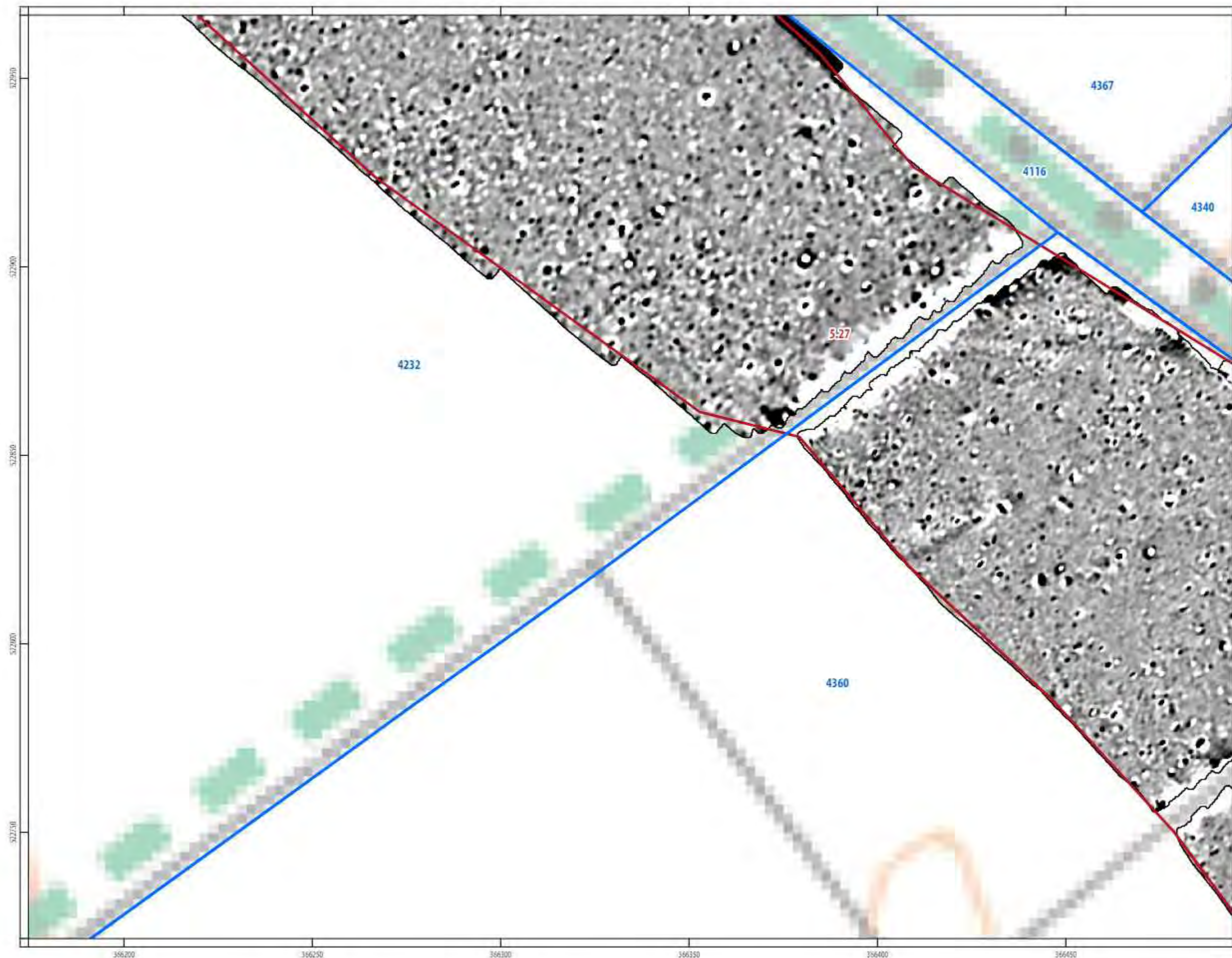
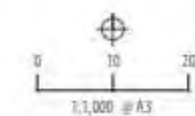


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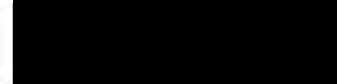
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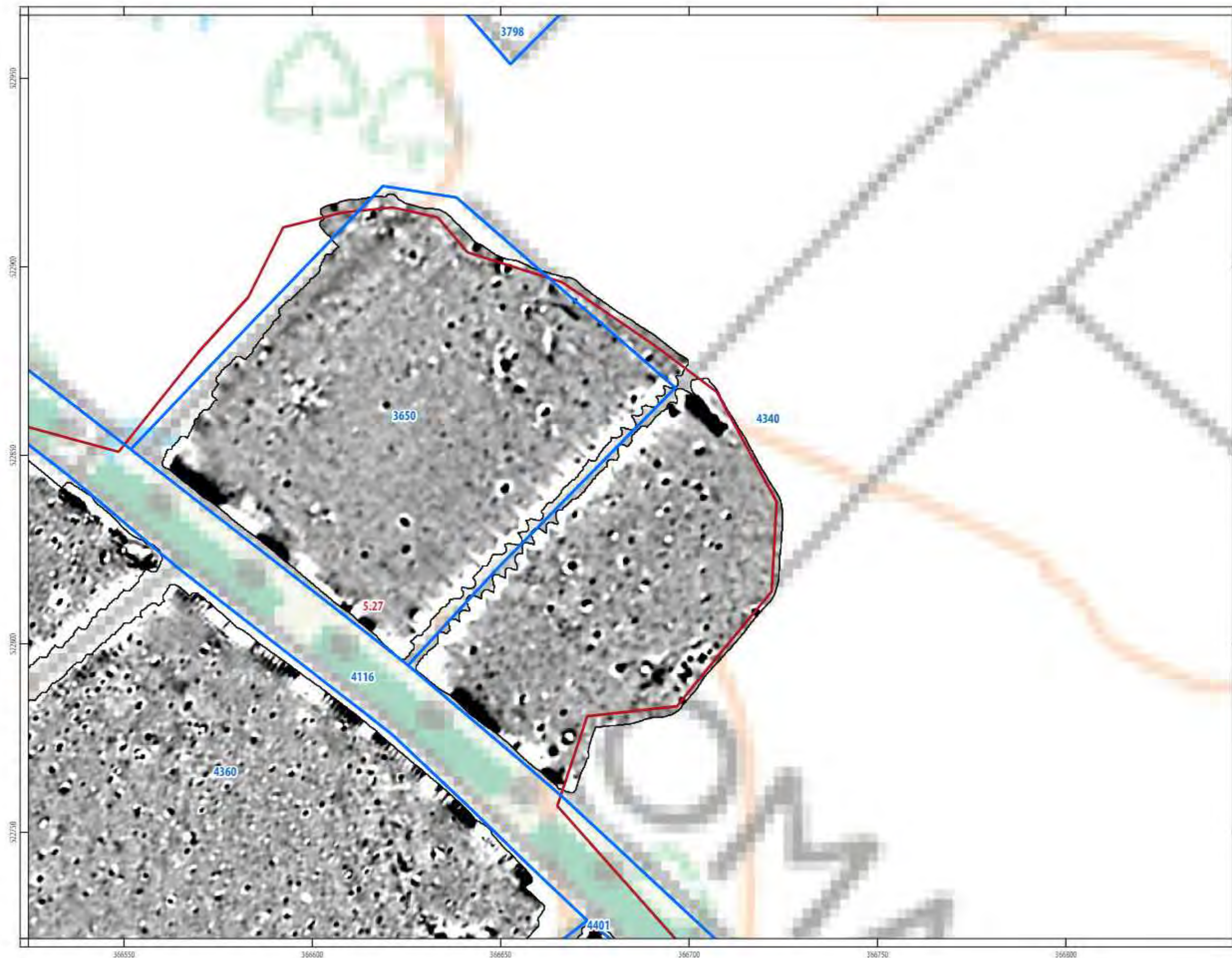
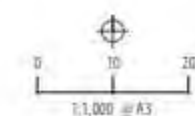


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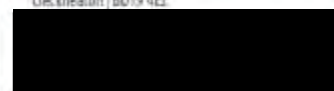
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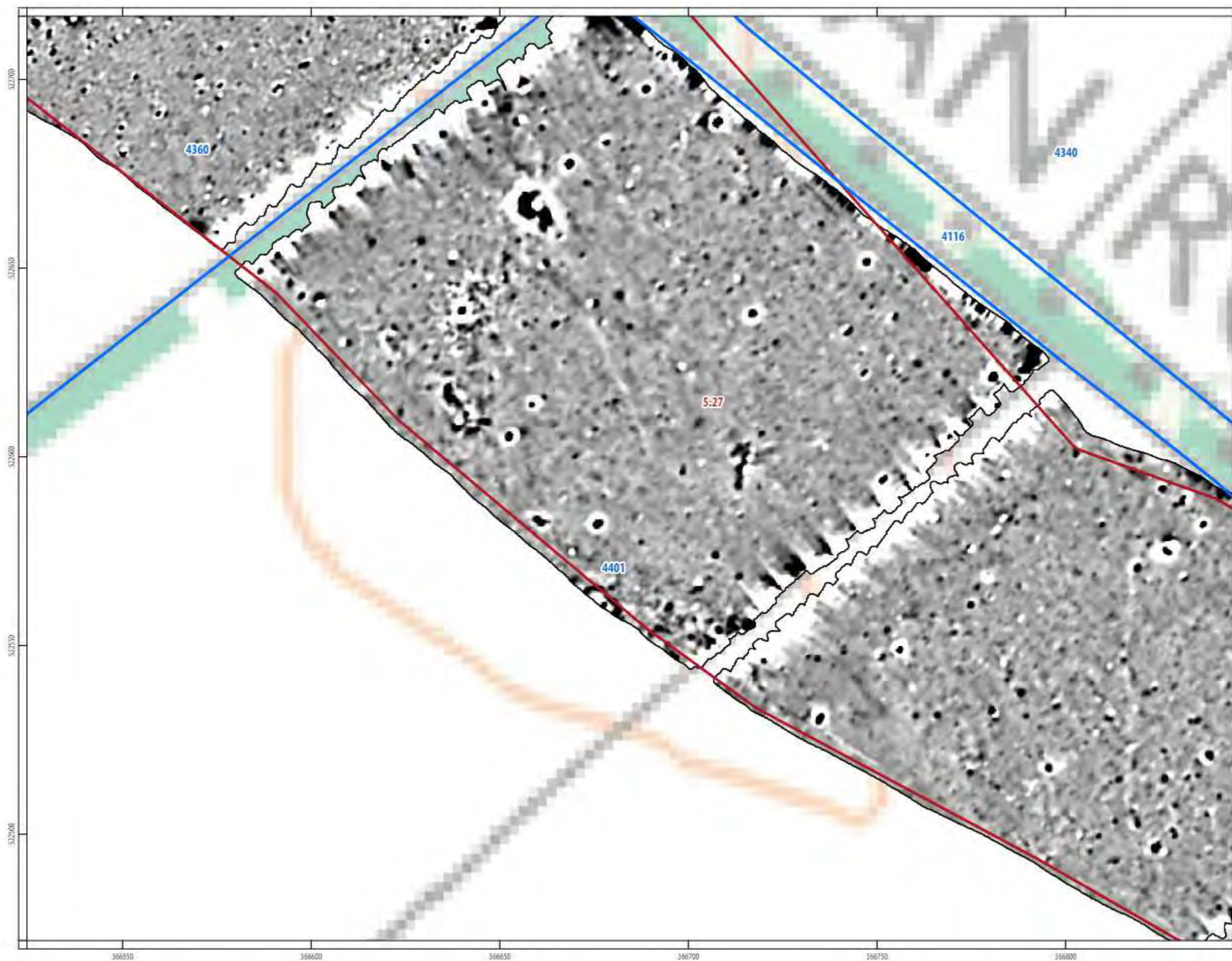
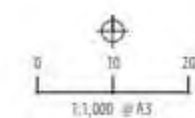


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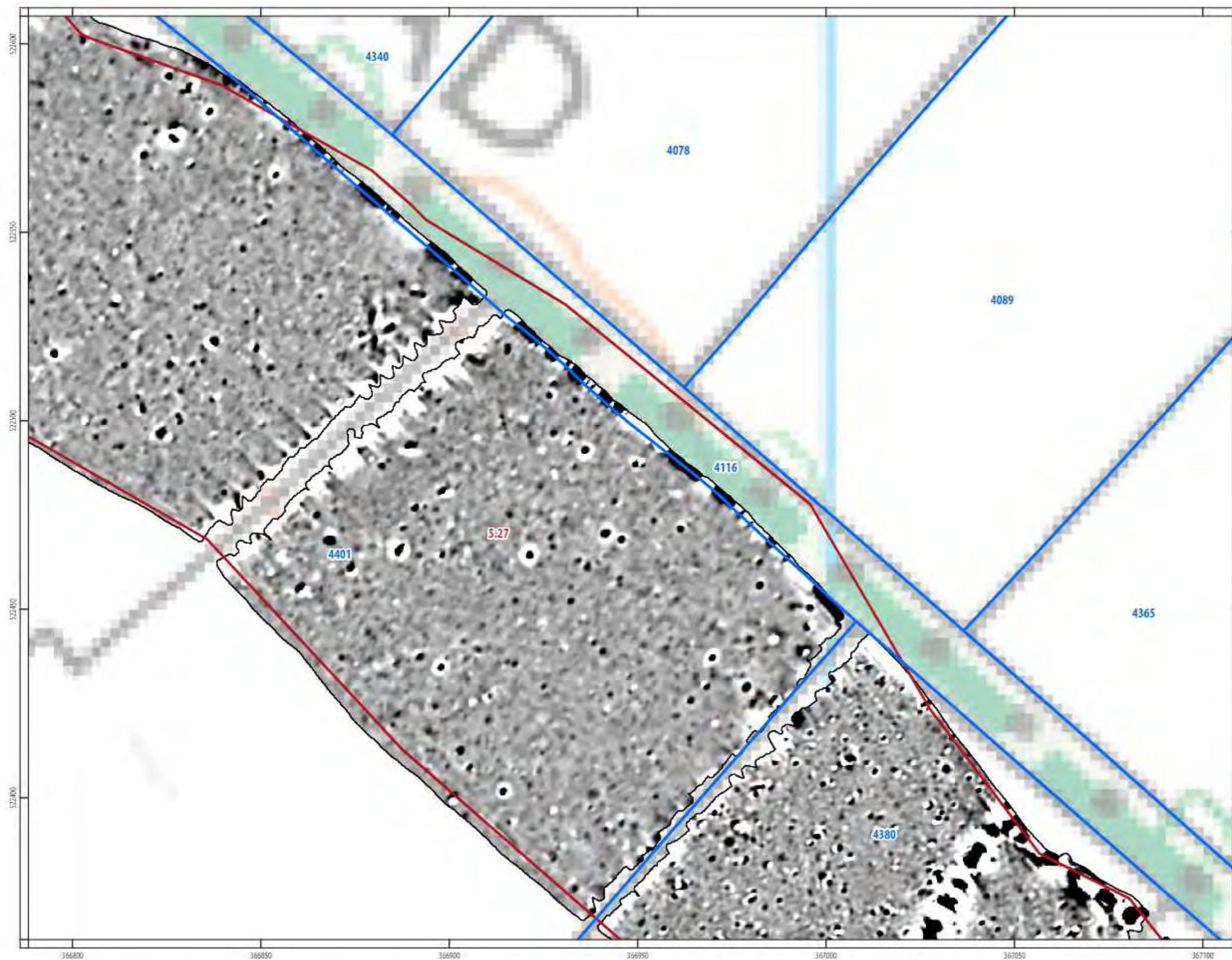
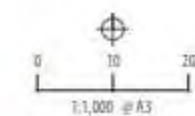


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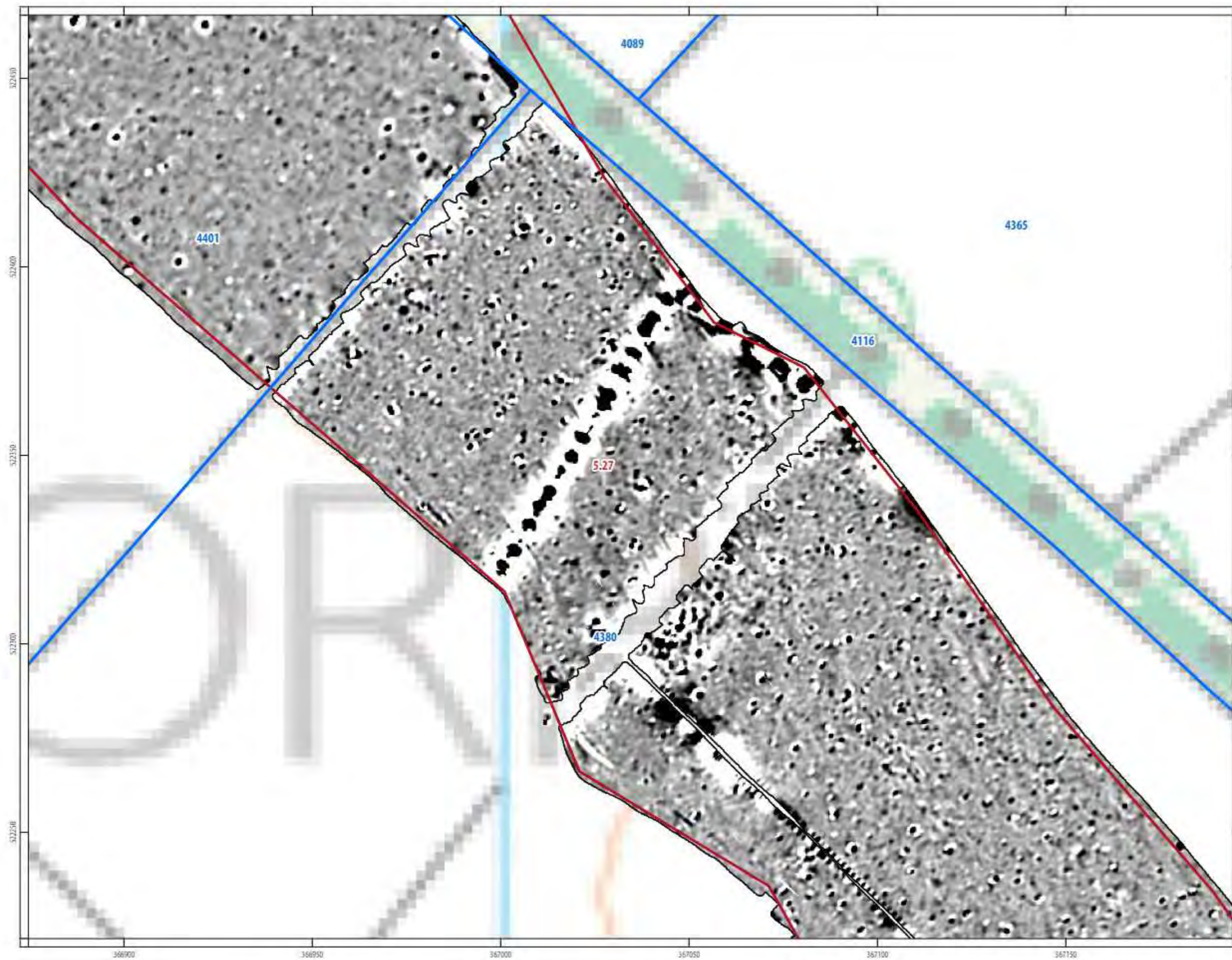
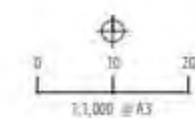


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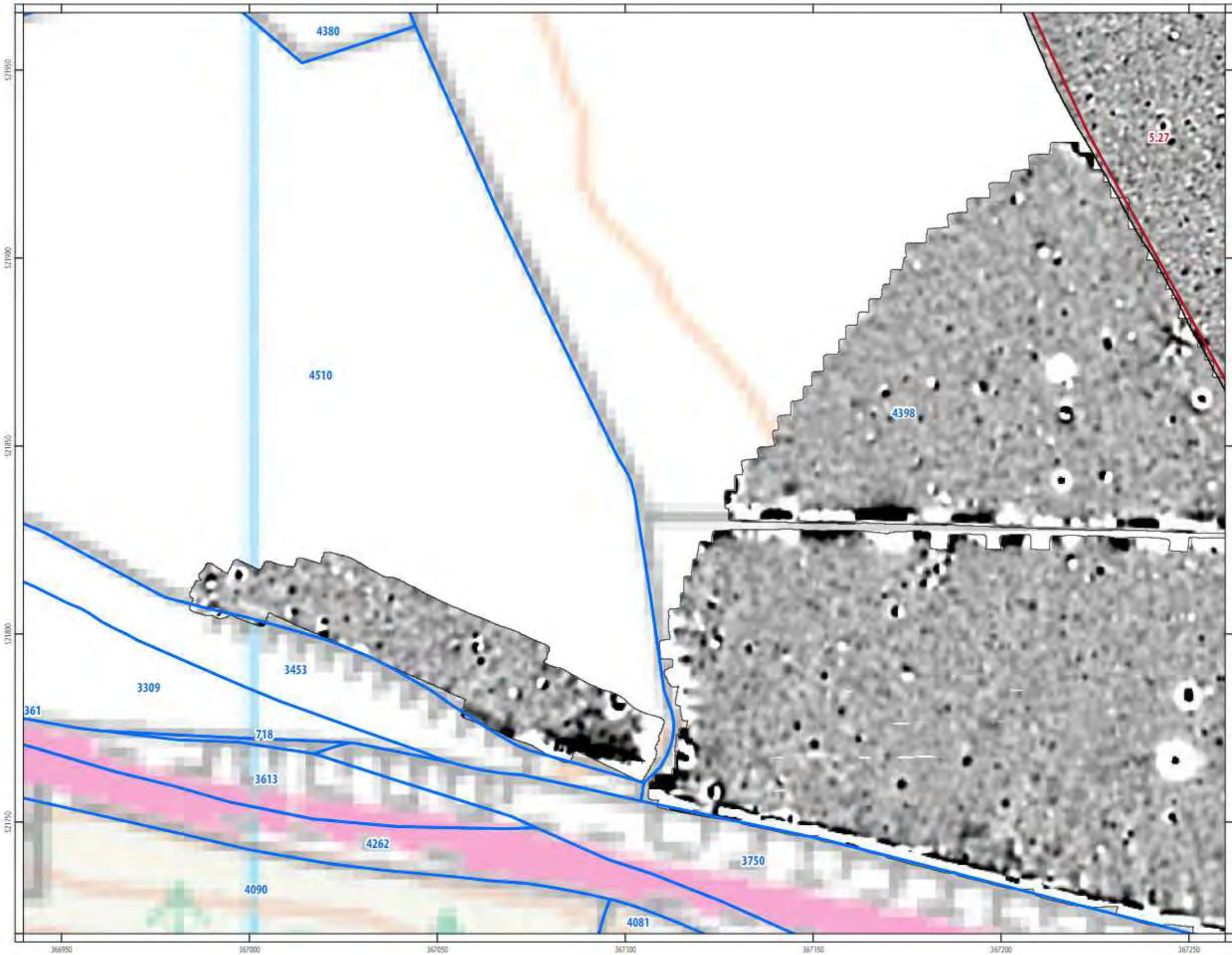


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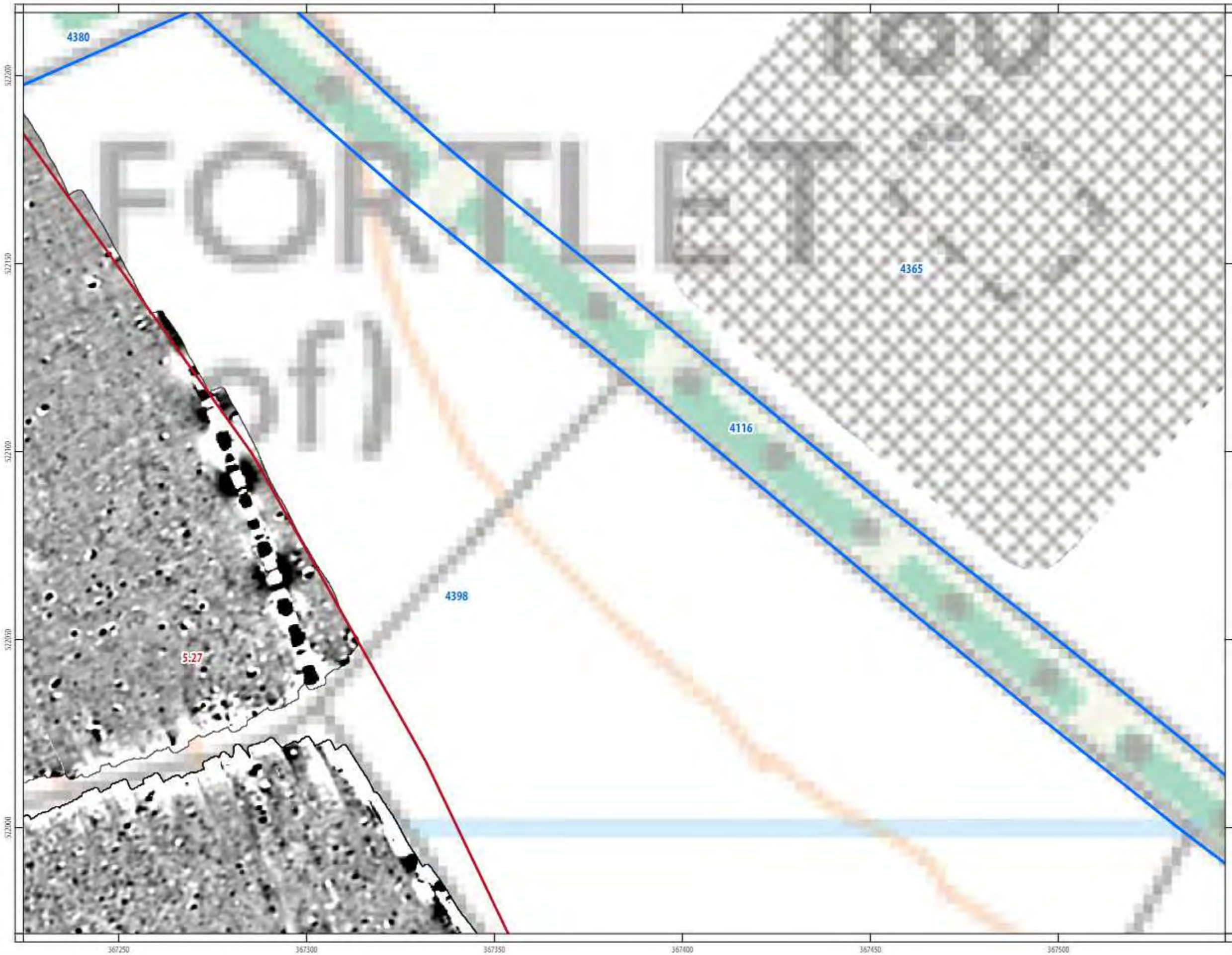


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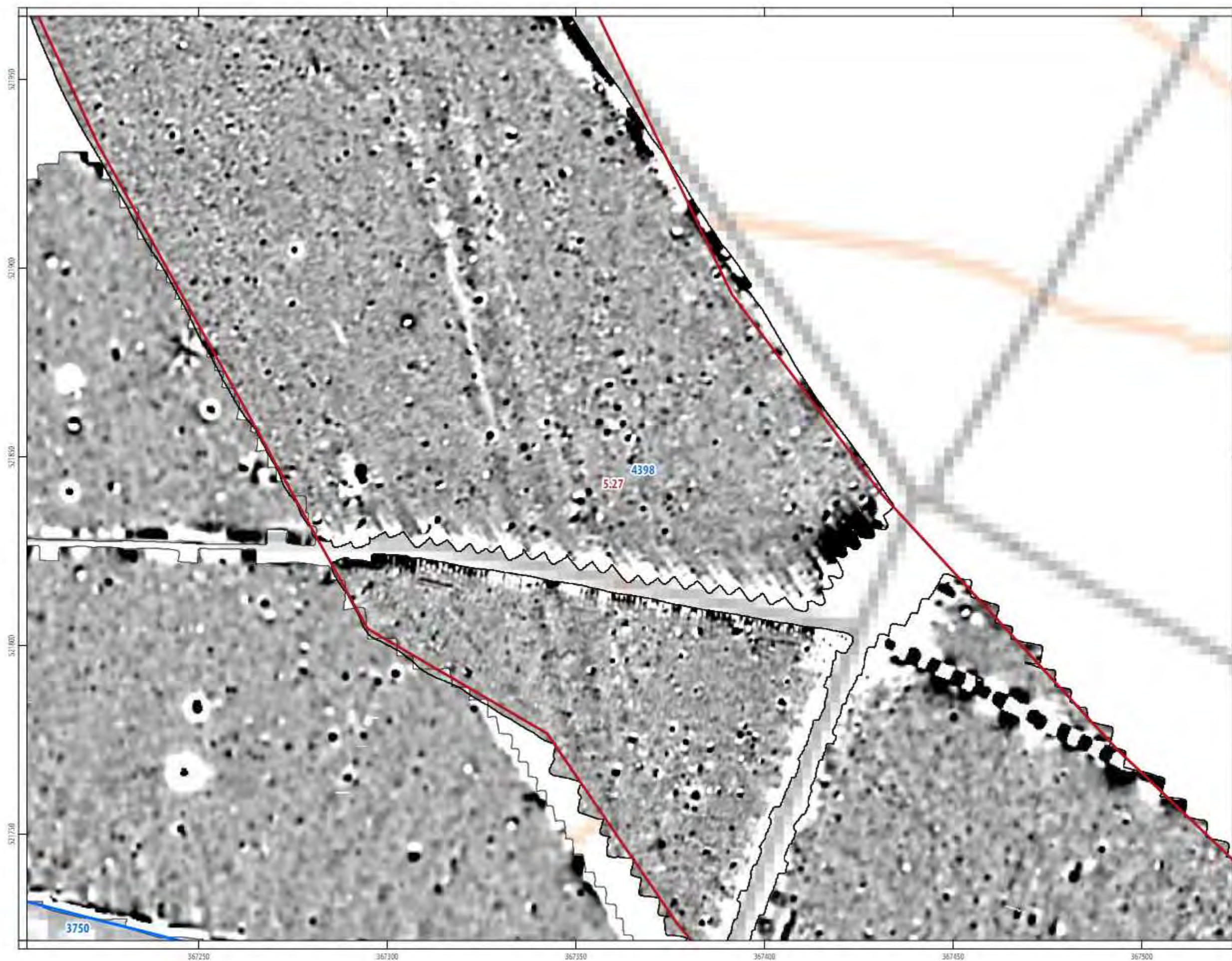
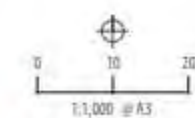


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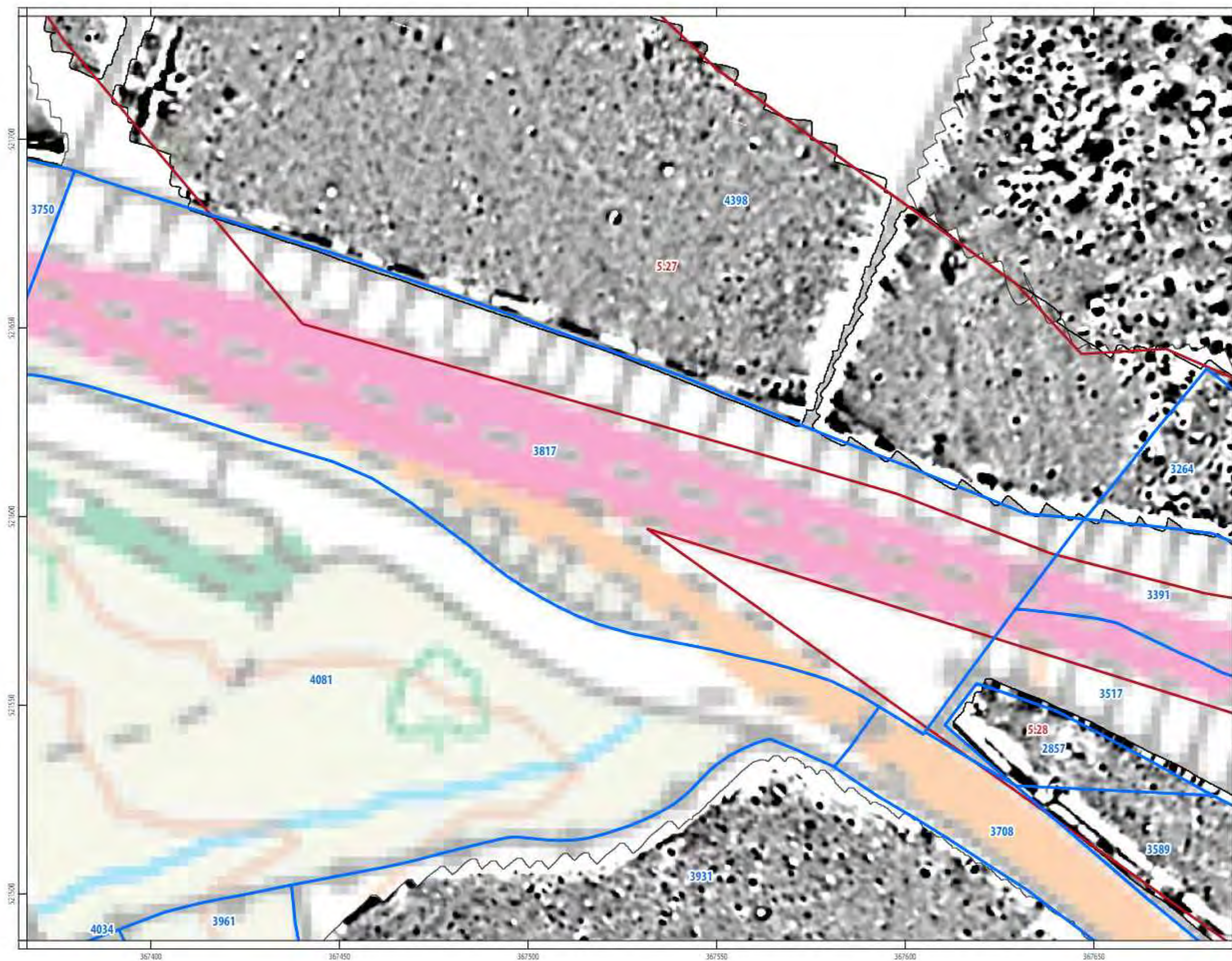
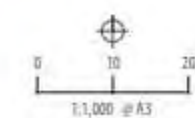


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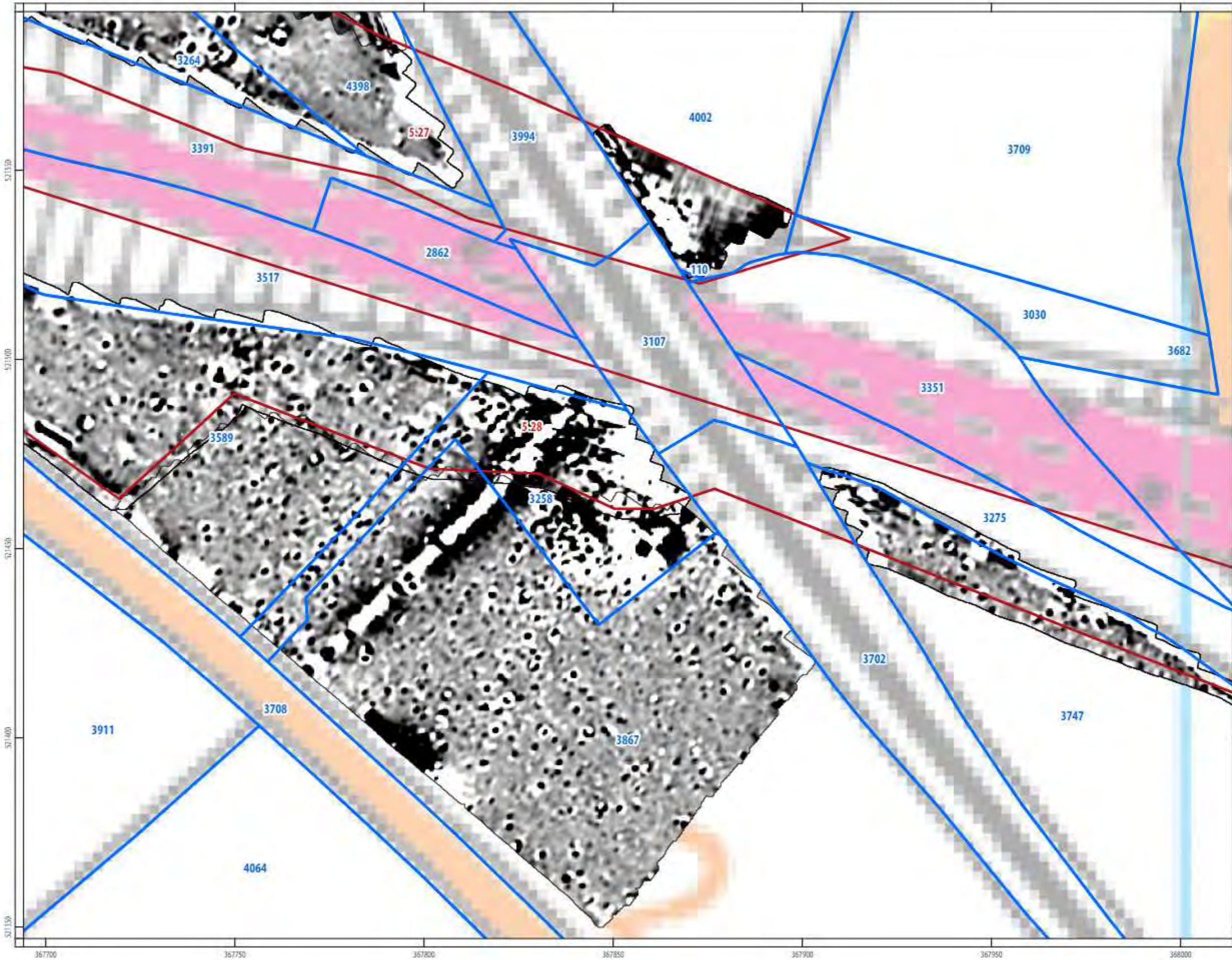
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ILLUS 114 Processed magnetometer data; Temple Sowerby to Appleby





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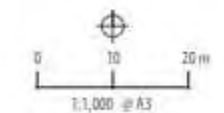


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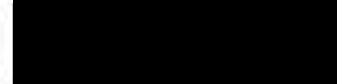


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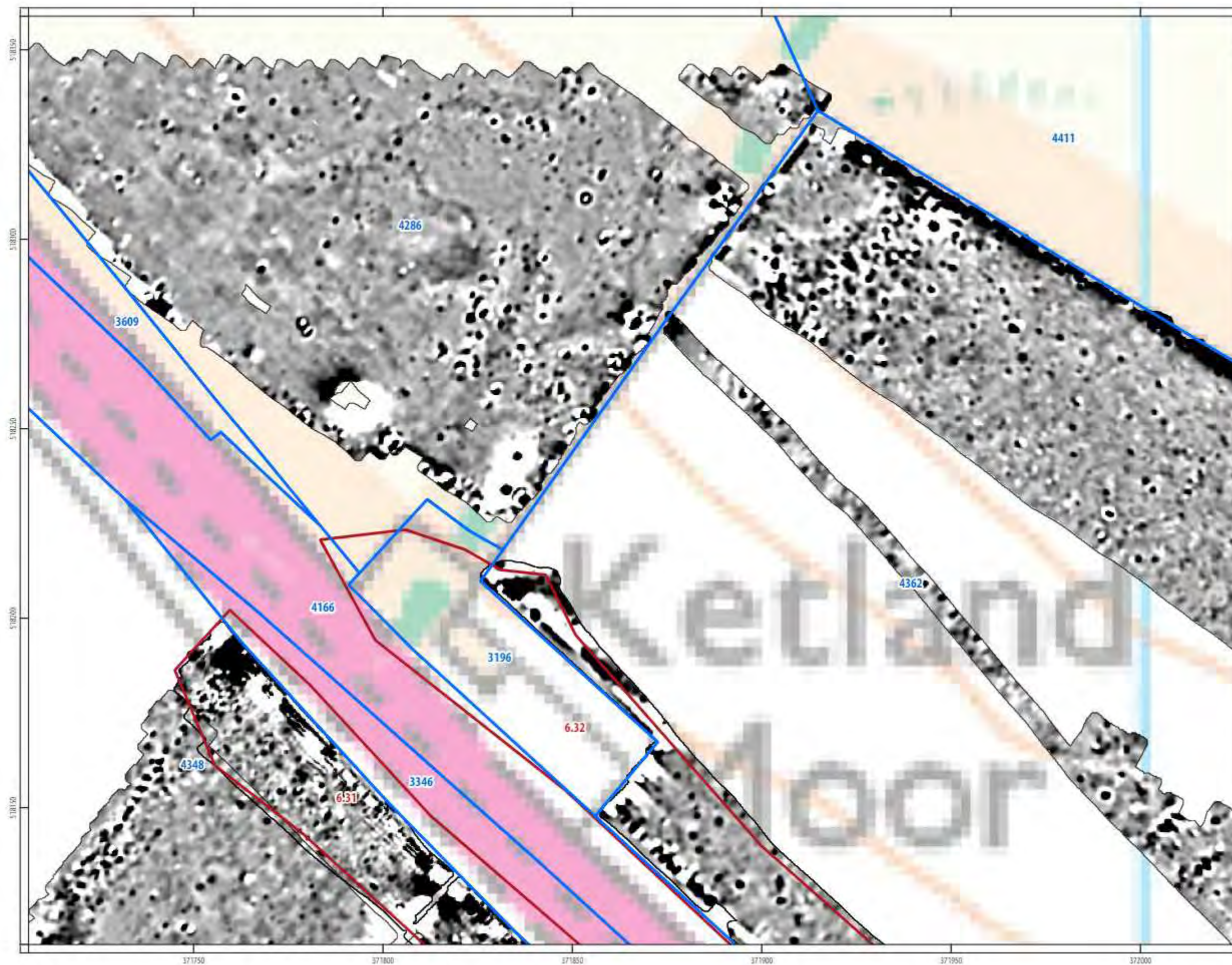
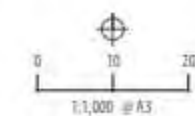


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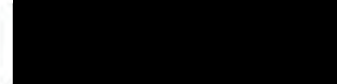
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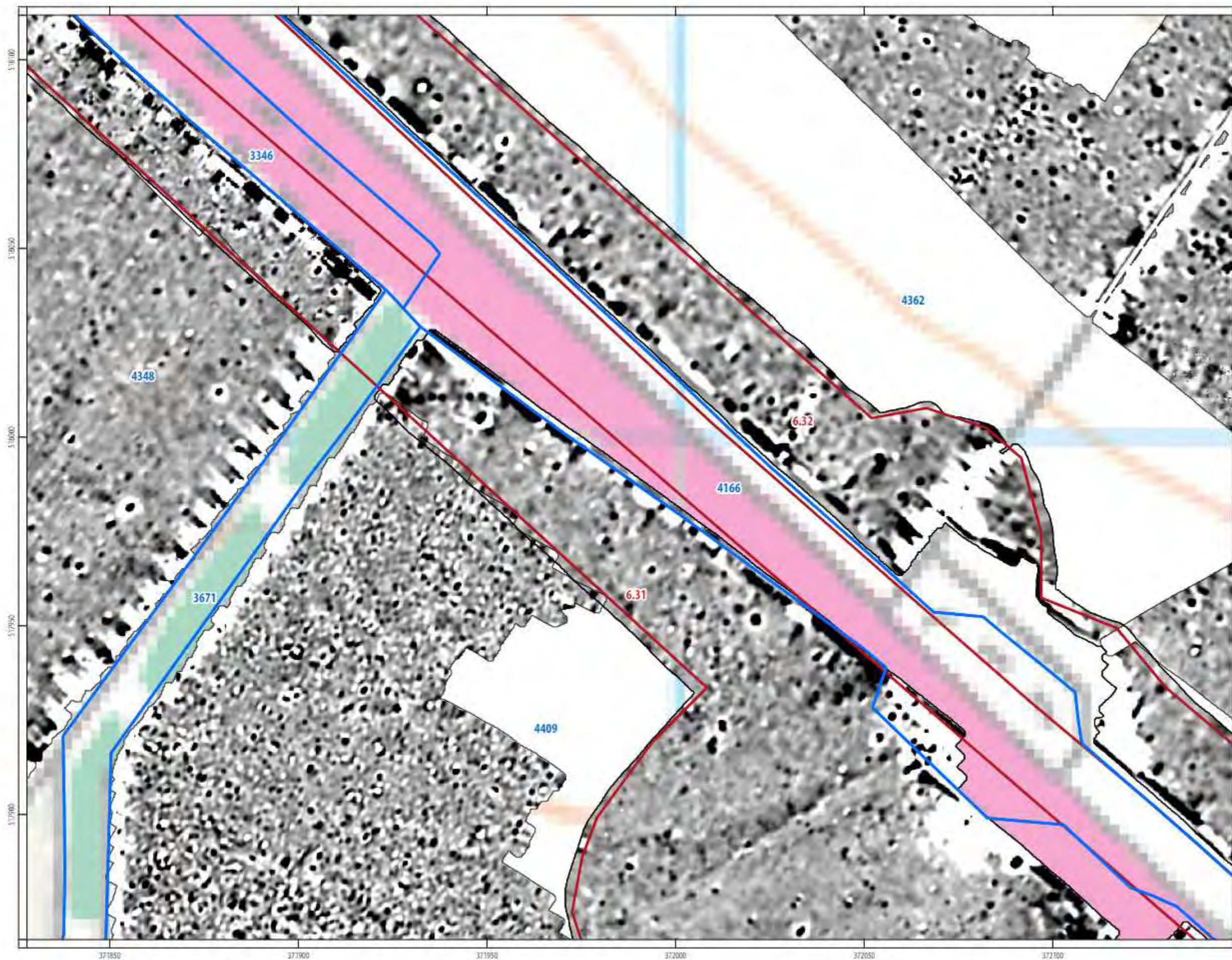
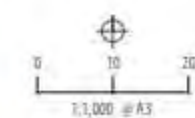


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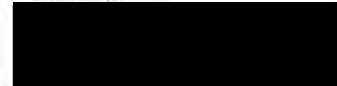
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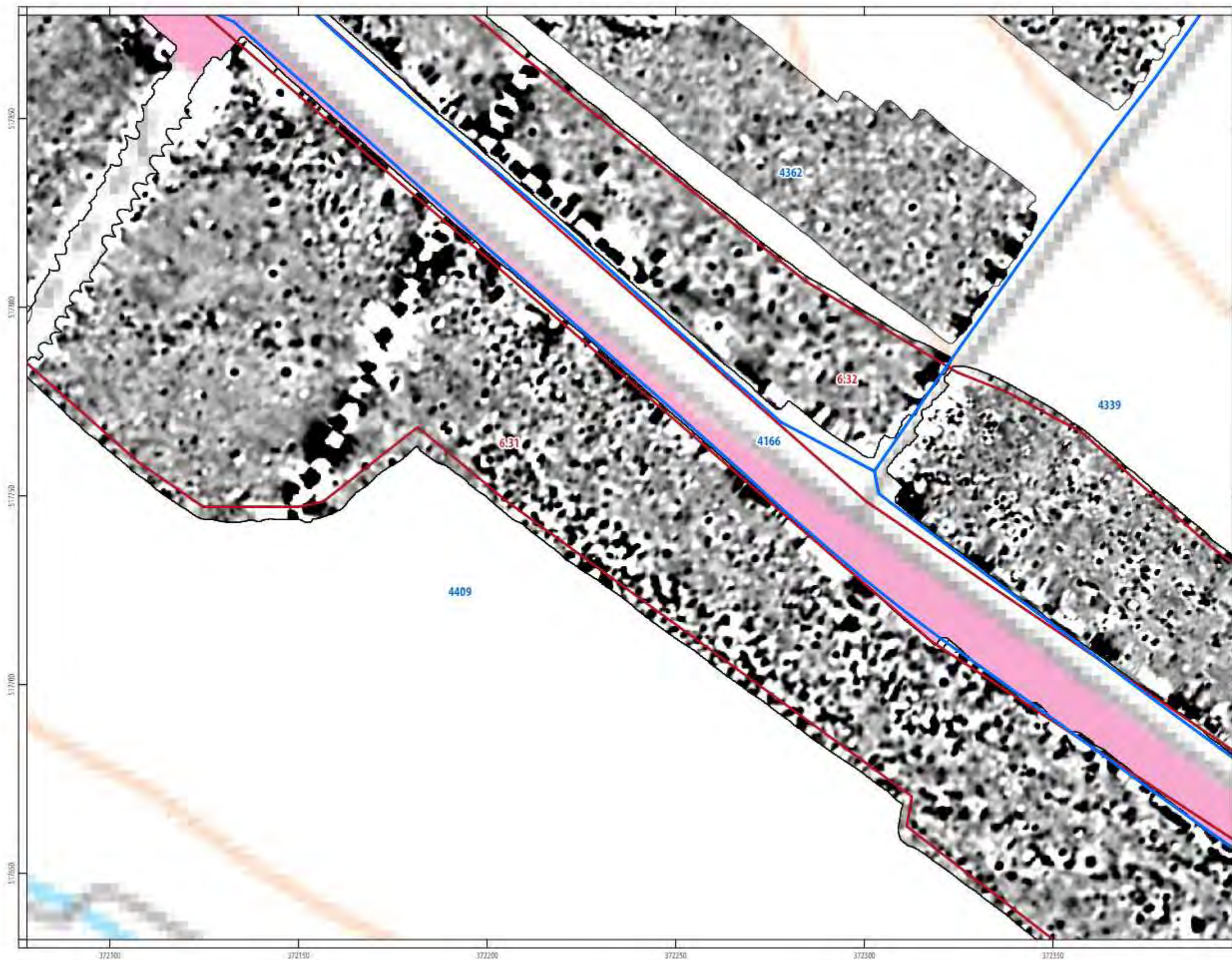
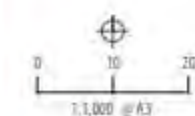


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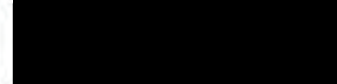
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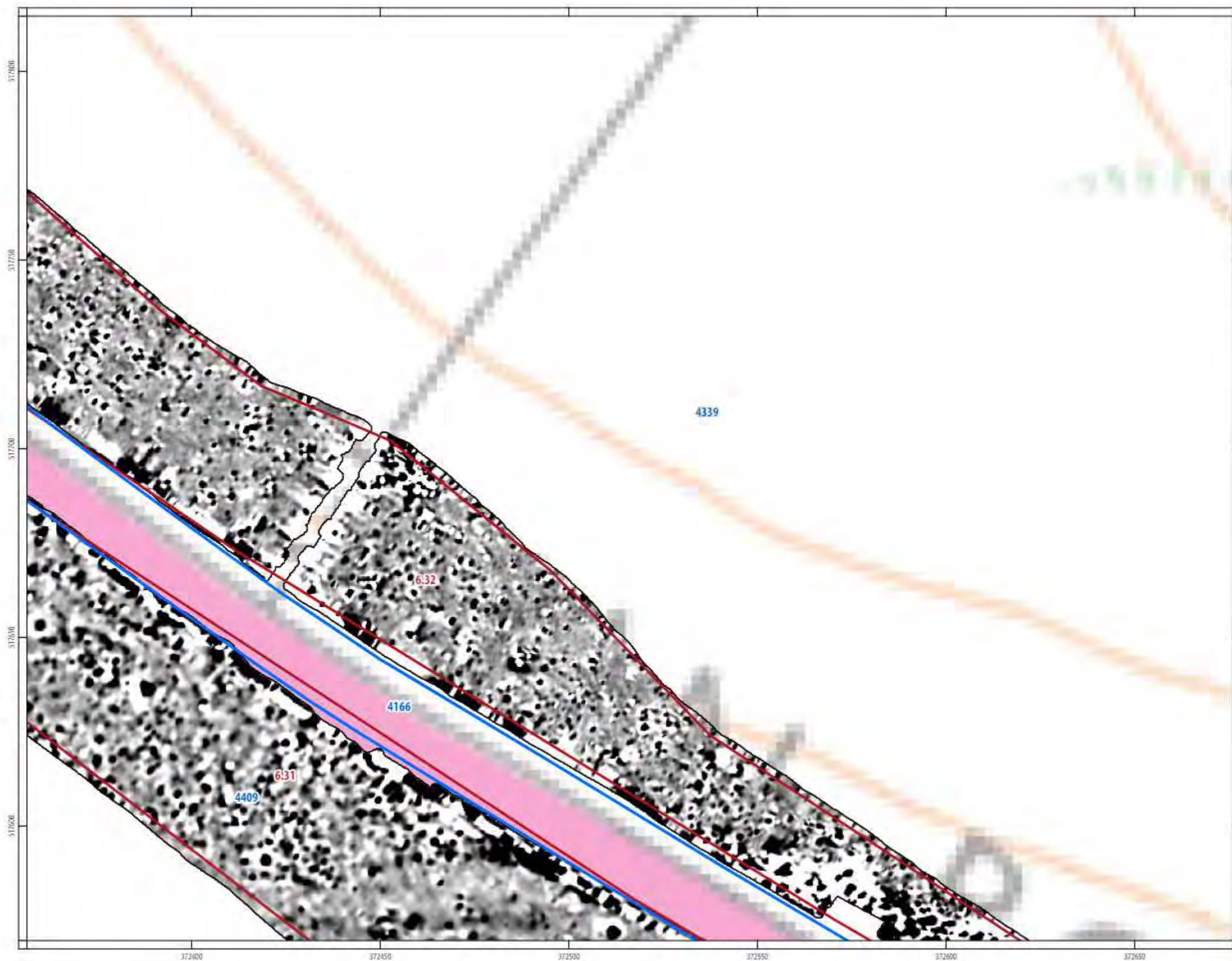
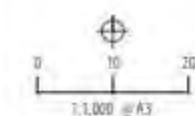


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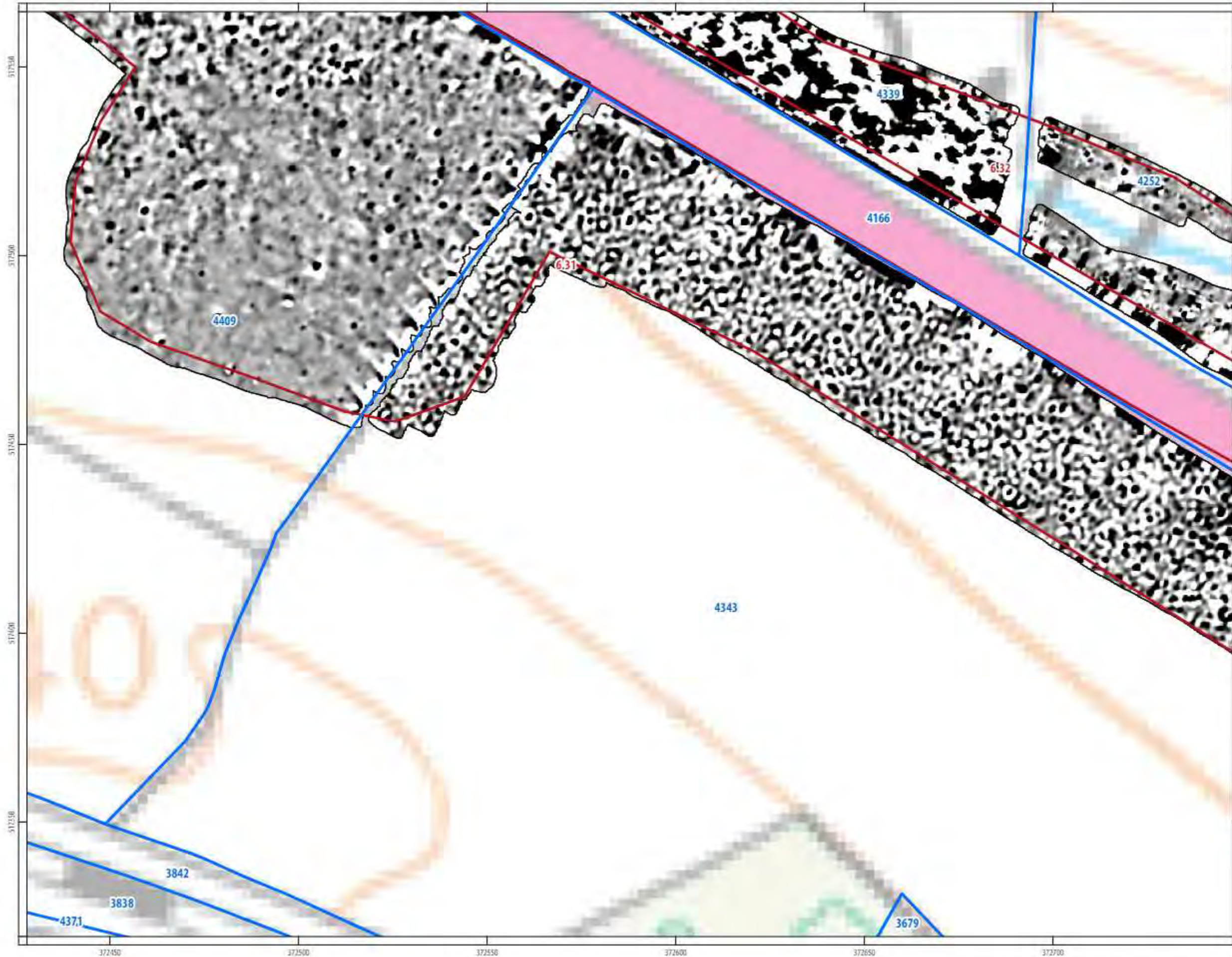


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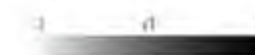
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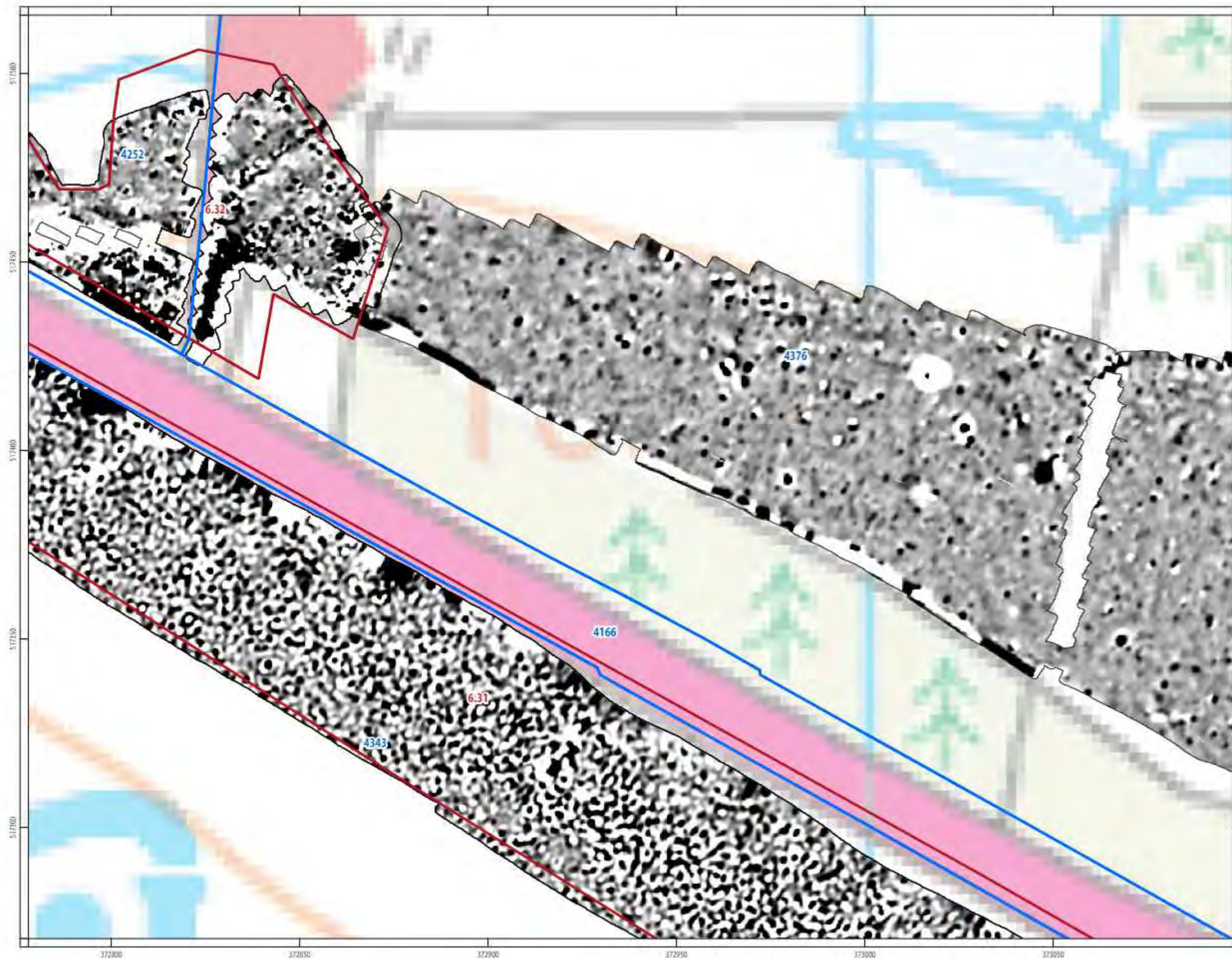
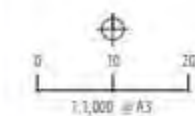


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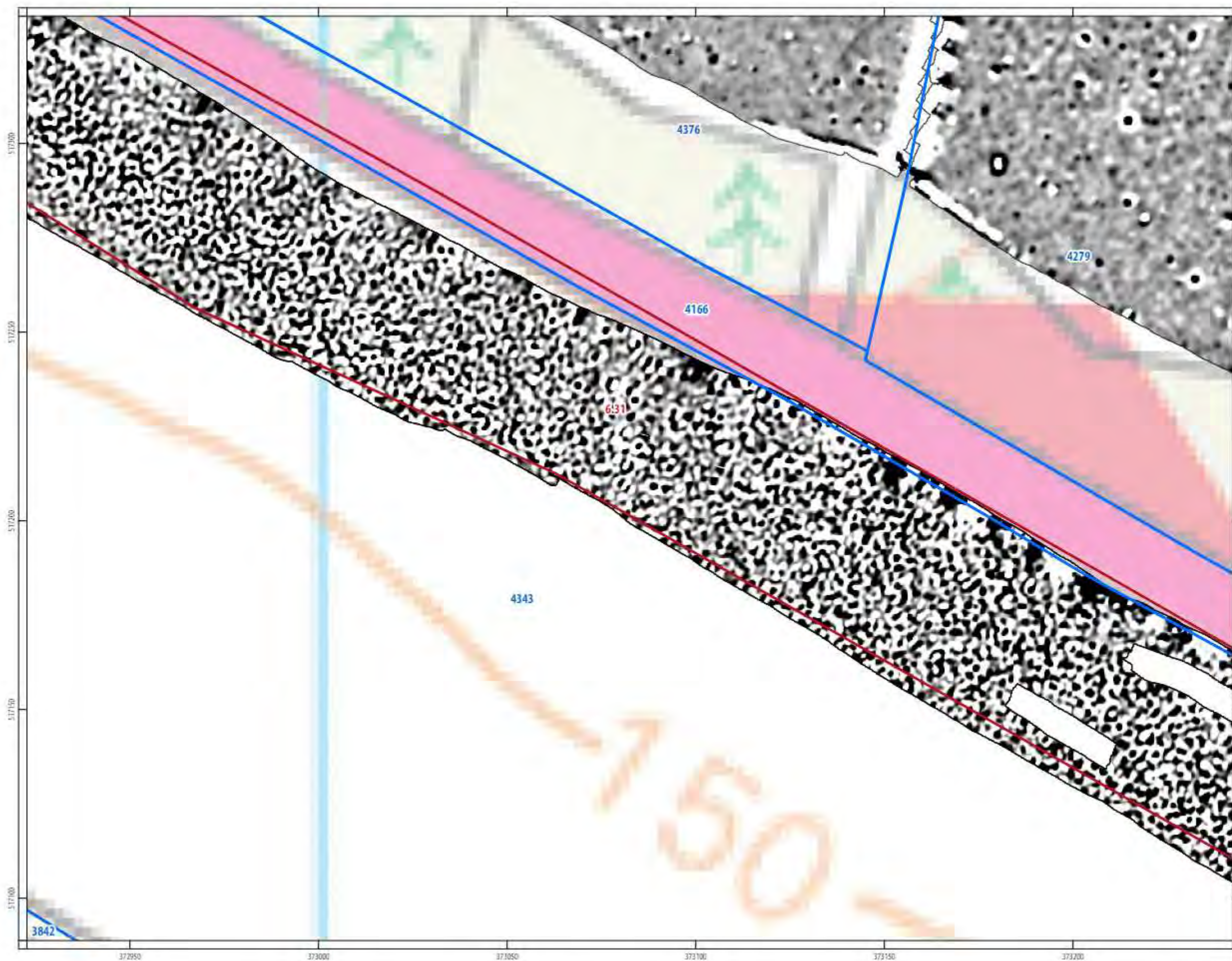
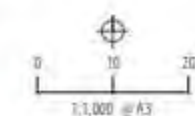


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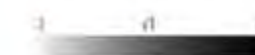
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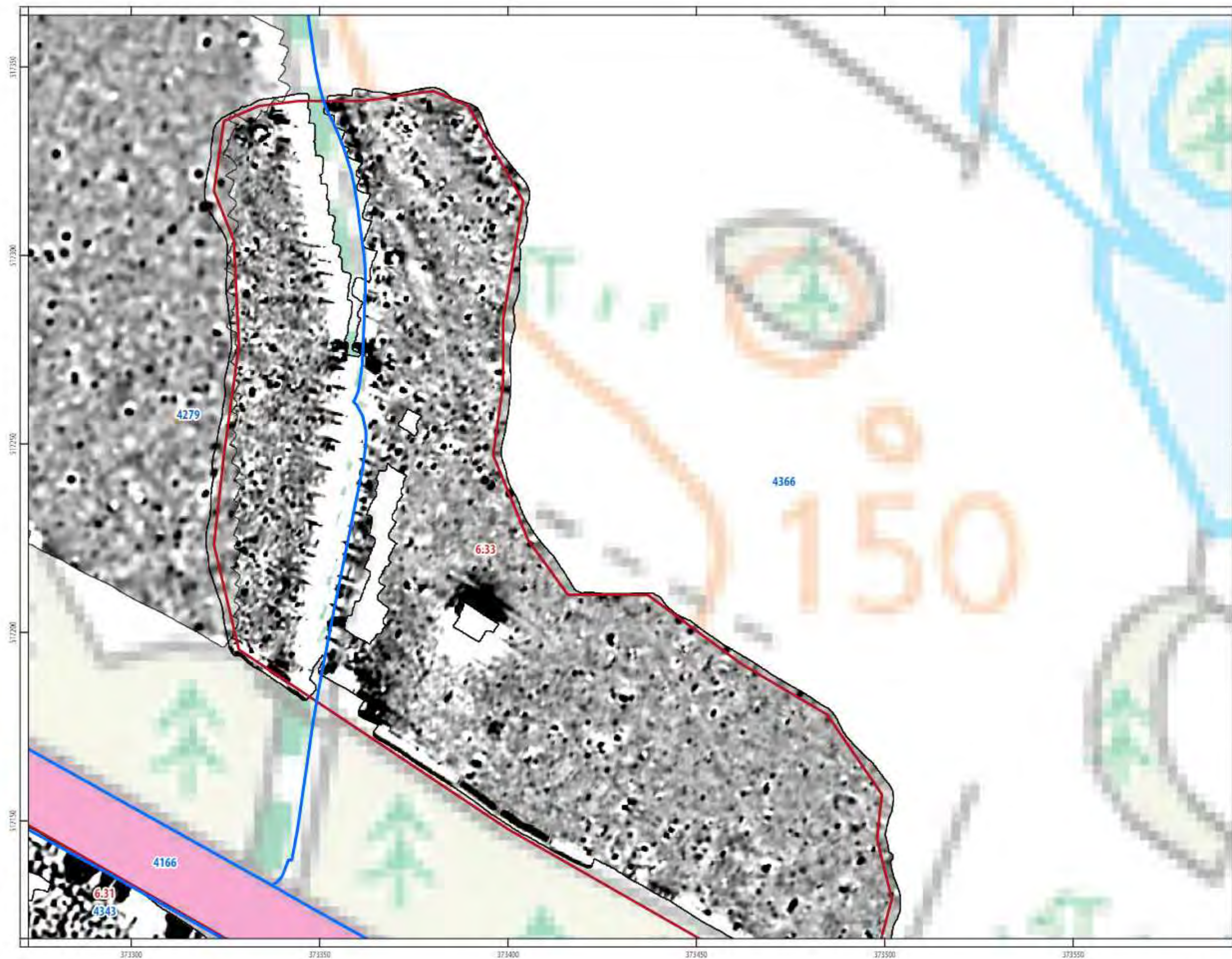
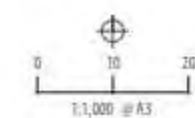


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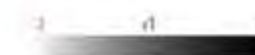
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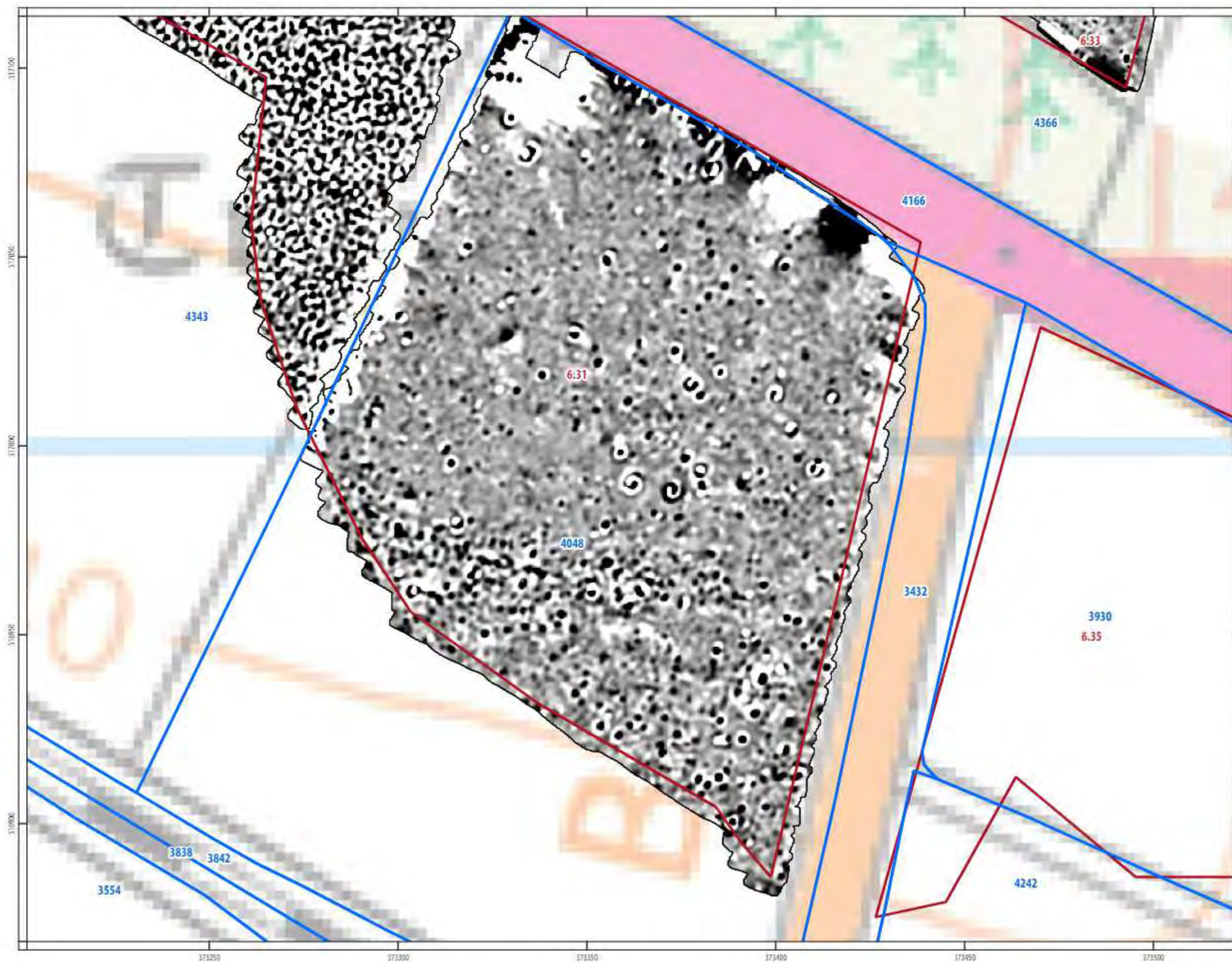
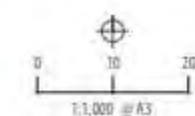


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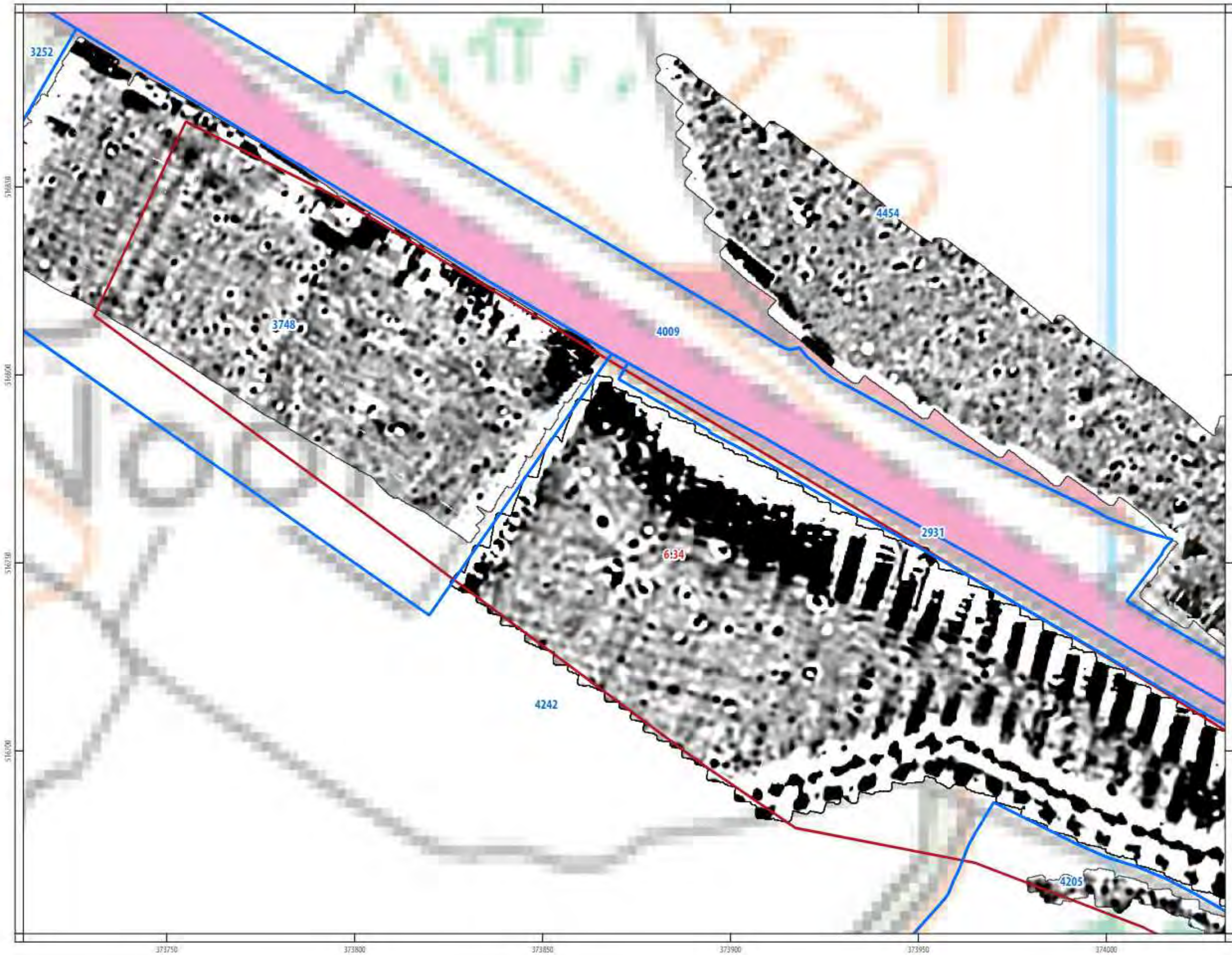


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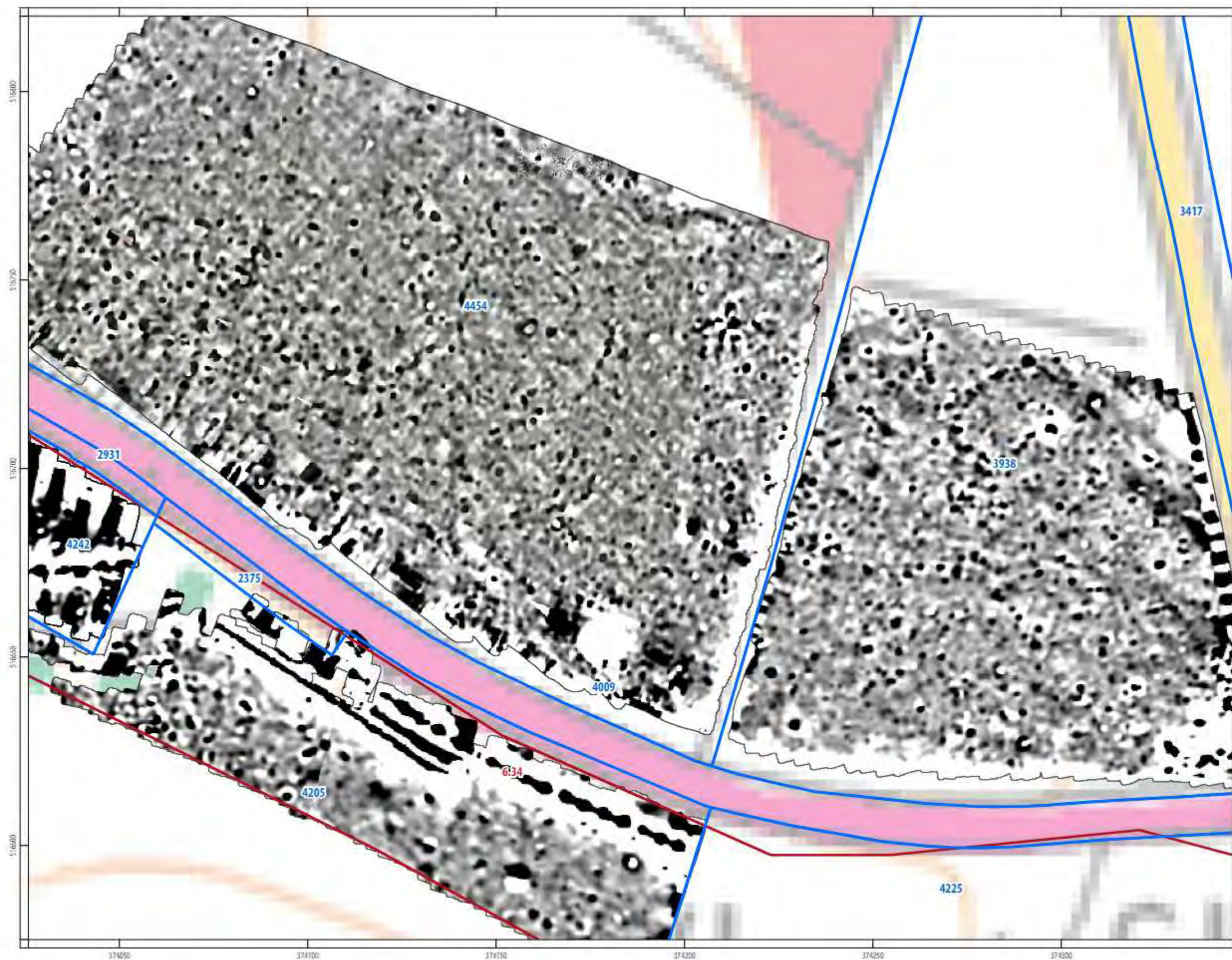
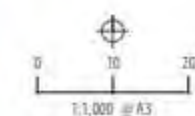


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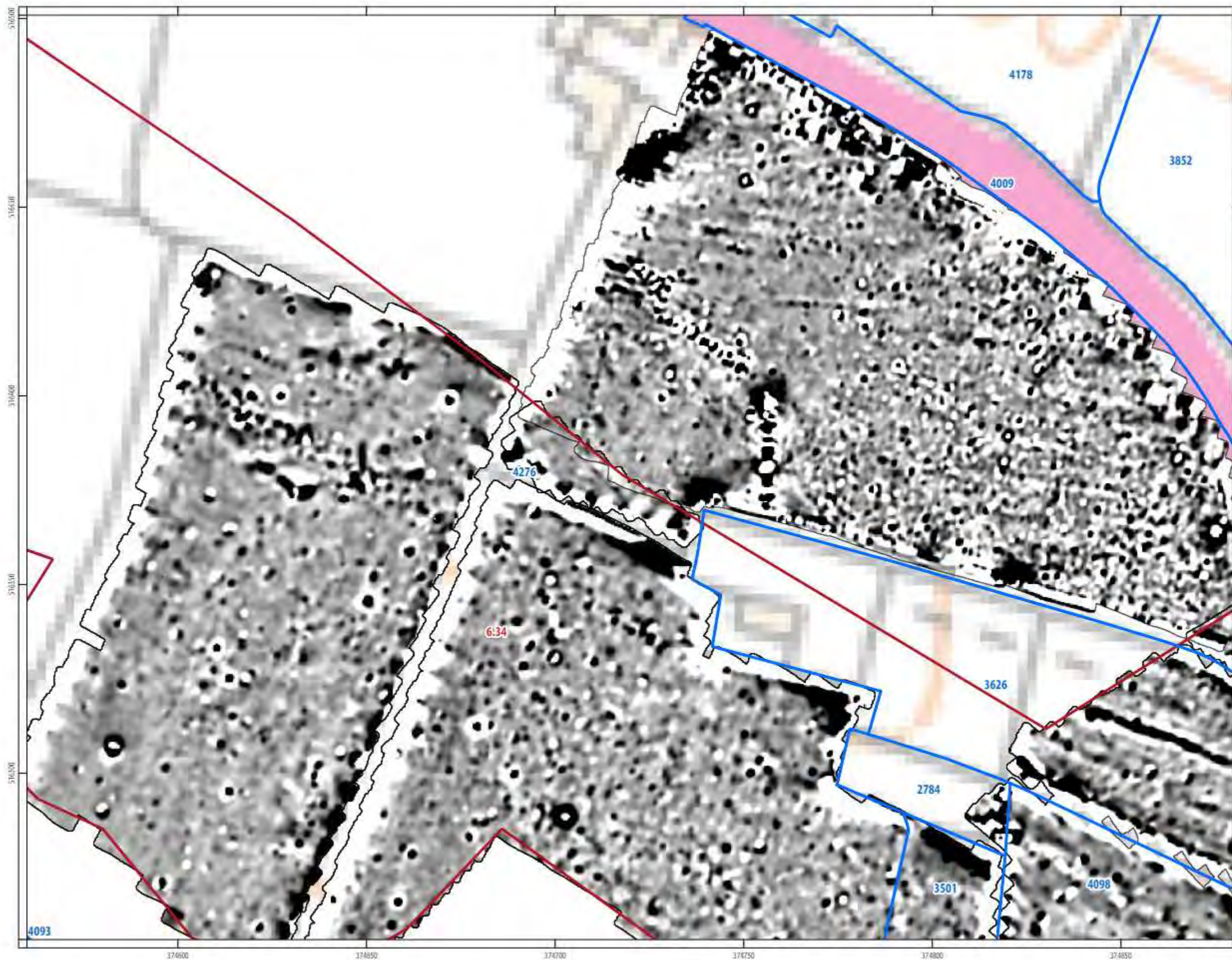
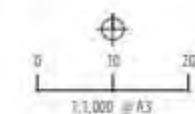


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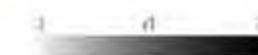
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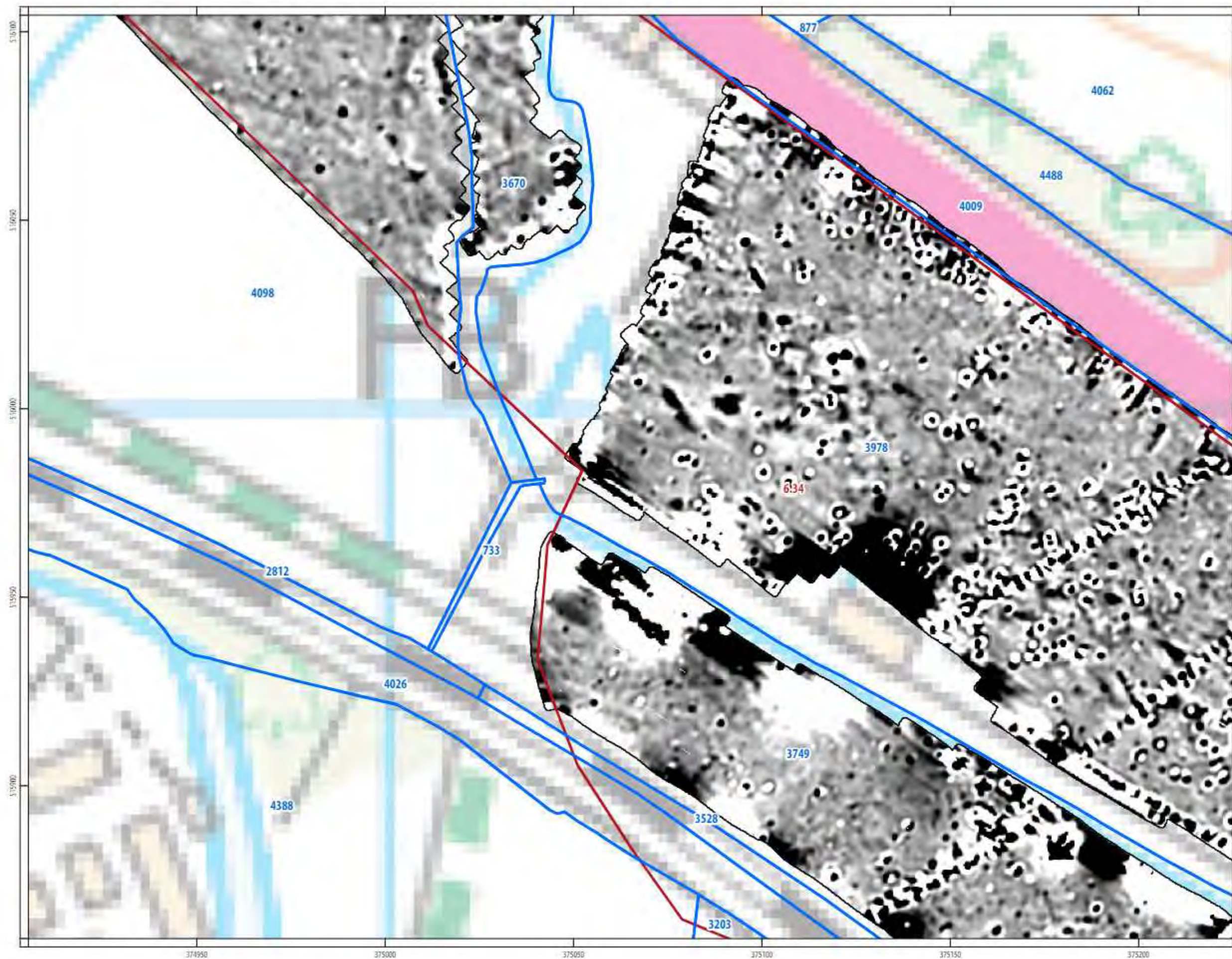
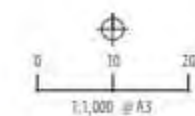


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- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

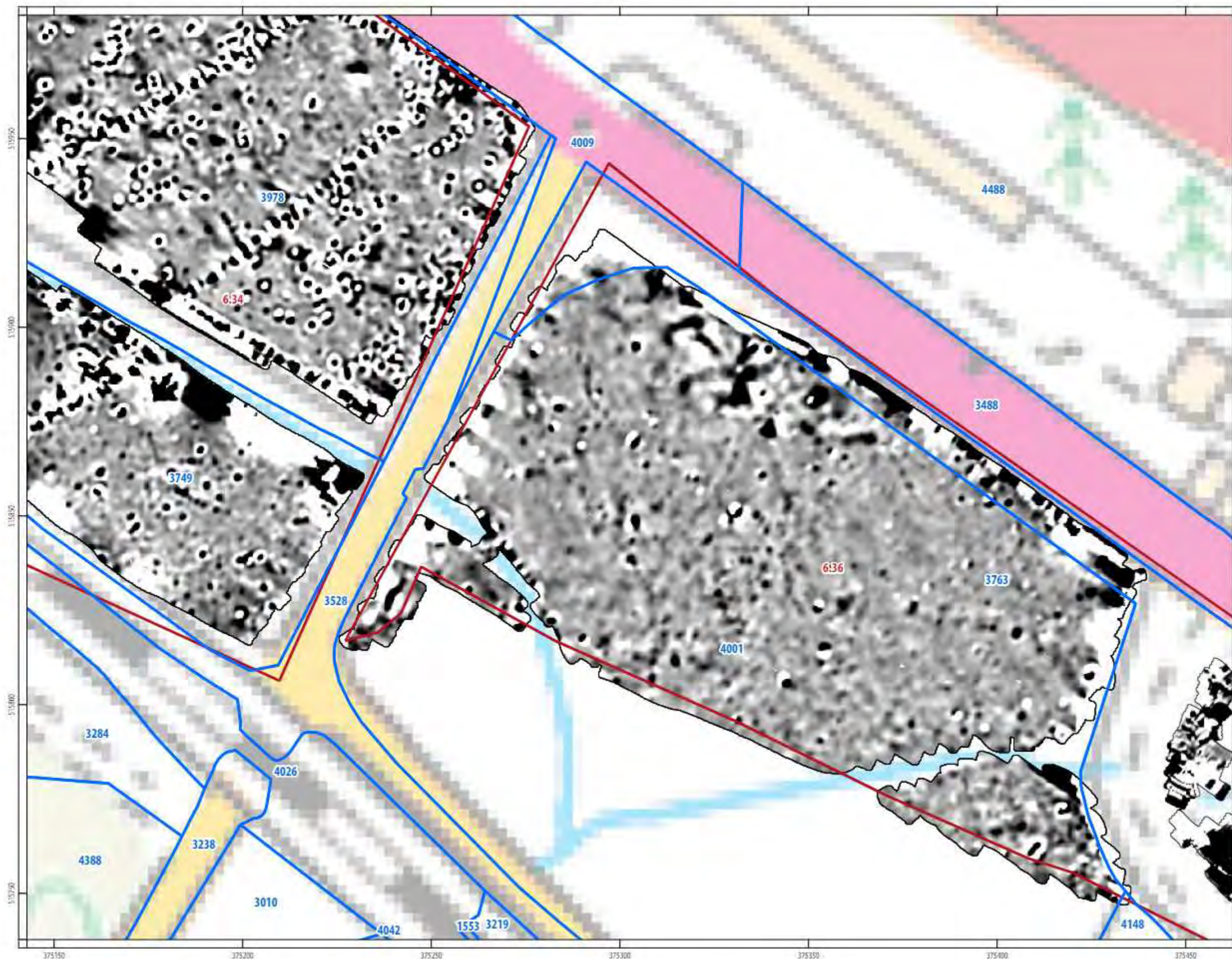
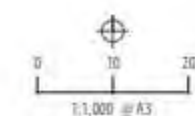


**PROJECT**

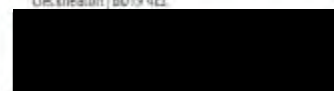
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

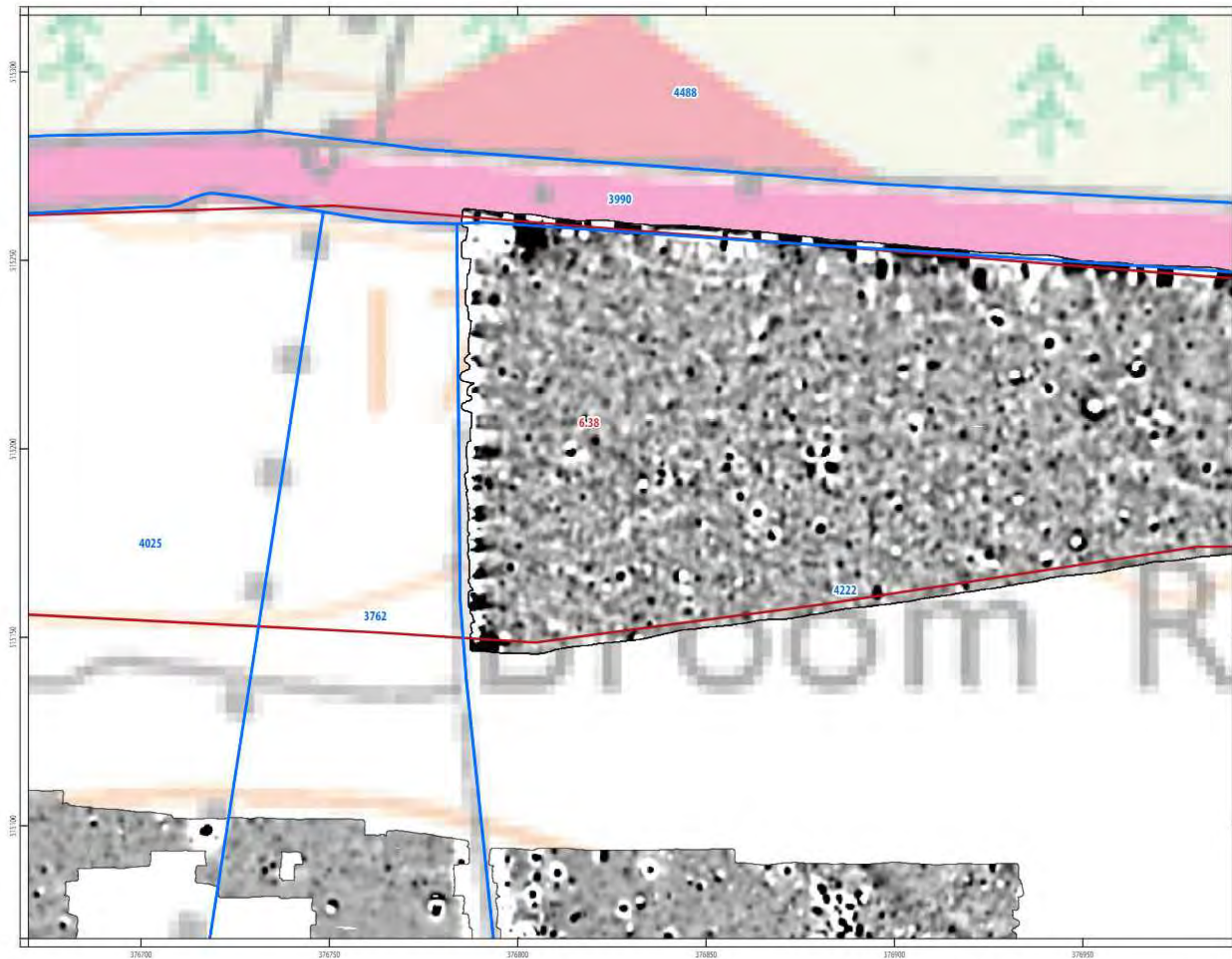
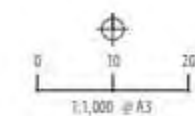


**PROJECT**





ATFU20 - A66 Transpennine Upgrade

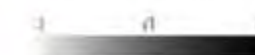
**CLIENT**

Highways England





-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

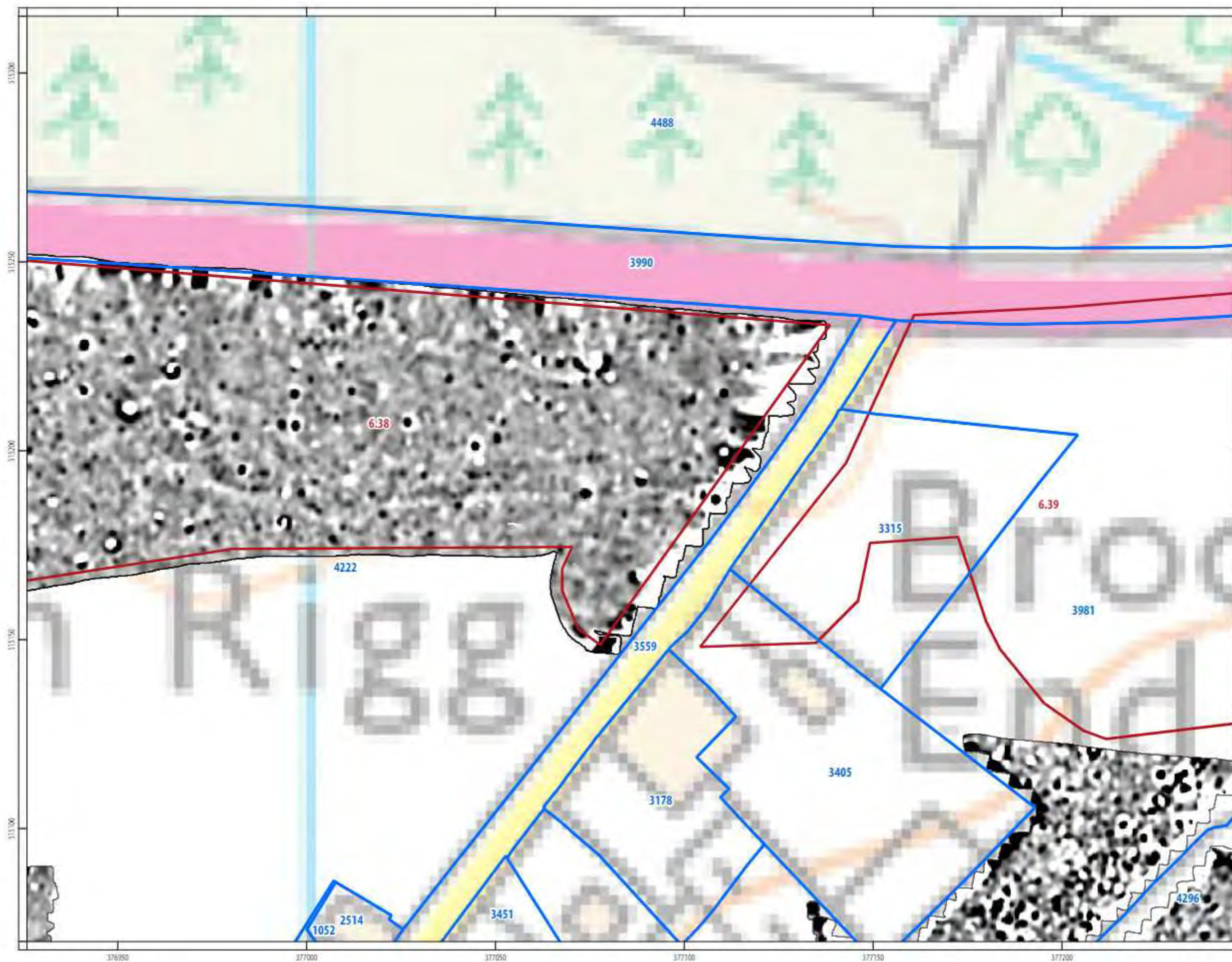
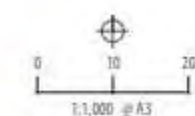


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

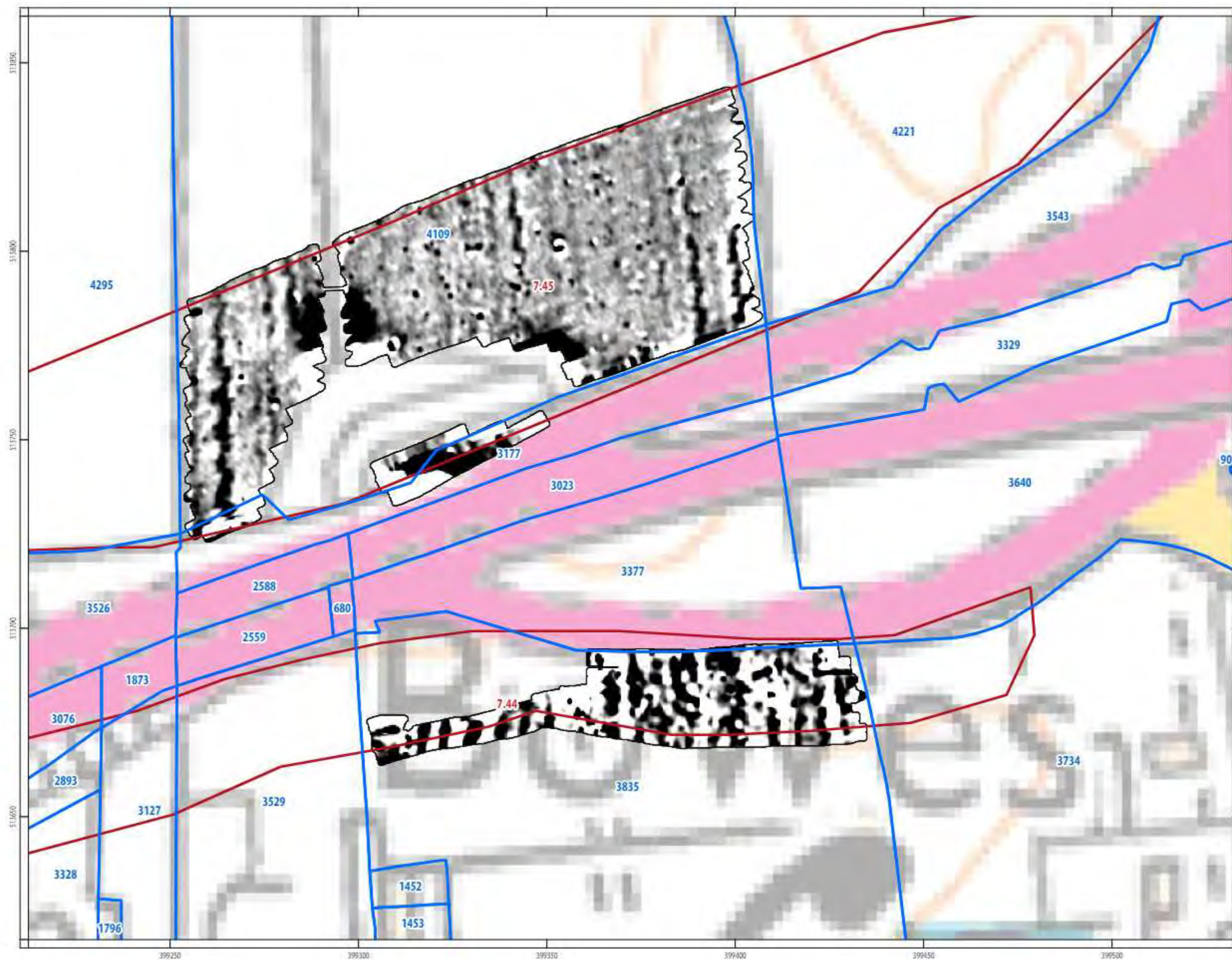
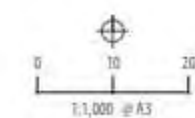


**PROJECT**

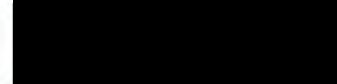
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

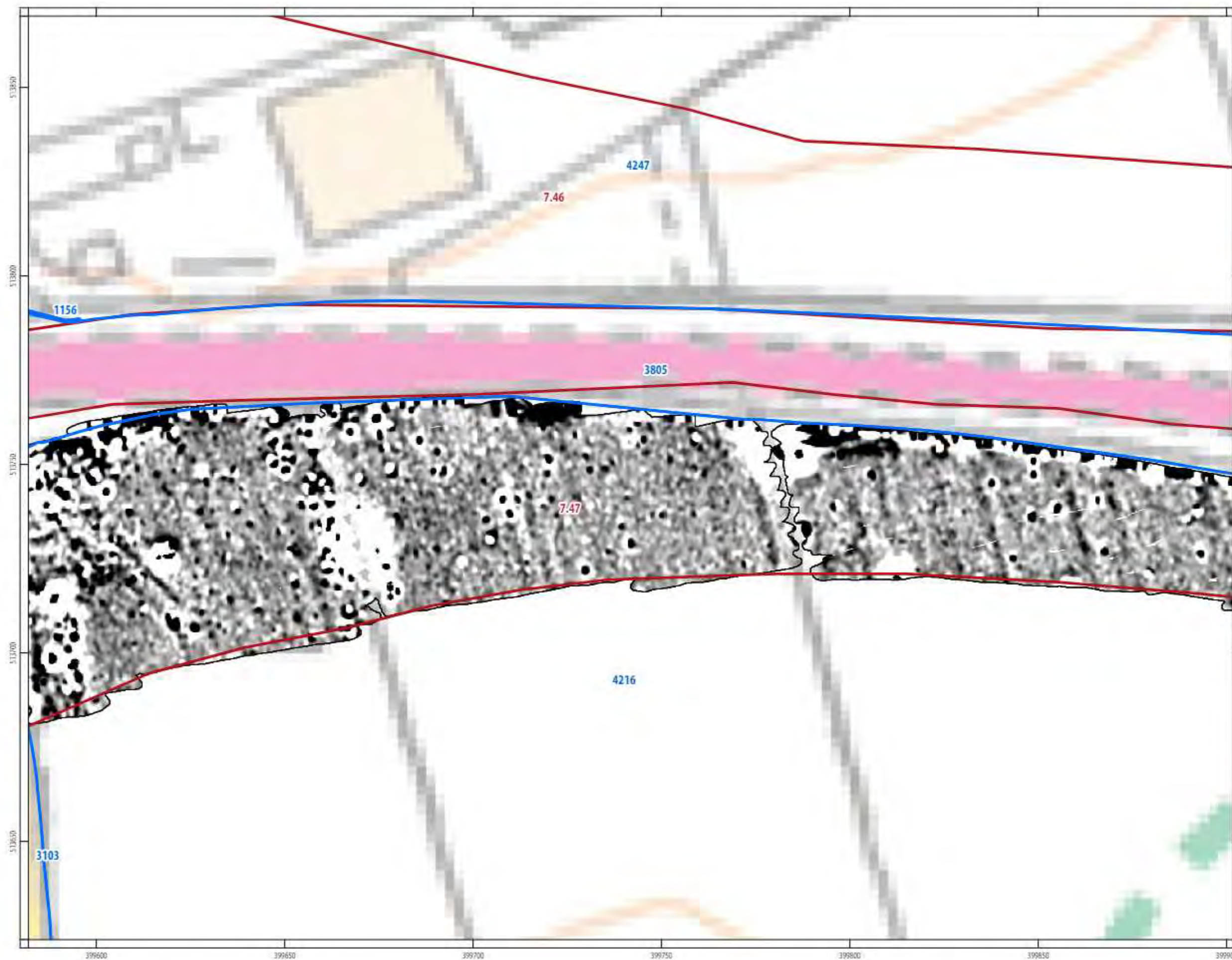
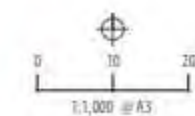


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



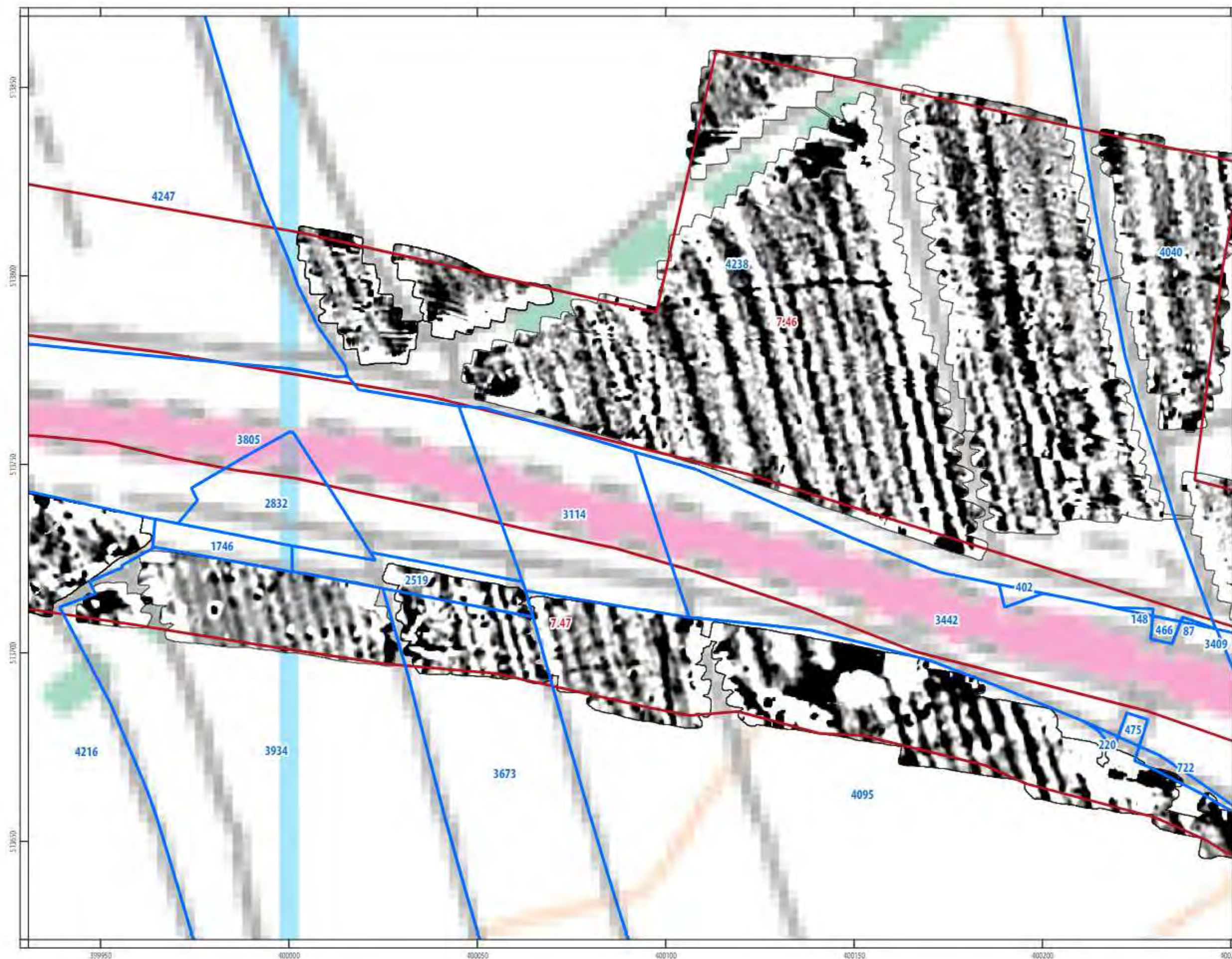
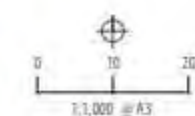


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

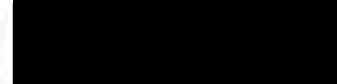


**PROJECT**  
ATFU20 - A66 Transpenine Upgrade

**CLIENT**  
Highways England





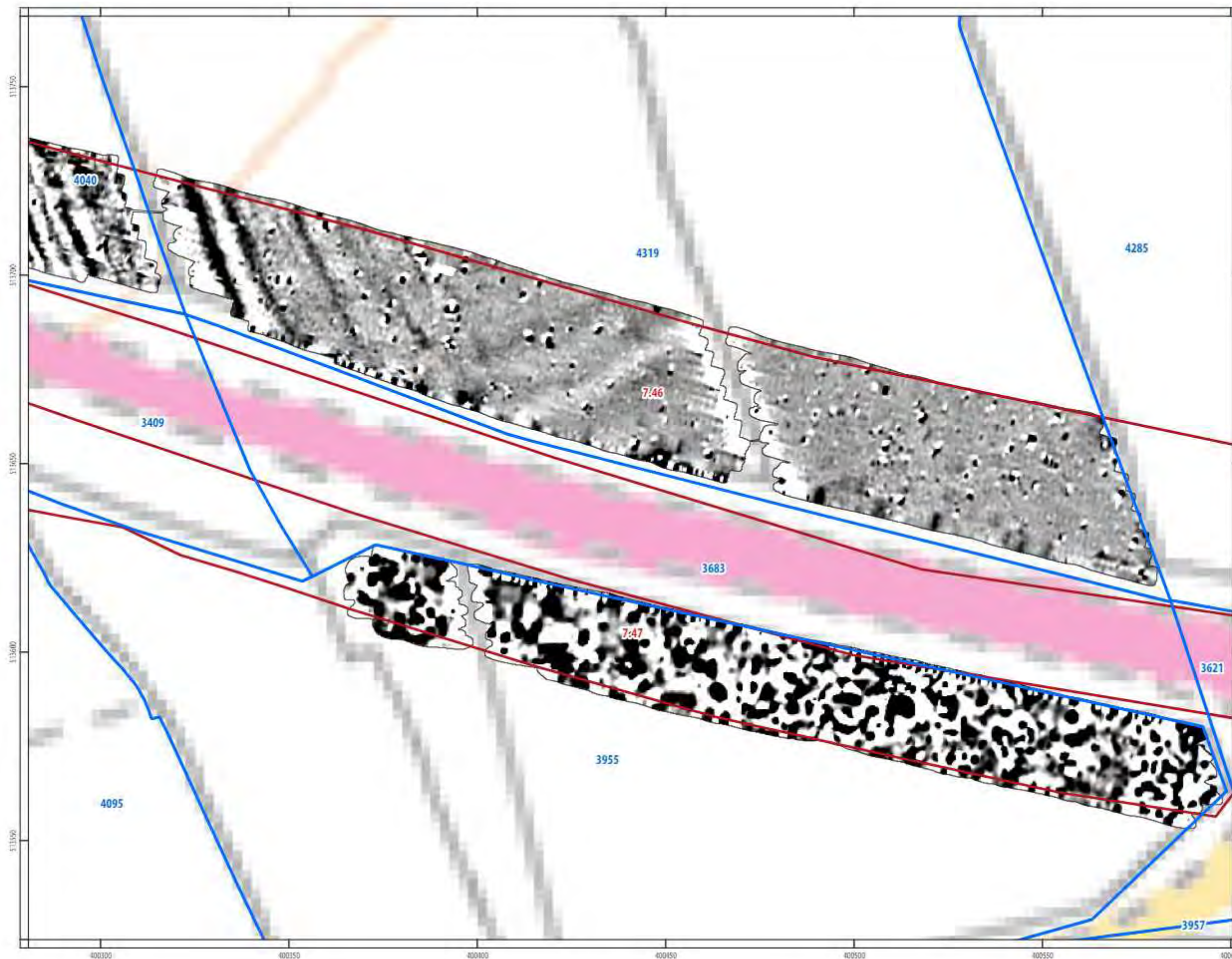
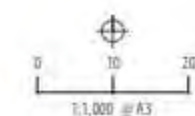


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

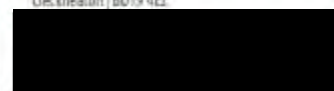


**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

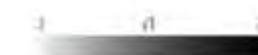
**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

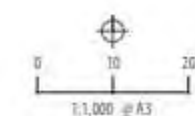


**PROJECT**

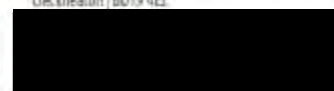
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

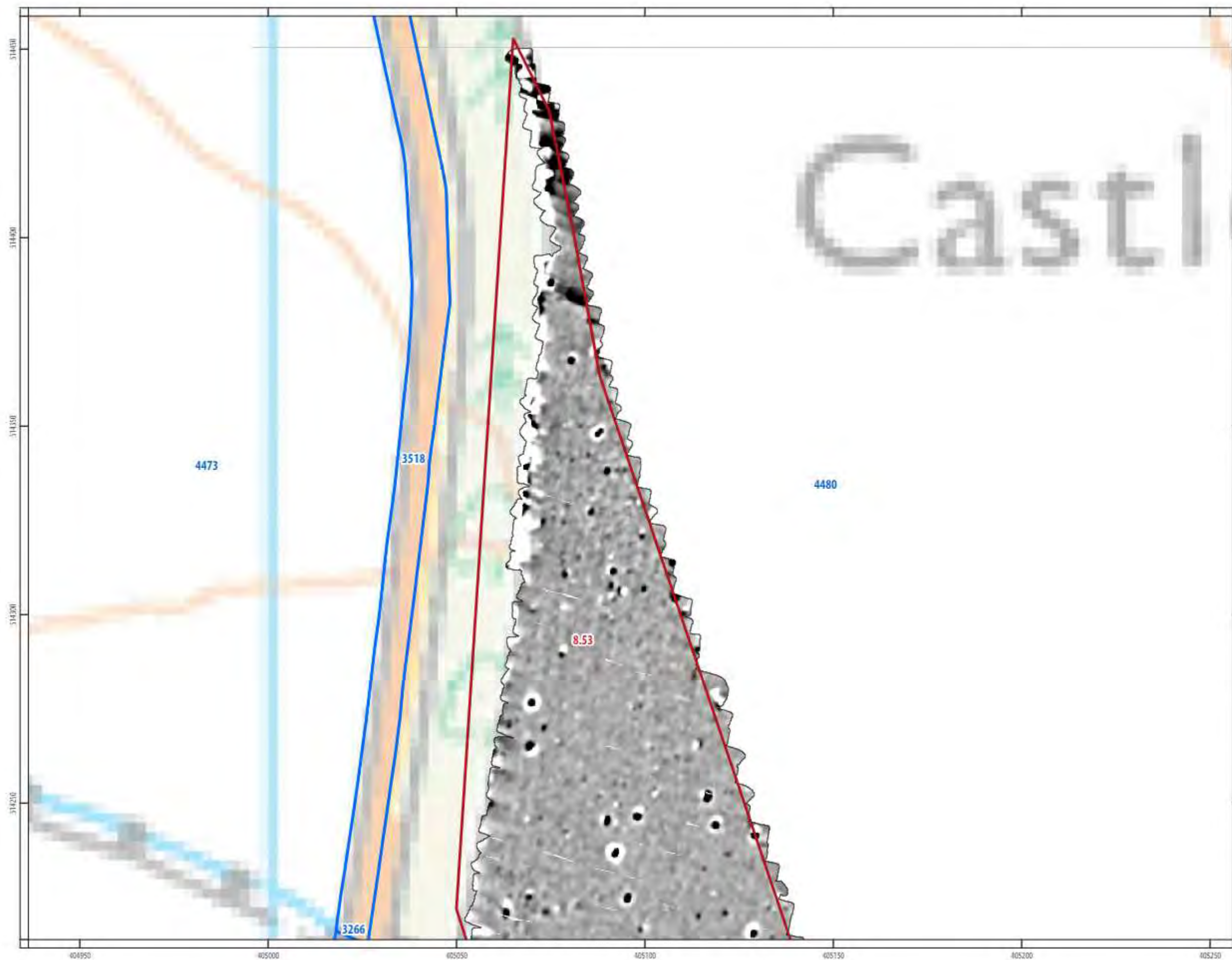
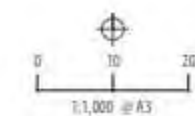


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

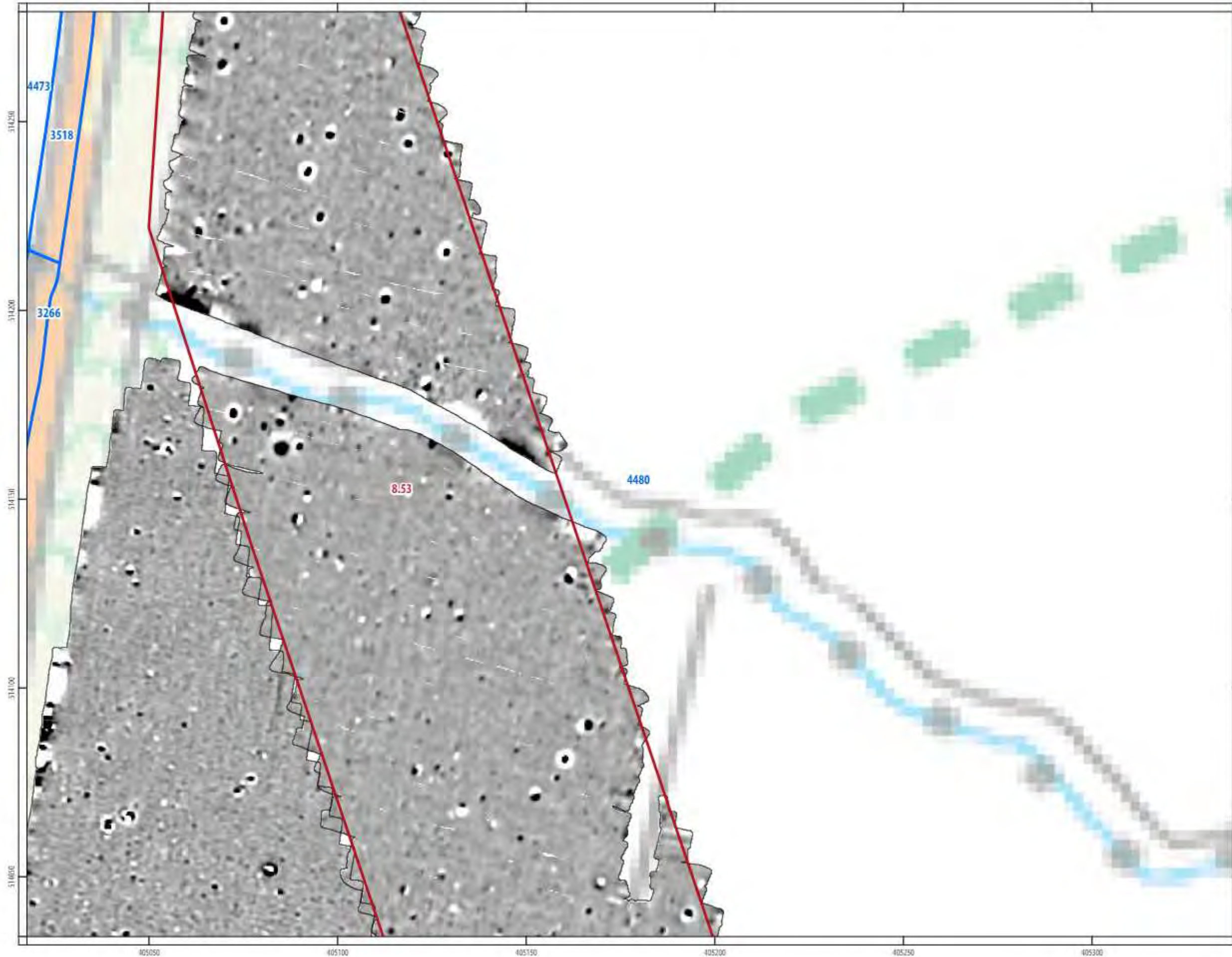


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





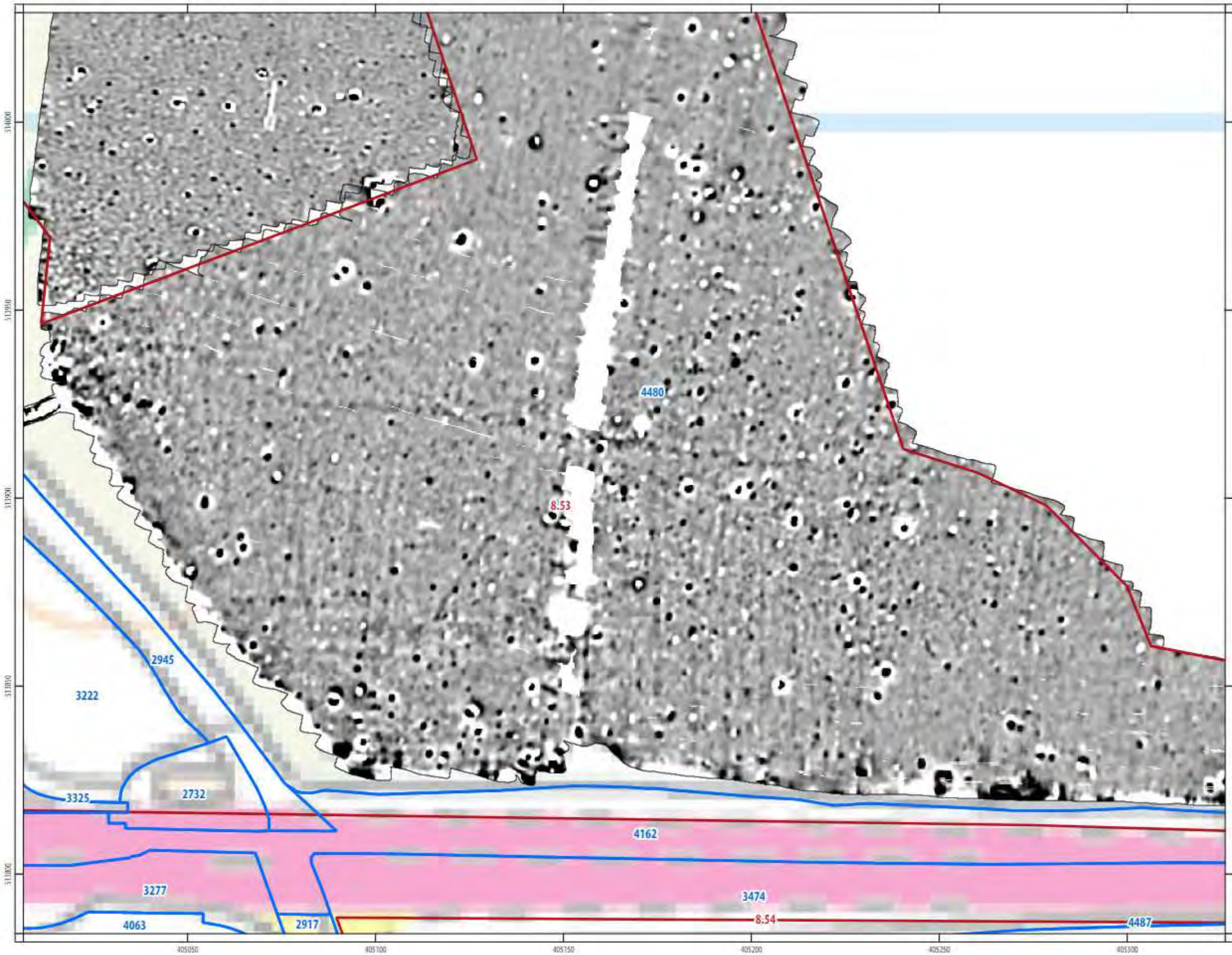


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



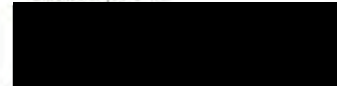
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 141 Processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

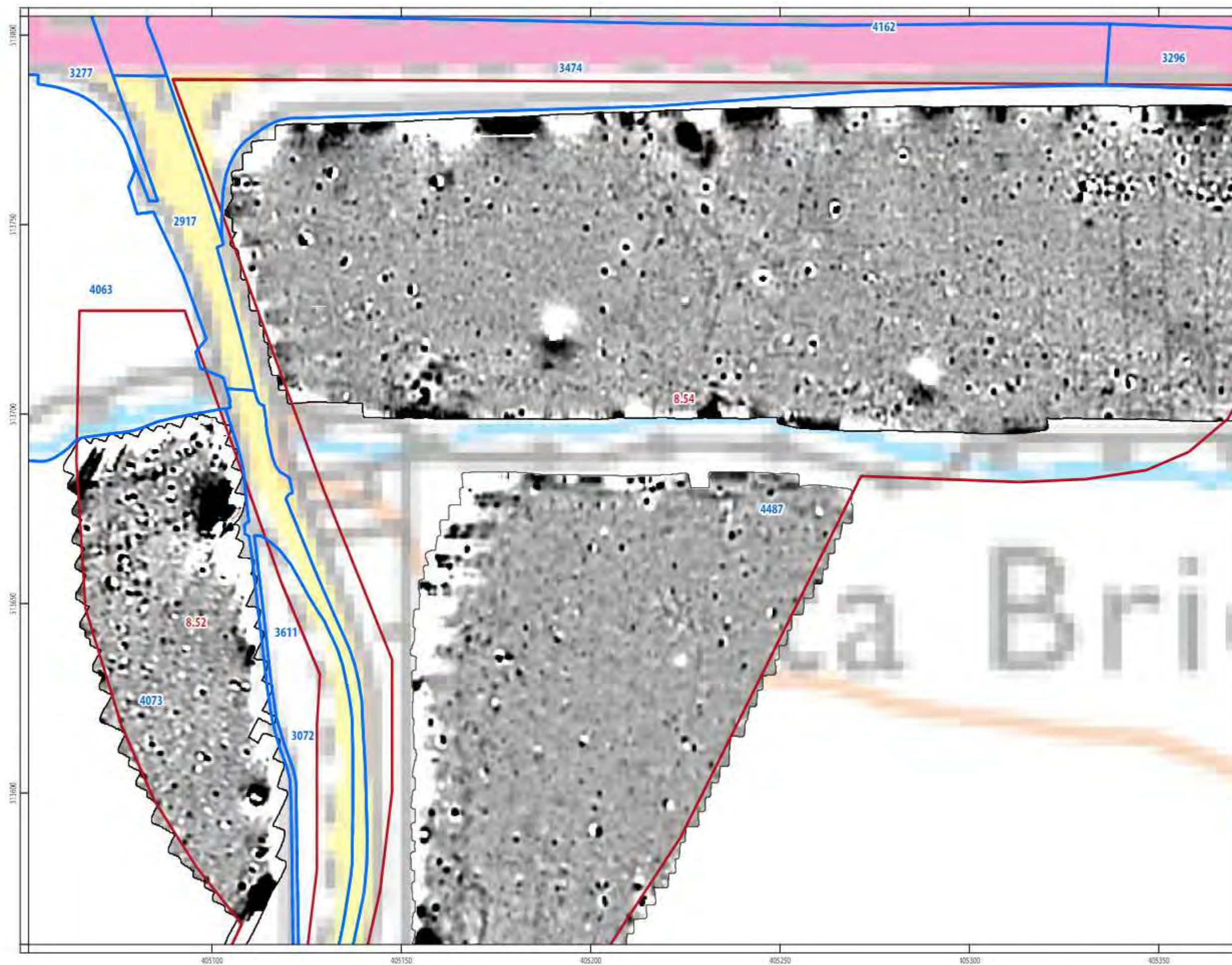
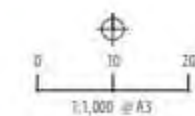


**PROJECT**

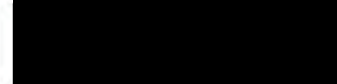
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

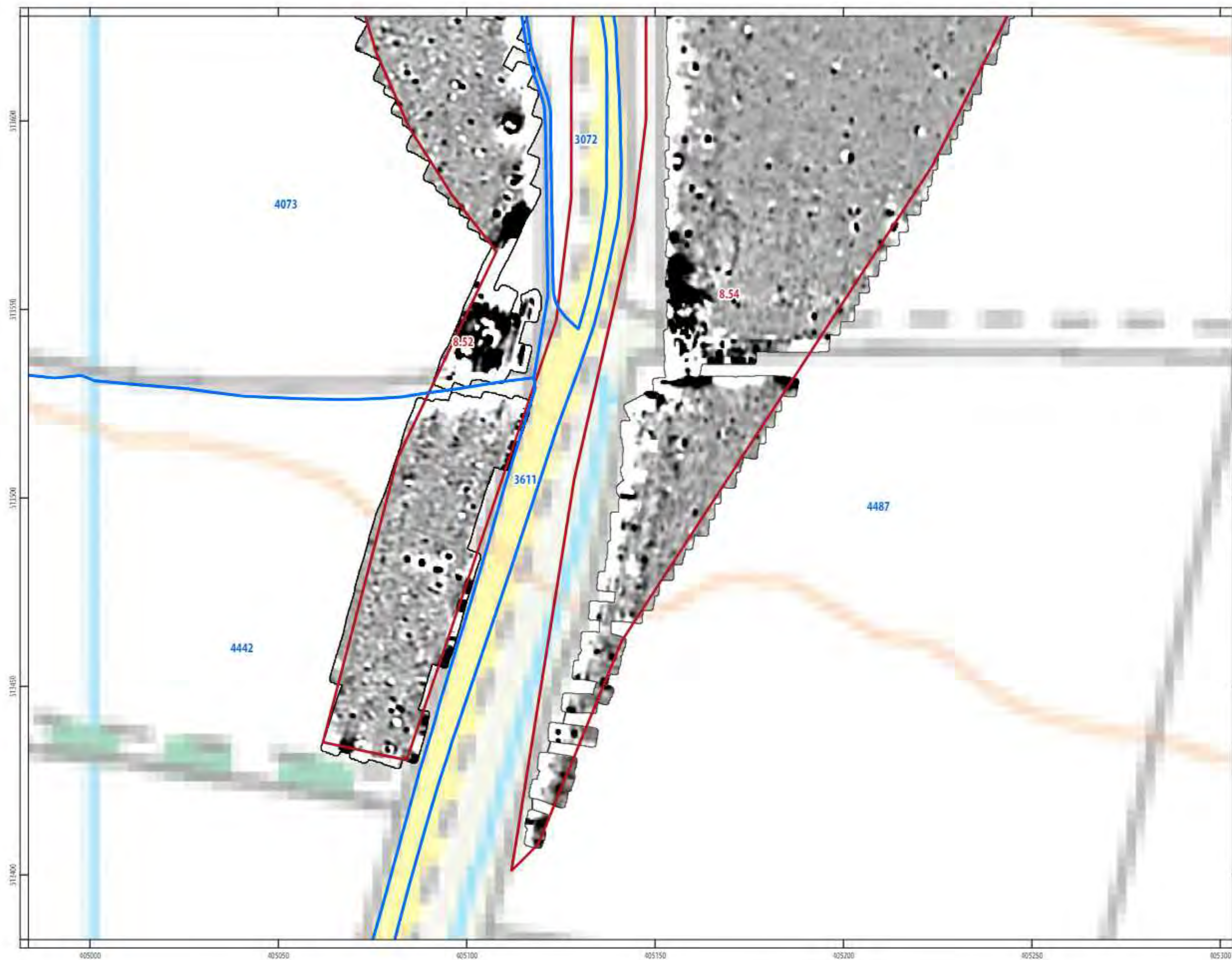
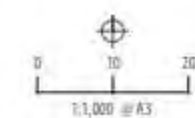


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

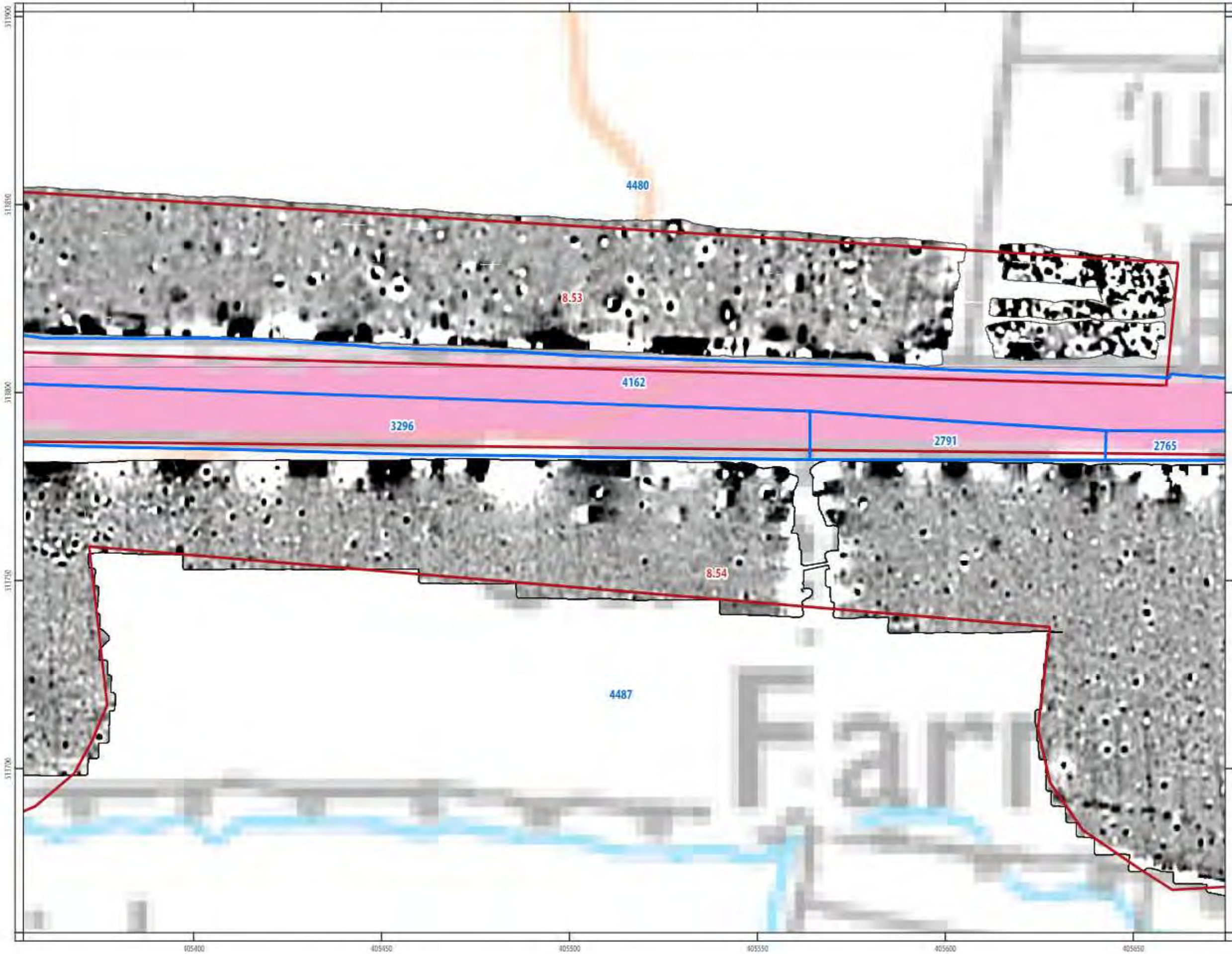
Highways England



ILLUS 143 Processed magnetometer data; Cross Lanes to Rokeby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

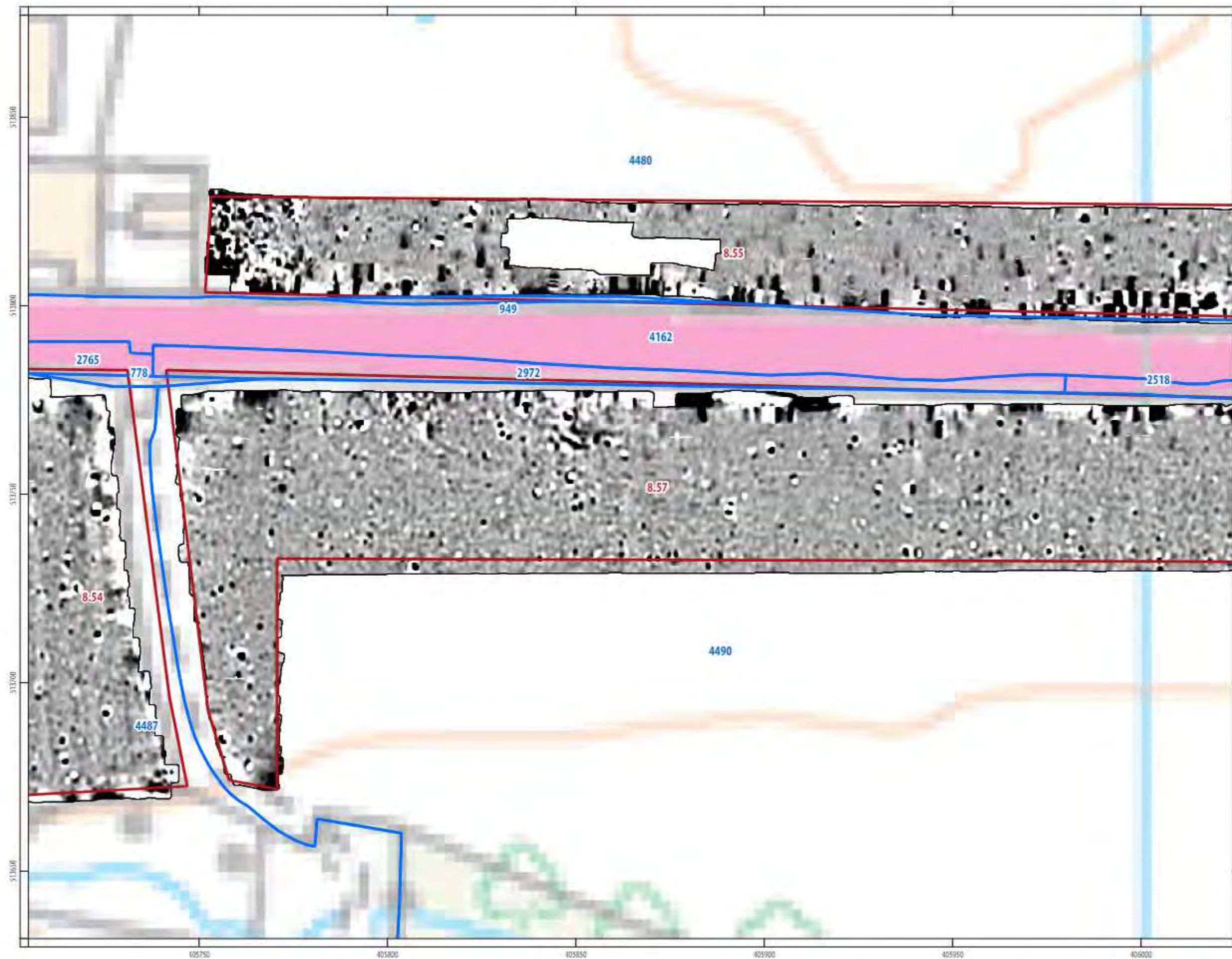
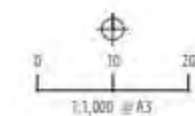


**PROJECT**

A1PU20 - A66 Transpennine Upgrade

**CLIENT**

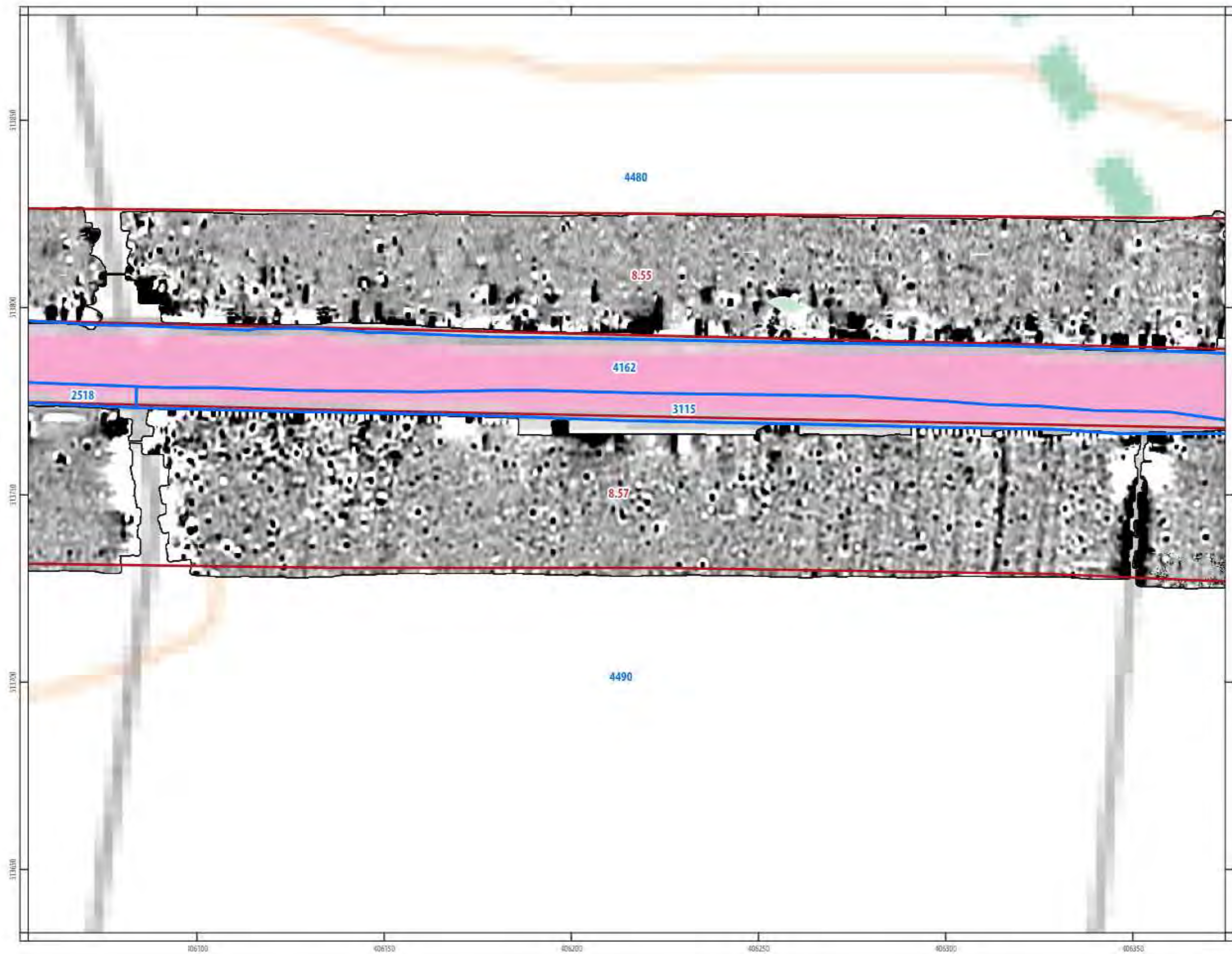
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

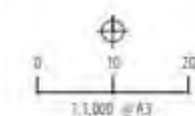


**PROJECT**

ATFU20 - A66 Transpenine Upgrade

**CLIENT**

Highways England



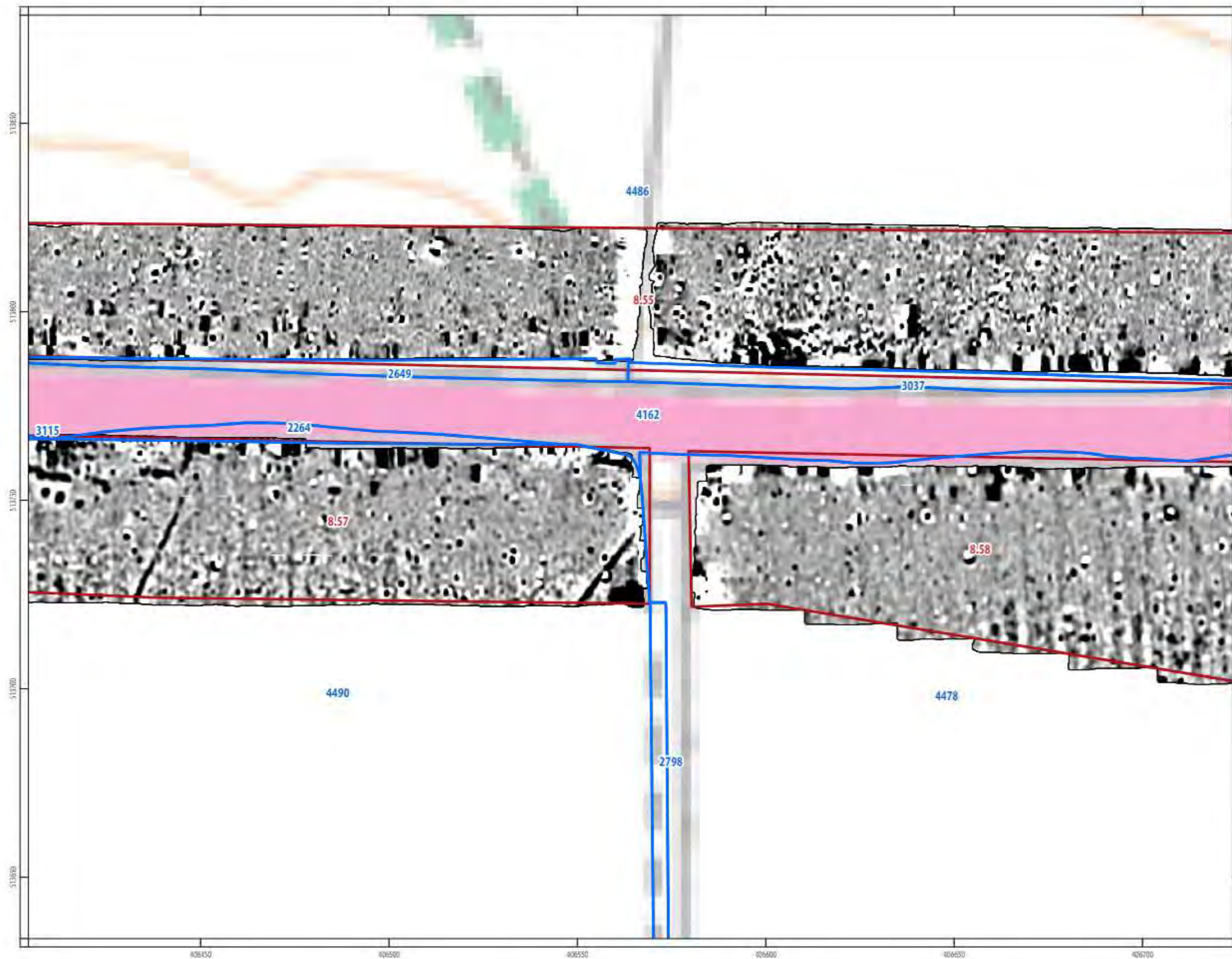
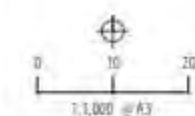


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

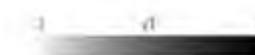


ILLUS 147 Processed magnetometer data; Cross Lanes to Rokeby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

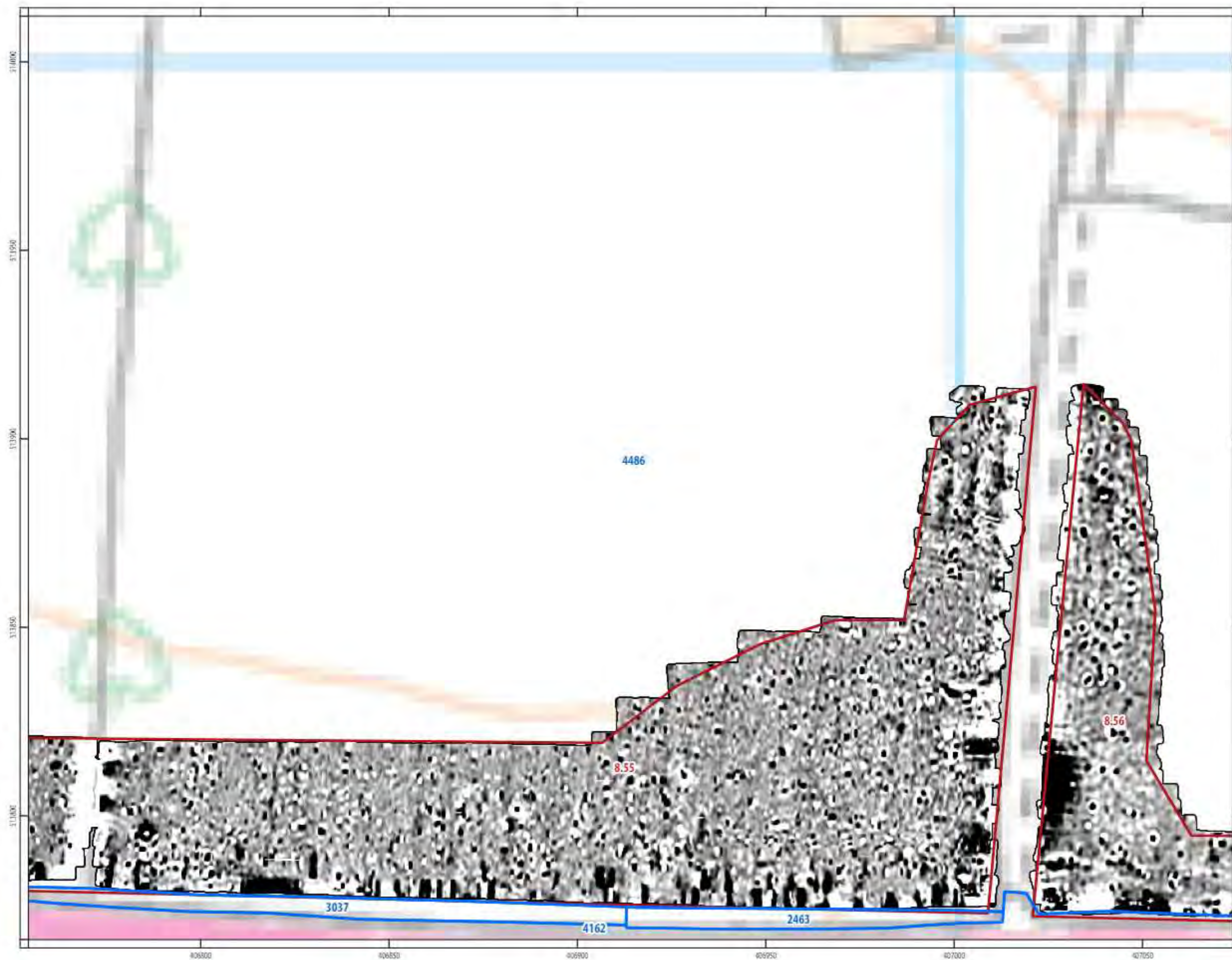
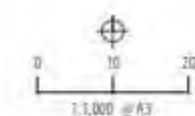


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

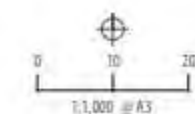


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

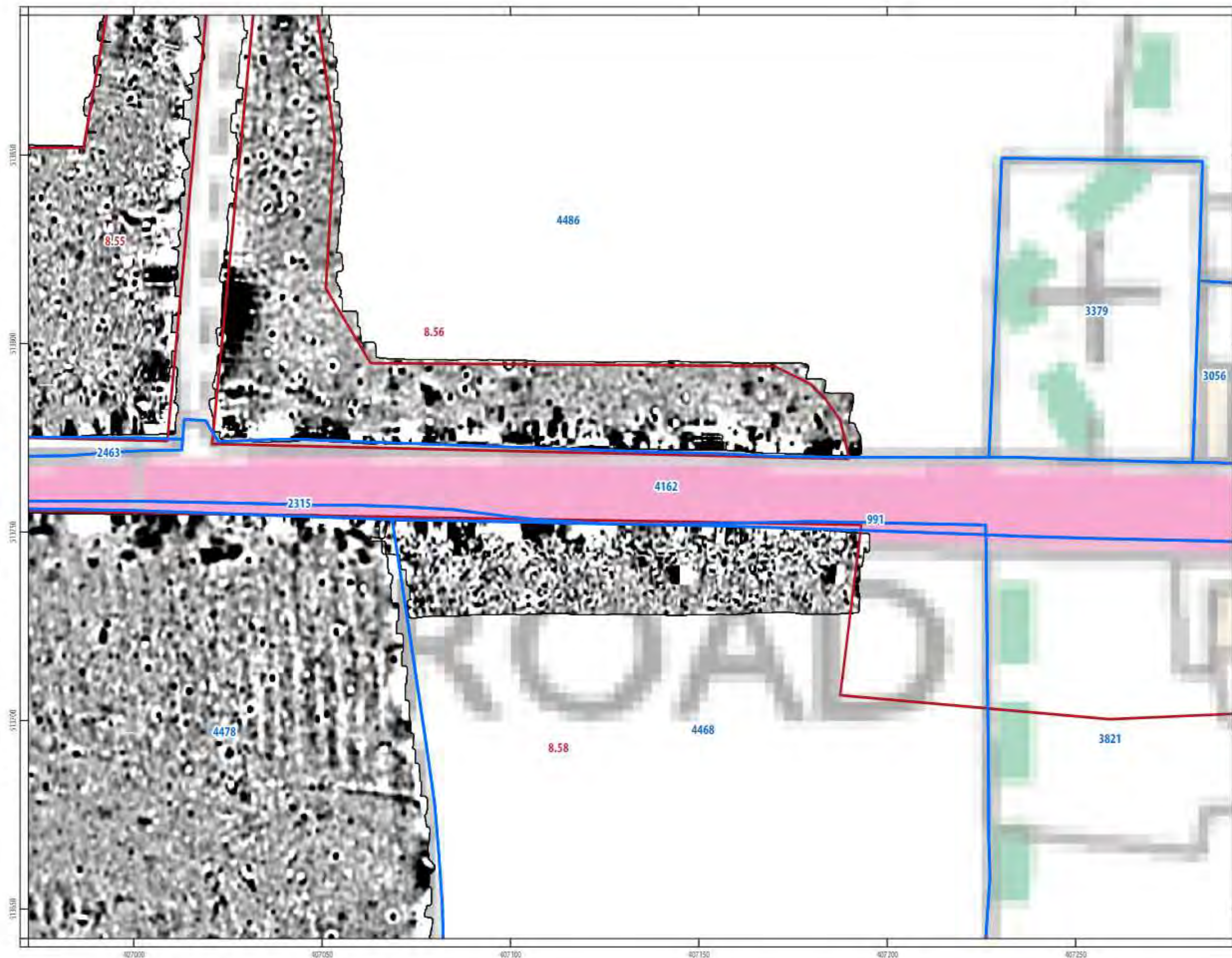
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

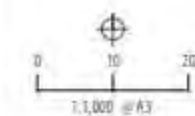


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



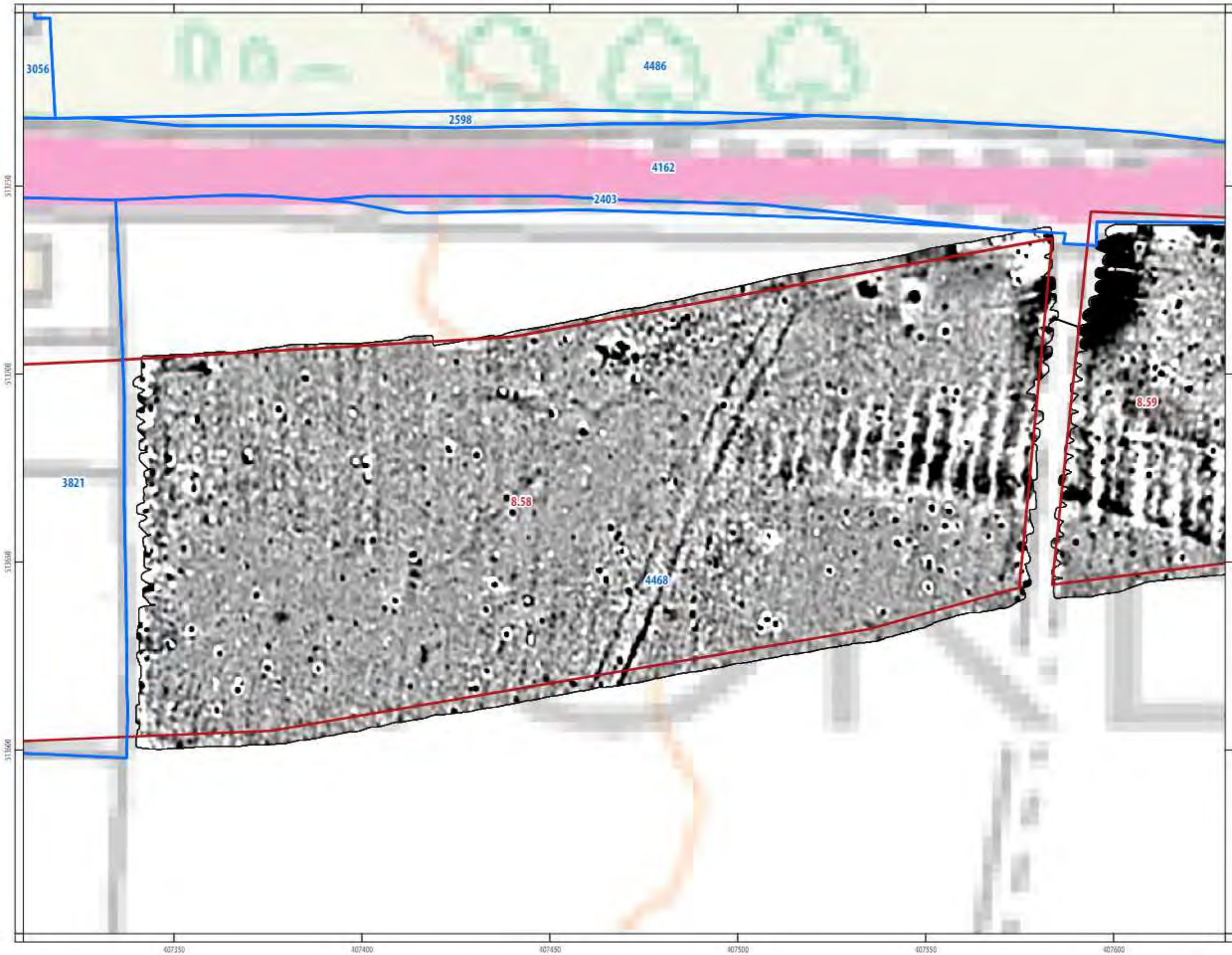


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

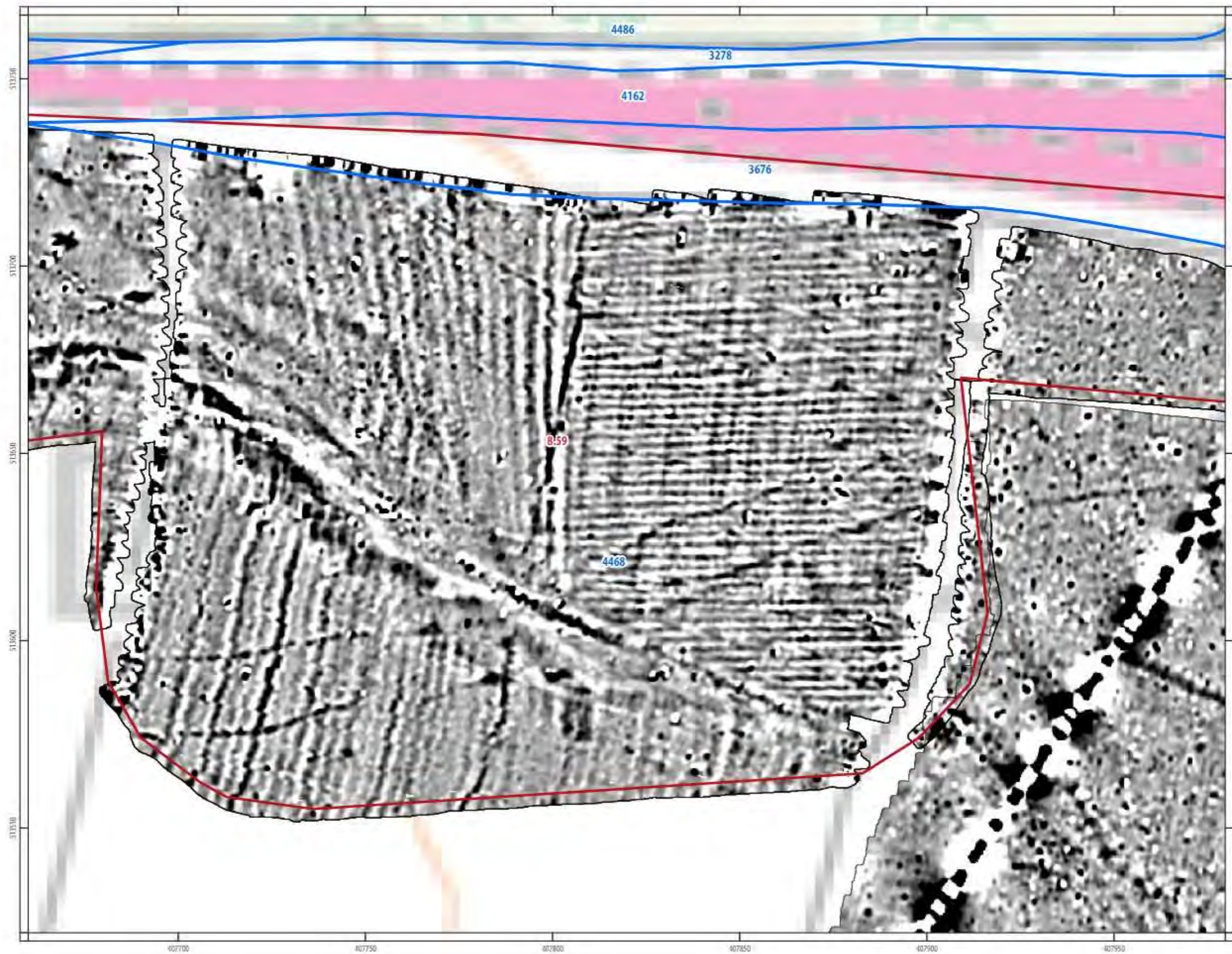


**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





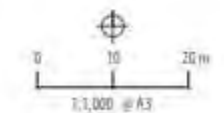


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
ATFU20 - A66 Transpenine Upgrade

**CLIENT**  
Highways England



ILLUS 152 Processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

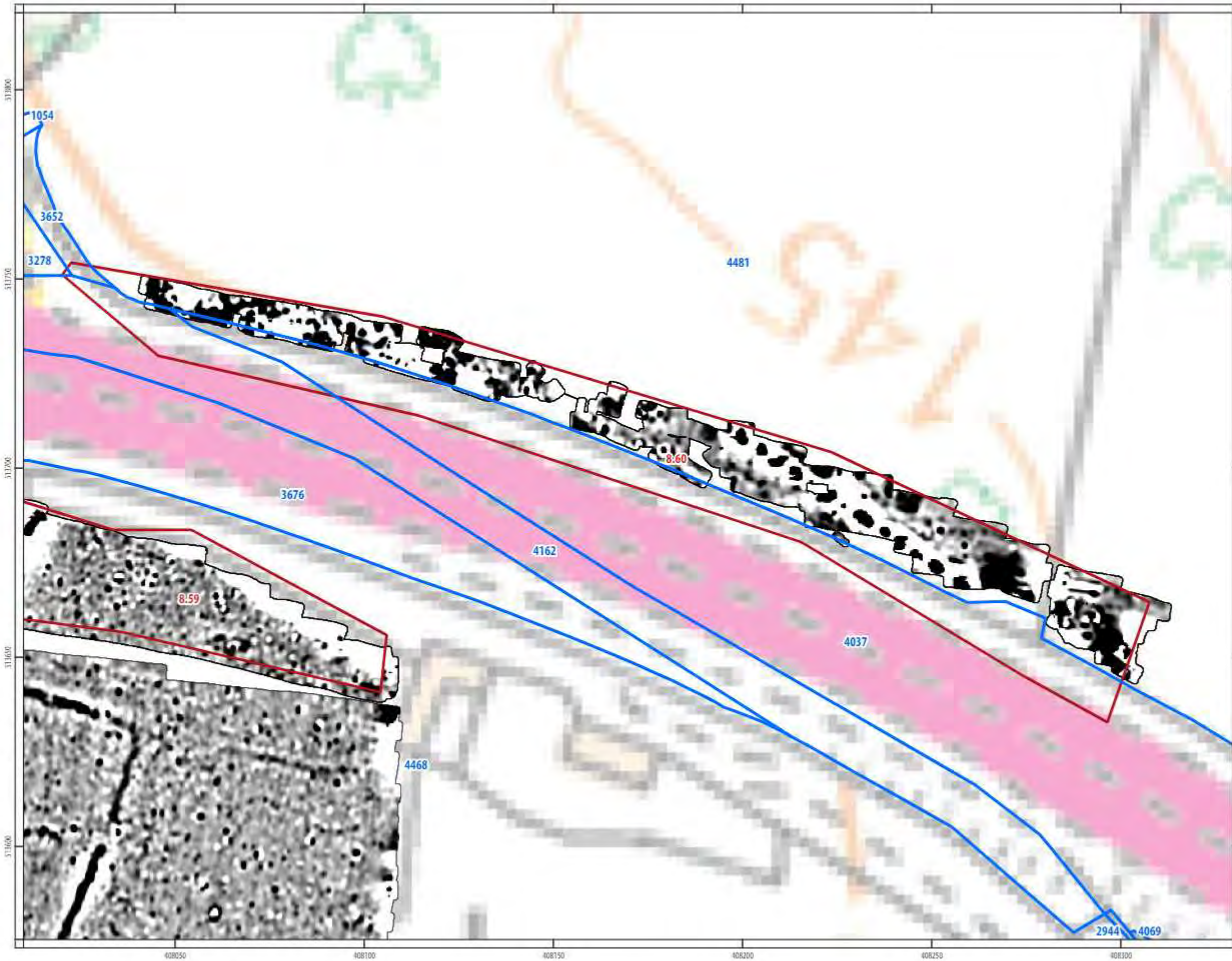


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





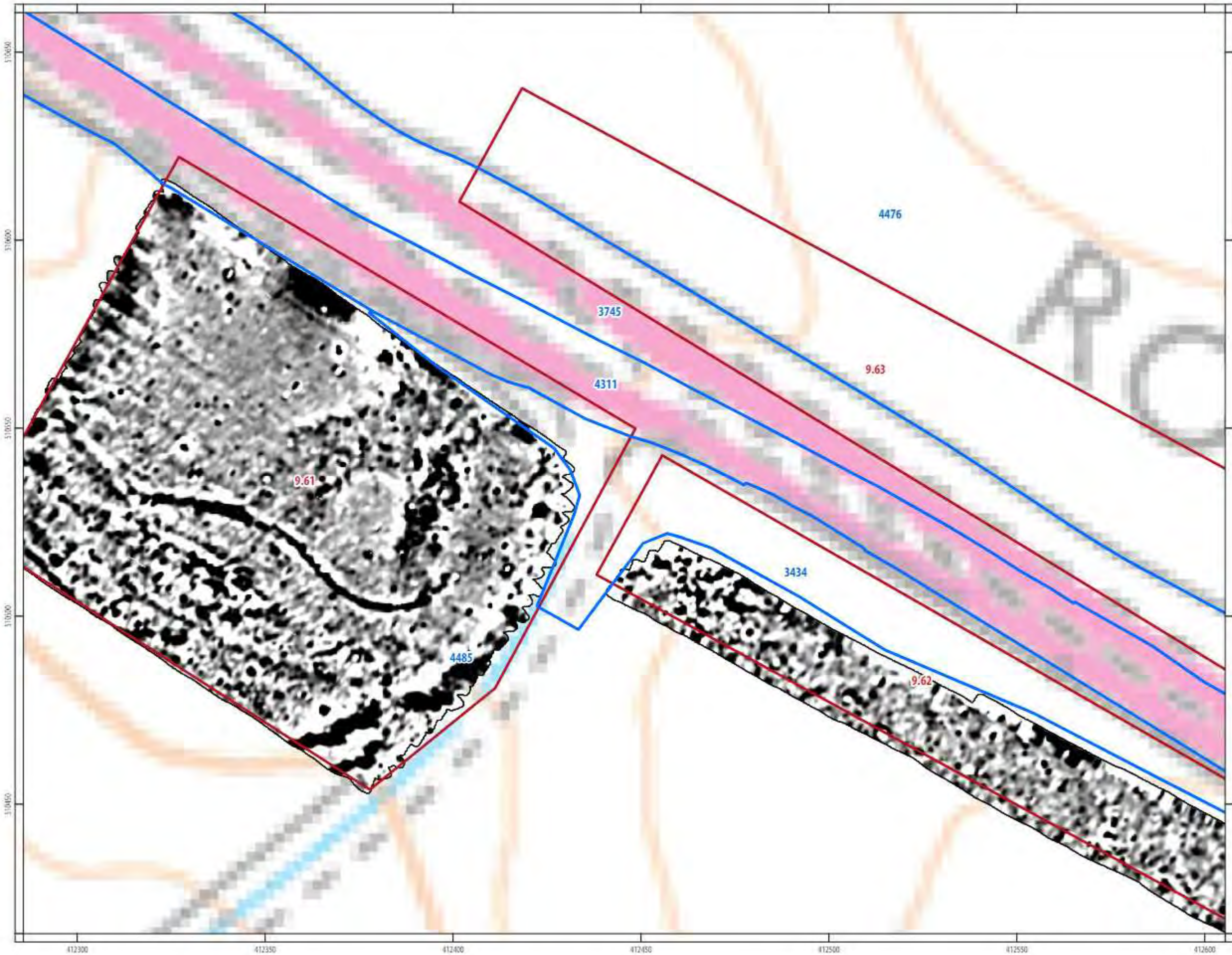


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



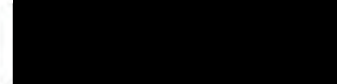
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 154 Processed magnetometer data; Stephen Bank to Carkin Moor





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

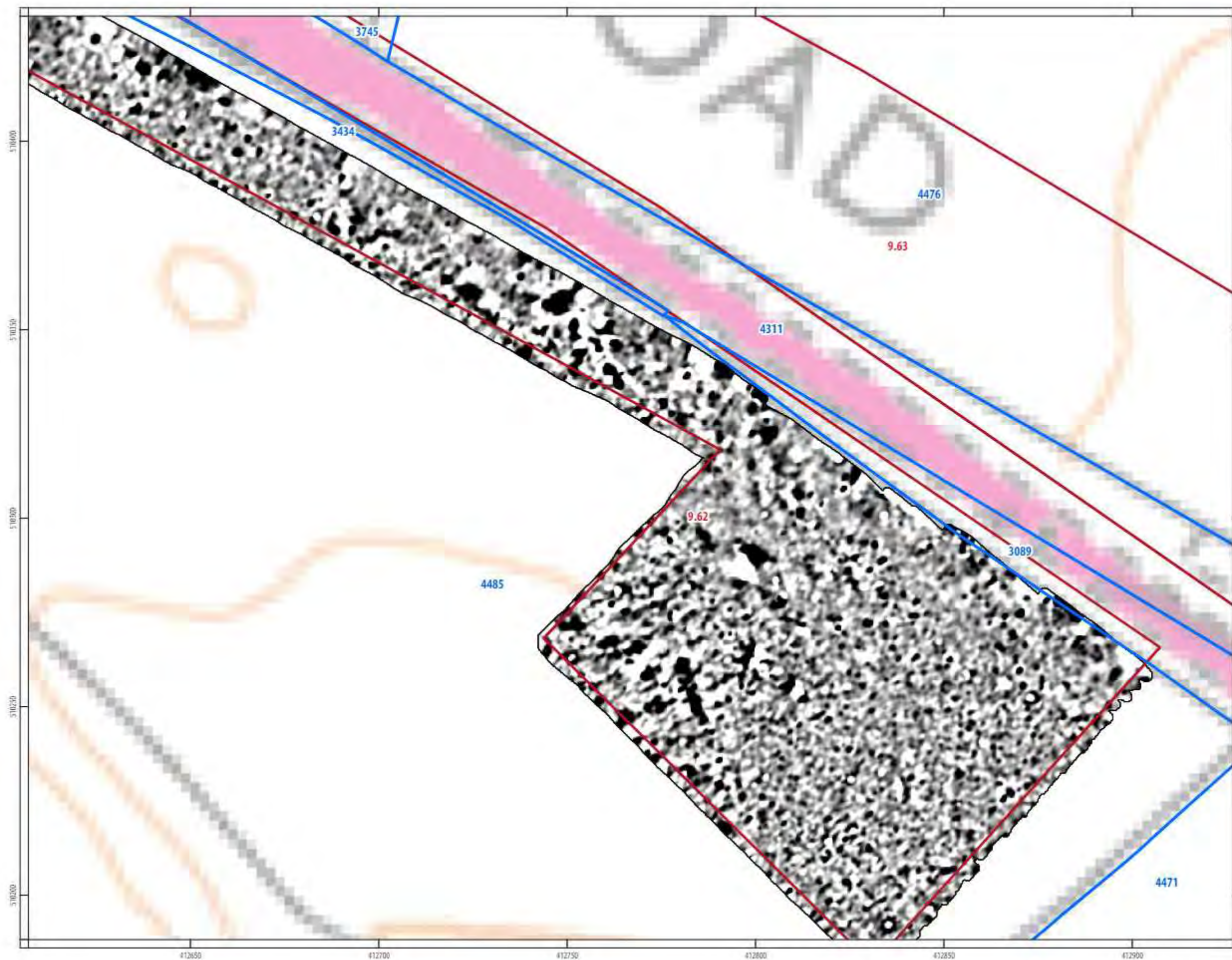
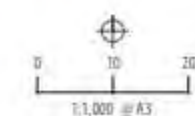


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

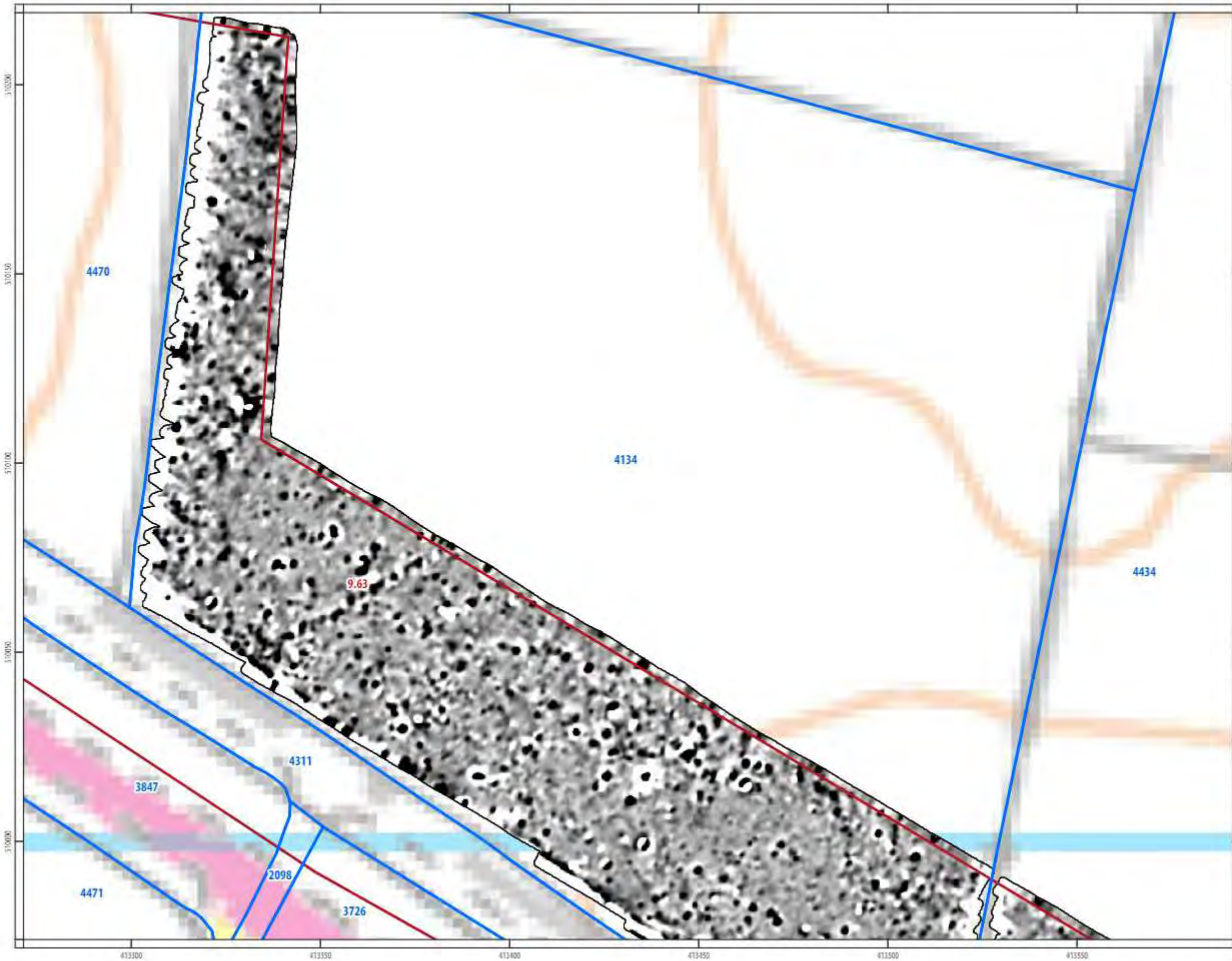


**PROJECT**

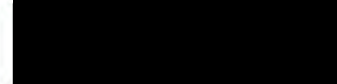
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

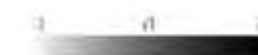
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

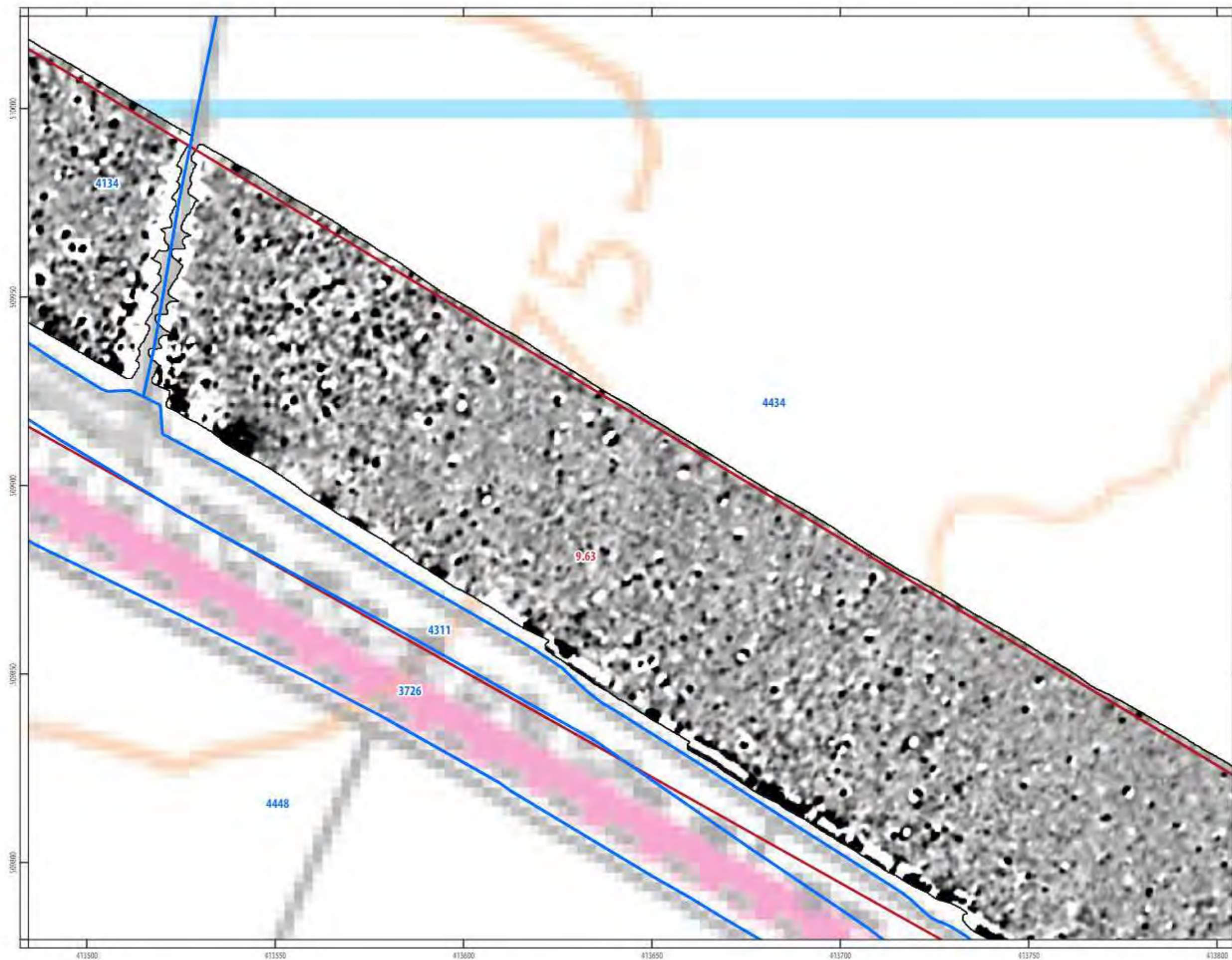
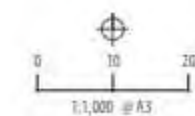


**PROJECT**

ATFU20 - A66 Transpennine Upgrade





**CLIENT**

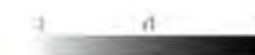
Highways England



ILLUS 157 Processed magnetometer data; Stephen Bank to Carlin Moor



-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

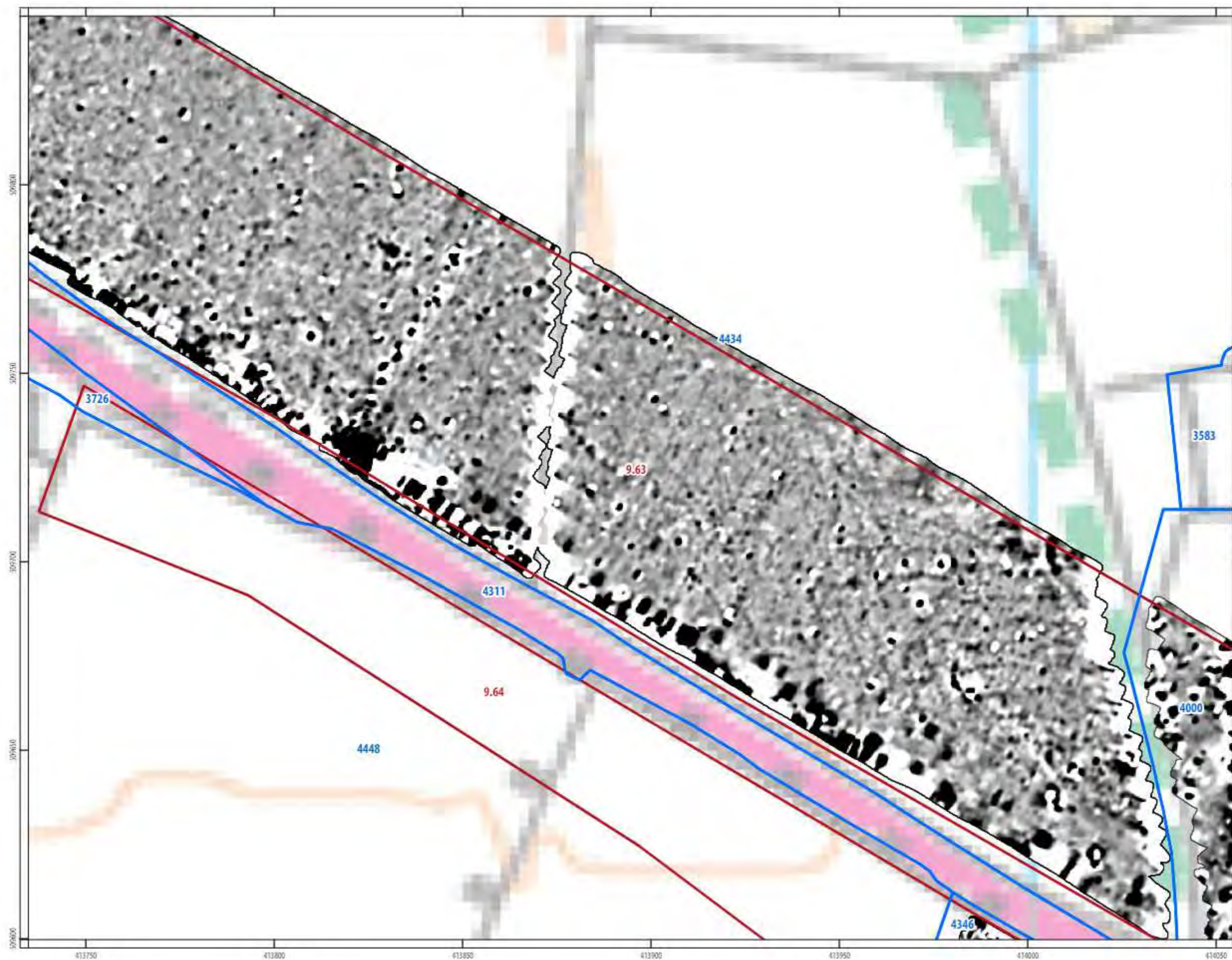
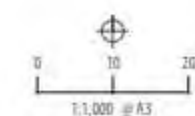


**PROJECT**





ATFU20 - A66 Transpennine Upgrade

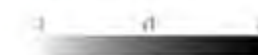
**CLIENT**

Highways England





-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

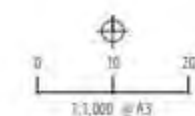


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





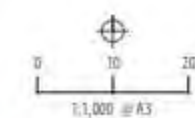


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument







**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument



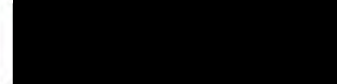
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS T62 Processed magnetometer data; Stephen Bank to Carlin Moor





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

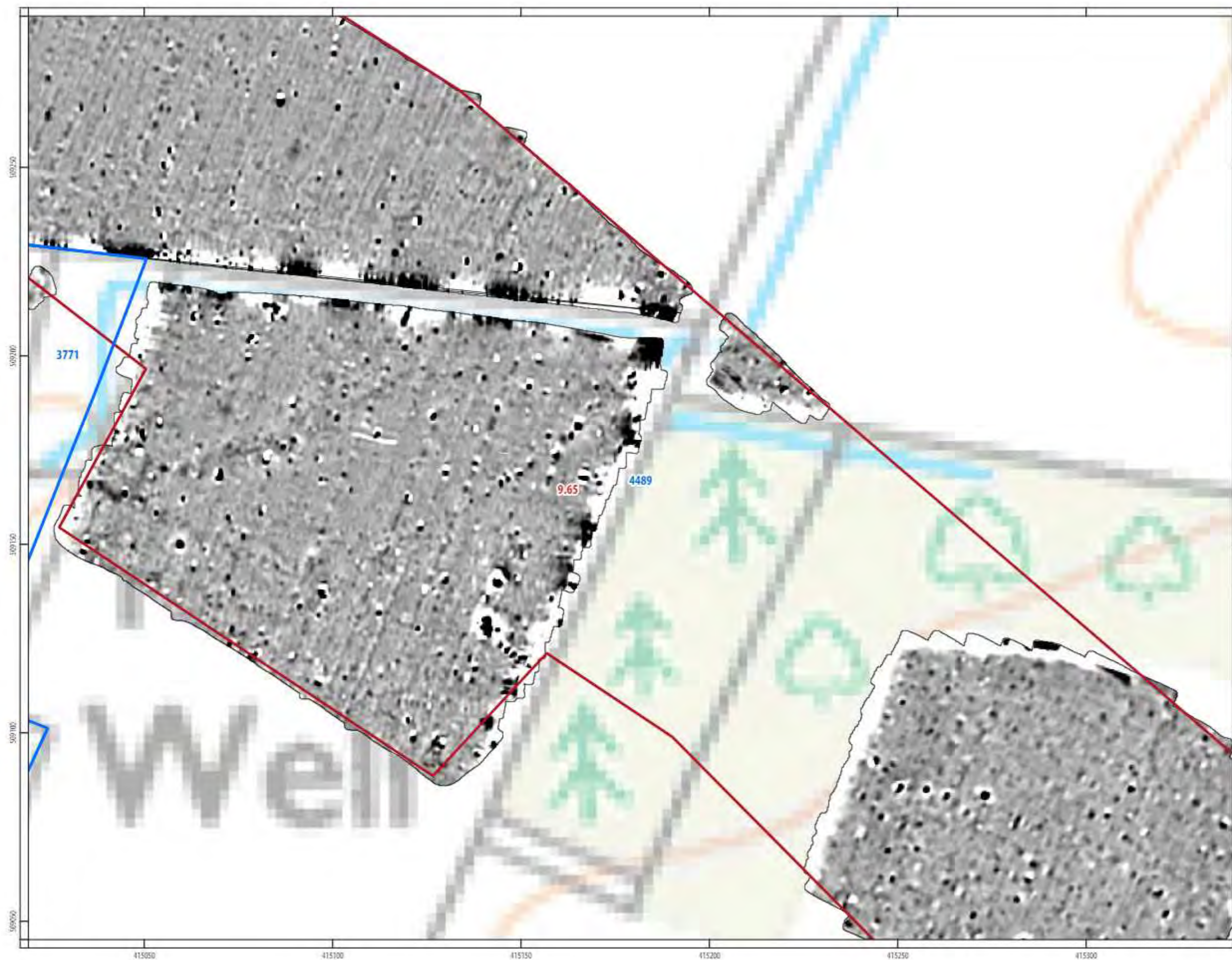
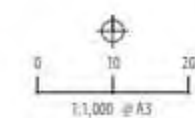


**PROJECT**

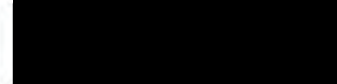
ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

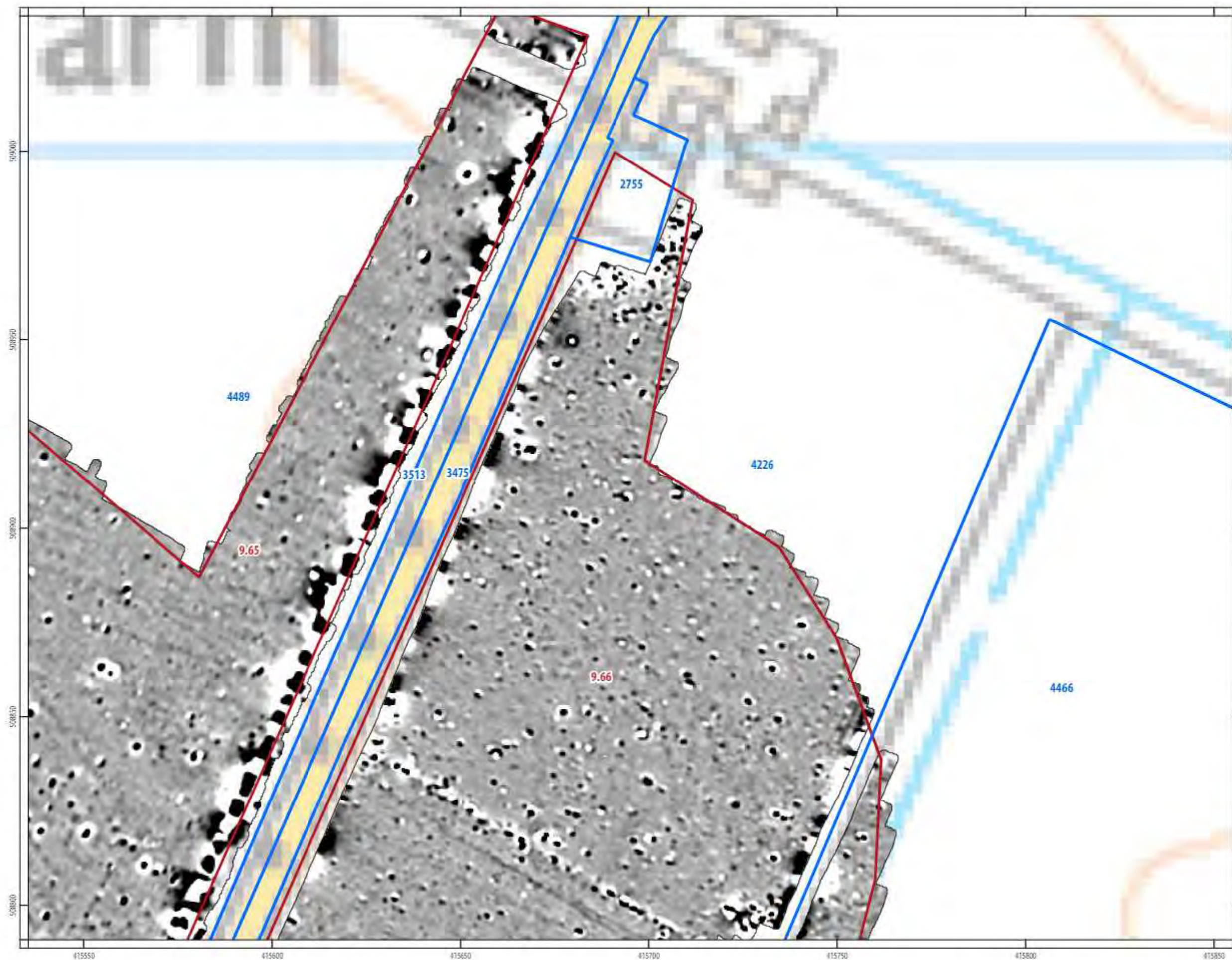
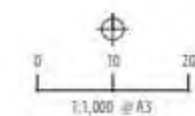


**PROJECT**

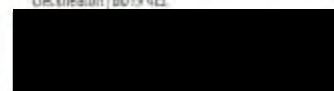
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

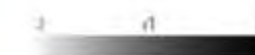
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- Scheduled Monument

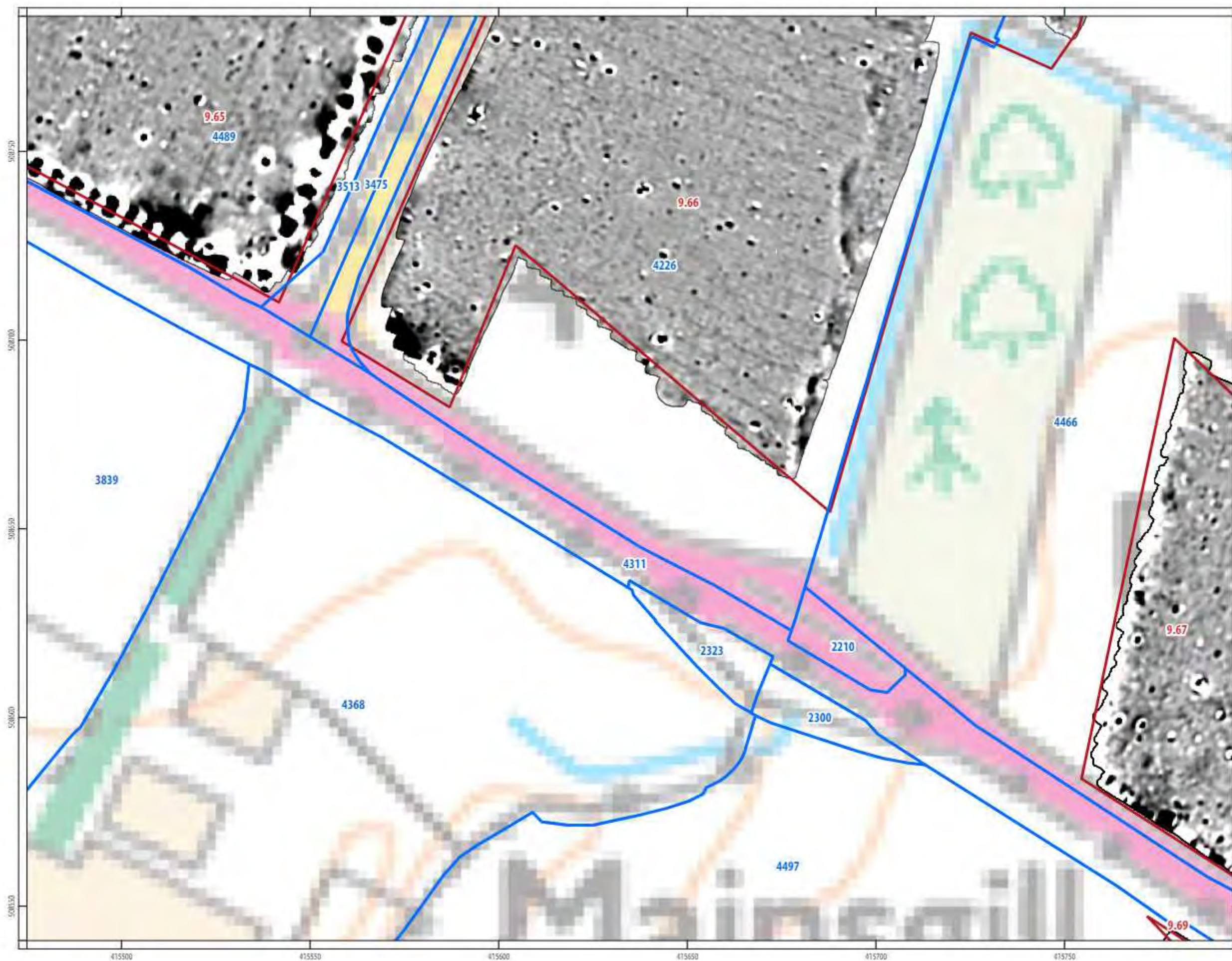
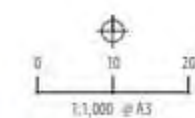


**PROJECT**





ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

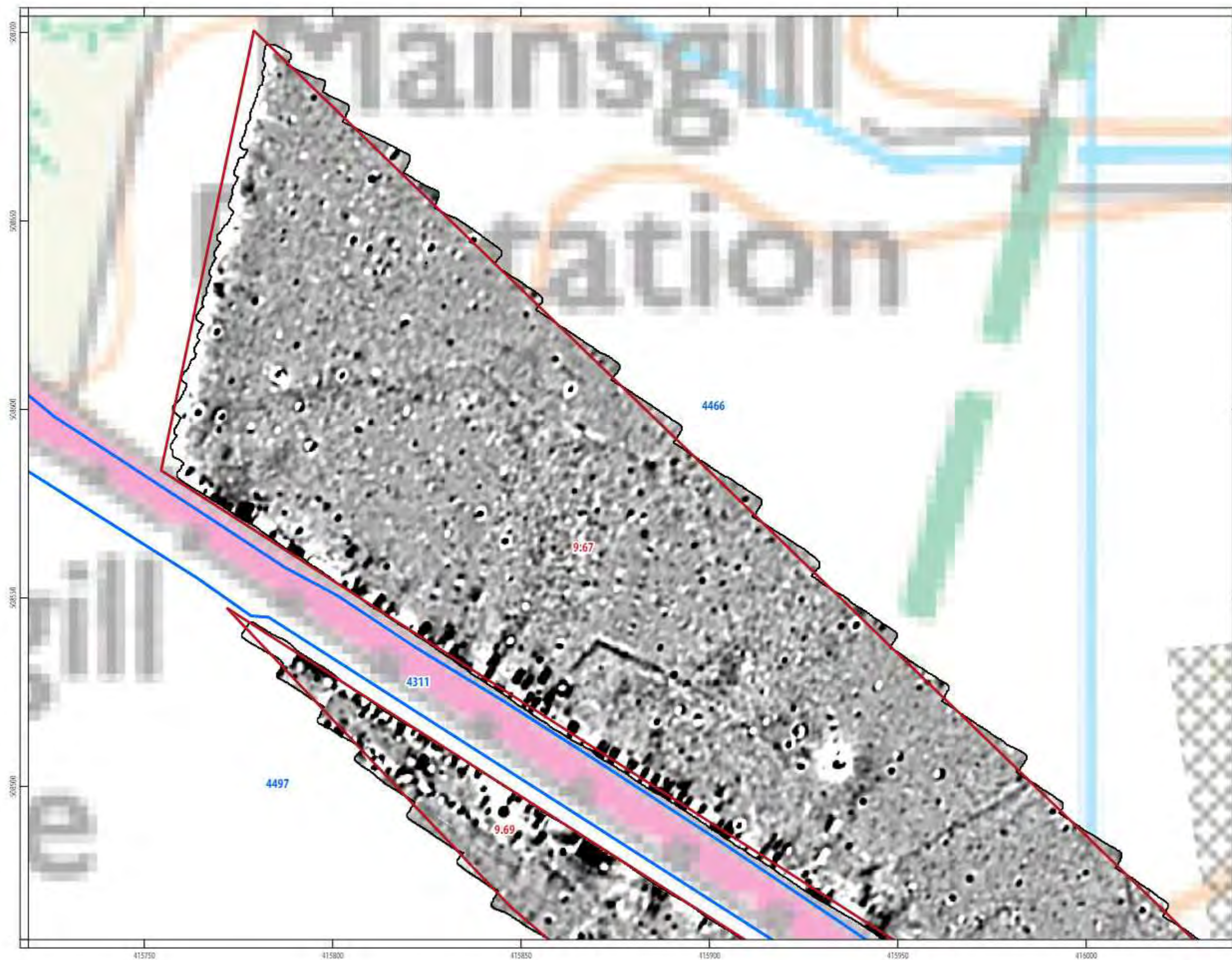
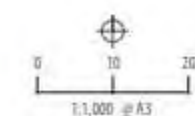


**PROJECT**





ATFU20 - A66 Transpennine Upgrade

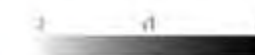
**CLIENT**

Highways England





-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

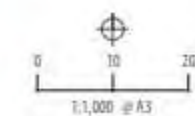


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

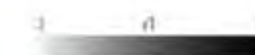
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

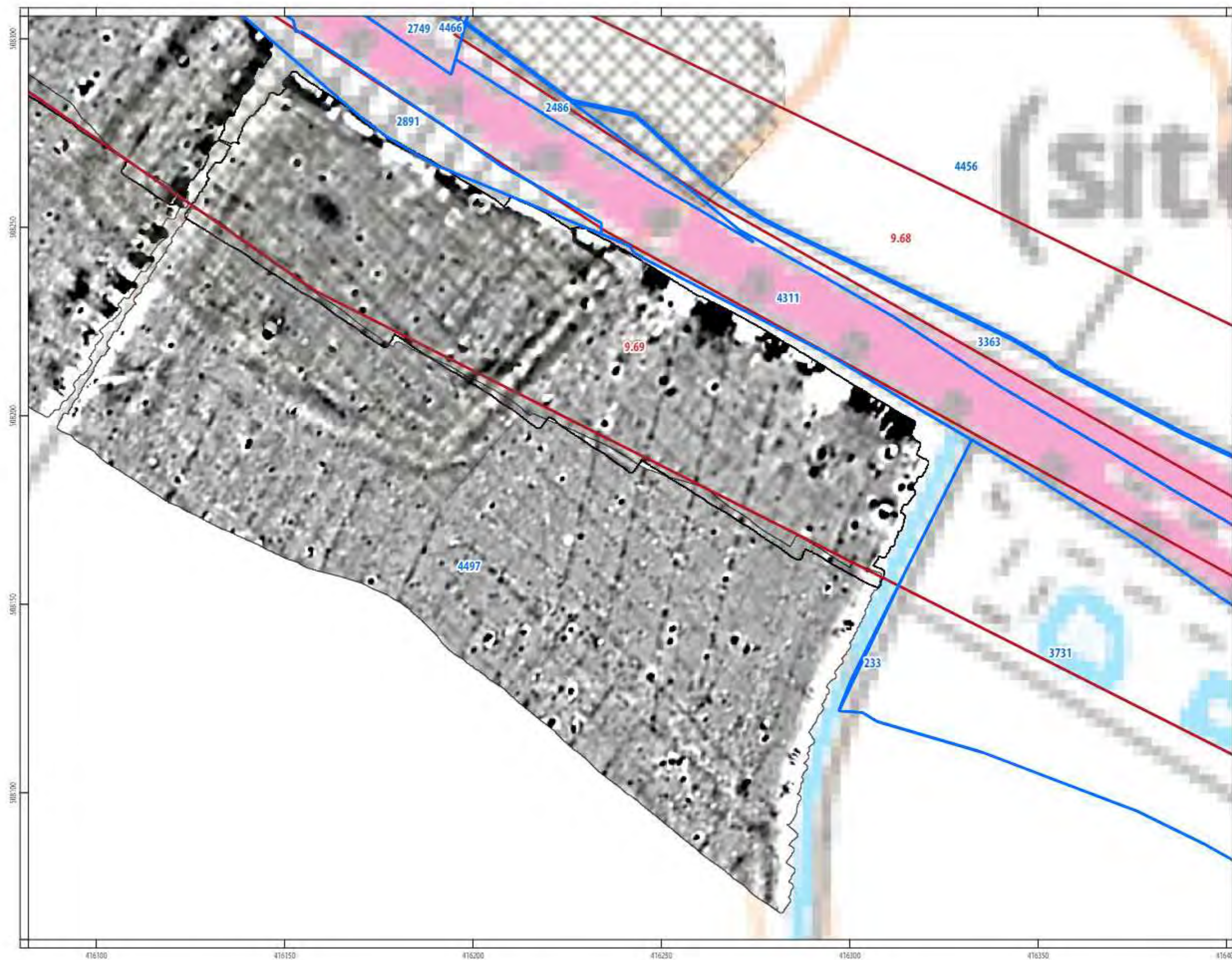
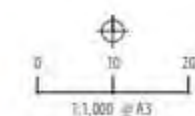


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

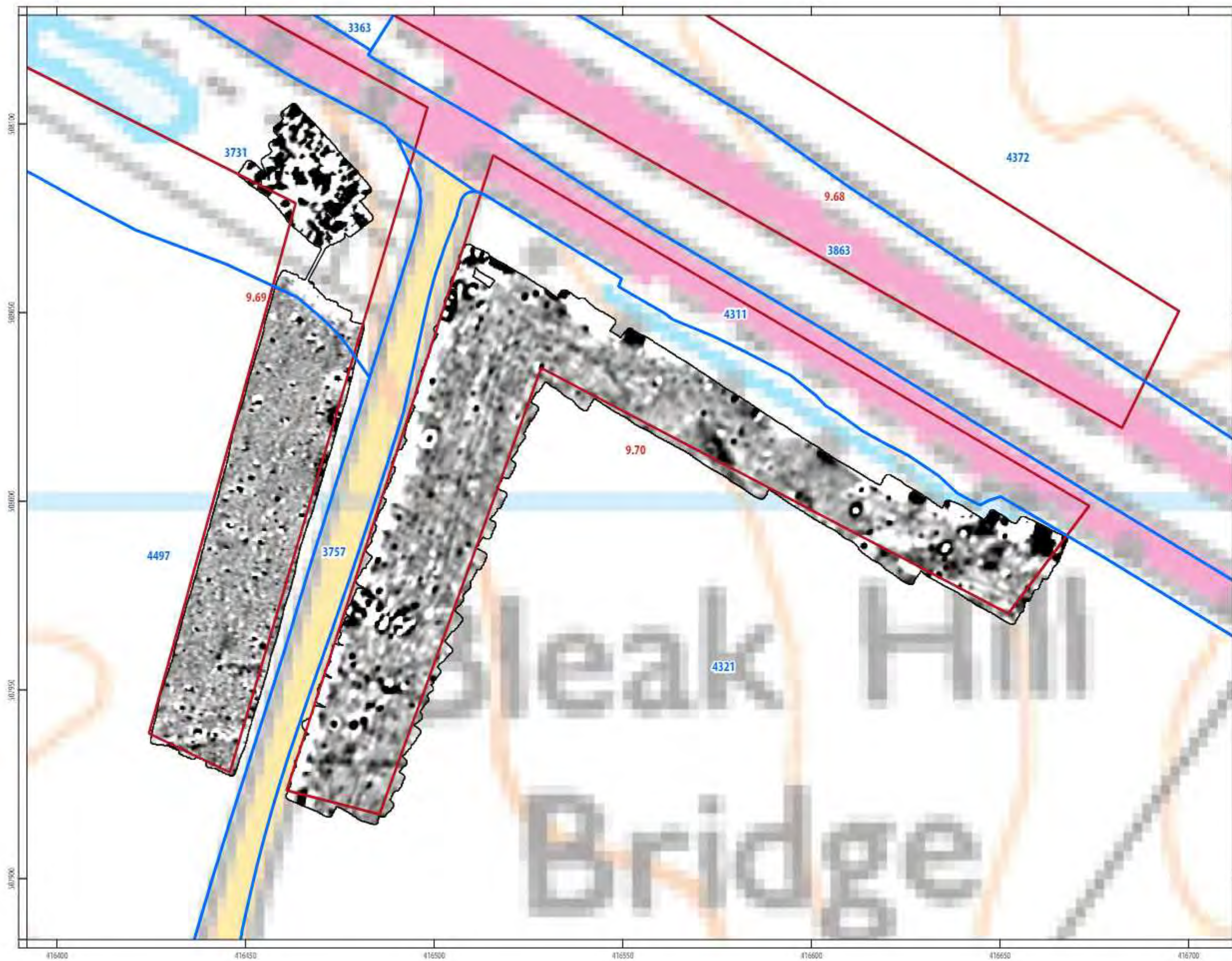
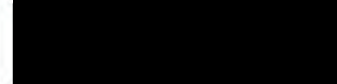
**CLIENT**

Highways England



ILLUS 168 Processed magnetometer data; Stephen Bank to Carkin Moor





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

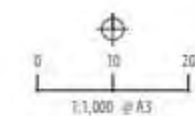


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England

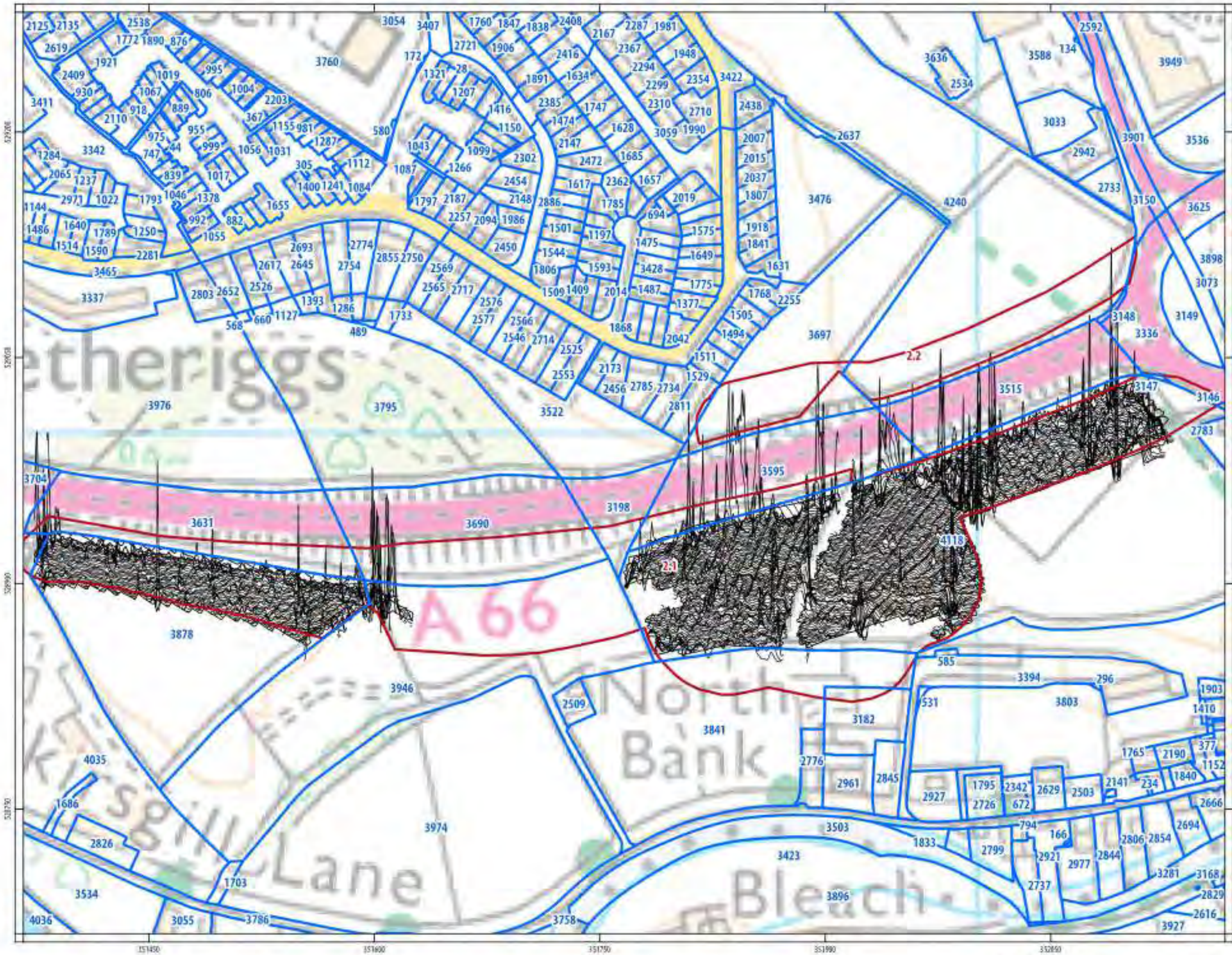
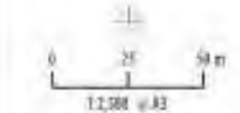




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 4Y - 10mDEM
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

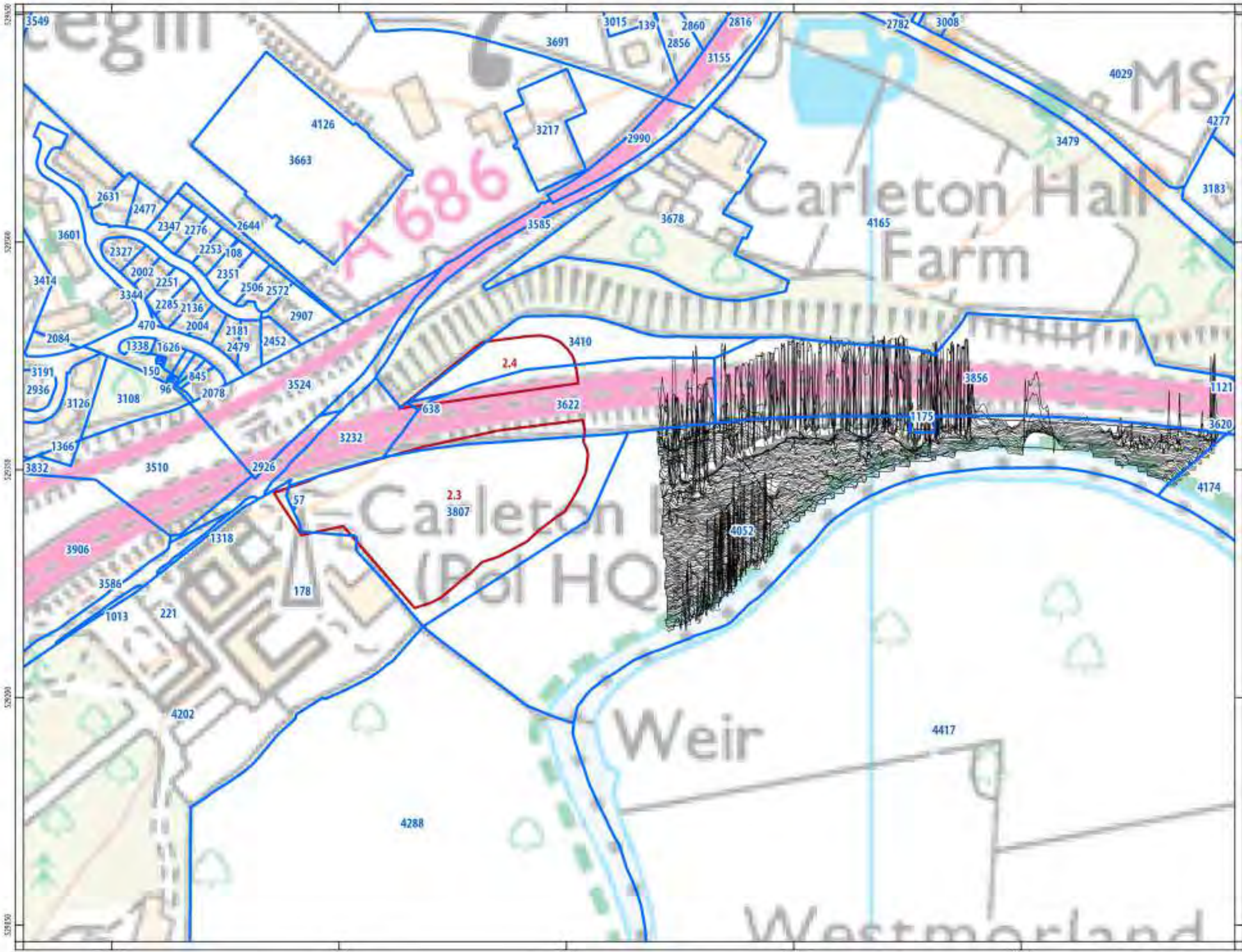


ILLUS 170 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



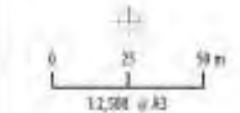


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10m Grid
- Scheduled Monument



**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

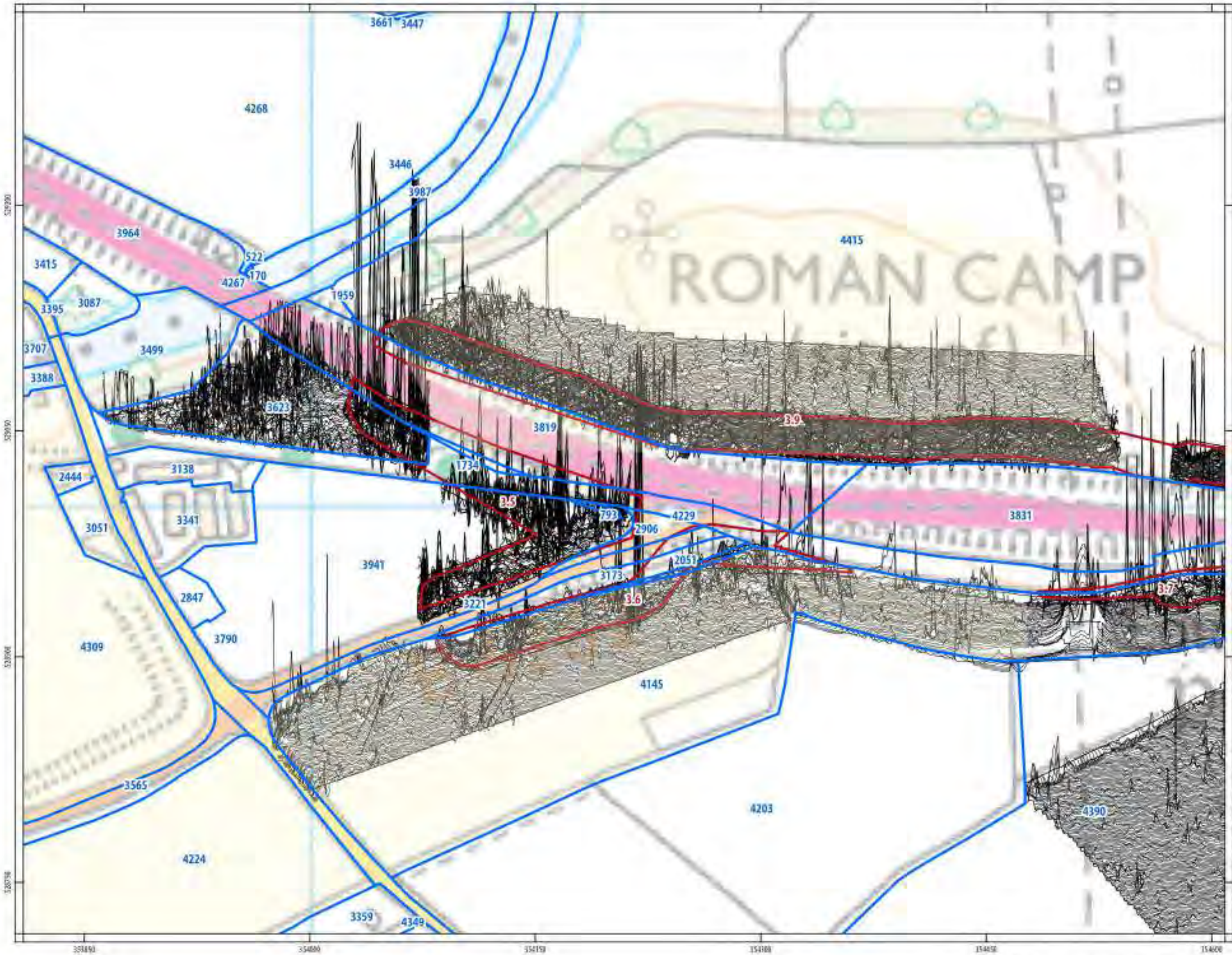


ILLUS 171 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



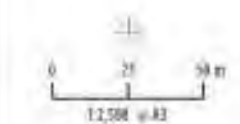


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 30m North
- ▭ Scheduled Monument



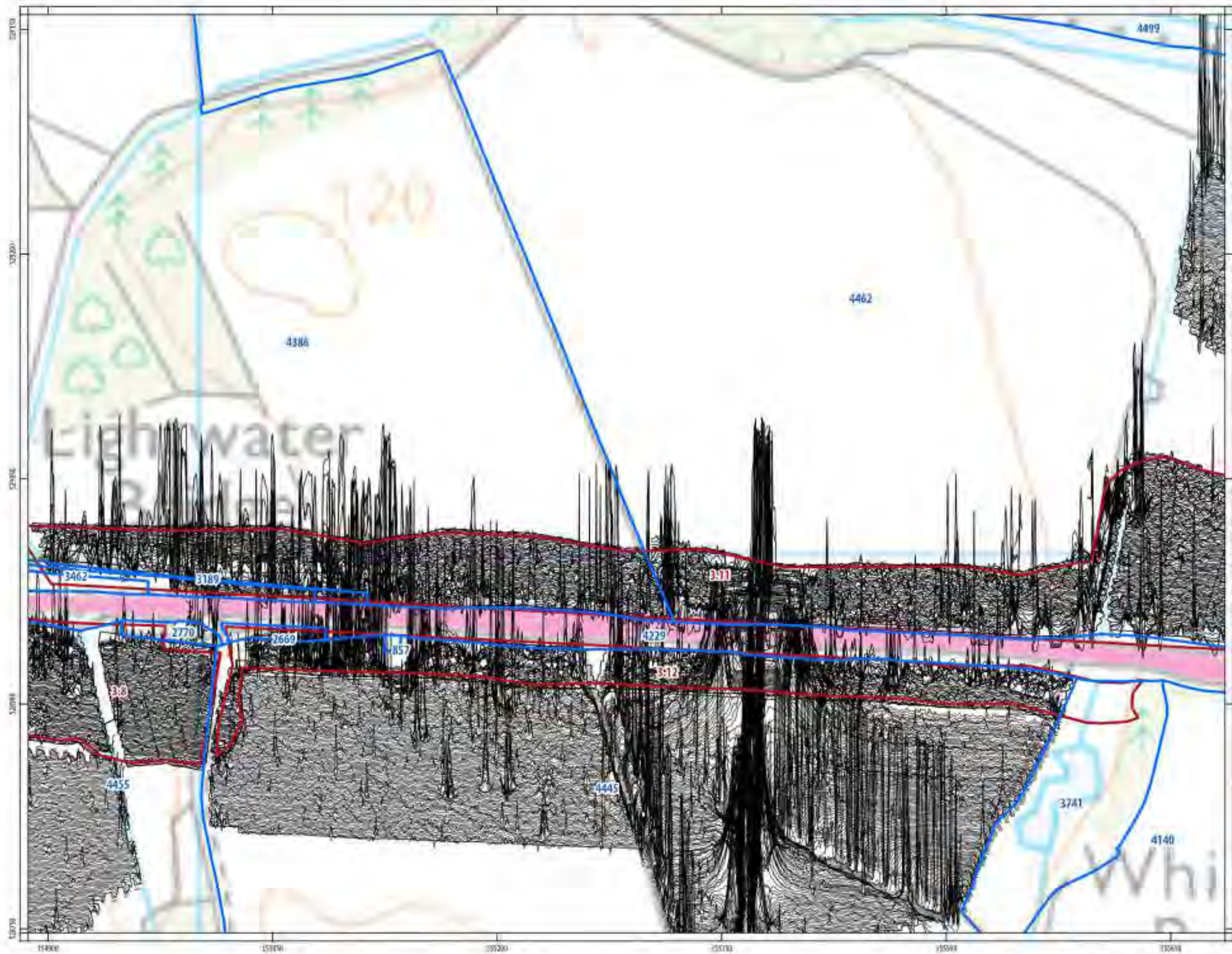
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 172 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





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Chesham | W91P 4ZT



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Effort
- ▭ 10m Grid Lines
- ▭ Restricted Movement

**PROJECT**  
M1010 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

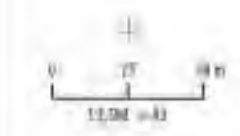


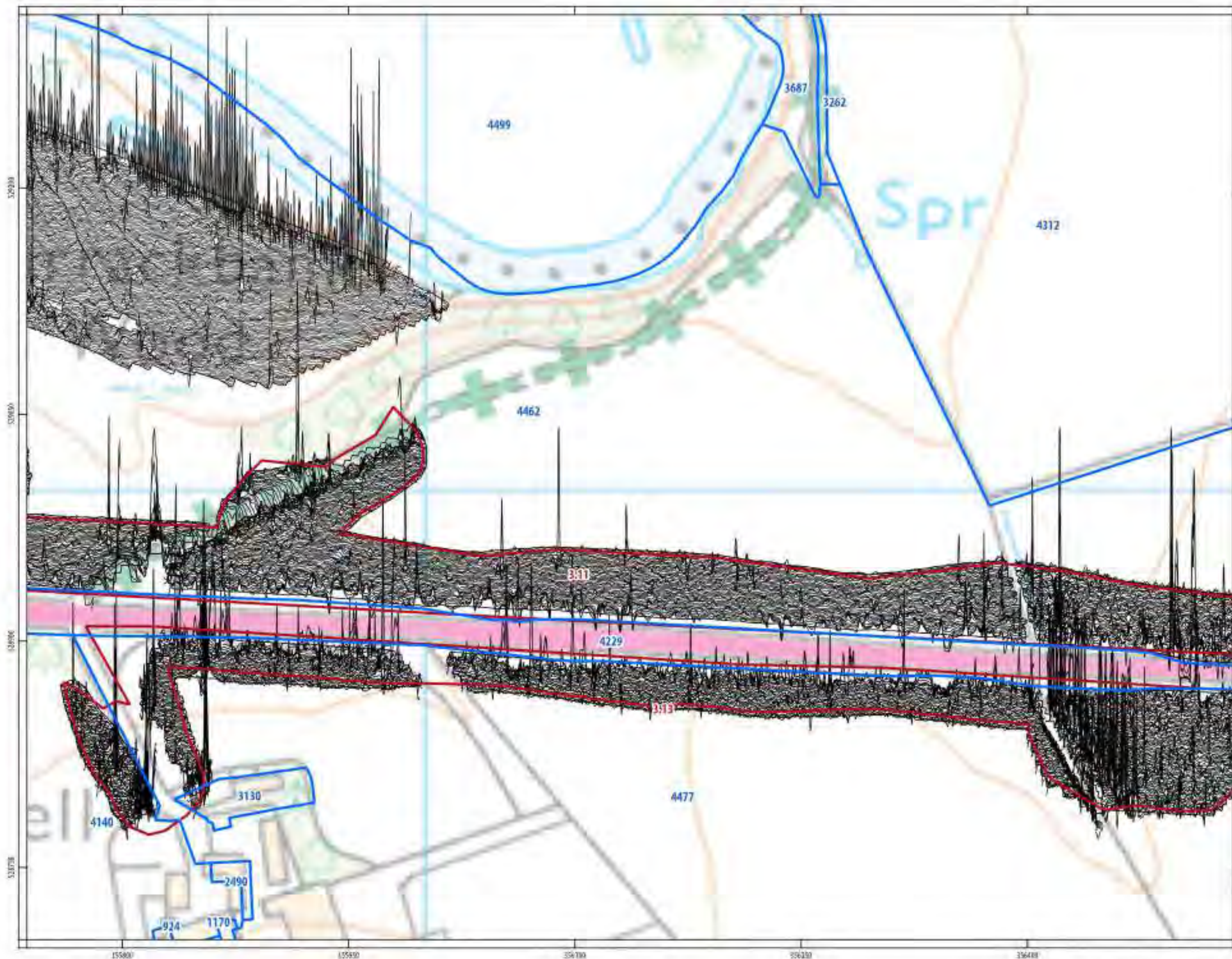
ILLUSTRATION 173 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- KV - Iron/Dom
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A96 Transport Upgrade

**CLIENT**  
Highways England

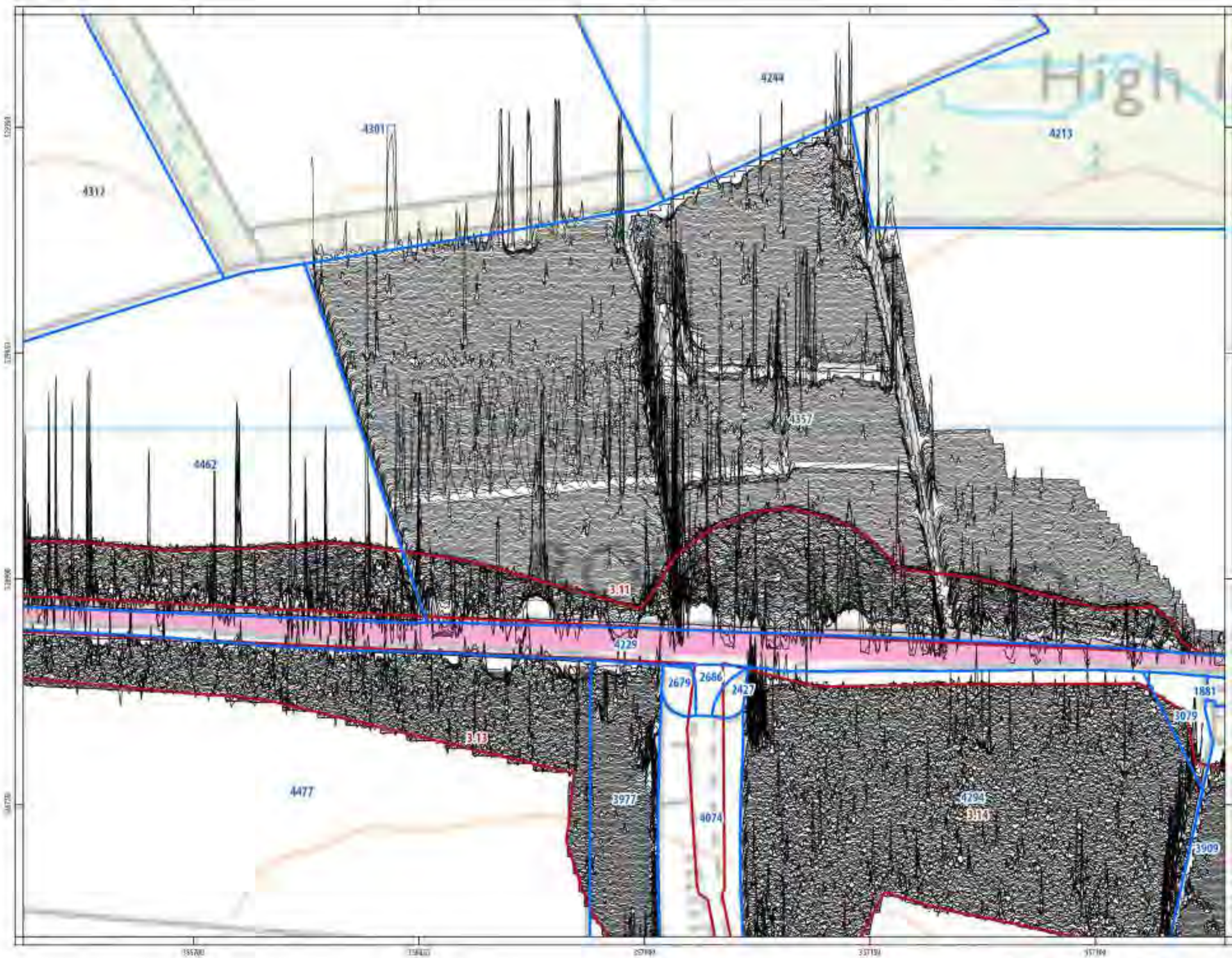


ILLUS 174 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Figure 1 (East) Excavation Area
- ▭ Figure 2 (West) Excavation Area
- Excavation Boundary
- 10m Grid Lines
- ▭ Proposed Infrastructure



**PROJECT**  
M7111 - AM Transport Upgrade

**CLIENT**  
Highways England

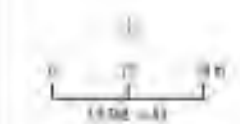


ILLUSTRATION 175 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Civilian Parts)

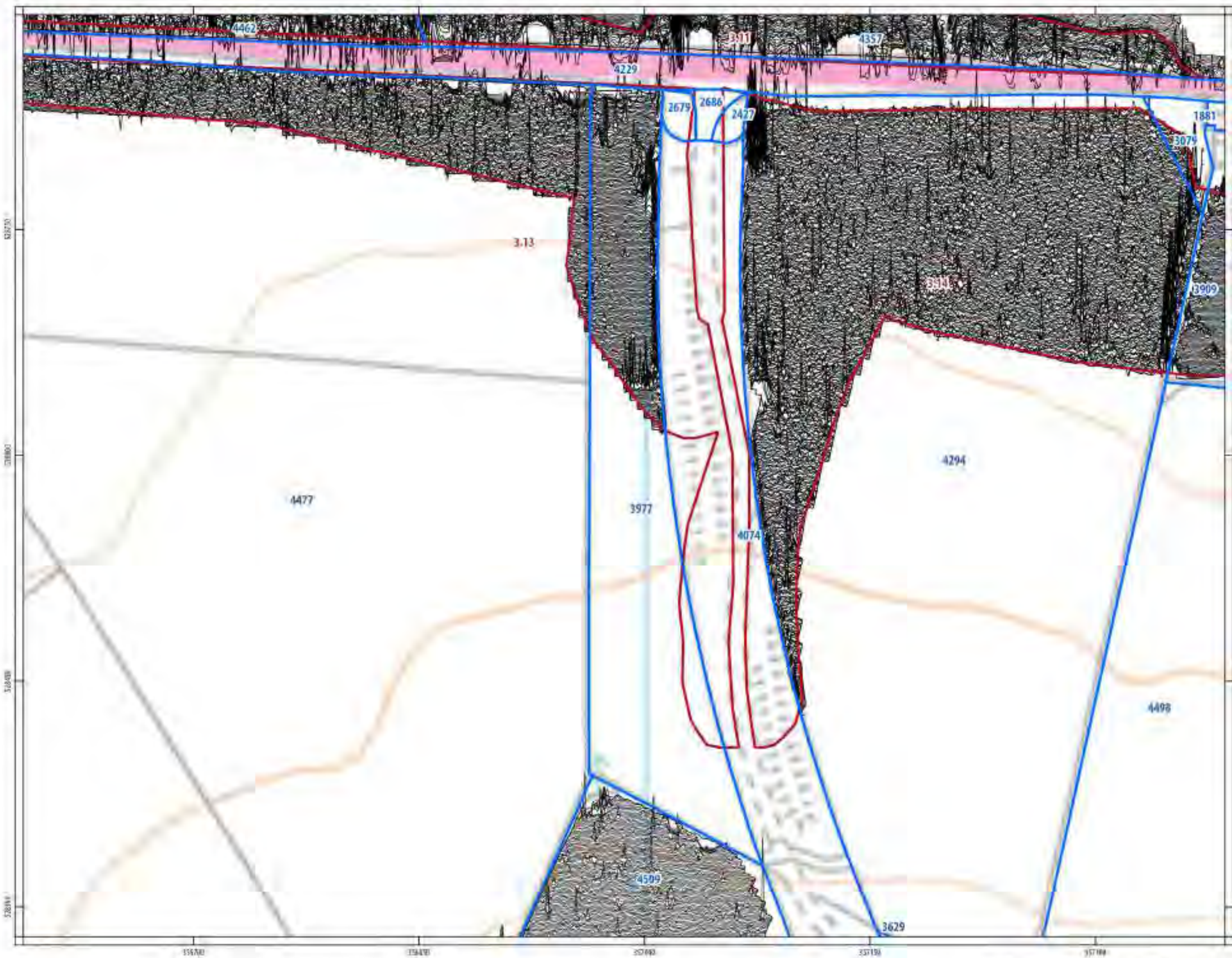
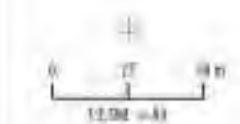




- ▭ Zone 1 (Low ground survey Area)
- ▭ Zone 2 (High ground survey Area)
- ▭ Proposed Survey Area
- ▭ All Other
- ▭ Unexcavated Foundations

**PROJECT**  
M1110 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



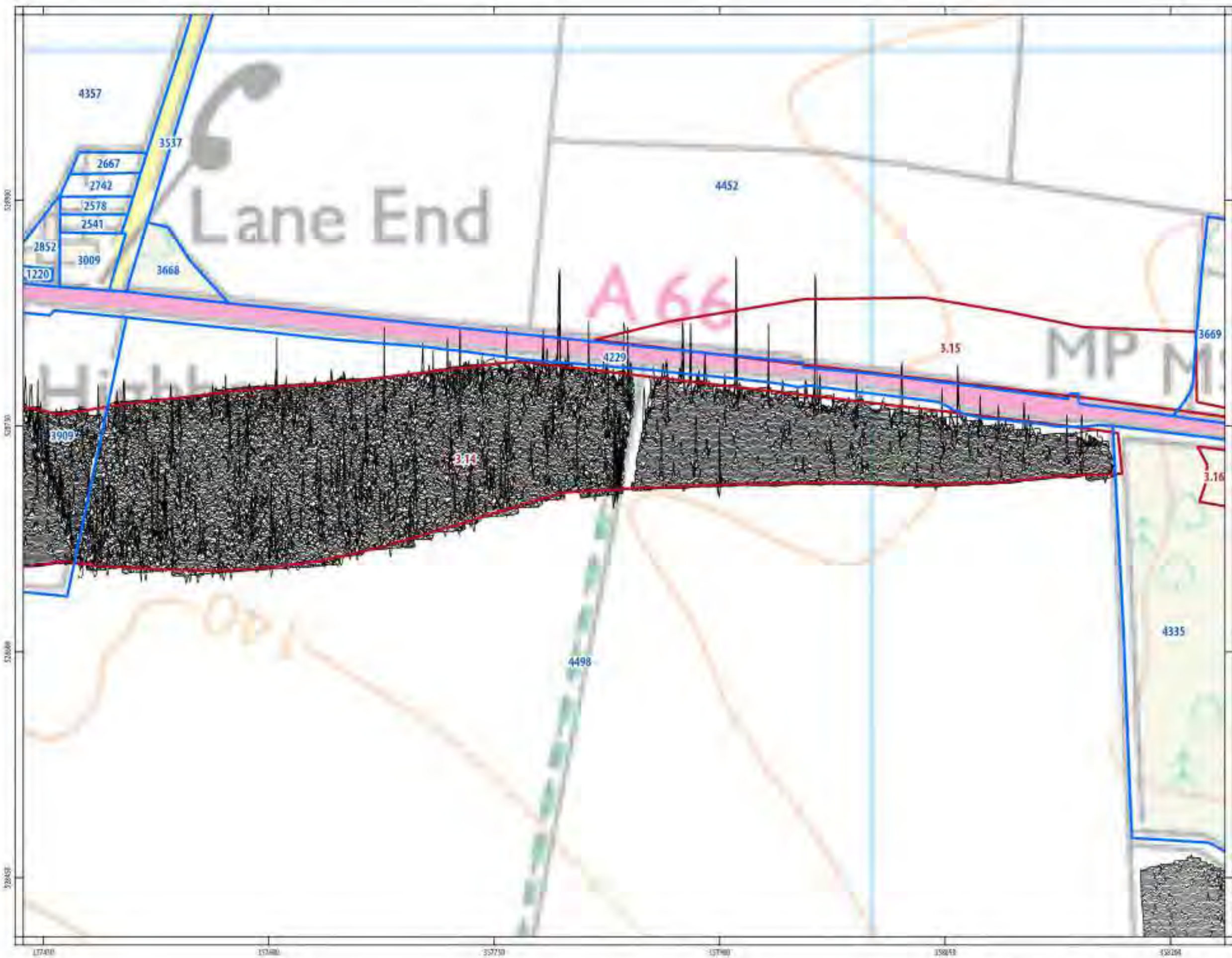
ILLUS 176 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parts)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Iron/Town
- Scheduled Monuments

**PROJECT**  
M1020 - M6 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 177 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

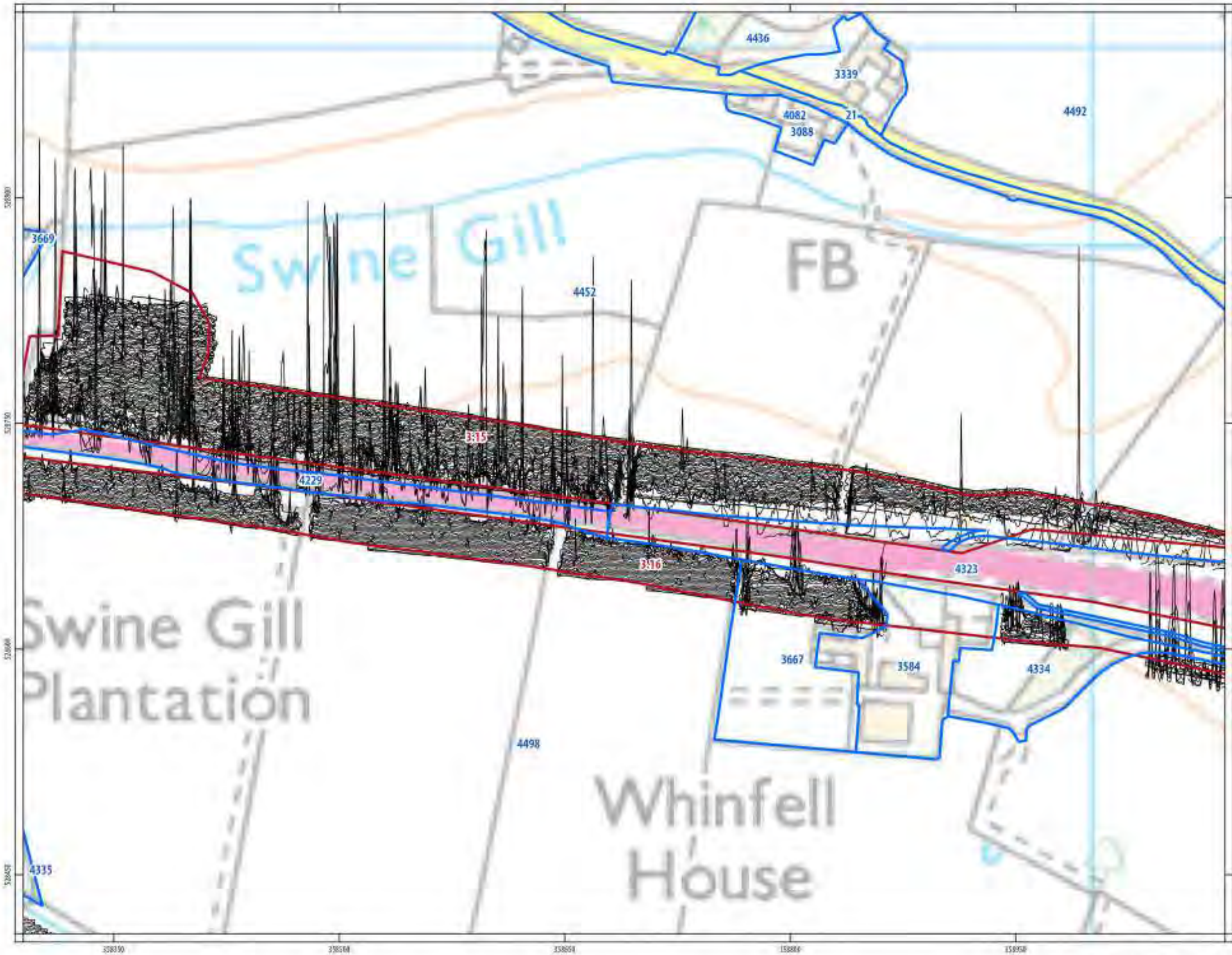




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Iron/Trom
- Scheduled Monument

**PROJECT**  
M7020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England

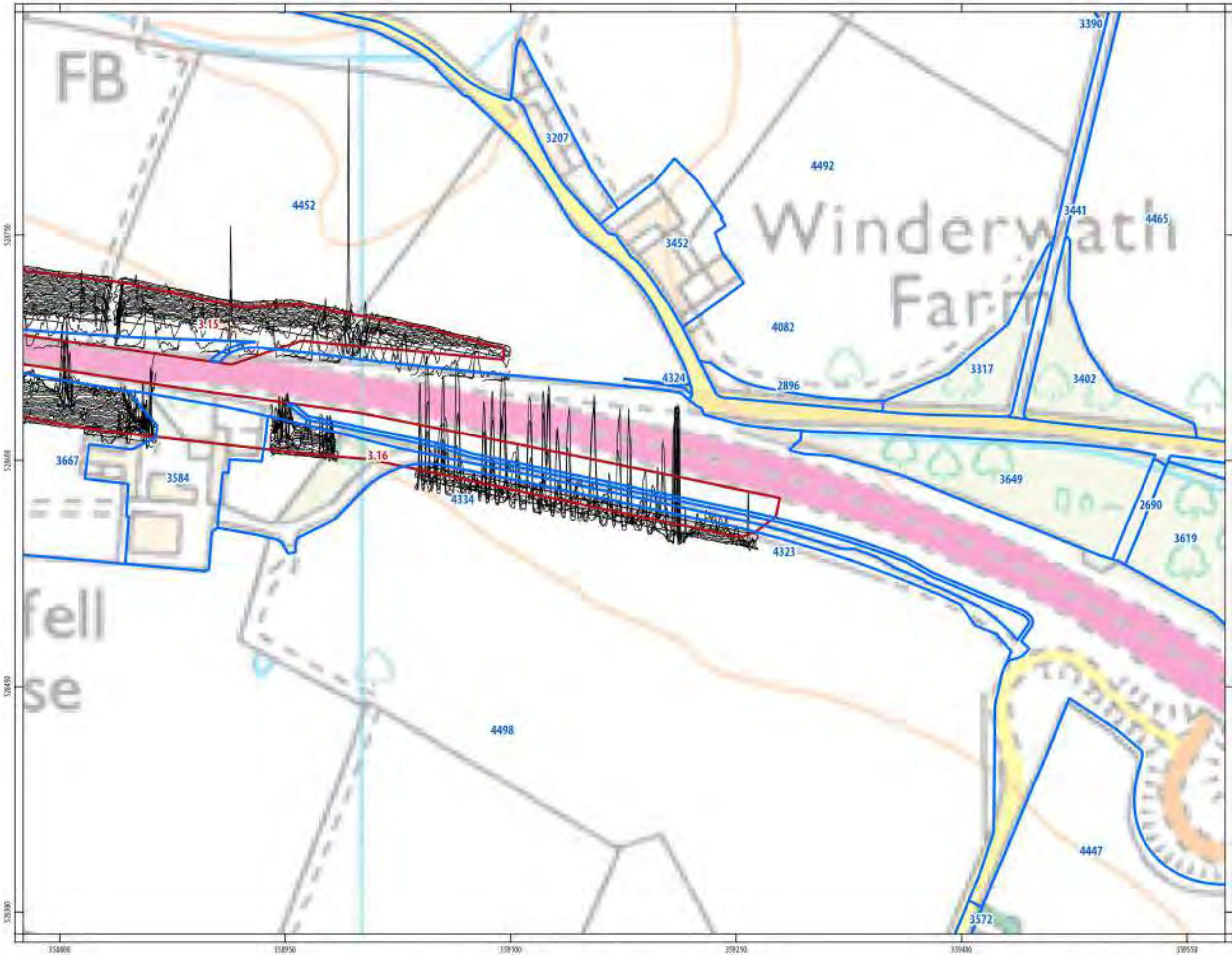


ILLUFS 178 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



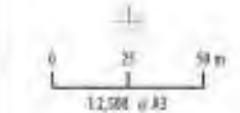


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- XY 10m Grid
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

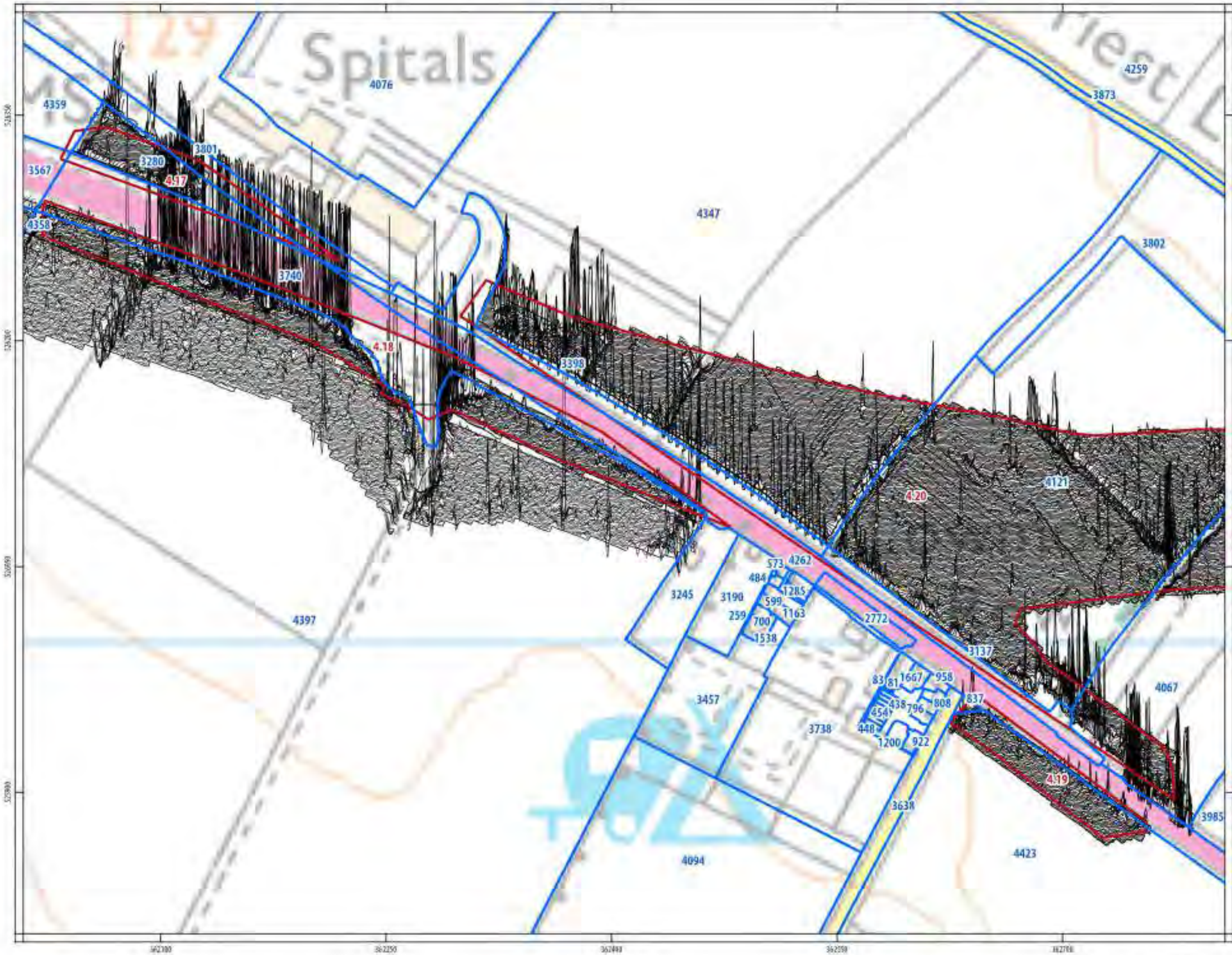


ILLUFS 179 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Top/Term
- Scheduled Monument



**PROJECT**  
M1020-496 Transpennine Upgrade

**CLIENT**  
Highways England



ILLU180 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron/Trom
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

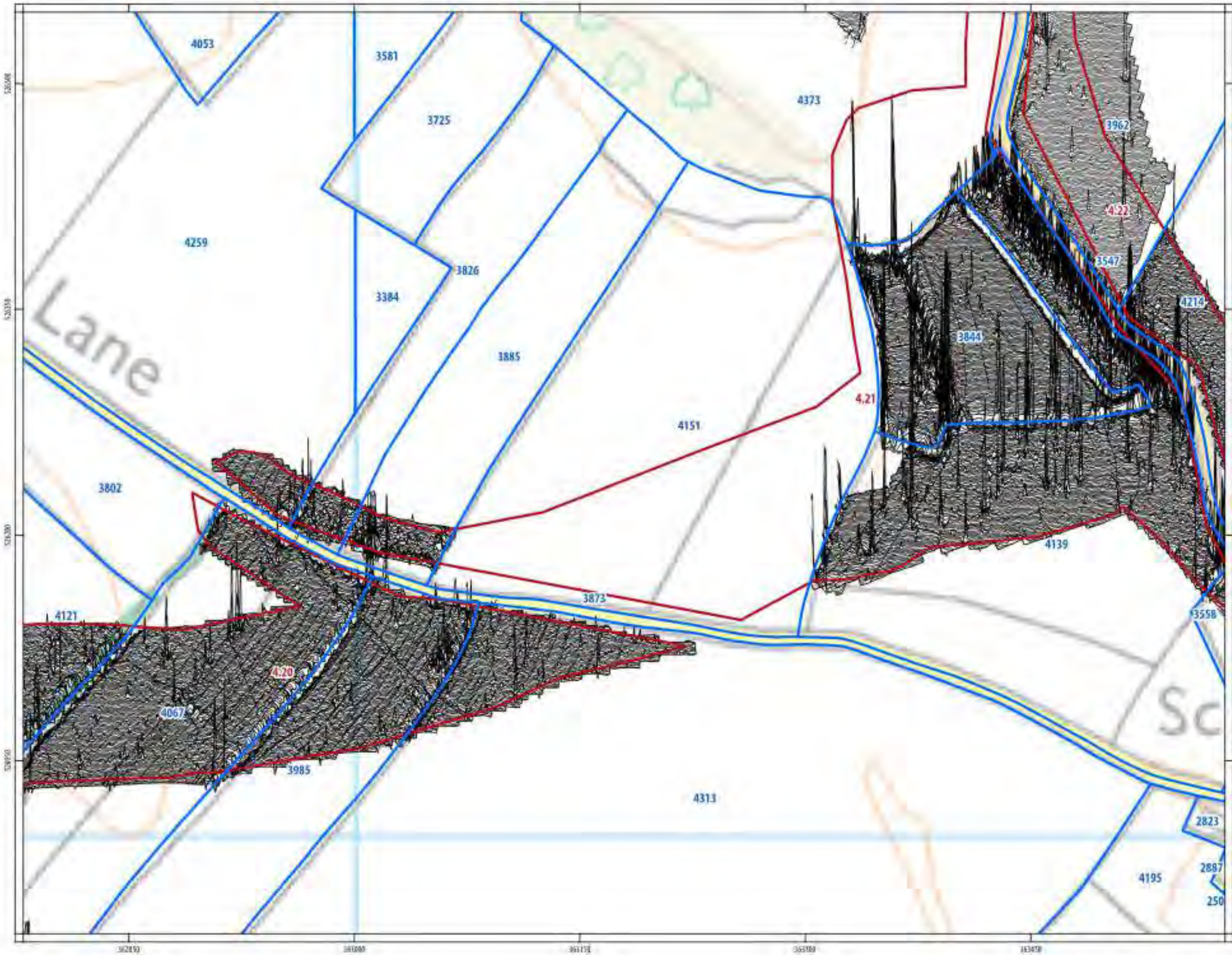
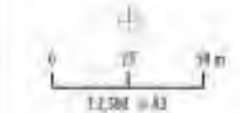
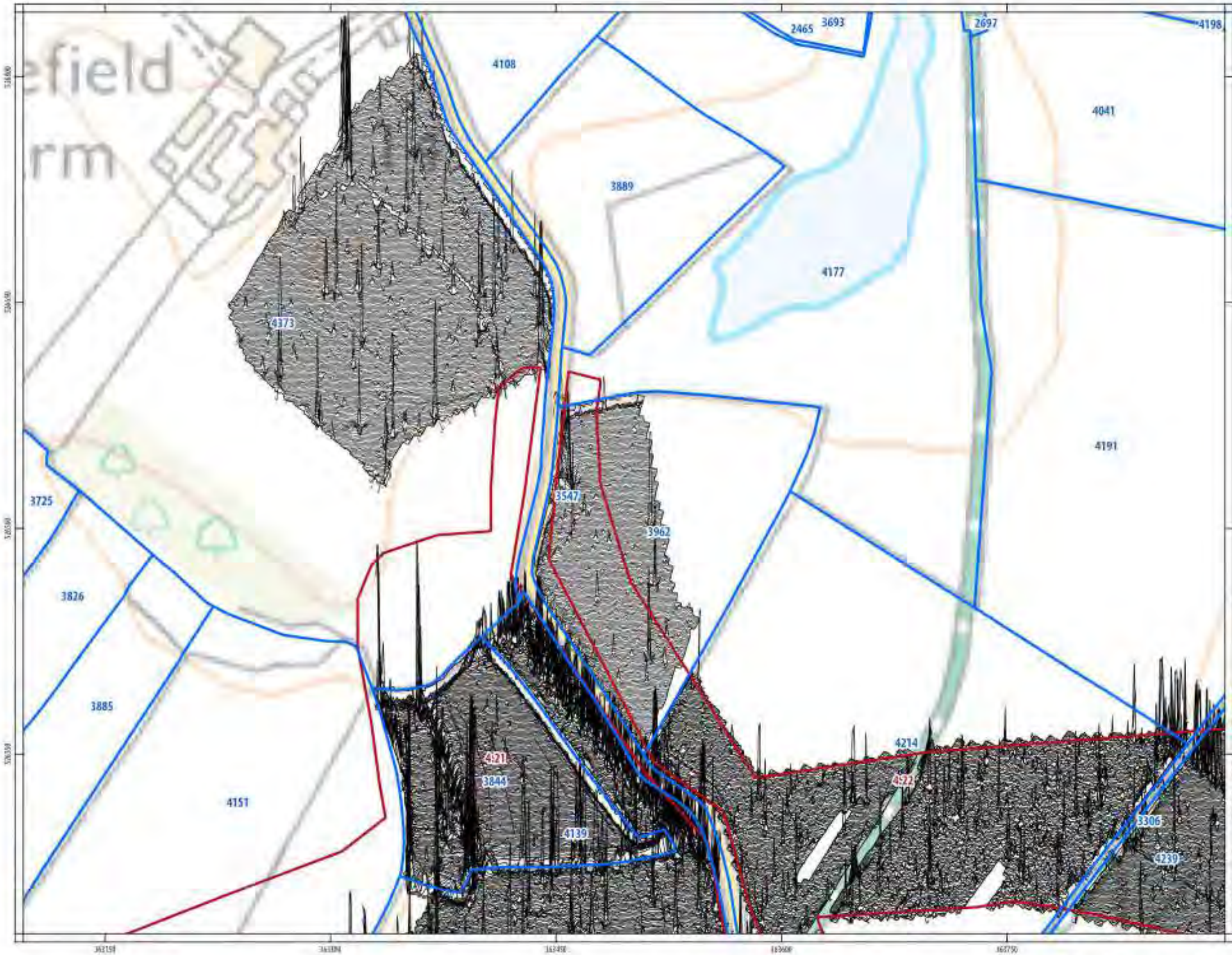


ILLUSTRATION 181 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





**HEADLAND**  
**ARCHAEOLOGY**

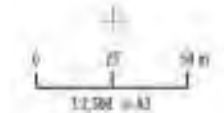
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Cricklewood | B279 4JZ



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- W. Monument
- Scheduled Monument

**PROJECT**  
M1020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England

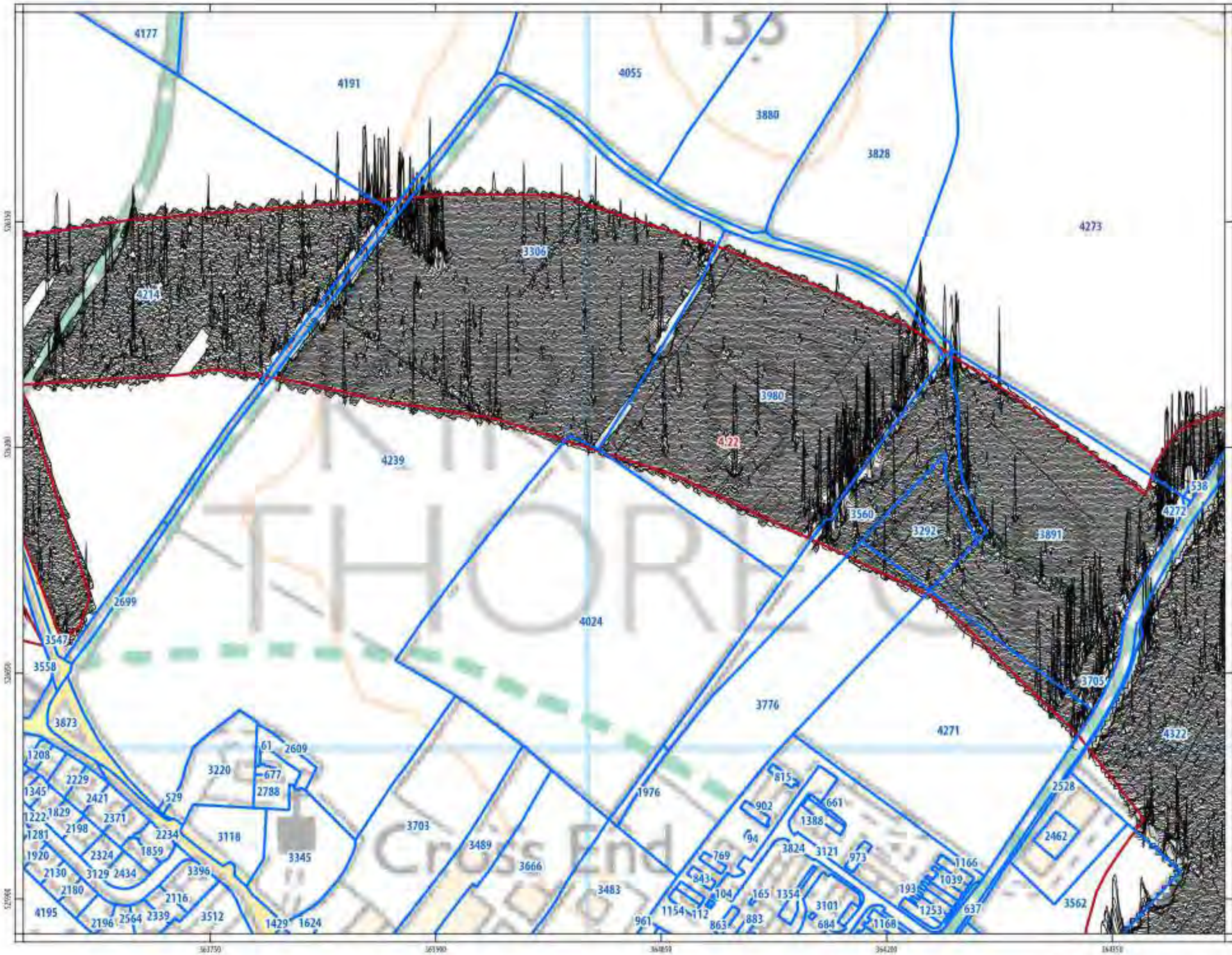


ILLIUS 182 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron Age
- ▭ Scheduled Monument



**PROJECT**  
M1020-A66 Transpennine Upgrade

**CLIENT**  
Highways England

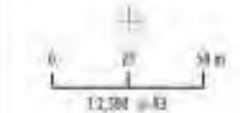


ILLUSTRATION 183: XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- W. Footprint
- Scheduled Monument

**PROJECT**  
M1020-A96 Transport Upgrade

**CLIENT**  
Highways England

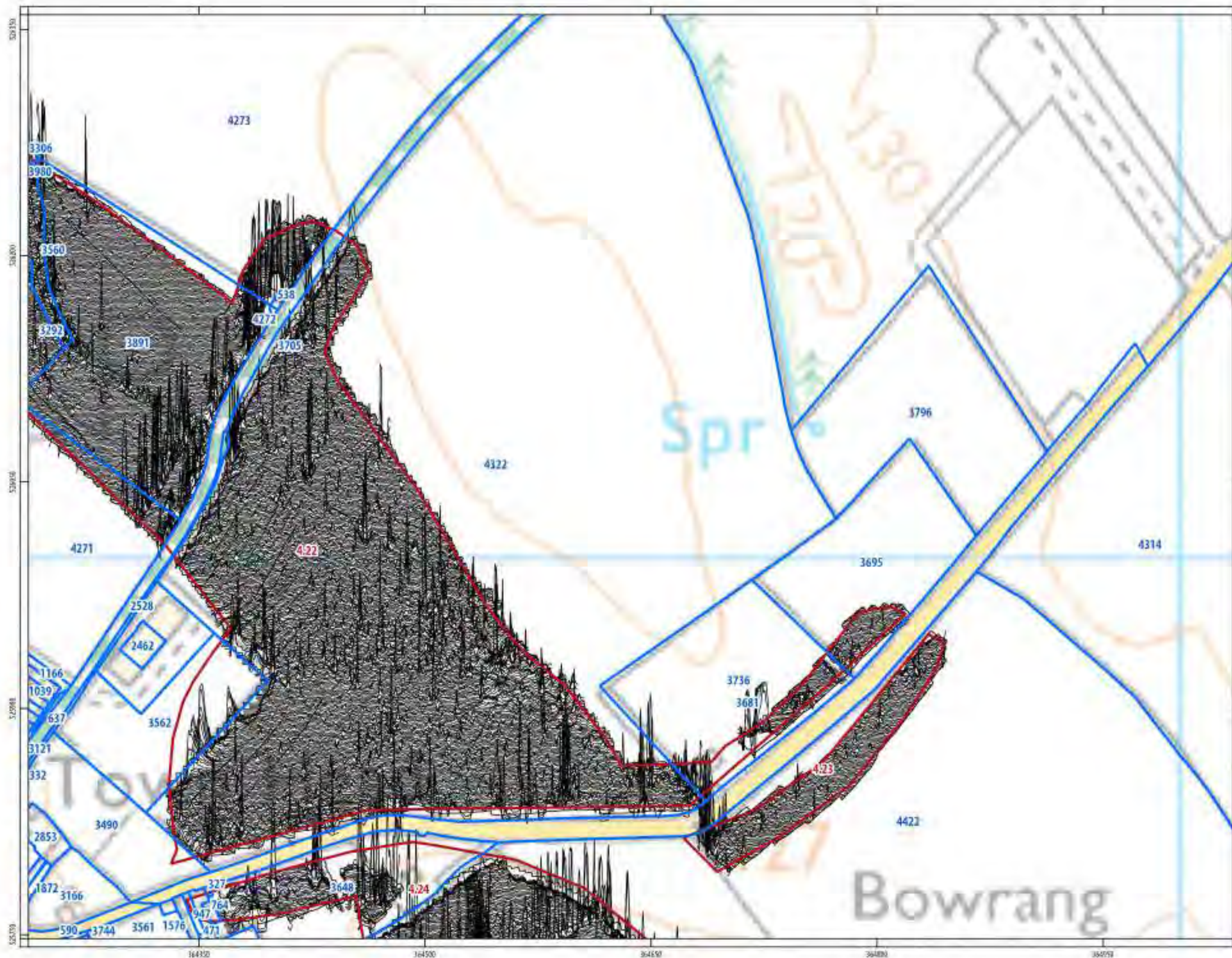


ILLUSTRATION 184 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





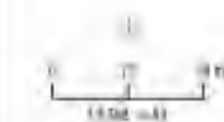
- Figure 1: 100m grid lines (red line)
- Figure 2: 50m grid lines (blue line)
- 100m grid lines (black line)
- 50m grid lines (grey line)
- 25m grid lines (light blue line)

**PROJECT**

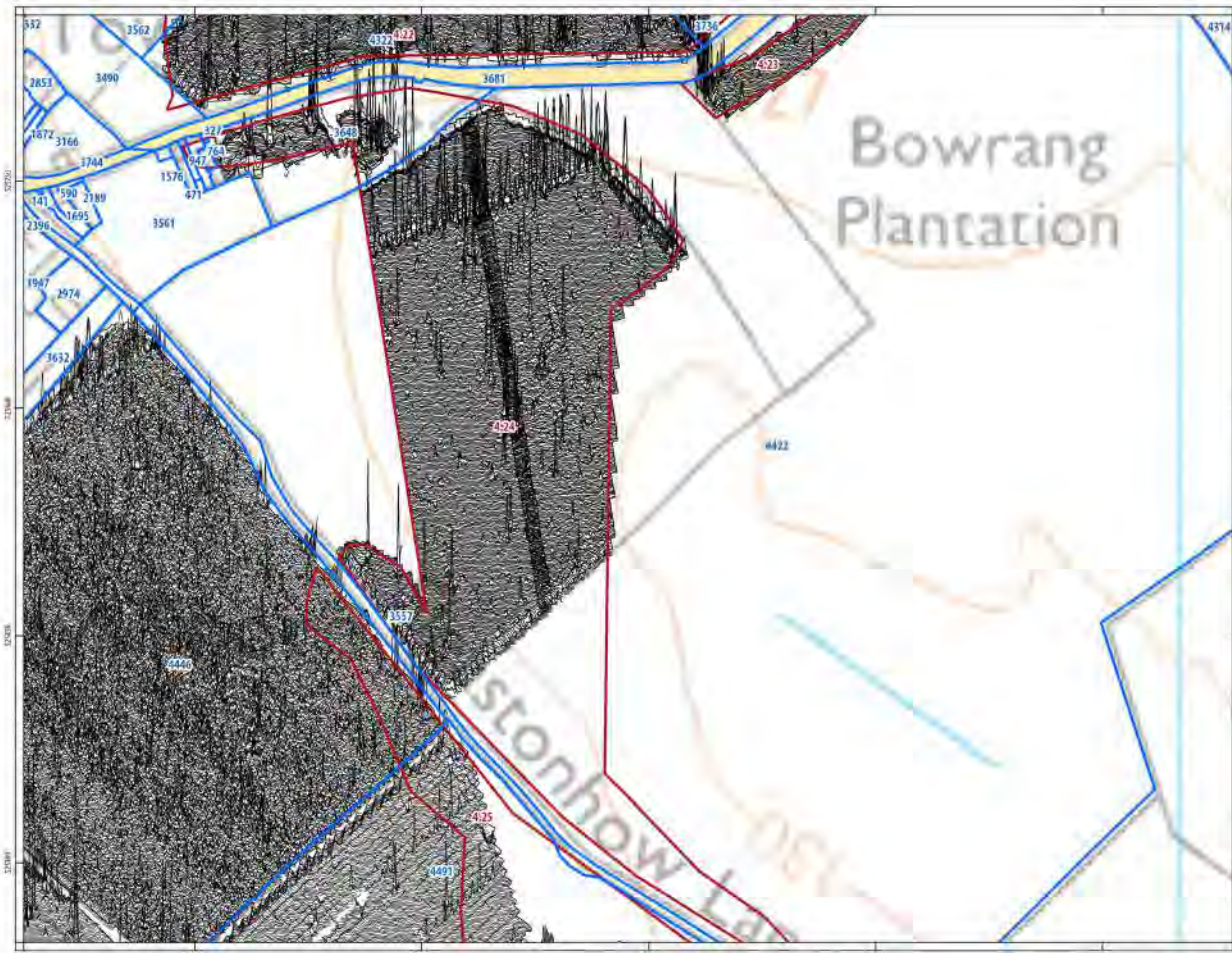
RT1110 - NW Temperature Upgrade

**CLIENT**

Highways England



Bowrang  
Plantation



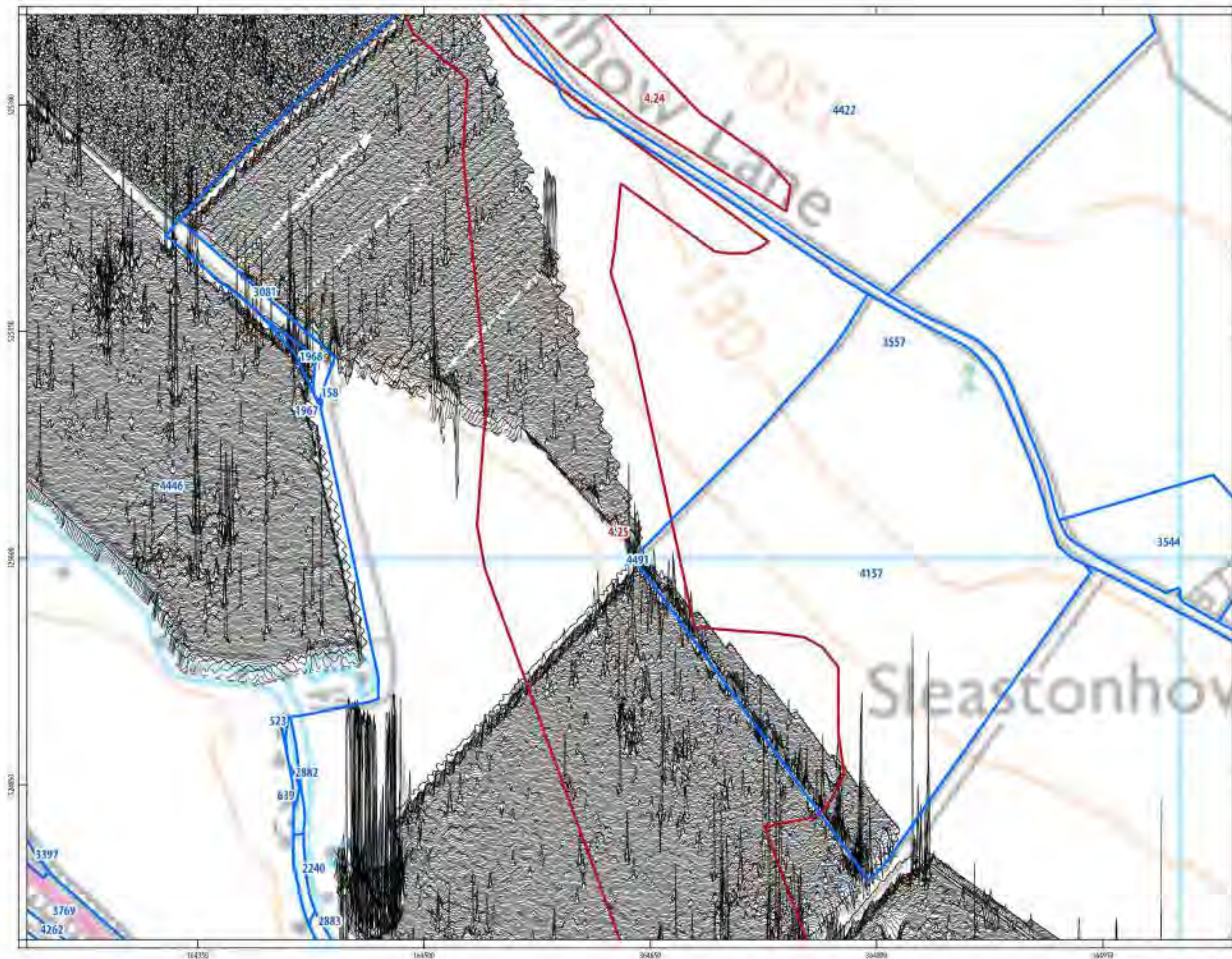




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Data
- ▭ 10m Grid
- ▭ Historical Boundaries

**PROJECT**  
A1101 - A16 Transpennine Upgrade

**CLIENT**  
Highways England

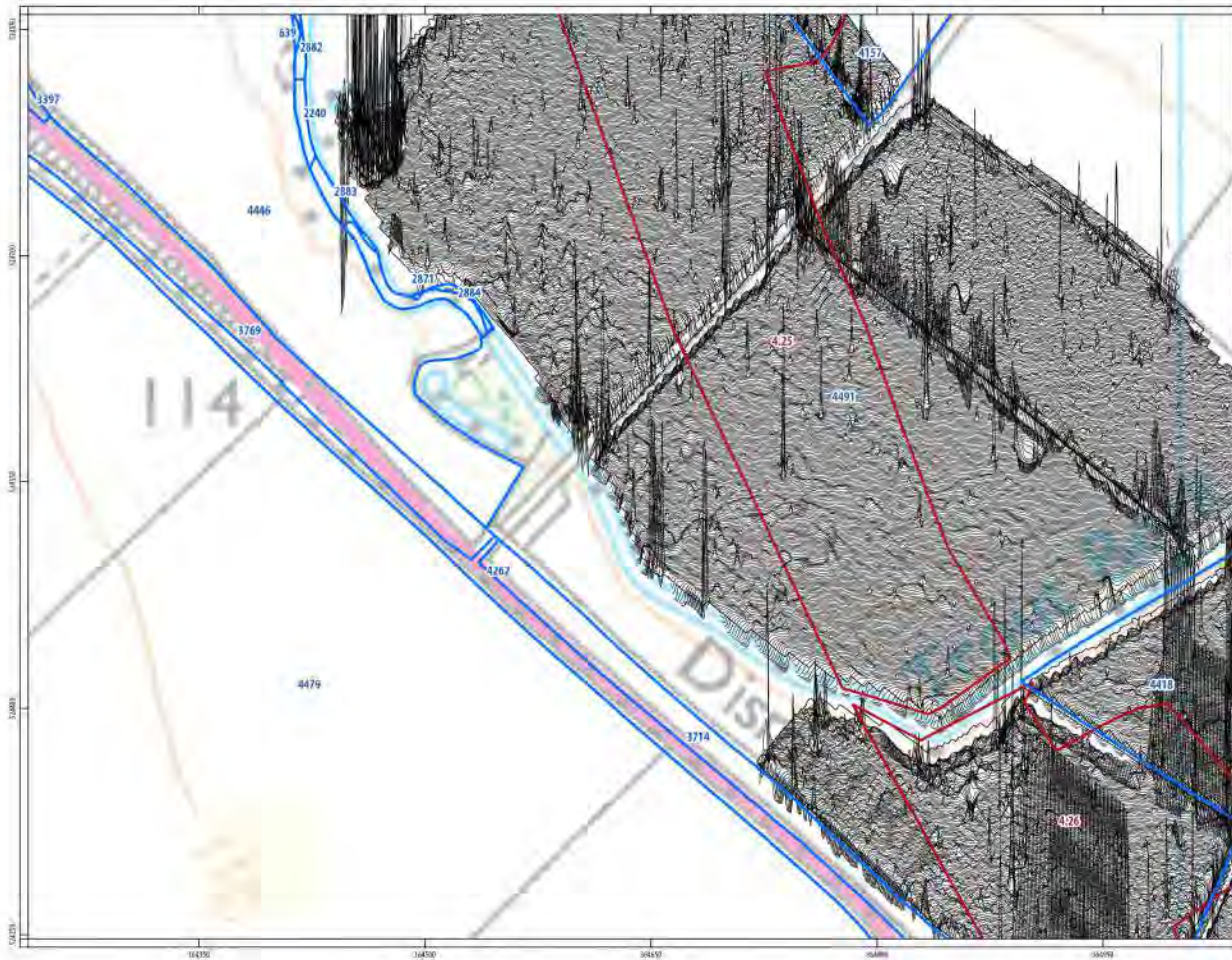


ILLUS 186 XY trace plot of minimally processed magnetometry data, Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Pattern
- 10m Grid Lines
- 10m Grid Margins



**PROJECT**  
A1110 - M6 Transport Upgrade

**CLIENT**  
Highways England



ILLUSTRATION XY trace plot of minimally processed magnetometer data, Temple Sowerby to Appleby





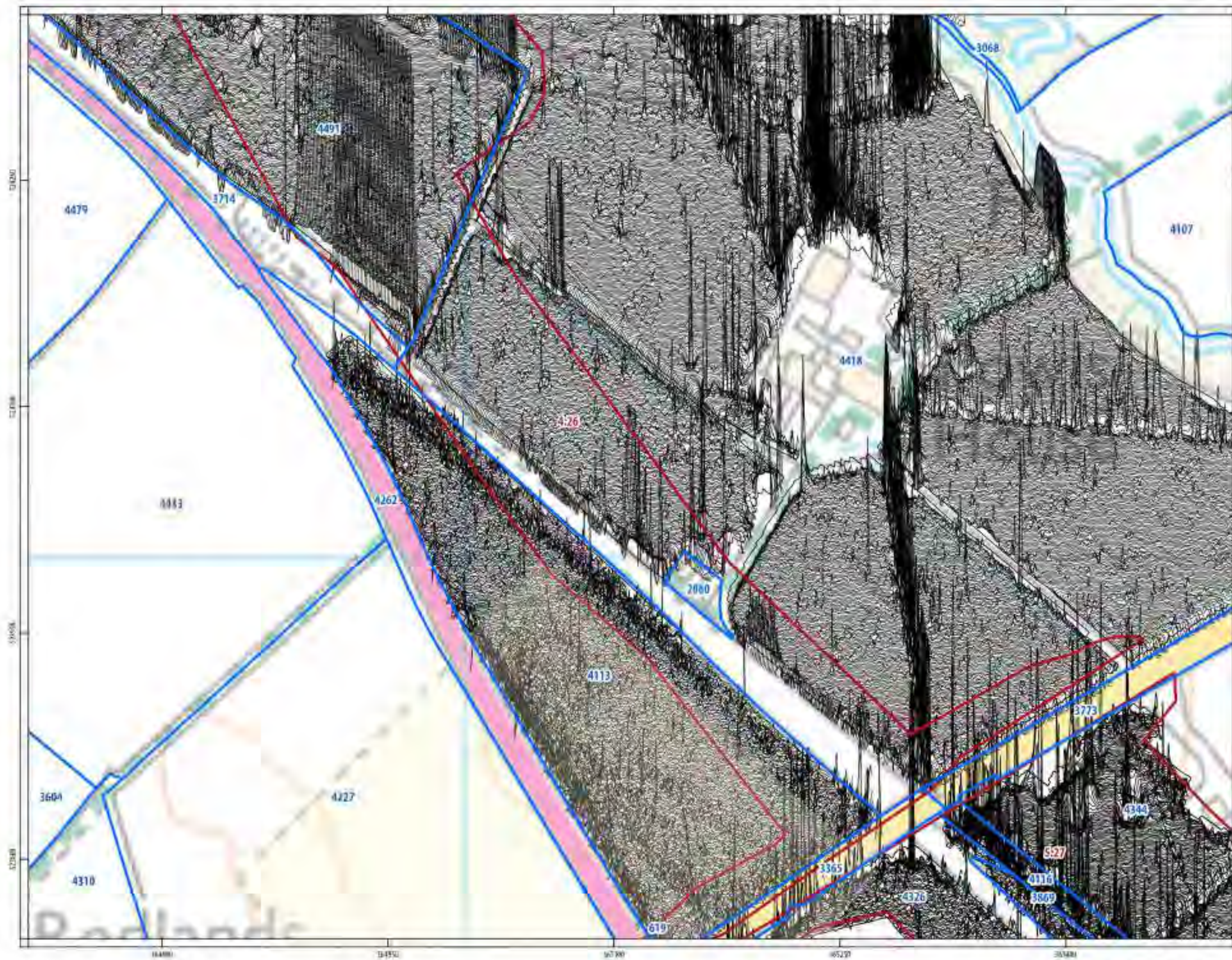
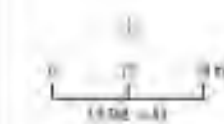
- ▭ Figure 1: Long grassland survey Area
- ▭ Figure 2: Long grassland survey Area
- ▭ Long grassland survey Area
- ▭ M1 - Old Drive
- ▭ Headland Archaeology

**PROJECT**

M1110 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLU5 188 XY trace plot of minimally processed magnetometer data, Temple Sowerby In Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- W. Trench
- Scheduled Monuments

**PROJECT**  
M1020 - M6 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUSTRATION: XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- W. Footpath
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

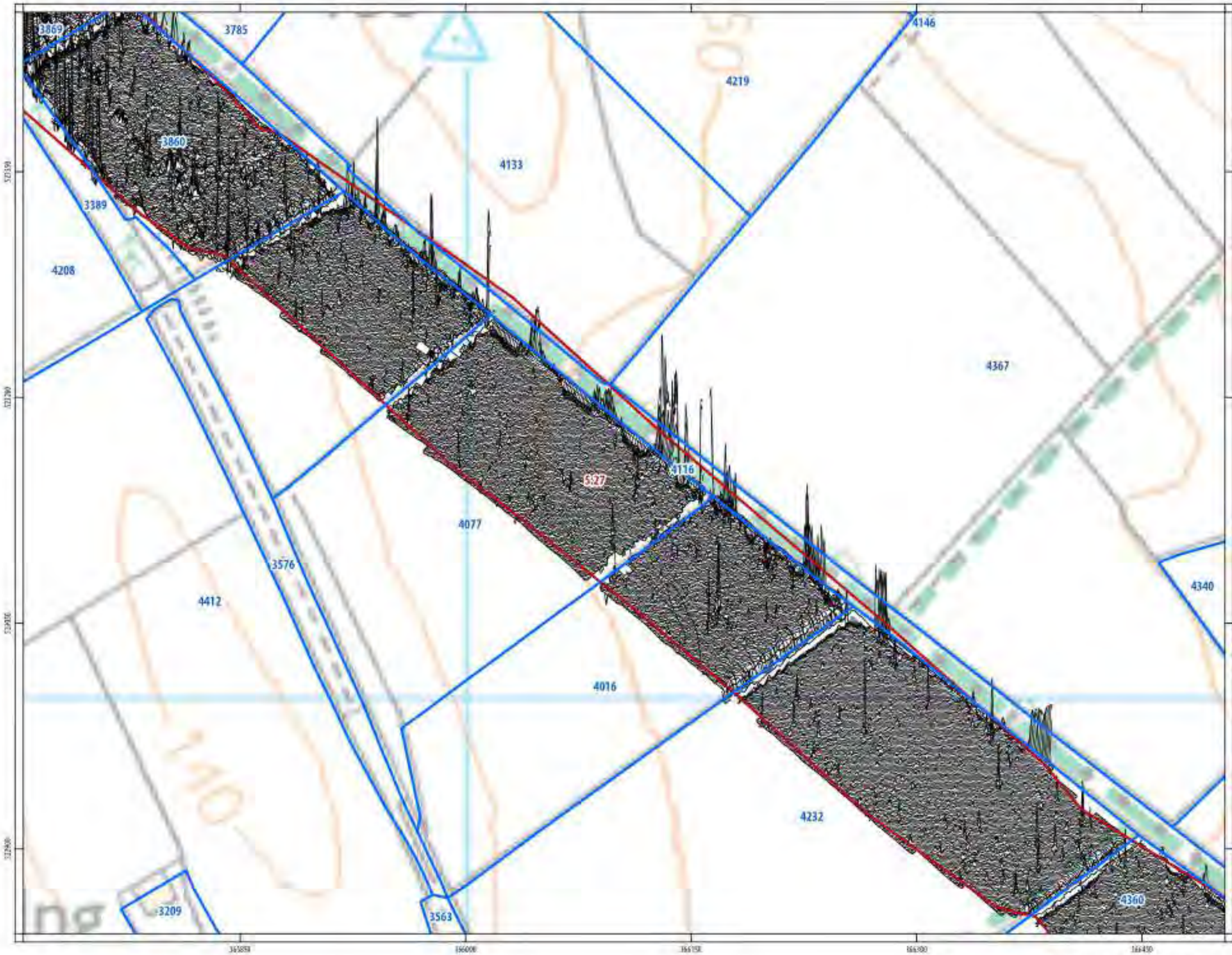


ILLUSTRATION XY trace plot of minimally processed magnetometer data; Temple Saverby to Appleby



- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- W - 10m/7cm
- Scheduled Monument

**PROJECT**  
M1120-496 Transport Upgrade

**CLIENT**  
Highways England

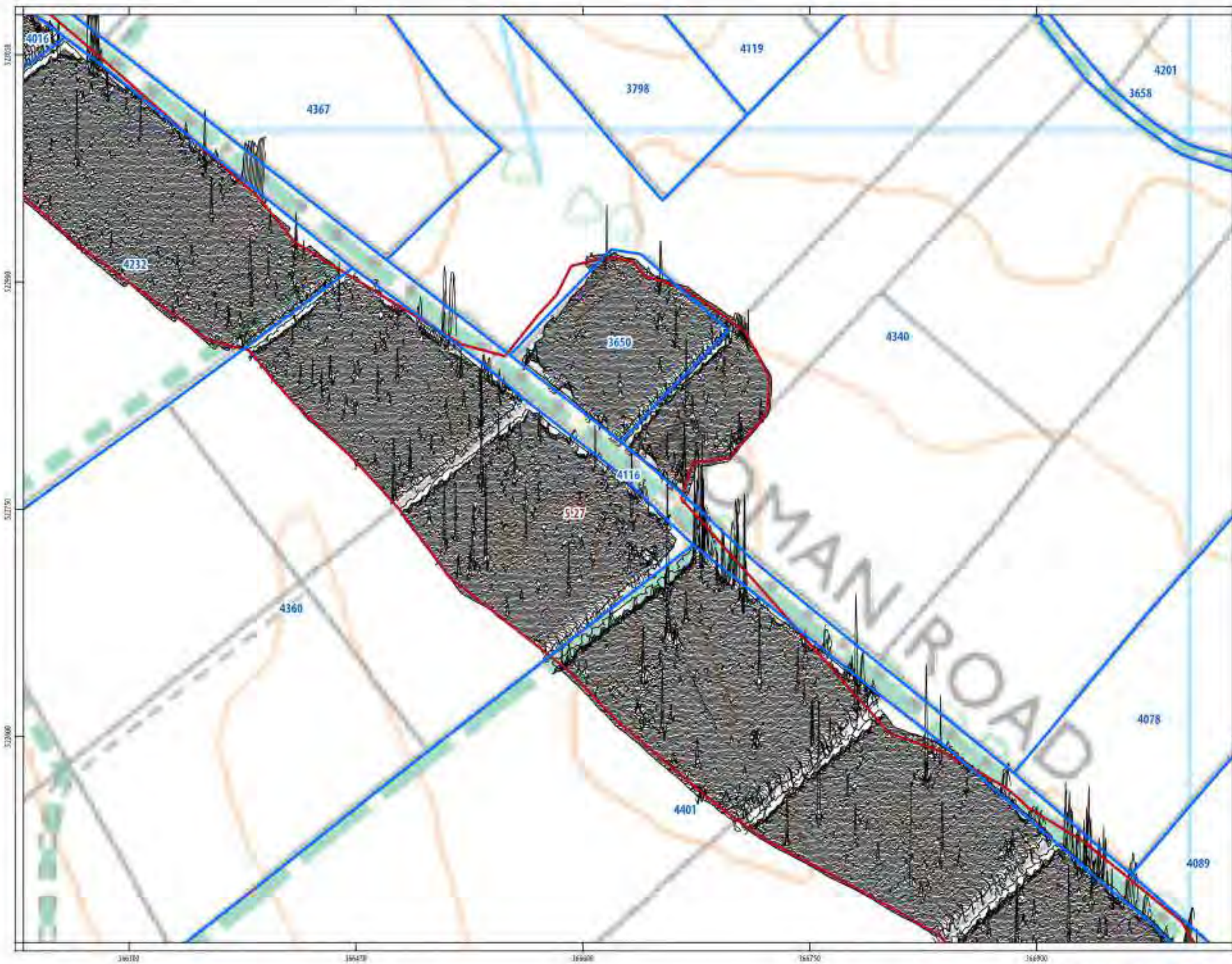
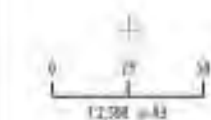


ILLUSTRATION 191 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

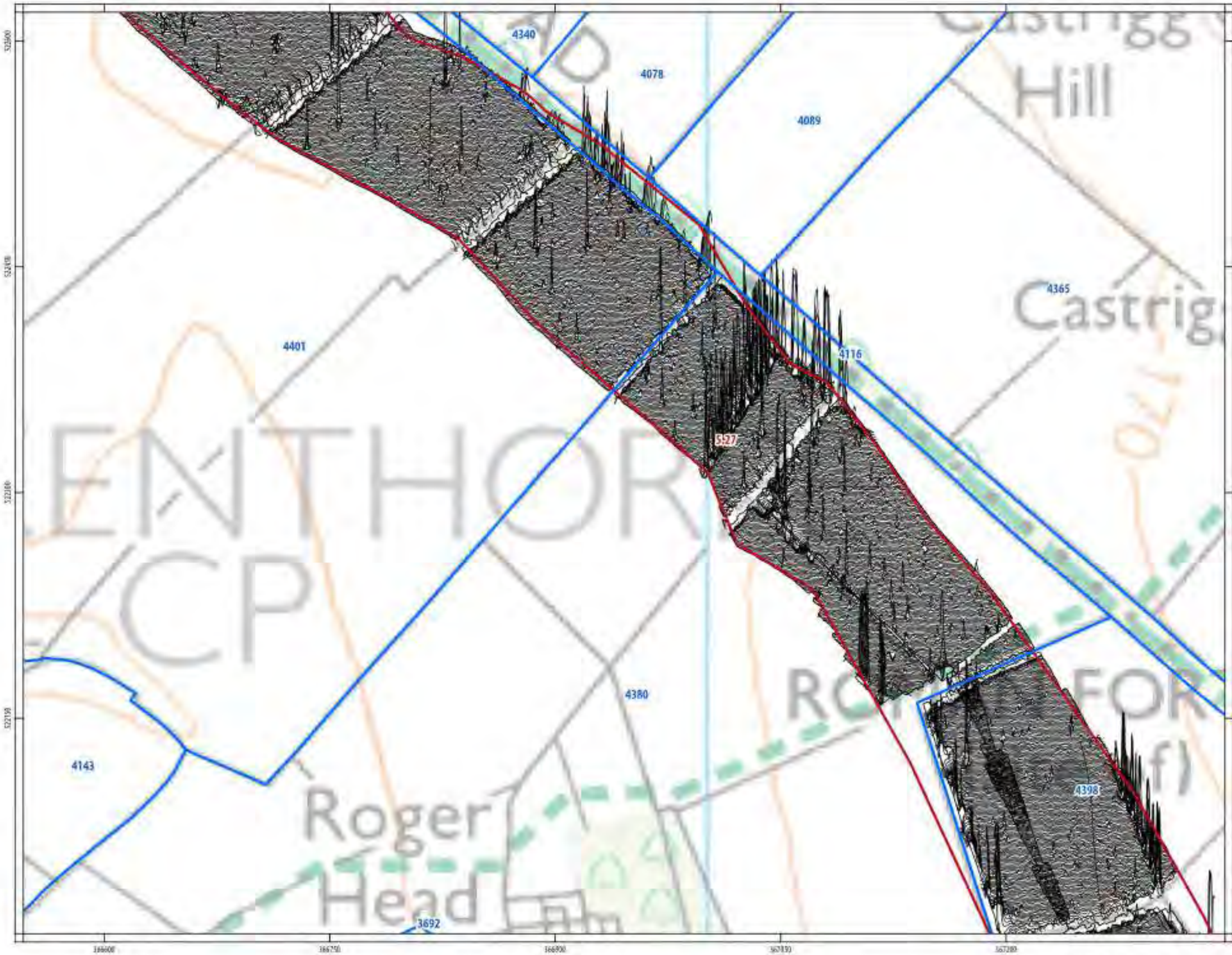




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - 10m/70m
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England



ILLIUS 192 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

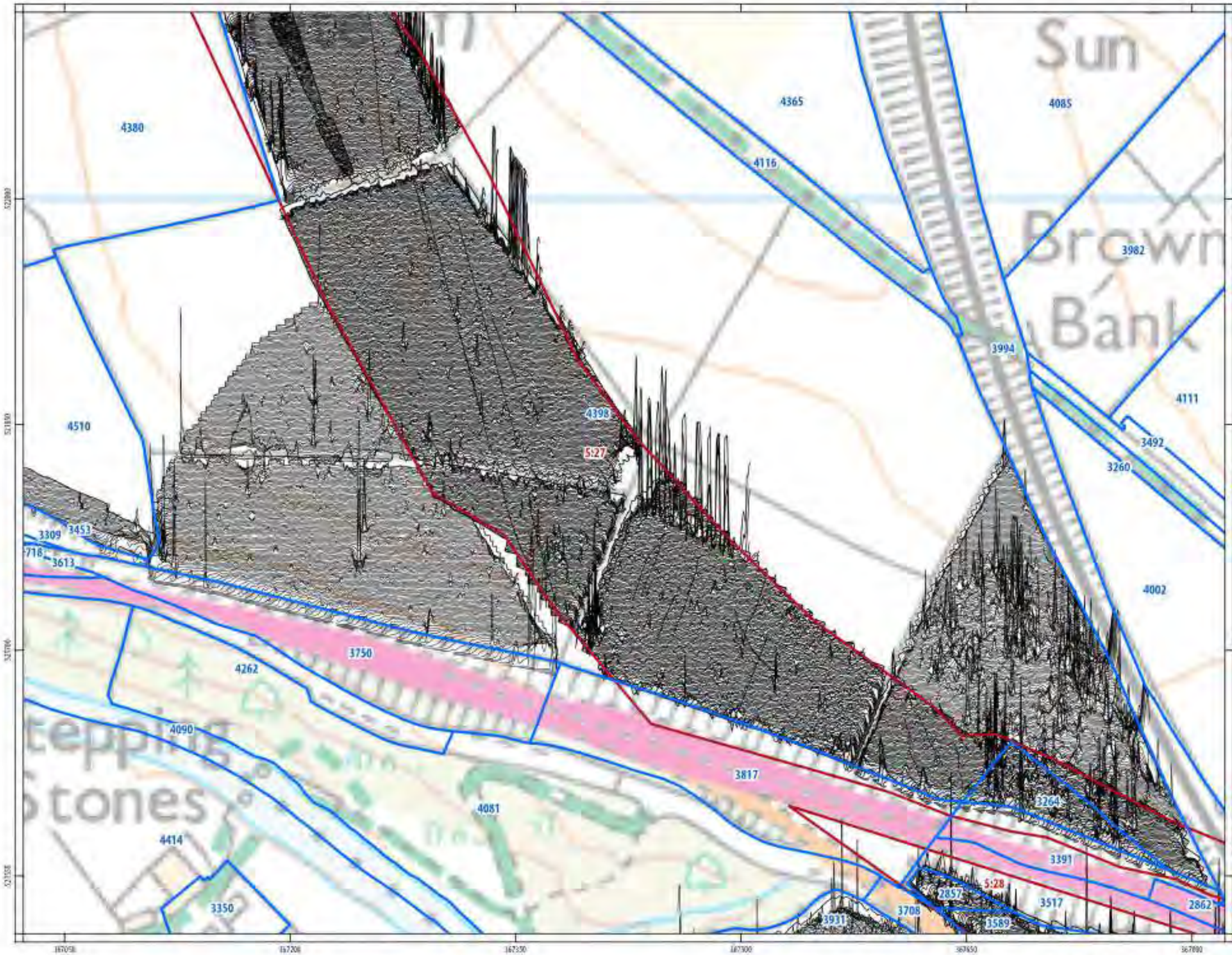
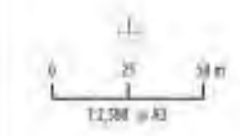




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron/Trom
- ▭ Scheduled Monument

**PROJECT**  
M7020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

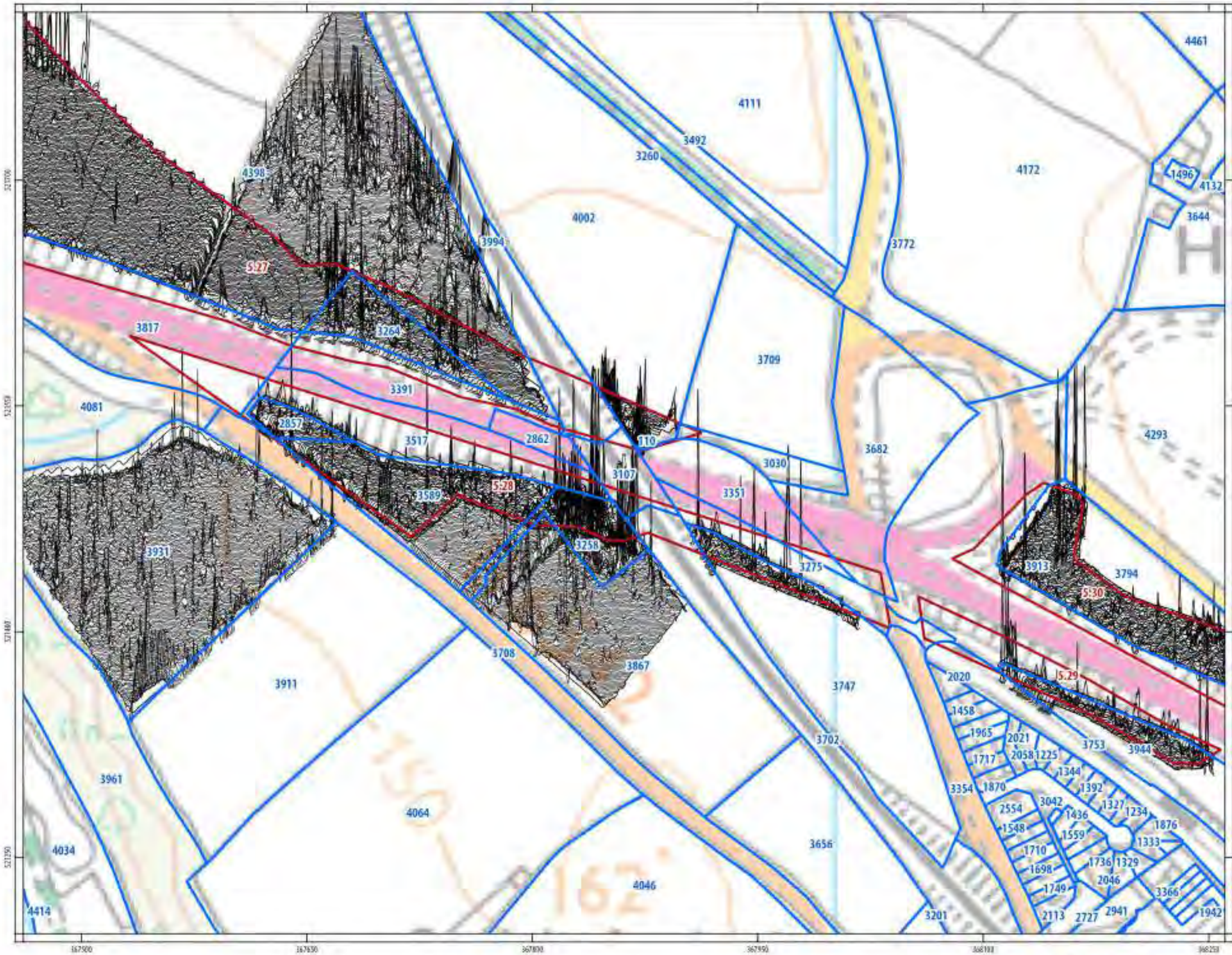


ILLUS 193 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 40m 10m/70m
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLU194 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

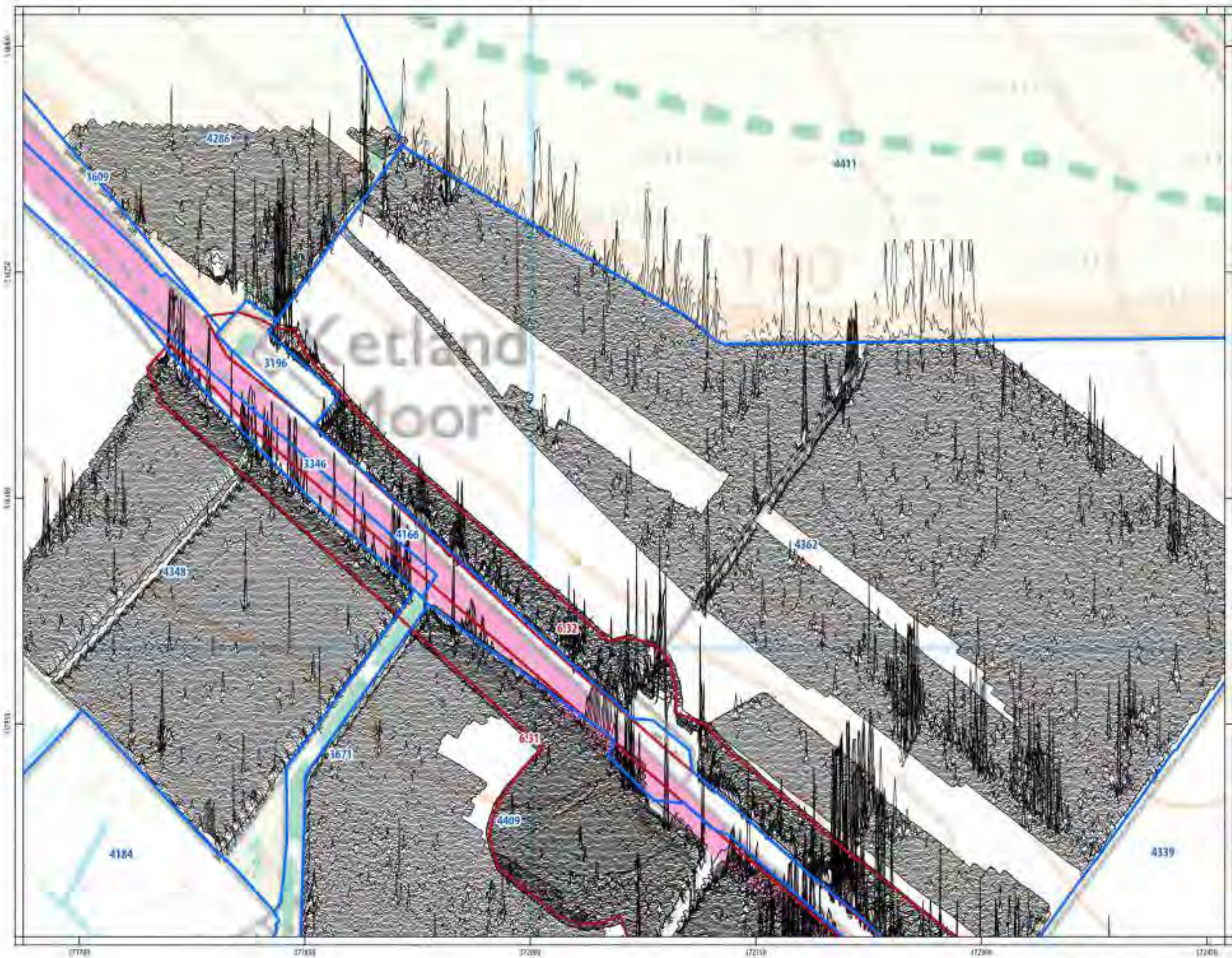




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Buffer
- ▭ 10m Grid Lines
- ▭ Mosaic Aerial Photography

**PROJECT**  
A77110 - M6 Transport Upgrade

**CLIENT**  
Highways England

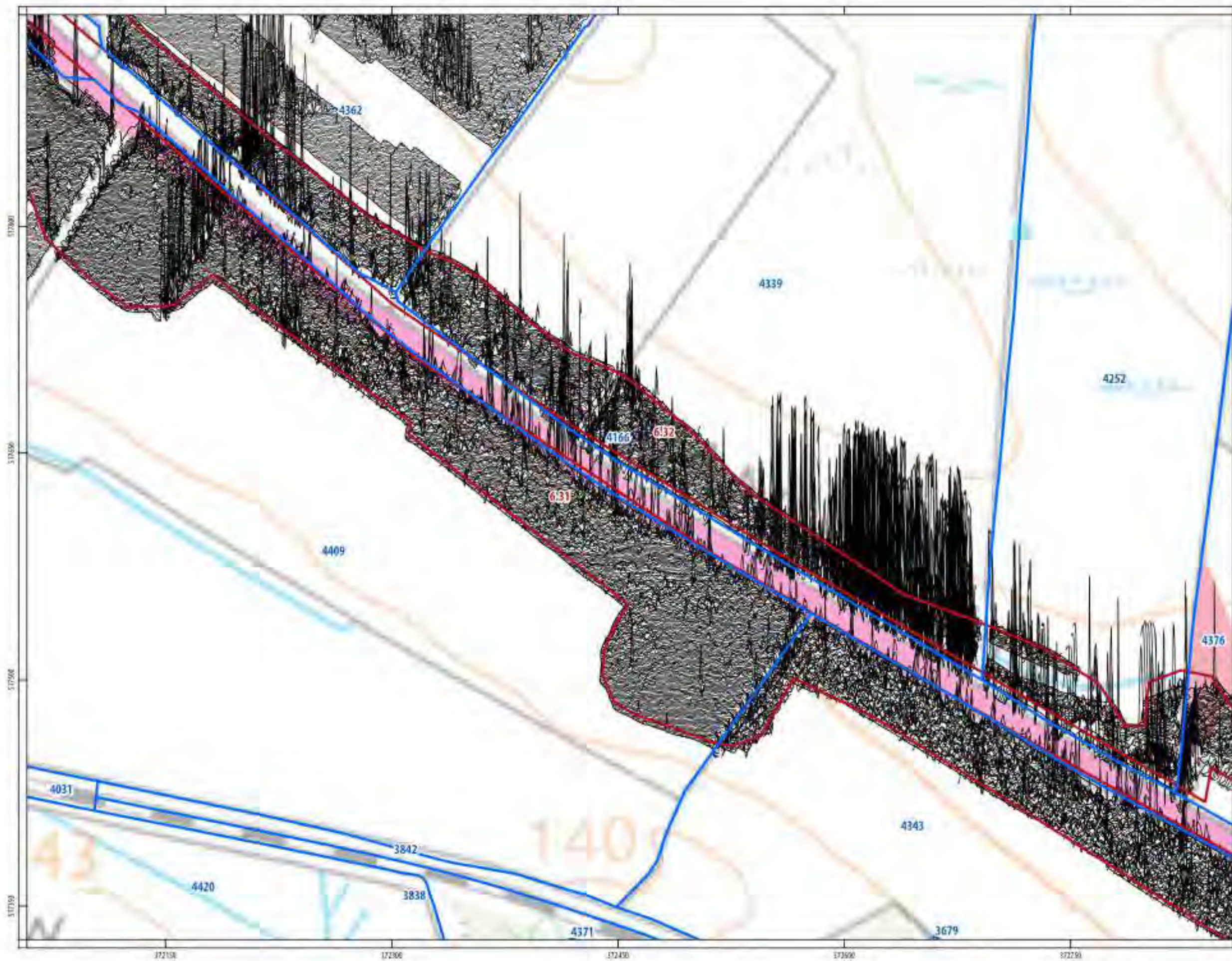


ILLU5 195 XY trace plot of minimally processed magnetometer data, Appleby to Blunth (Warcup)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- W. to D. m
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 196 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)

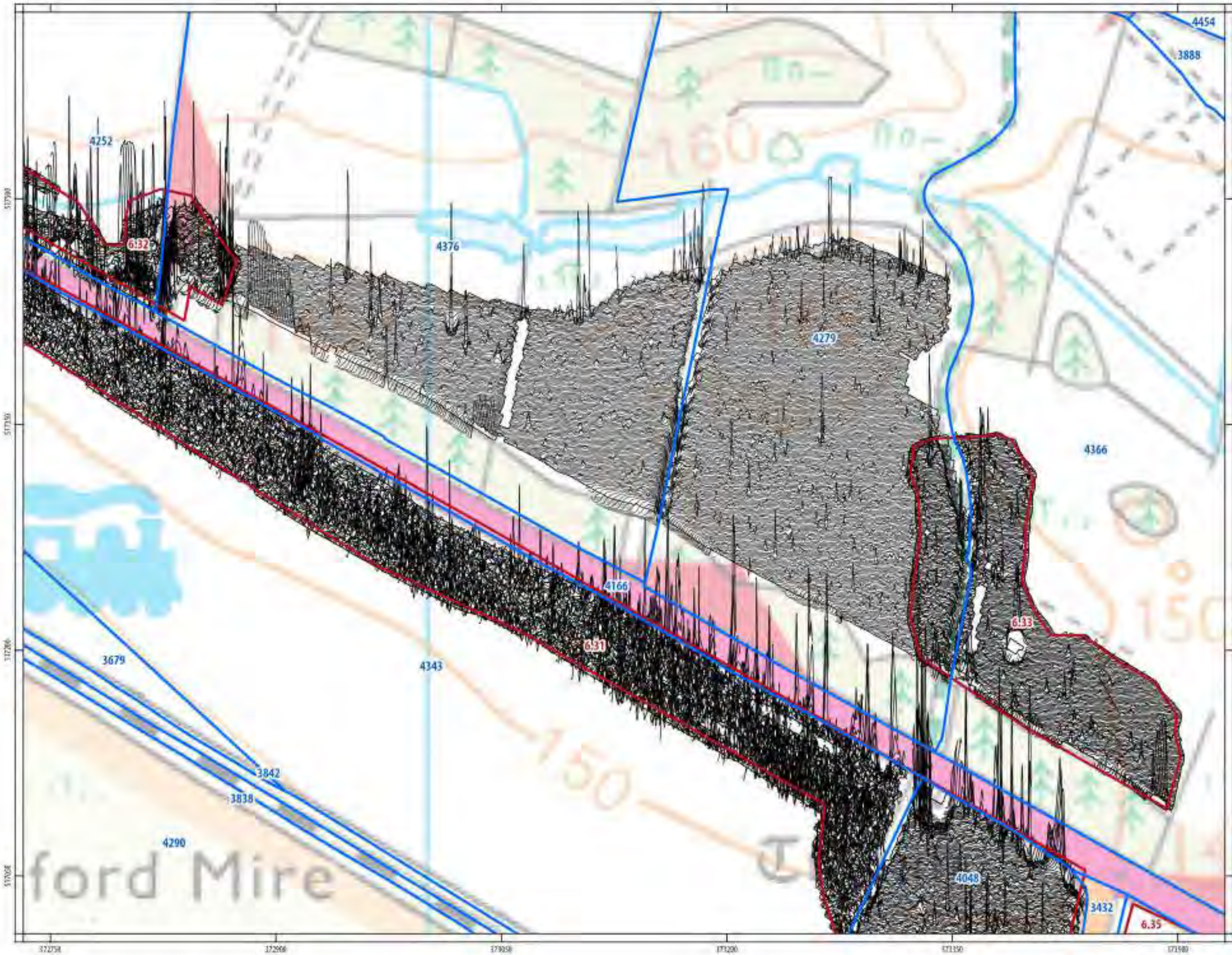




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Iron/70m
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 197 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- 20m North
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

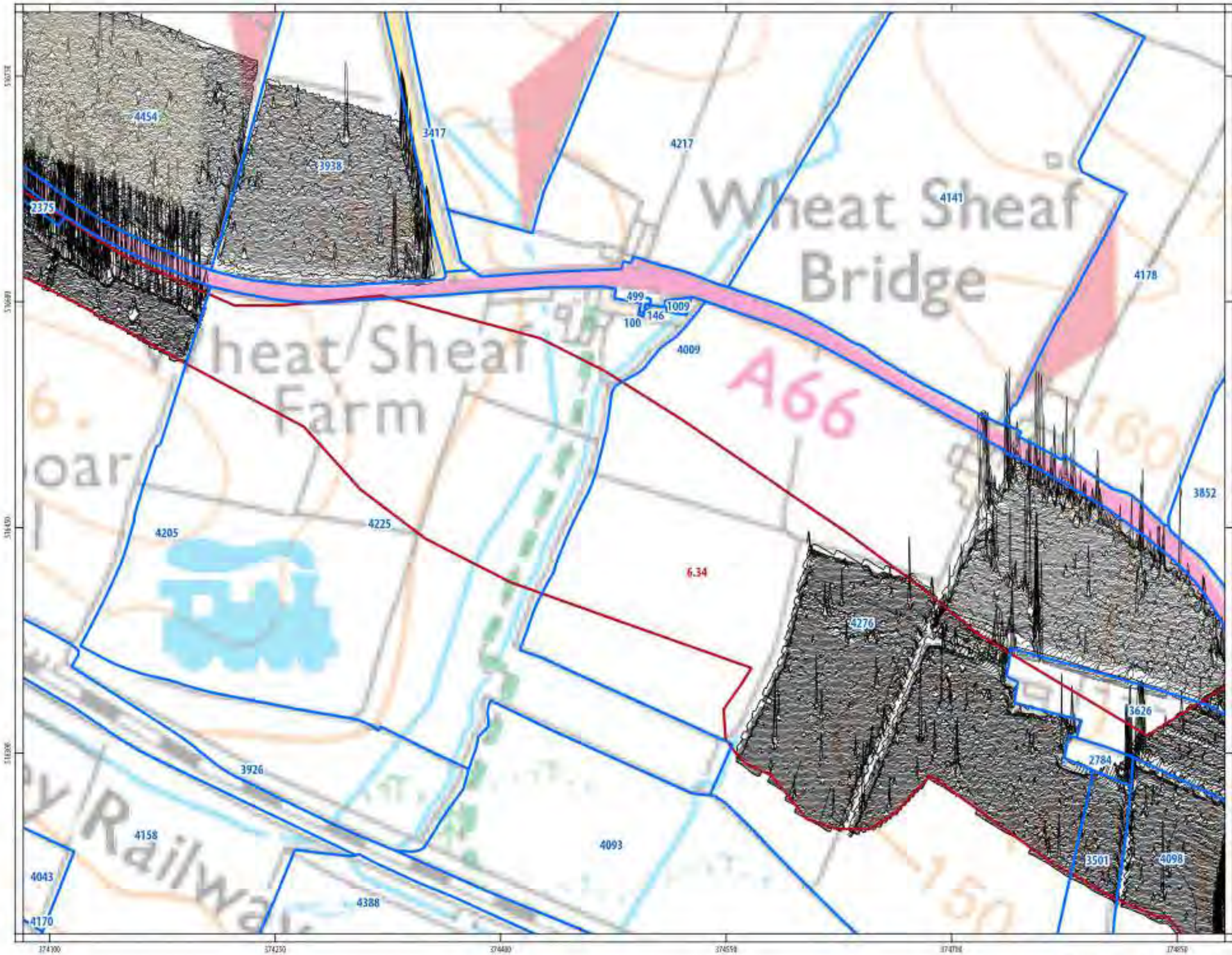


ILLUS 198 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



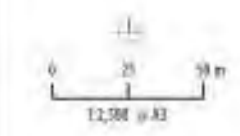


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 10m Grid
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



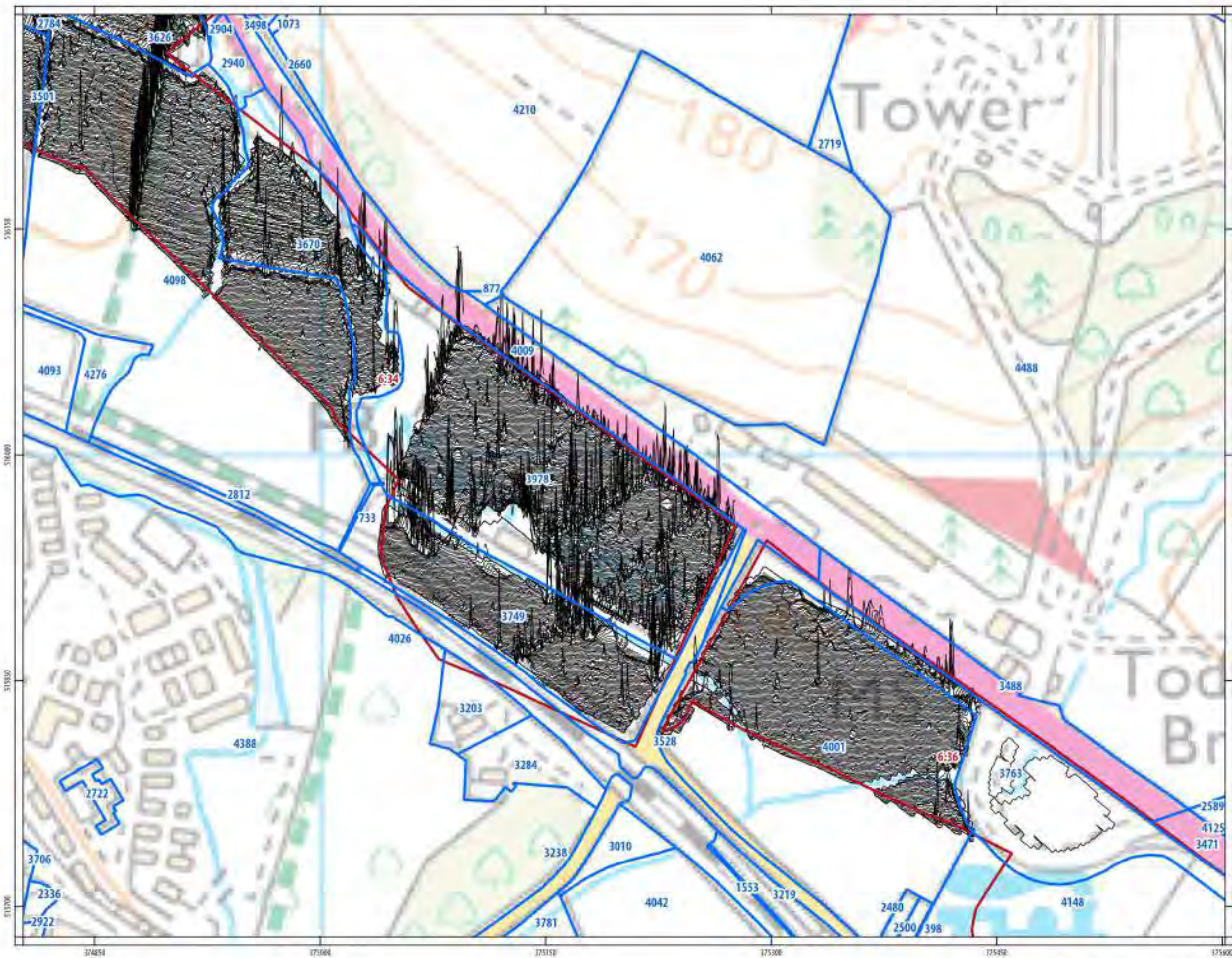
ILLUS 199 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- 10m Contour
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

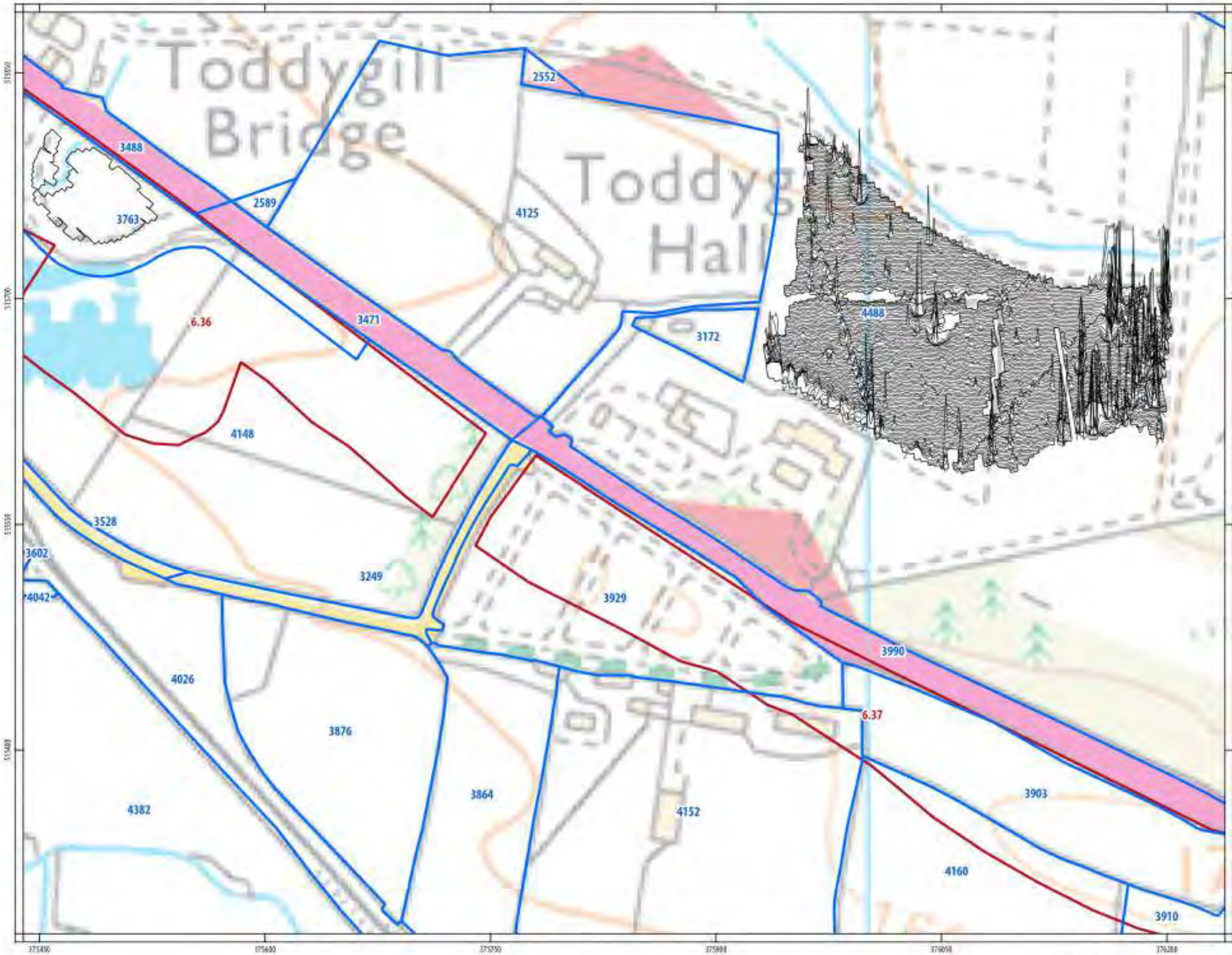


ILLUS 200 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



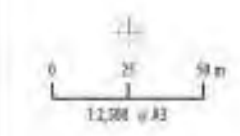


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KY - 10m TDEM
- Scheduled Monument



**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

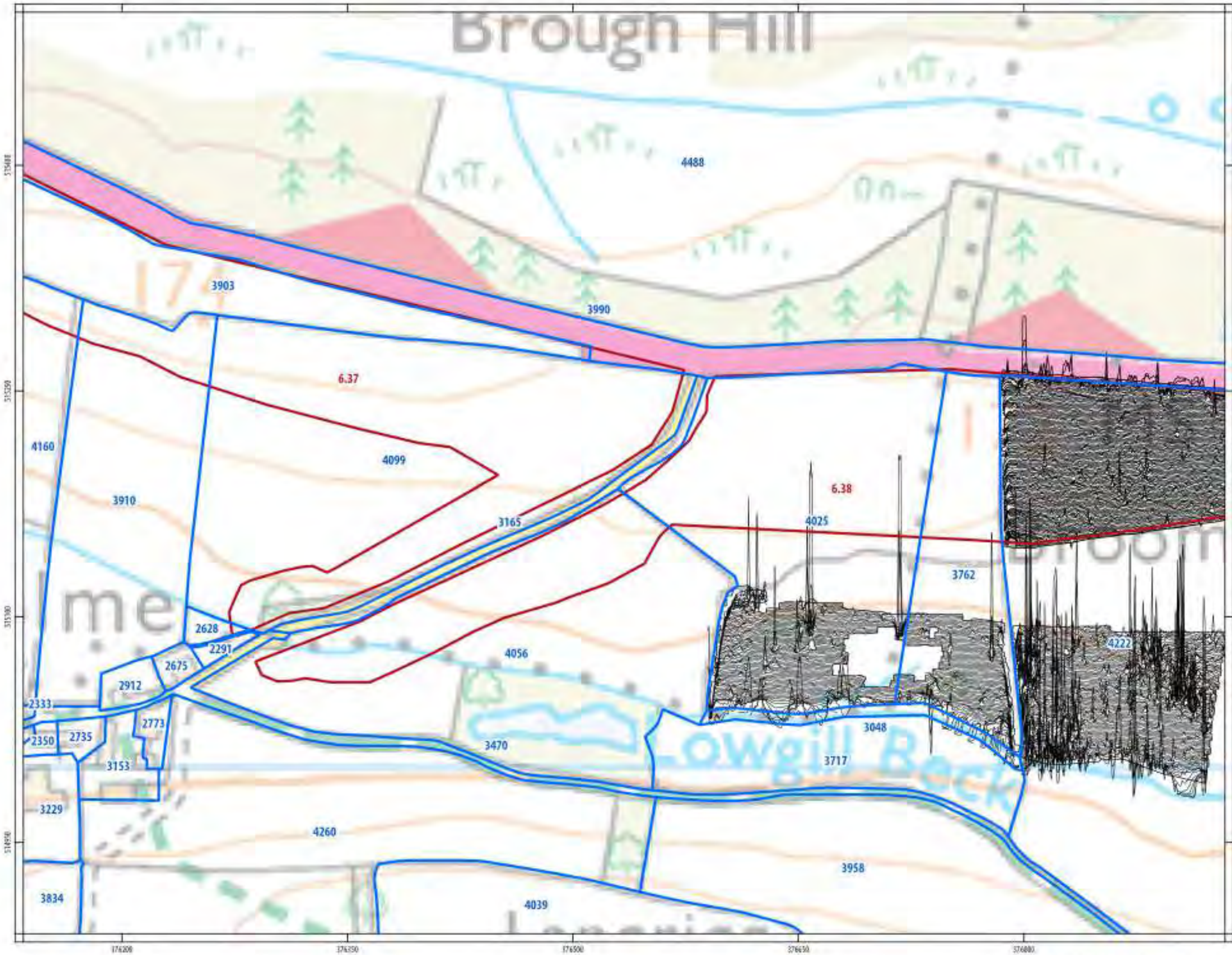


ILLUS 201 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ XY 10mT2m
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

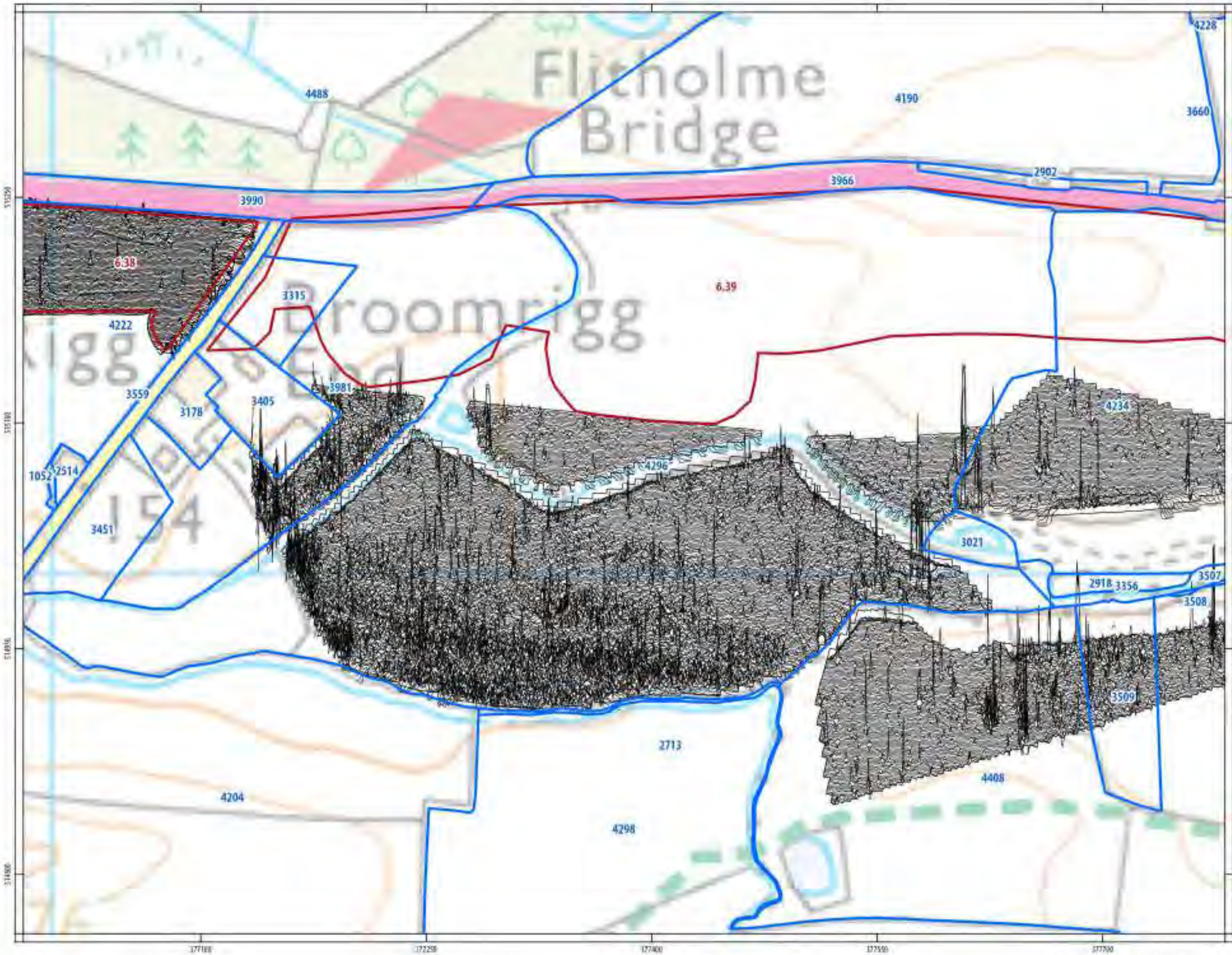


ILLUS 202 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



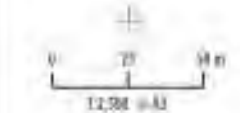


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Iron/Steel
- ▭ Scheduled Monument



**PROJECT**  
M1020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England

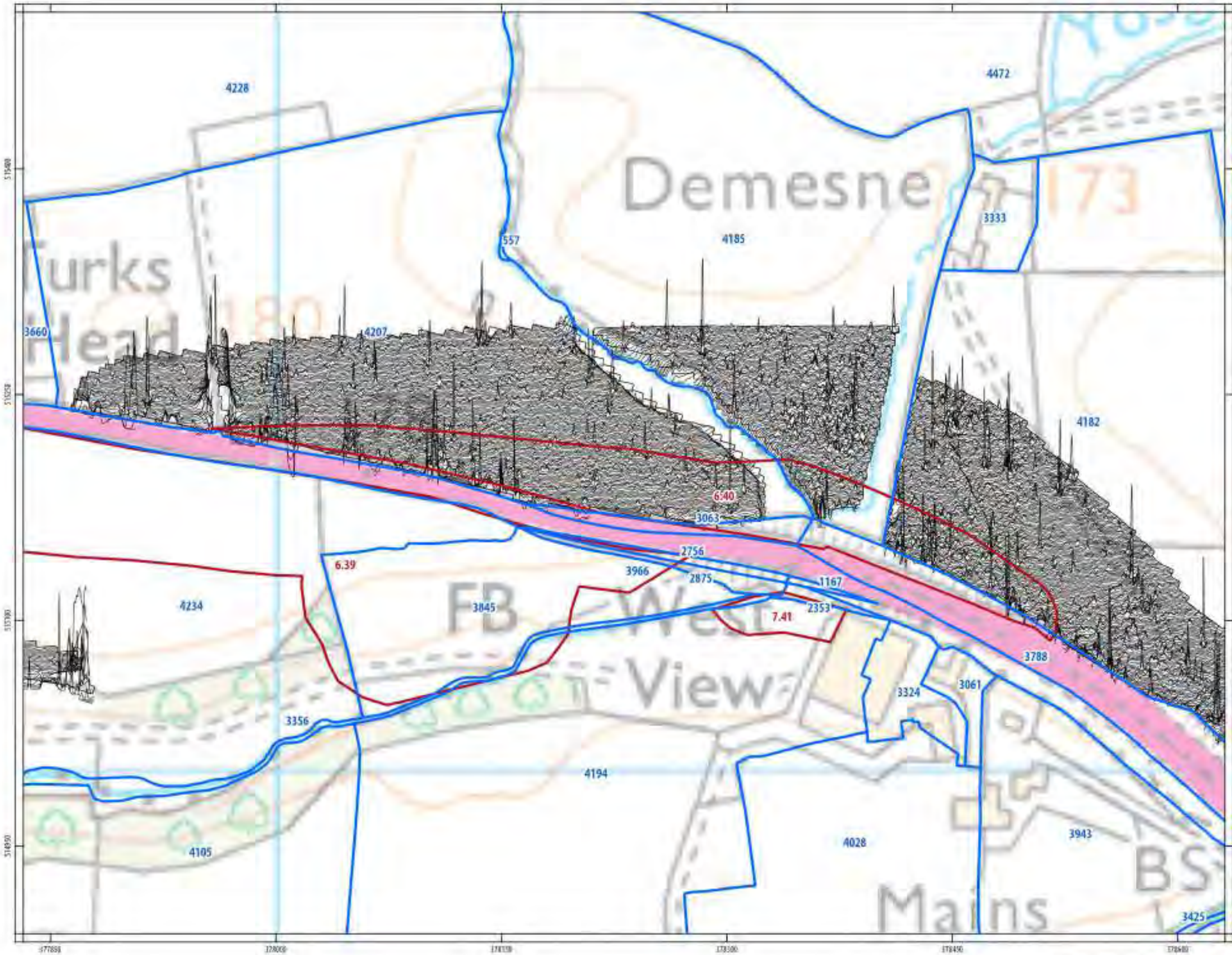


ILLUS 203 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron/Trom
- ▭ Scheduled Monument



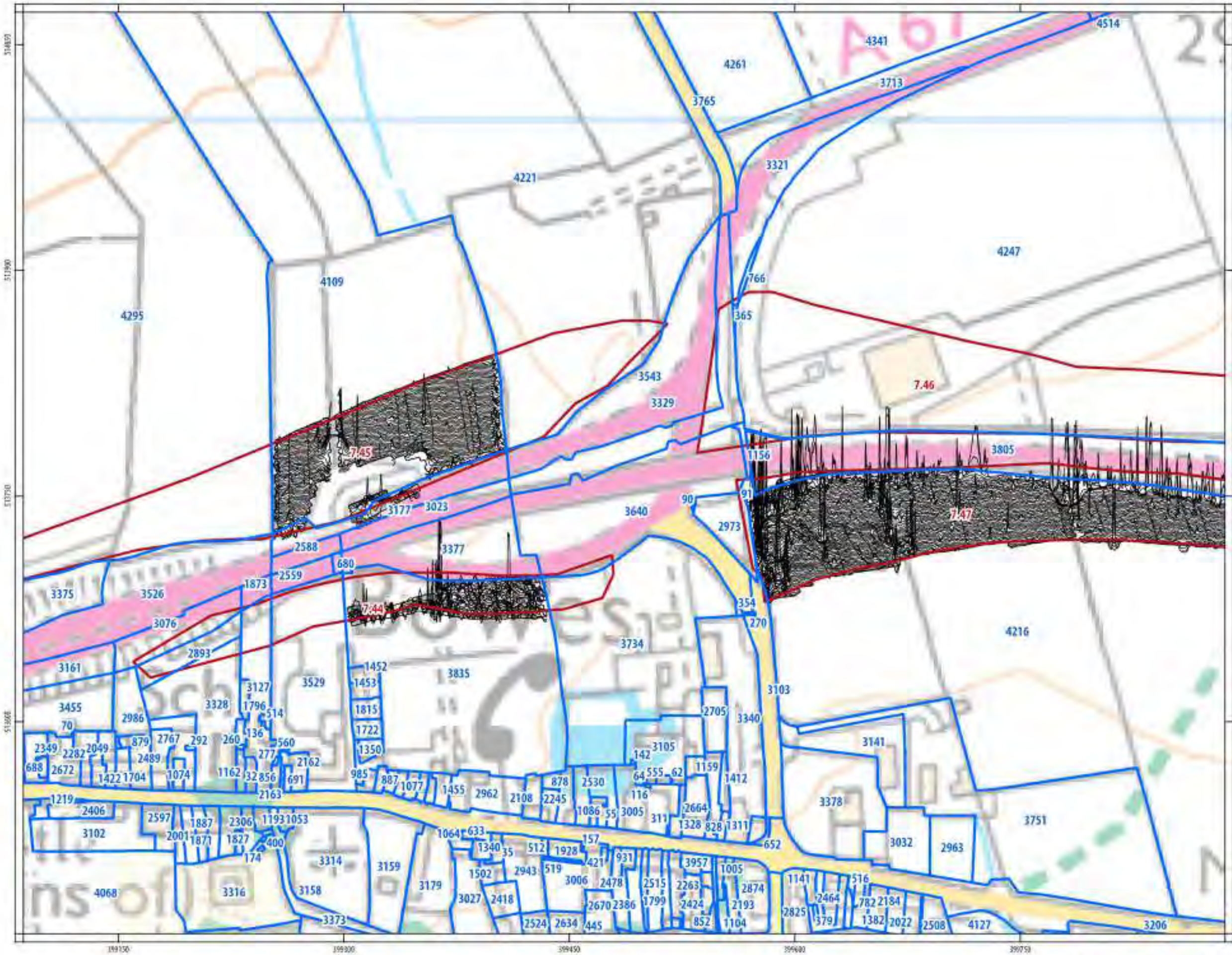
ILLUS 204 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 40m x 10m Grid
- ▭ Scheduled Monument



**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 206 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)



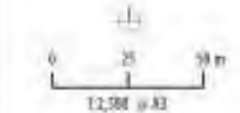


- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- 10m Grid Line
- Scheduled Monument



**PROJECT**  
A7020-A66 Transpennine Upgrade

**CLIENT**  
Highways England

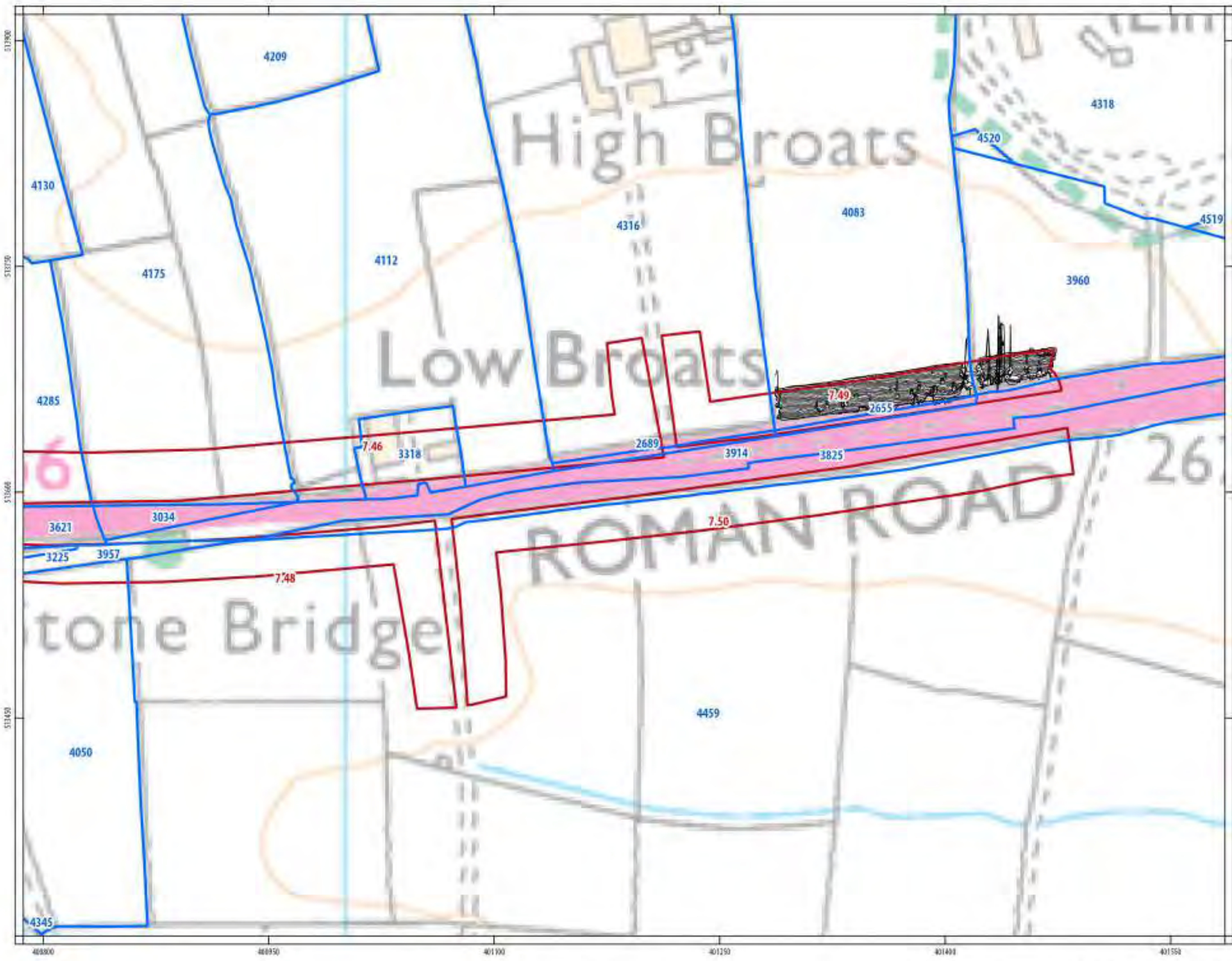


ILLUS 207 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)



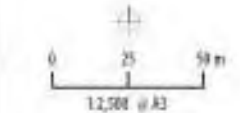


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- XY 10m/7cm
- Scheduled Monument

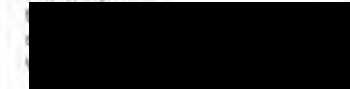


**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



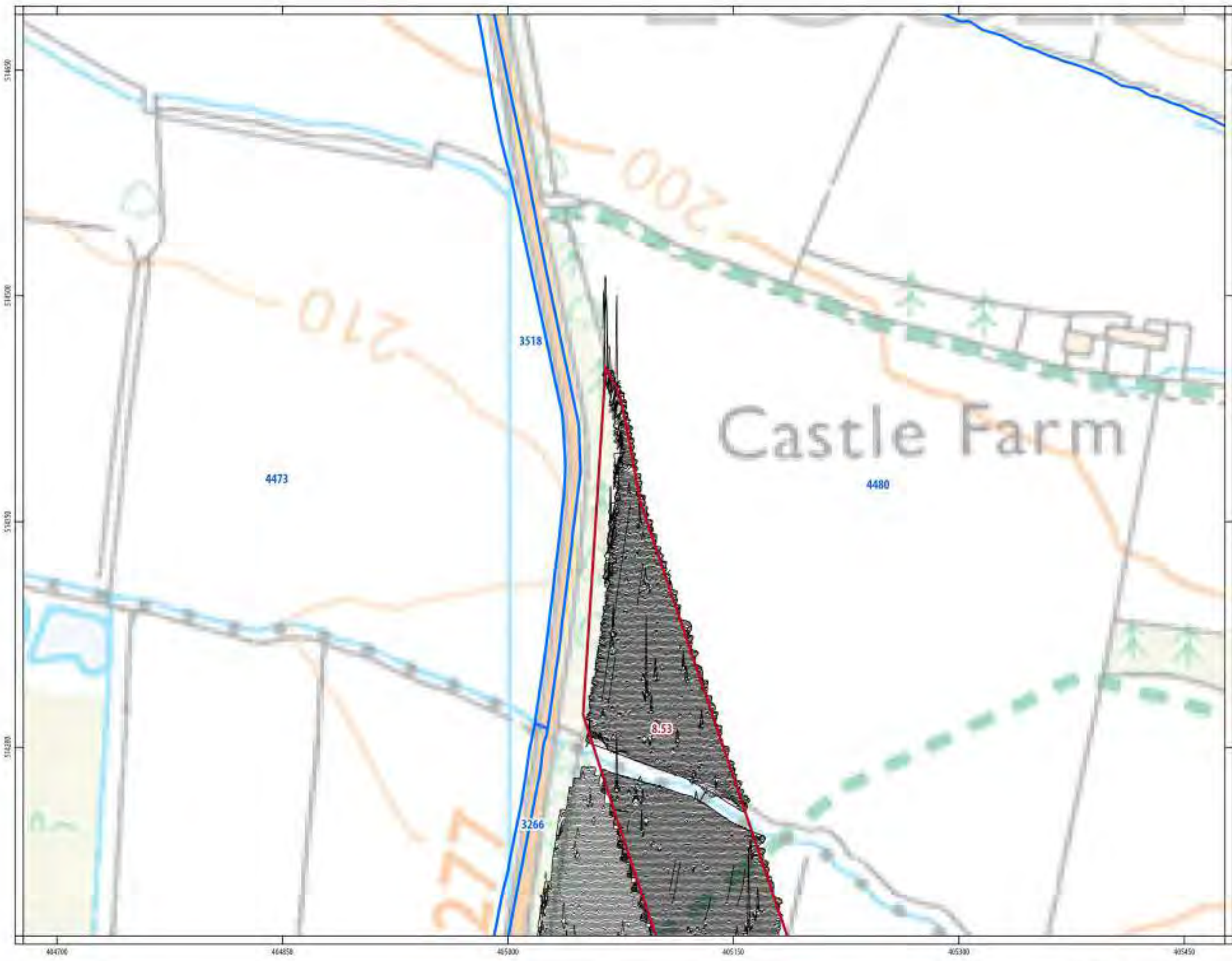
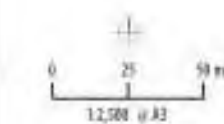




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10mT/m
- Scheduled Monument

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



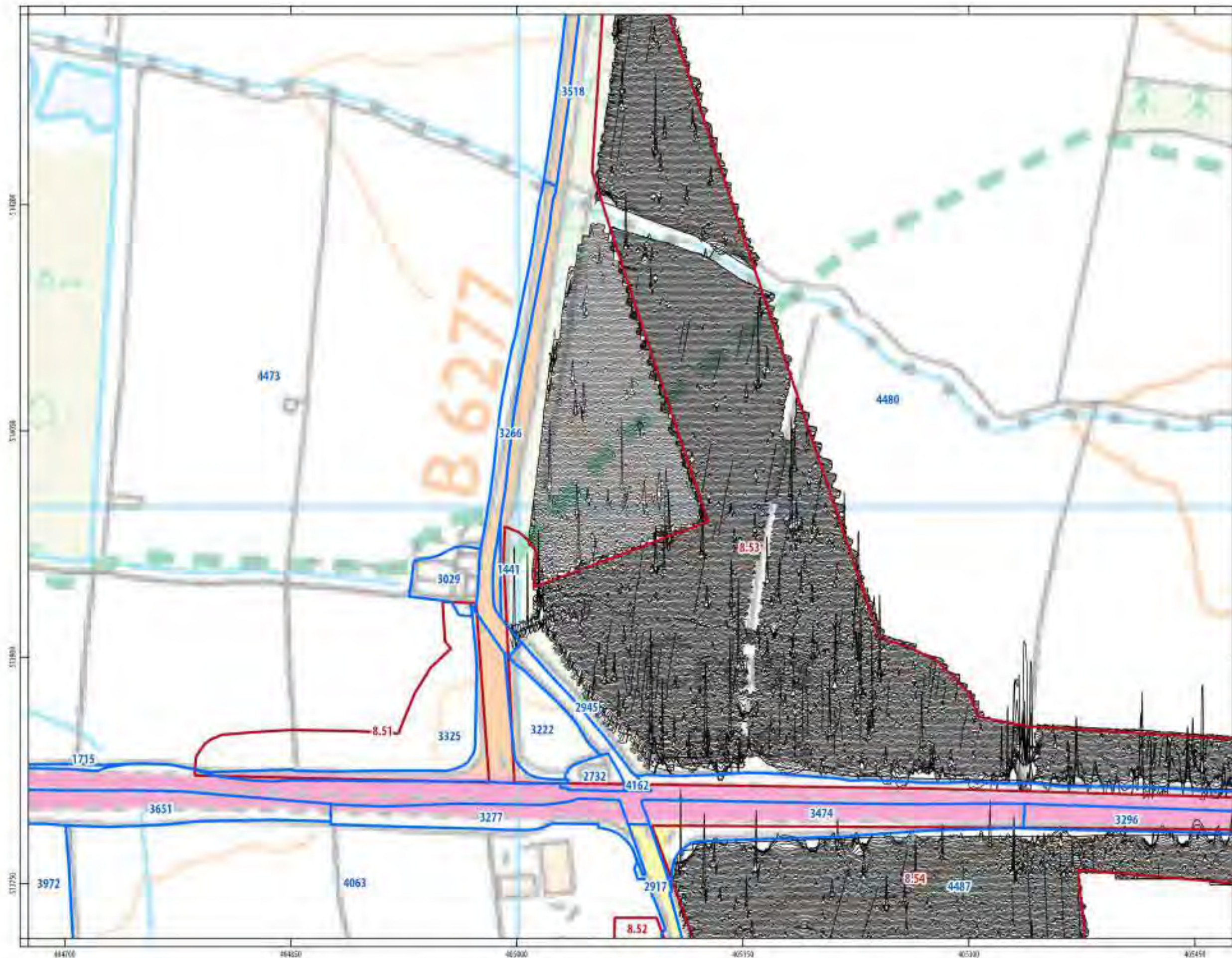
ILLUS 209 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Top/Down
- ▭ Scheduled Monument

**PROJECT**  
M1020-496 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 210 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby





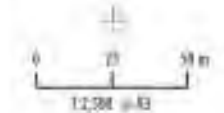
**HEADLAND  
ARCHAEOLOGY**

Headland Archaeology (Holdings) & North  
Units 23-25 | Acorn Business Centre | Birkbe Road  
Cleethorpe | 8879 482

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - 10m/70m
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 211 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



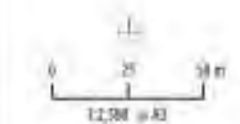


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron/Trom
- ▭ Scheduled Monument



**PROJECT**  
M20-A96 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 212 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ KV - Iron/Dom
- ▭ Scheduled Monuments



**PROJECT**  
M1020 - M6 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 213 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby

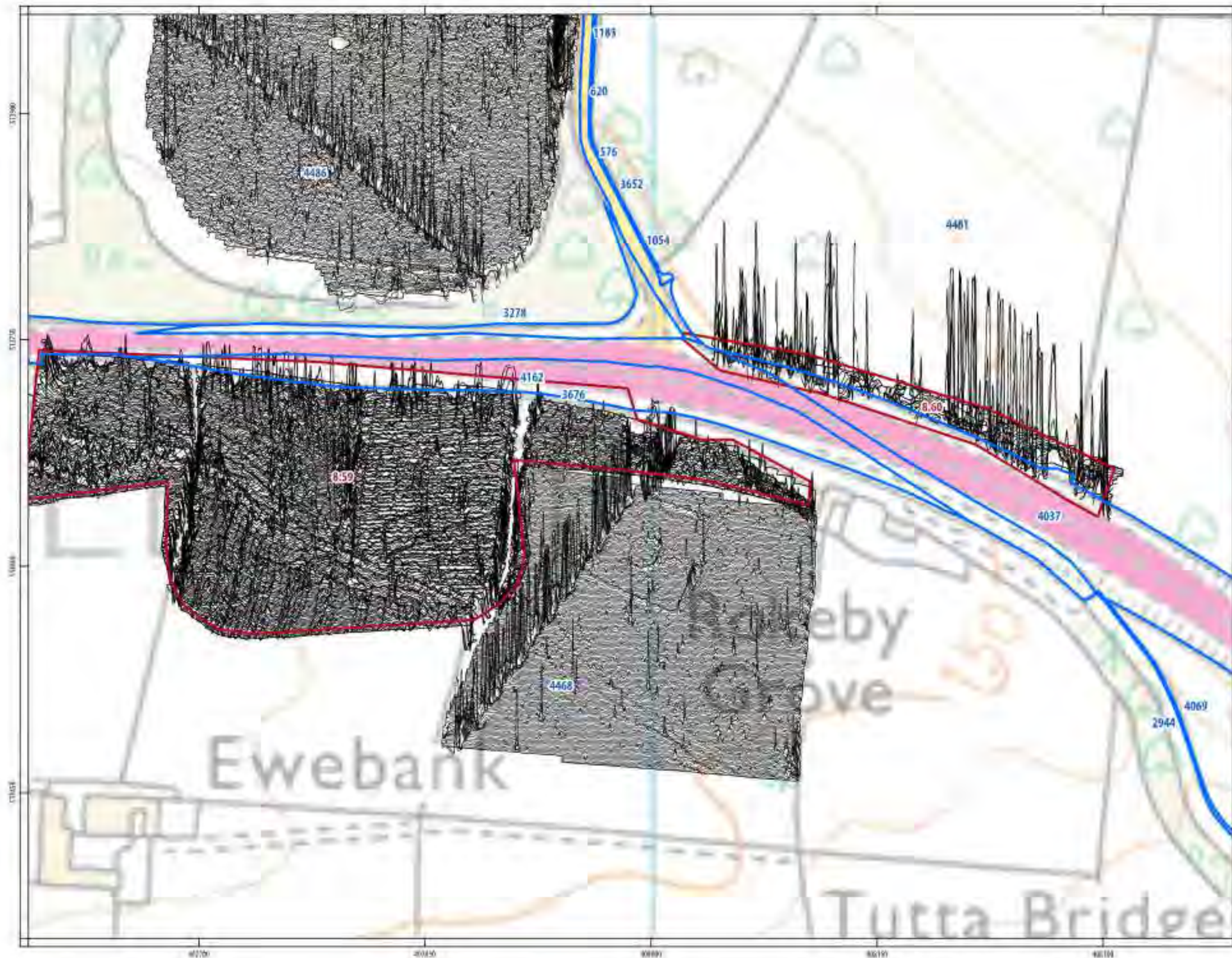




- ▭ Zone 1 Geophysical Survey Area
- ▭ Zone 2 Geophysical Survey Area
- ▭ Geophysical Survey Path
- ▭ 80m Grid
- ▭ Proposed Main Road

**PROJECT**  
M1120 - M6 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 214 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby

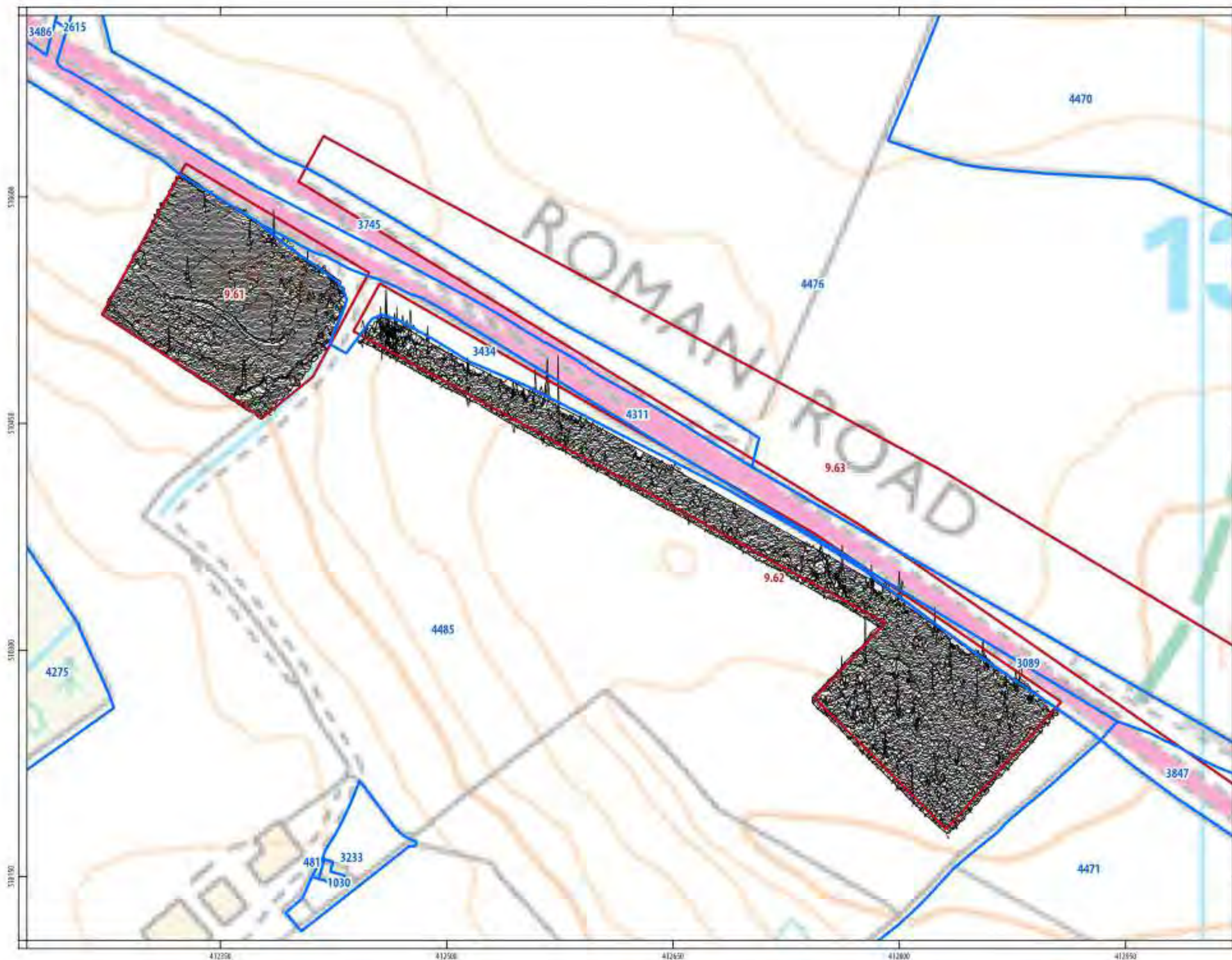




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- 10m Contour
- Scheduled Monument

**PROJECT**  
M20-696 Transpennine Upgrade

**CLIENT**  
Highways England

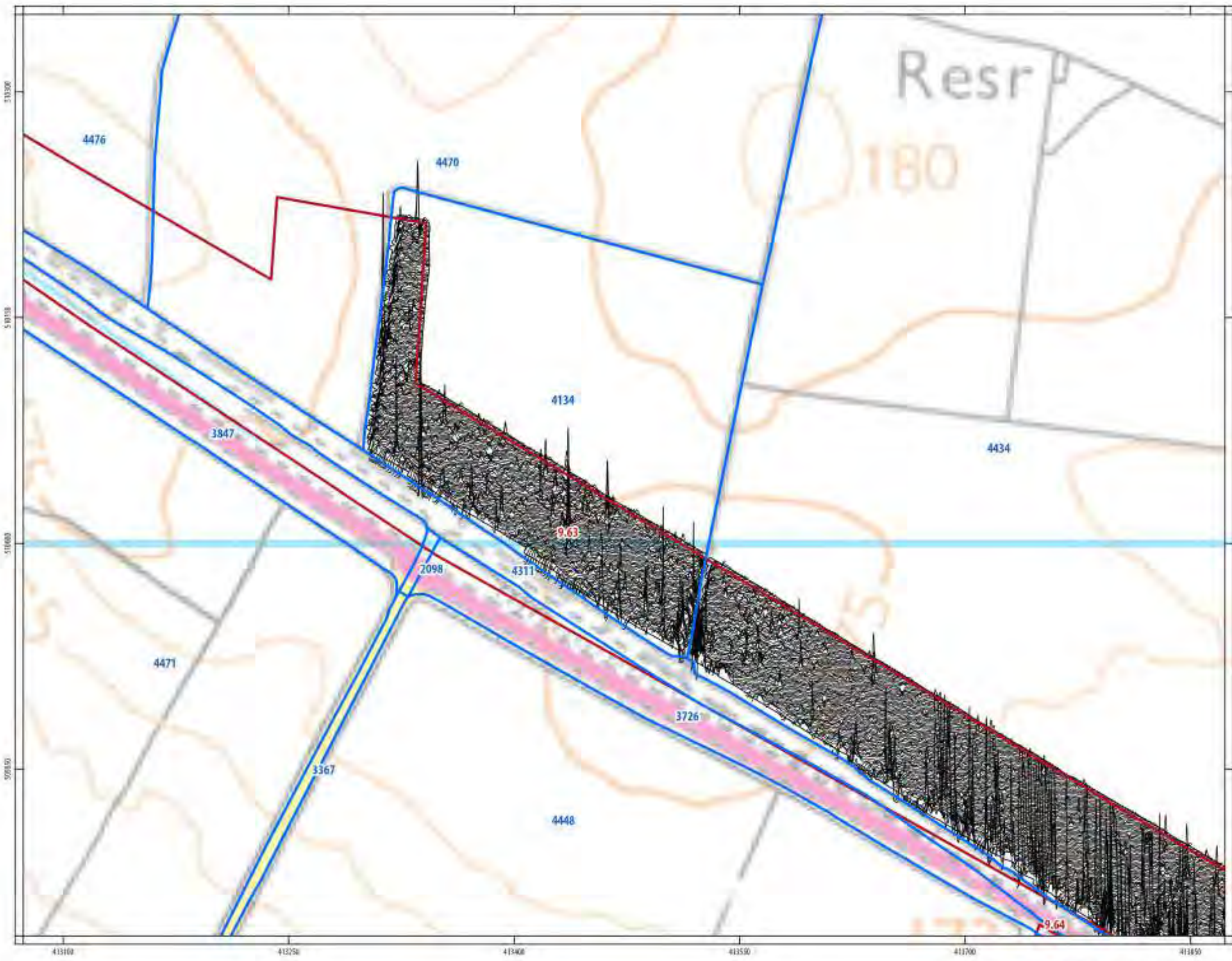


ILLUS 215 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



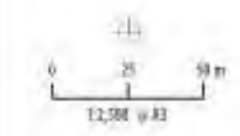


- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ 40m Grid
- ▭ Scheduled Monument



**PROJECT**  
A16/A66 Transpennine Upgrade

**CLIENT**  
Highways England



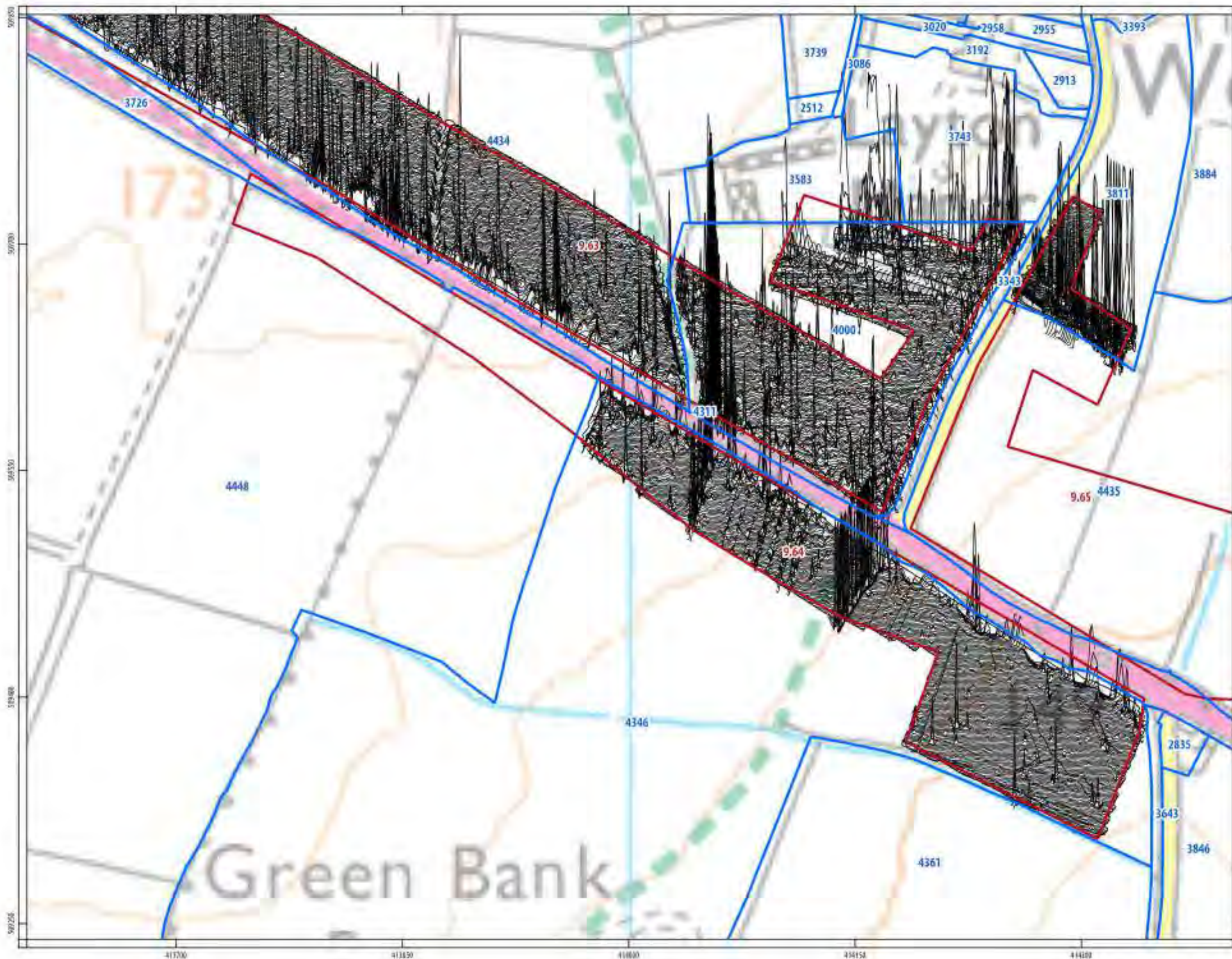
ILLUS 216 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KV - Iron/Trom
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 217 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- 10m Contour
- Scheduled Monument



**PROJECT**  
M20-696 Transpennine Upgrade

**CLIENT**  
Highways England



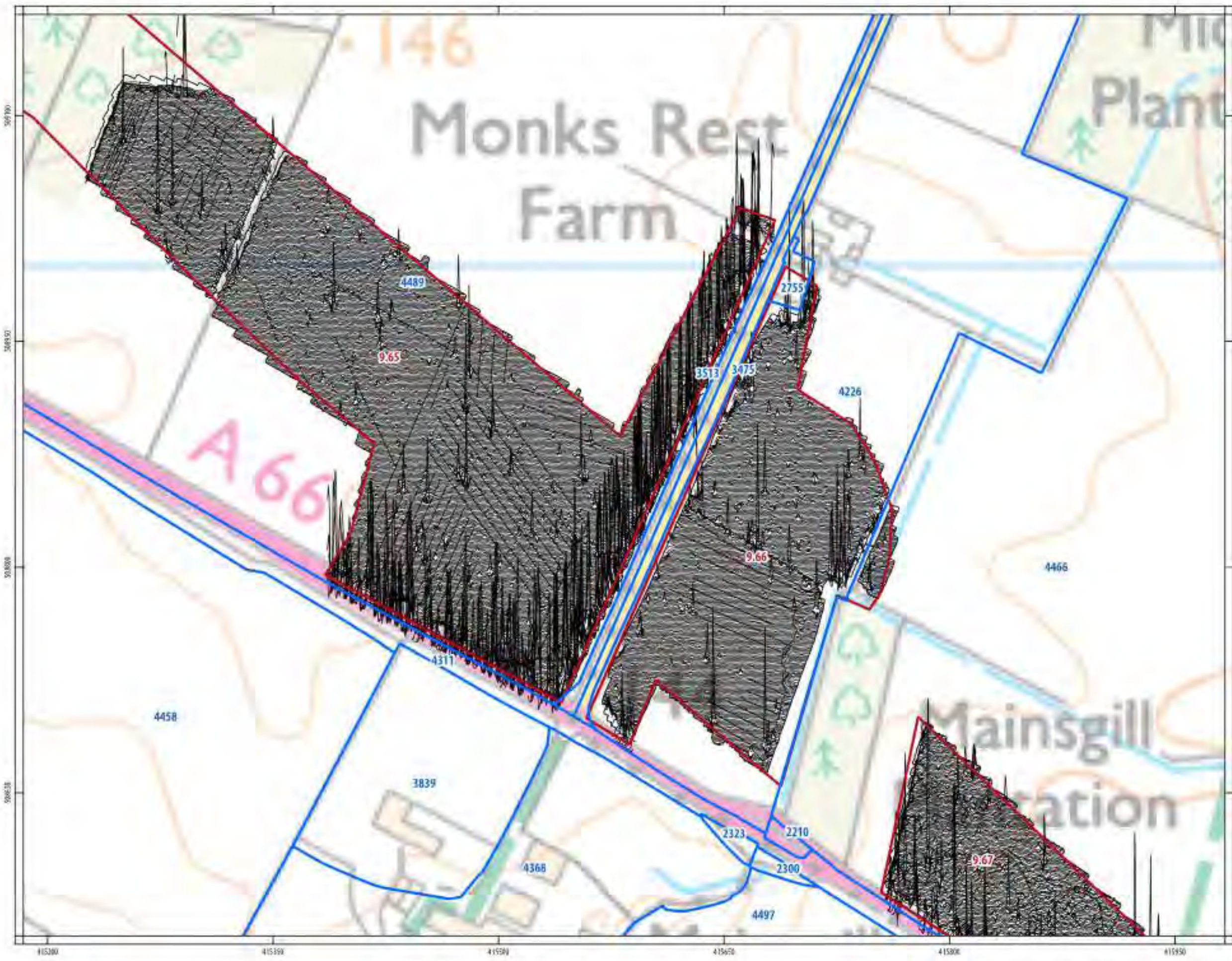
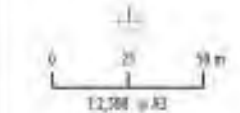
ILLUS 218 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- 10m Grid
- ▭ Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 219 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

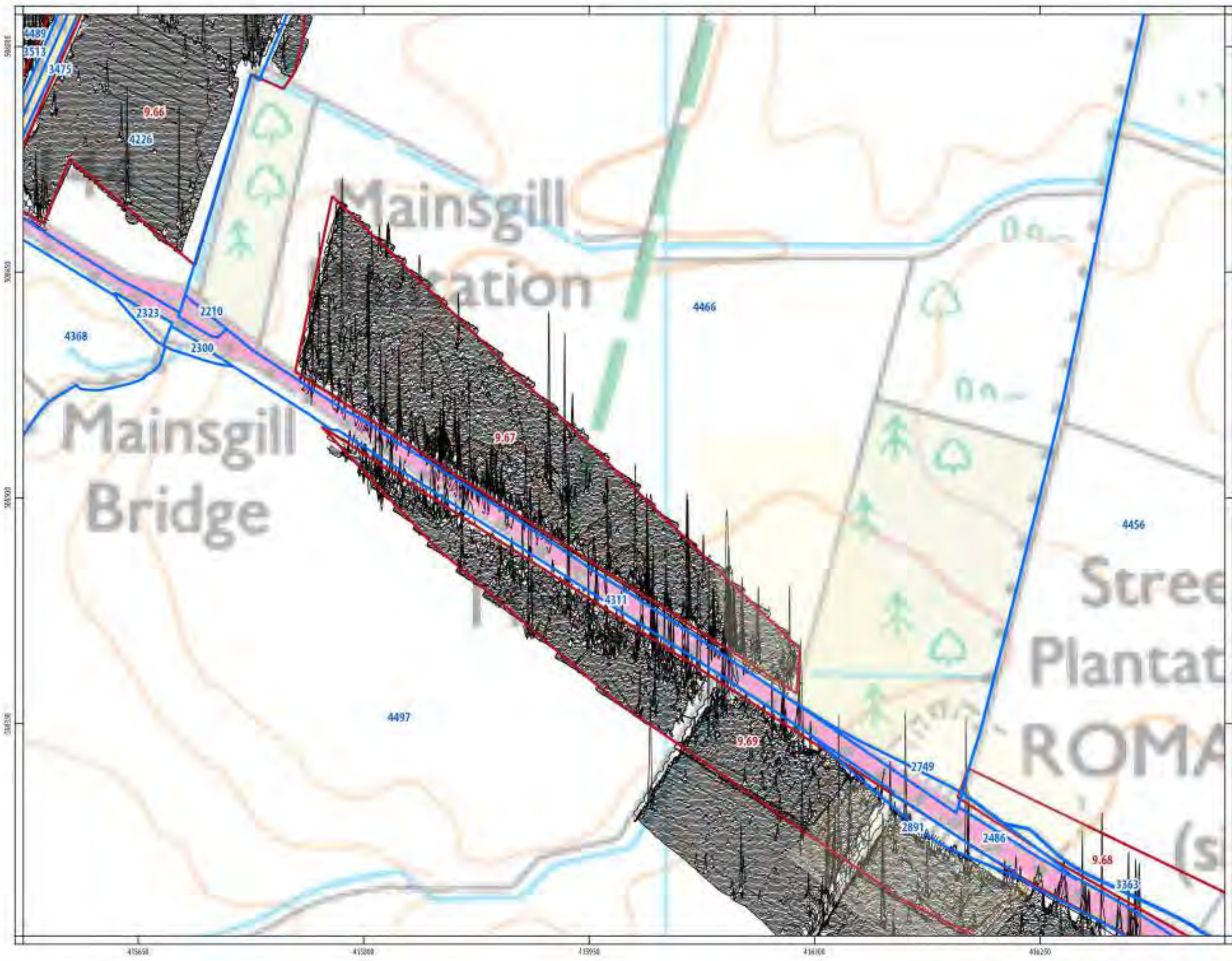
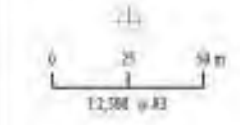




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Entry
- ▭ 4V - 10m/7cm
- ▭ Scheduled Monument

**PROJECT**  
A7020 - A96 Transpennine Upgrade

**CLIENT**  
Highways England



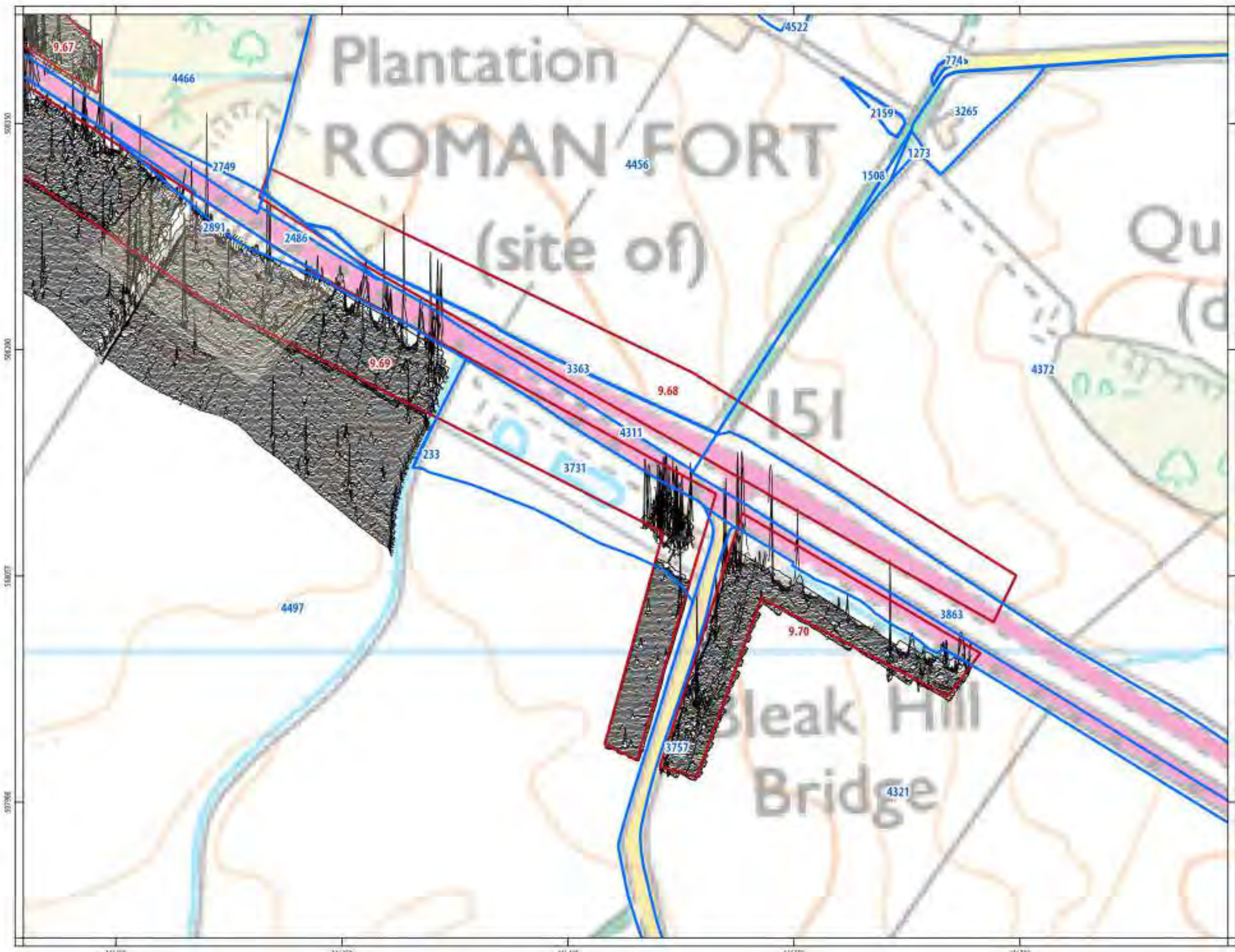
ILLUS 220 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- KY - 10m/10m
- Scheduled Monument

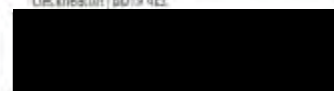
**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 221 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor





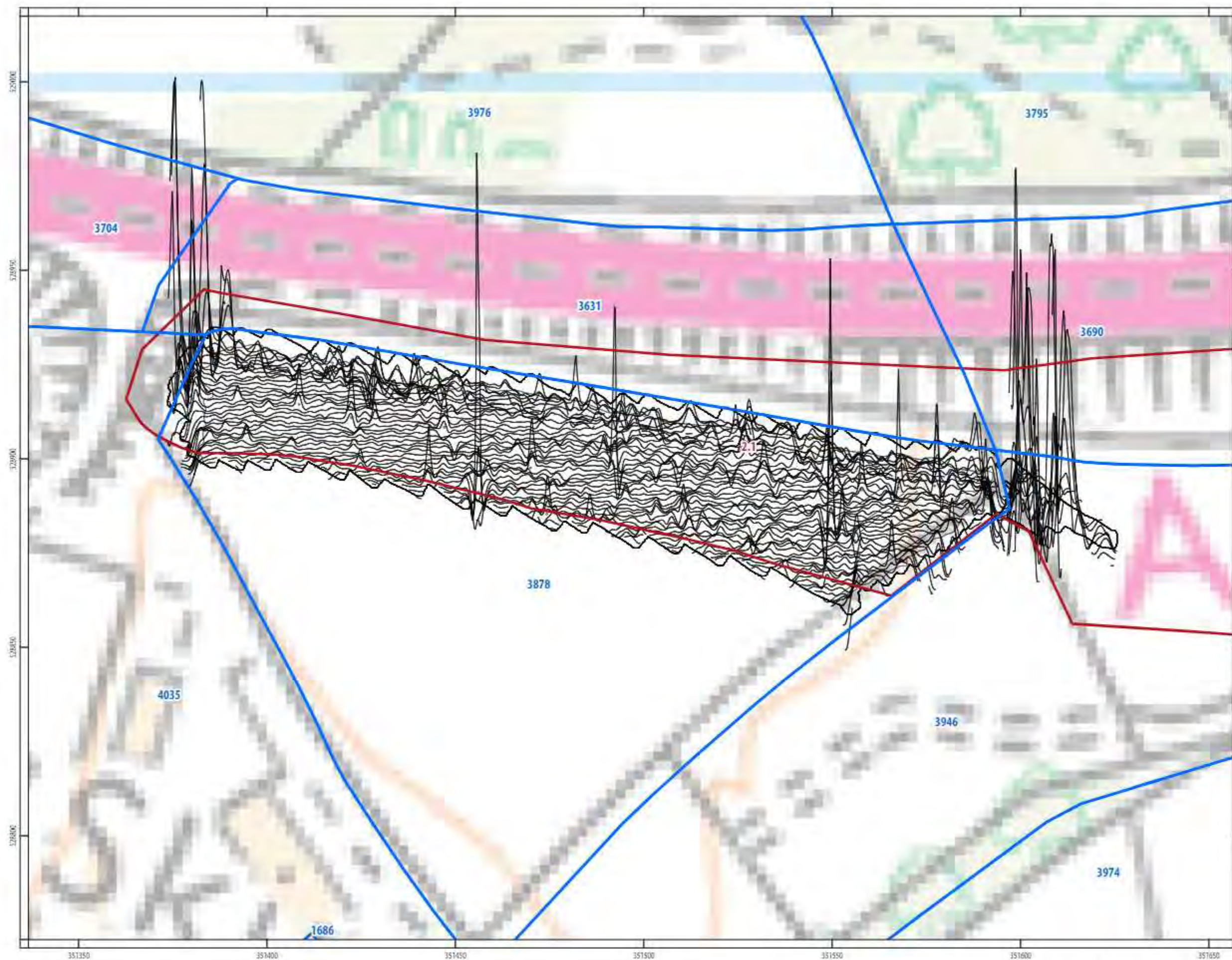
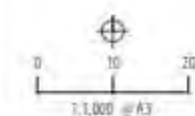
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 222 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout

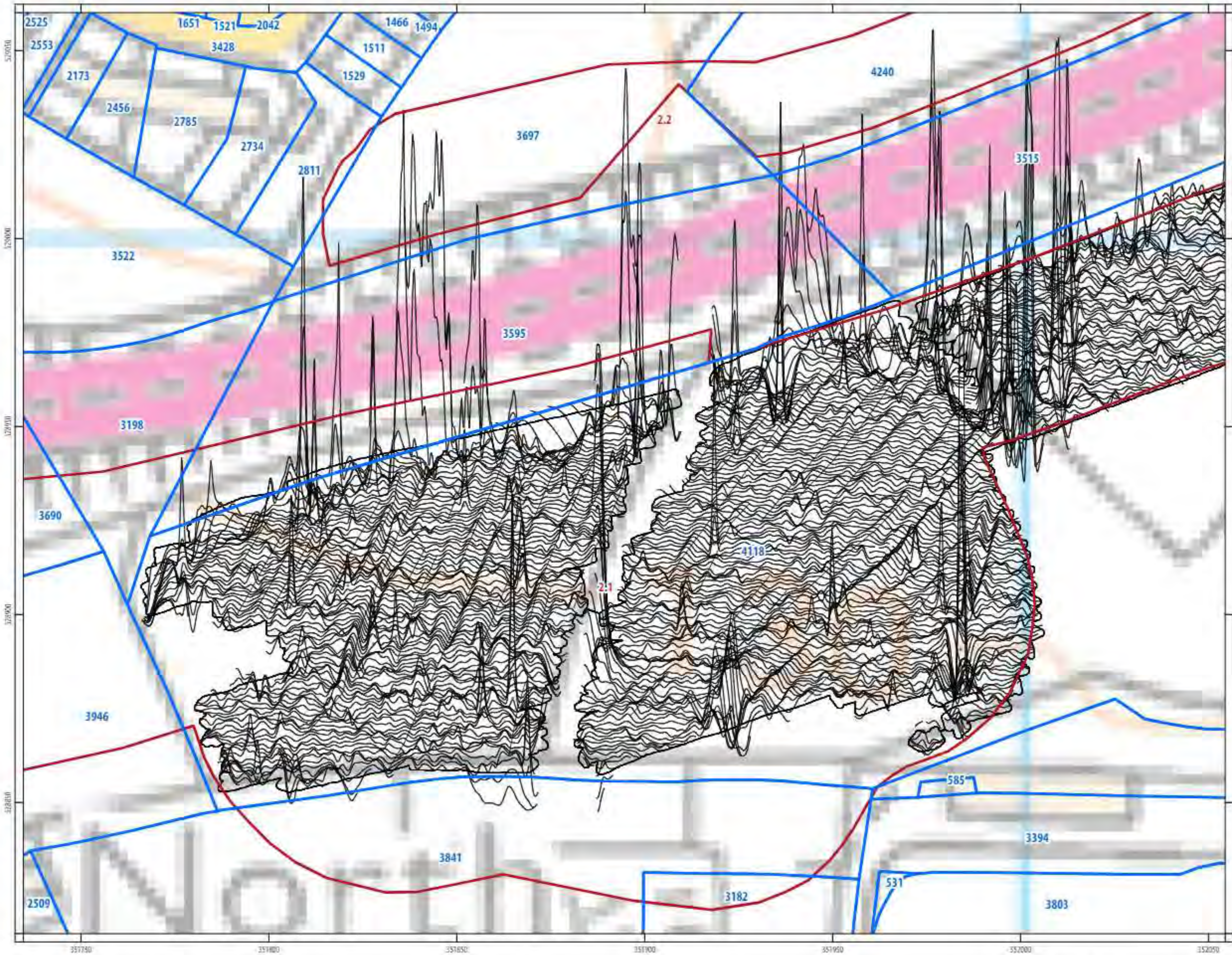




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 223 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout

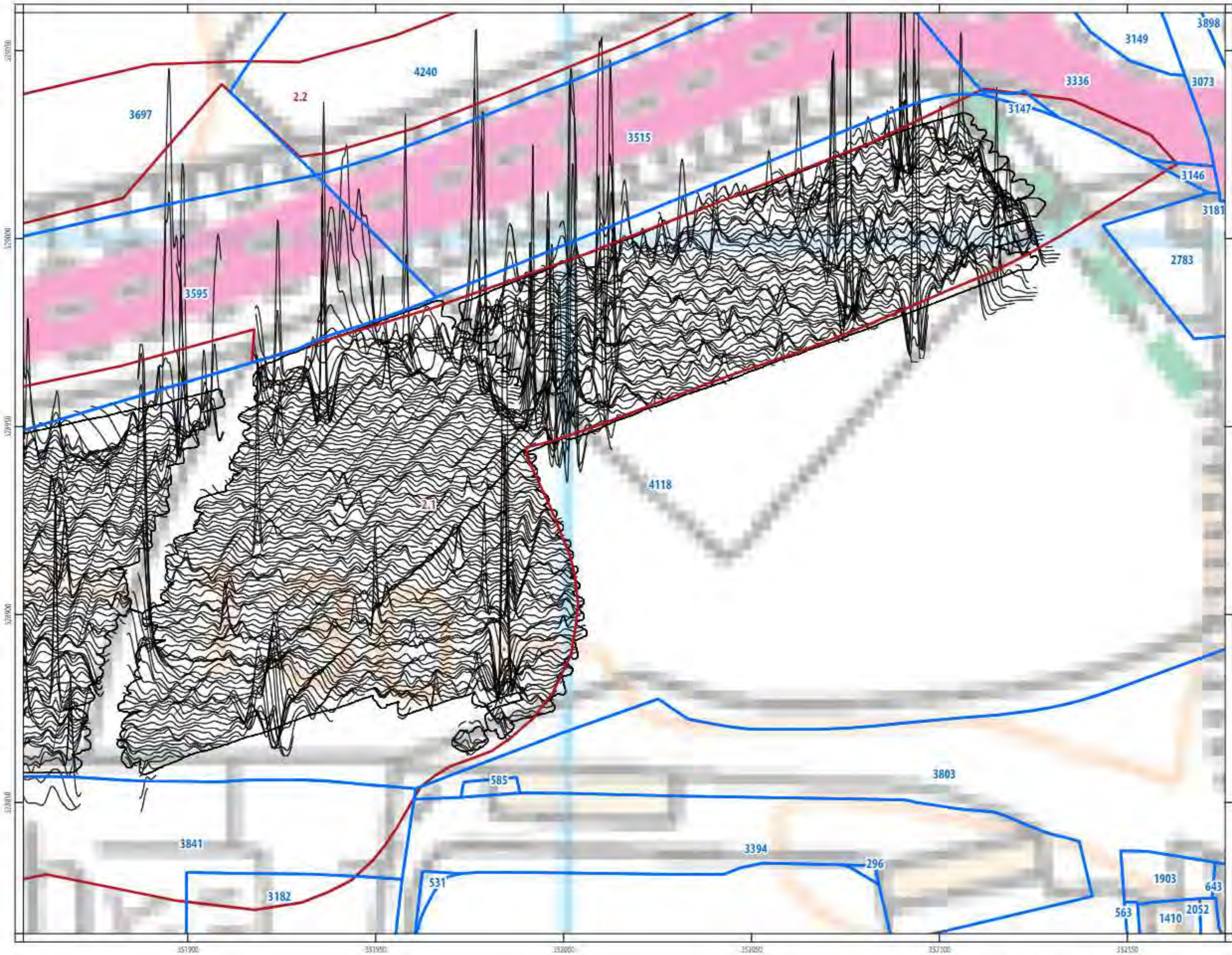




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 224 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout

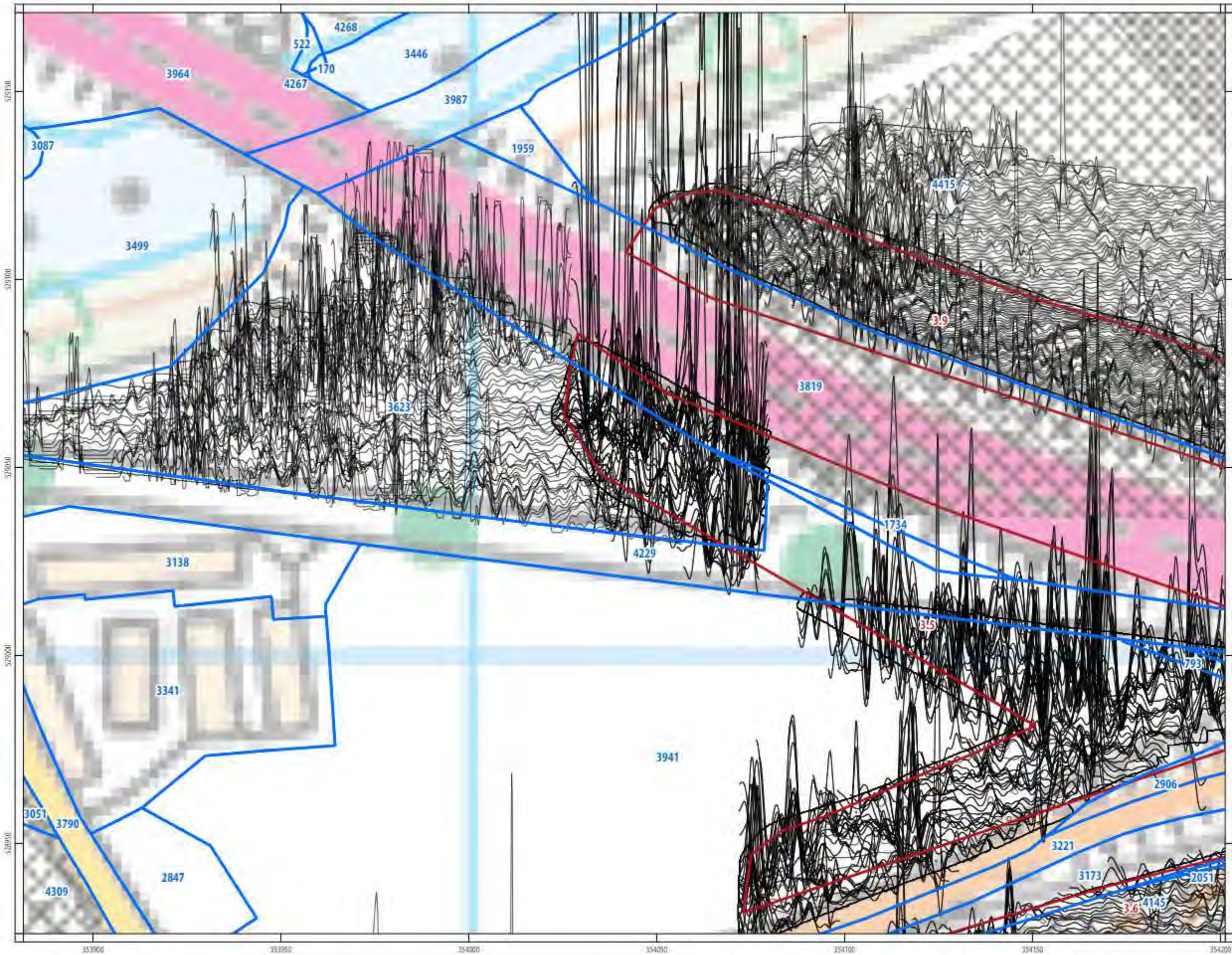




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Easement
- XY - 10m / cm
- Scheduled Monument

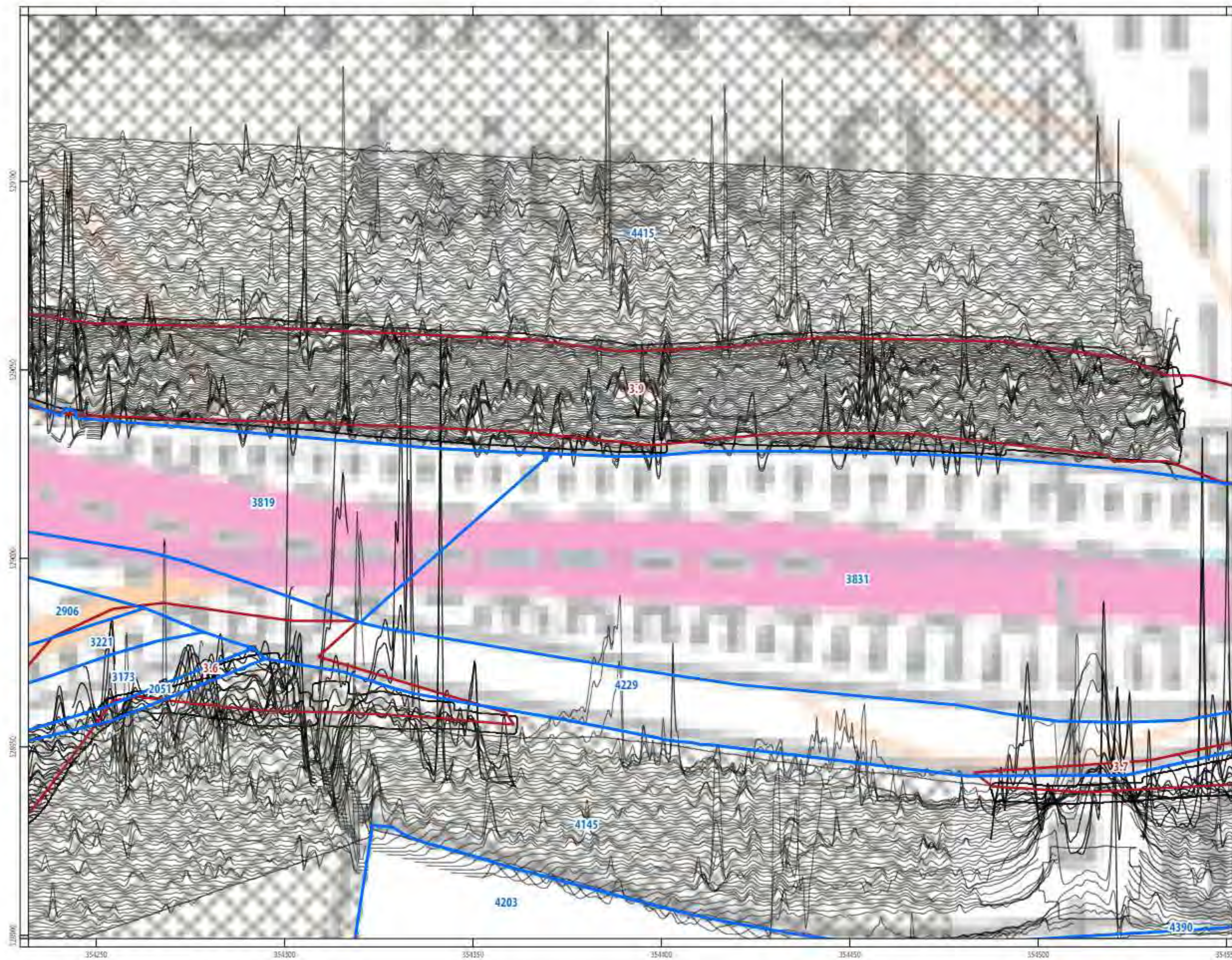
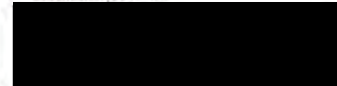
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 225 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

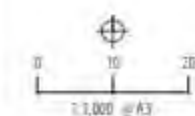




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- ▨ Scheduled Monument

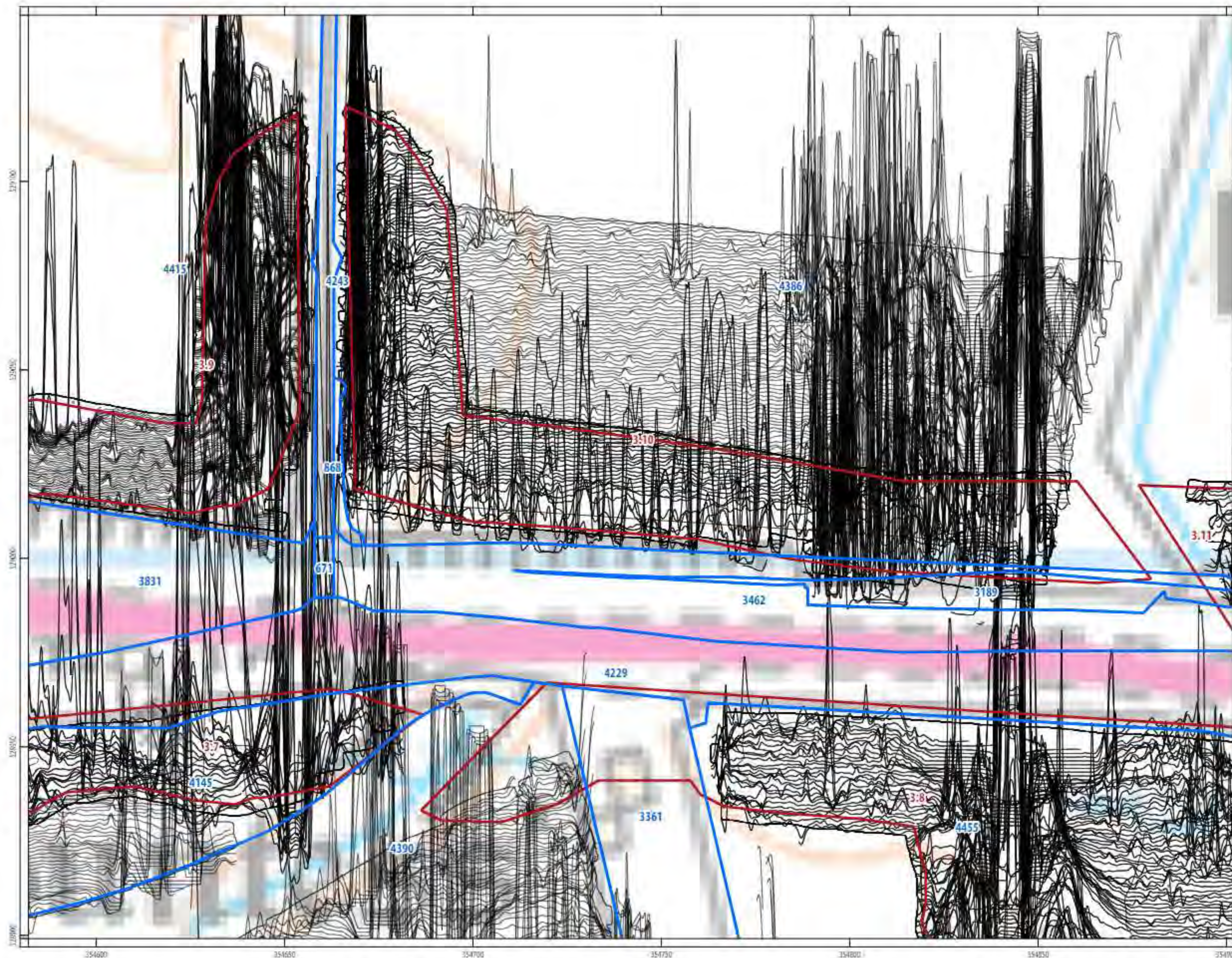
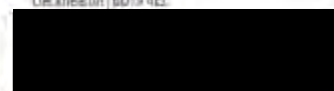
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 226 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

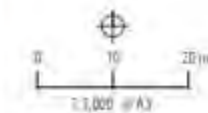




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XV (Dm) (m)
- ⊗ Scheduled Monument

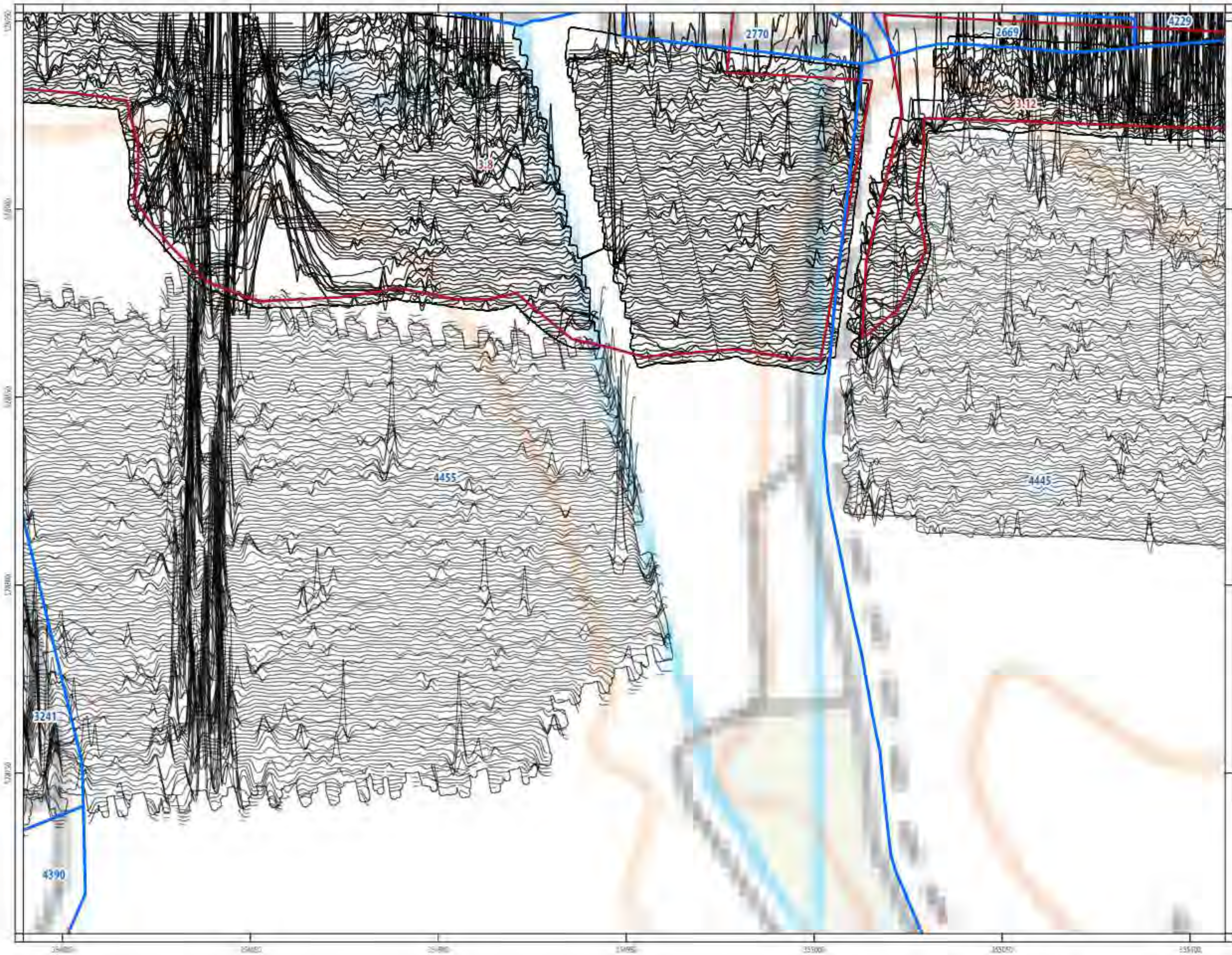
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 227 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- Phase 1 (Leighton Buzzard) Survey Area
- Phase 2 (Leighton Buzzard) Survey Area
- Contour and Survey Lines
- 1:1000 Scale
- Section Management

**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 228 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



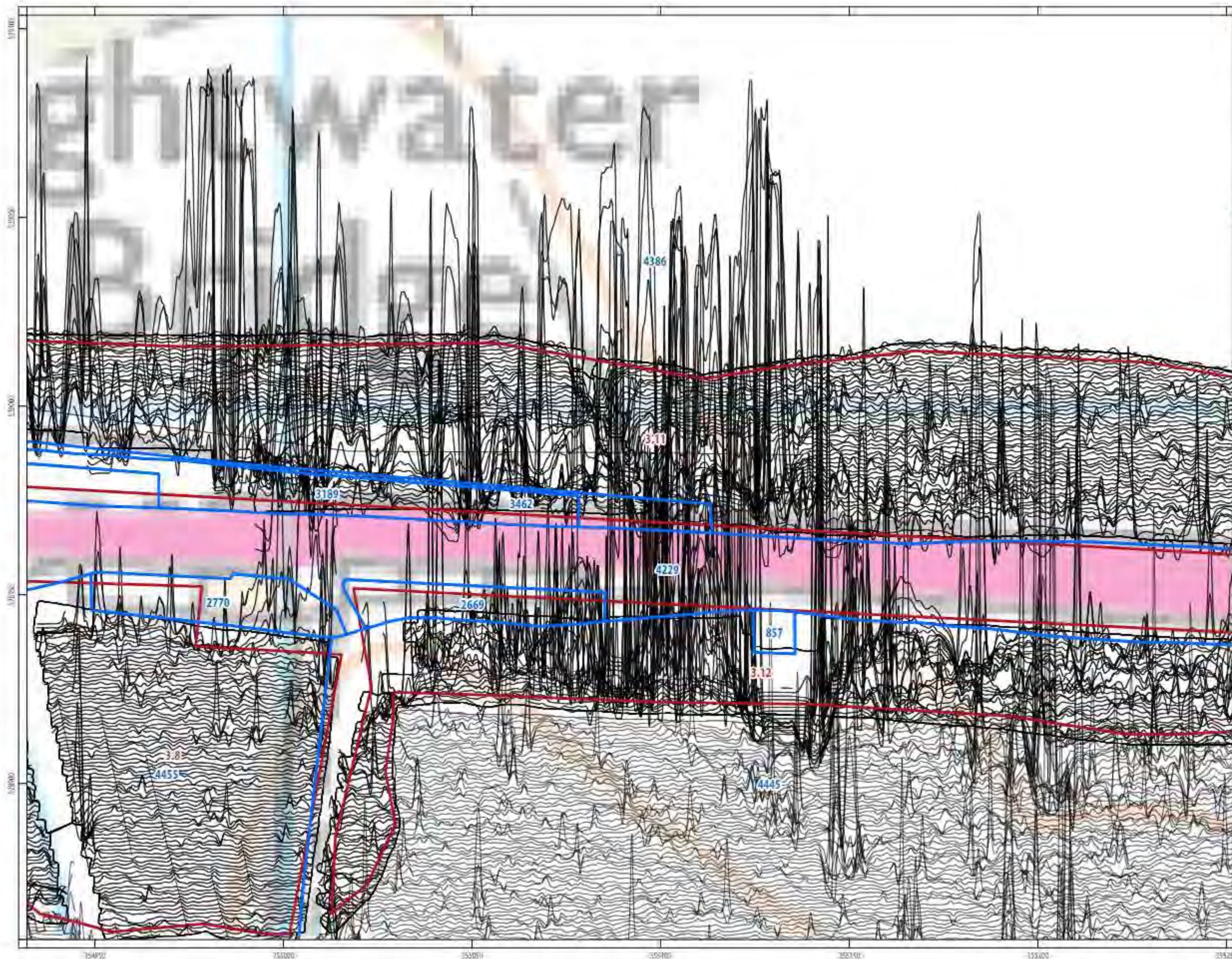
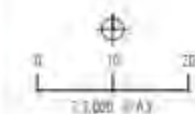
- ▭ Phase 1 Excavation Survey Area
- ▭ Phase 2 Excavation Survey Area
- County Council Survey Line 4
- XY Grid Lines
- Sectional Measurement

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**

Highways England

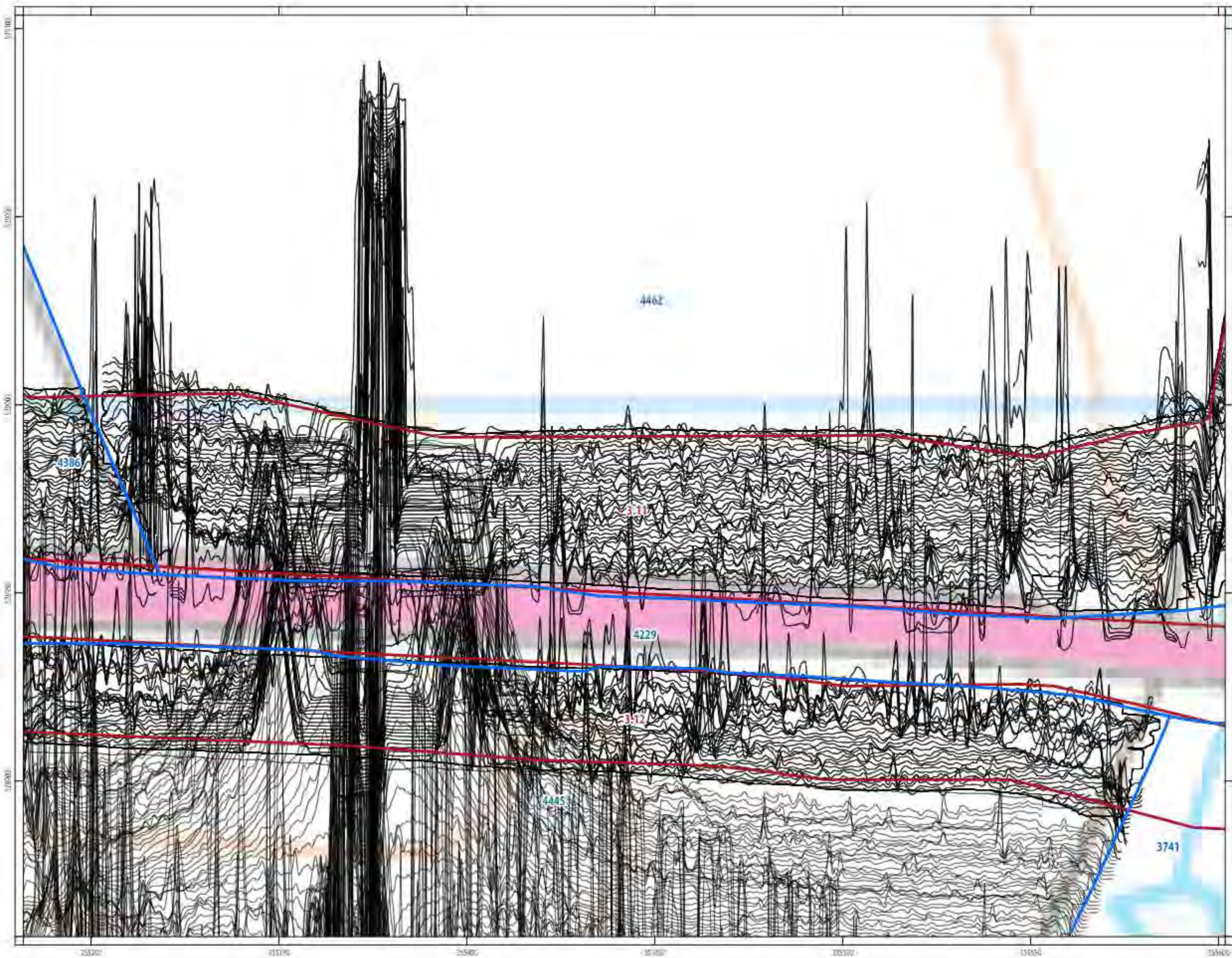


ILLUS 229 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Limited Visual Assessment Area
- ▭ Phase 2 Limited Visual Assessment Area
- Limited Visual Assessment Line 1
- Limited Visual Assessment Line 2
- Section Management



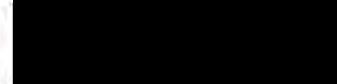
**PROJECT**  
A17U20-466 Transport Upgrade

**CLIENT**  
Highways England



ILLUS 230 XY trace plot of minimally processed magnetometer data, Penrith to Temple Severby (Center Parc)





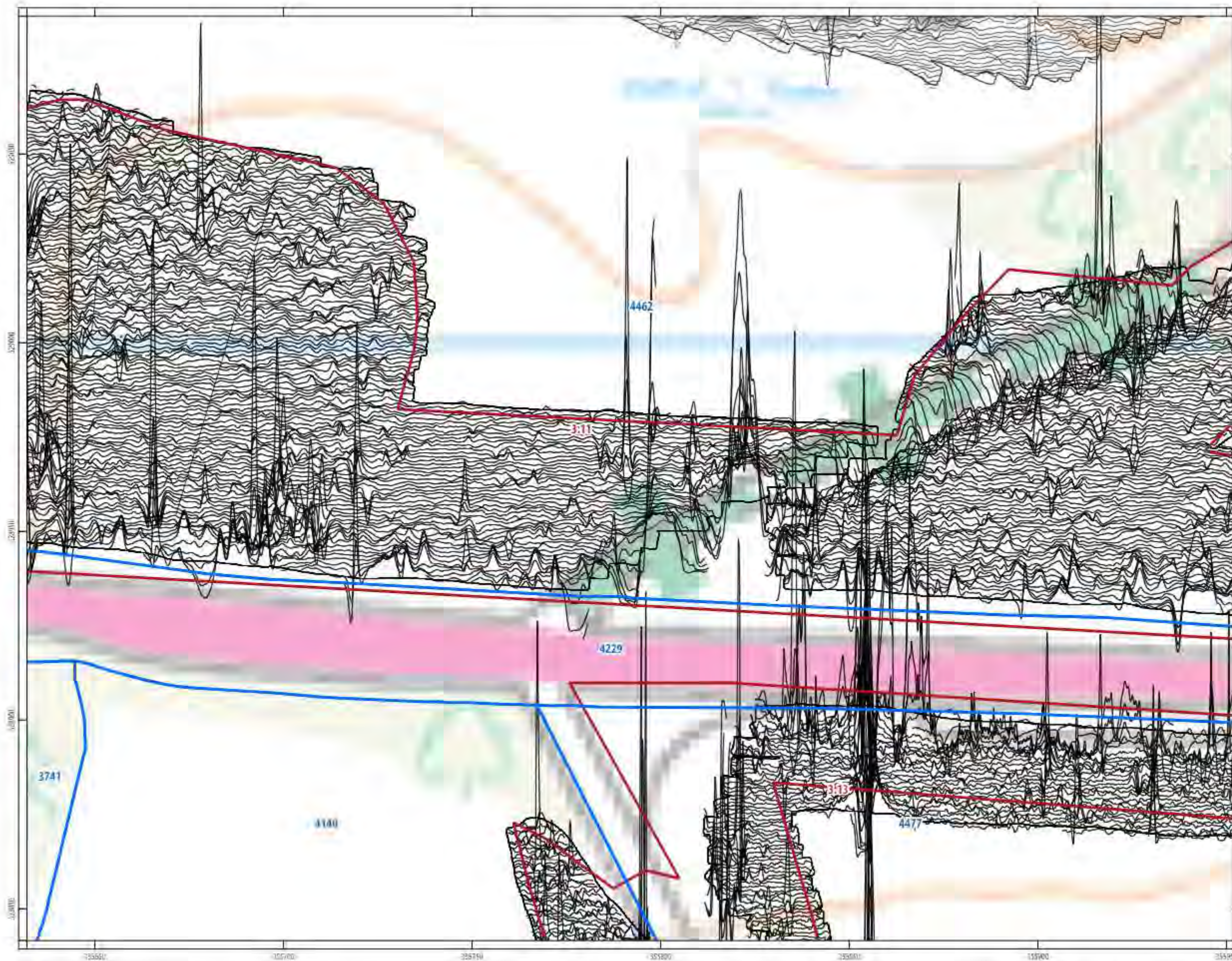
- ▭ Phase 1 (Landmark) Survey Area
- ▭ Phase 2 (Landmark) Survey Area
- ▭ Contour and Property Lines
- ▭ Fences
- ▭ Section Management

**PROJECT**

A17120 - A66 Transverse Upgrade

**CLIENT**

Highways England



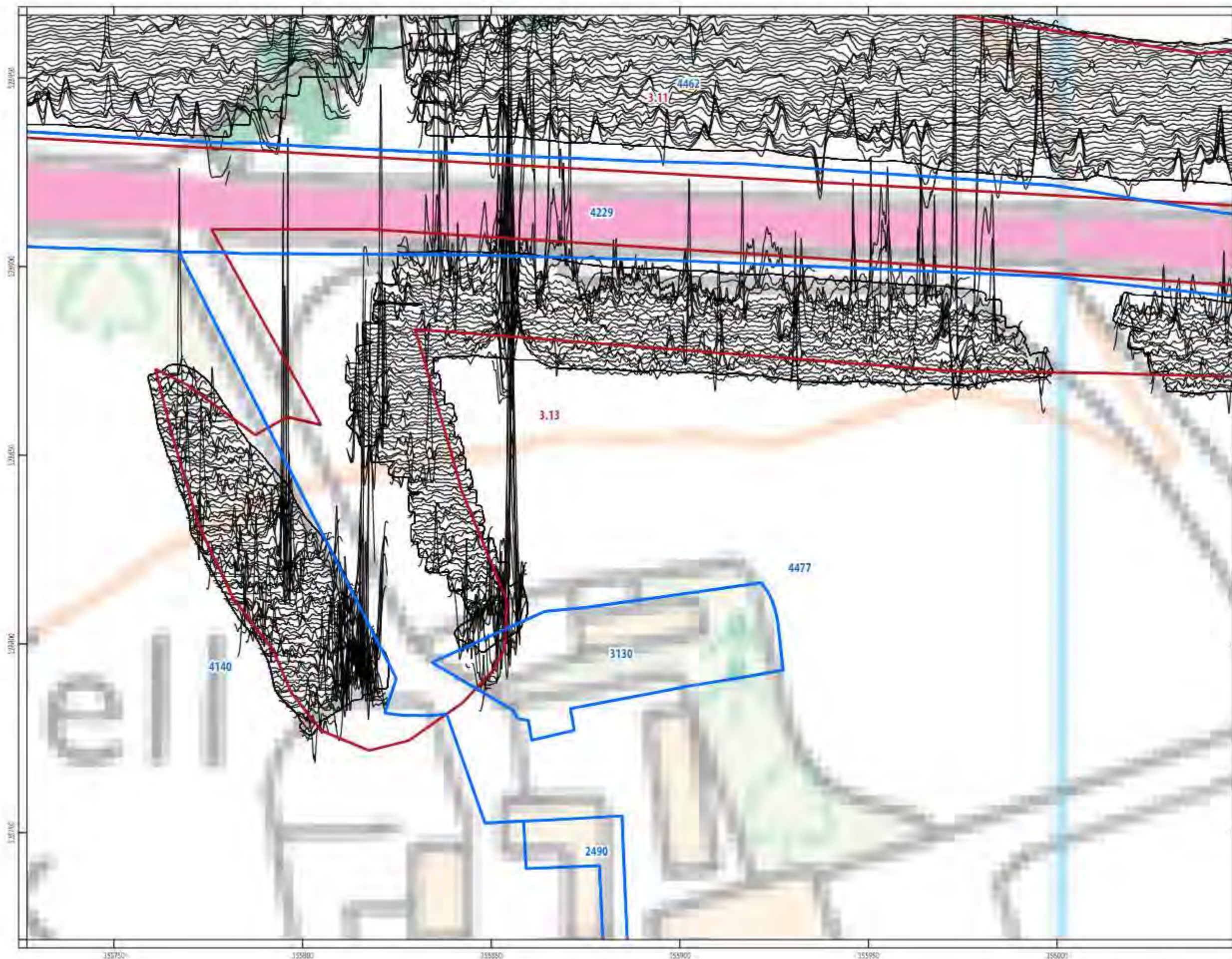
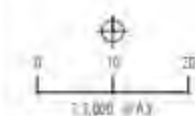
ILLUS 231 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- ⊕ Scheduled Monument

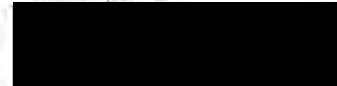
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 232 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





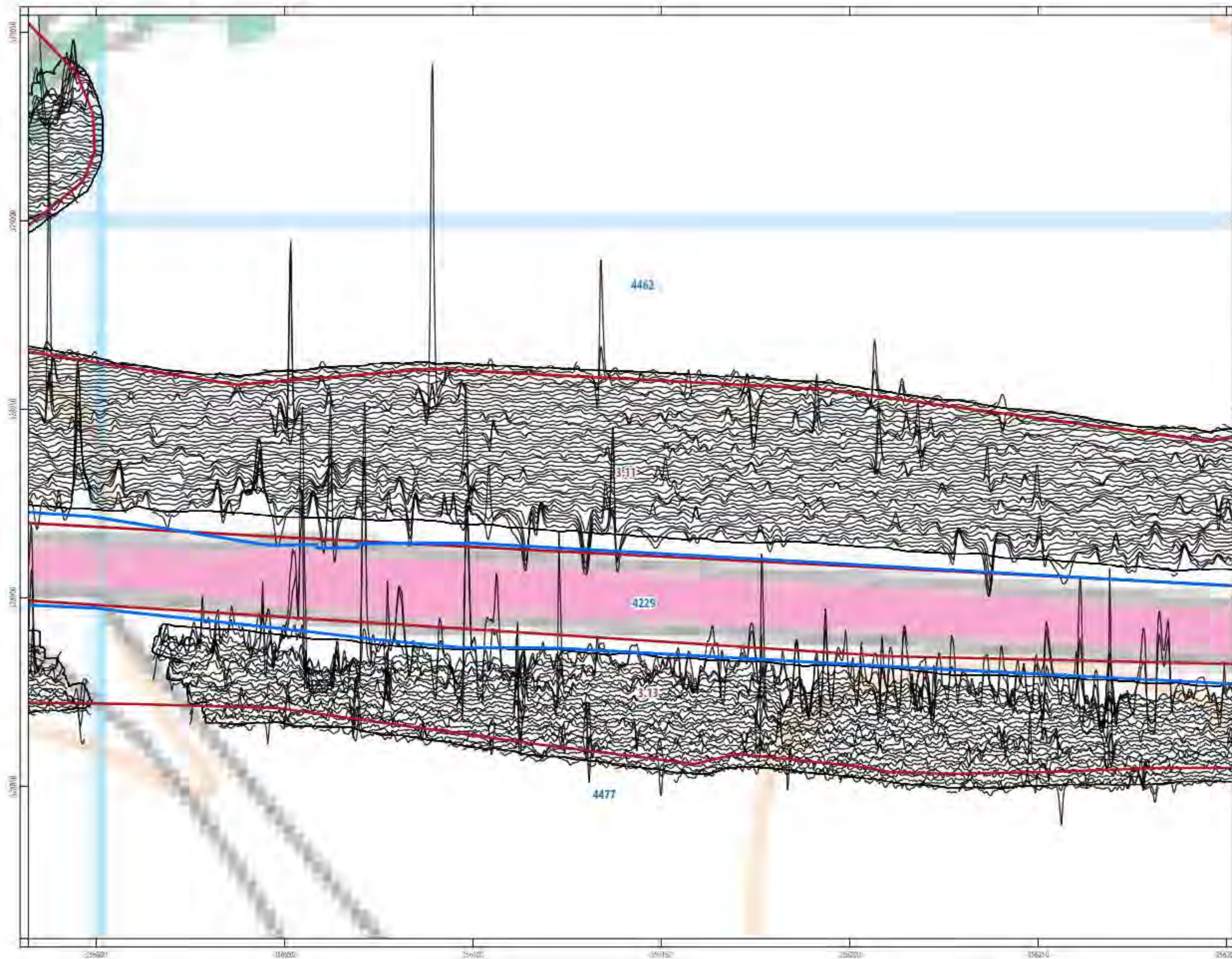
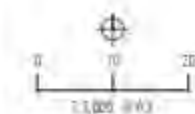
- ▭ Phase 1 Unexcavated Burial Area
- ▭ Phase 2 Unexcavated Burial Area
- ▭ Cemetery and Burial Ground
- ▭ VV - 100m
- ▭ Section Management

**PROJECT**

STU20 - A66 Transport Upgrade

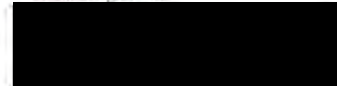
**CLIENT**

Highways England



ILLUS 233 XY trace plot of minimally processed magnetometer data, Penrith to Temple Sowerby (Center Paris)





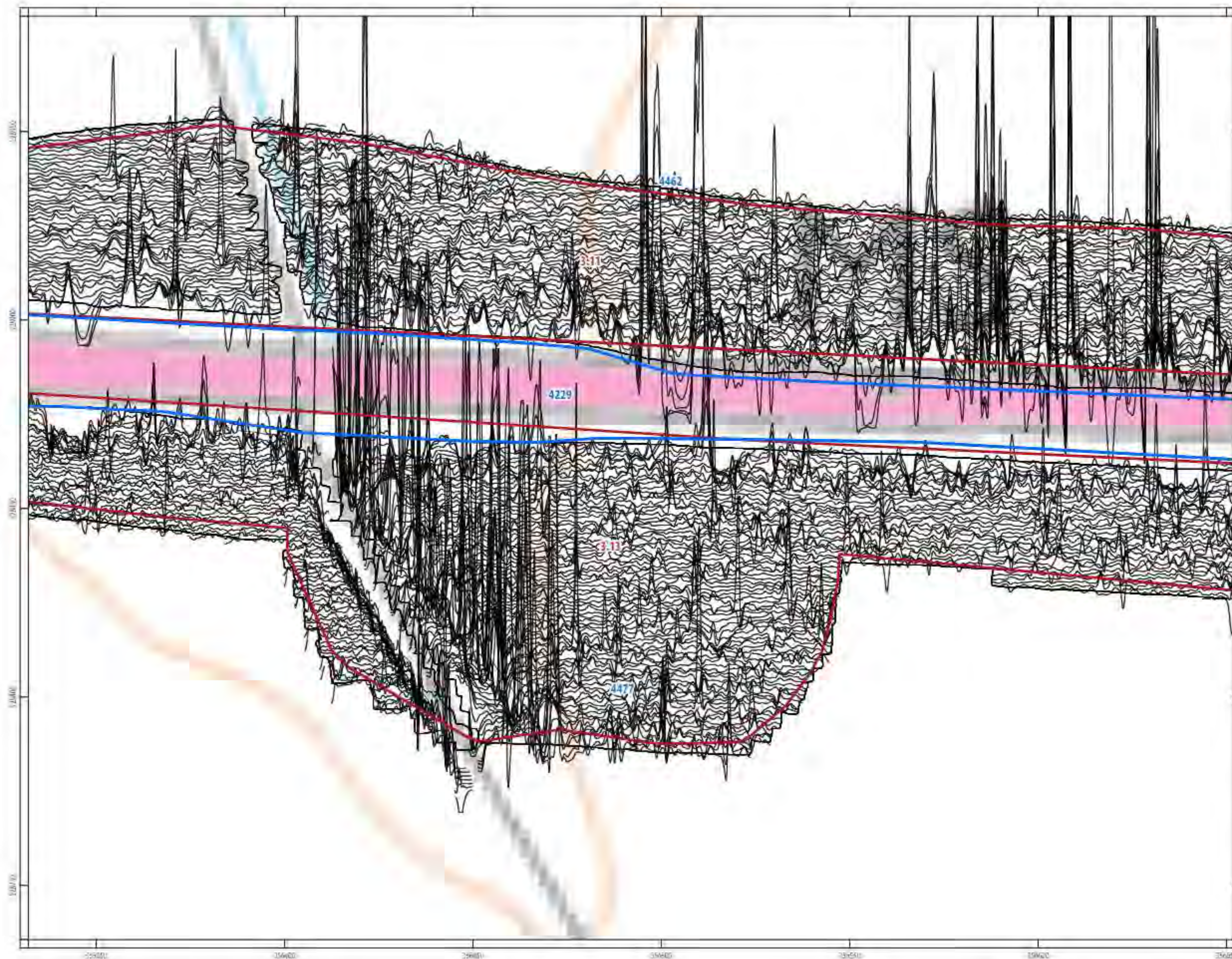
- ▭ Phase 1 (Unexcavated) Survey Area
- ▭ Phase 2 (Excavated) Survey Area
- Contour and ground level
- XY Coordinates
- ⊗ Sectional Measurement

**PROJECT**

AT1120 - A66 Transport Upgrade

**CLIENT**

Highways England



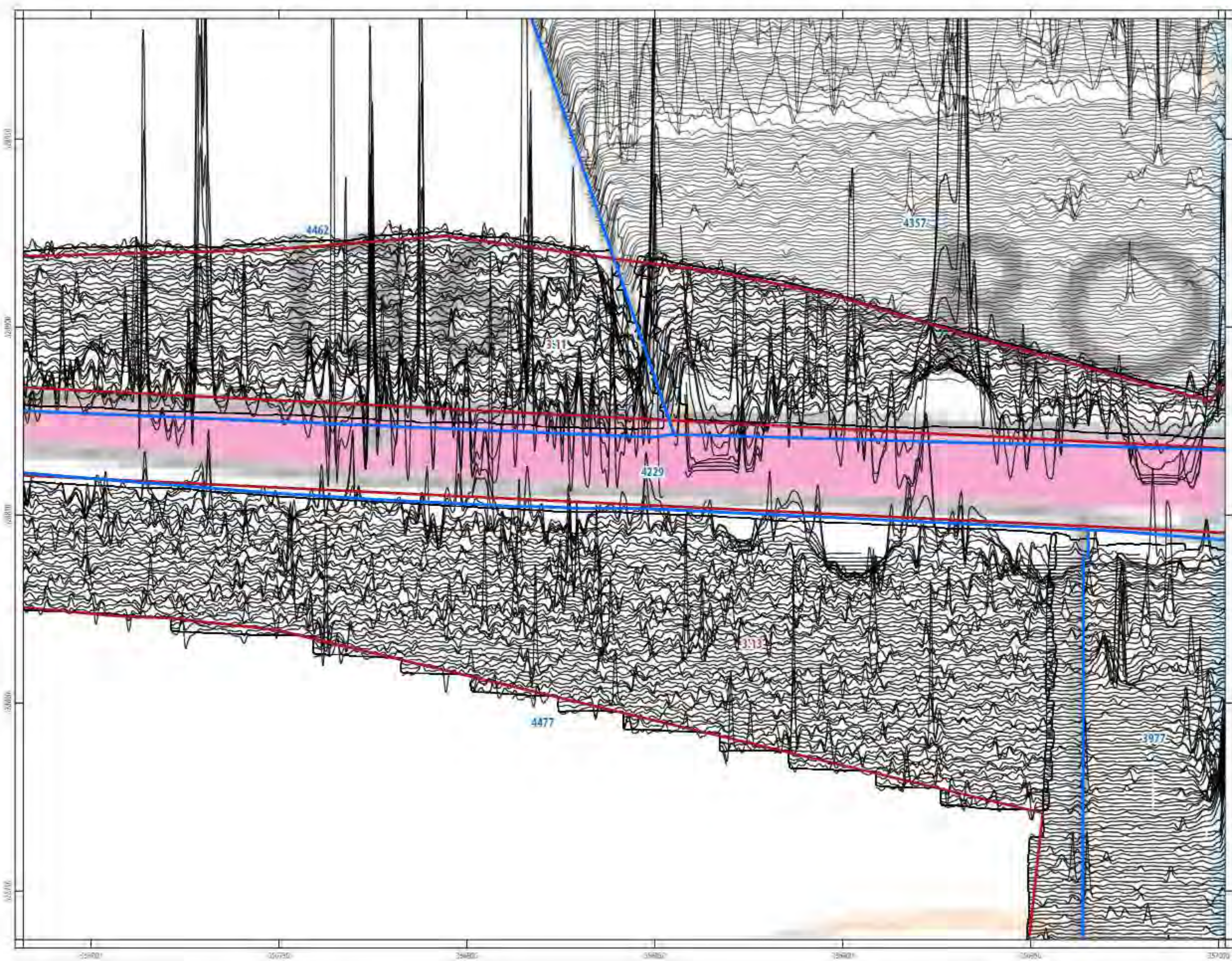
ILLUS 214 XY trace plot of minimally processed magnetometer data, Pennin to Temple Sowerby (Center Paris)



- Phase 1 (Classified) Roman Period
- Phase 2 (Classified) Roman Period
- Geology and ground level
- Excavation
- Section Line

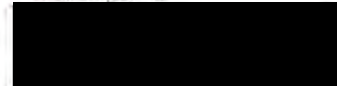
**PROJECT**  
A17120 - A66 Transport Upgrade

**CLIENT**  
Highways England



ILLUS 235 XY trace plot of minimally processed magnetometer data, Perinth to Temple Sowerby (Center Paris)





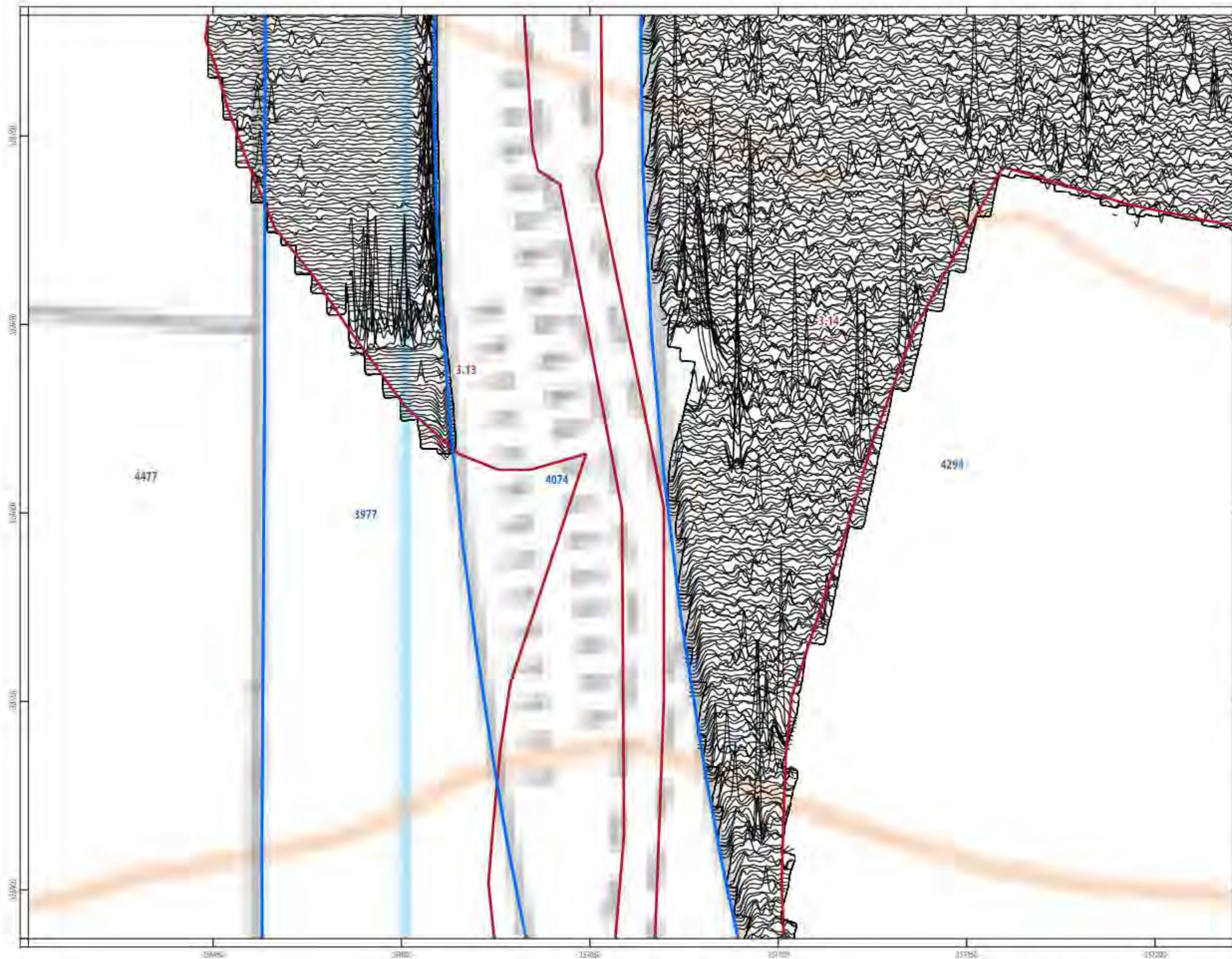
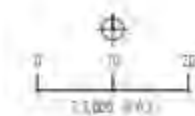
- ▭ Phase 1 (Unexcavated) Survey Area
- ▭ Phase 2 (Excavated) Survey Area
- Contour and survey lines
- 1:10 Contour
- Section Management

**PROJECT**

A1120 - A66 Transport Upgrade




**CLIENT**

Highways England



ILLUS 236 XY trace plot of minimally processed magnetometer data, Penrith to Temple Sowerby (Center Parc)



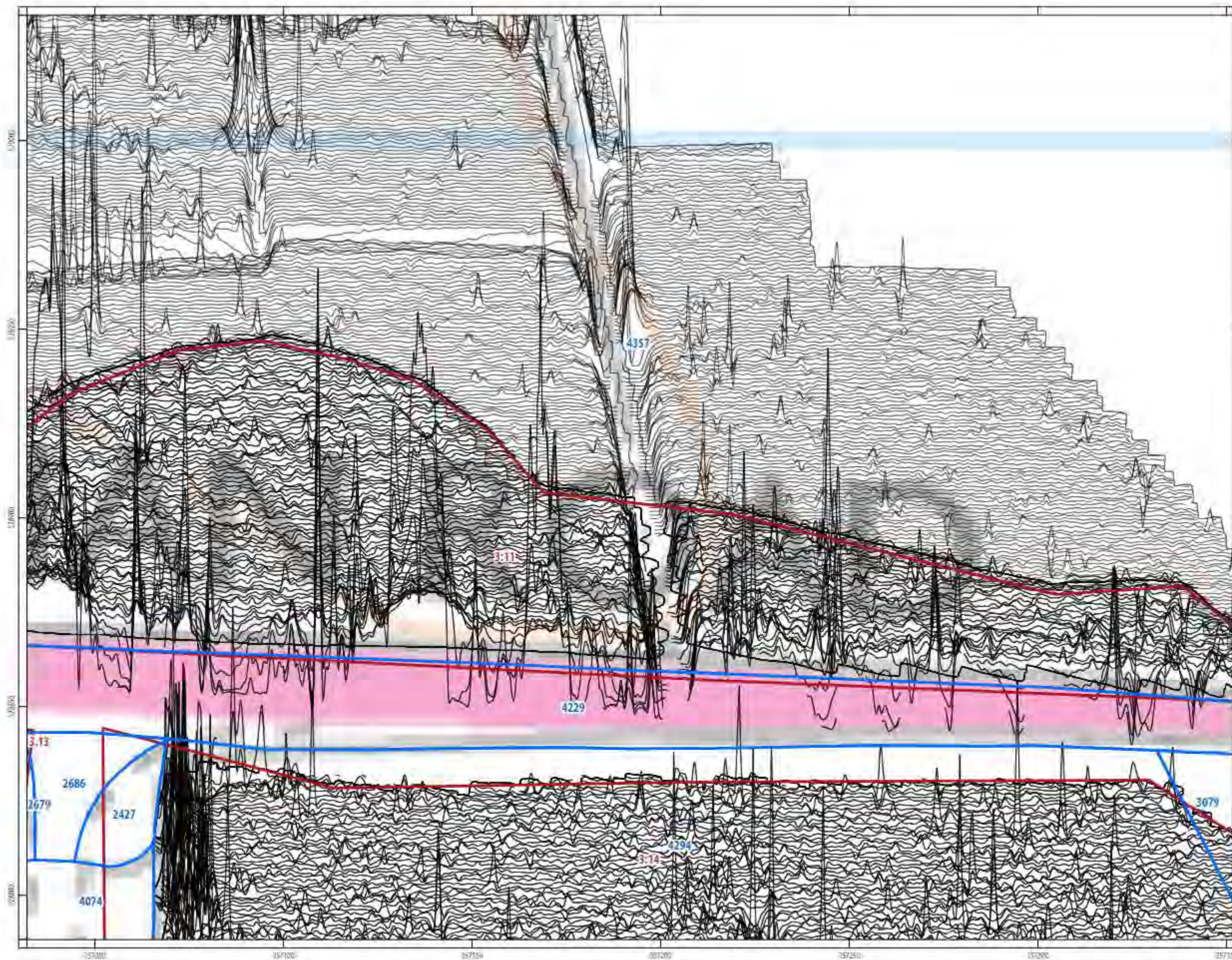
- ▭ Phase 1 Unexcavated Survey Area
- ▭ Phase 2 Excavated Survey Area
-  Geophysical Survey Line 1
-  XY-026000
-  Section Measurement

**PROJECT**

AT1120 - A66 Transport Improvement

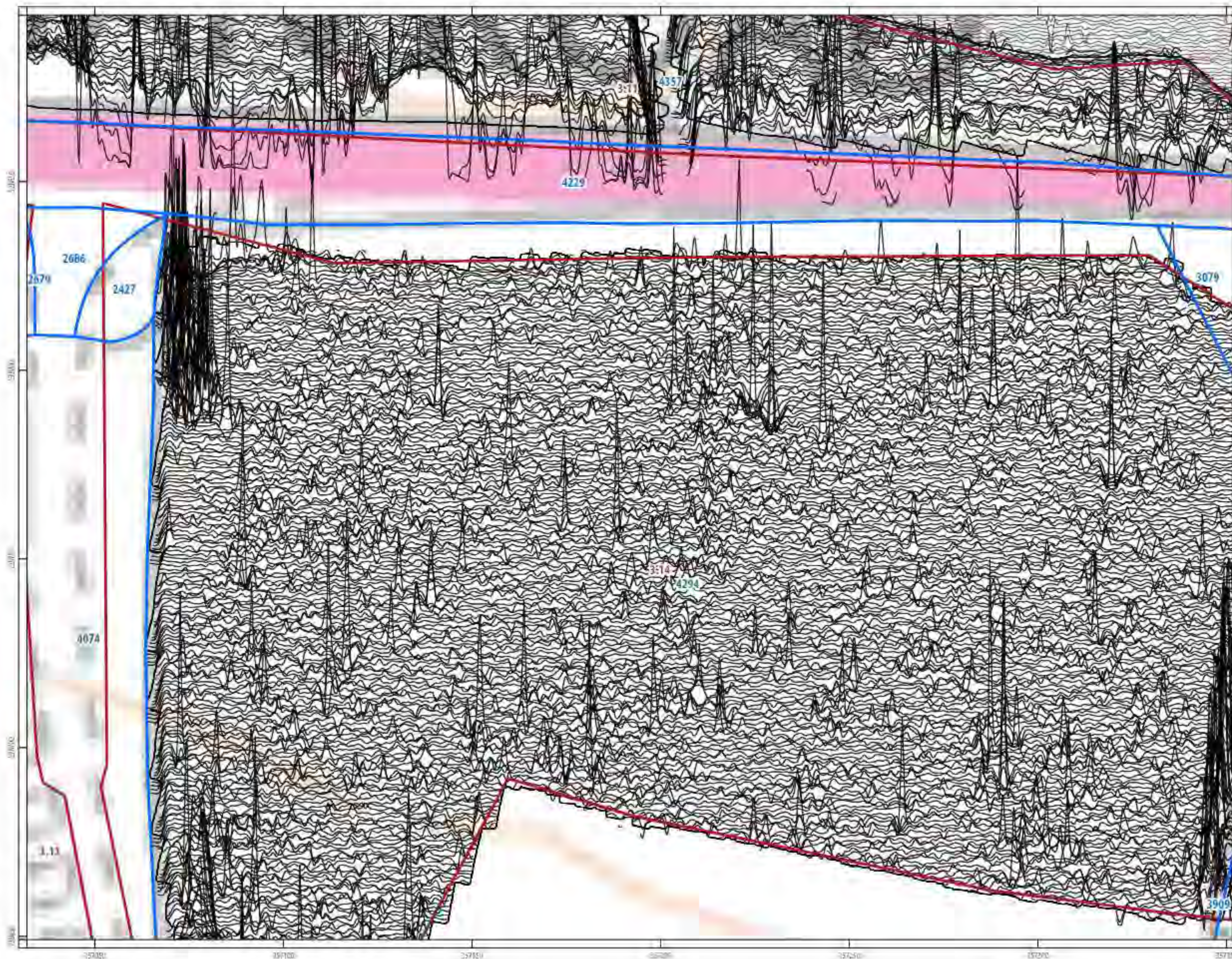
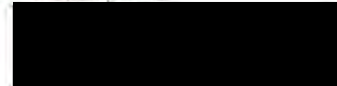
**CLIENT**

Highways England



ILLUS 237 XY trace plot of minimally processed magnetometer data, Penrith to Temple Sowerby (Center Paris)





**PROJECT**

RT1120-400 Transposition Project

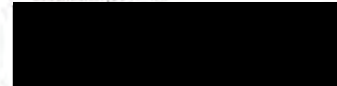
**CLIENT**

Highways England



ILLUS 218 XY trace plot of minimally processed magnetometer data, (North) to Temple Sowerby (Center Paris)

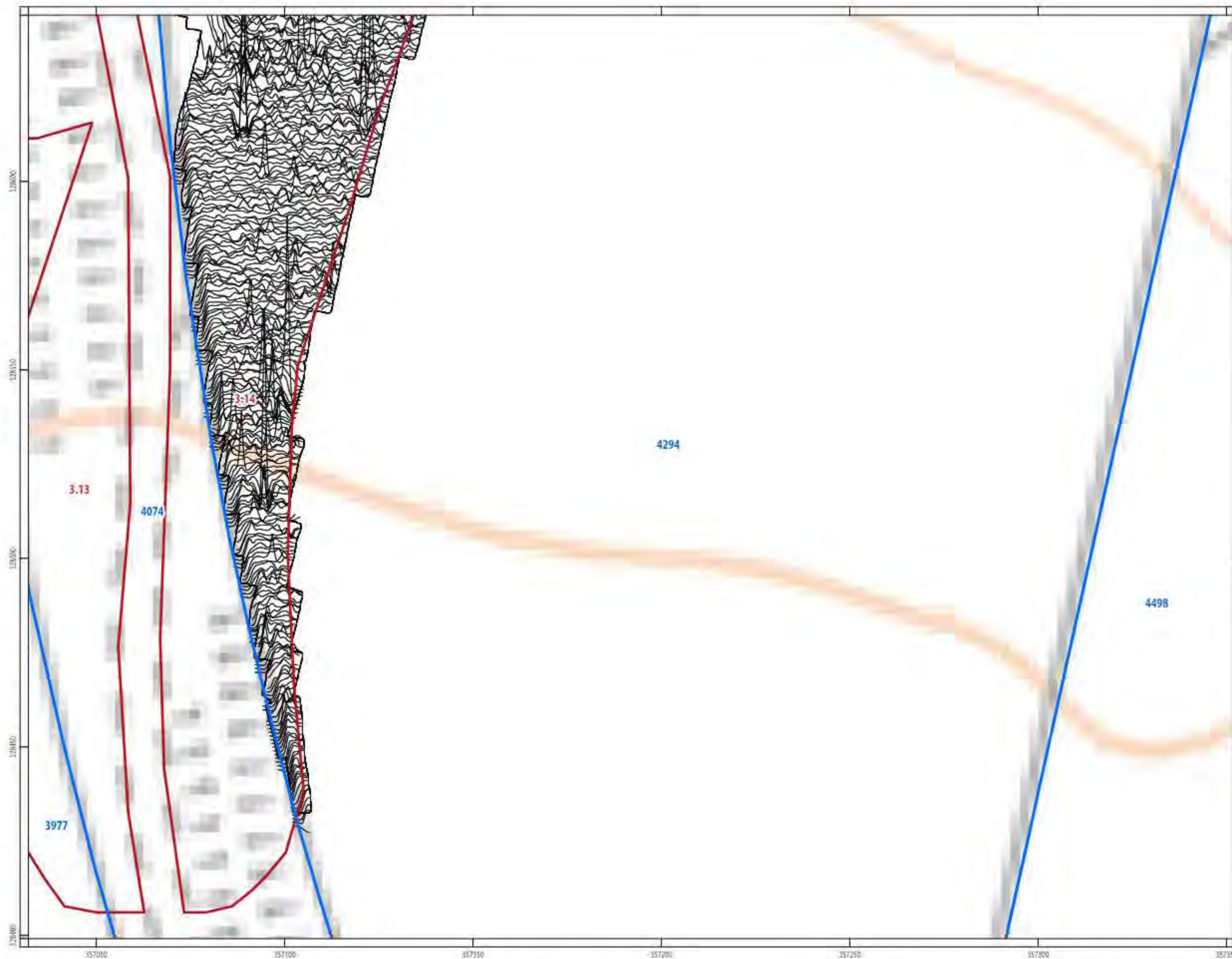
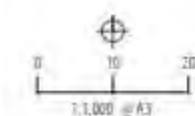




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (10m/1cm)
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 239 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

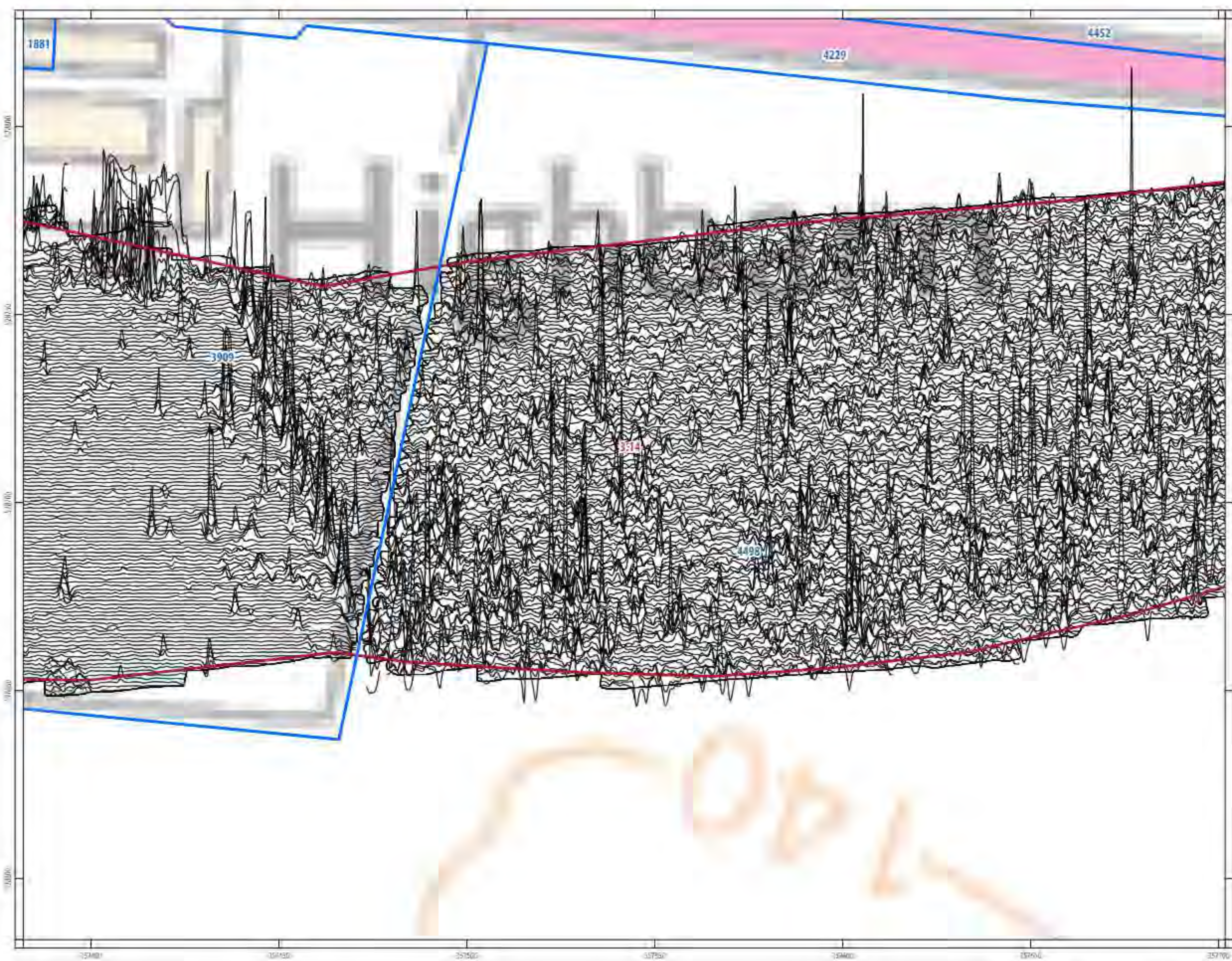




- Phase 1 (Unexcavated) Survey Area
- Phase 2 (Excavated) Survey Area
- Contour and ground level
- 10m Gridlines
- Sectional Measurement

**PROJECT**  
A17120 - A66 Transport Improvement

**CLIENT**  
Highways England

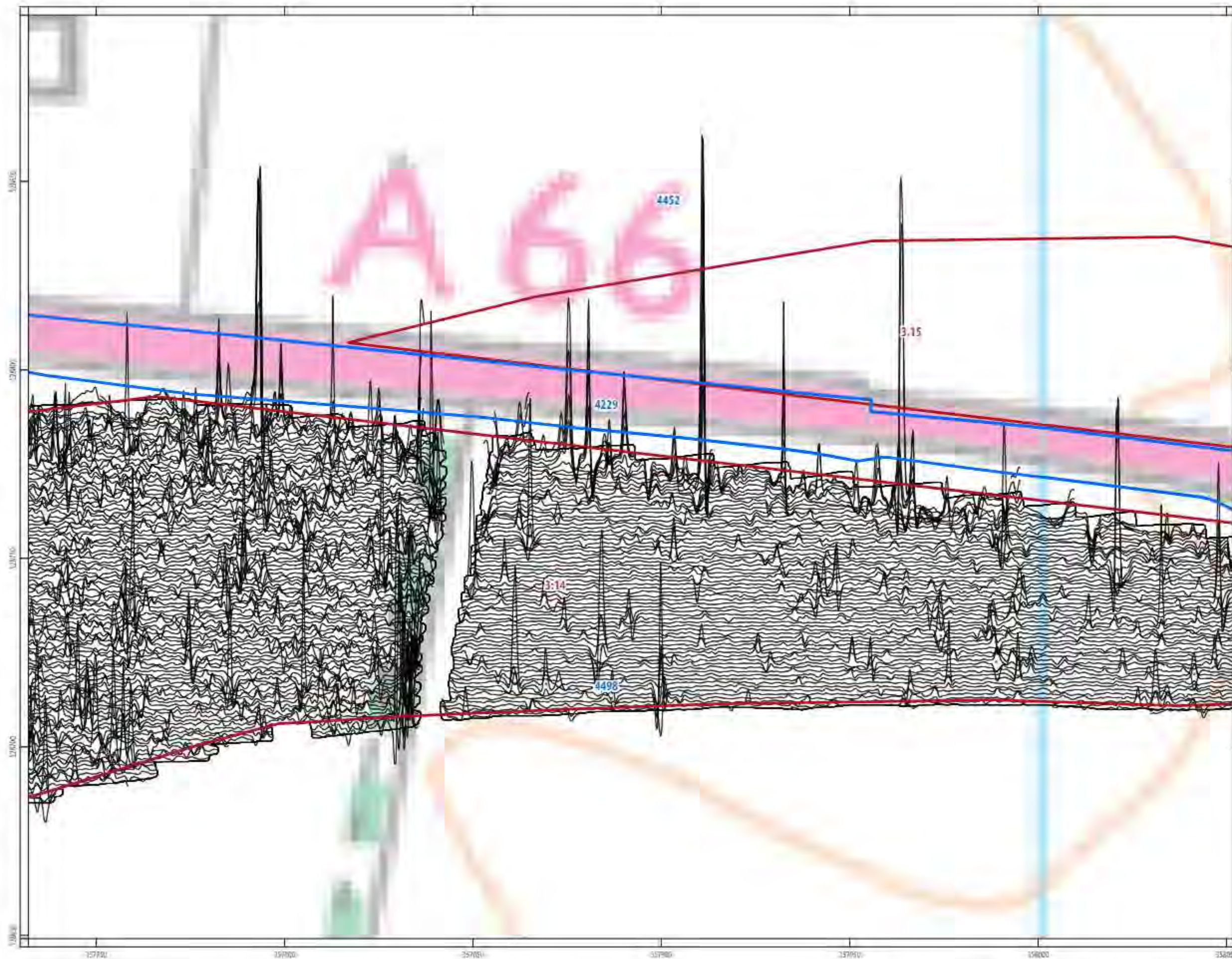


ILLUS 240 XY trace plot of minimally processed magnetometer data, Pennith to Temple Sowerby (Center Paris)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY Grid Lines
- Section Measurement

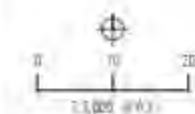


**PROJECT**

A1120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 241 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)

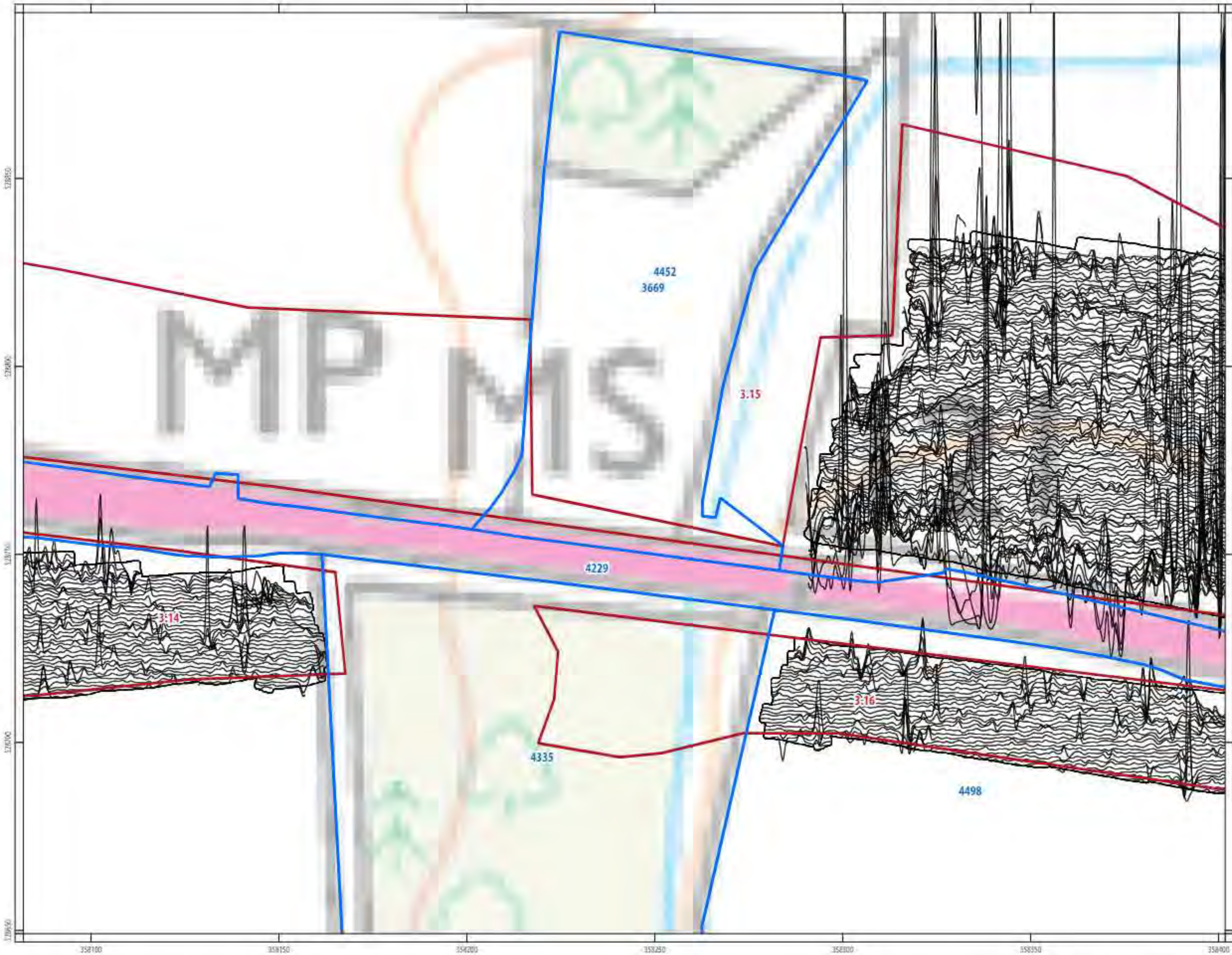




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- ⊕ Scheduled Monument

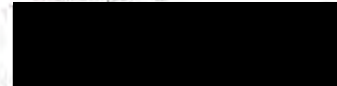
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

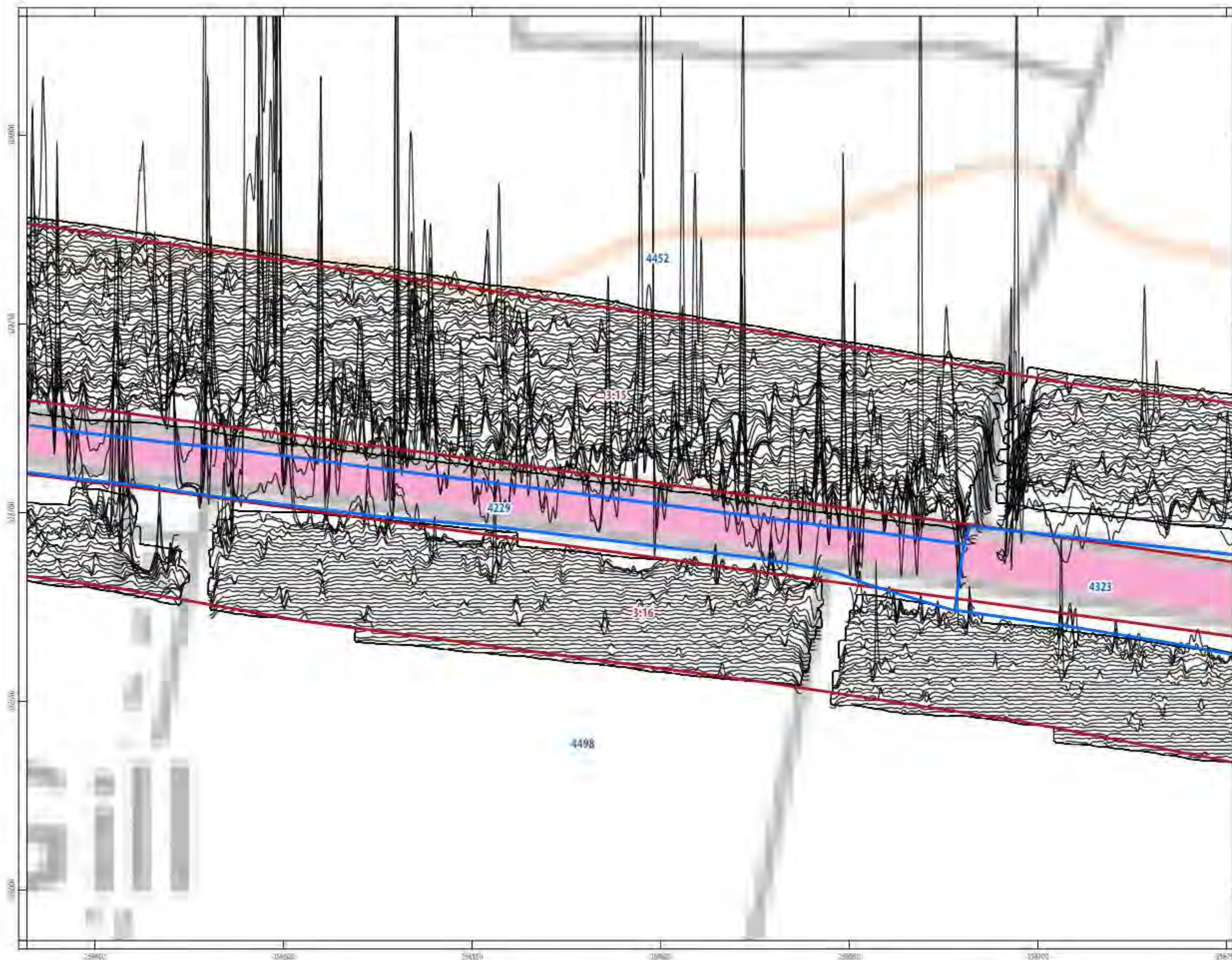


ILLUS 242 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Excavation Survey Area
- ▭ Phase 2 Excavation Survey Area
- Excavation Survey Line 1
- XY-Grid Lines
- Section Line Measurement

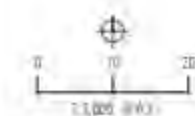


**PROJECT**

A17120 - A66 Transport Upgrade

**CLIENT**

Highways England



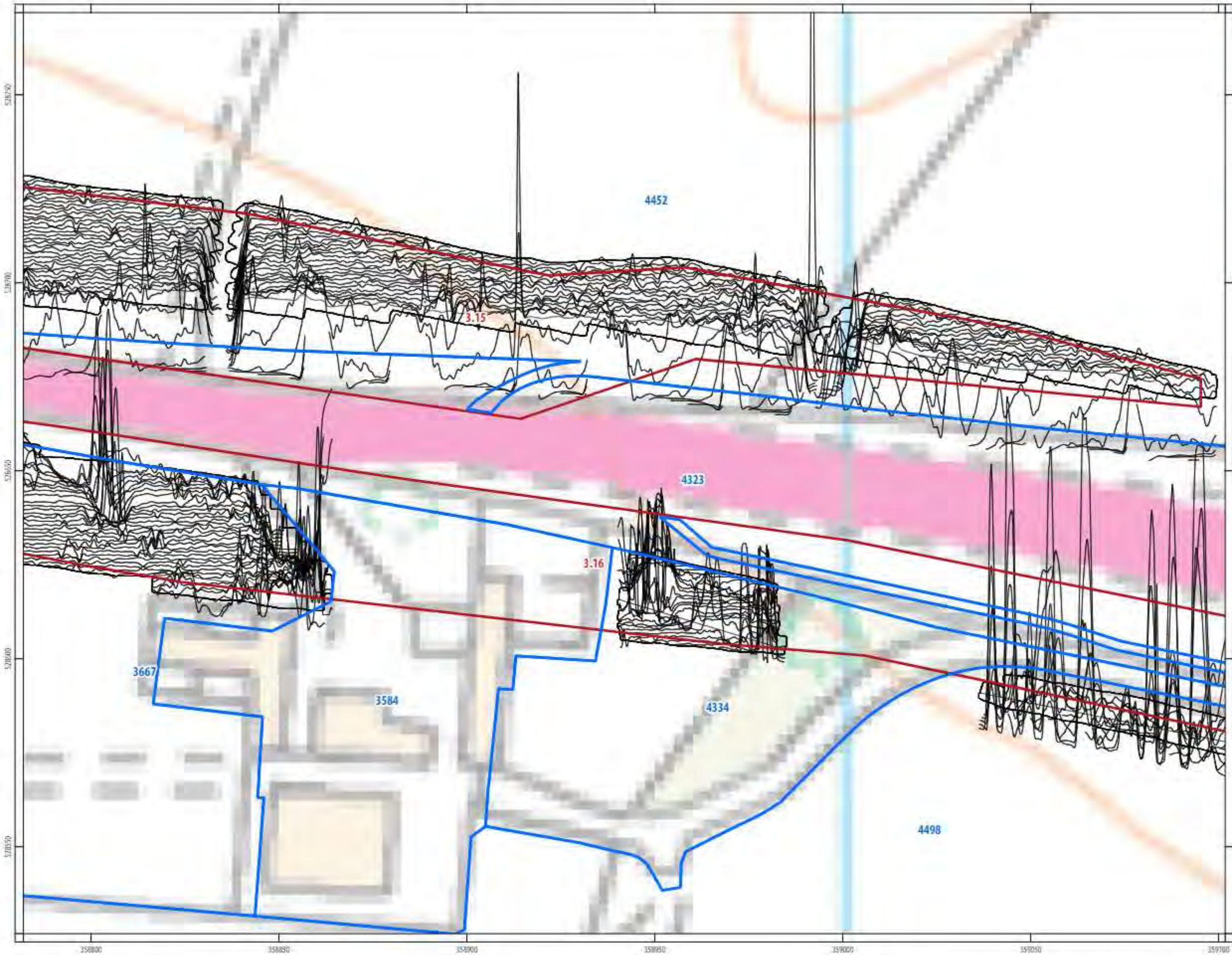
ILLUS 243 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m / 2cm
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 244 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

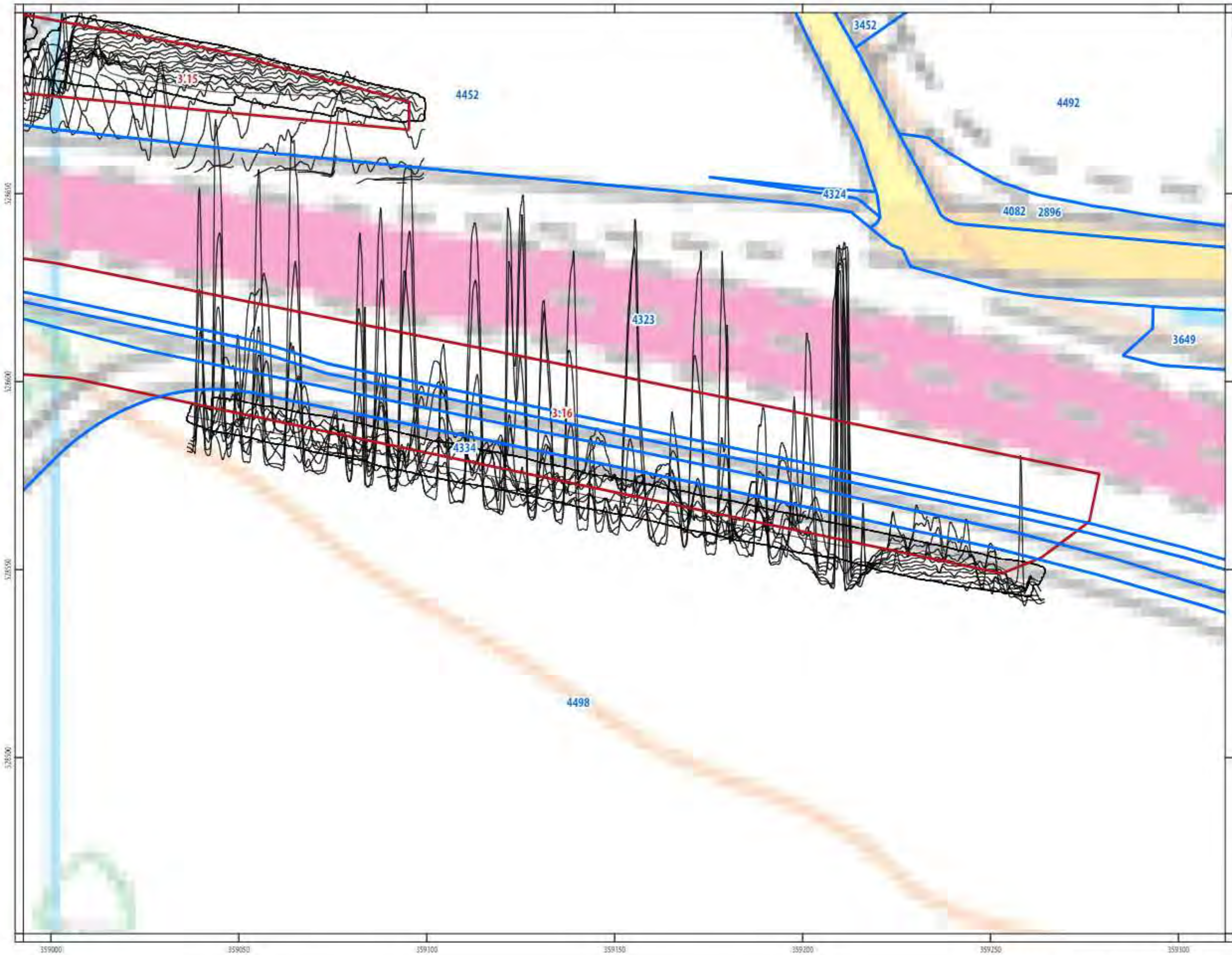




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10n / cm
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 245 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

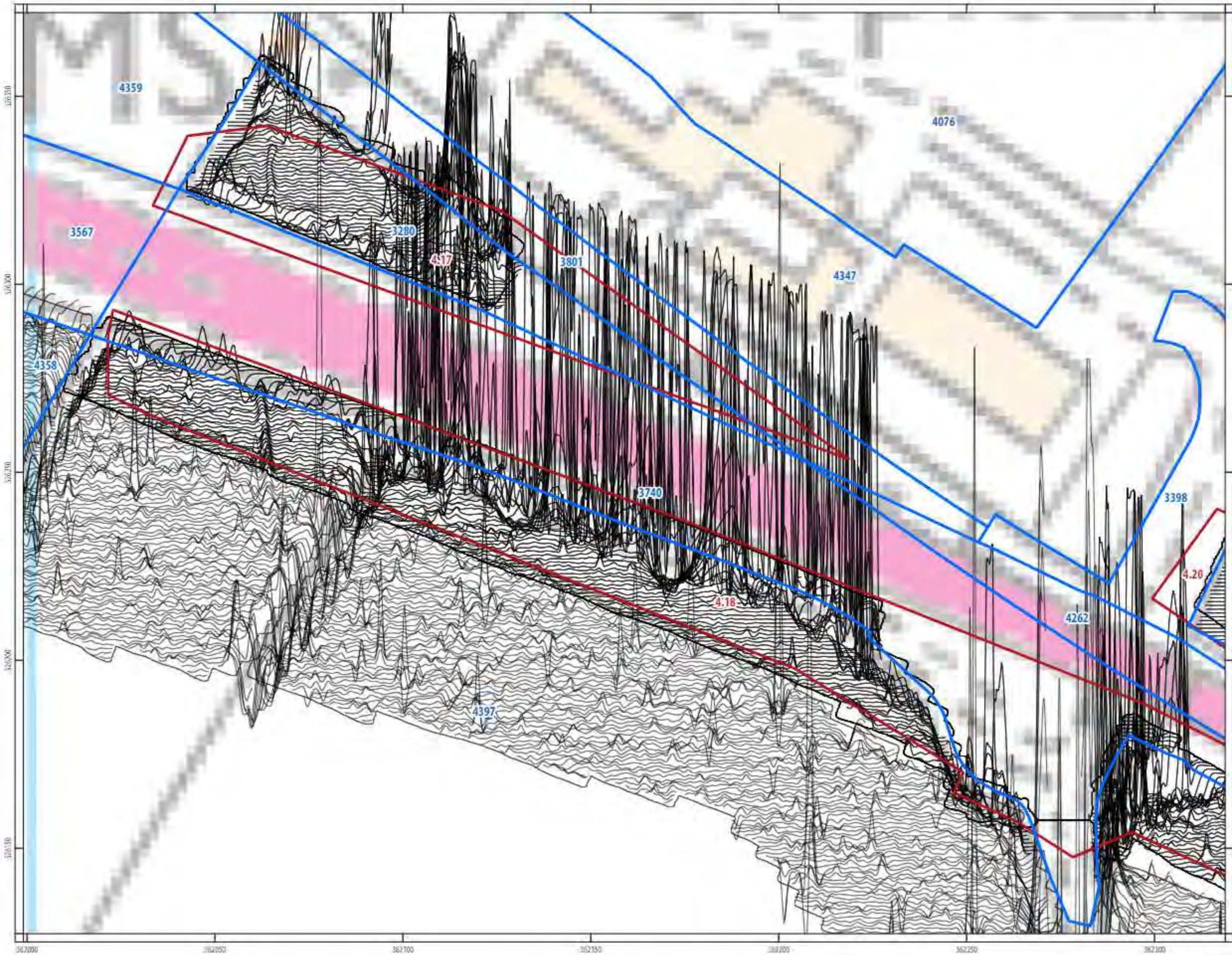




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (Dn) (cm)
- Scheduled Monument

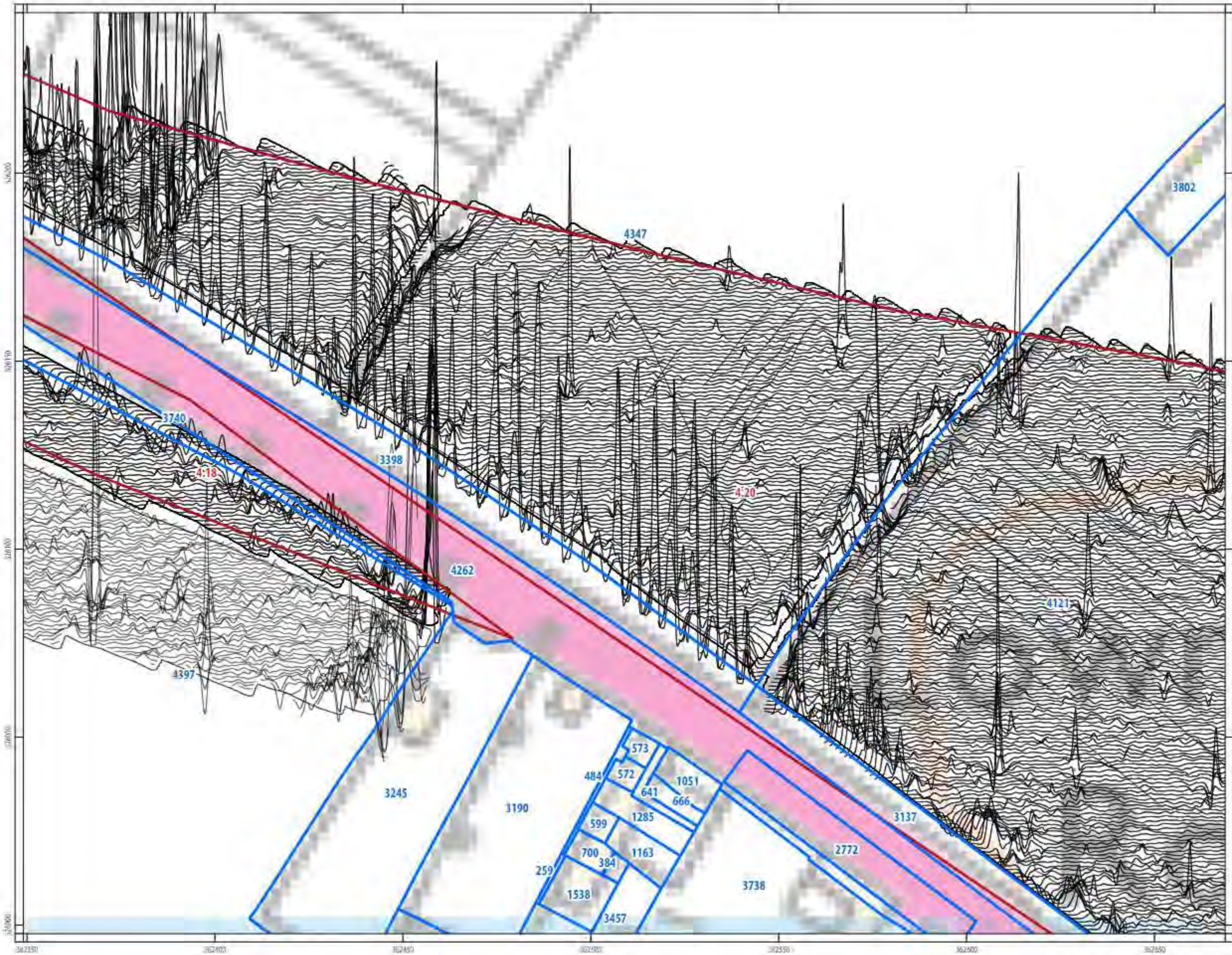
**PROJECT**  
A/FU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 246 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid lines
- Selected Monuments

**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 247 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

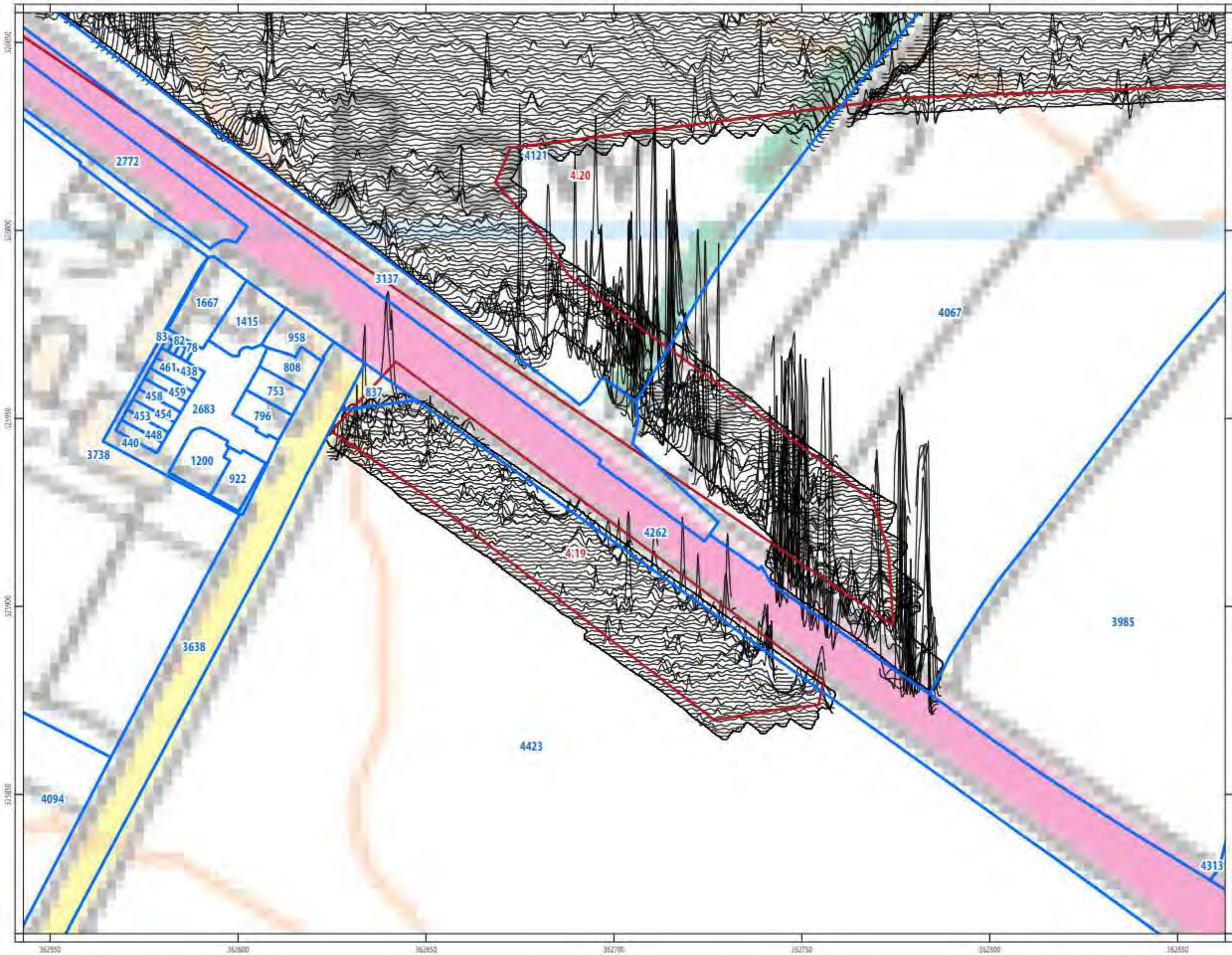




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m / 1cm
- Scheduled Monument

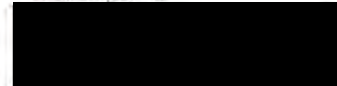
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 248 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





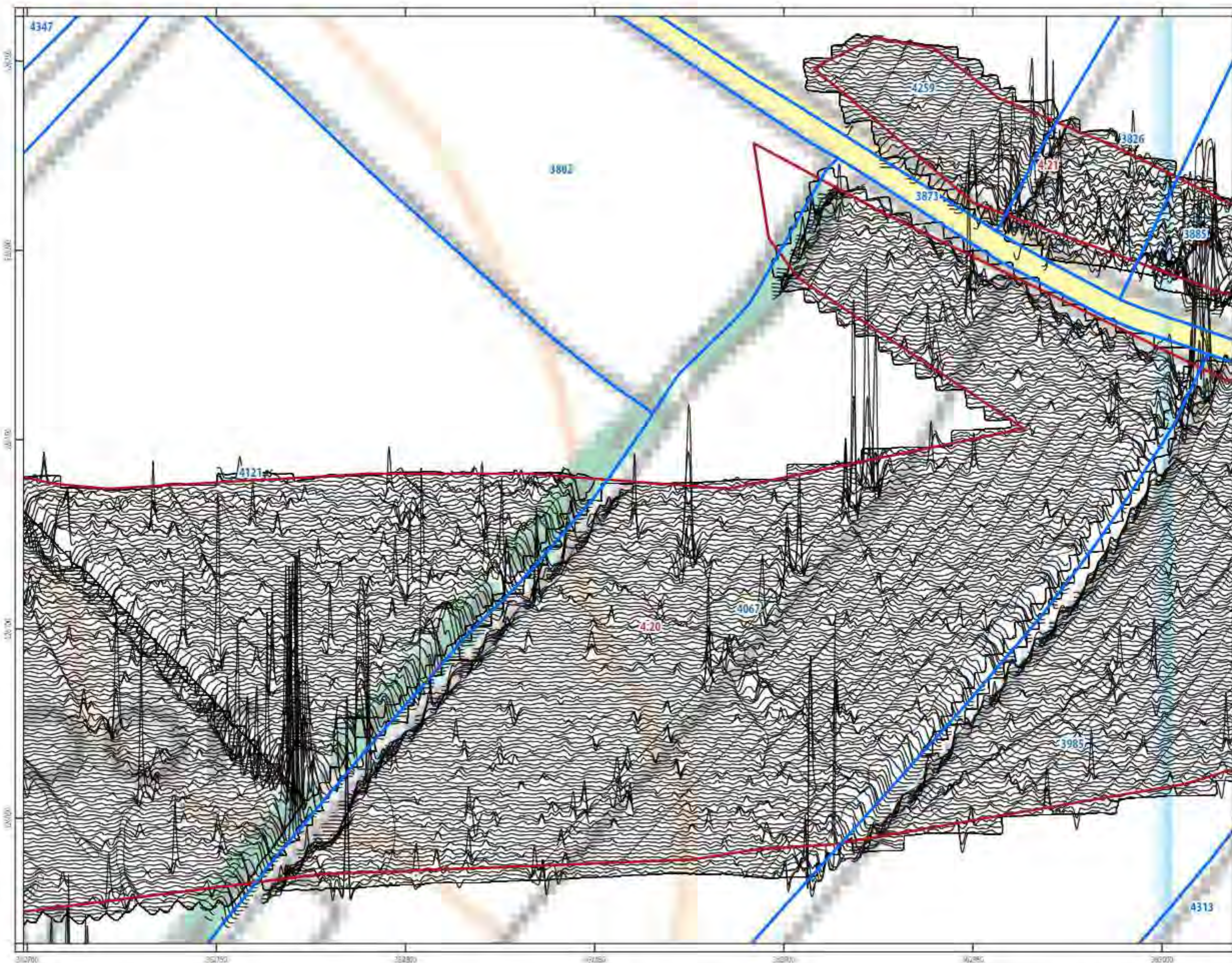
- ▭ Phase 1 Landmark Survey Area
- ▭ Phase 2 Landmark Survey Area
- Contour and survey lines
- Elevation
- Survey Point

**PROJECT**

AT1120 - A66 Transverse Upgrade

**CLIENT**

Highways England



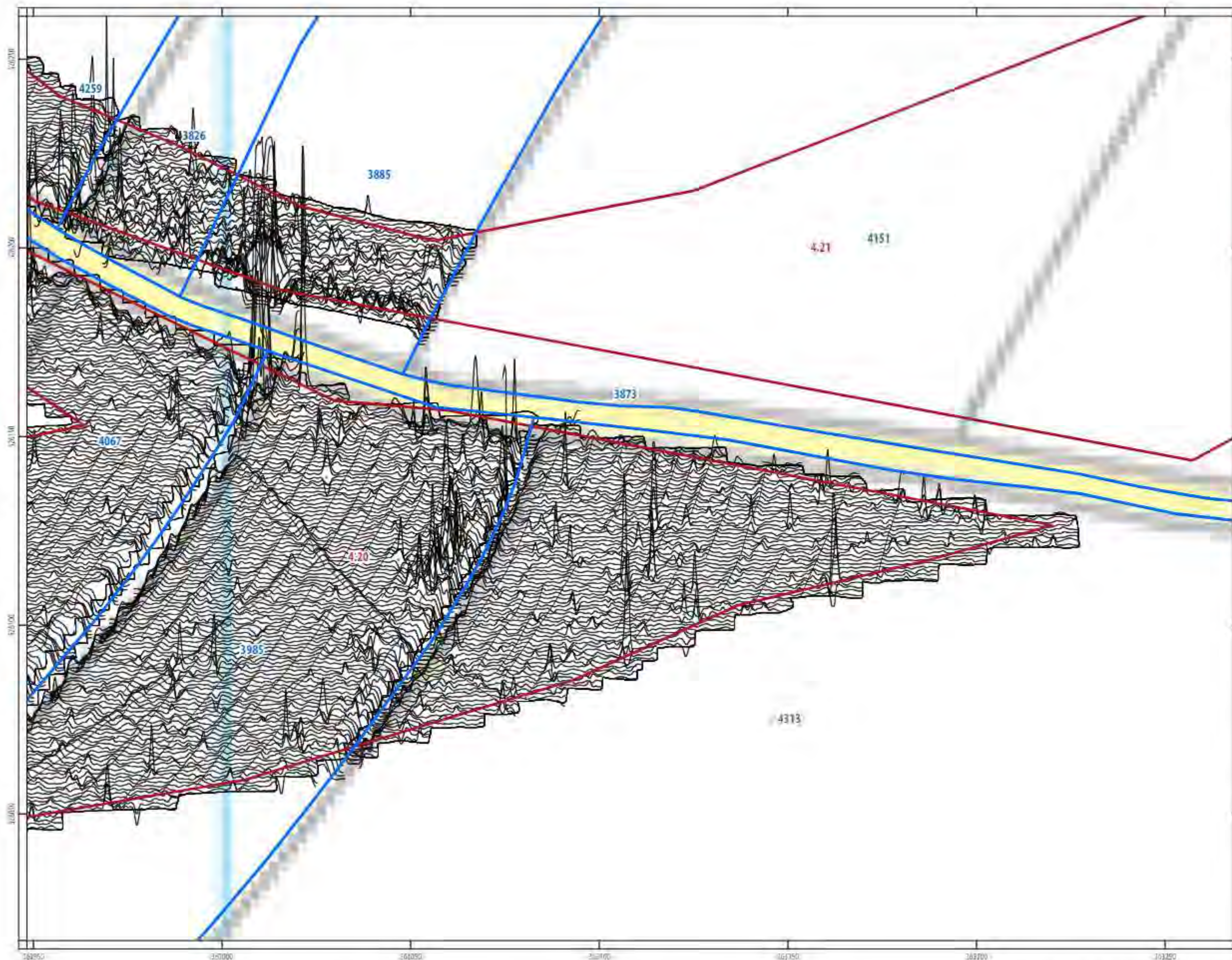
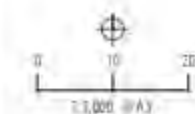




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY Grid Lines
- Sectional Measurement

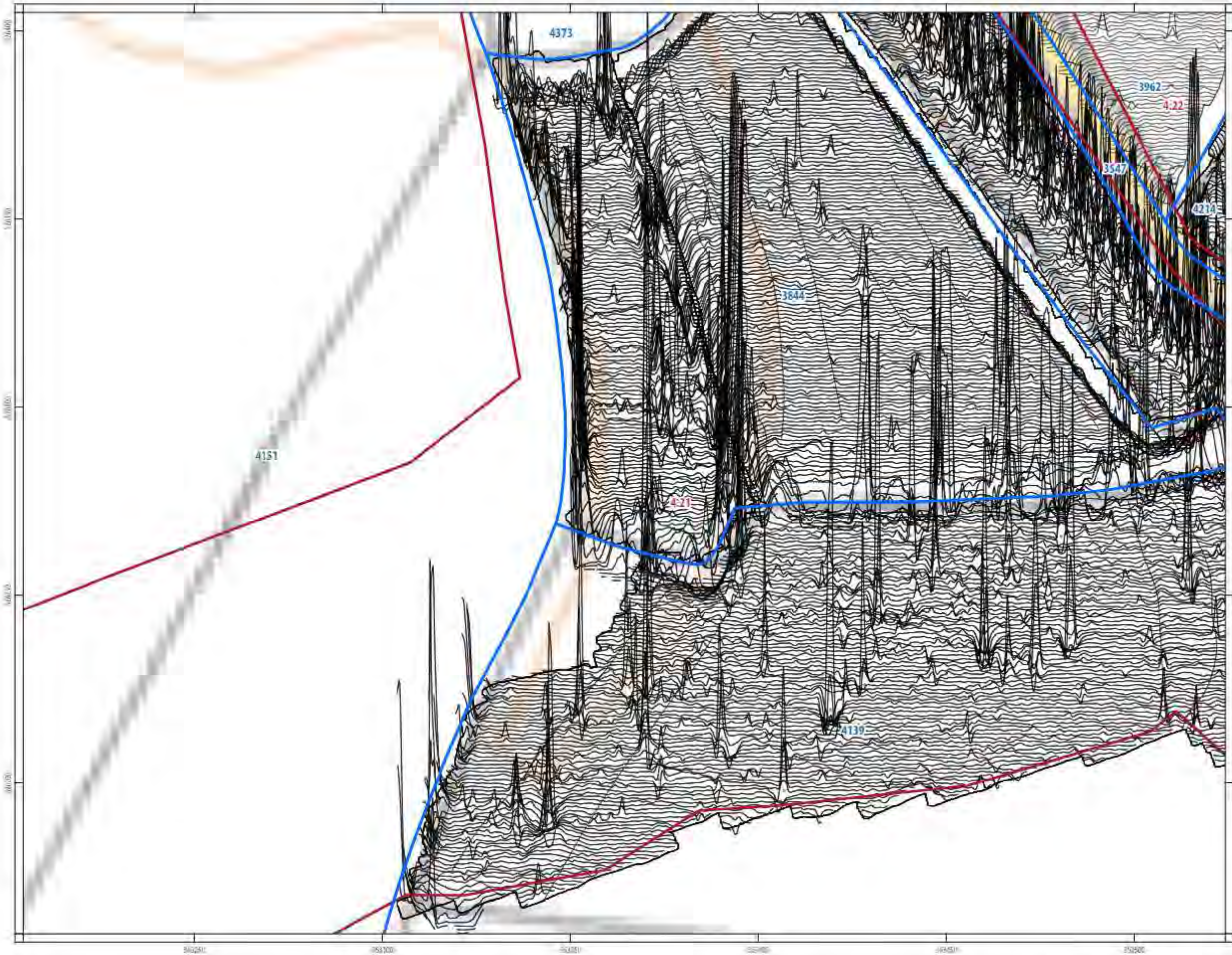
**PROJECT**  
A17120 - A66 Transport Upgrade

**CLIENT**  
Highways England



ILLUS 250 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 (Unexcavated) Survey Area
- ▭ Phase 2 (Excavated) Survey Area
- ▭ Contour and Property Lines
- ▭ Fences
- ▭ Section Management

**PROJECT**



A17120 - A66 Transpennine Upgrade

**CLIENT**

Highways England





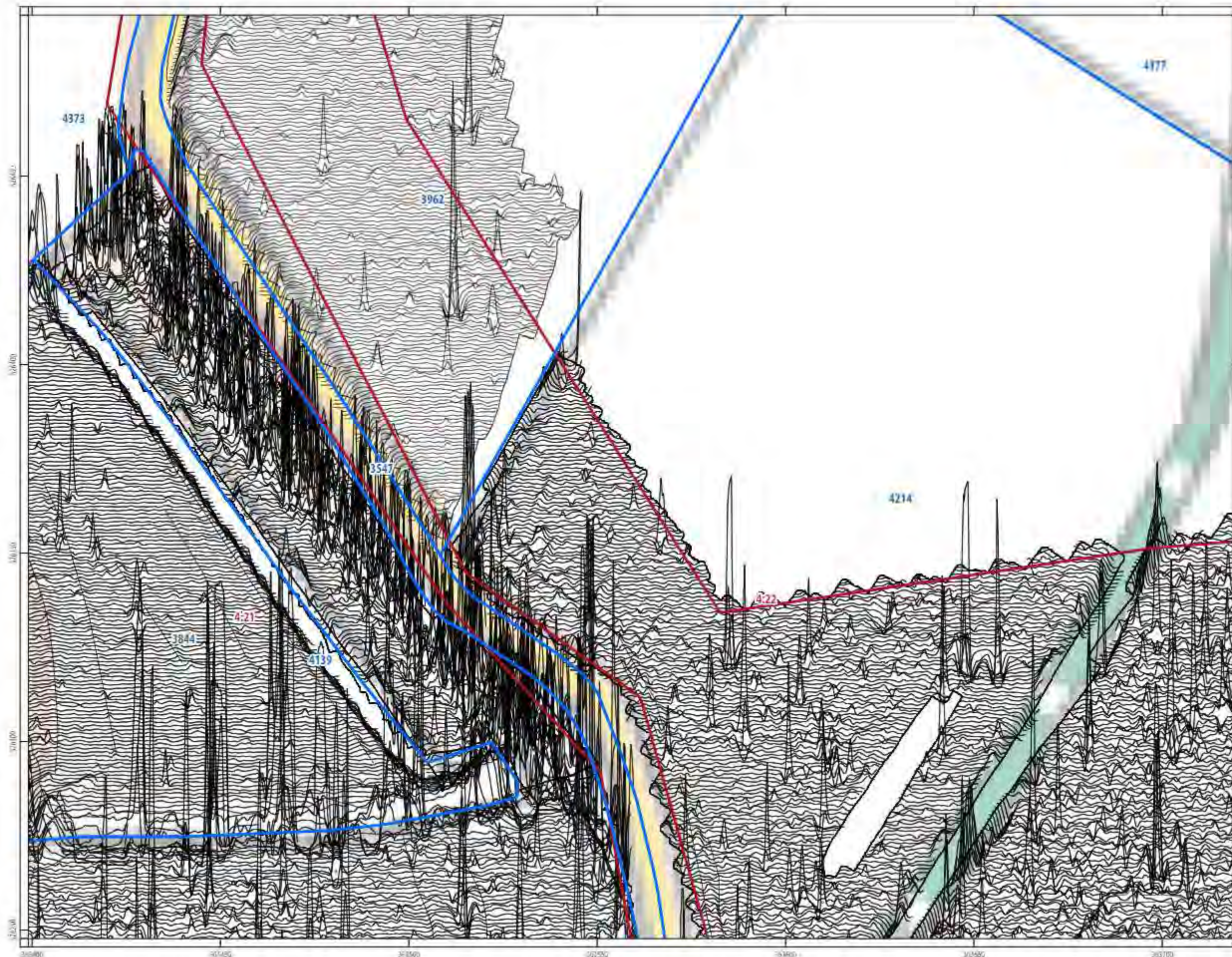
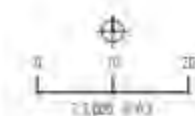
-  Phase 1 (Boundary) Survey Area
-  Phase 2 (Boundary) Survey Area
-  Contoured Survey Line 1
-  Survey Line
-  Section Management

**PROJECT**

ST1120 - A66 Transport Upgrade

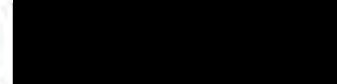
**CLIENT**

Highways England



ILLUS 252. XY trace plot of minimally processed magnetometer data; Temple Soverby to Appleby

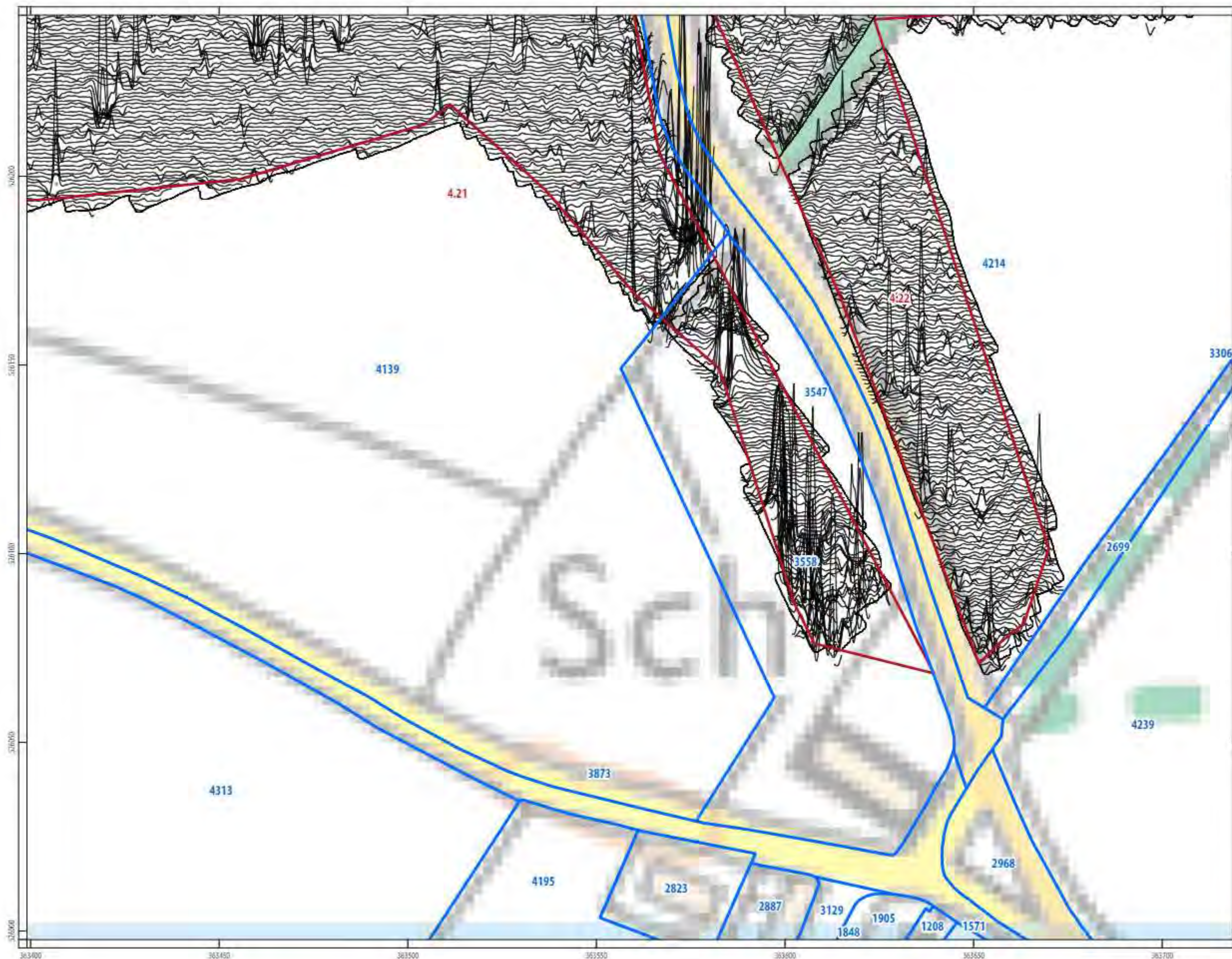
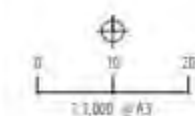




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (10m/10m)
- ⊗ Scheduled Monument

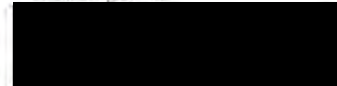
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 253 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





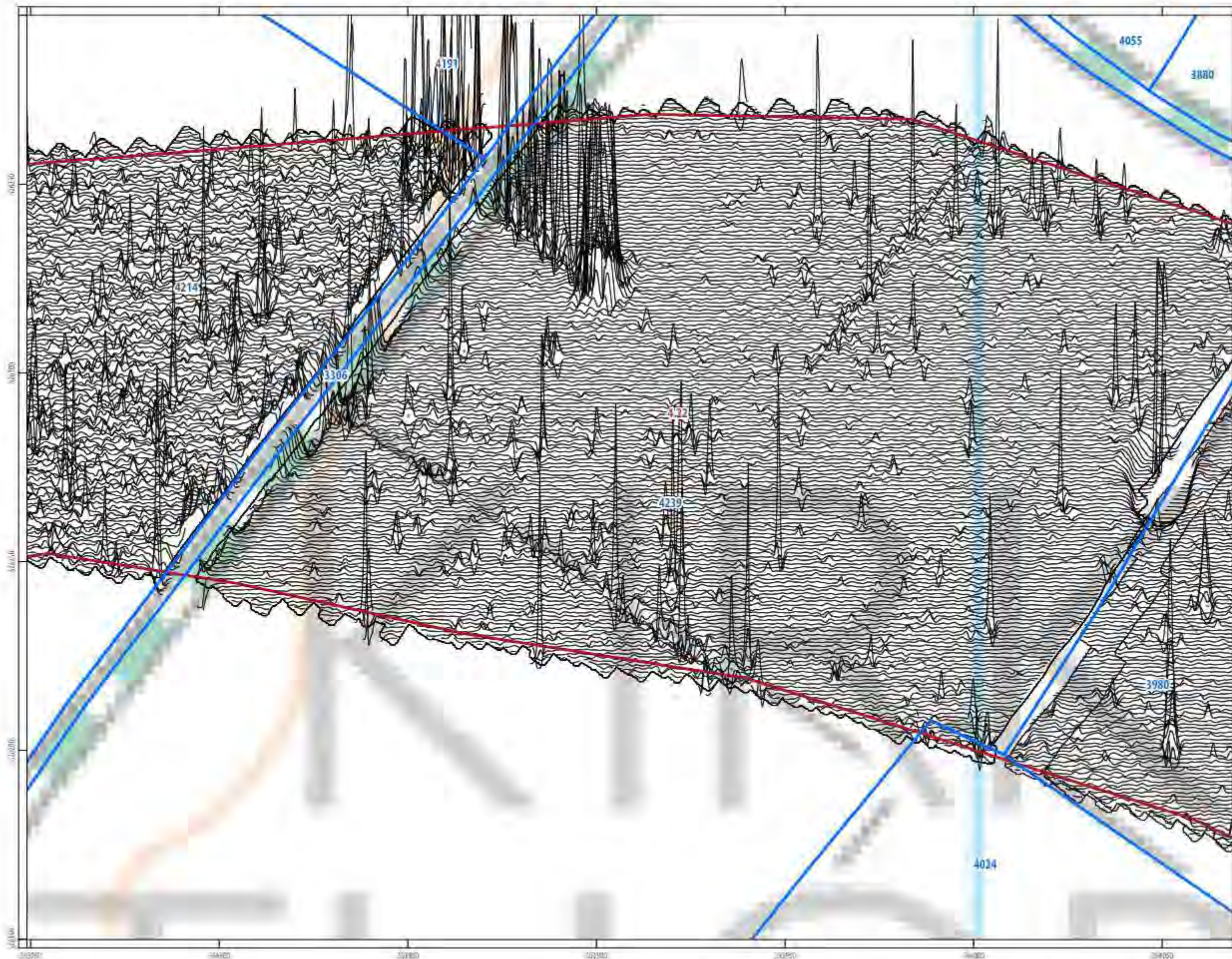
- ▭ Phase 1 (Unexcavated) Survey Area
- ▭ Phase 2 (Excavated) Survey Area
- Excavated Feature Line
- Trench Location
- Sectional Measurement

**PROJECT**

A17120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 254 XY trace plot of minimally processed magnetometer data: Temple Soverby to Appleby

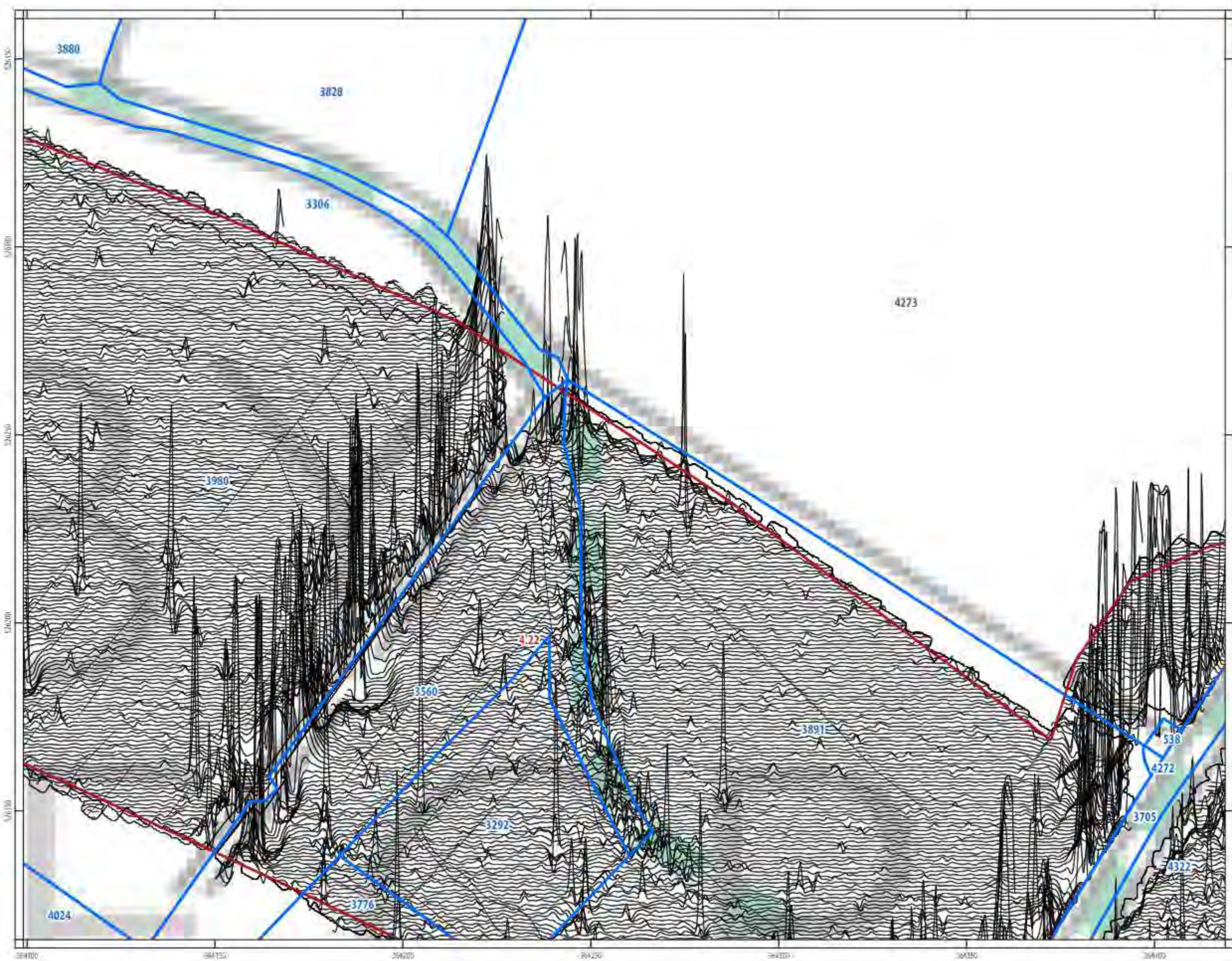




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 4
- XY-02 Section
- Section 04 Measurement




**PROJECT**  
A1120 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 255 XY trace plot of minimally processed magnetometer data; Temple Soverby to Appleby



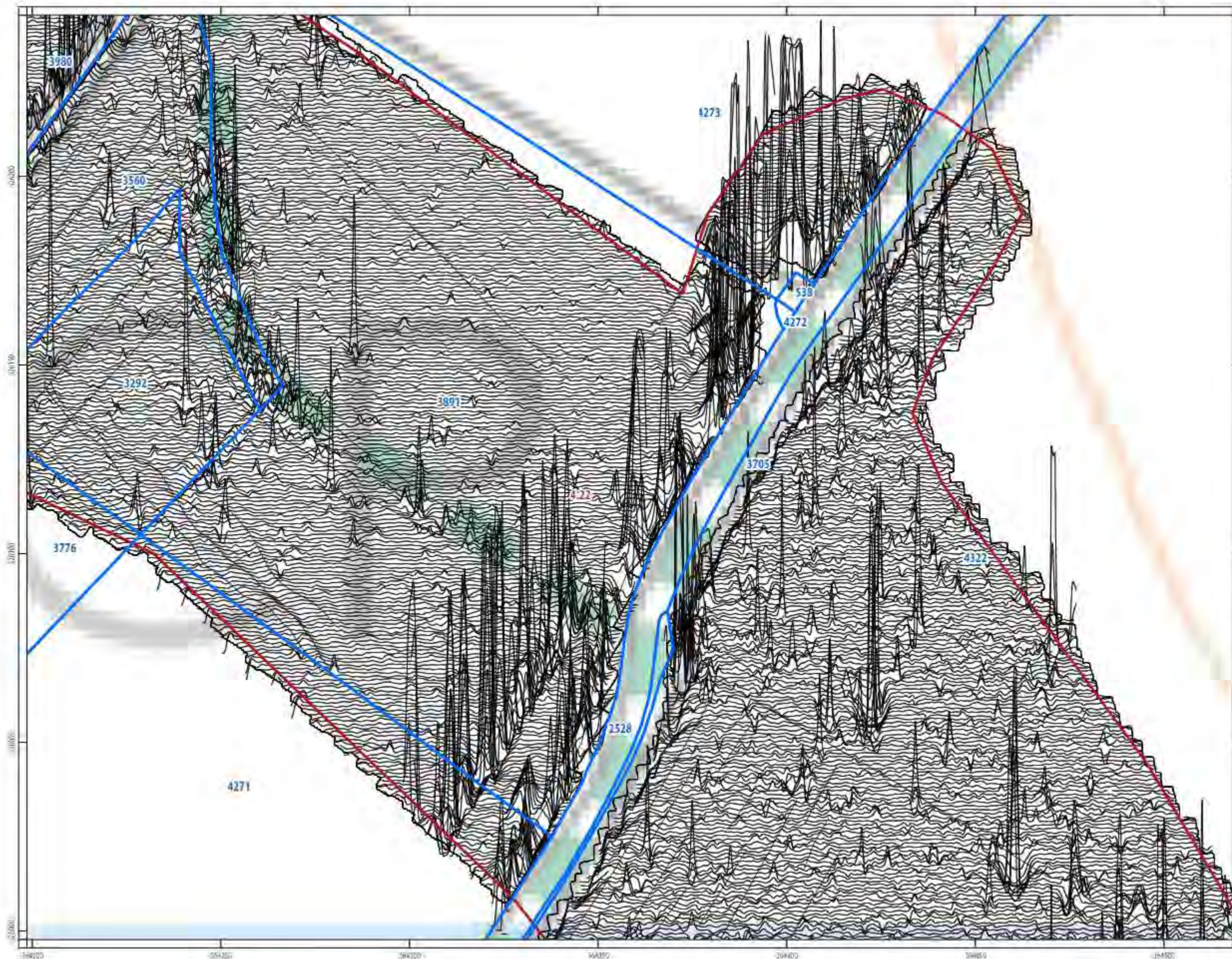
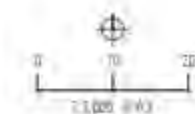
-  Phase 1 Unexcavated Survey Area
-  Phase 2 Excavated Survey Area
-  County Council Boundary
-  XY Grid Lines
-  Sectional Measurement

**PROJECT**

AT1120-466 Transport Upgrade

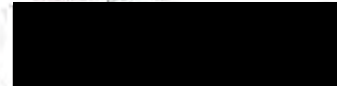
**CLIENT**

Highways England



ILLUS 256 XY trace plot of minimally processed magnetometer data; Temple Soveryby to Appleby





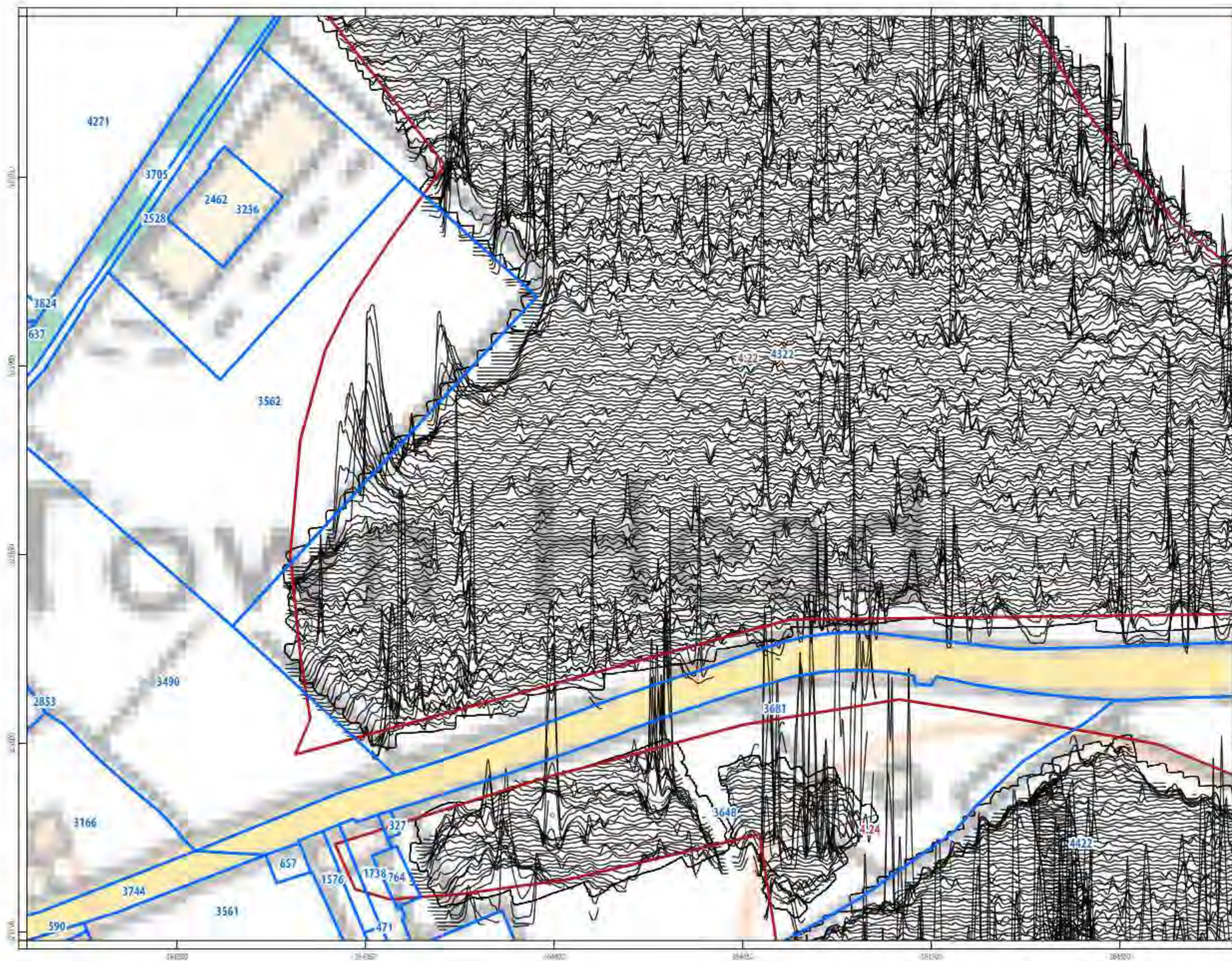
- ▭ Phase 1 Unexcavated Burial Area
- ▭ Phase 2 Unexcavated Burial Area
- ▭ County Council's Local A
- ▭ XY Grid Lines
- ▭ Sectional Measurement

**PROJECT**

AT1120 - A66 Transport Improvement

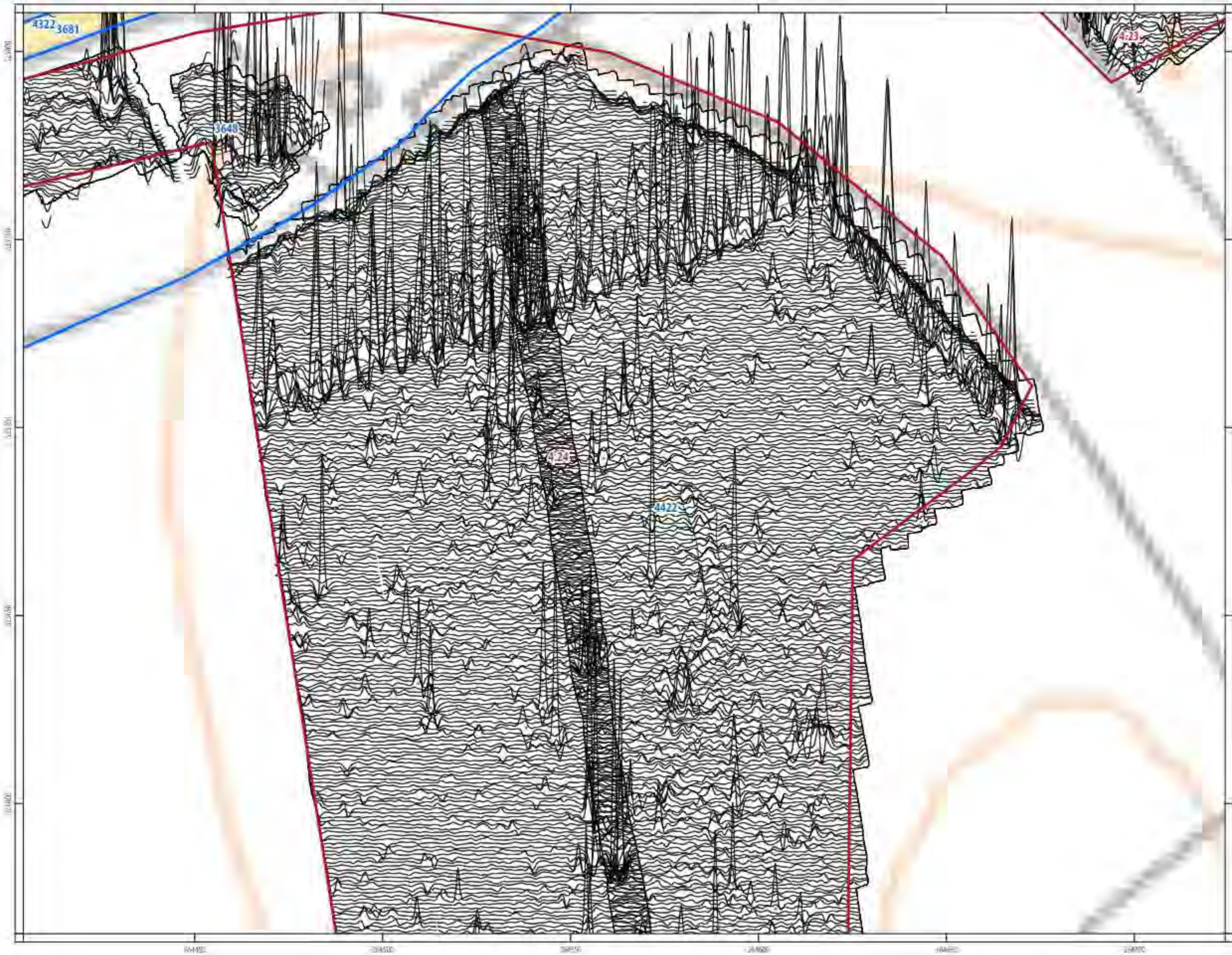
**CLIENT**

Highways England



ILLUS 257 XY trace plot of minimally processed magnetometer data; Temple Soveryby to Appleby





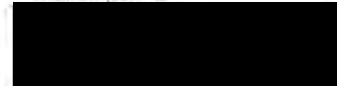
- ▭ Phase 1 (Mainly) Survey Area
- ▬ Phase 2 (Mainly) Survey Area
- ▬ Property and Access Lines
- ▬ Fences
- ▬ Sectional Measurement

**PROJECT**  
A17120 - A66 Transport Upgrade

**CLIENT**  
Highways England







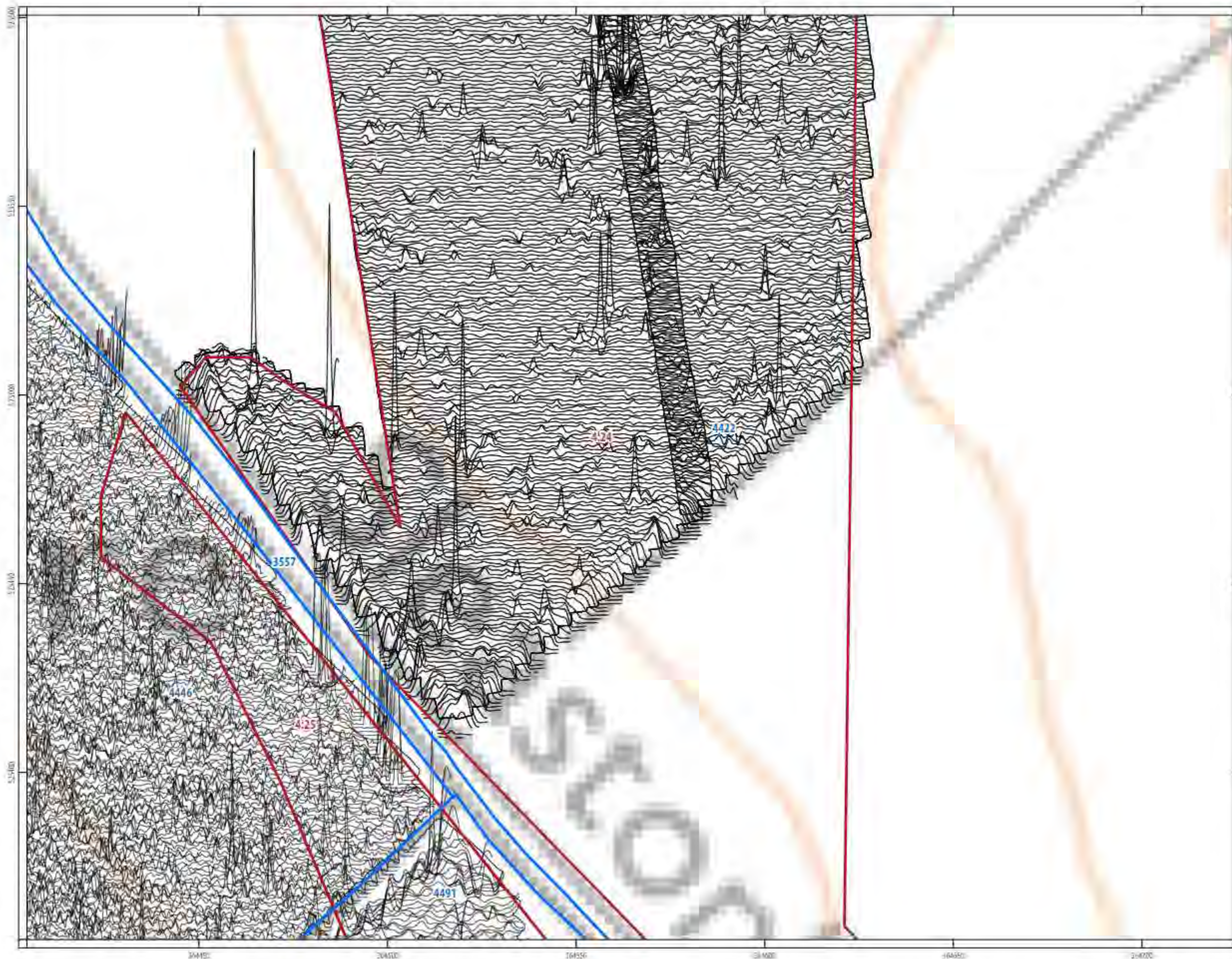
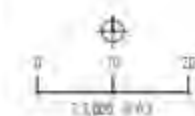
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY Grid Lines
- Section Management

**PROJECT**

A1120 - A66 Transport Upgrade

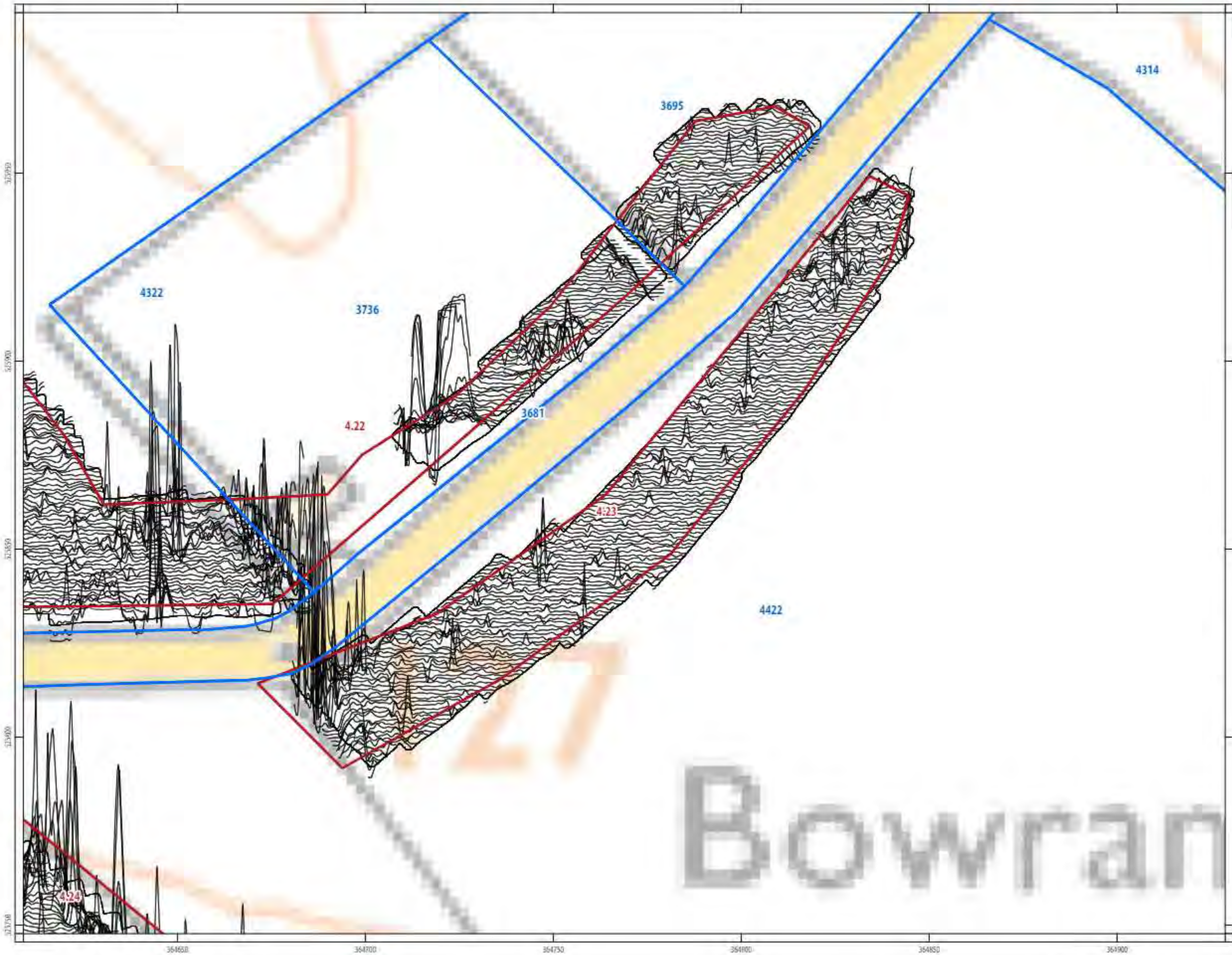
**CLIENT**

Highways England



ILLUS 259 XY trace plot of minimally processed magnetometer data: Temple Soverby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (10m/2cm)
- ⊗ Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 260 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





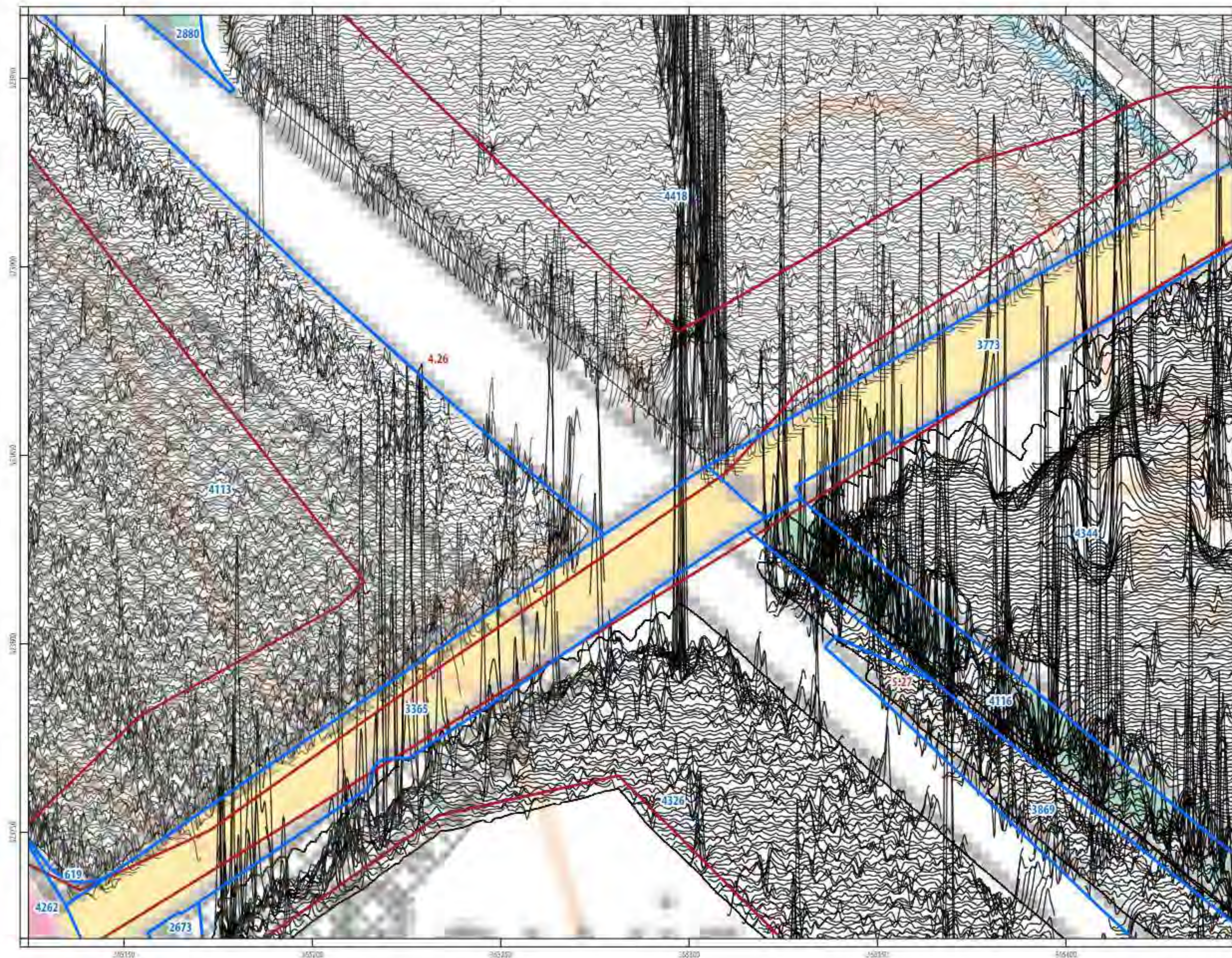
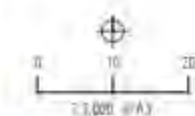
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY Grid Lines
- Sectional Measurement

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 261 XY trace plot of minimally processed magnetometer data; Temple Soverby to Appleby





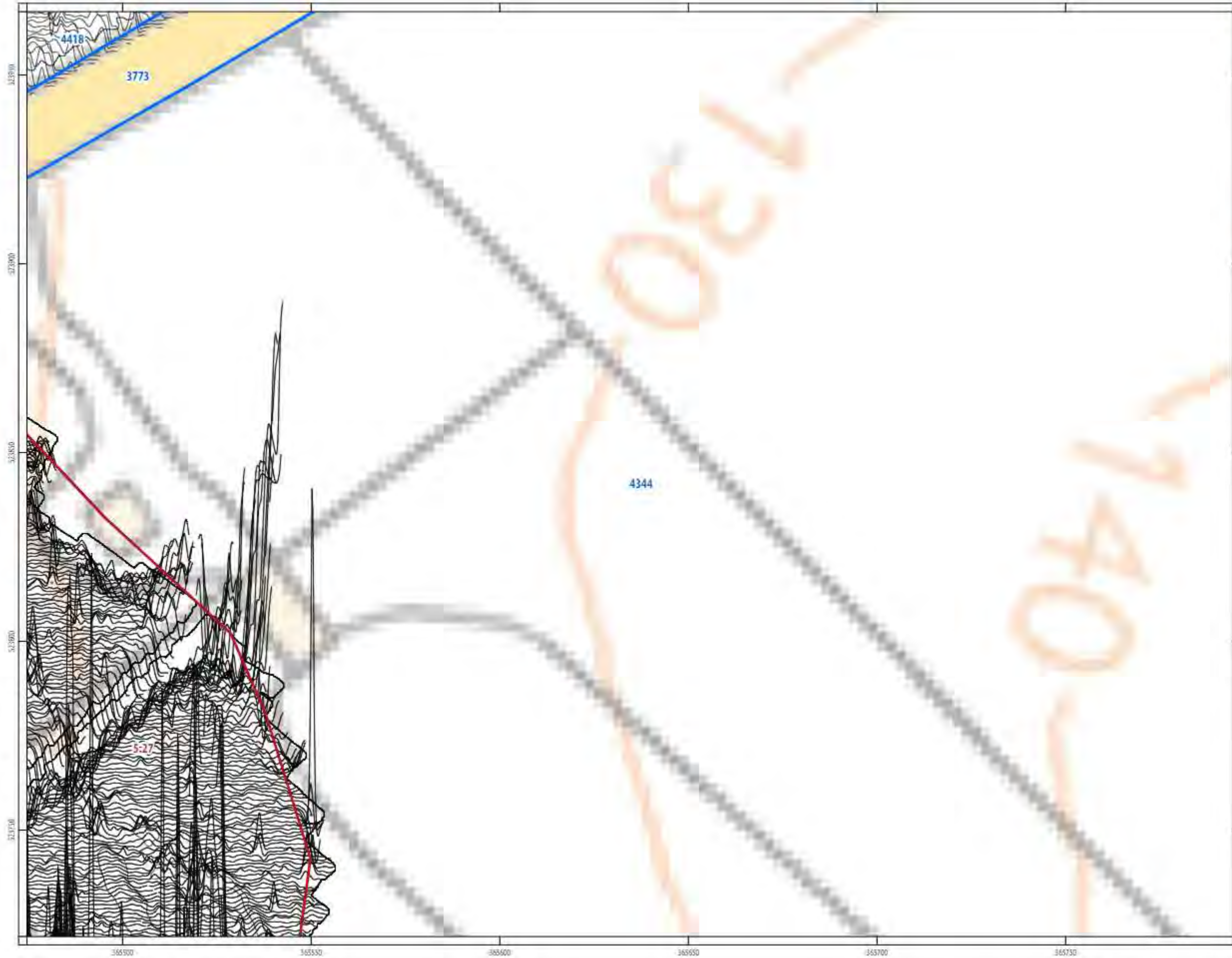
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (10m/10m)
- Scheduled Monument

**PROJECT**

A7420 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 262 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 (Unexcavated) Survey Area
- ▭ Phase 2 (Excavated) Survey Area
- Contour and ground level
- Fences
- Sectional Measurement

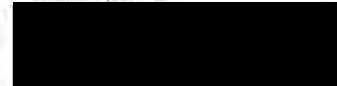
**PROJECT**  
AT1120 - A66 Transpennine Upgrade






**CLIENT**  
Highways England



ILLUS 263: XY trace plot of minimally processed magnetometer data: Temple Soverby to Appleby





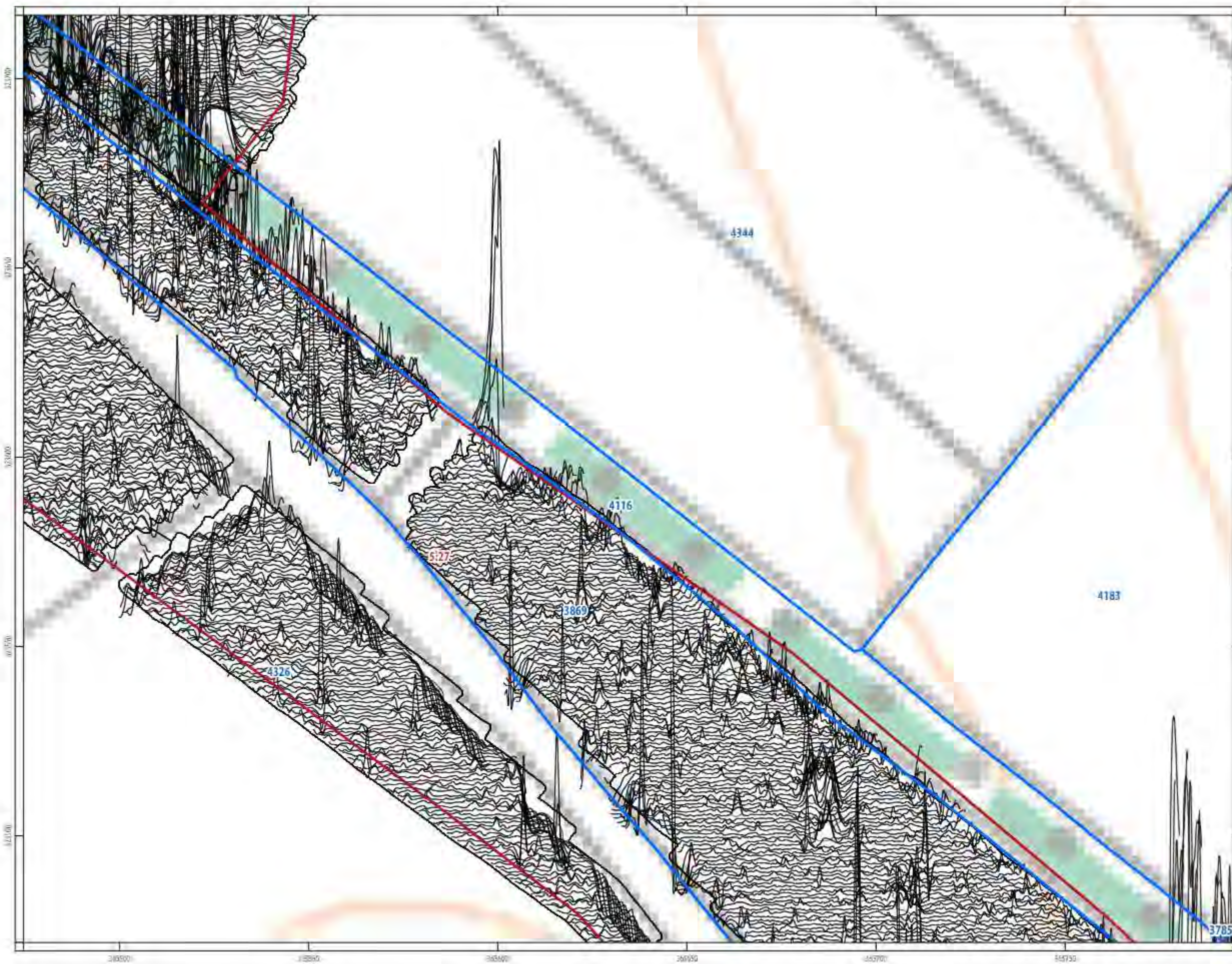
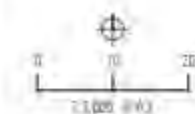
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Line 1
-  XY-02 Section
-  Section Measurement

**PROJECT**

A1120 - A66 Transport Upgrade

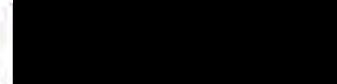
**CLIENT**

Highways England



ILLUS 264 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





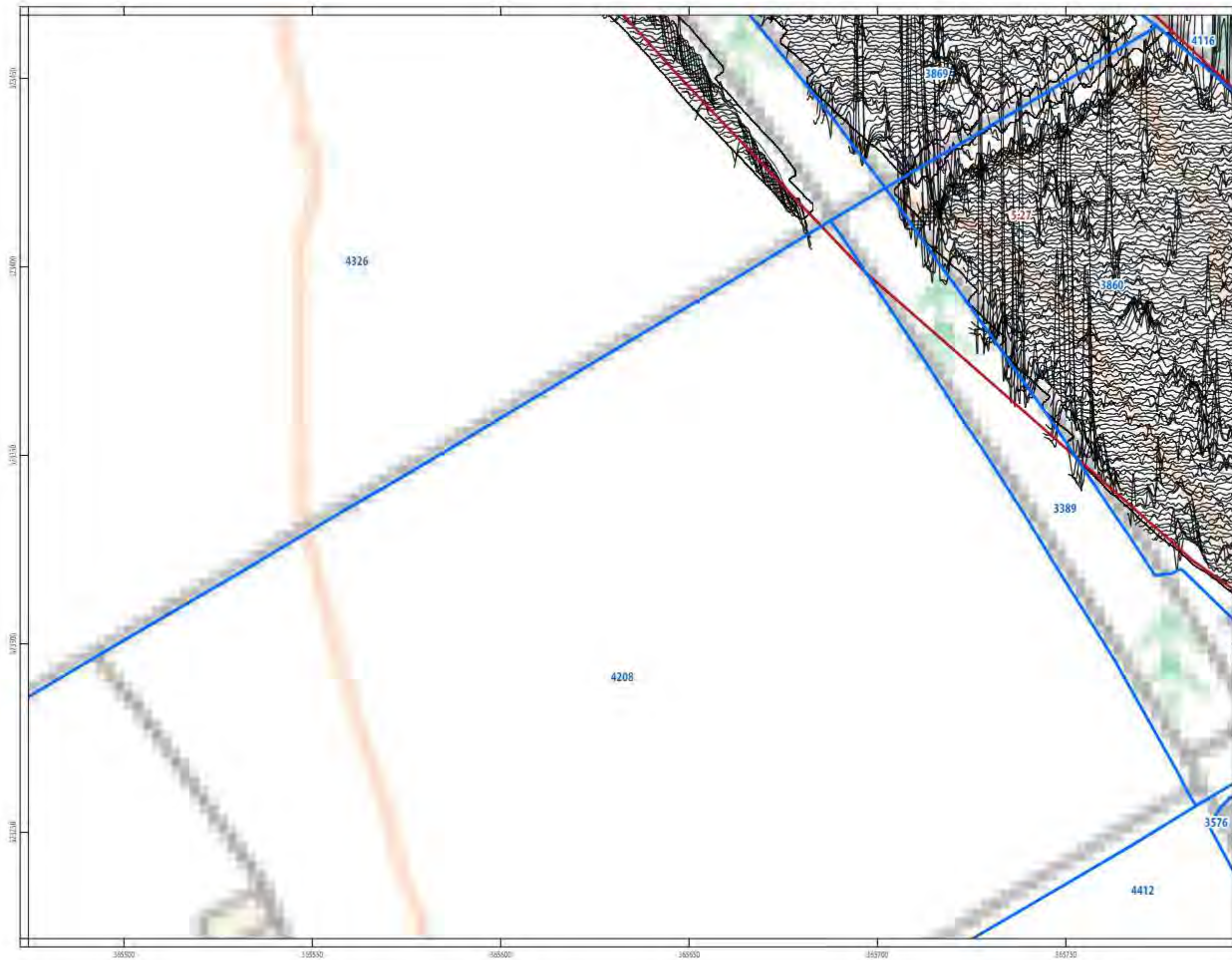
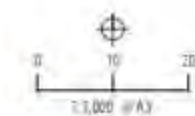
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- ⊕ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 265 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





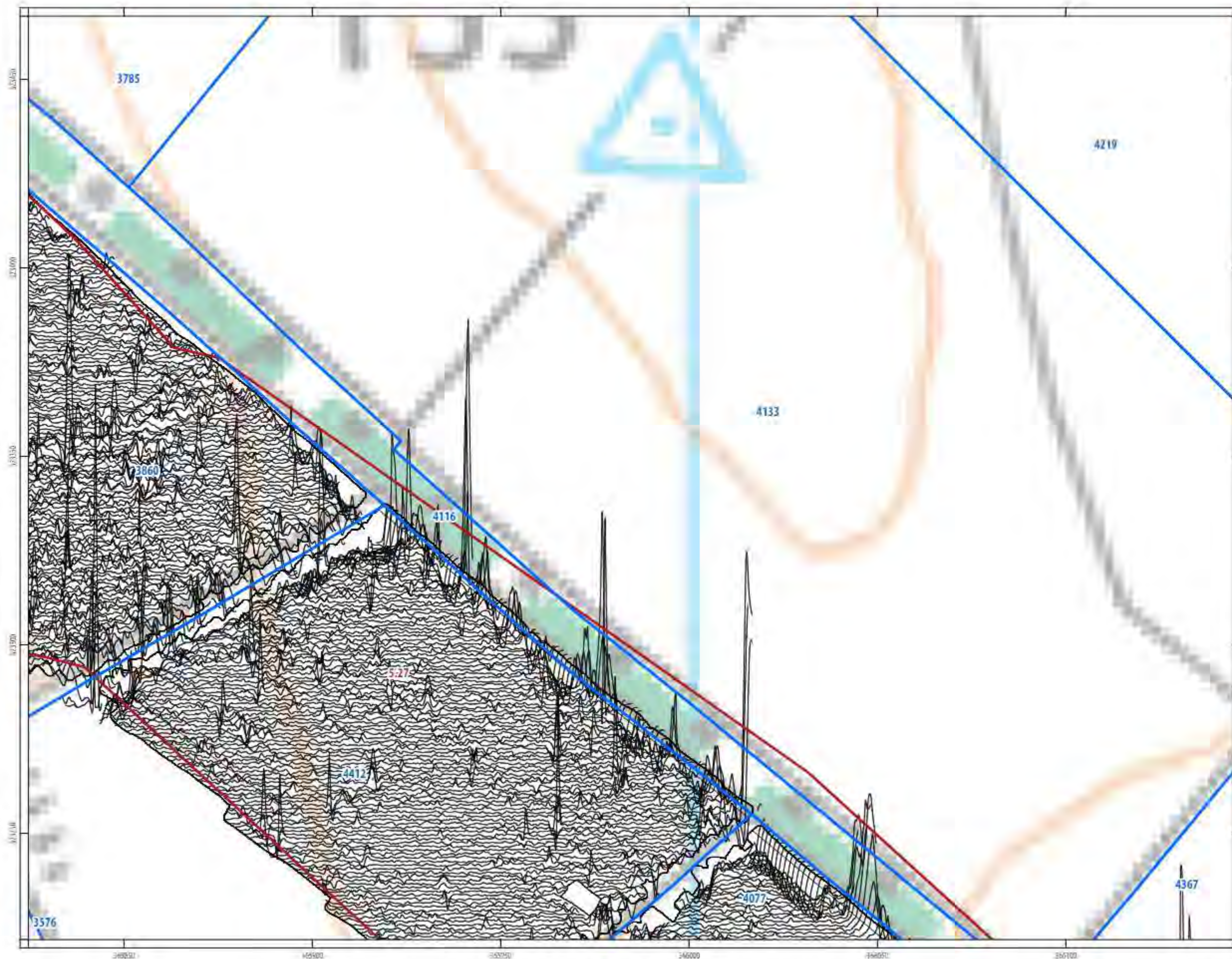
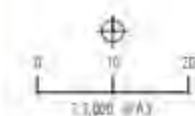
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line 1
- XY Grid Lines
- Scheduled Monument

**PROJECT**

A7120 - A66 Transpenine Upgrade

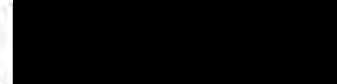
**CLIENT**

Highways England



ILLUS 266 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





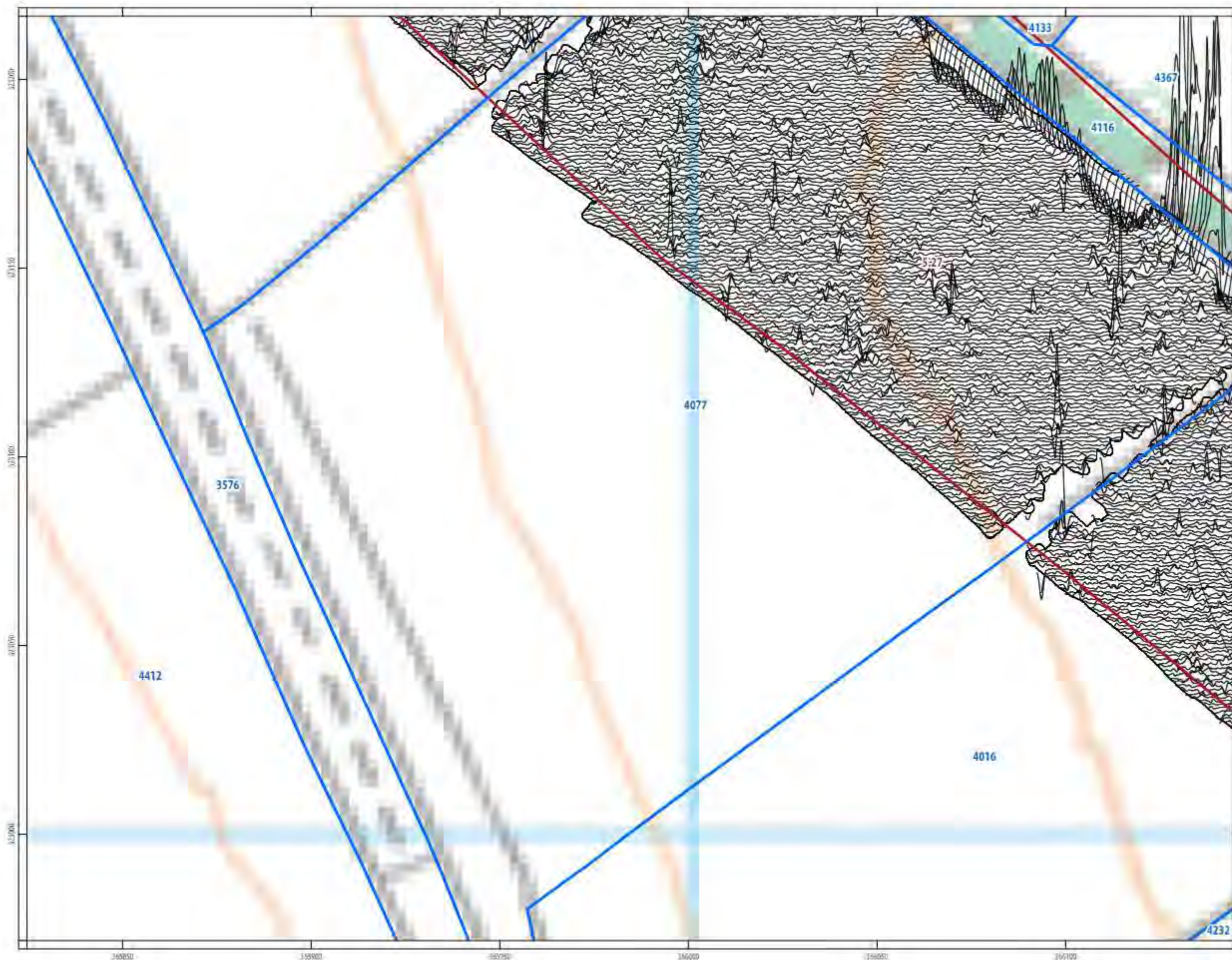
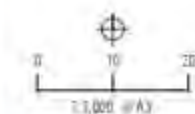
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

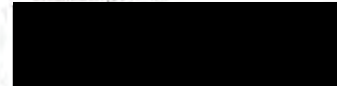
**CLIENT**

Highways England



ILLUS 267 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





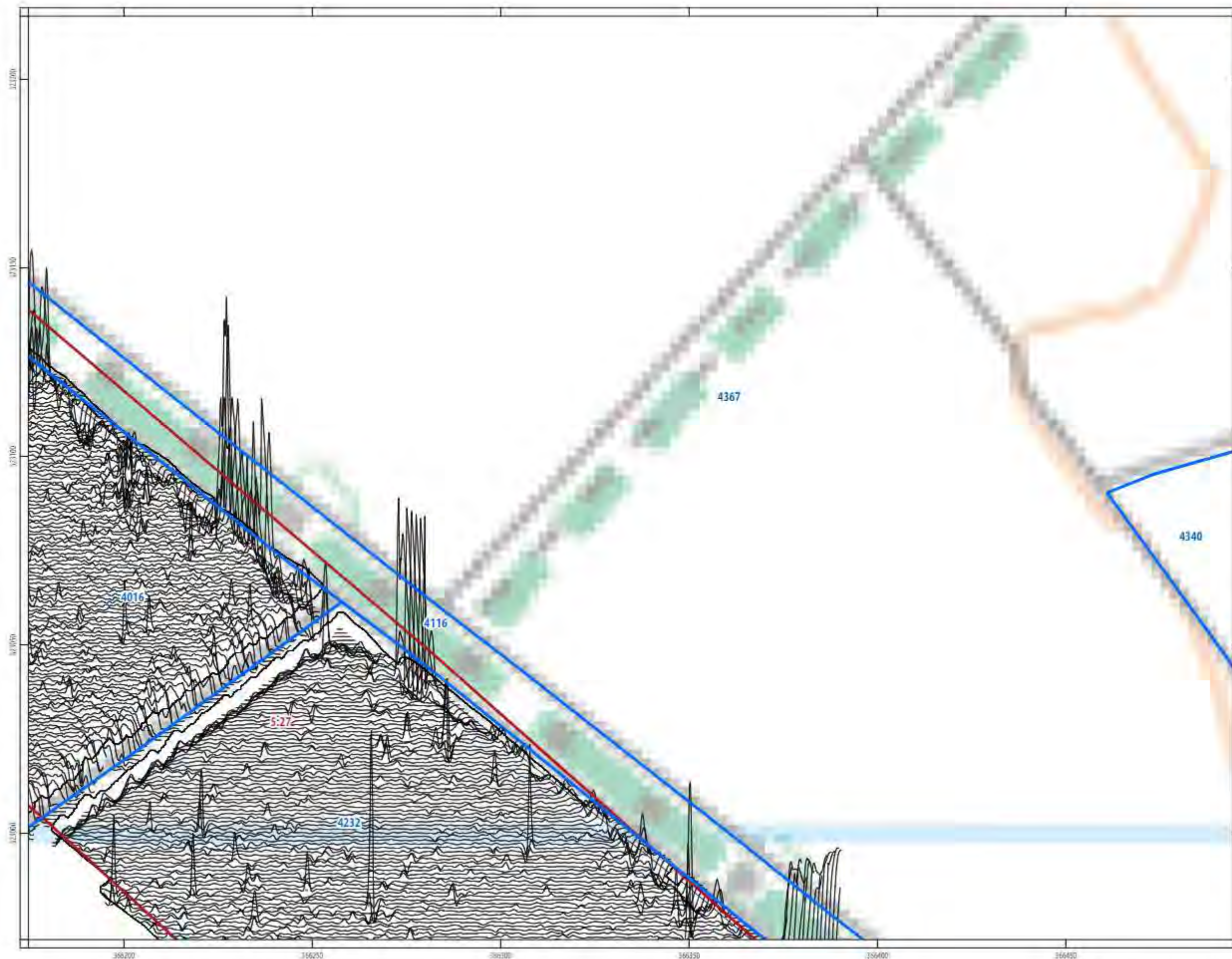
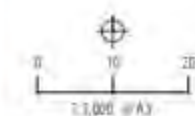
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines 1
- XY (DEM) —
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

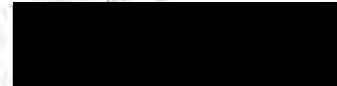
**CLIENT**

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ILLUS 268 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





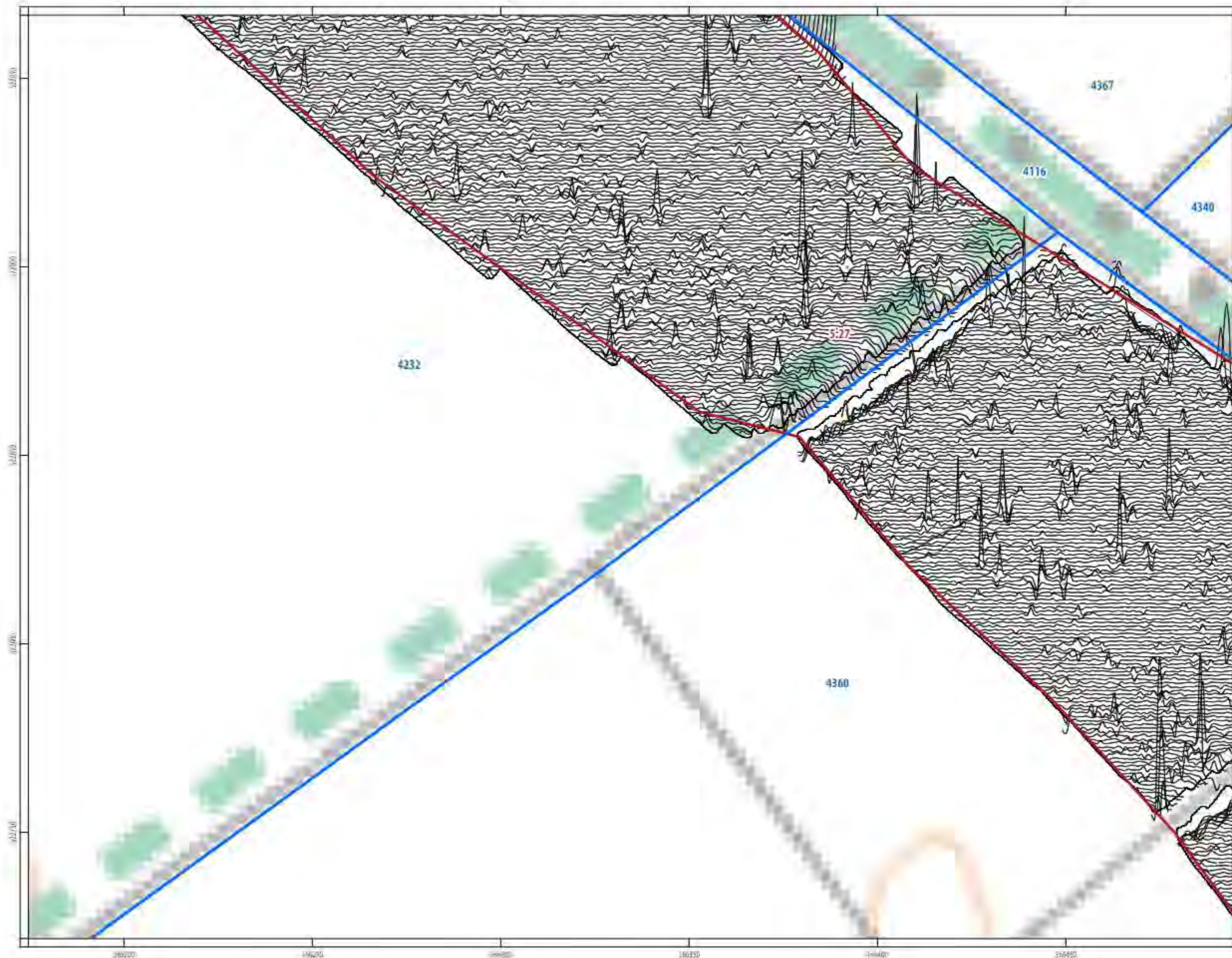
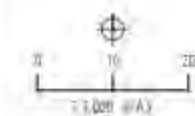
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY-02 Section
- Section 04 Measurement

**PROJECT**

ATF120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 269 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



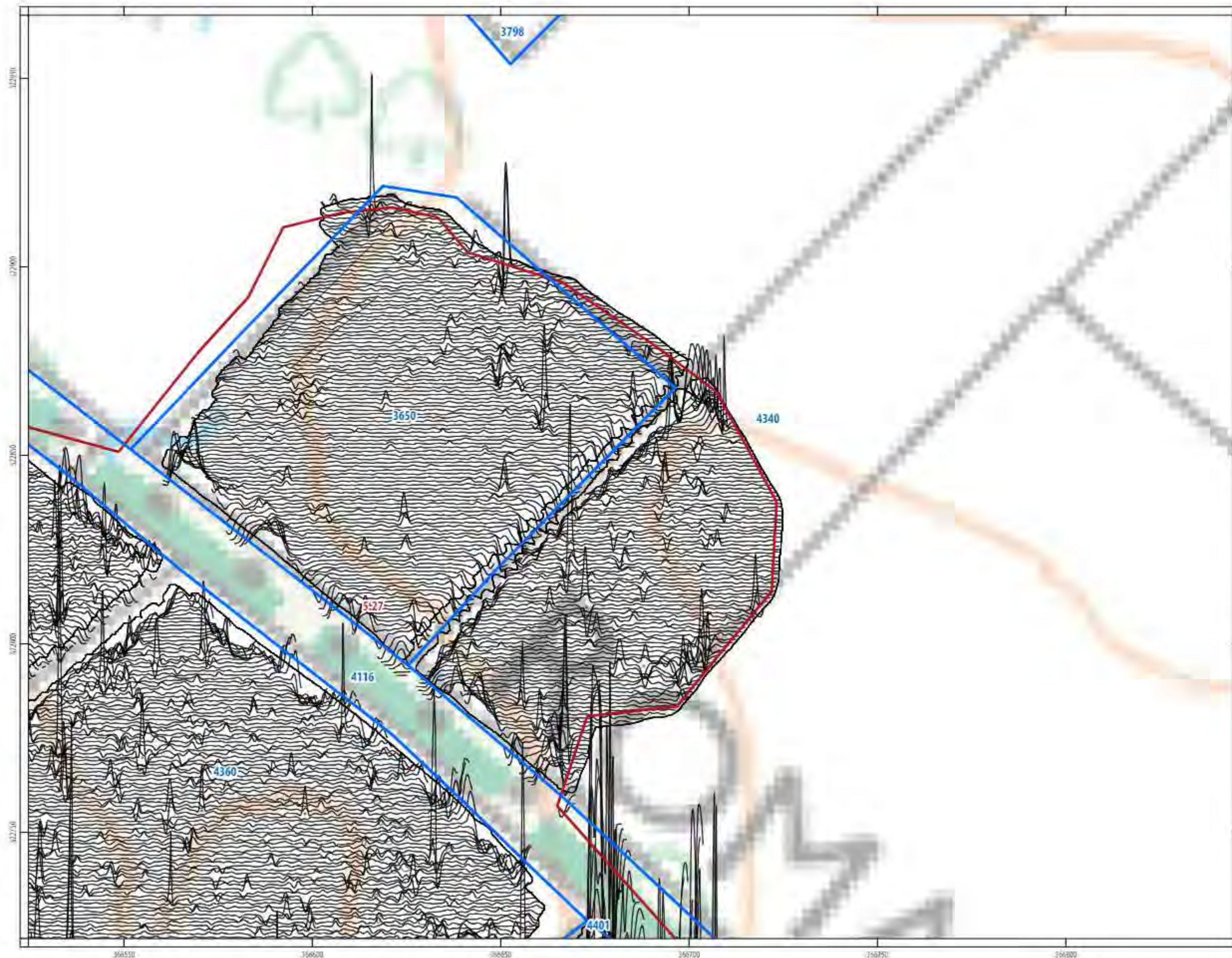
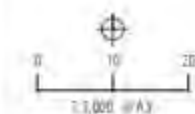
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- ⊠ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

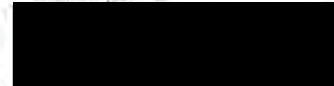
**CLIENT**

Highways England



ILLUS 270 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





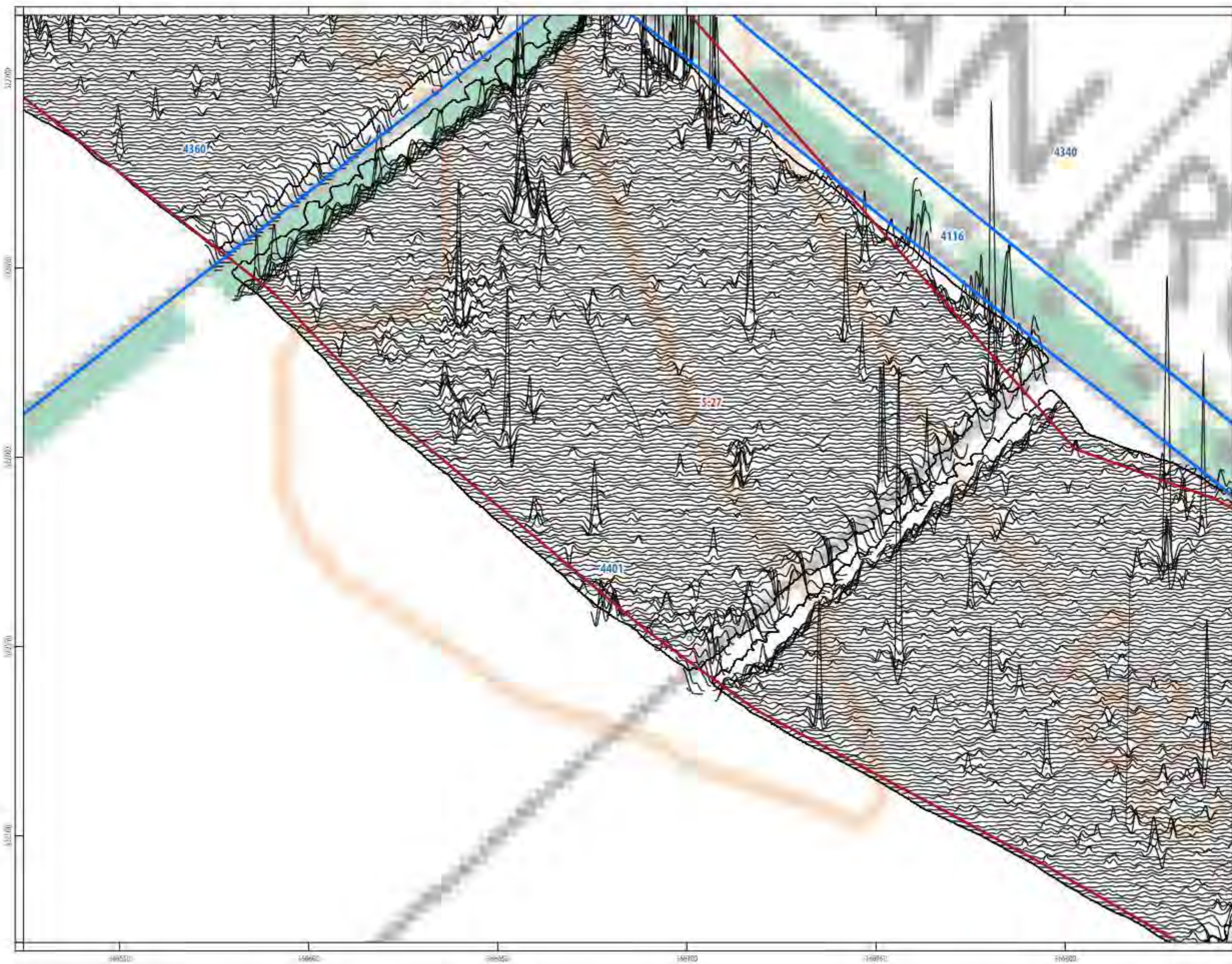
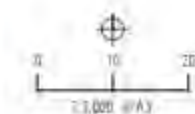
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY Coordinates
- Sectional Measurement

**PROJECT**

A1420 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 271 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





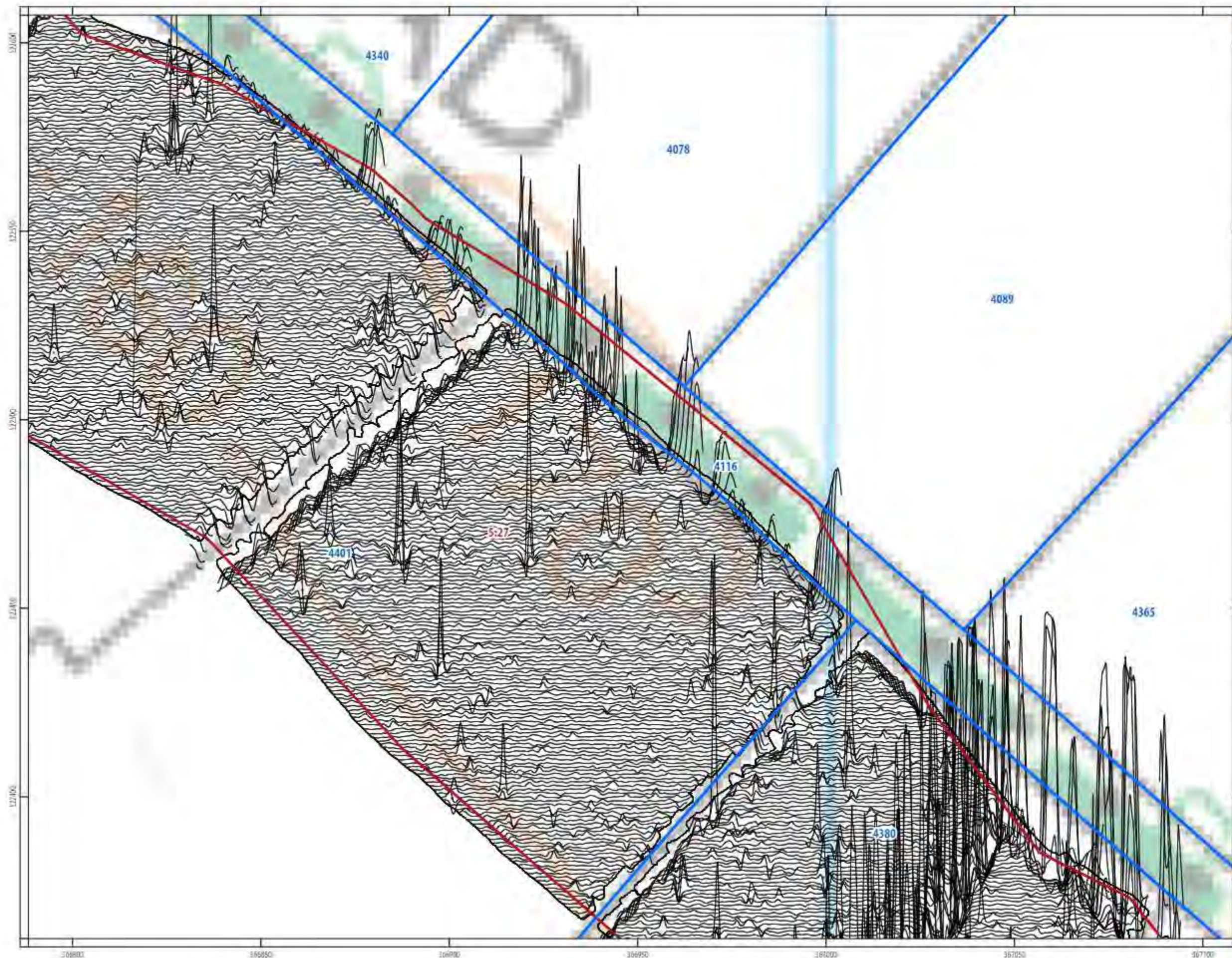
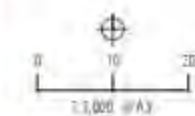
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- Selected Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade






**CLIENT**

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ILLUS 272: XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



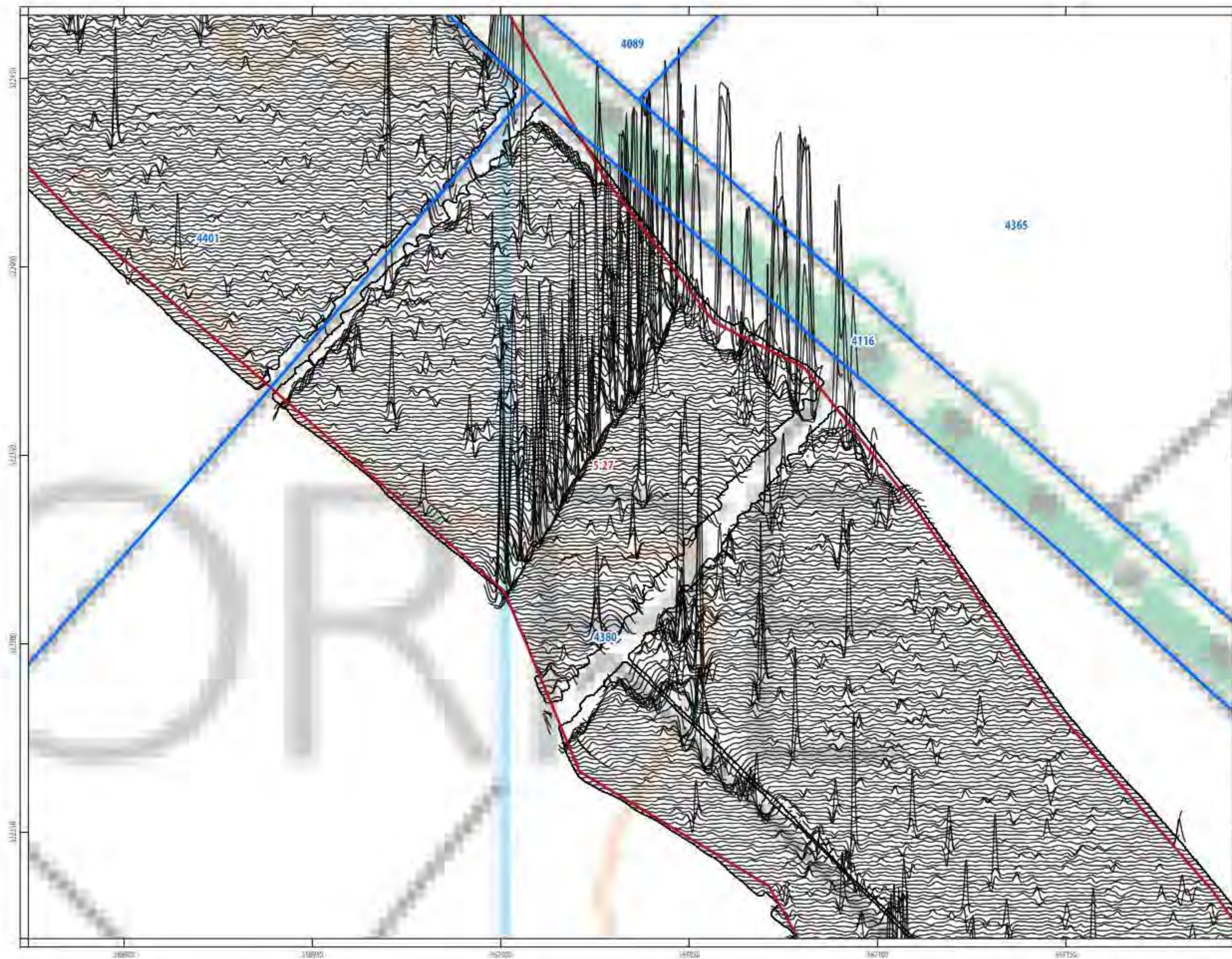
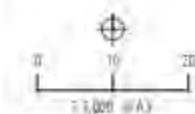
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Line 1
-  XY - 10m Grid
-  Section Line / Measurement

**PROJECT**

A1120 - A66 Transpenine Upgrade

**CLIENT**

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ILLUS 273. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





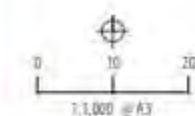
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

A7FJ20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 274 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





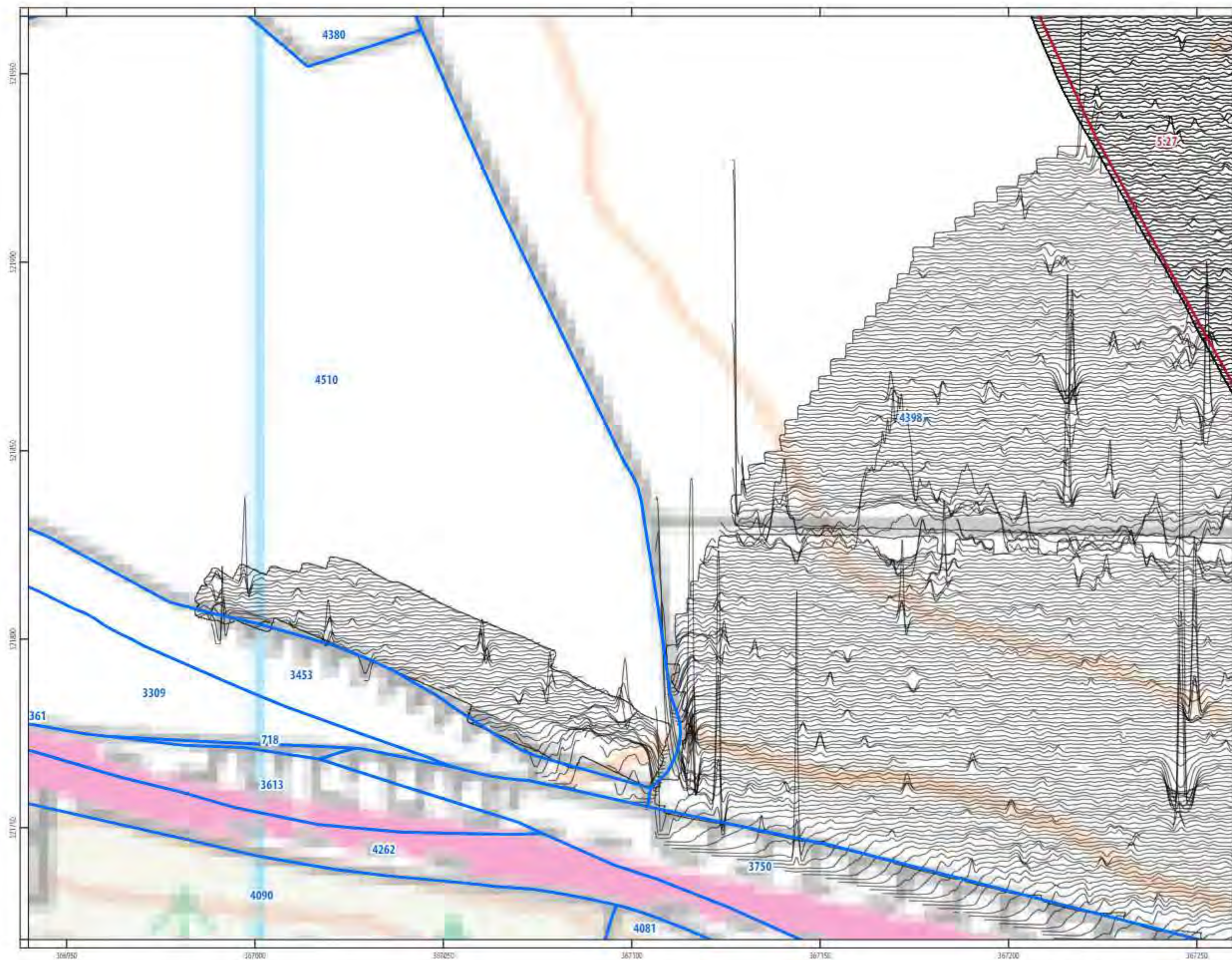
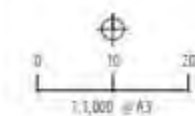
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m (1cm)
- ⊕ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 274 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



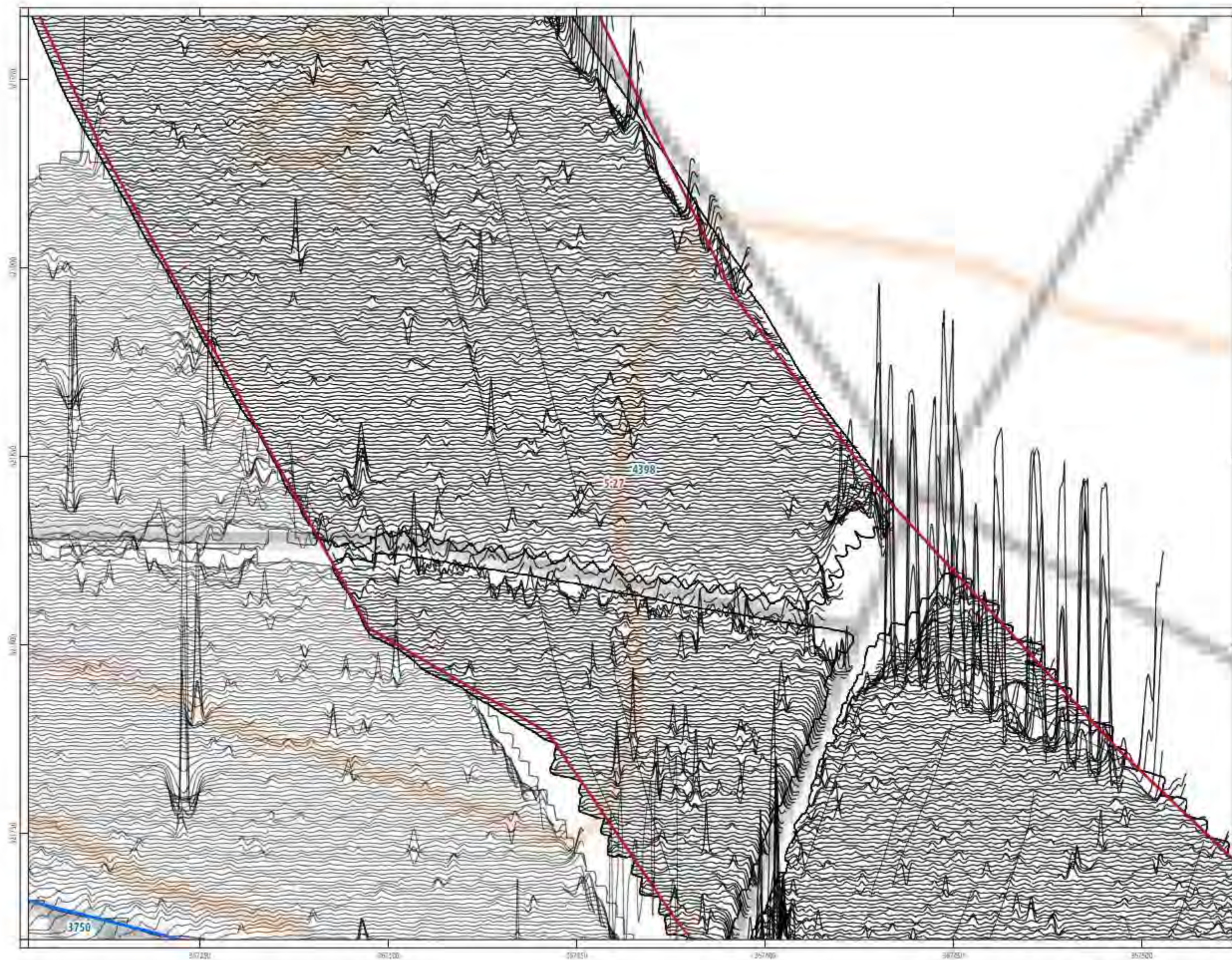




- ▭ Phase 1 Unexcavated Burial Area
- ▭ Phase 2 Unexcavated Burial Area
- ▭ Cemetery and Burial Ground
- ▭ XY Grid Lines
- ▭ Section Management




**PROJECT**  
AT1120 - A66 Transport Upgrade

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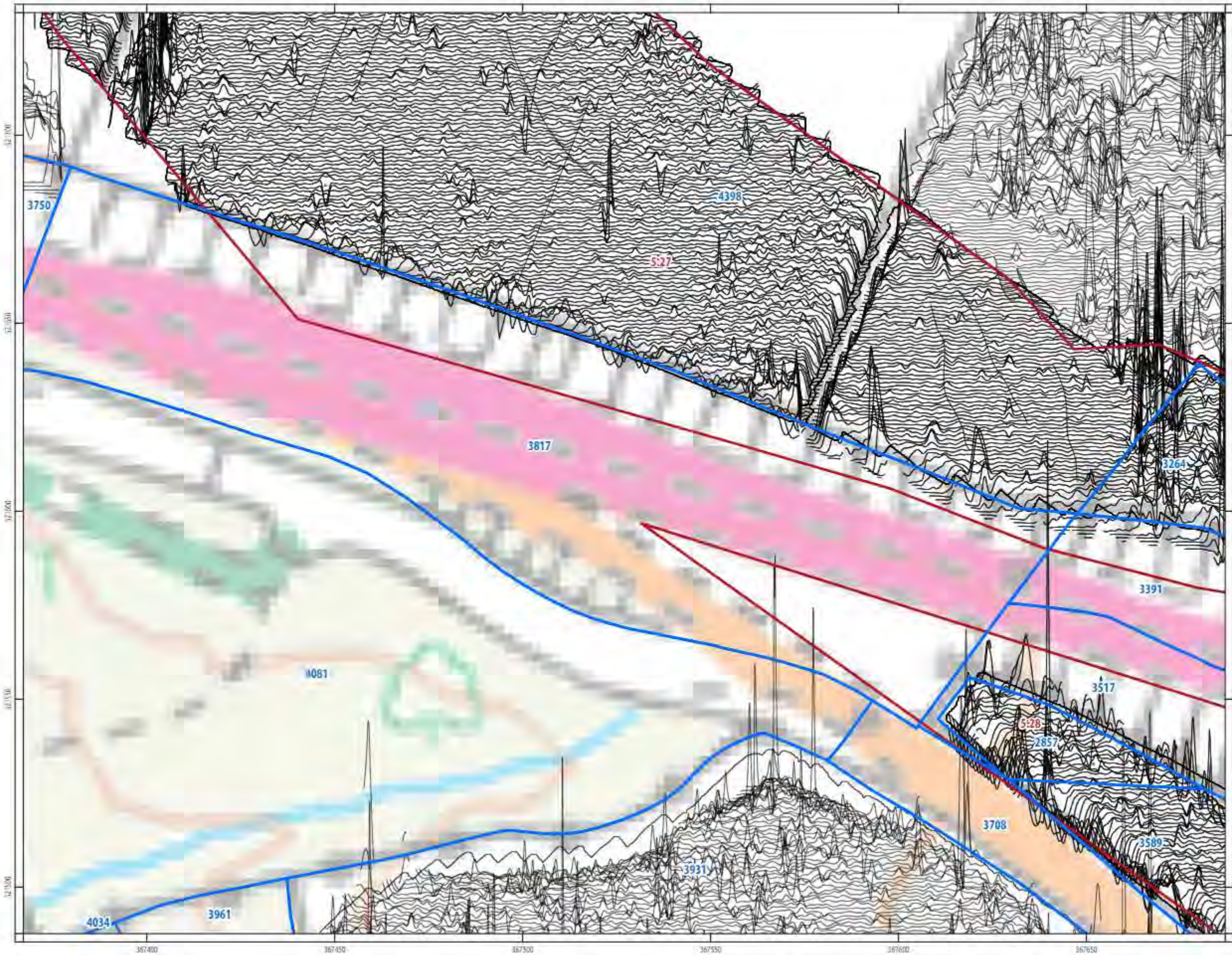
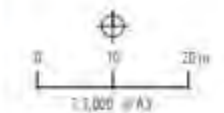
ILLUS 276 XY trace plot of minimally processed magnetometer data; Temple Soveryby to Appleby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
-  Geophysical Survey Lines
-  XY (0m Easement)
-  Scheduled Monument

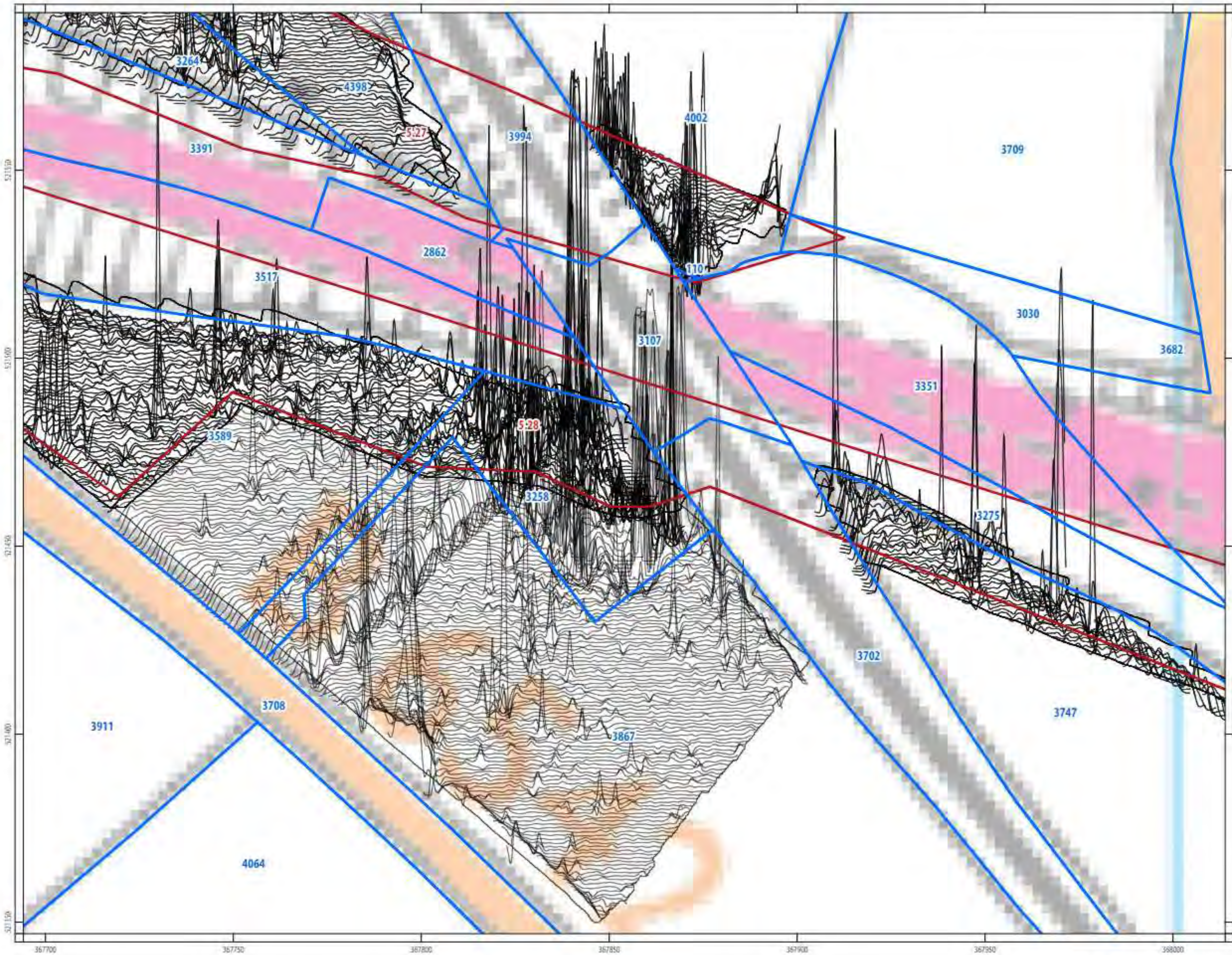
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 277 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- ⊗ Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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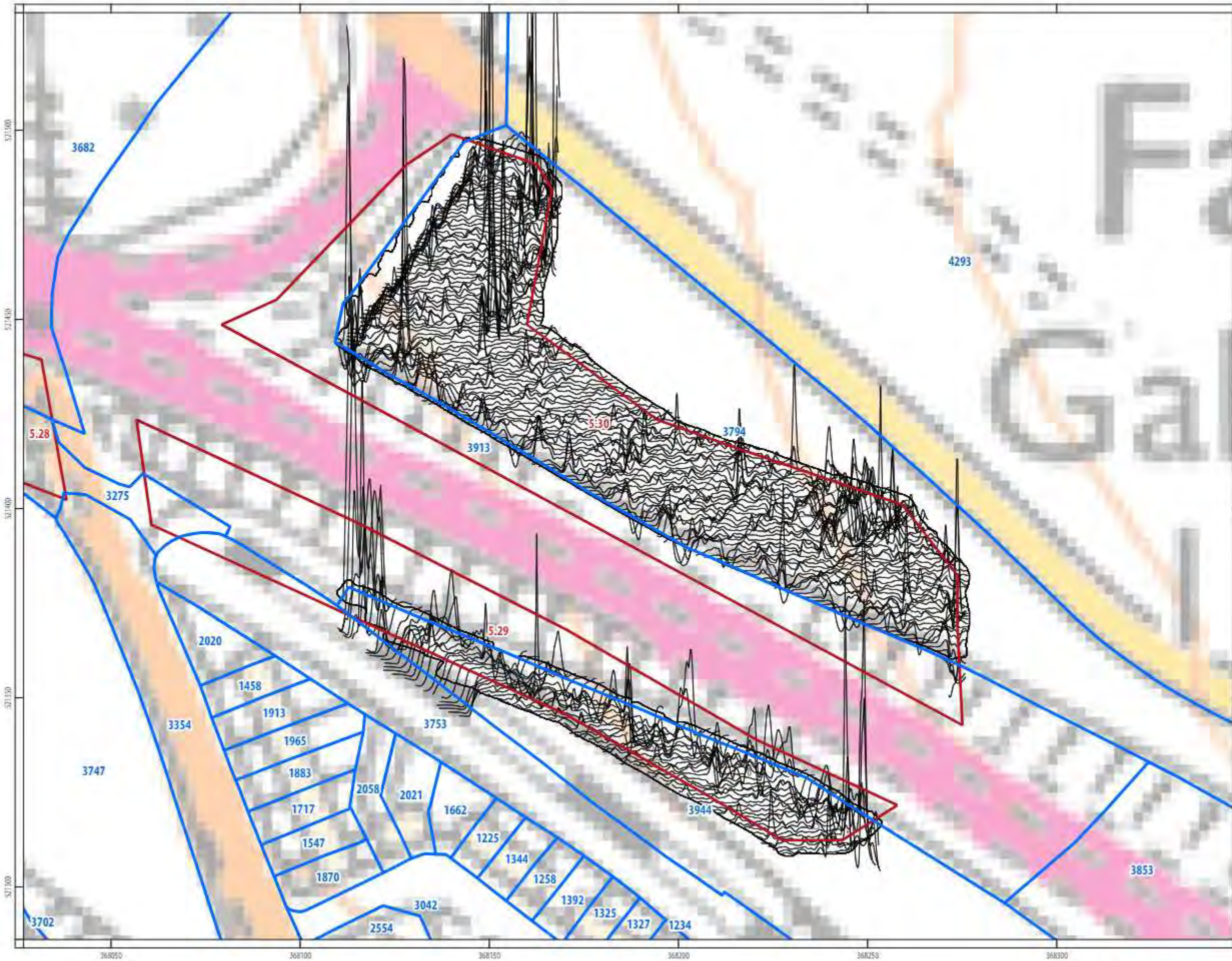
ILLUS 278 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- ⊗ Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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ILLUS 279. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

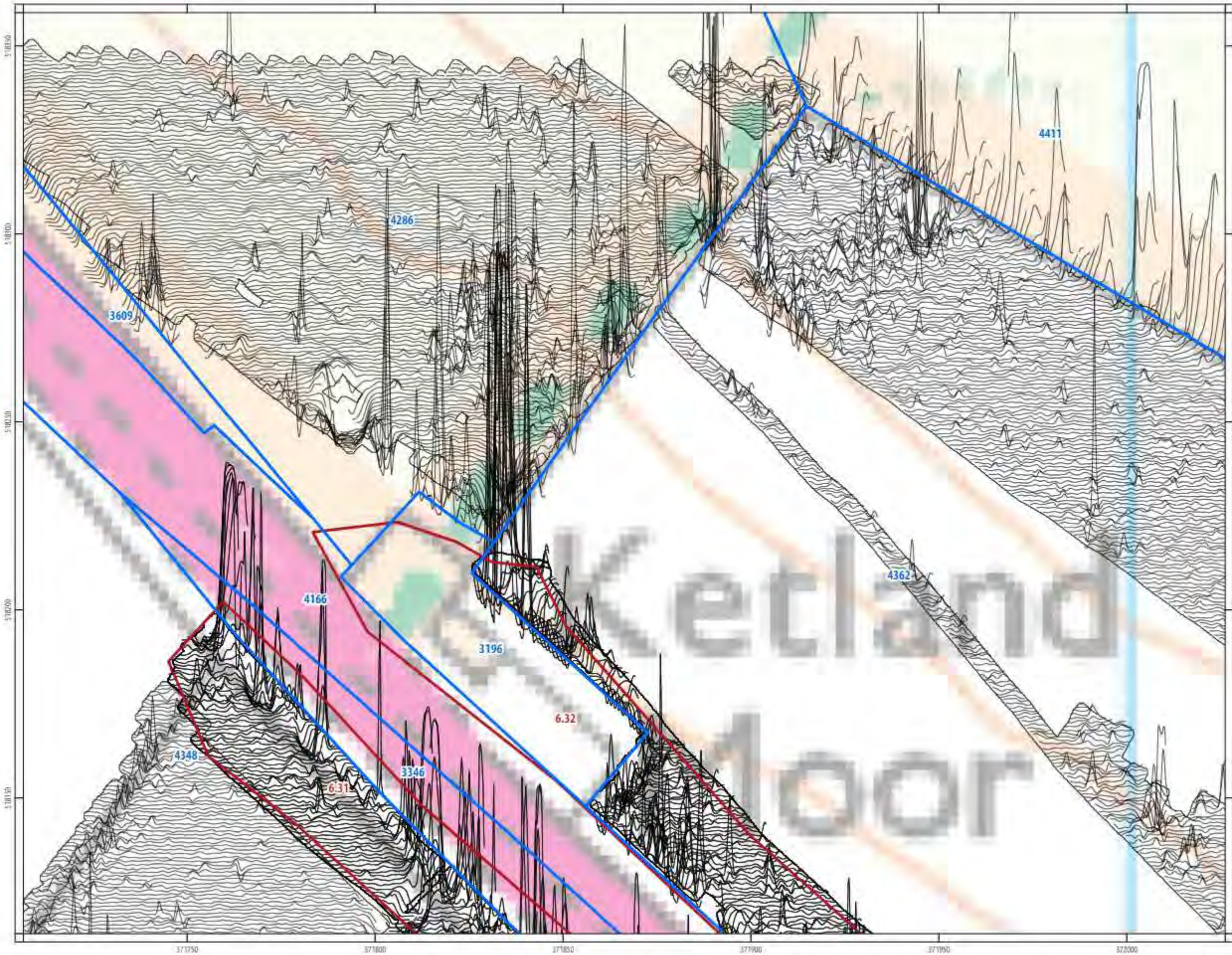




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- ⊕ Scheduled Monument

**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 280 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





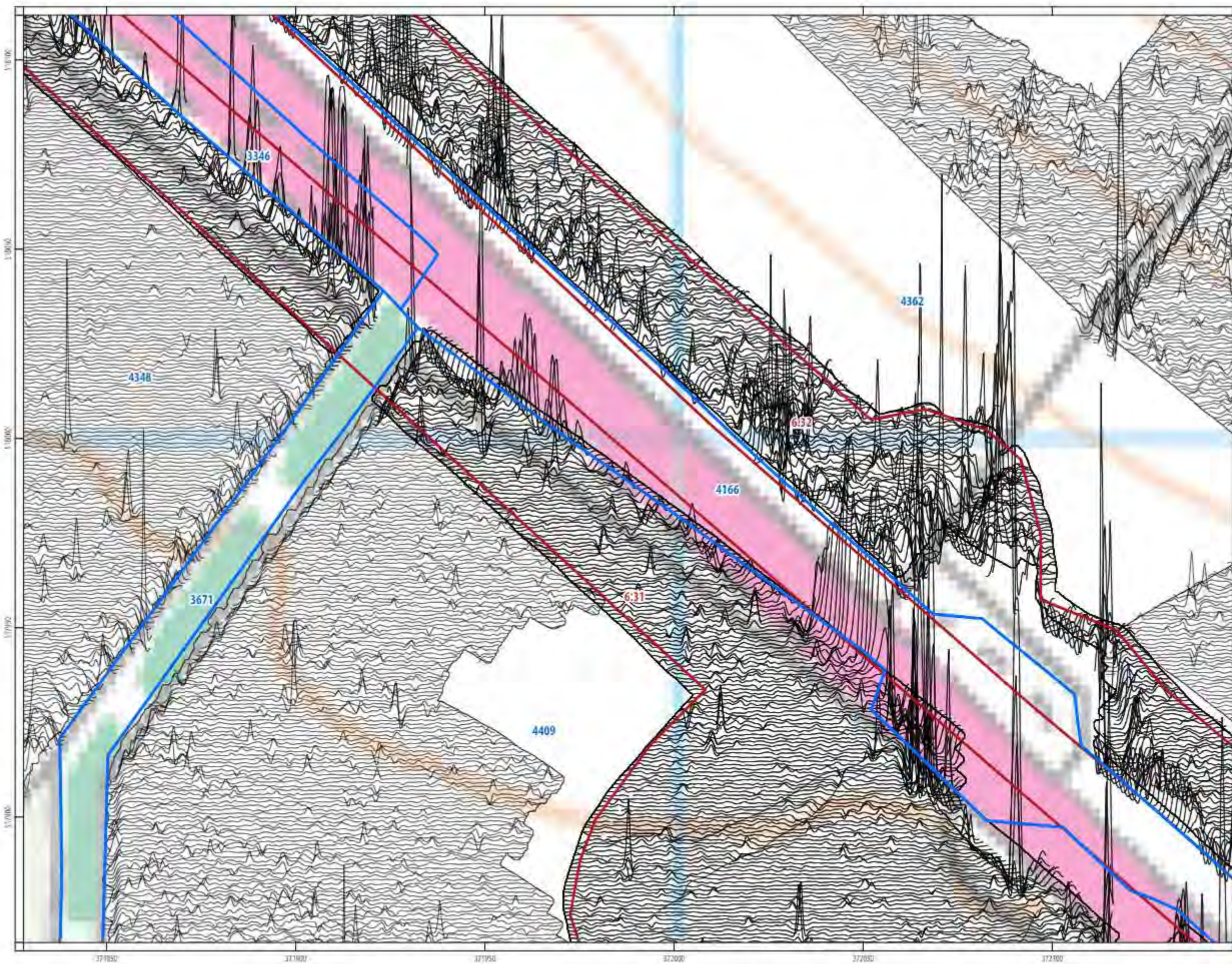
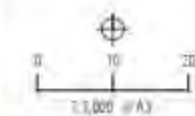
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- Selected Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



171850 171900 171950 172000 172050 172100

ILLUS 281 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



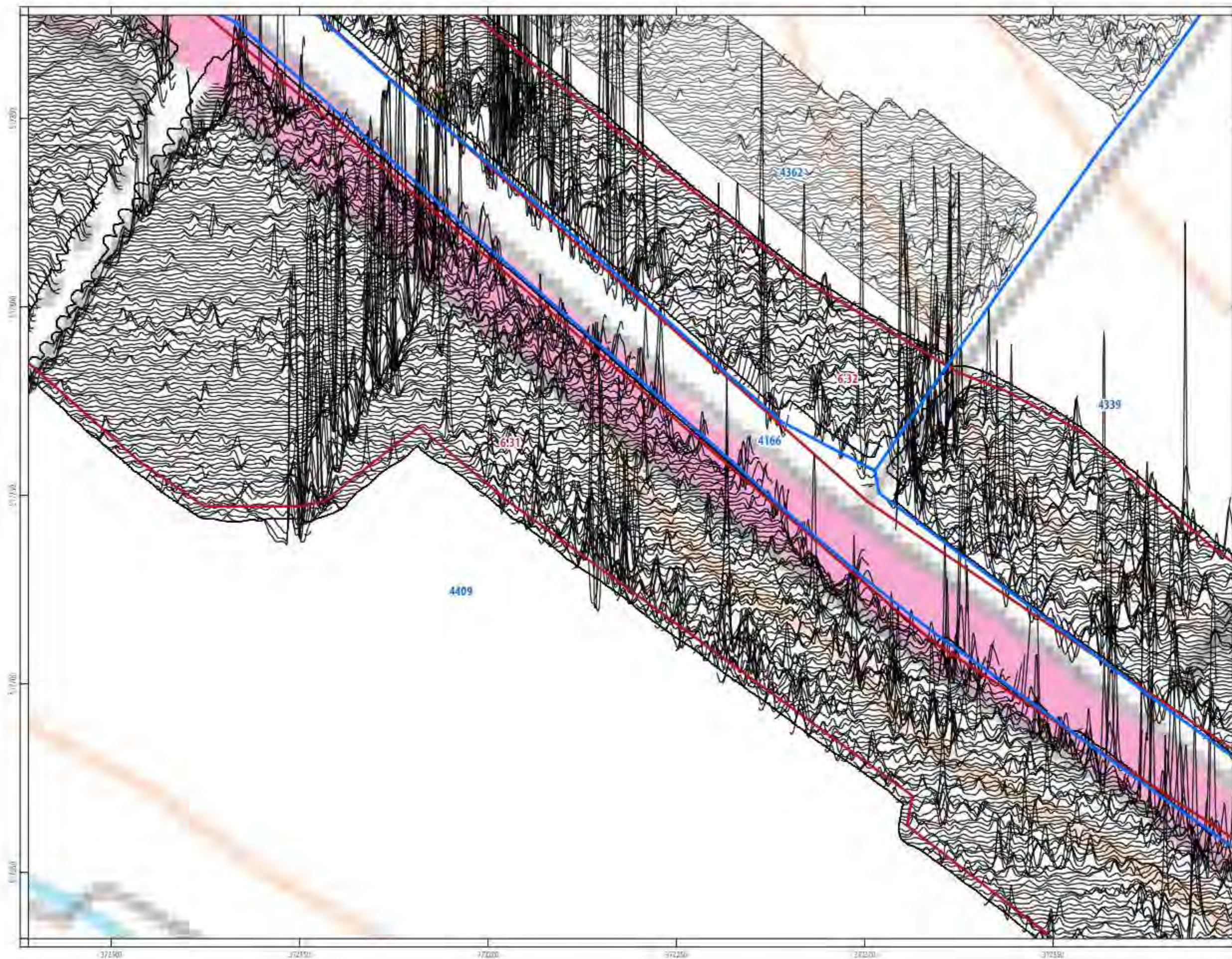
-  Phase 1 (Unearthed) Survey Area
-  Phase 2 (Excavated) Survey Area
-  County's and District's Boundaries
-  1:1000 Contours
-  Section of Management

**PROJECT**

A17120 - A66 Transport Improvement

**CLIENT**

Highways England



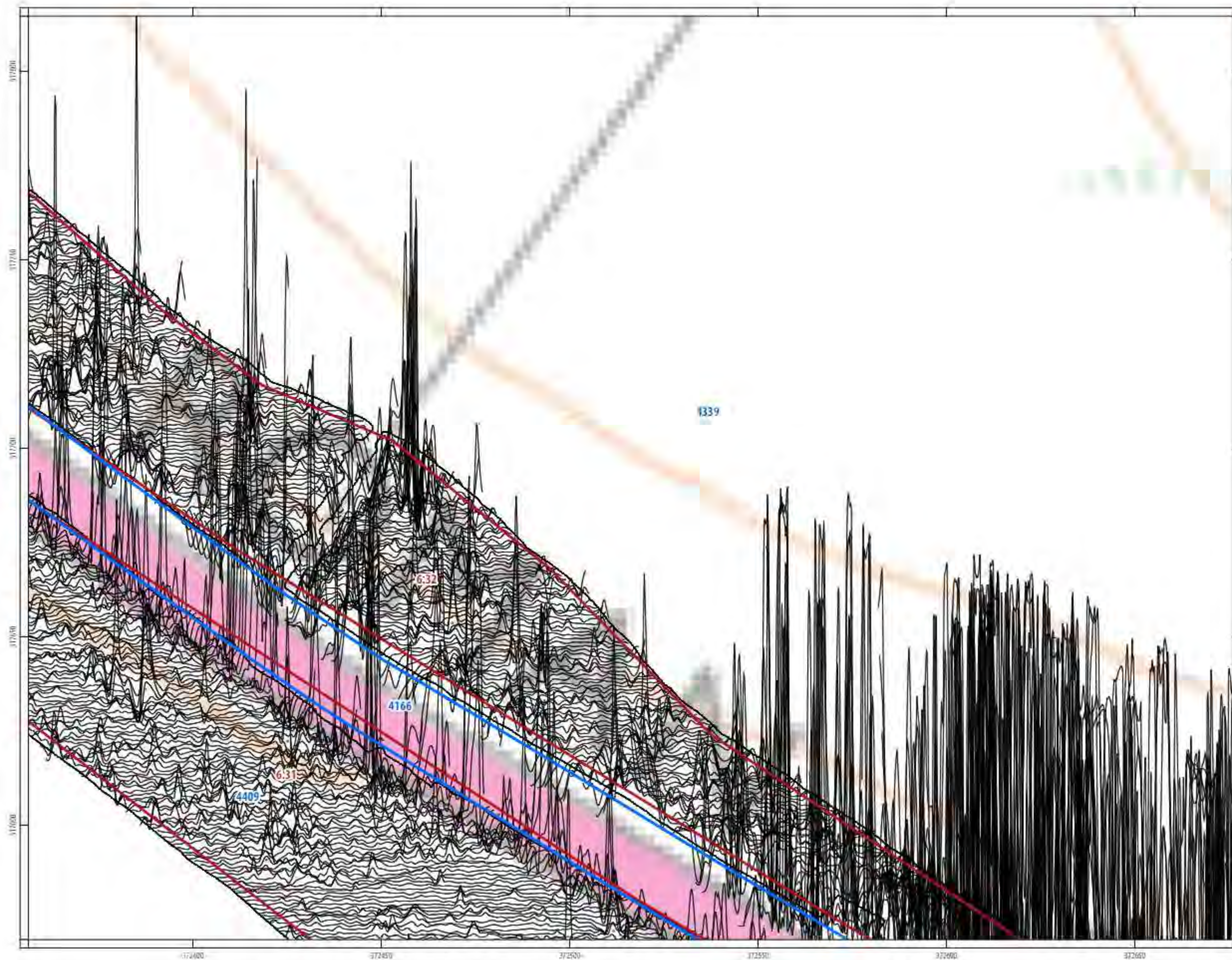
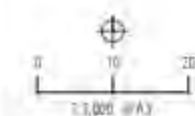
ILLUS 282 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



-  Trace 1 Geophysical Survey Area
-  Trace 2 Geophysical Survey Area
-  Geophysical survey Line 4
-  XY Coordinates
-  Scheduled Monument

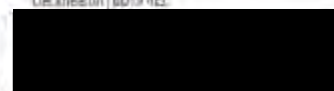
**PROJECT**  
A1620 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 283 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





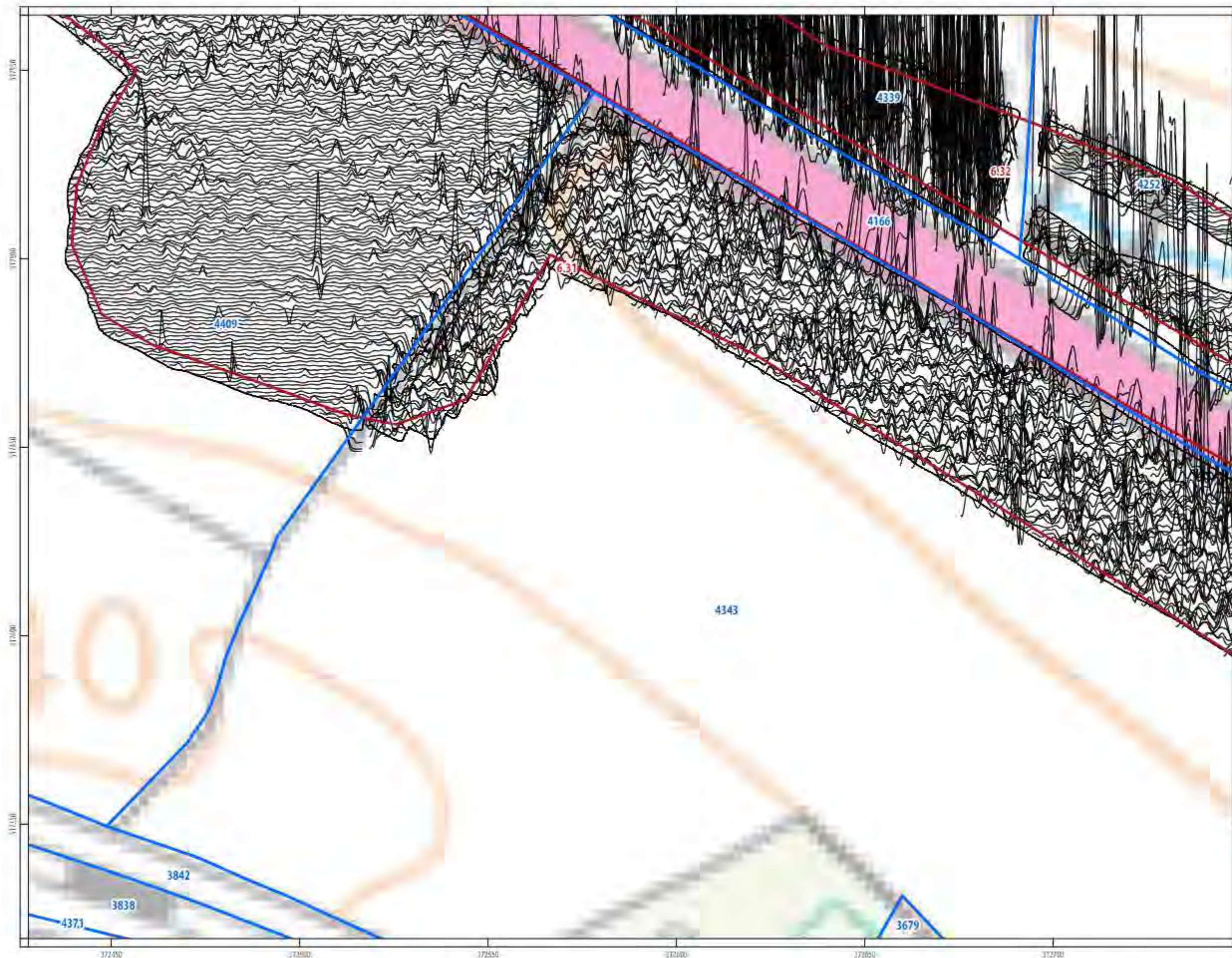
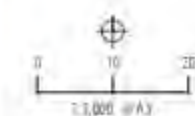
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line
- XY Grid Lines
- Selected Monument

**PROJECT**

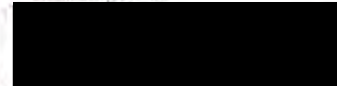
A17U20 - A66 Transpennine Upgrade

**CLIENT**

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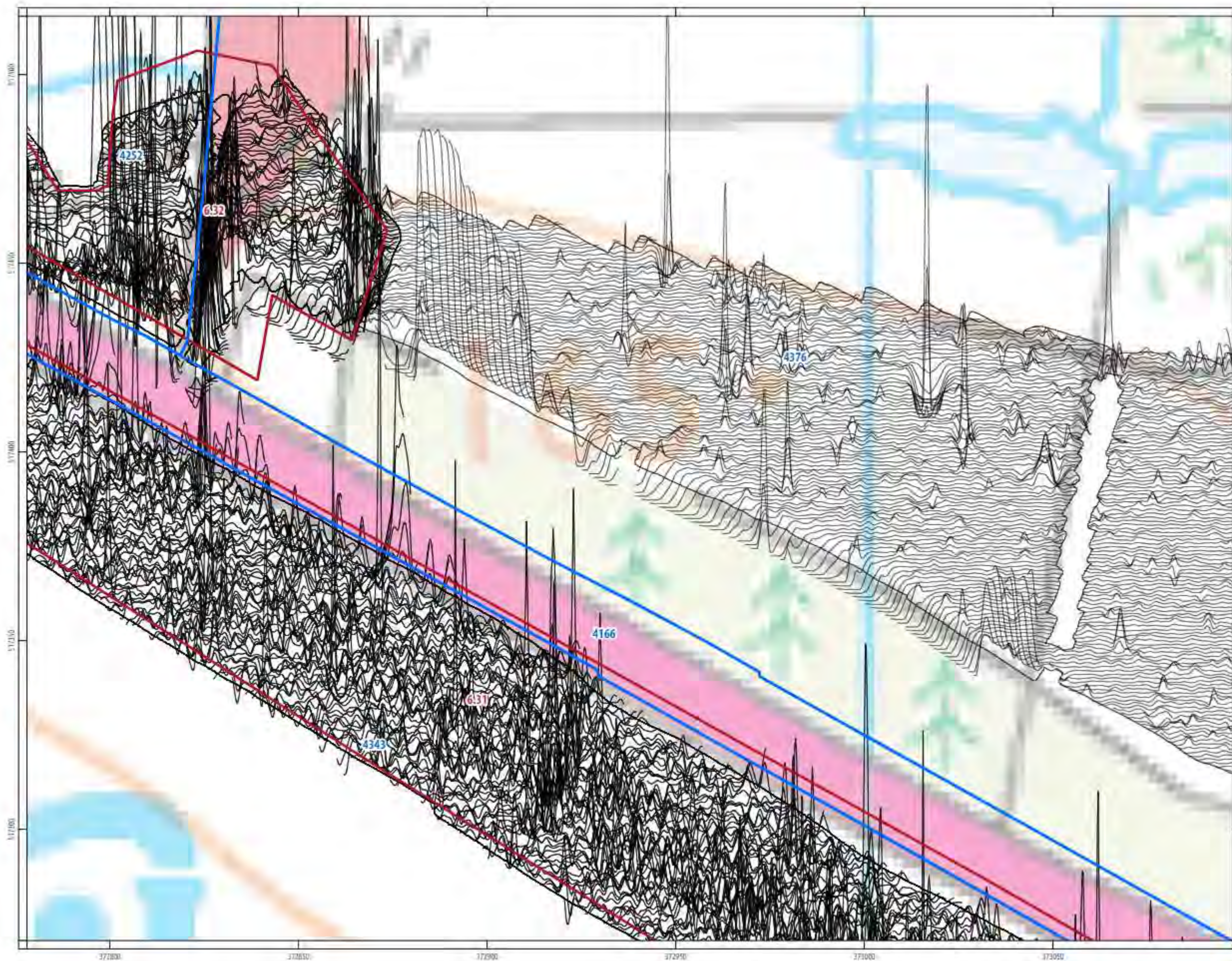
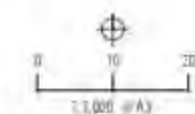
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

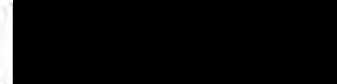
Highways England



372000 372500 373000 373500 374000 374500 375000

ILLUS 285 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





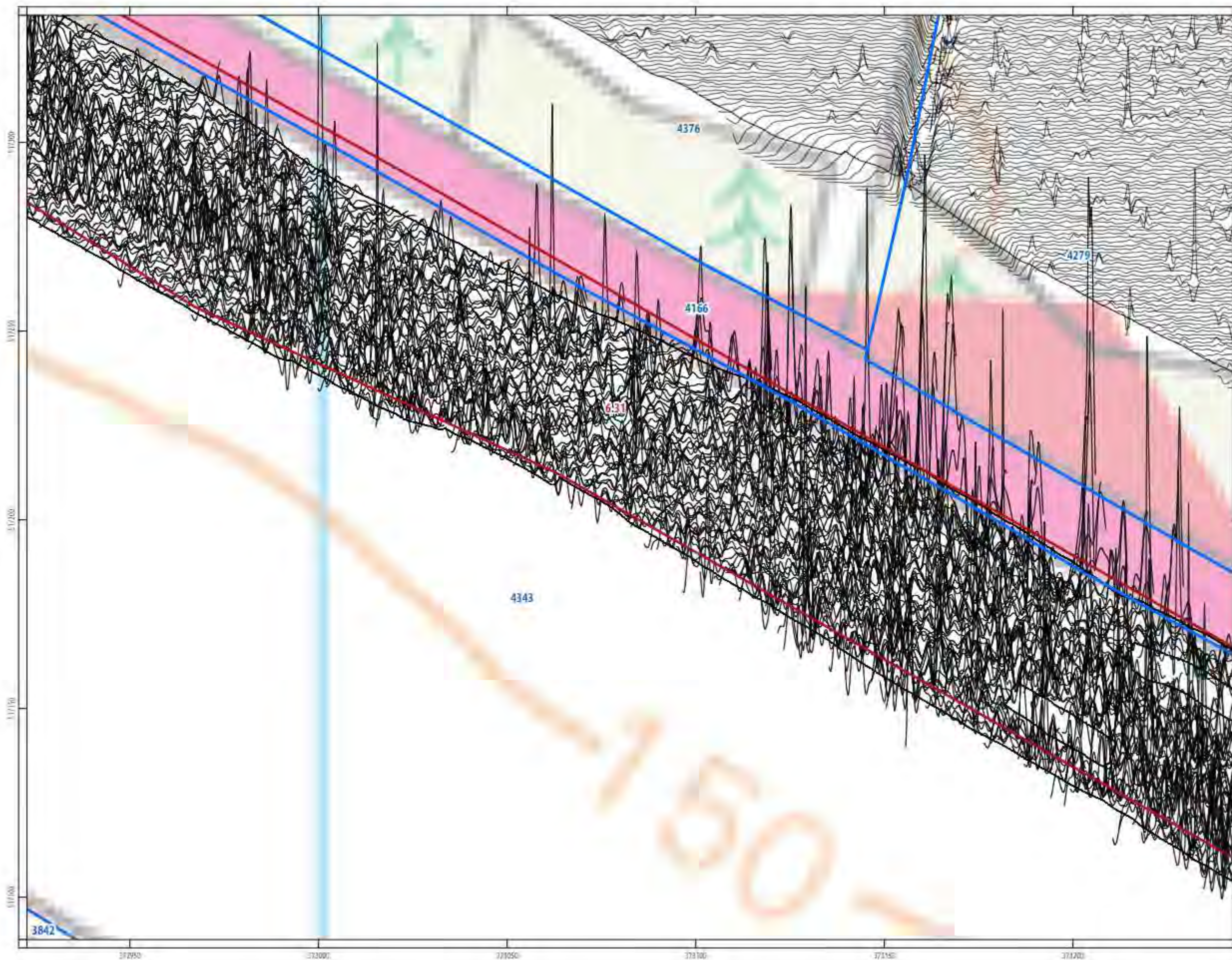
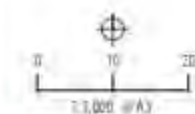
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line 1
- XY Coordinates
- Selected Monument

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**

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ILLUS 286 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



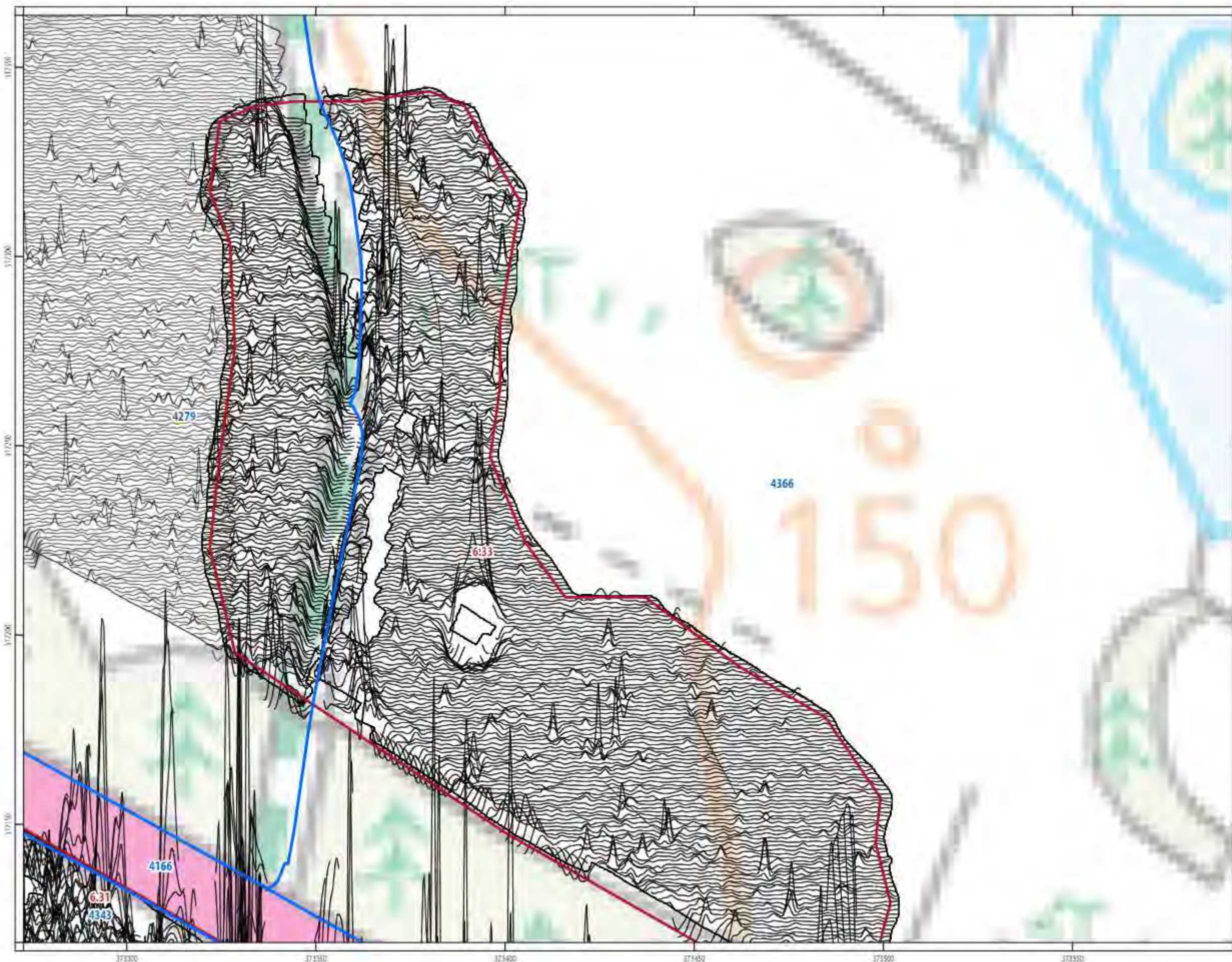
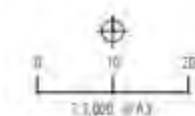
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
-  Geophysical survey line
-  XY Grid Line
-  Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

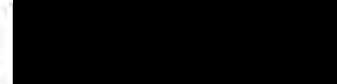
**CLIENT**

Highways England



ILLUS 287 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)

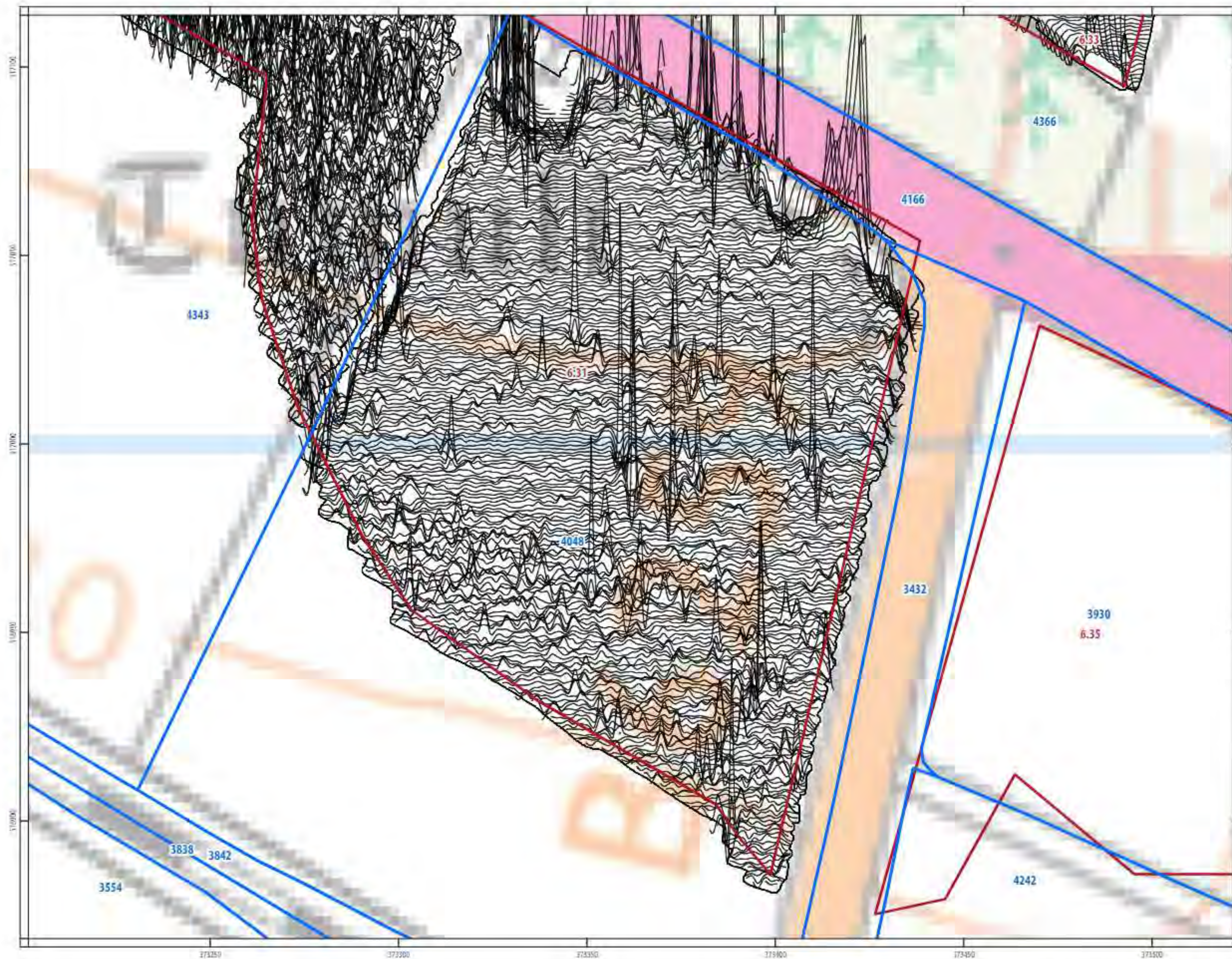
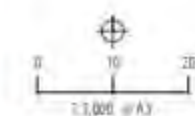




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY Grid Lines
- Scheduled Monument

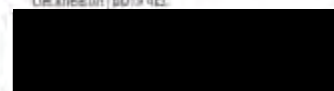
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 288 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





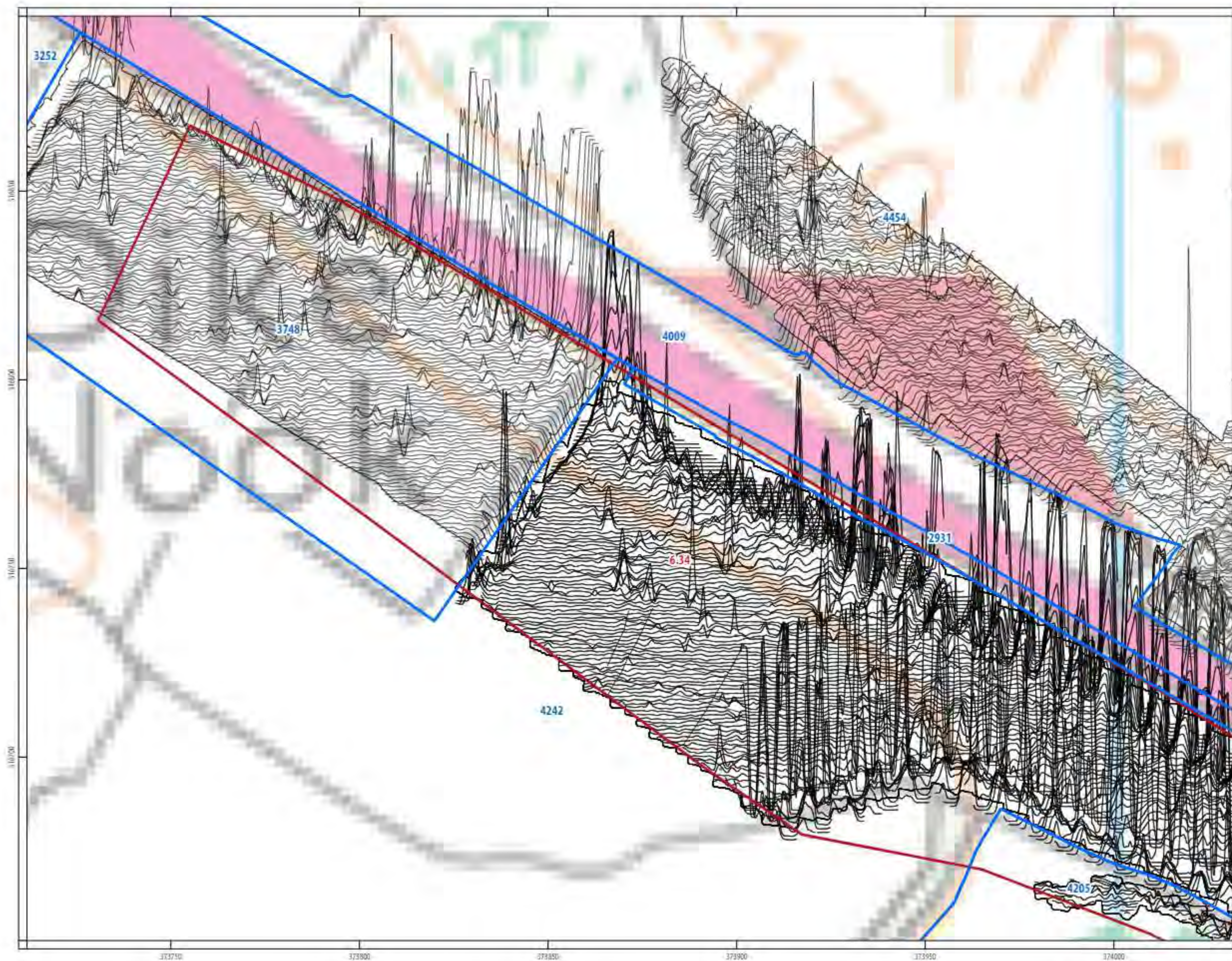
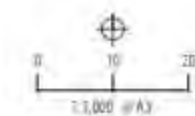
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (Data) Line
- ⊗ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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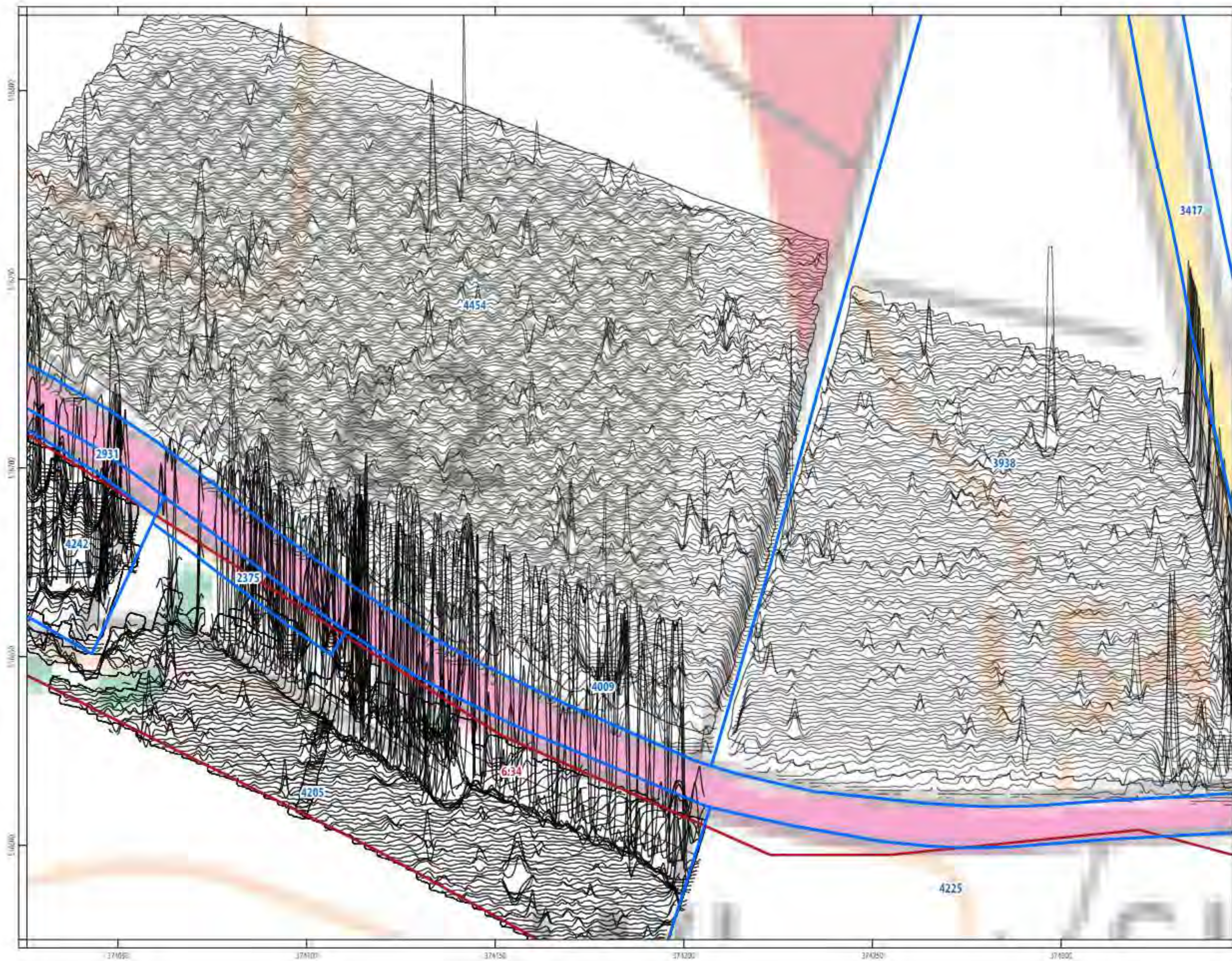


ILLUS 289 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Line 1
- ▭ XY Grid Lines
- ▭ Scheduled Monument

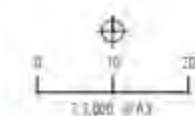


**PROJECT**

AFTU20 - A66 Transpennine Upgrade

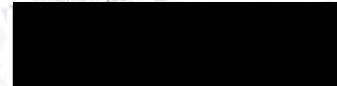
**CLIENT**

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ILLUS 290 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





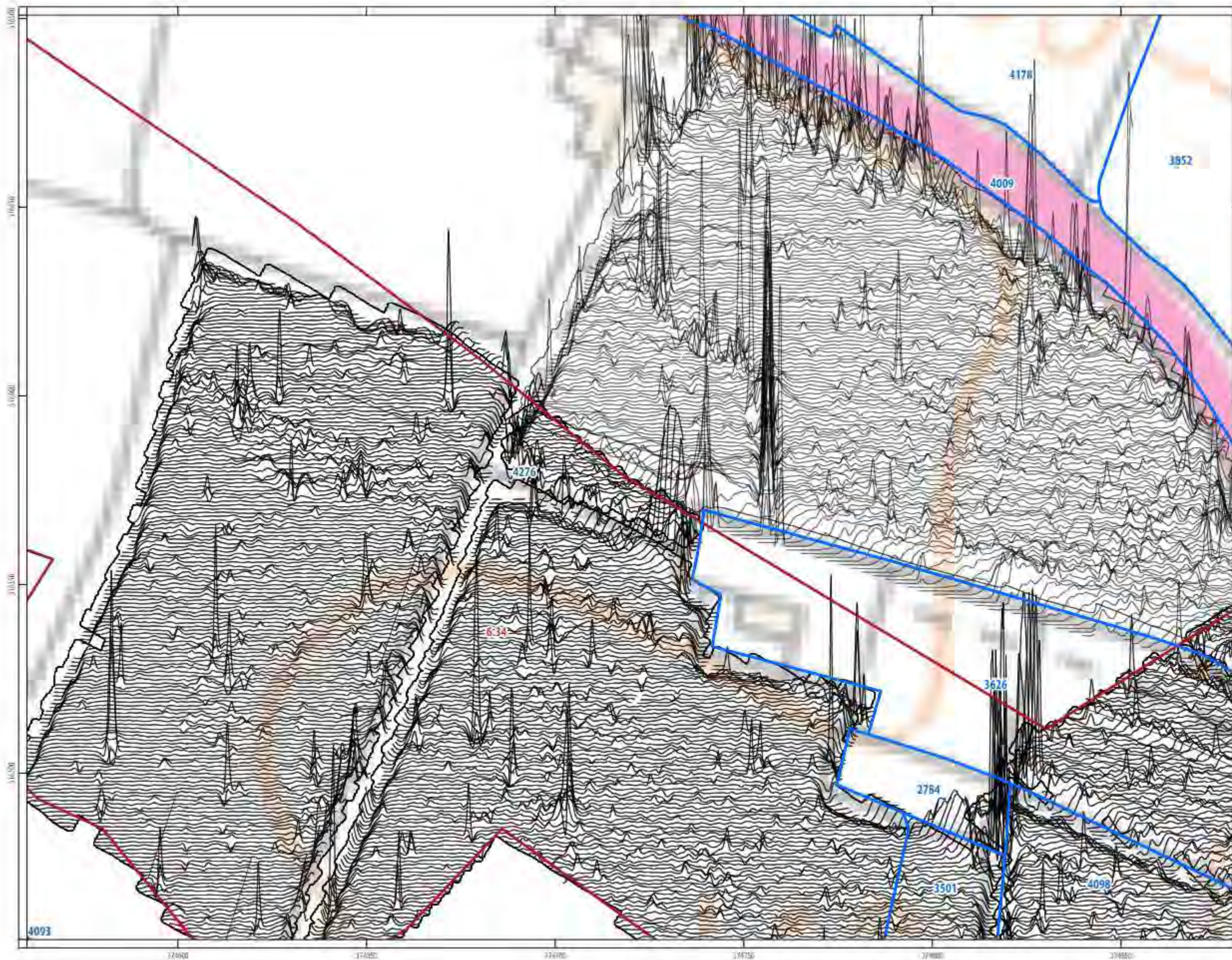
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- Geophysical Survey Line 2
- Section Management

**PROJECT**

A17120 - A66 Transport Upgrade

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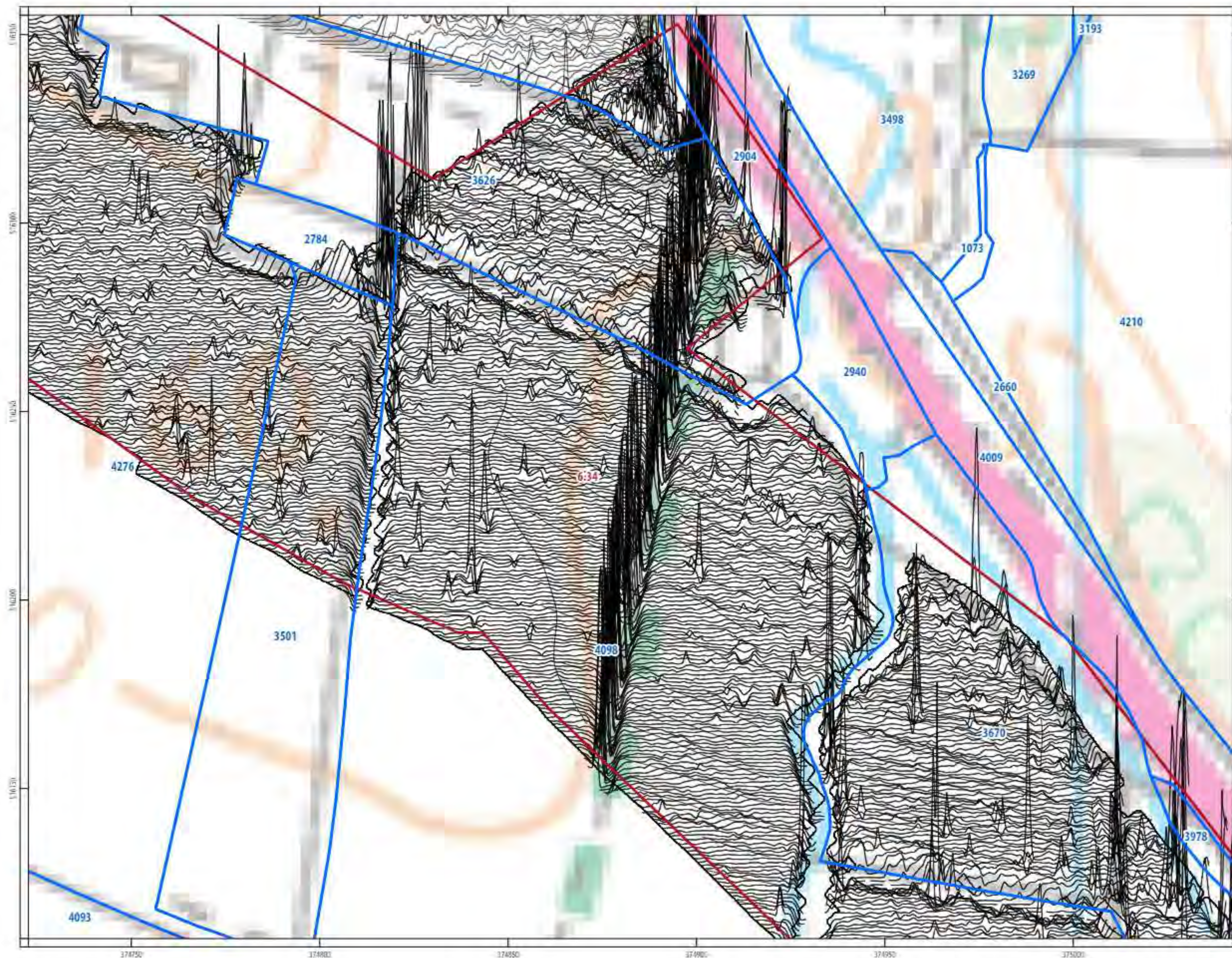
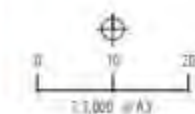
ILLUS 291 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m Easement)
- ⊕ Scheduled Monument

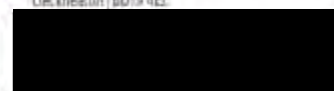
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 292 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





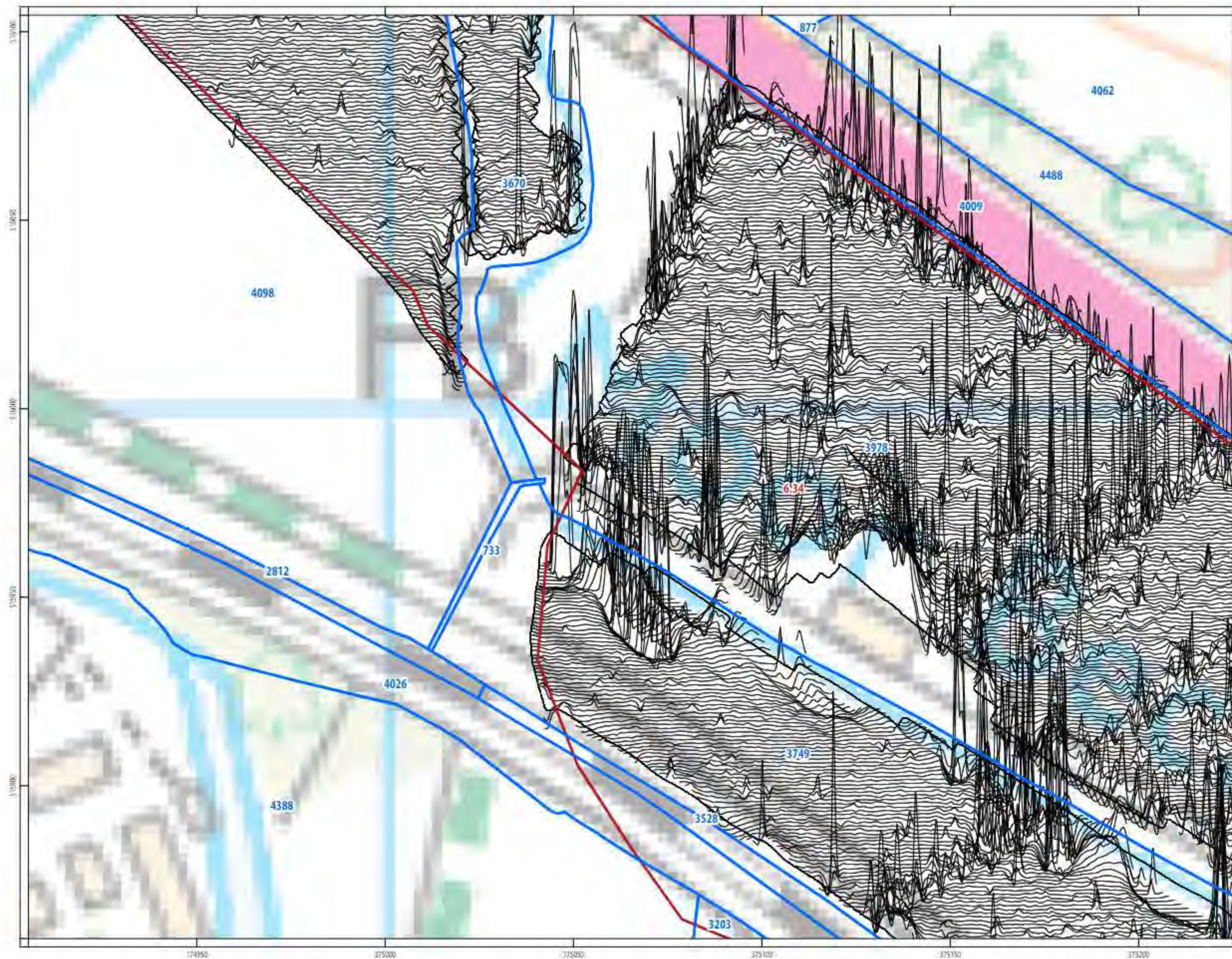
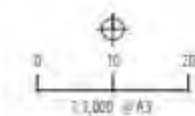
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 293 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)

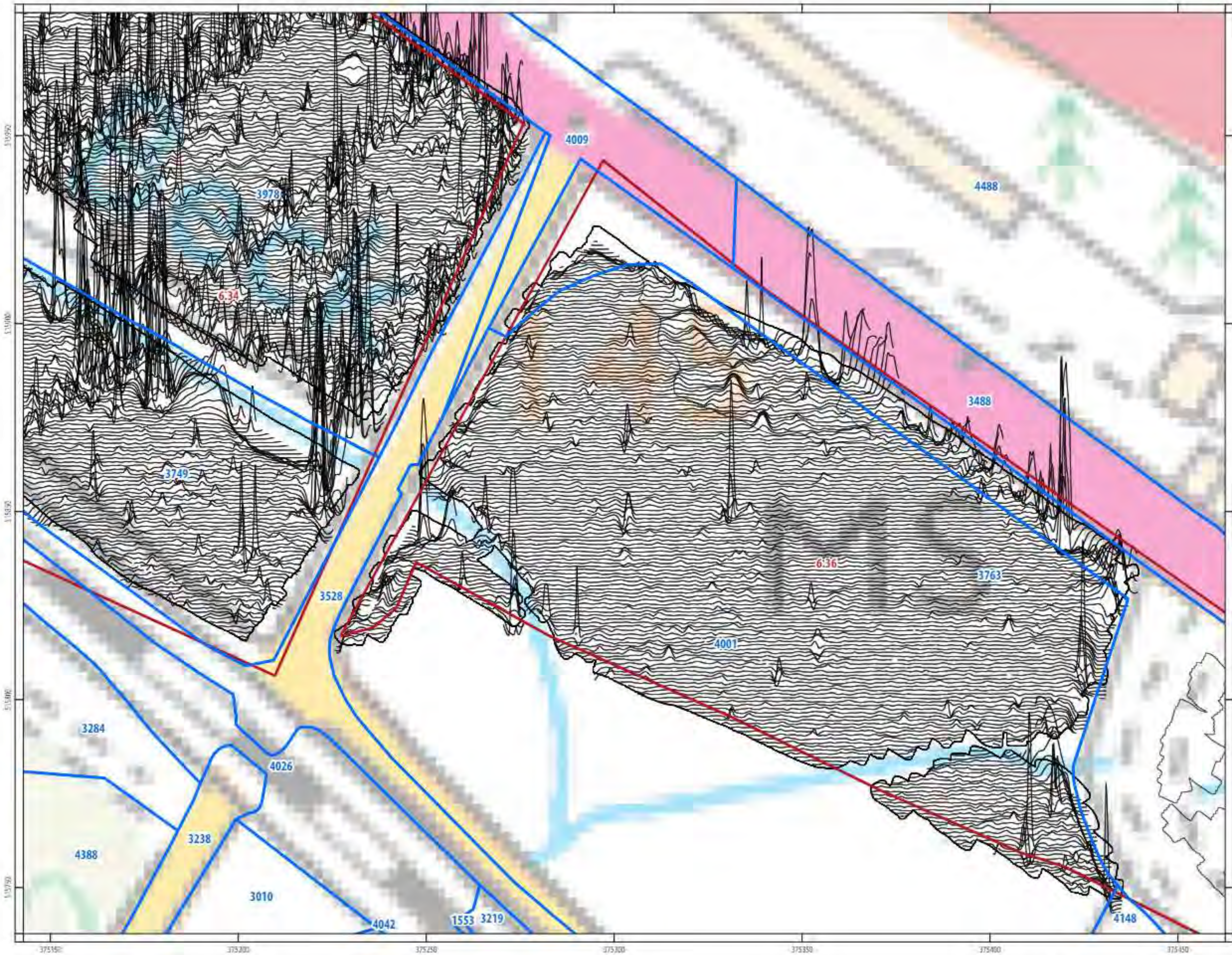




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- Scheduled Monument

**PROJECT**  
A17U20 - A66 Transpennine Upgrade

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Highways England



ILLUS 294 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



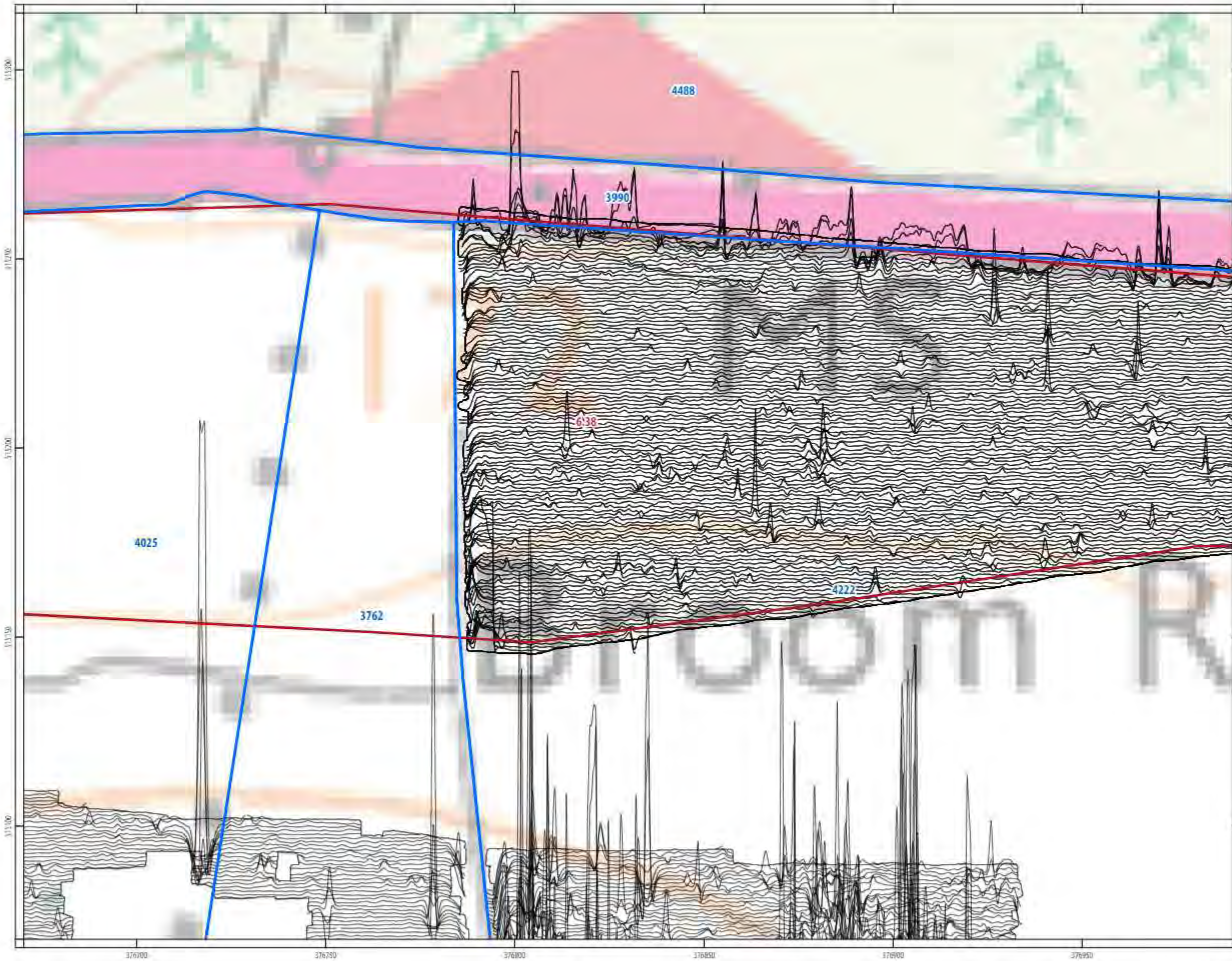
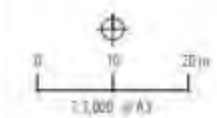
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY Grid Lines
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 295 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)





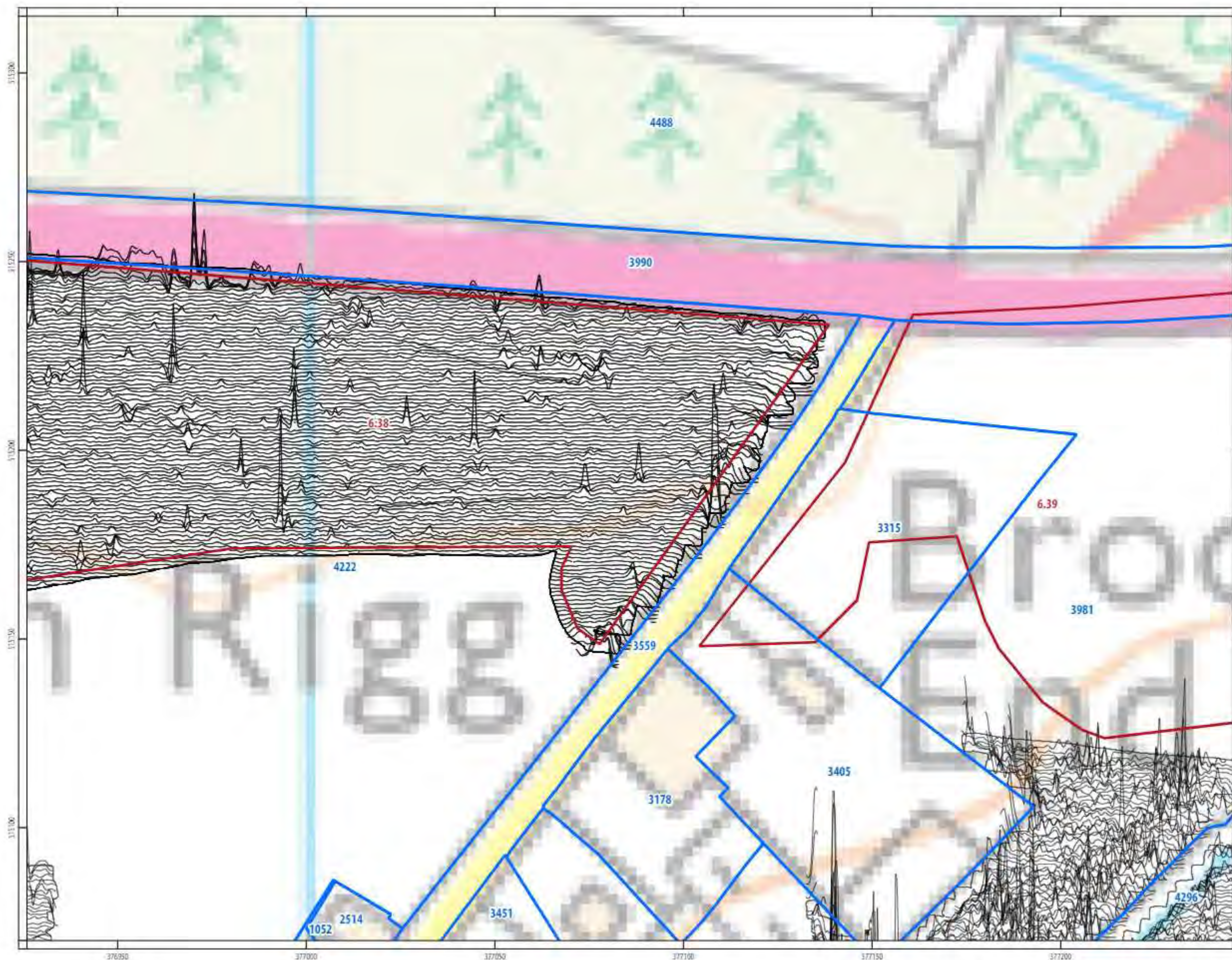
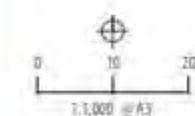
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m/cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



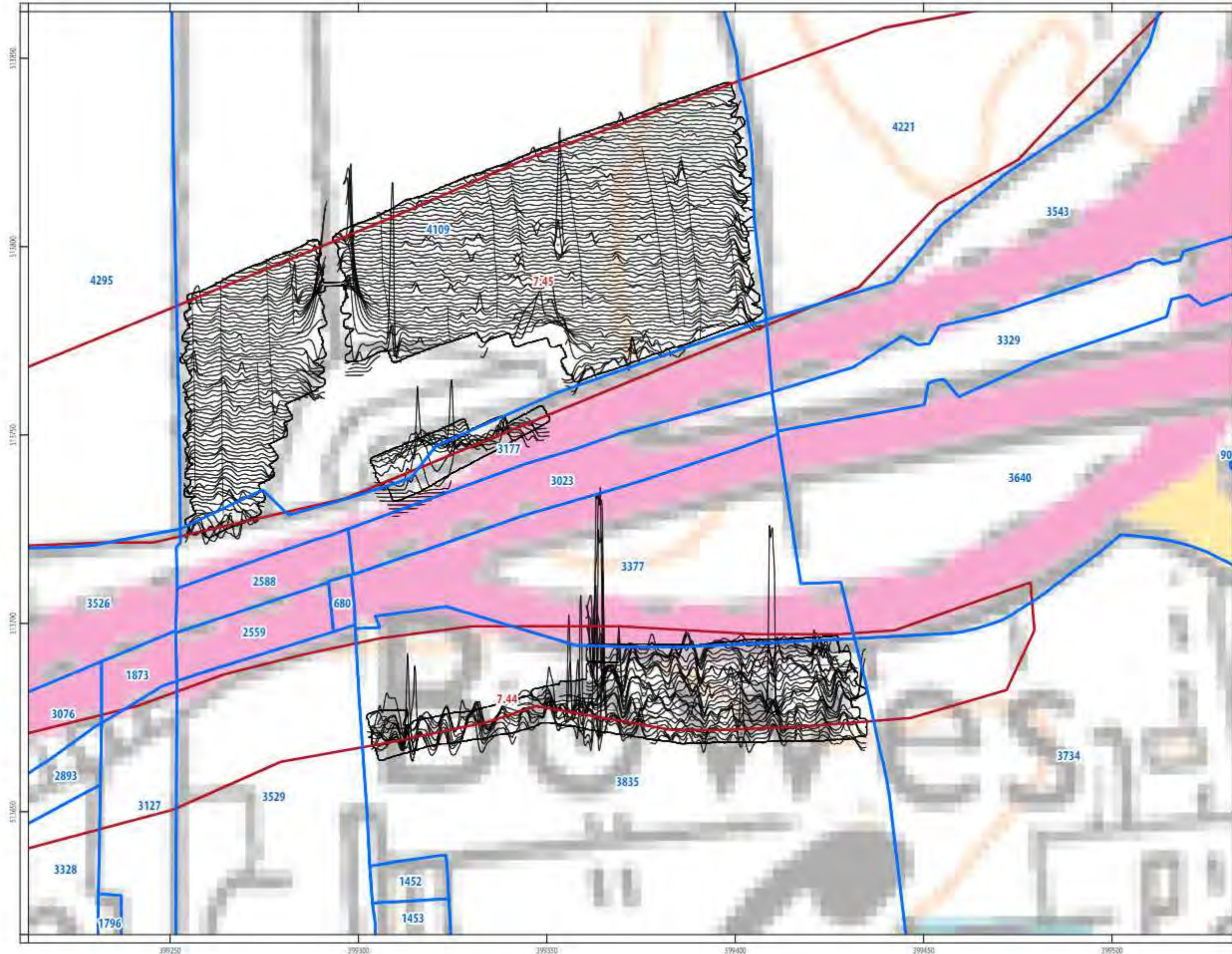
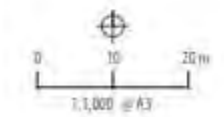
ILLUS 296 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Trace
- XY - 10m E/cm
- Scheduled Monument

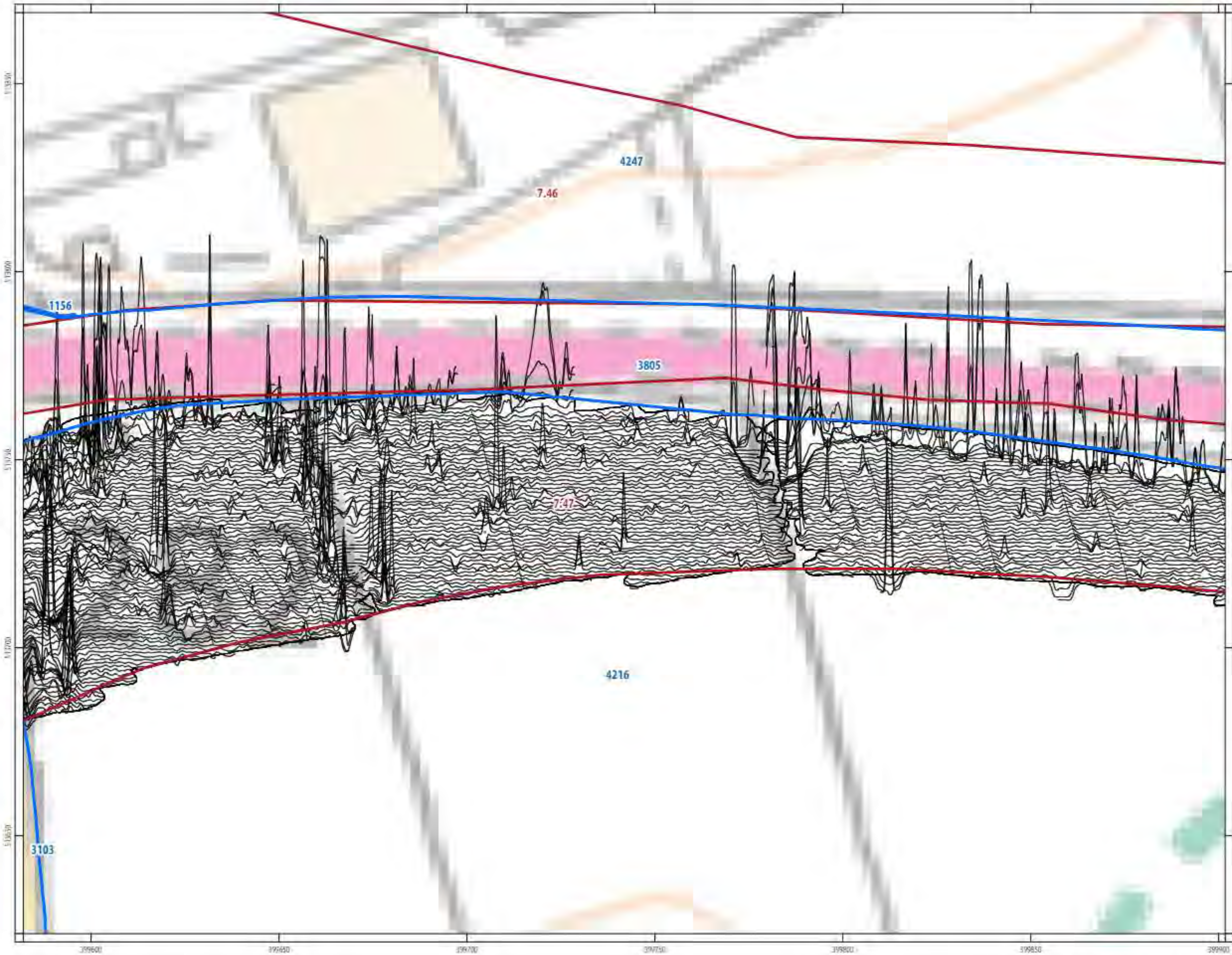
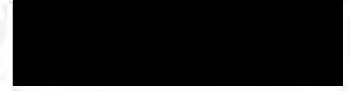
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 297 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical survey line
- XY Grid Line
- Scheduled Monument

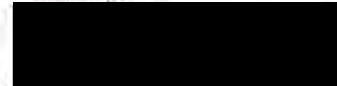
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



(ILLUS 298 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)

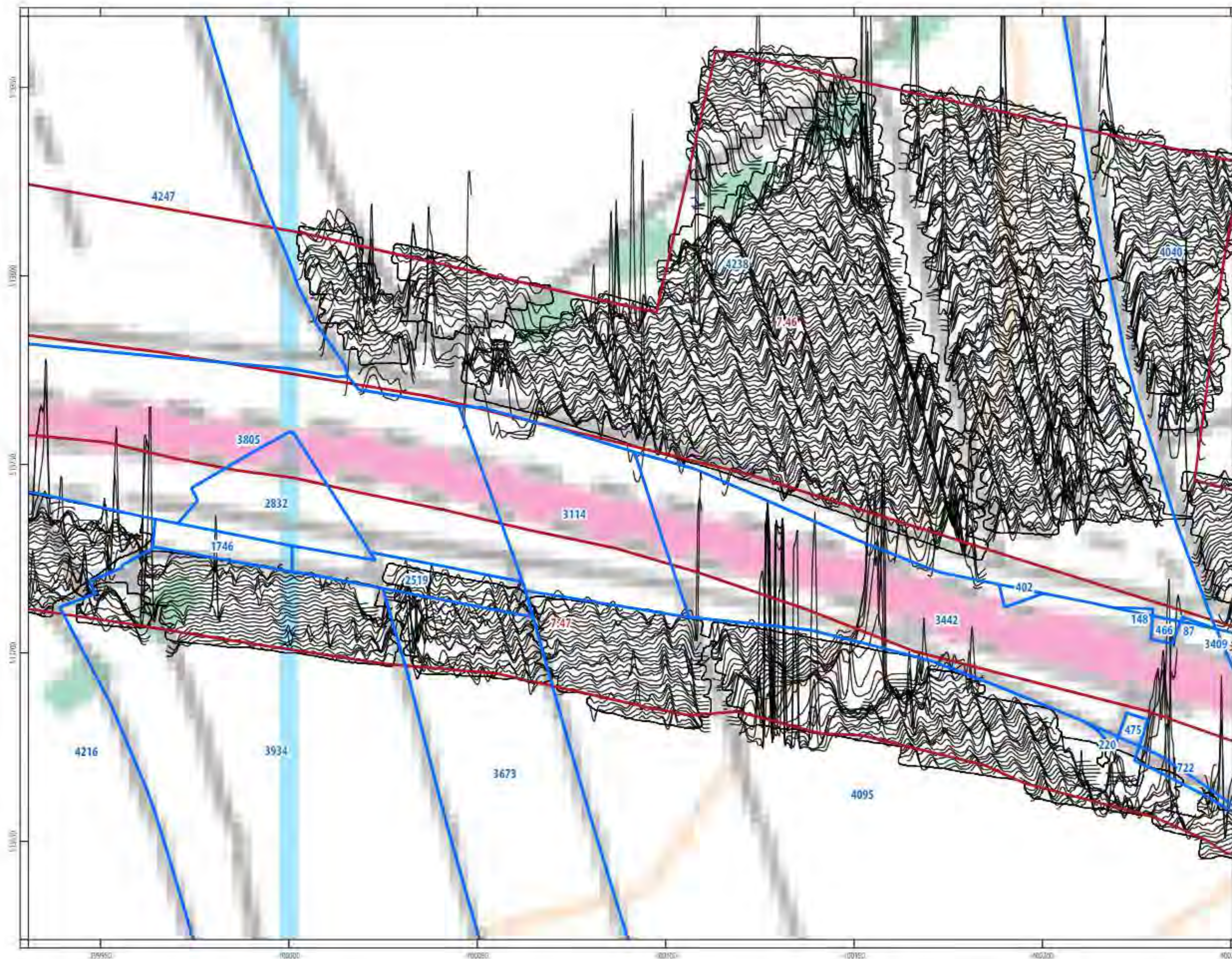
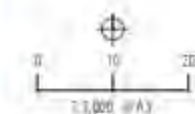




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 1
- XY Coordinates
- Sectional Measurement

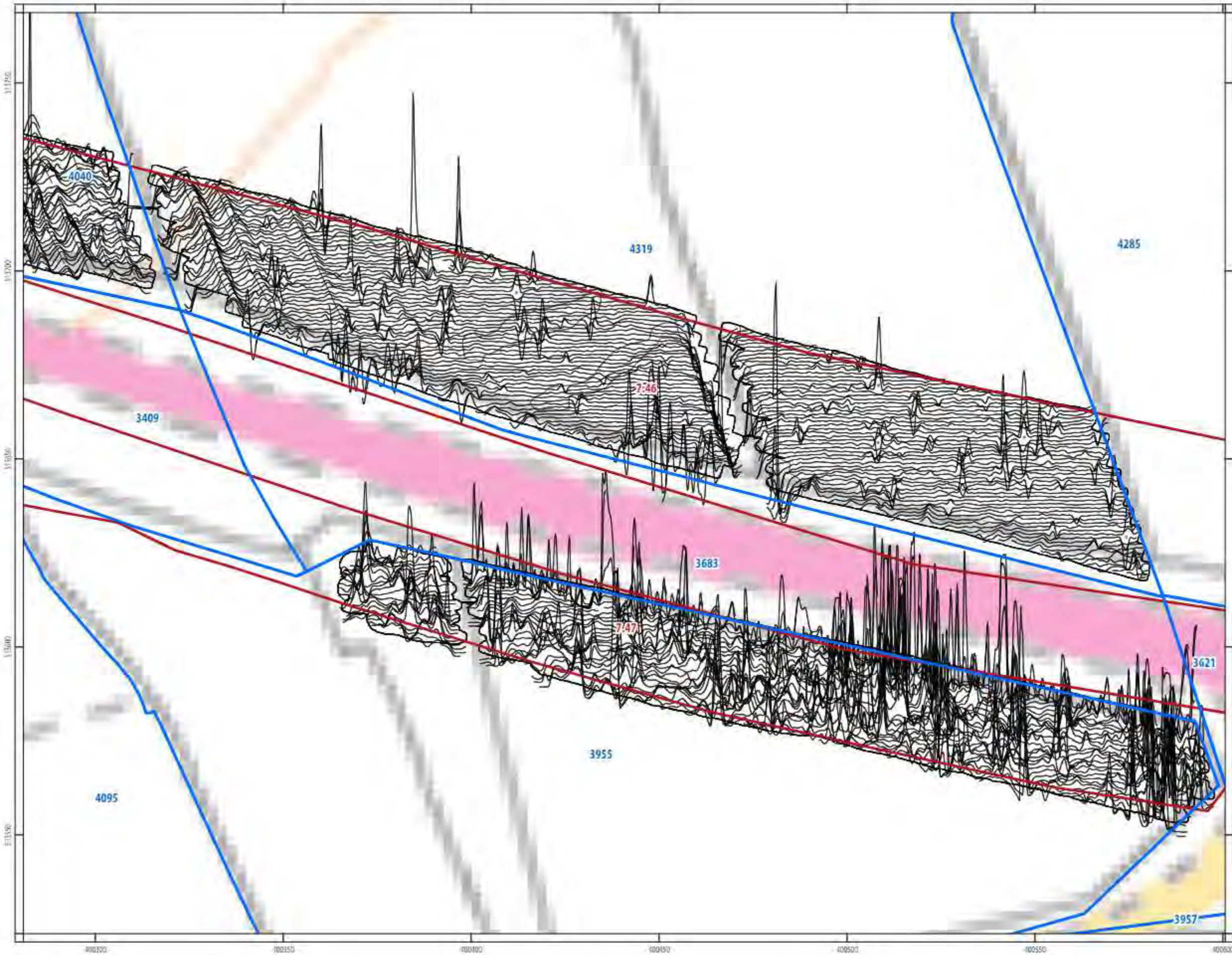
**PROJECT**  
ATF120 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 299 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- ⊕ Scheduled Monument

**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England

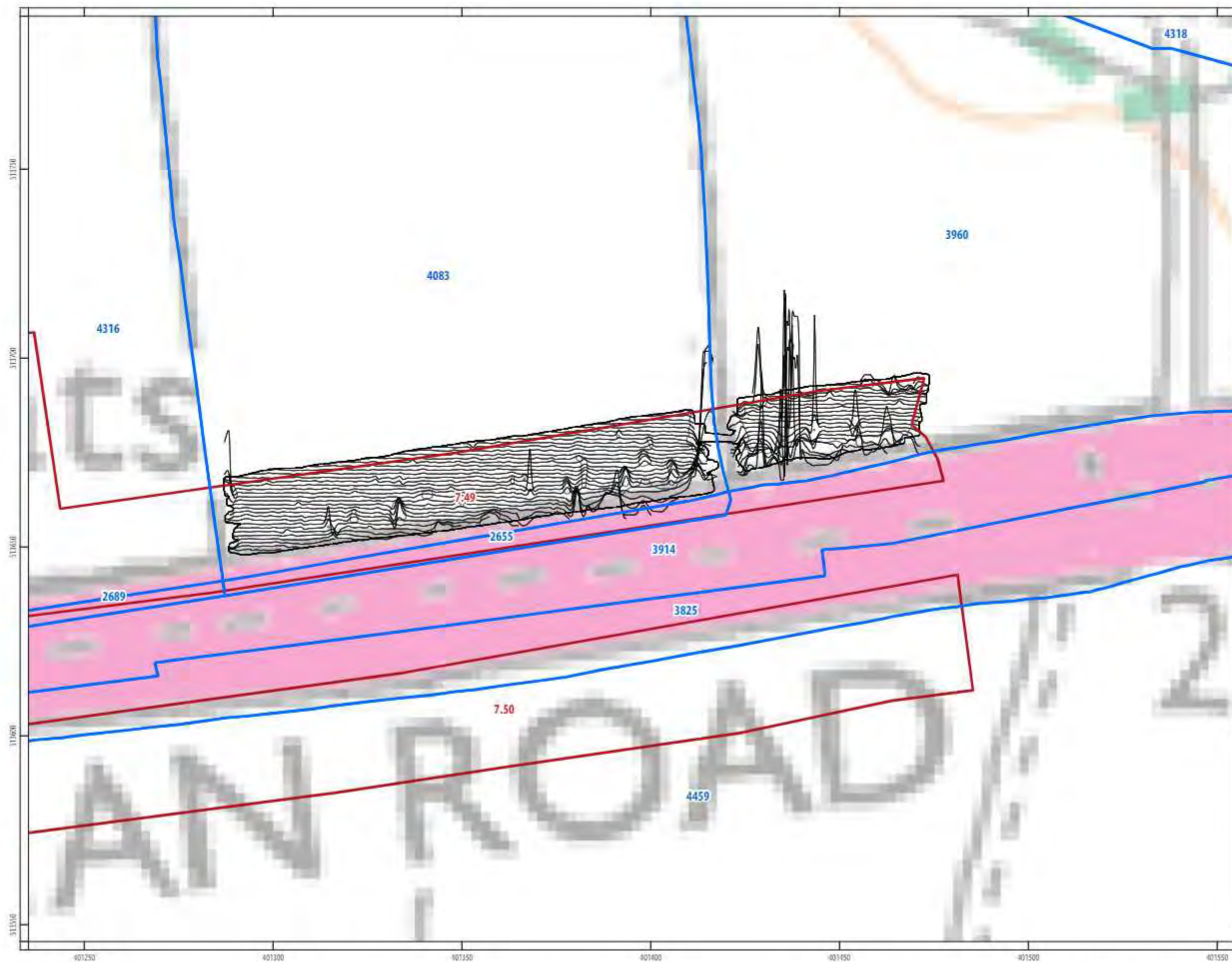


(LLUS 300) XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

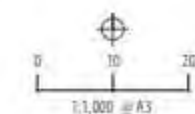


**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







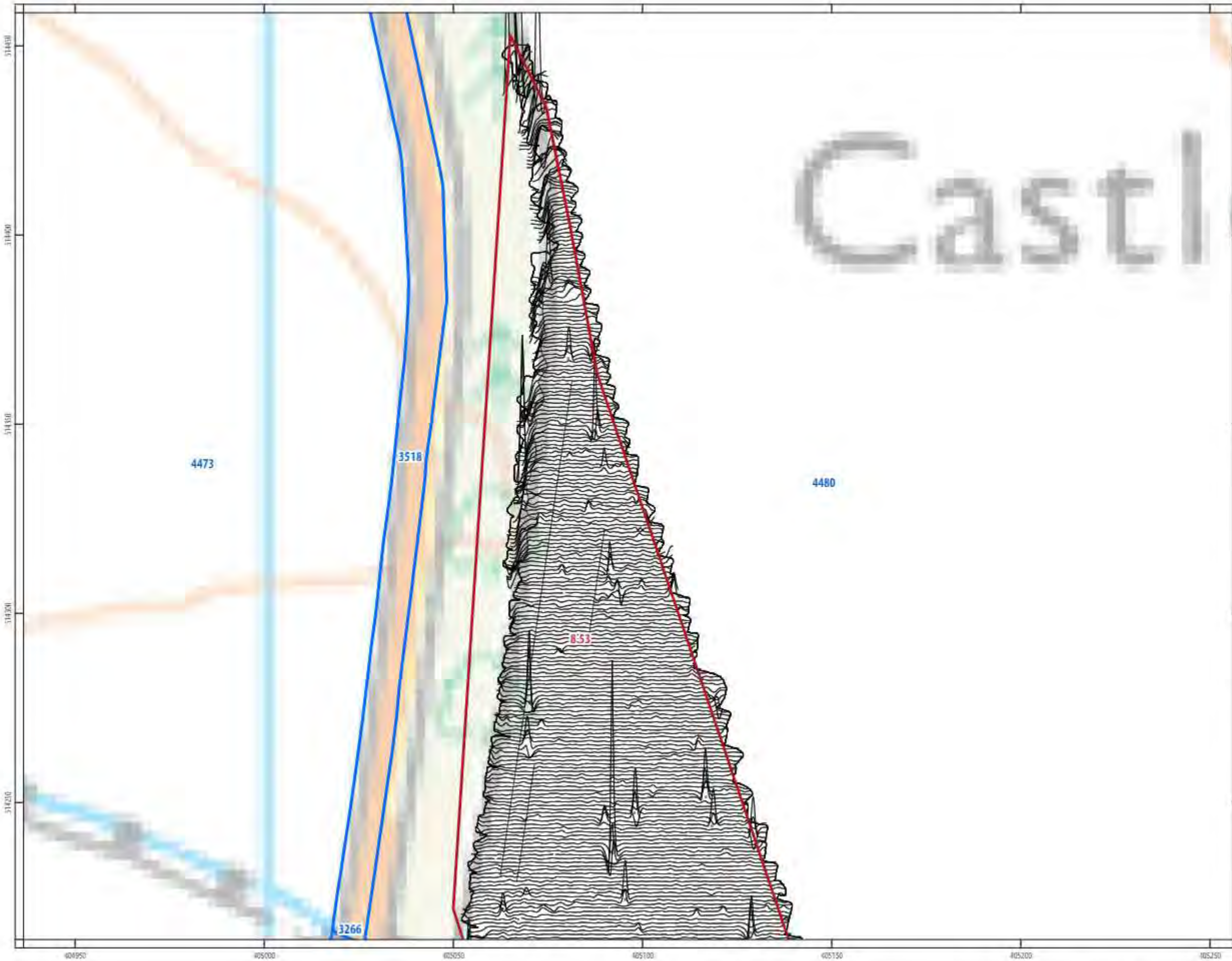
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m/10m
- ⊗ Scheduled Monument

**PROJECT**

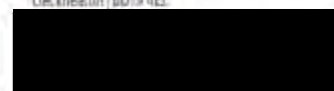
ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







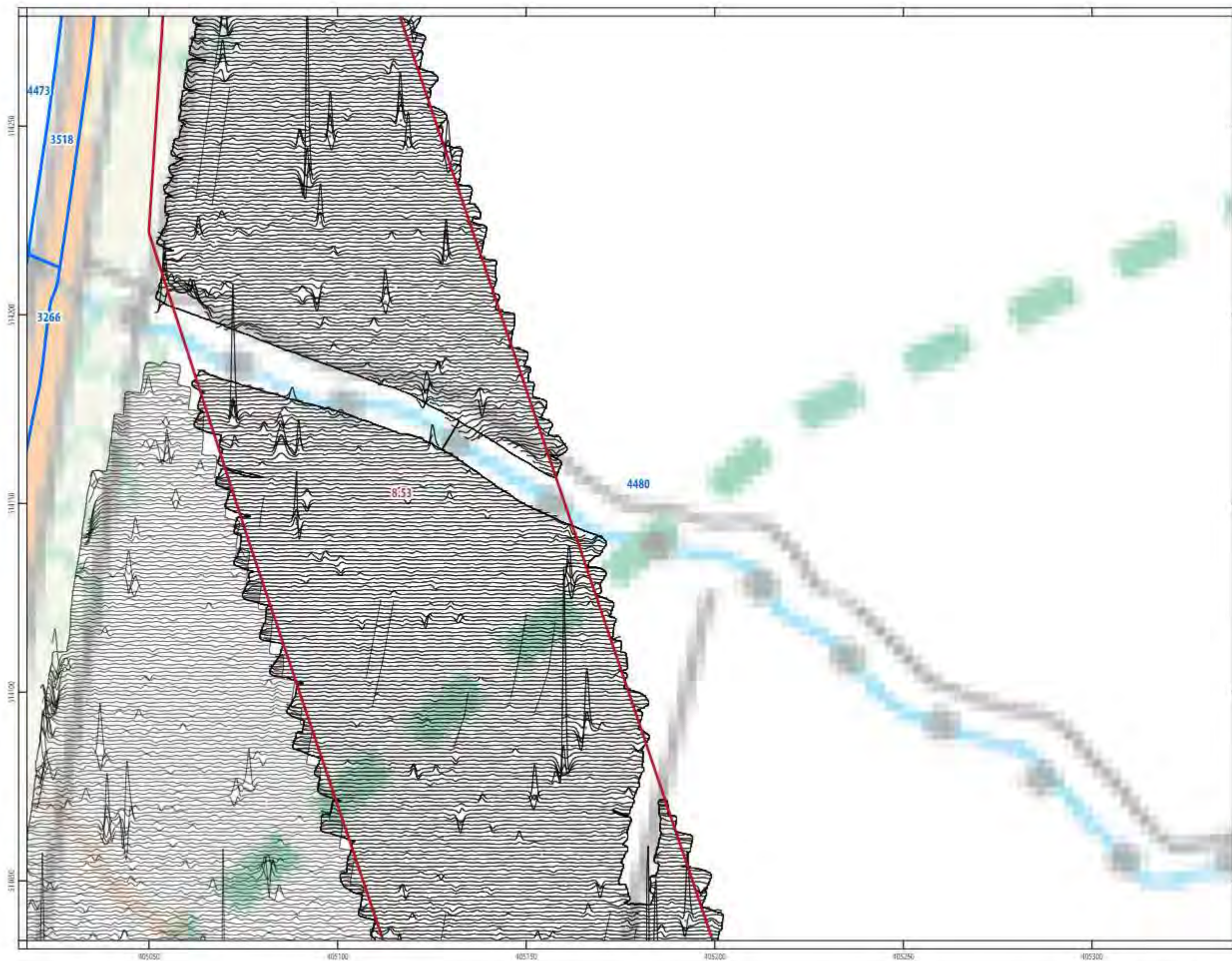
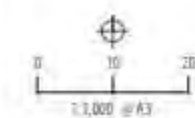
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (10m/10m)
- Scheduld Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 303 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



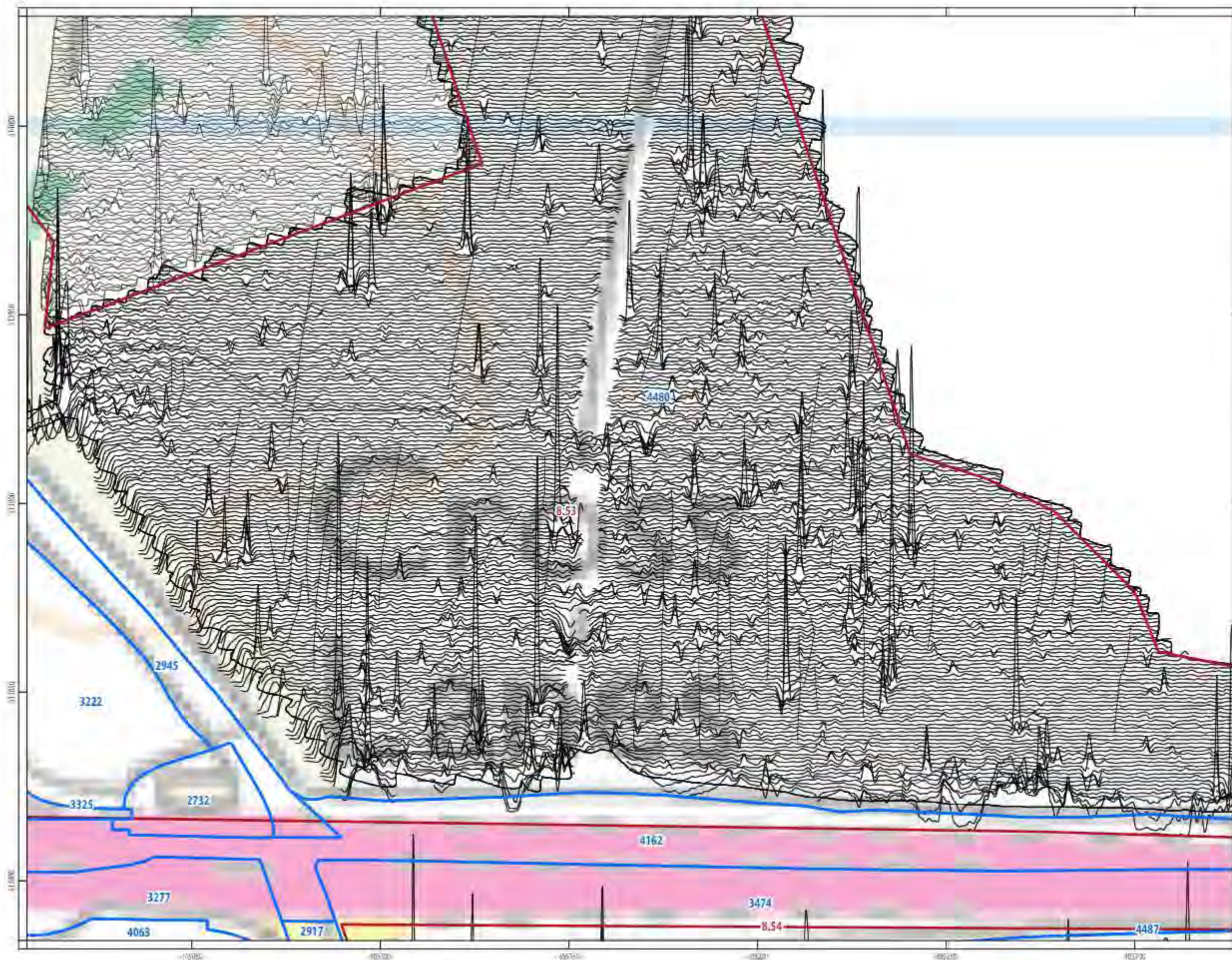
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Line 4
- ▭ XY Grid Lines
- ▭ Structures / Mounds

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 304 XY trace plot of minimally processed magnetometer data; Cross Lines to Rokeby

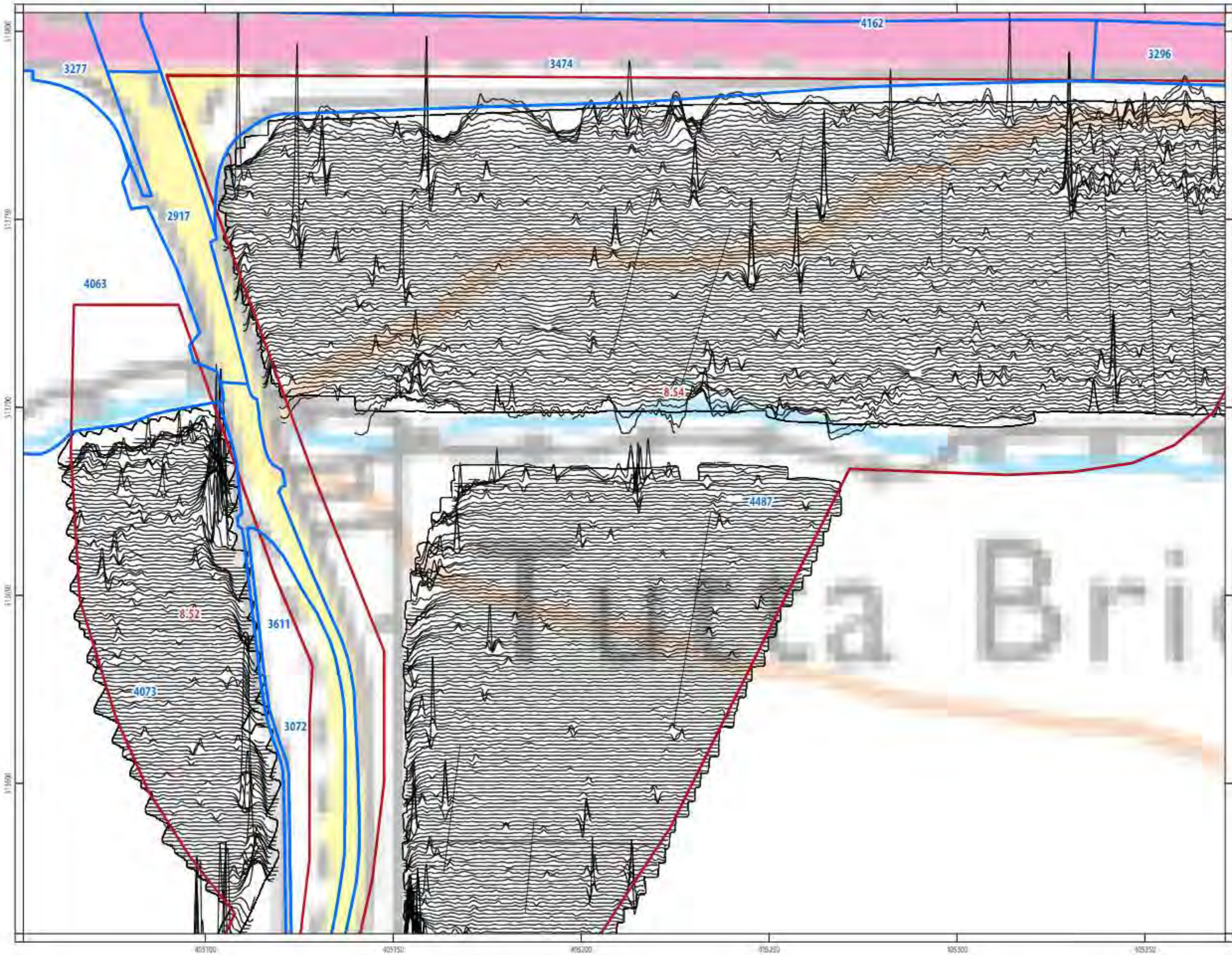




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Grid Lines
- ⊕ Scheduled Monument

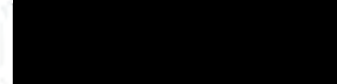
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 305 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby





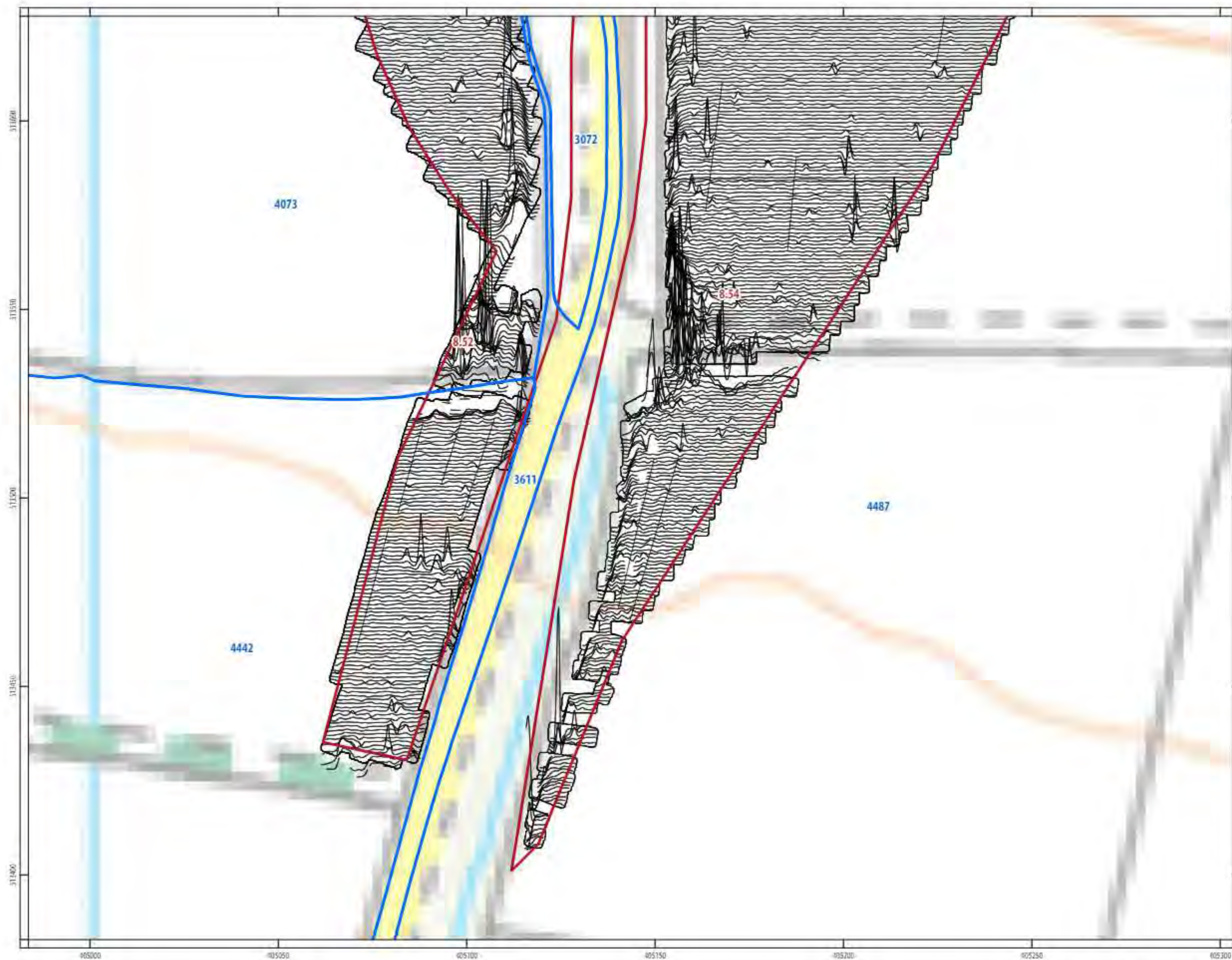
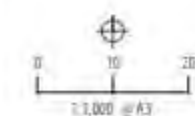
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- ⊕ Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England

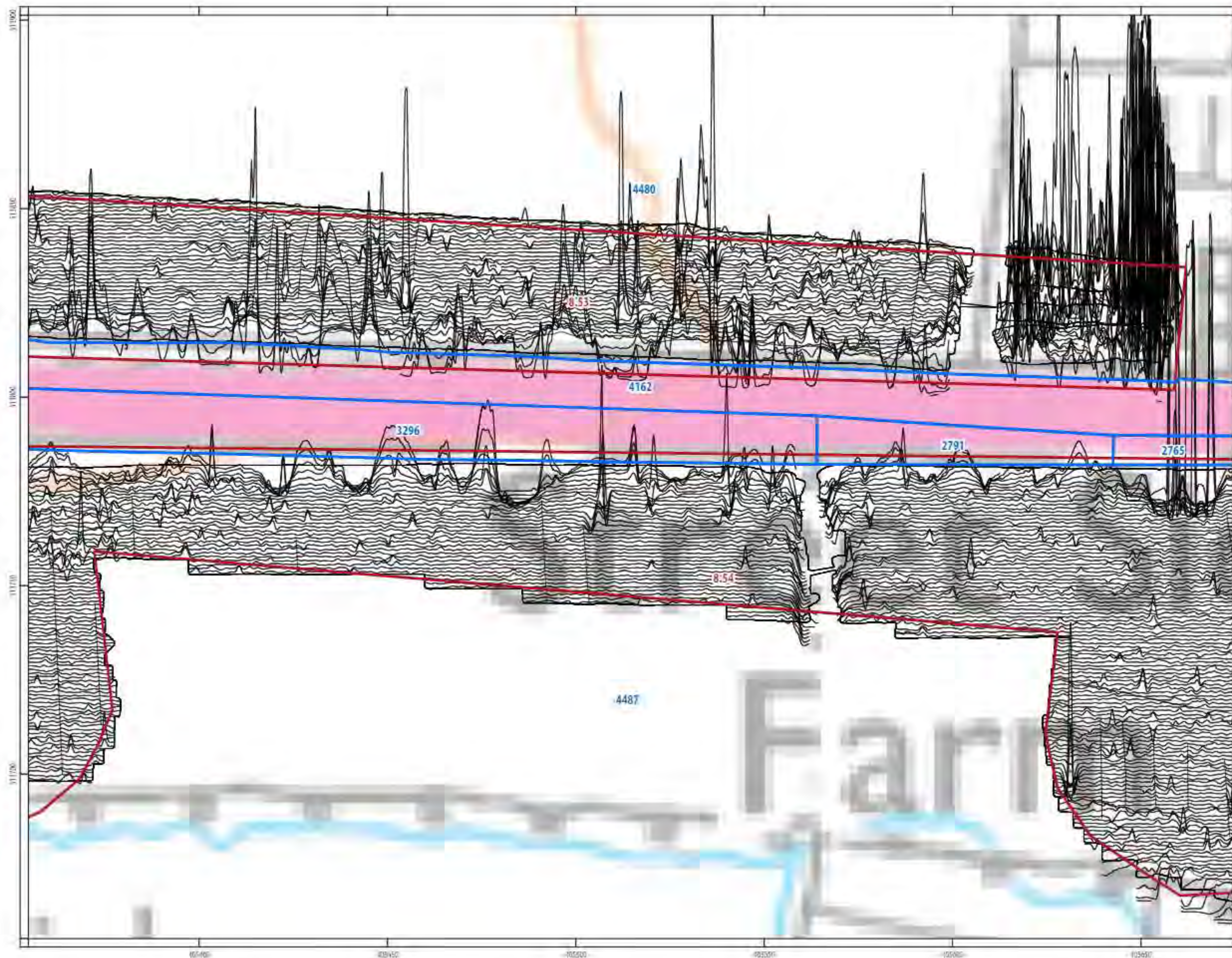


ILLUS 306 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line 4
- XY Orientation
- Sectional Measurement

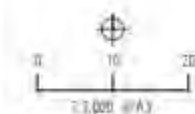


**PROJECT**

A1420 - A66 Transpennine Upgrade

**CLIENT**

Highways England





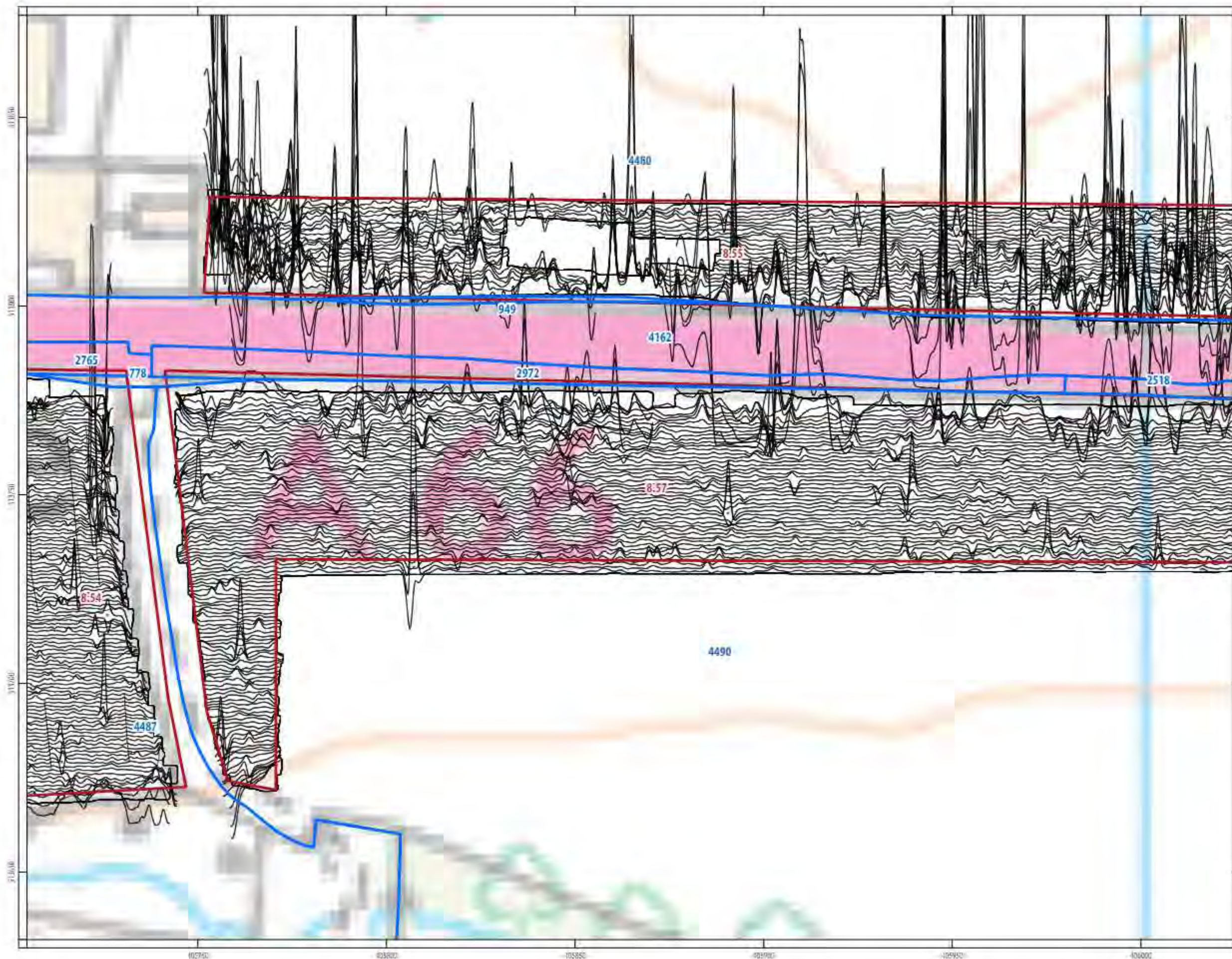
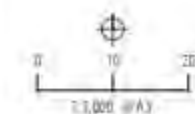
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line 1
- XY Coordinates
- ⊗ Selected Manurepit

**PROJECT**

A17U20 - A66 Transpennine Upgrade




**CLIENT**

Highways England



ILLUS 308 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



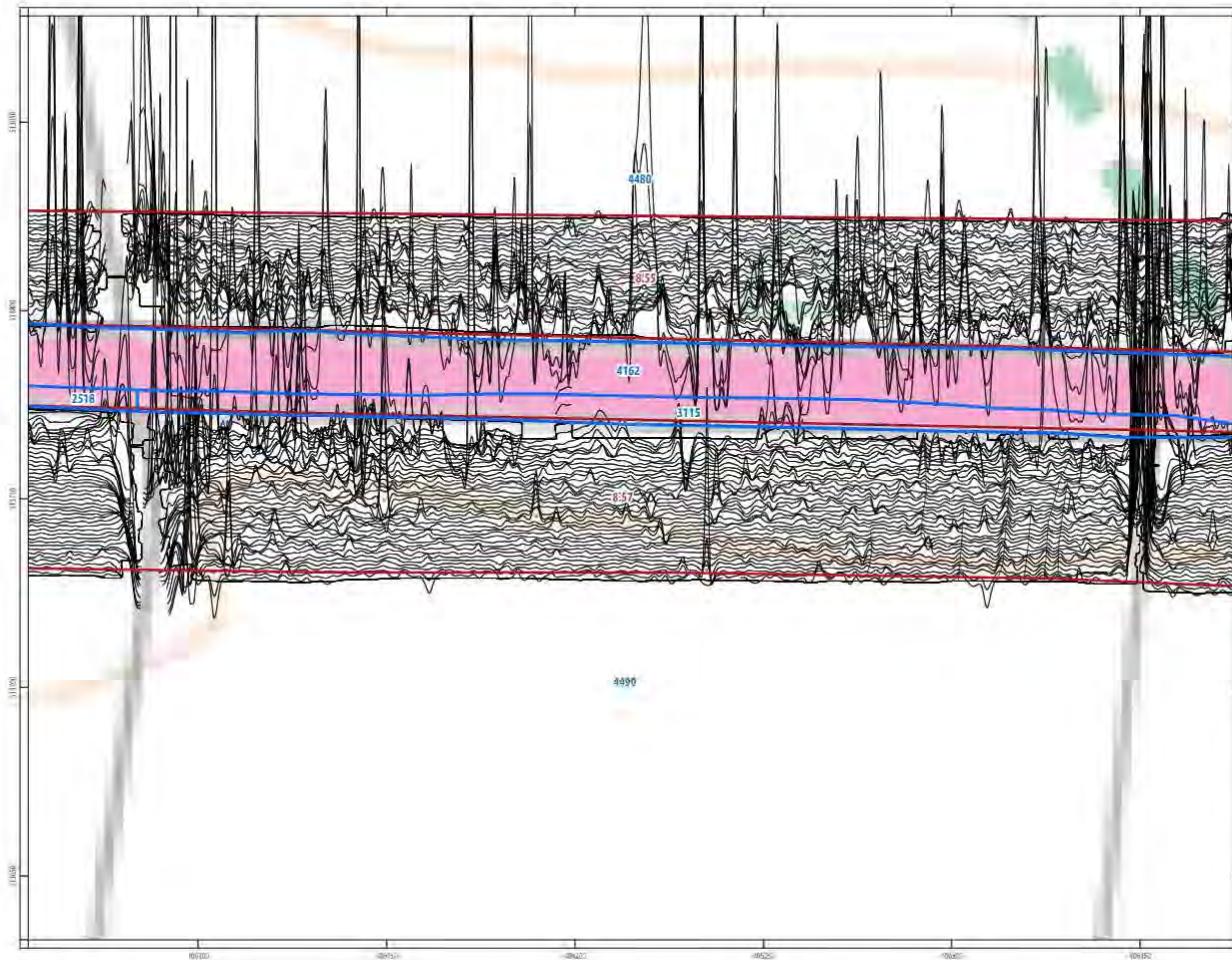
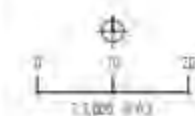
-  Phase 1 (Landscape) Survey Area
-  Phase 2 (Landscape) Survey Area
-  Contour and survey line
-  10m grid lines
-  Section Management

**PROJECT**

A17120 - A66 Transverse Upgrade

**CLIENT**

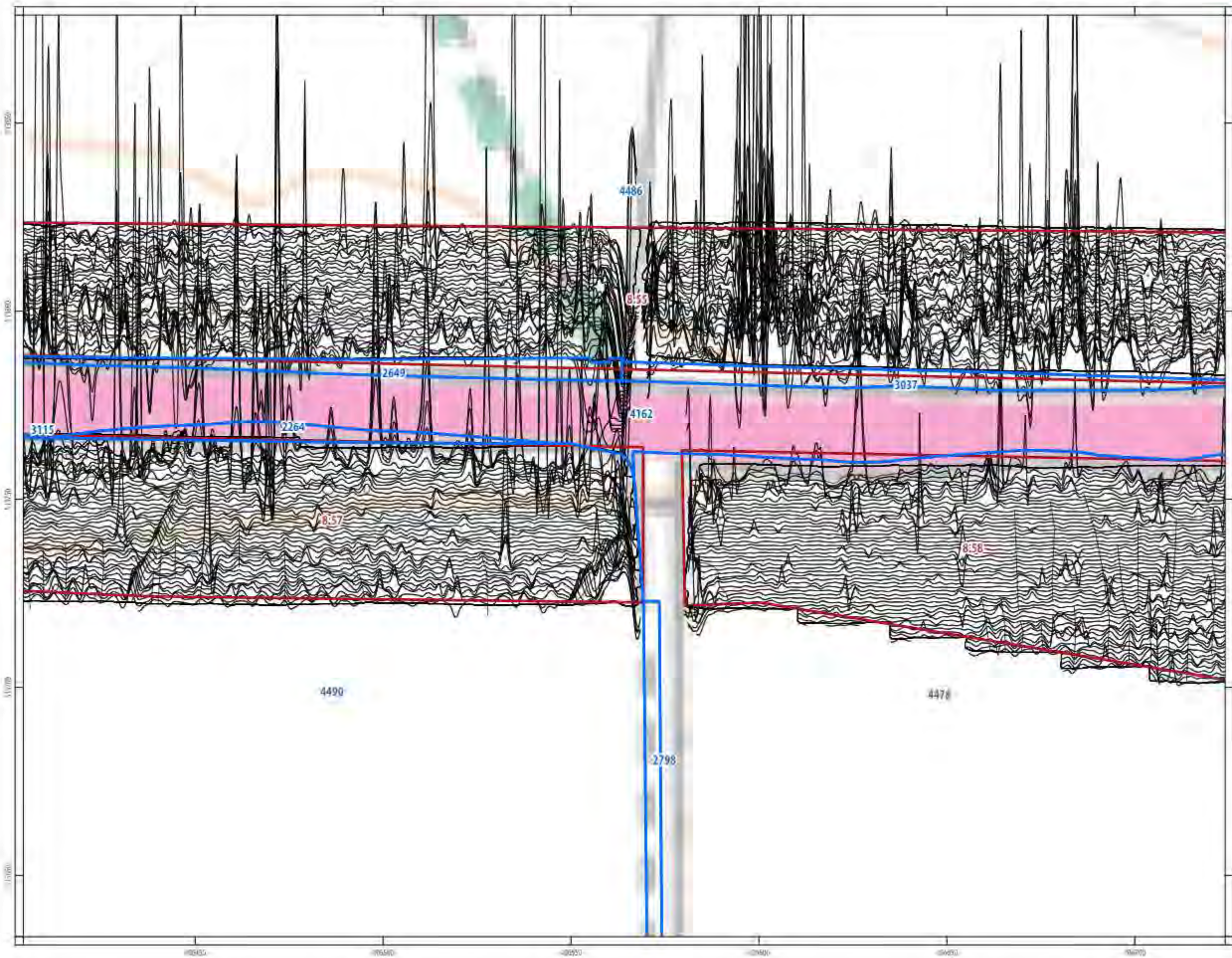
Highways England



ILLUS 309 XY trace plot of minimally processed magnetometer data; Cross Lines to Rokeby



- ▭ Phase 1 (Landscape) Survey Area
- ▭ Phase 2 (Landscape) Survey Area
- ▭ Geophysical Survey Line 1
- ▭ Geophysical Survey Line 2
- ▭ Section of M1



**PROJECT**  
A11120 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



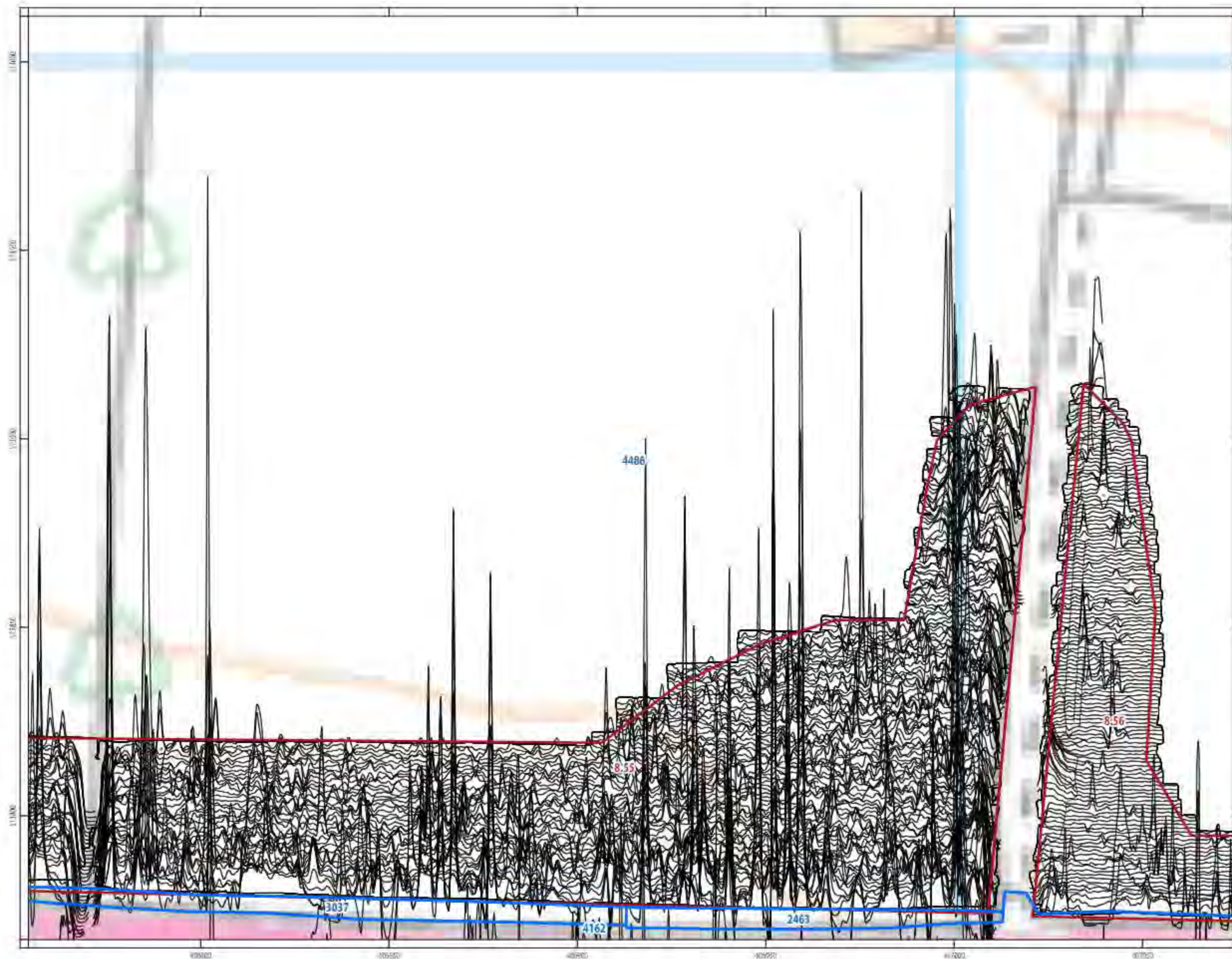
ILLUS 310 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



- ▭ Phase 1 Limited Visual Access Area
- ▭ Phase 2 Limited Visual Access Area
- County's and survey's Low 4
- VV - 100m
- ⊗ Section 61 Measurement



**PROJECT**  
A1120 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 311 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



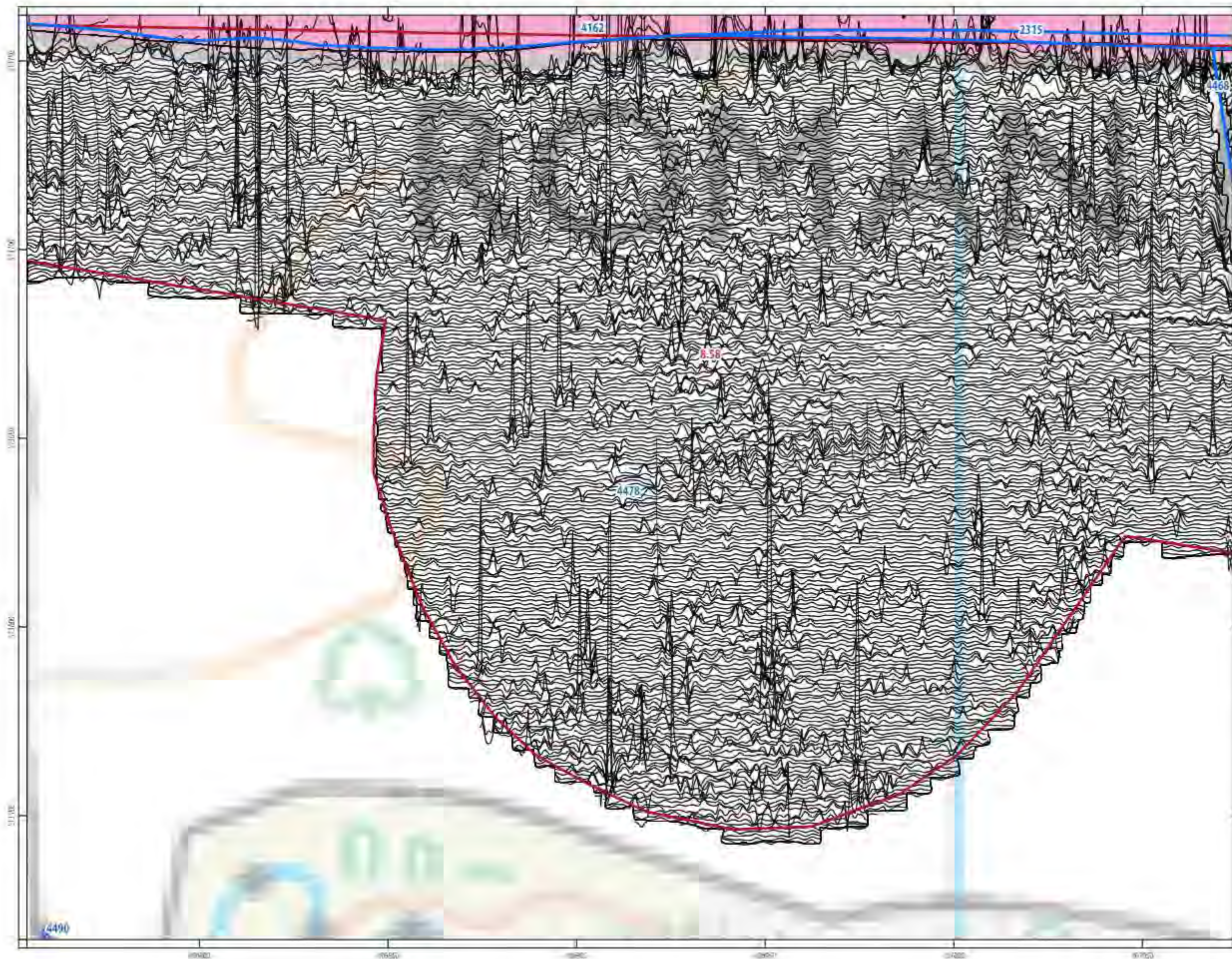
-  Plot 1 (Classified) (Contour)
-  Plot 2 (Classified) (Contour)
-  Contour (unclassified)
-  Contour (unclassified)
-  Contour (unclassified)

**PROJECT**

AT1120 - A66 Transport Upgrade

**CLIENT**

Highways England



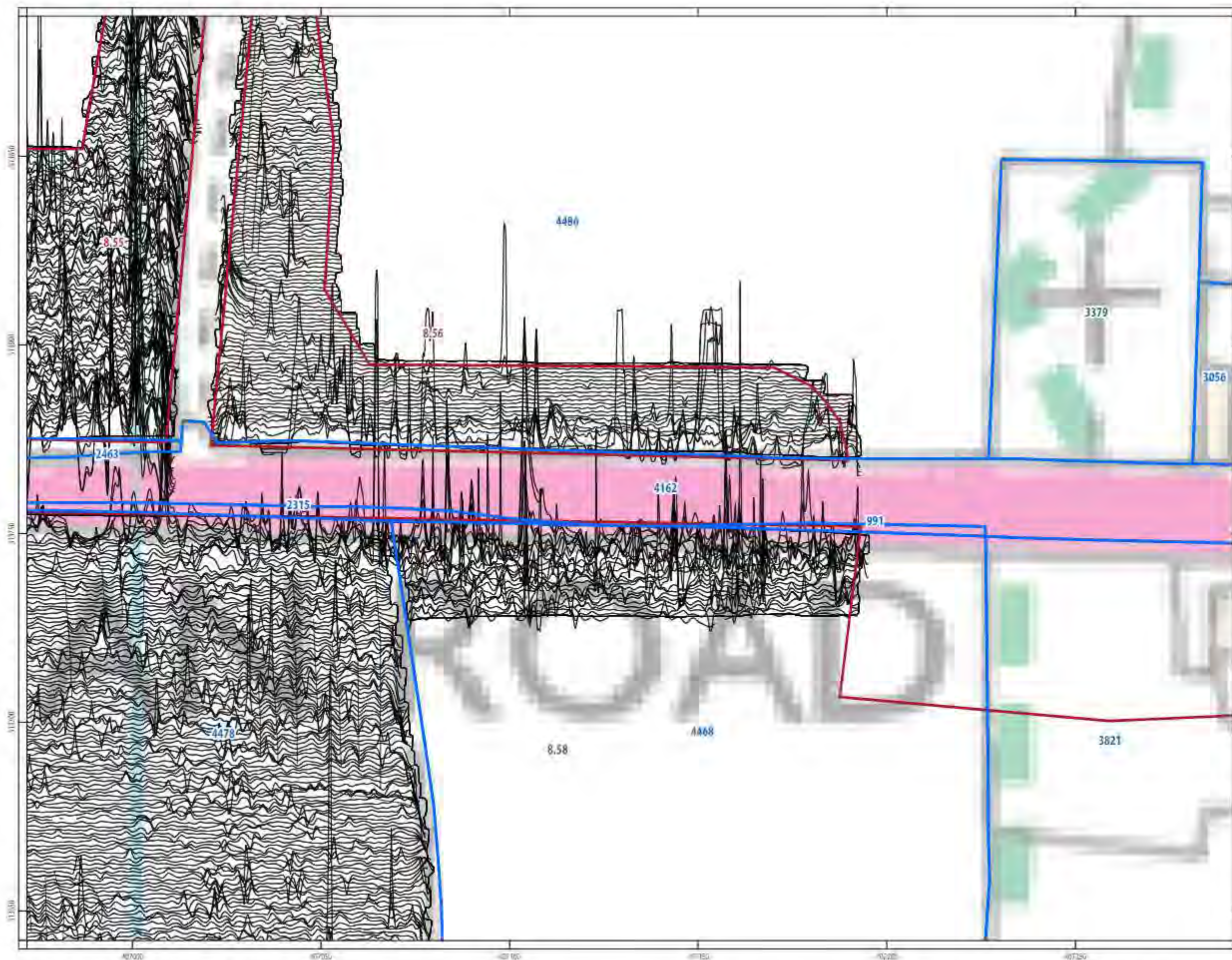
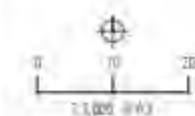
ILLUS 312: XY trace plot of minimally processed magnetometer data; Cross Lanes to Roley



- ▭ Phase 1 Limited Visual Survey Area
- ▭ Phase 2 Limited Visual Survey Area
- ▭ Limited Visual Survey Area
- ▭ XY Grid Lines
- ▭ Section Management

**PROJECT**  
A1120-A66 Transport Upgrade

**CLIENT**  
Highways England



ILLUS 3|3 XY trace plot of minimally processed magnetometer data; Cross Lanes to Roleby



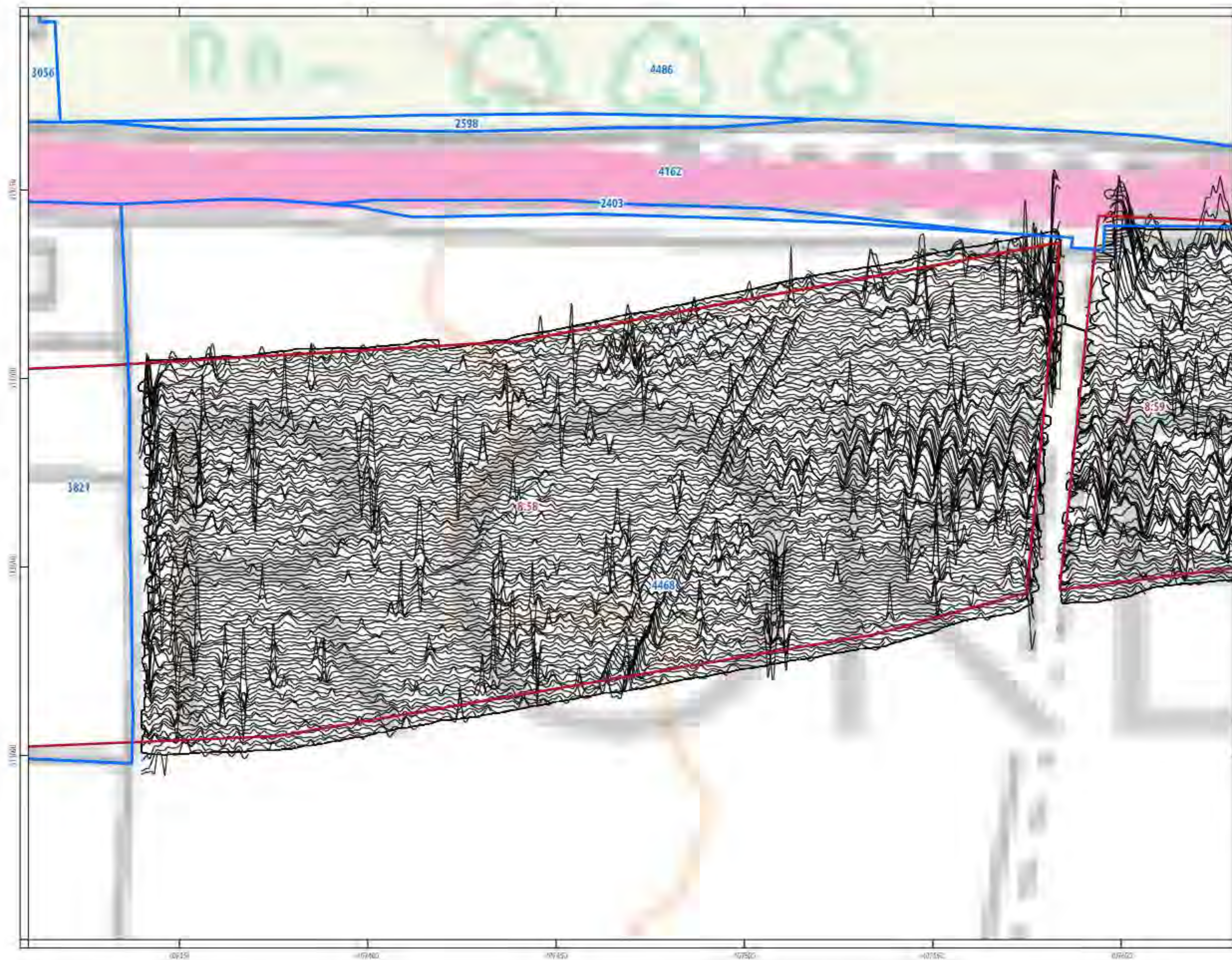
- ▭ Phase 1 (Mainly rural) Survey Area
- ▭ Phase 2 (Mainly rural) Survey Area
- Contour and ground level
- 10m Gridlines
- ⊗ Section Measurement

**PROJECT**

AT1120 - A66 Transport Improvement

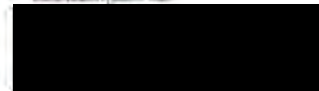
**CLIENT**

Highways England

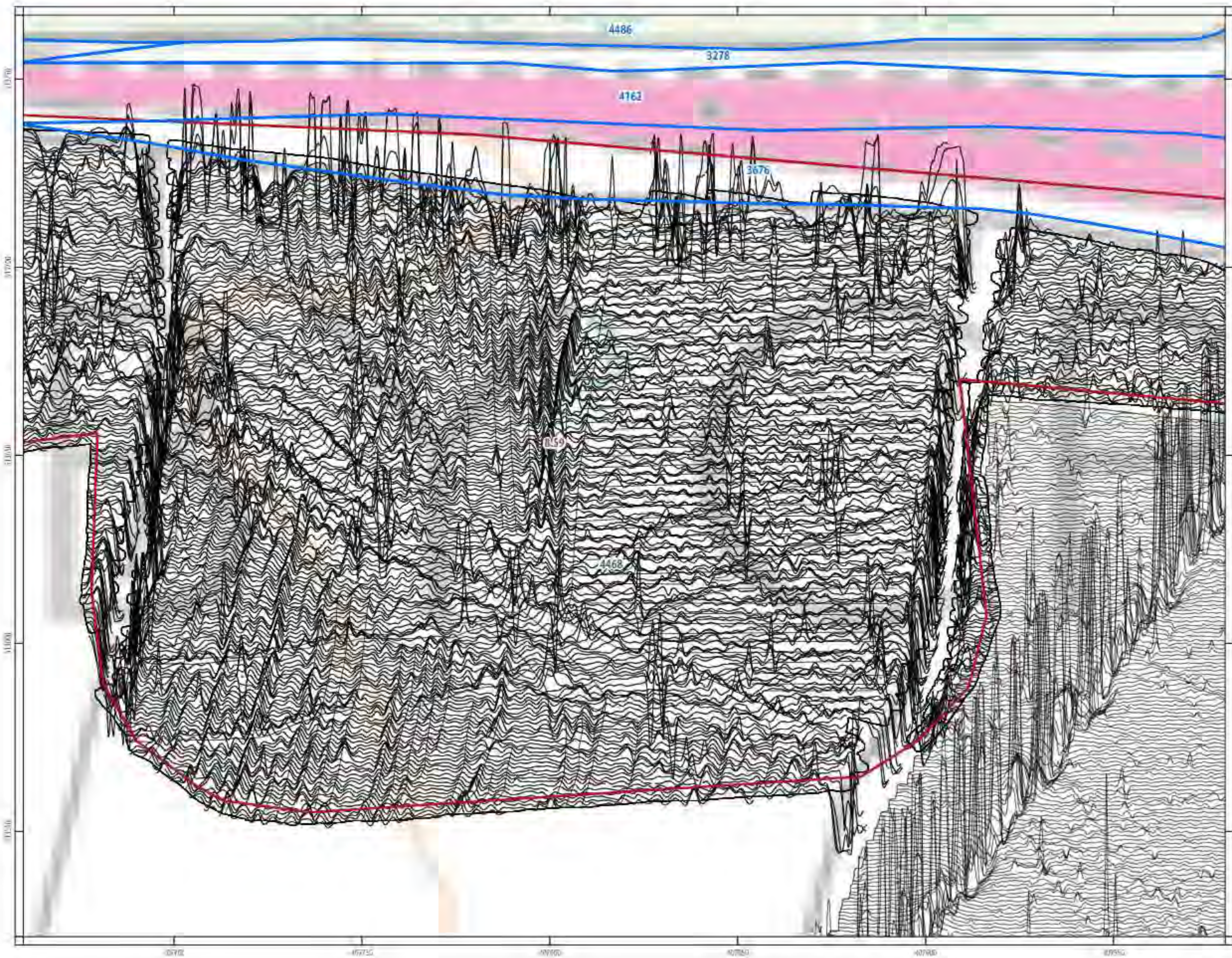


ILLUS 314 XY trace plot of minimally processed magnetometer data; Cross Lines to Roley





- ▭ Phase 1 Classification Survey Profile
- ▬ Phase 2 Classification Survey Profile
- ▬ Contour and ground Level
- ▬ Excavation
- ▭ Excavation Obstruction





**PROJECT**  
A17120 - A66 Transport Improvement

**CLIENT**  
Highways England



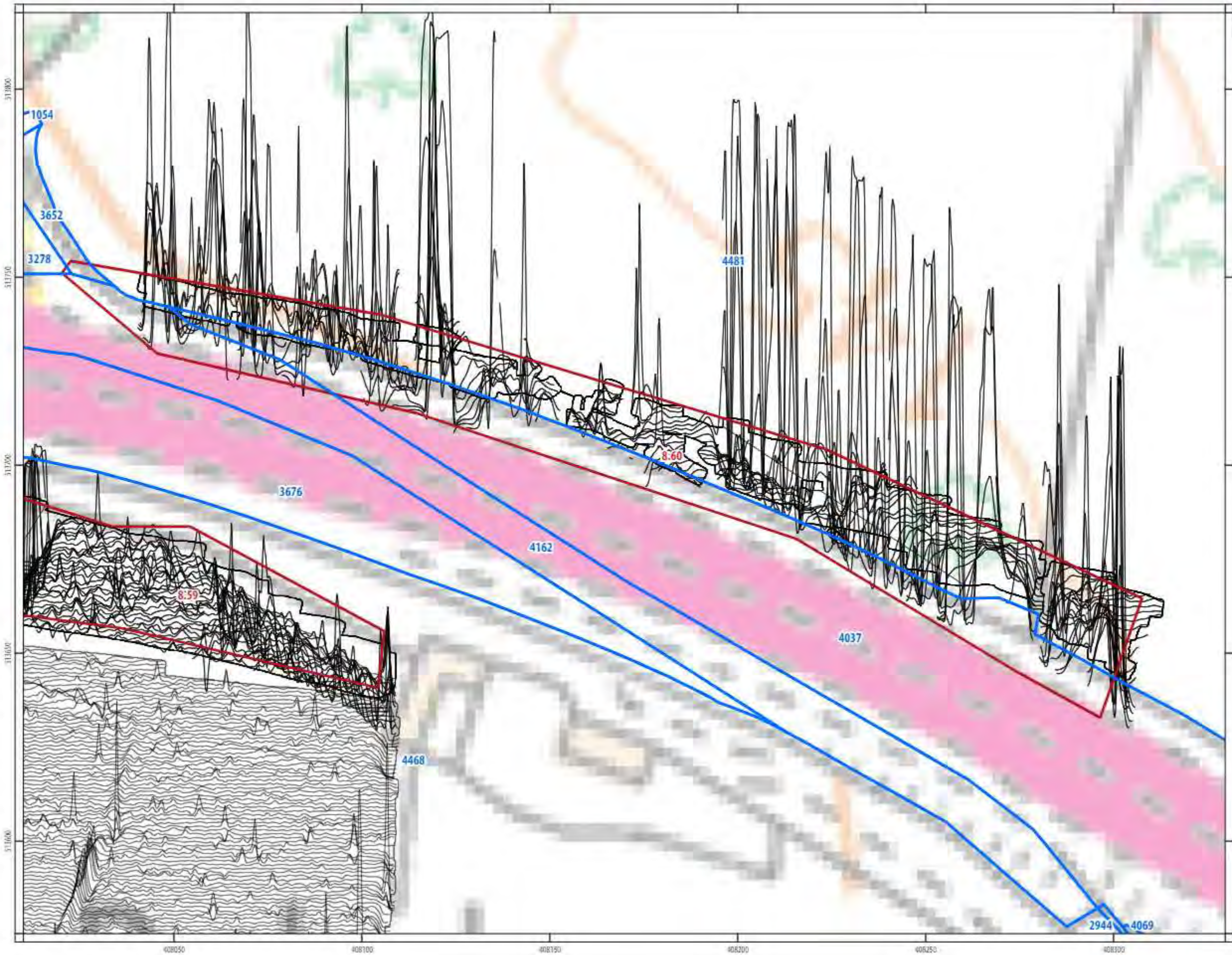
ILLUS 315 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY - 10m / cm
-  Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



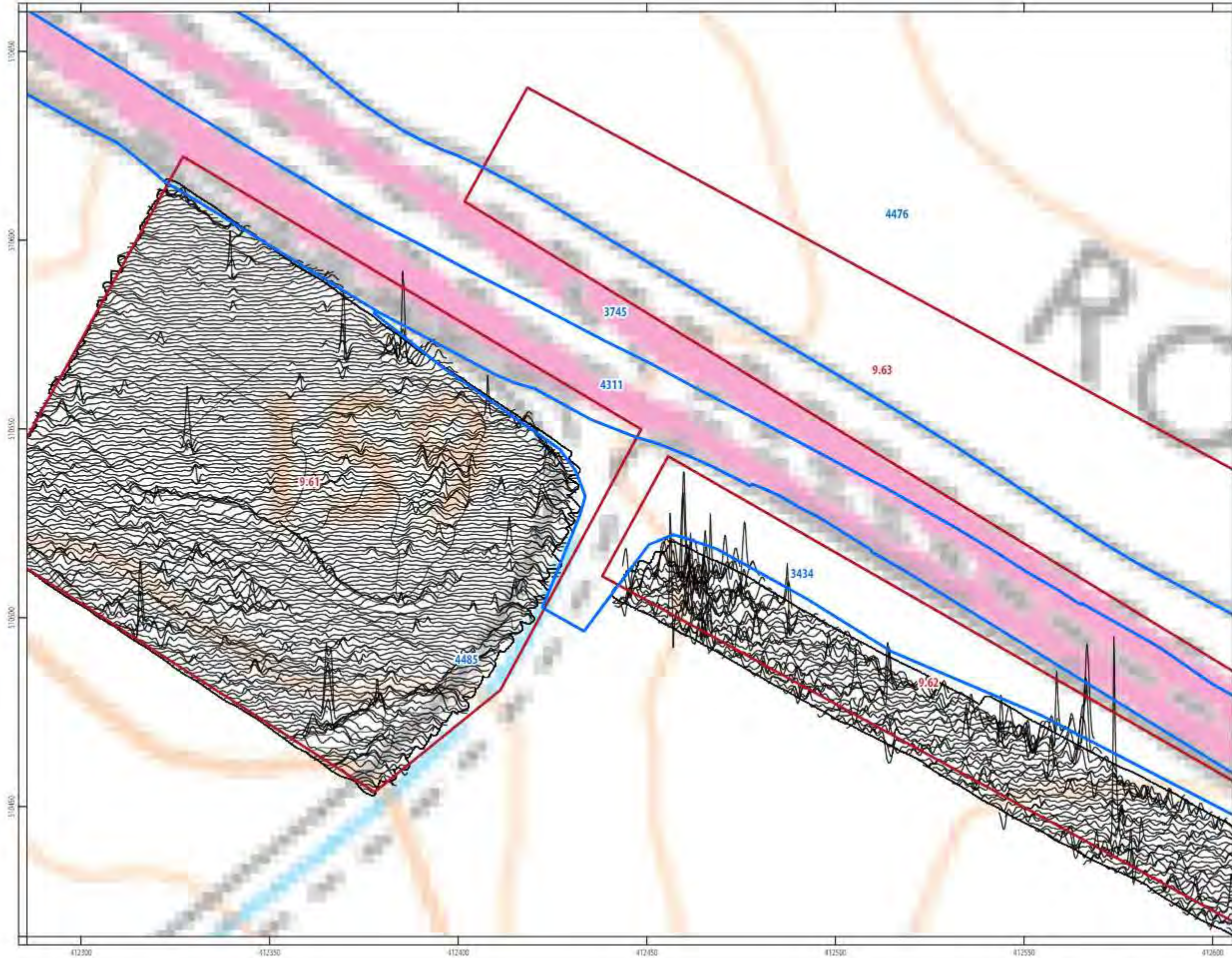
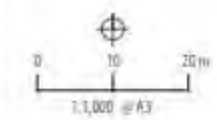
ILLUS 316 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

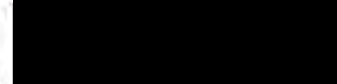
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 317 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

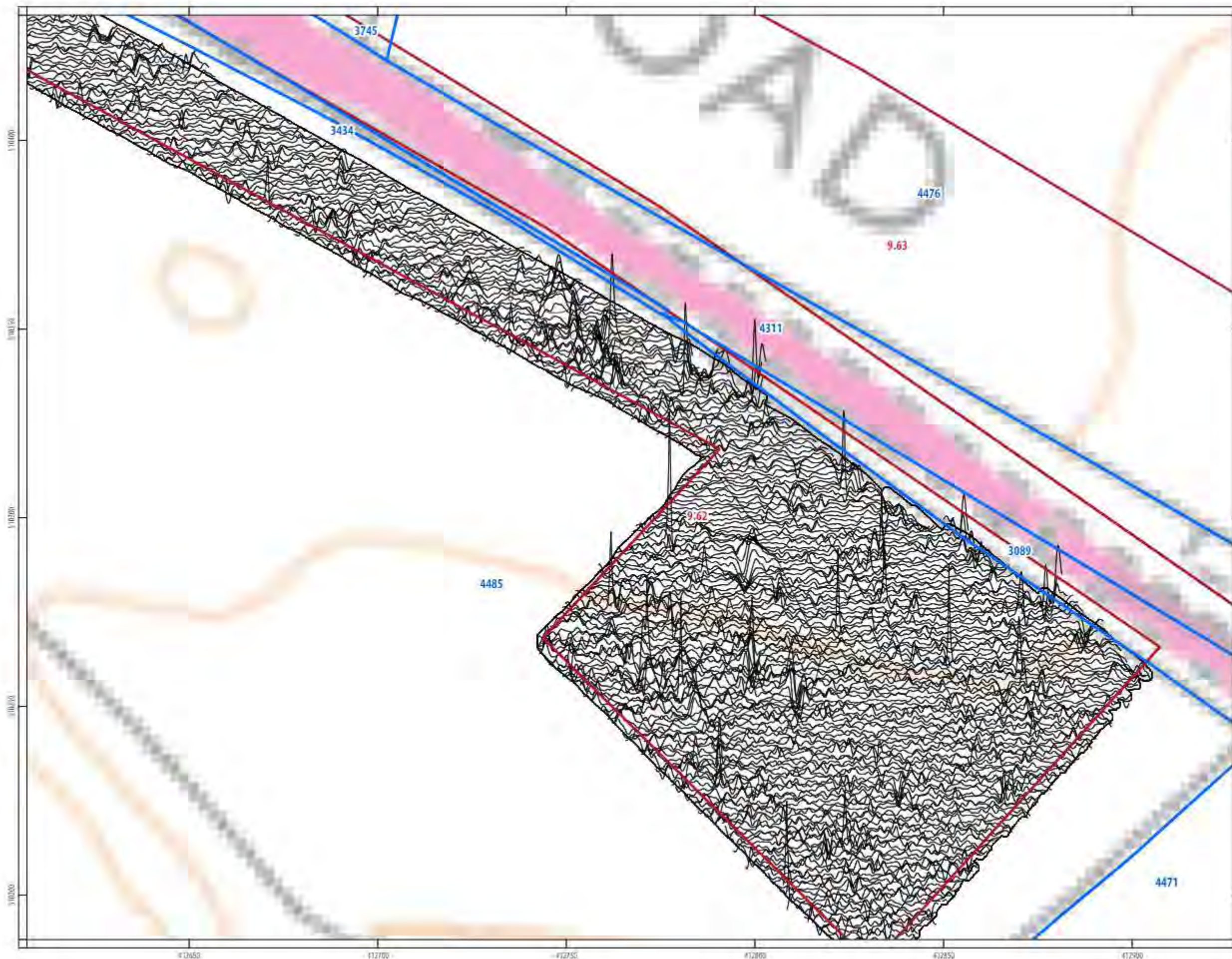
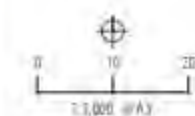




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line 1
- XY (Data) line
- Scheduled Monument

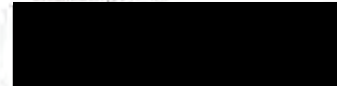
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 318 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor

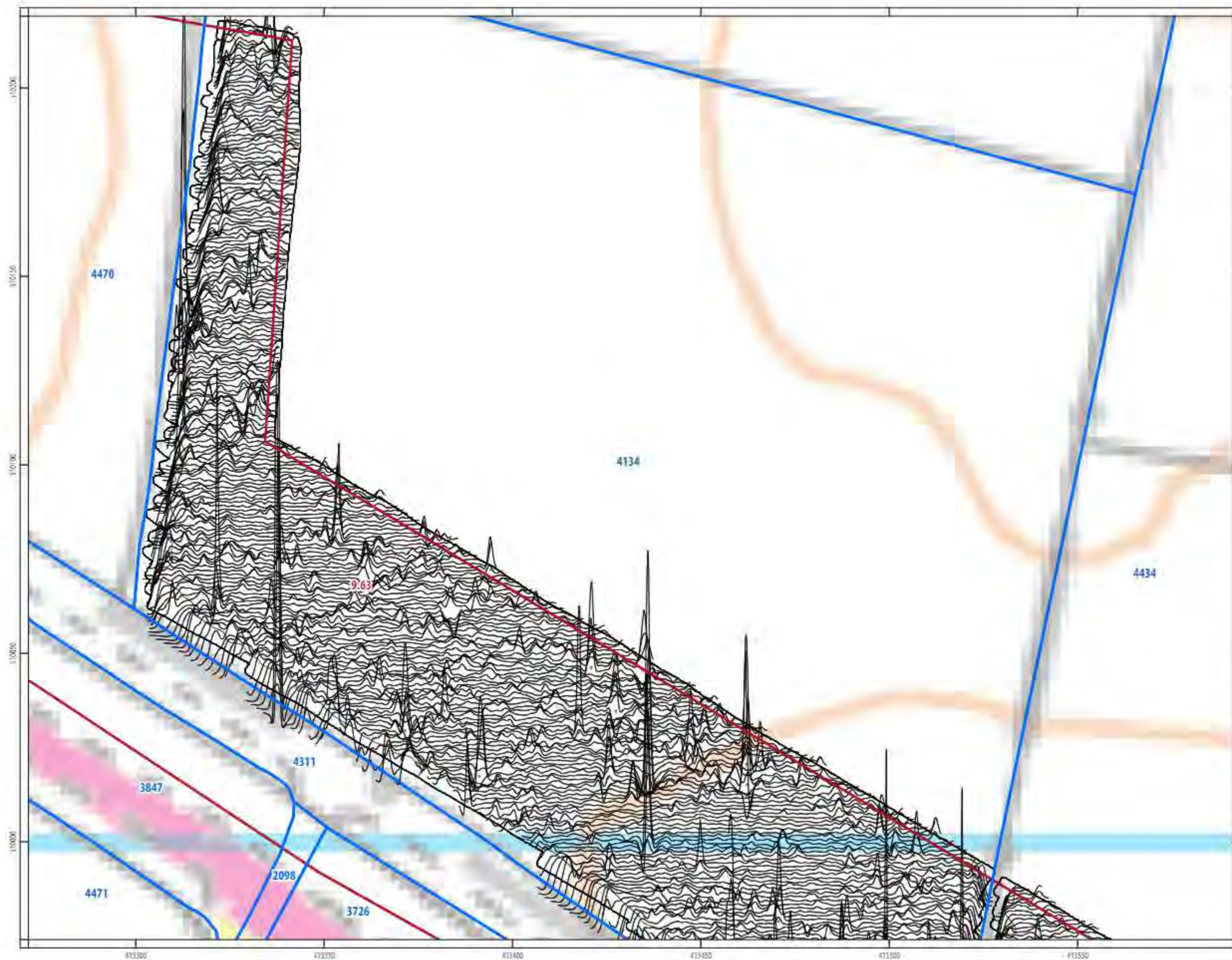
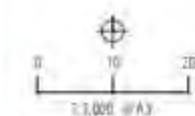




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/0m)
- Scheduled Monument

**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 319 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



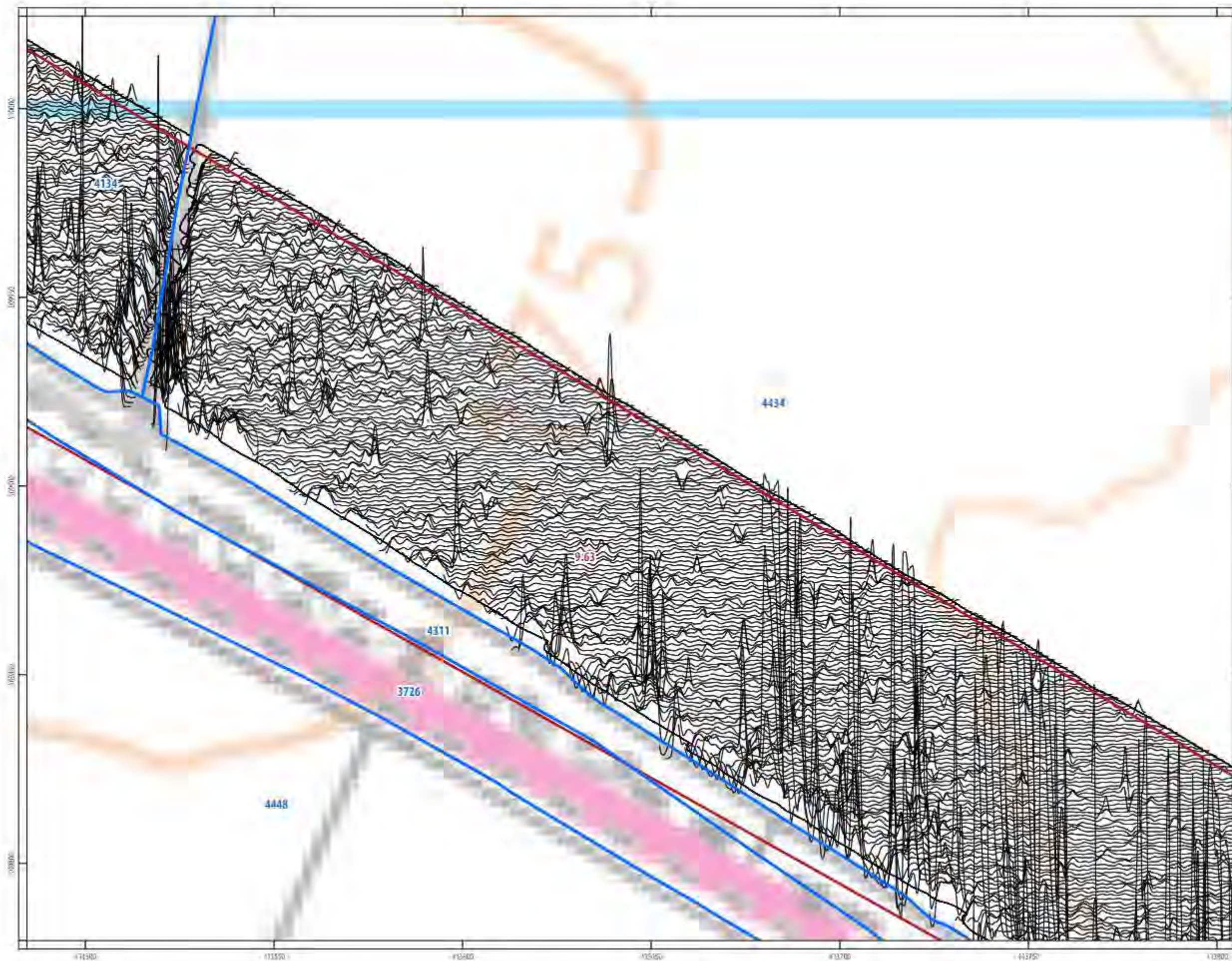
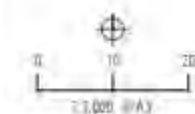
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Line 4
- ▭ XY-Coordinate
- ▭ Sectioned Measurement

**PROJECT**

A1120 - A66 Transpennine Upgrade

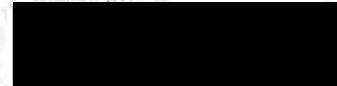
**CLIENT**

Highways England



ILLUS 320: XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

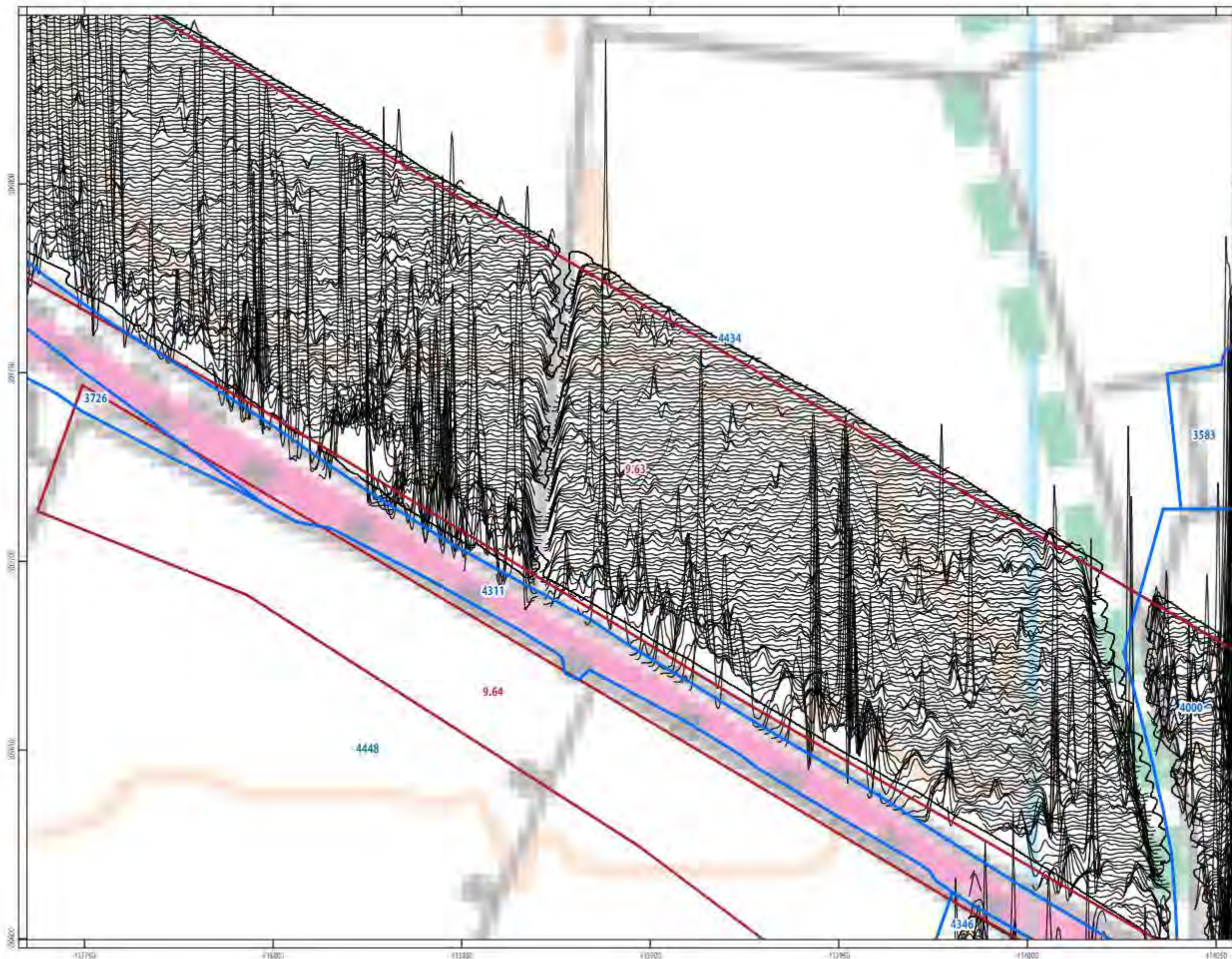
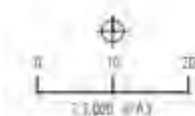




- ▭ Trace 1 Geophysical Survey Area
- ▭ Trace 2 Geophysical Survey Area
- Geophysical survey Line 1
- XY Grid Lines
- Sectional Measurement

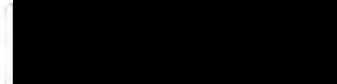
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 321 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

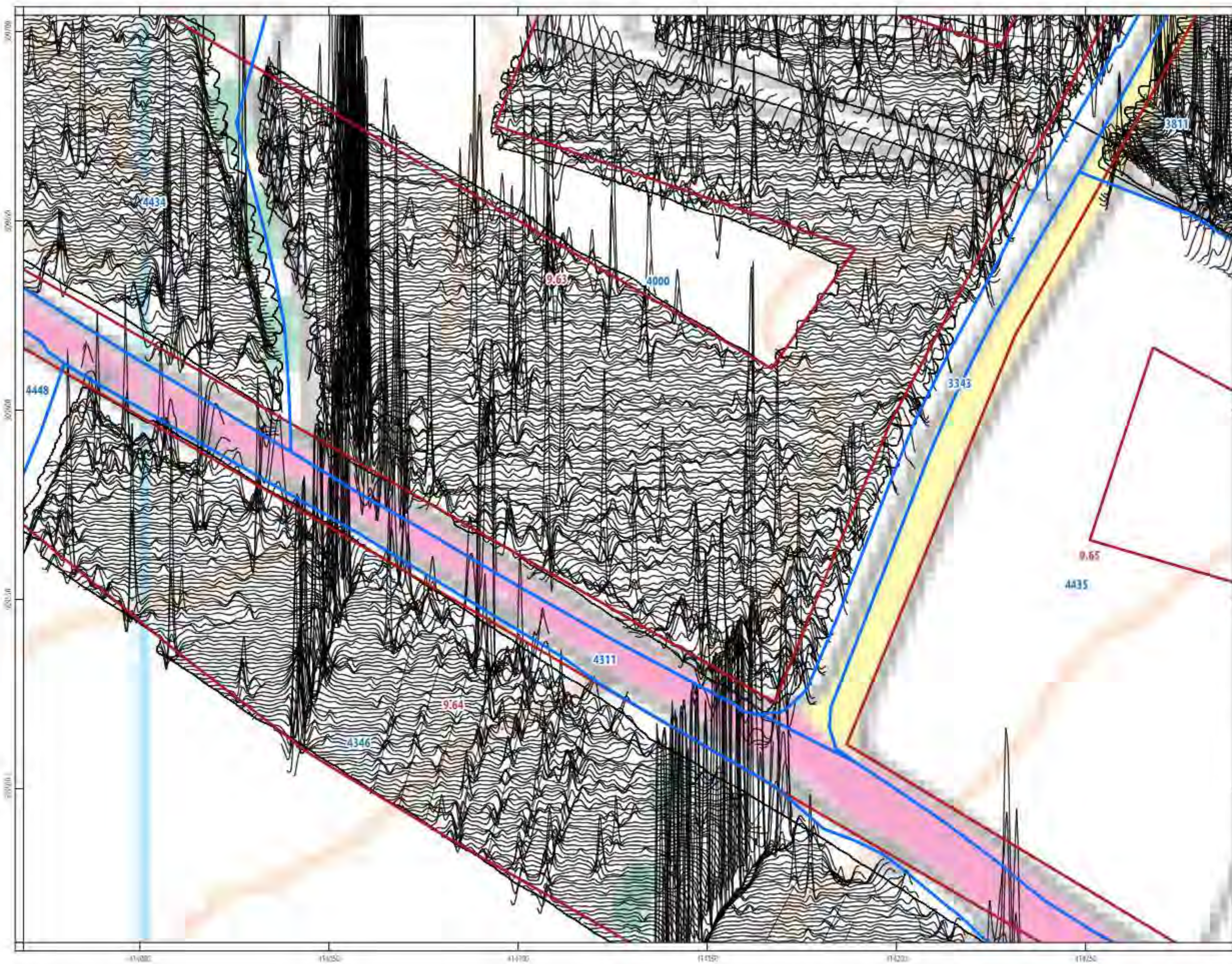
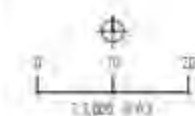




- ▭ Phase 1 (Landmark) Survey Area
- ▭ Phase 2 (Detailed) Survey Area
- ▭ Conjectured Survey Lines
- ▭ Fences
- ▭ Section Management

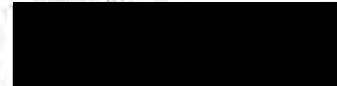
**PROJECT**  
A1120 - A66 Transport Upgrade

**CLIENT**  
Highways England



ILLUS 322 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

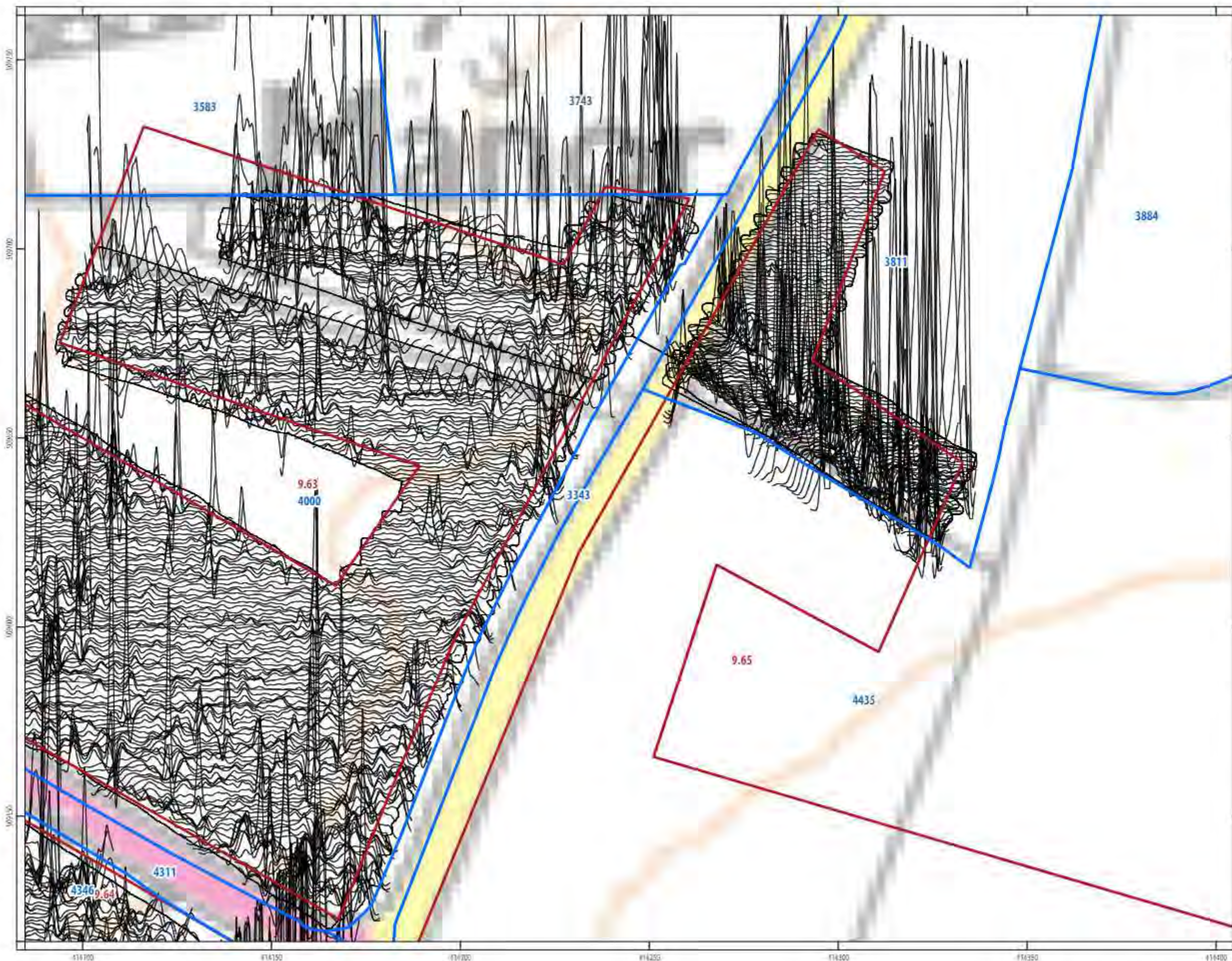
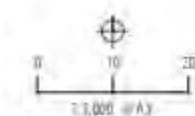




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line
- XY Grid line
- Scheduled Monument

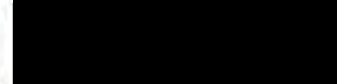
**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 323 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor

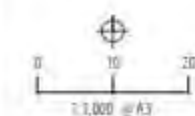




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/1cm)
- Scheduled Monument

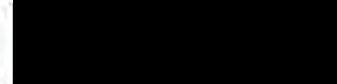
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 324 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor





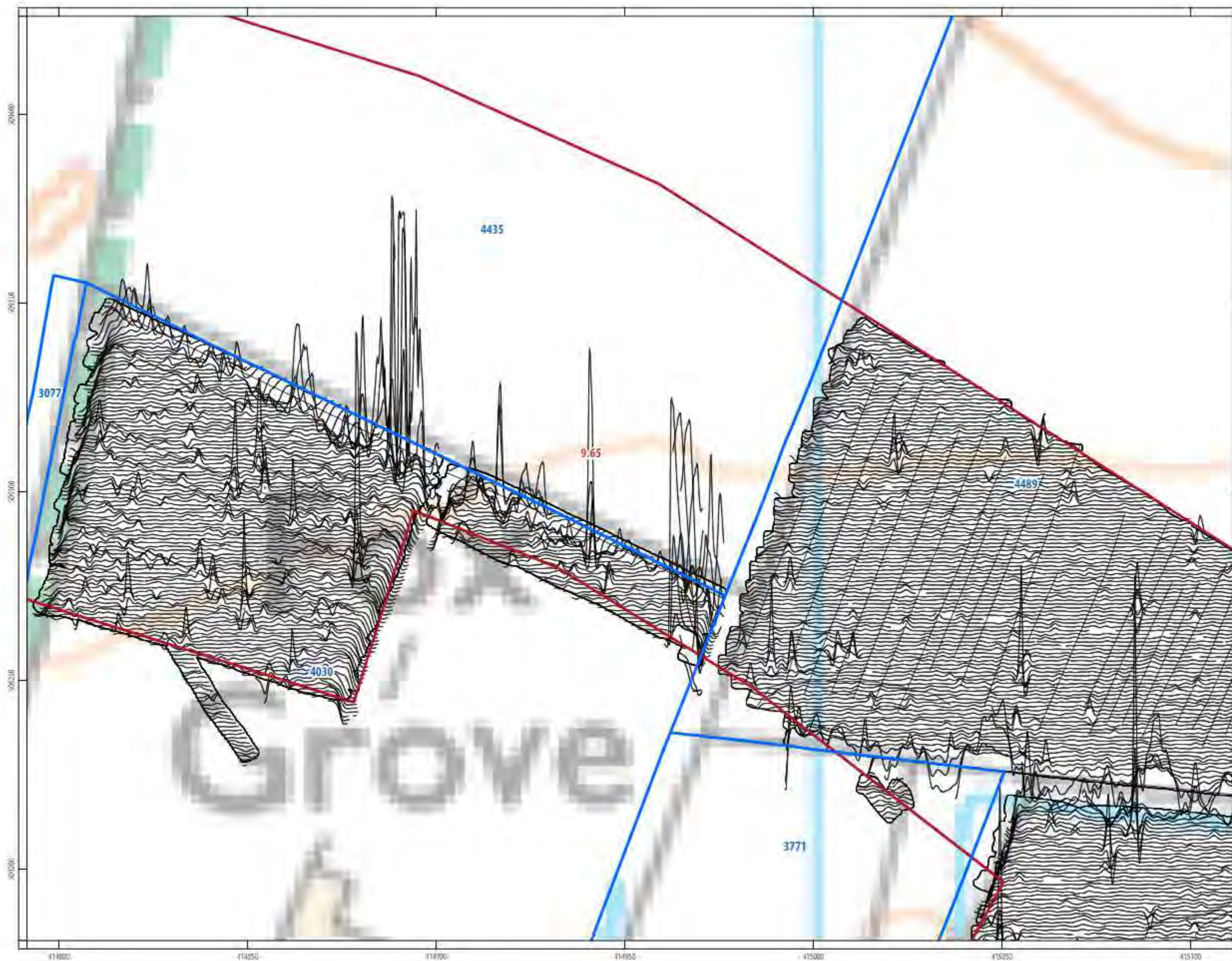
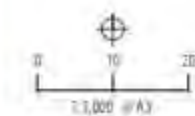
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m ELEM)
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 325 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor



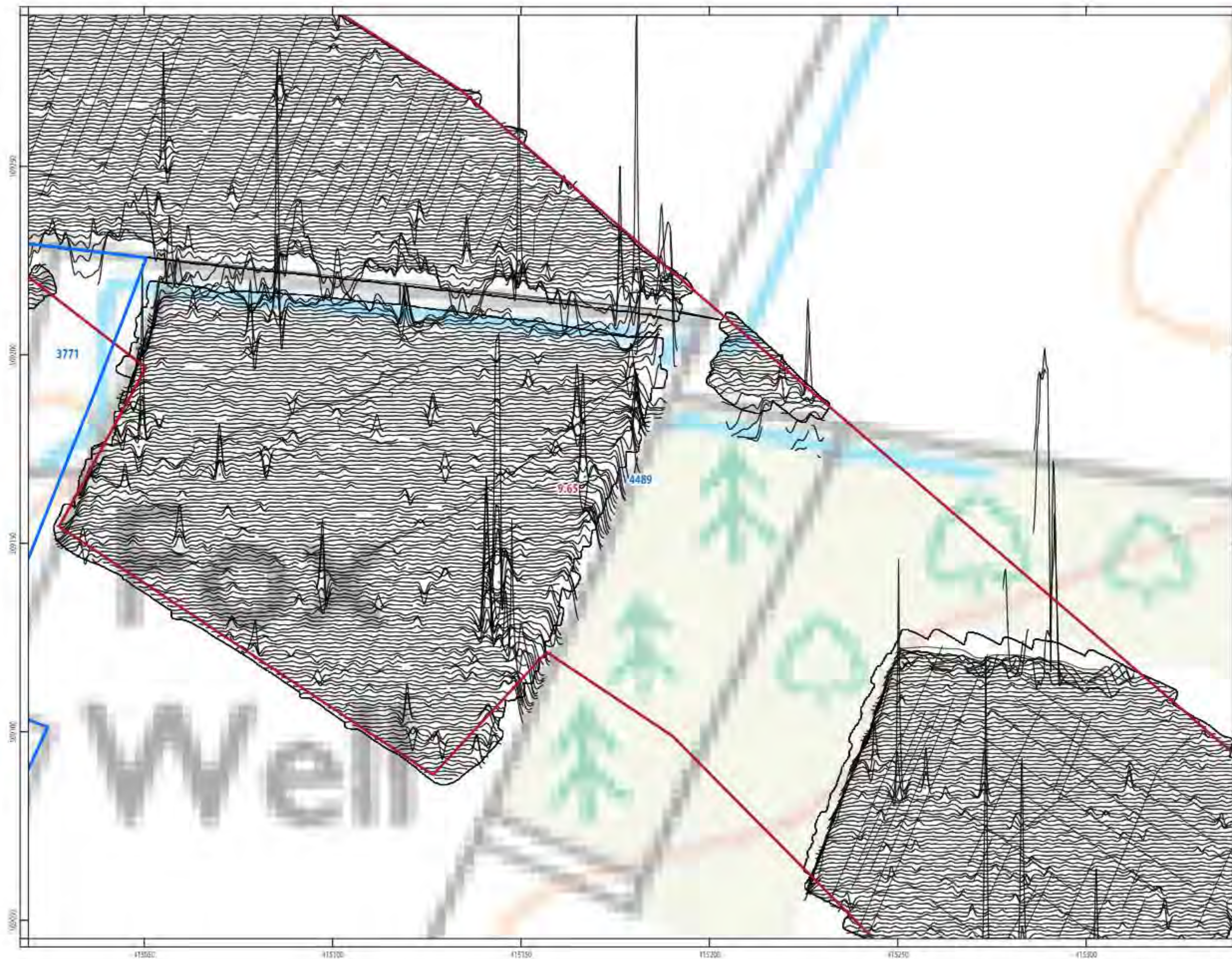
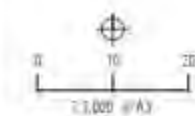
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey lines
- XY Coordinates
- ⊗ Scheduled Monument

**PROJECT**

A1120 - A66 Transpennine Upgrade

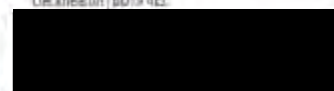
**CLIENT**

Highways England



ILLUS 326 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor





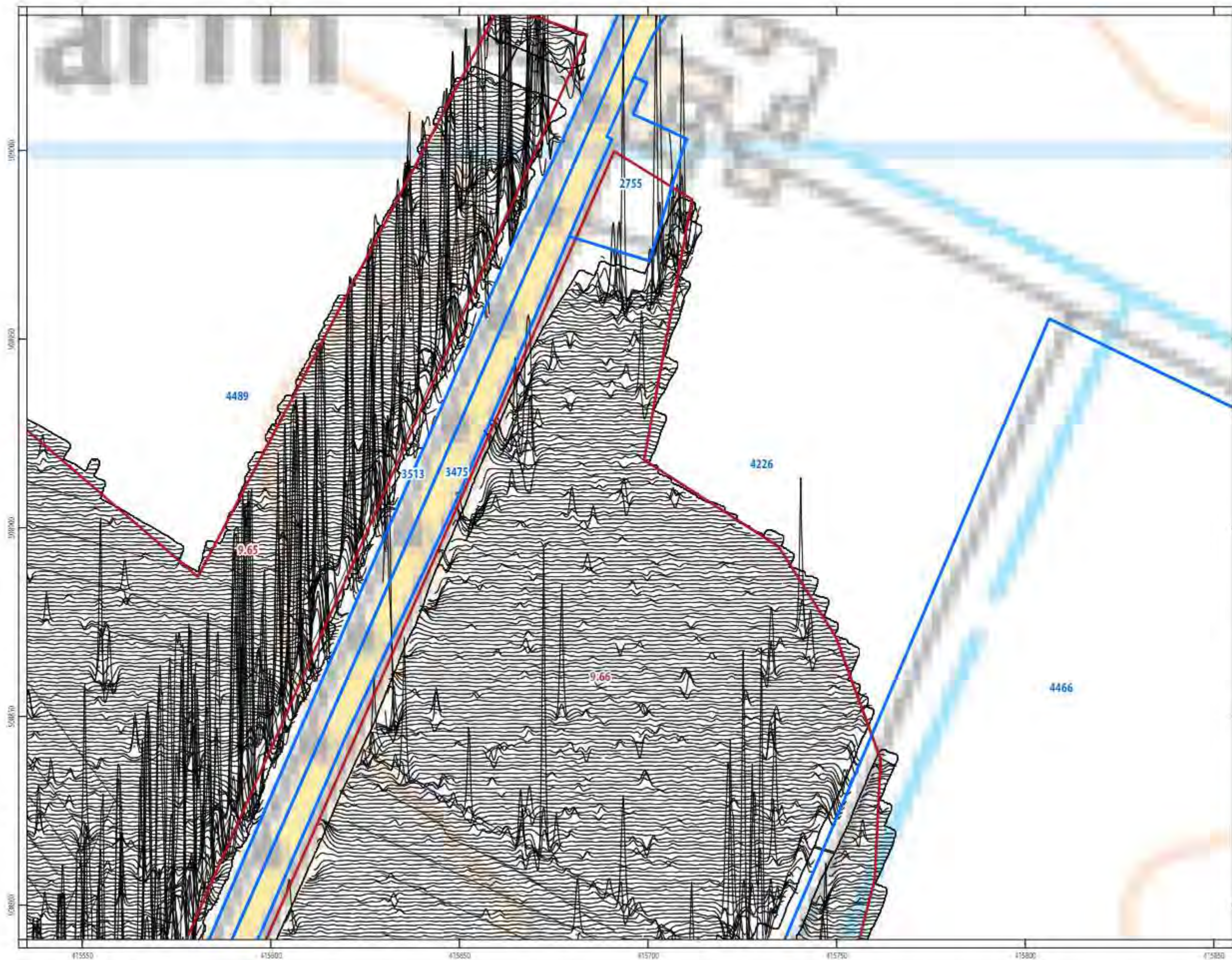
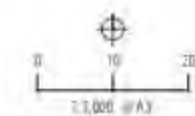
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY (0m/10m)
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



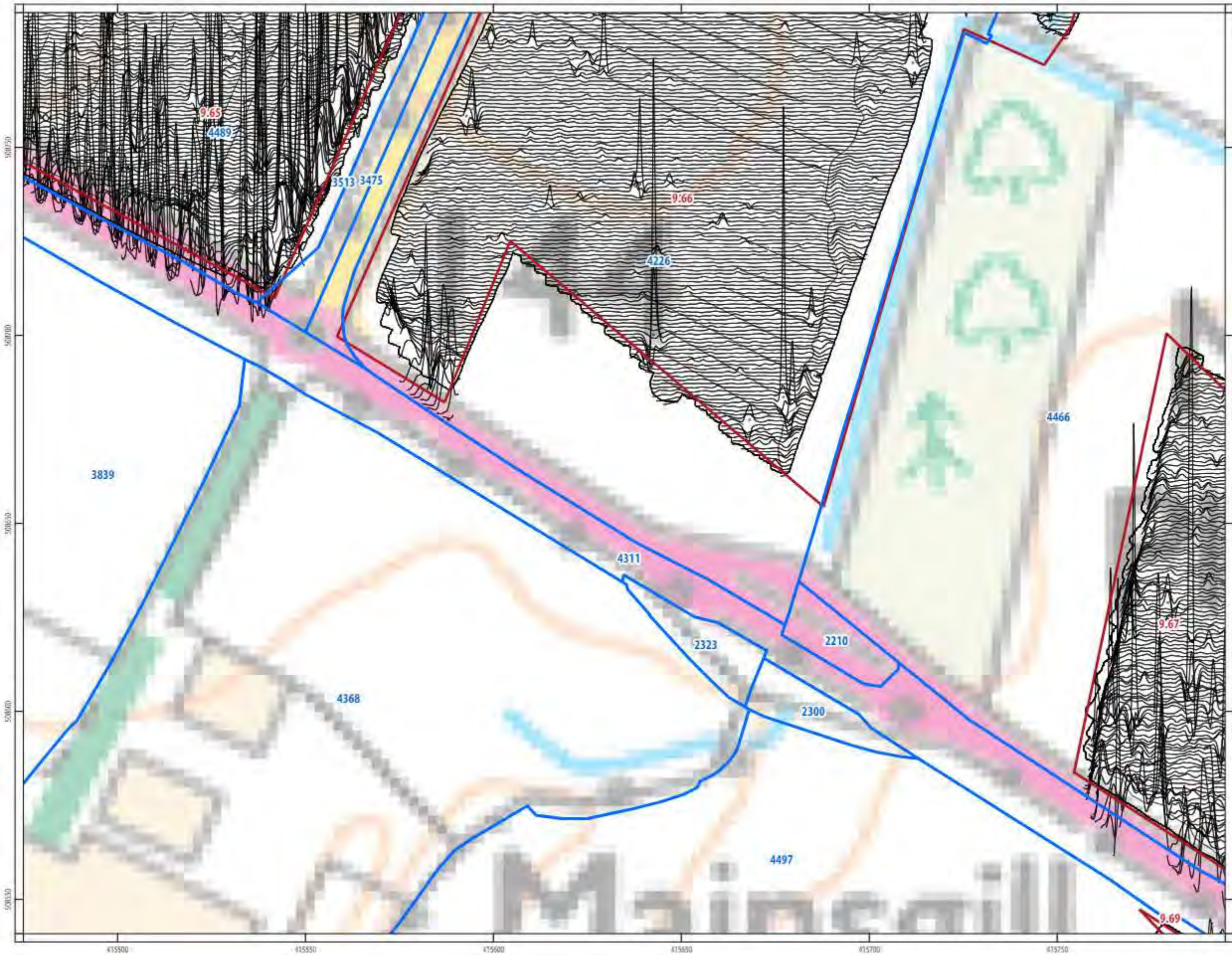
ILLUS 327 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 328 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



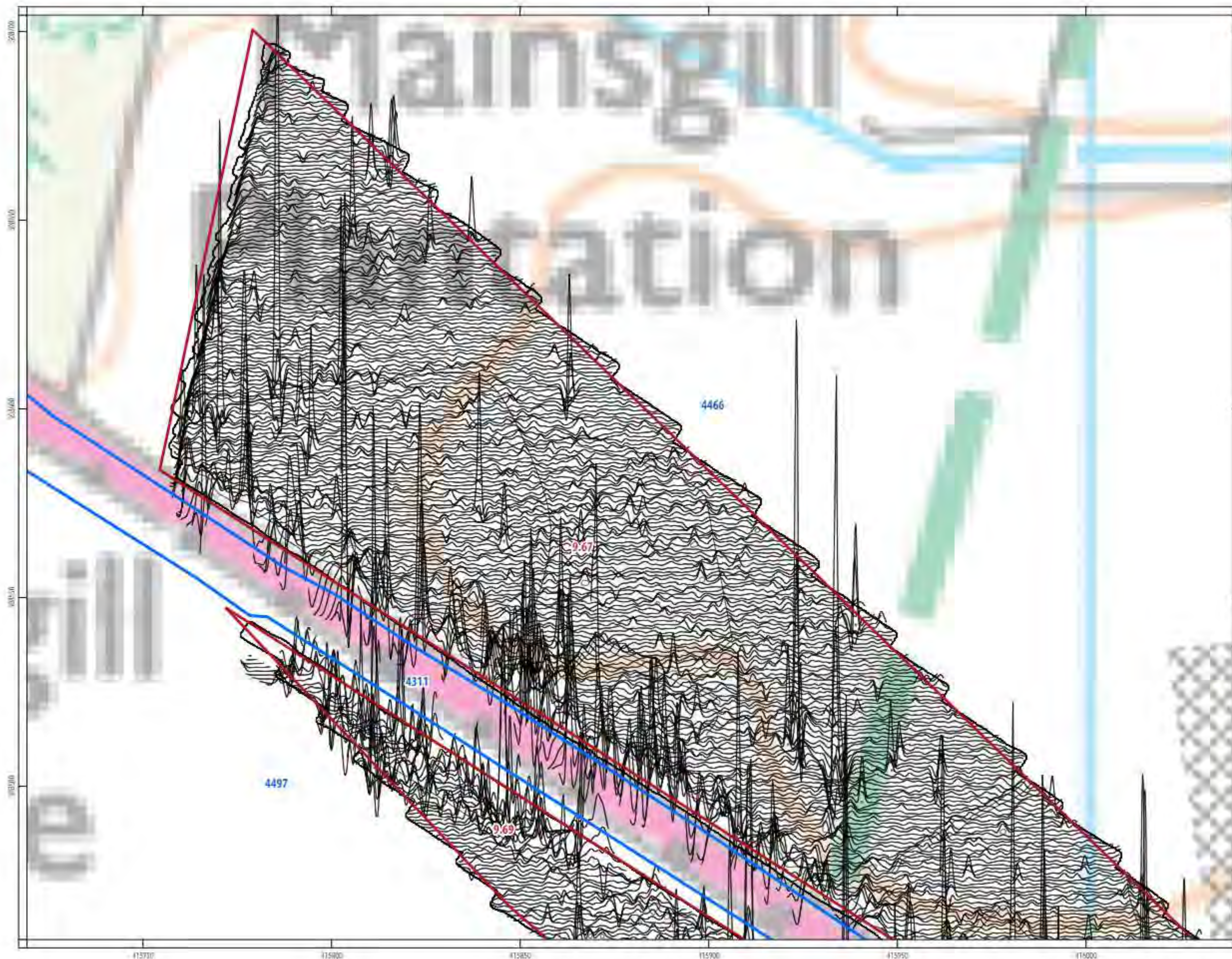
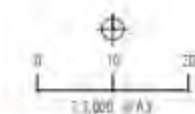
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
-  Geophysical survey Line 4
-  XY-02 (Trench)
-  Scheduled Monument

**PROJECT**

A1420 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 329 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



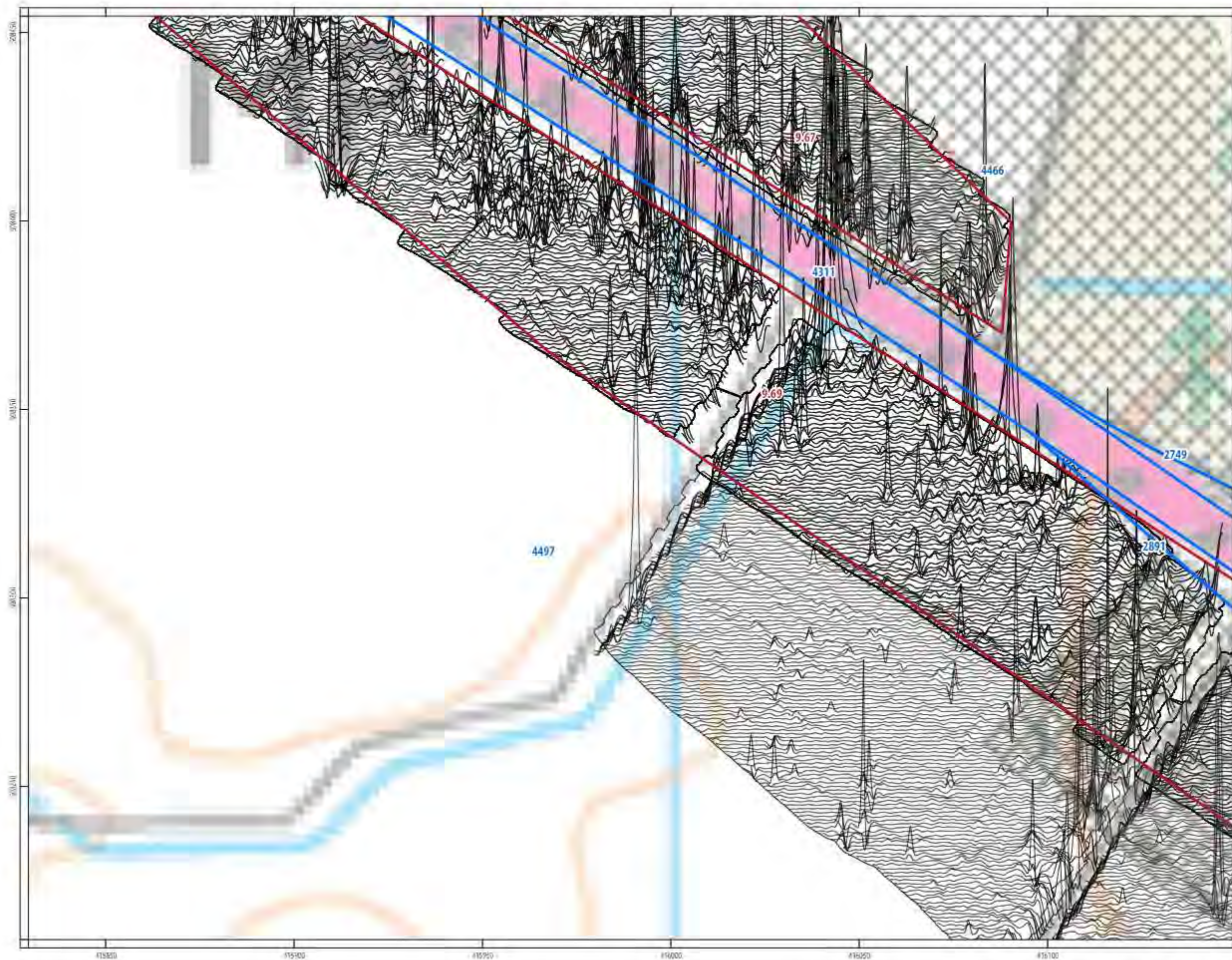
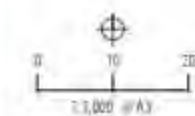
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical survey line
- XY Coordinate
- Selected Monitoring

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 330 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

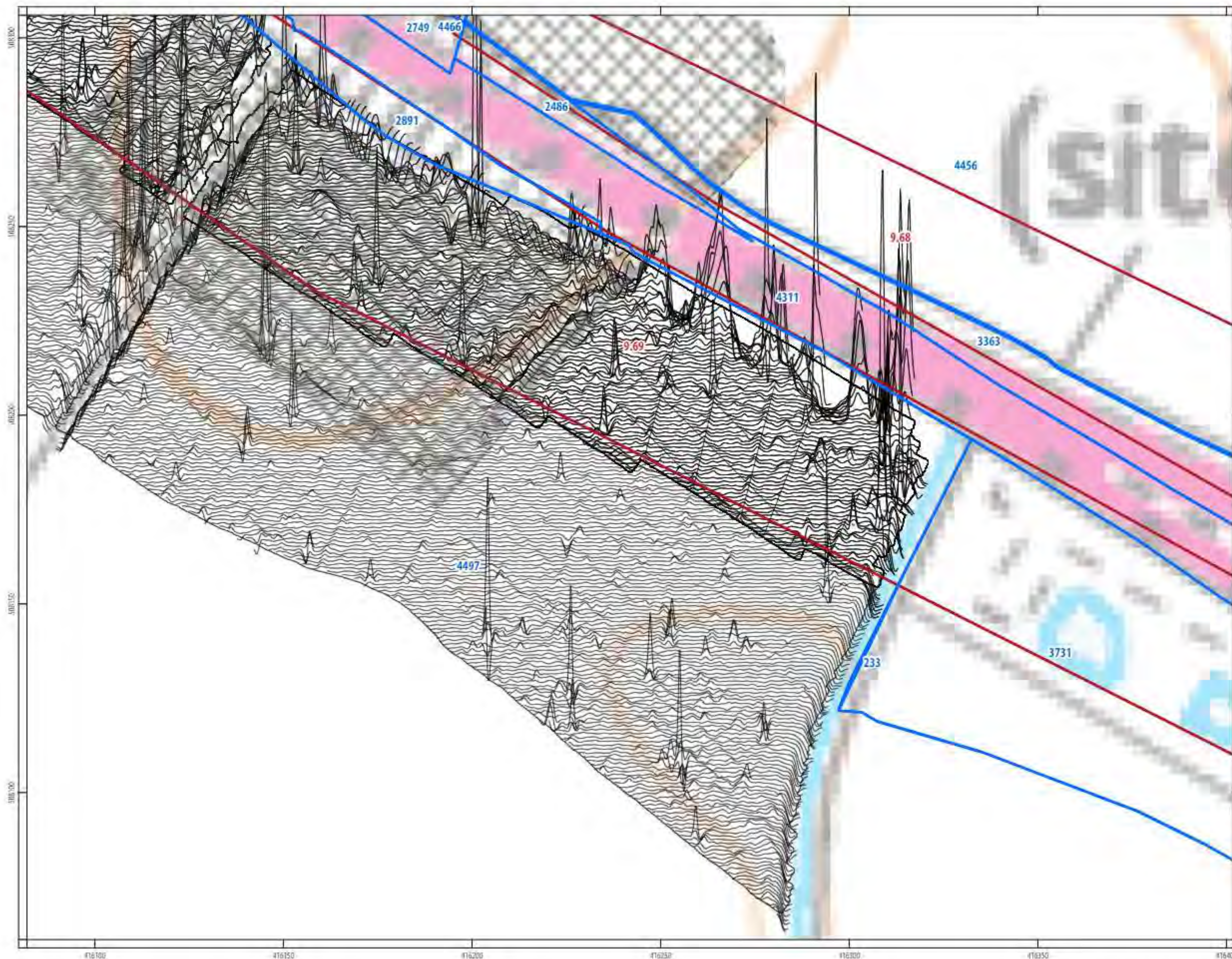
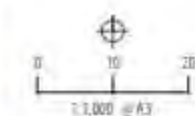




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m (1cm)
- Scheduled Monument

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



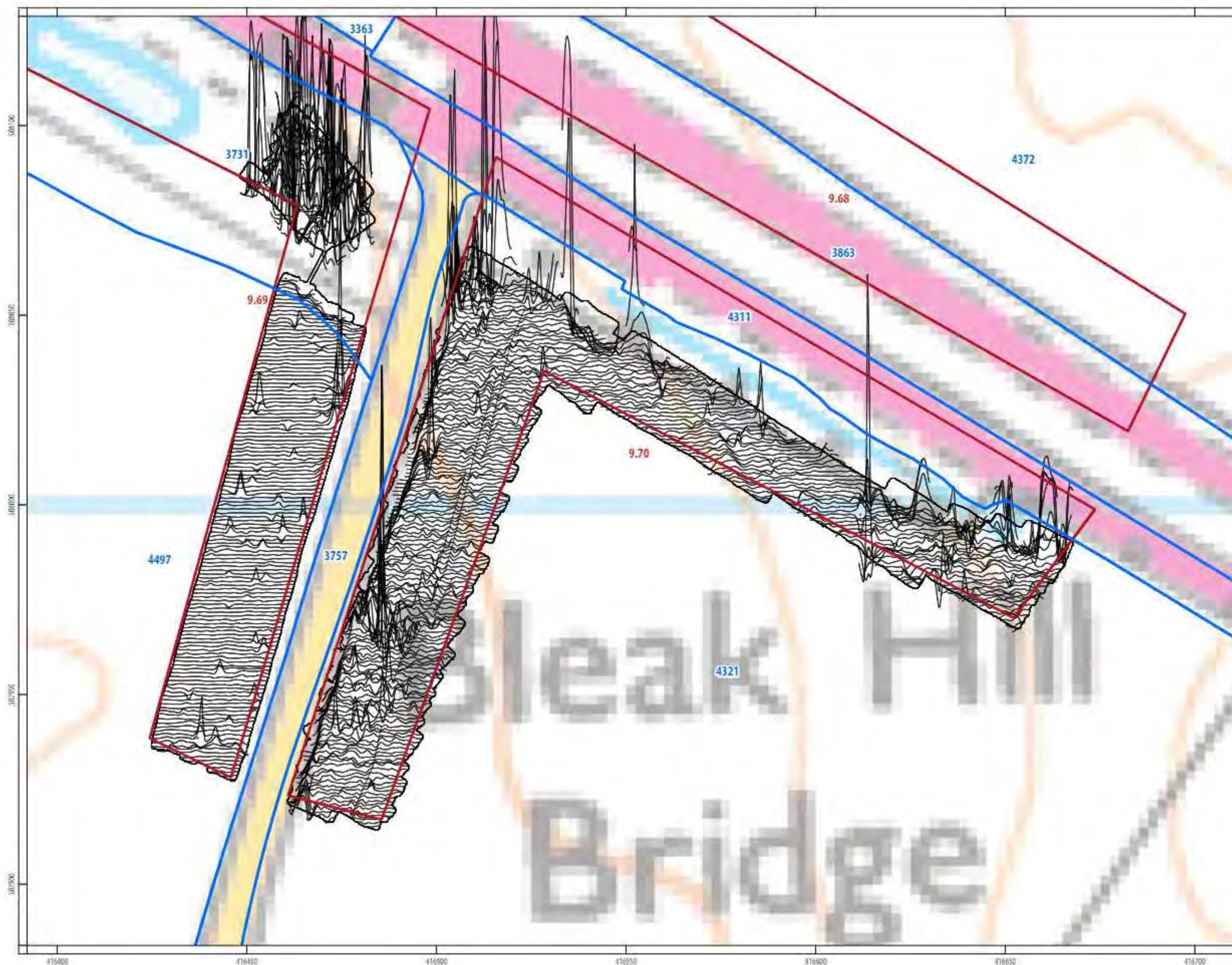
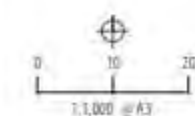
ILLUS 331 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carkin Moor



- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY - 10m / cm
- Scheduled Monument

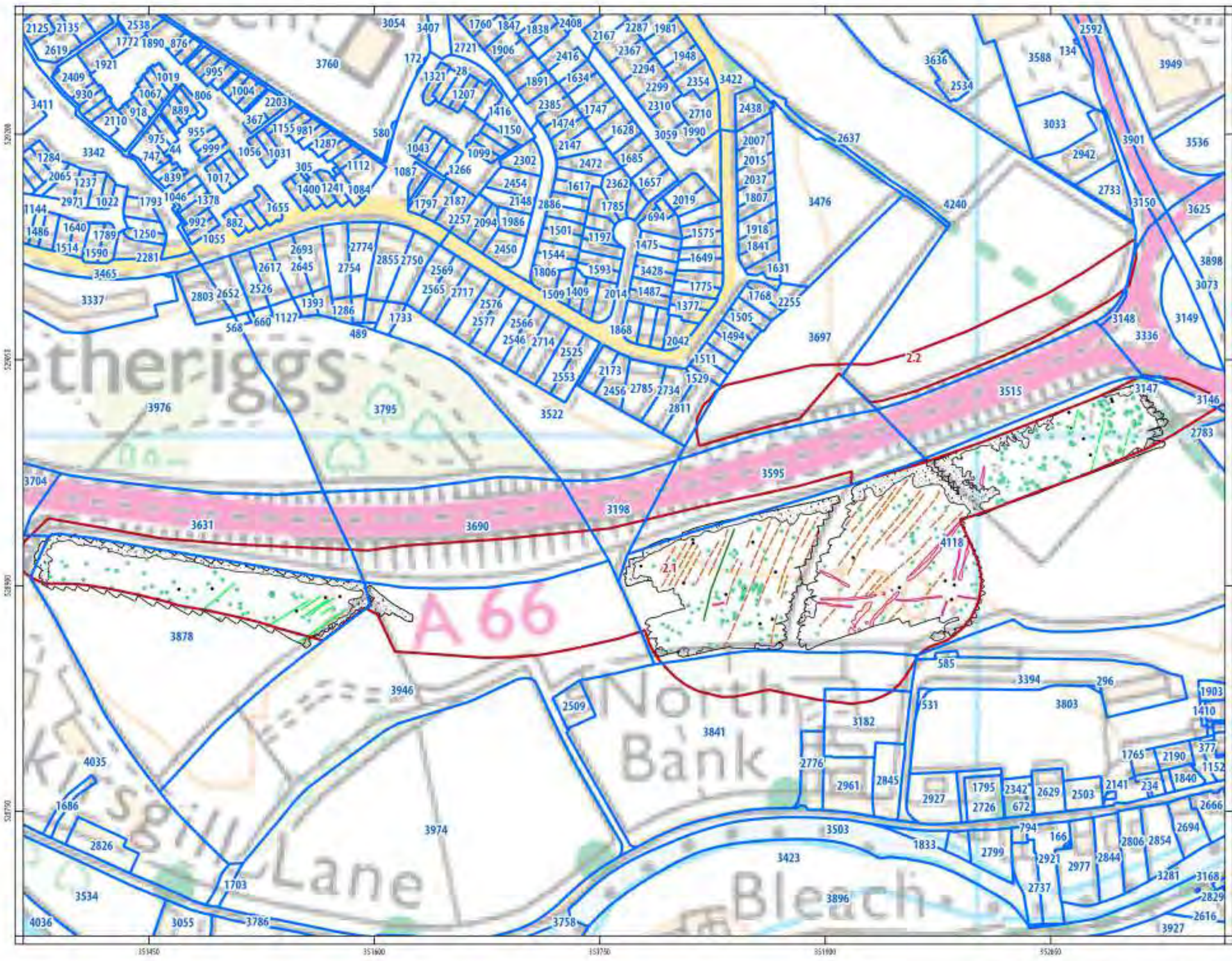
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 332 XY trace plot of minimally processed magnetometer data; AT1M Junction 53 Scotch Corner





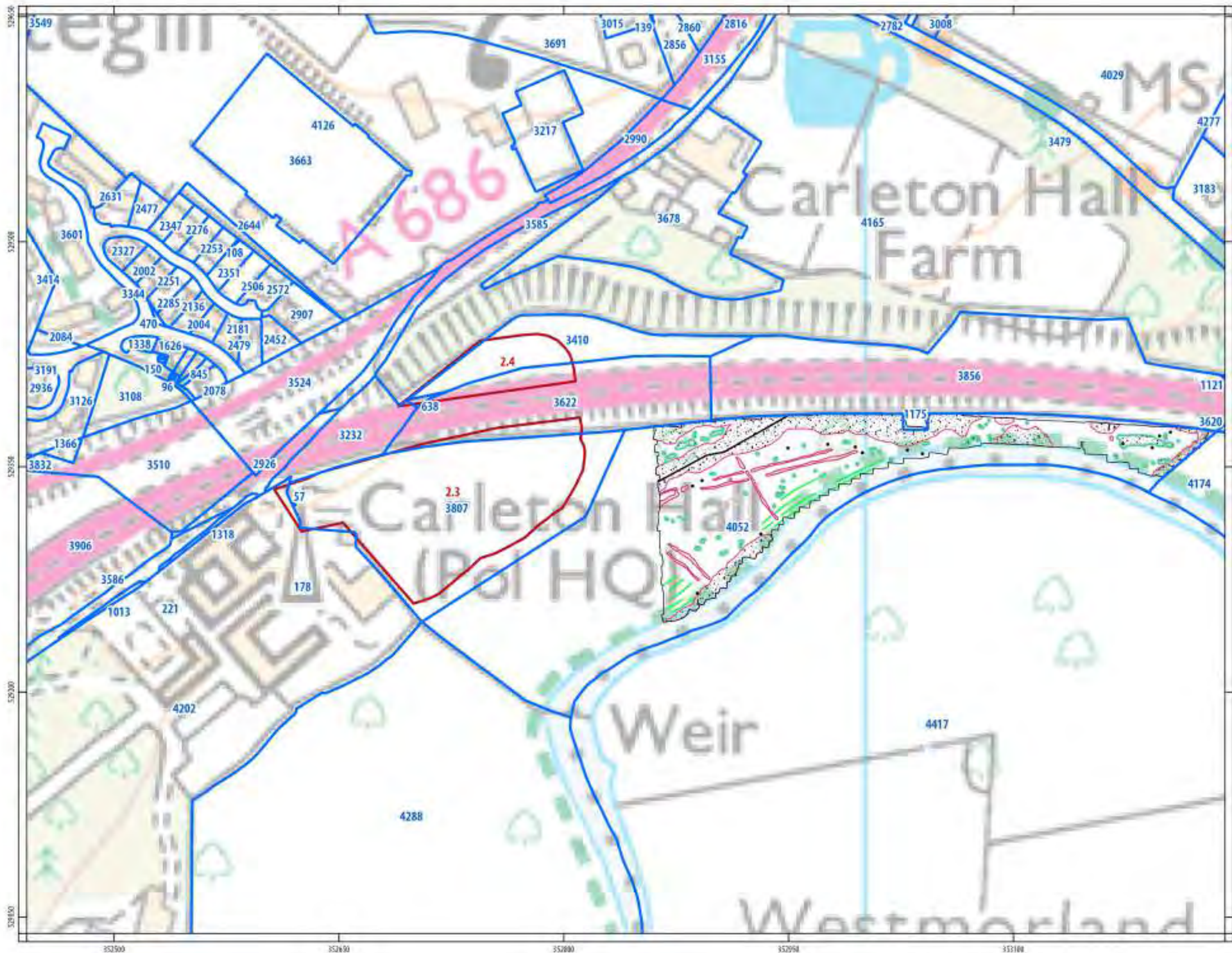
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
M6/J20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



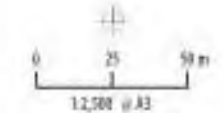




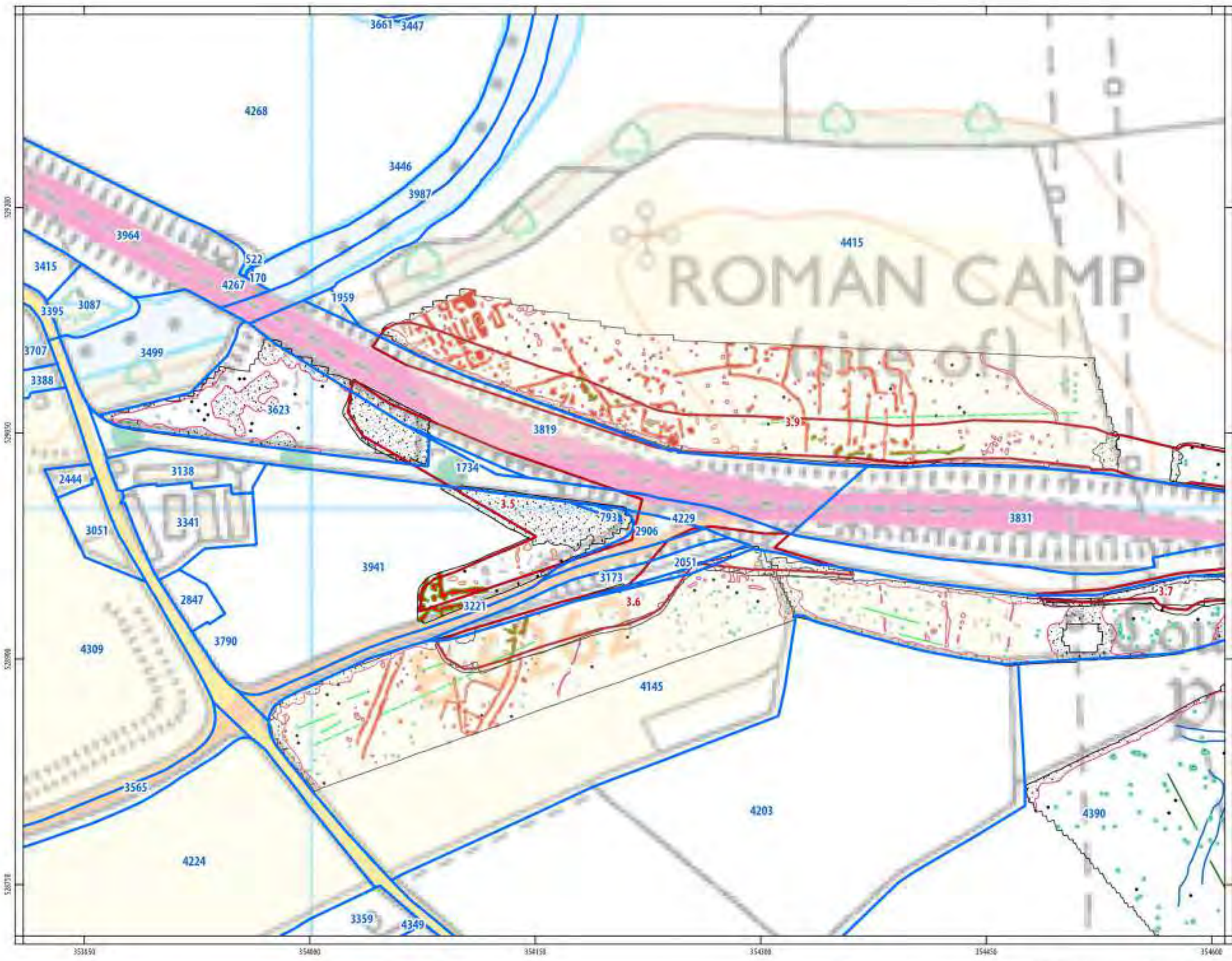
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
M6J40-466 Transpennine Upgrade

**CLIENT**  
Highways England



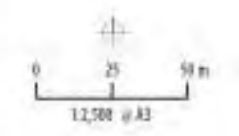




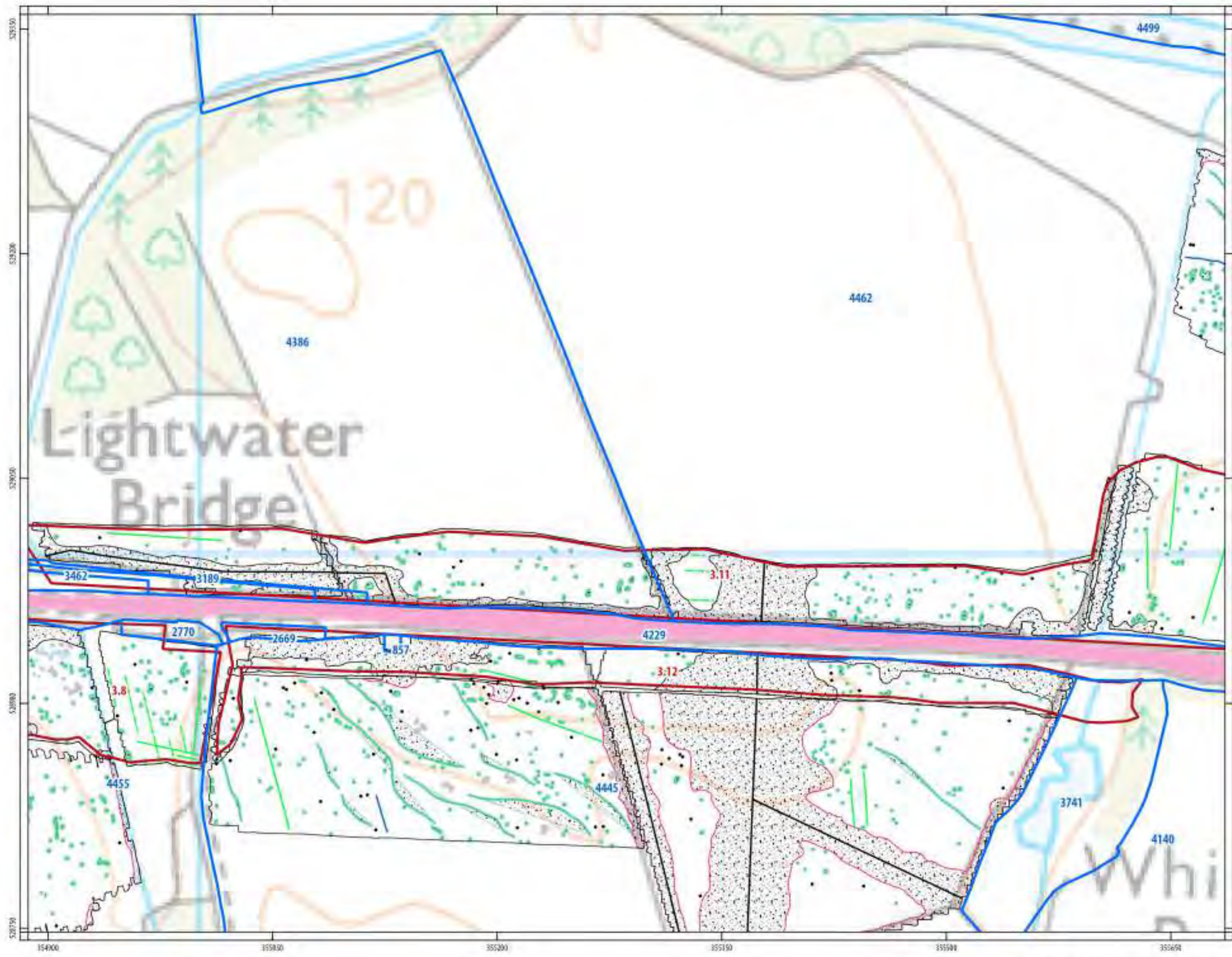
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LIPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England







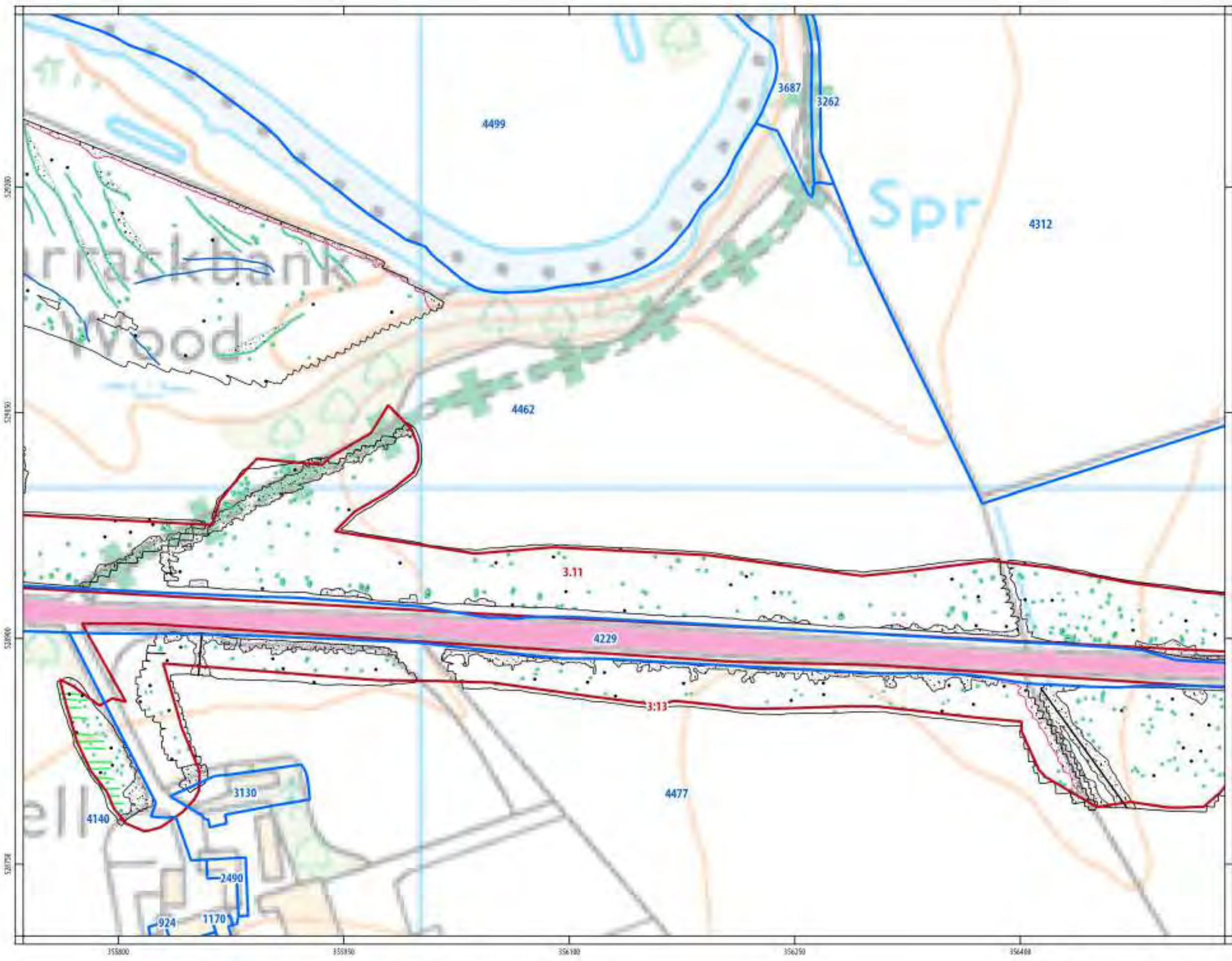
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kin burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
Highways England



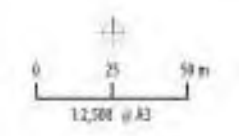




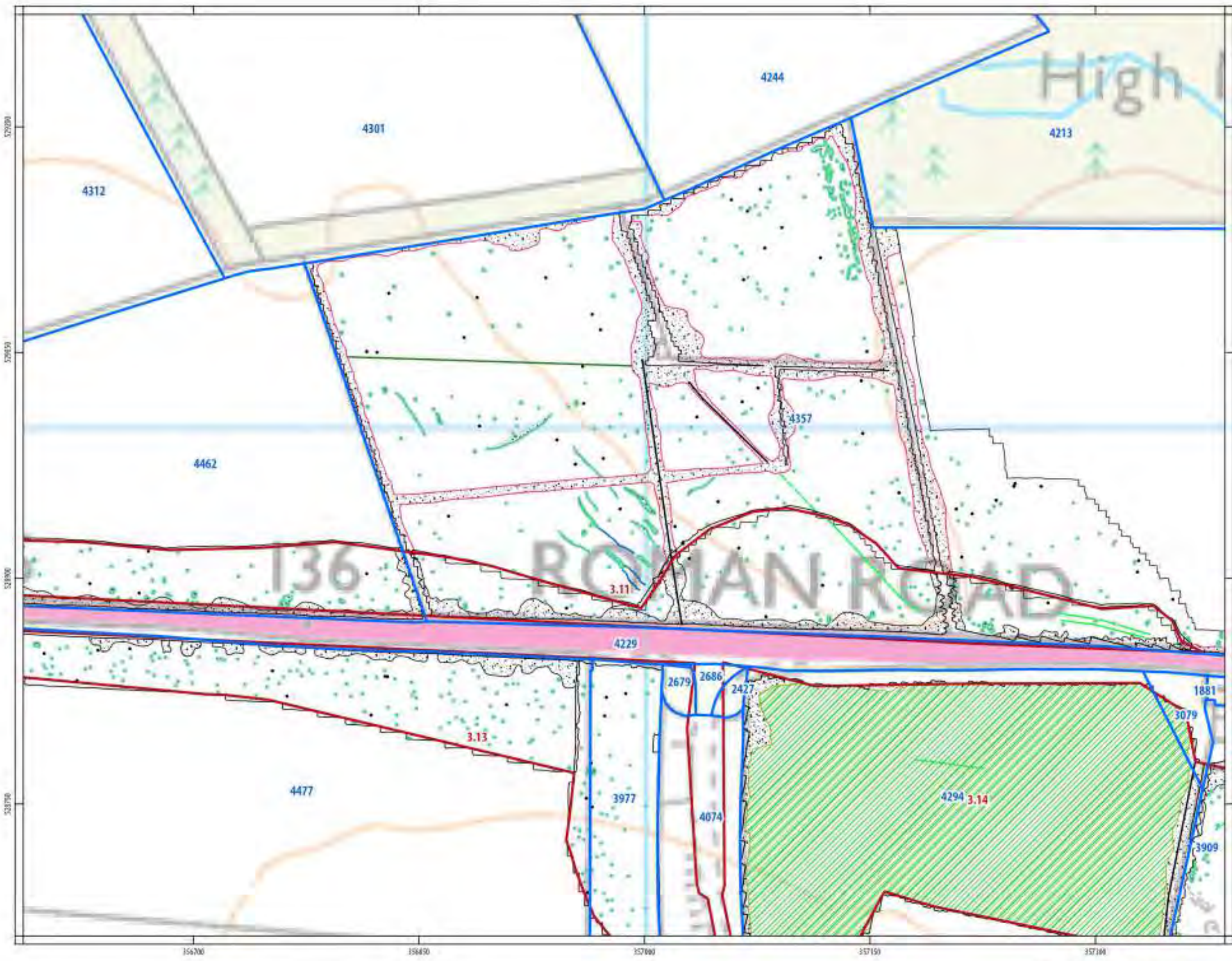
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



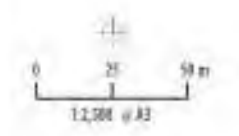




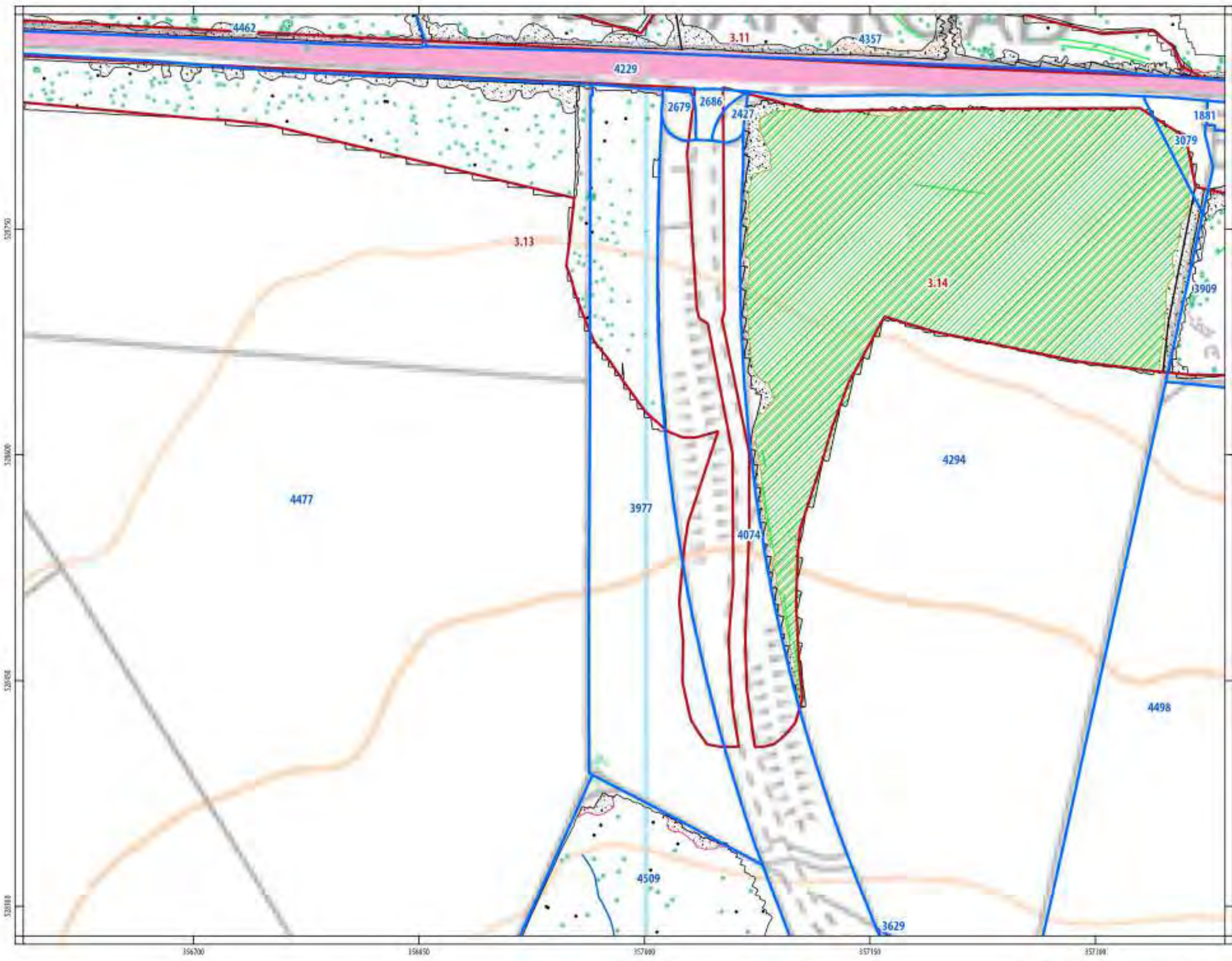
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/fertous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/fertous pipe

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



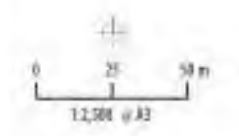




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- - - linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kin burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

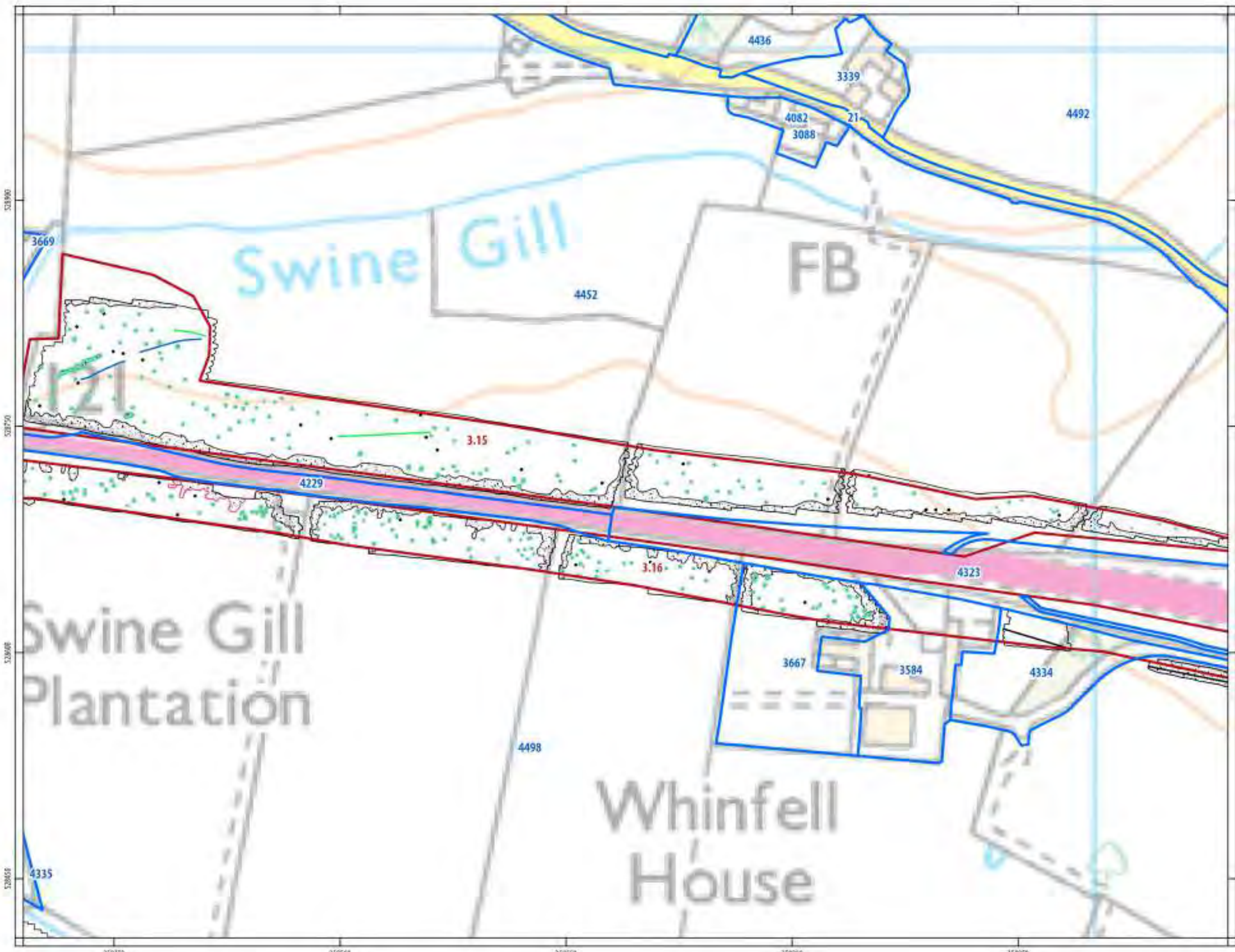
**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 340 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





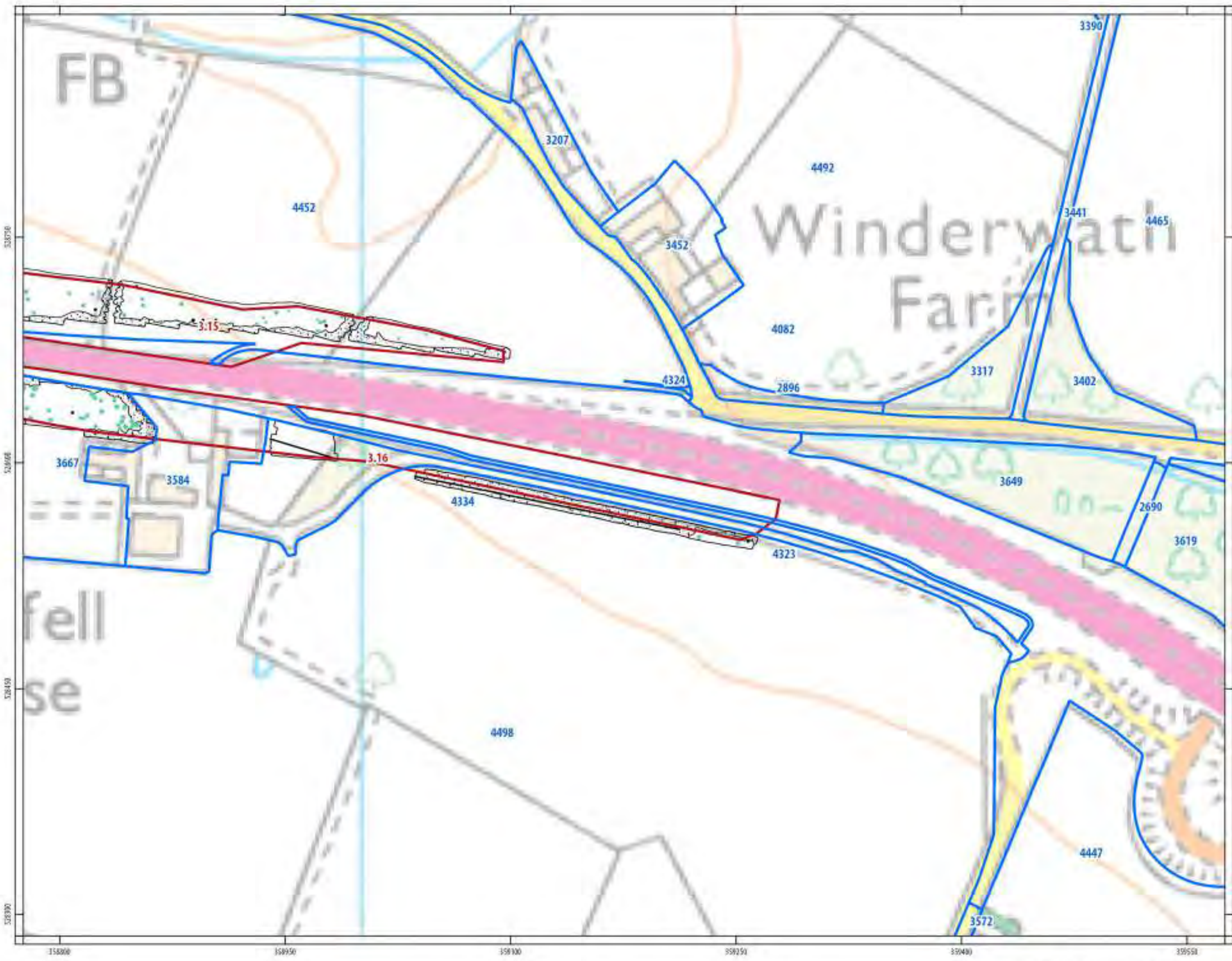
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



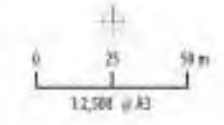




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

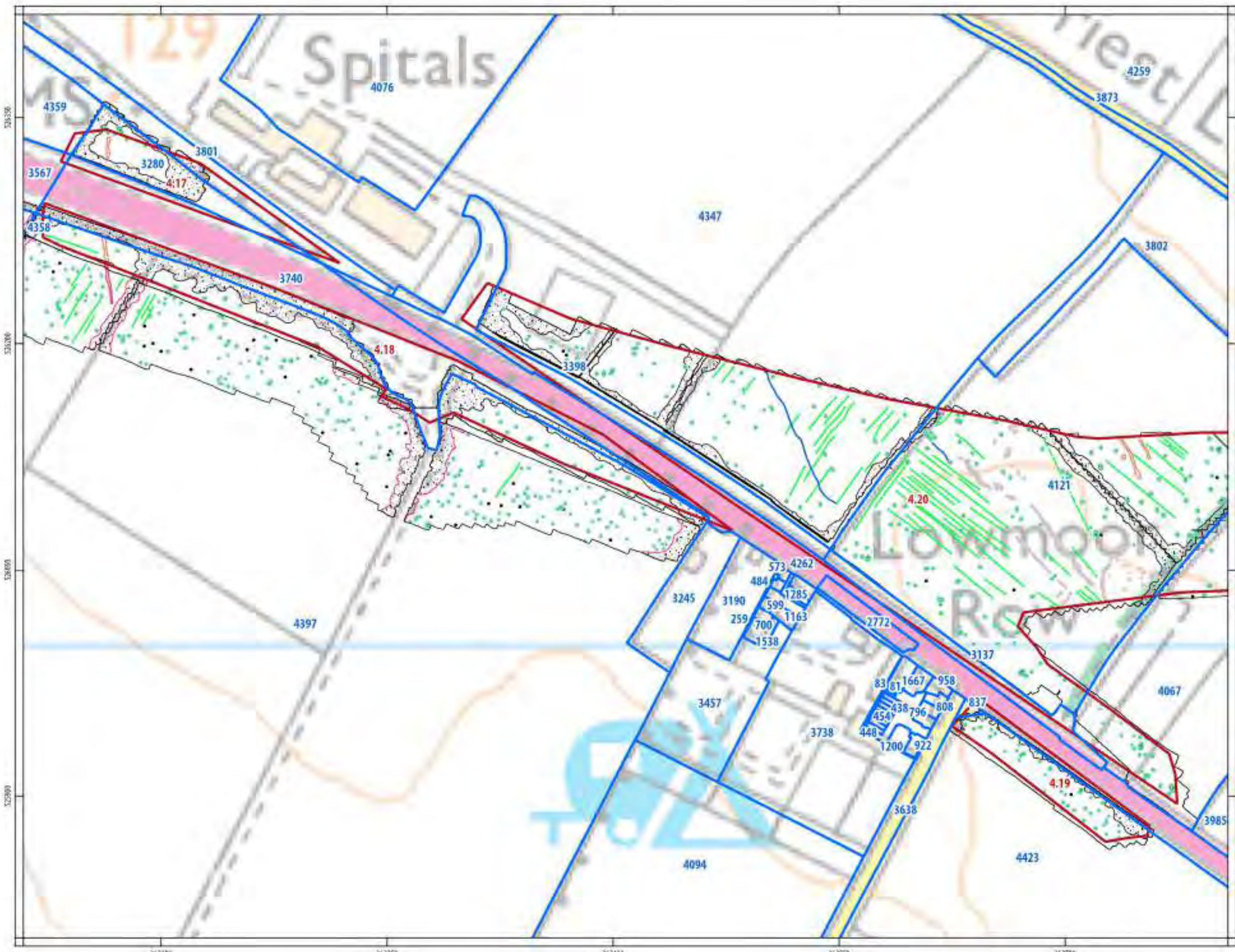
**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 342 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

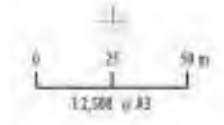




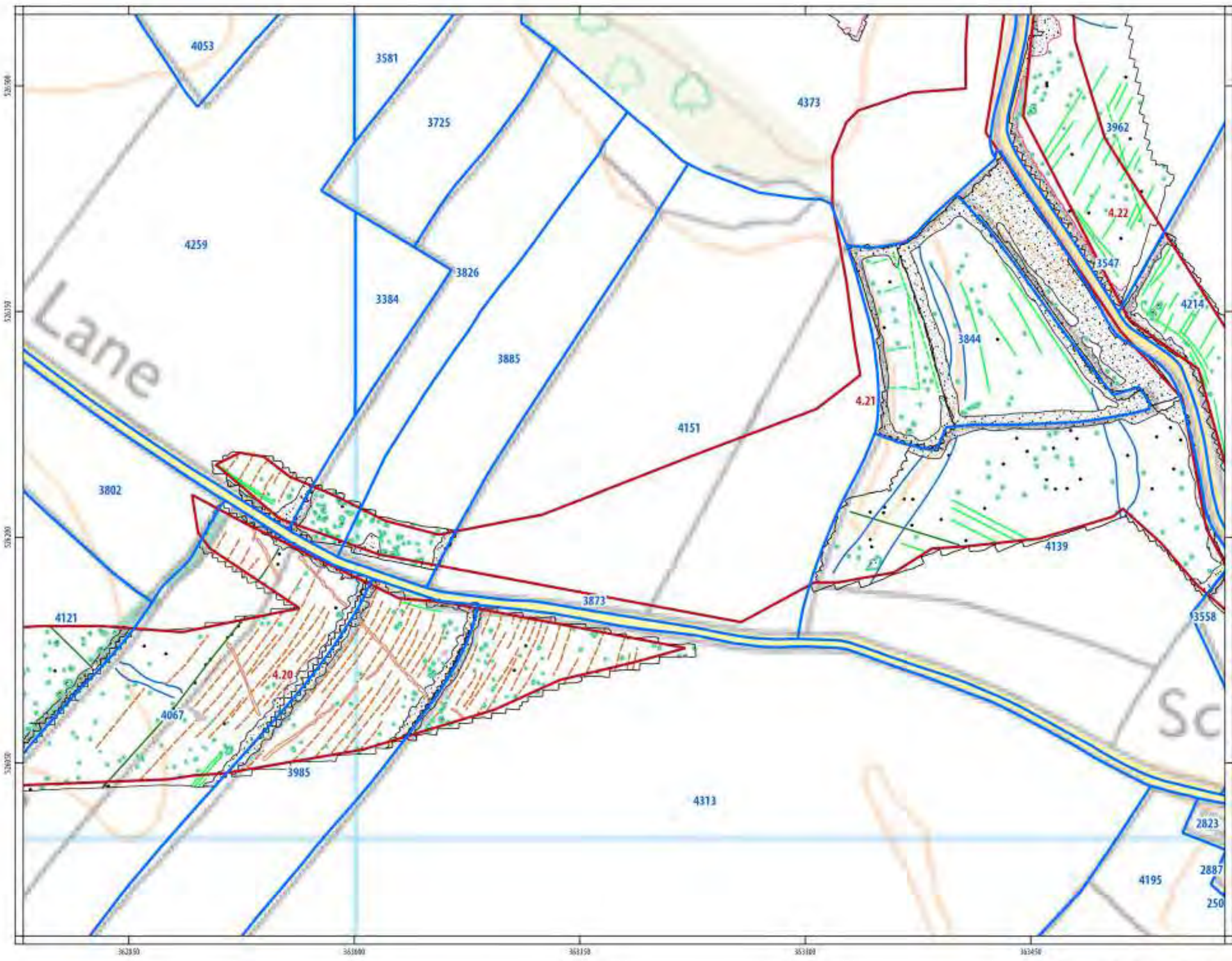
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
M20-496 Transpennine Upgrade

**CLIENT**  
Highways England



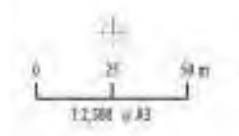




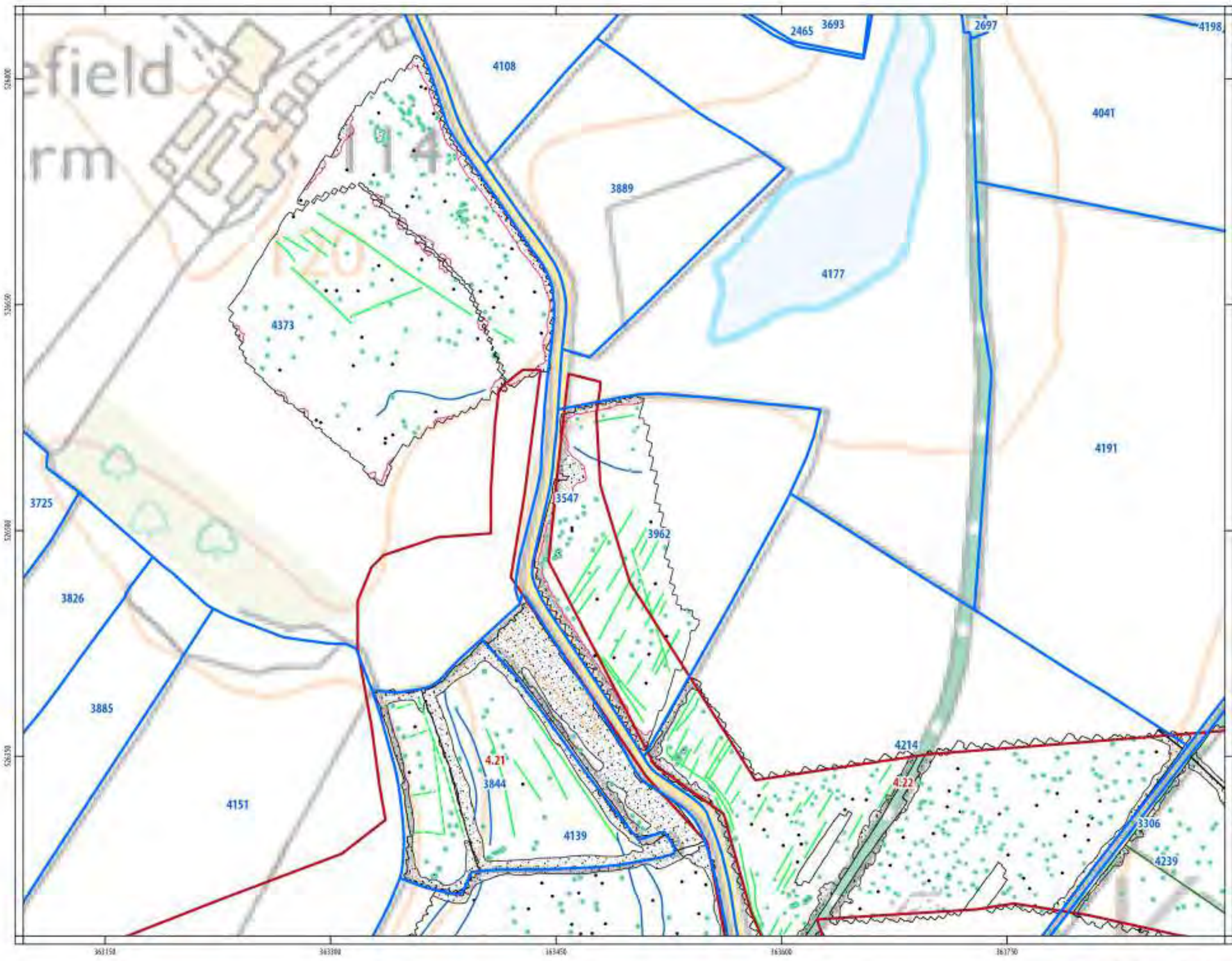
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/lin burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

**PROJECT**  
M20-496 Transpennine Upgrade

**CLIENT**  
Highways England



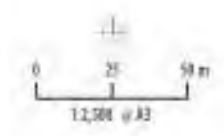




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

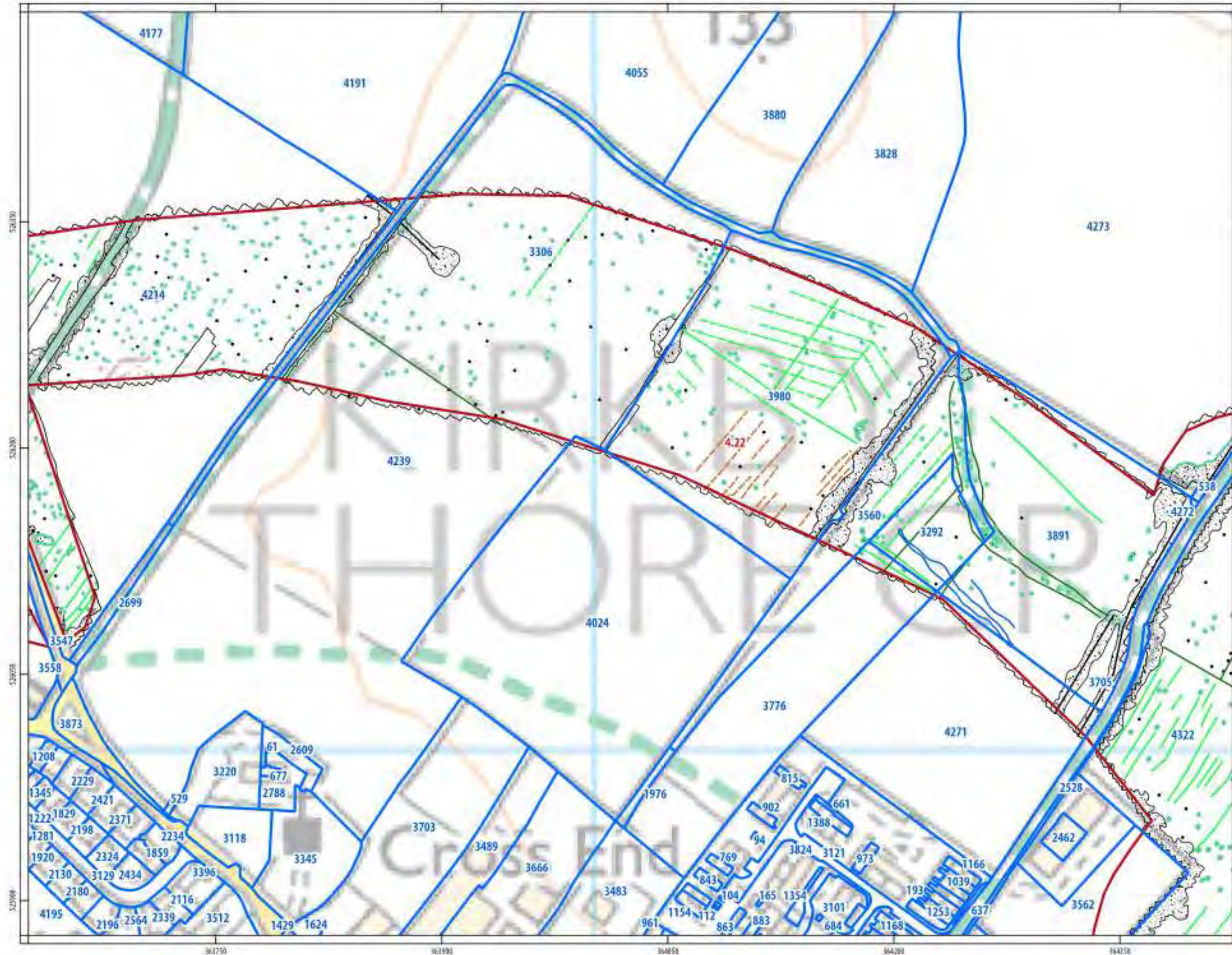
**PROJECT**  
APU20 - A96 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 345 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

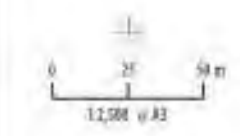




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

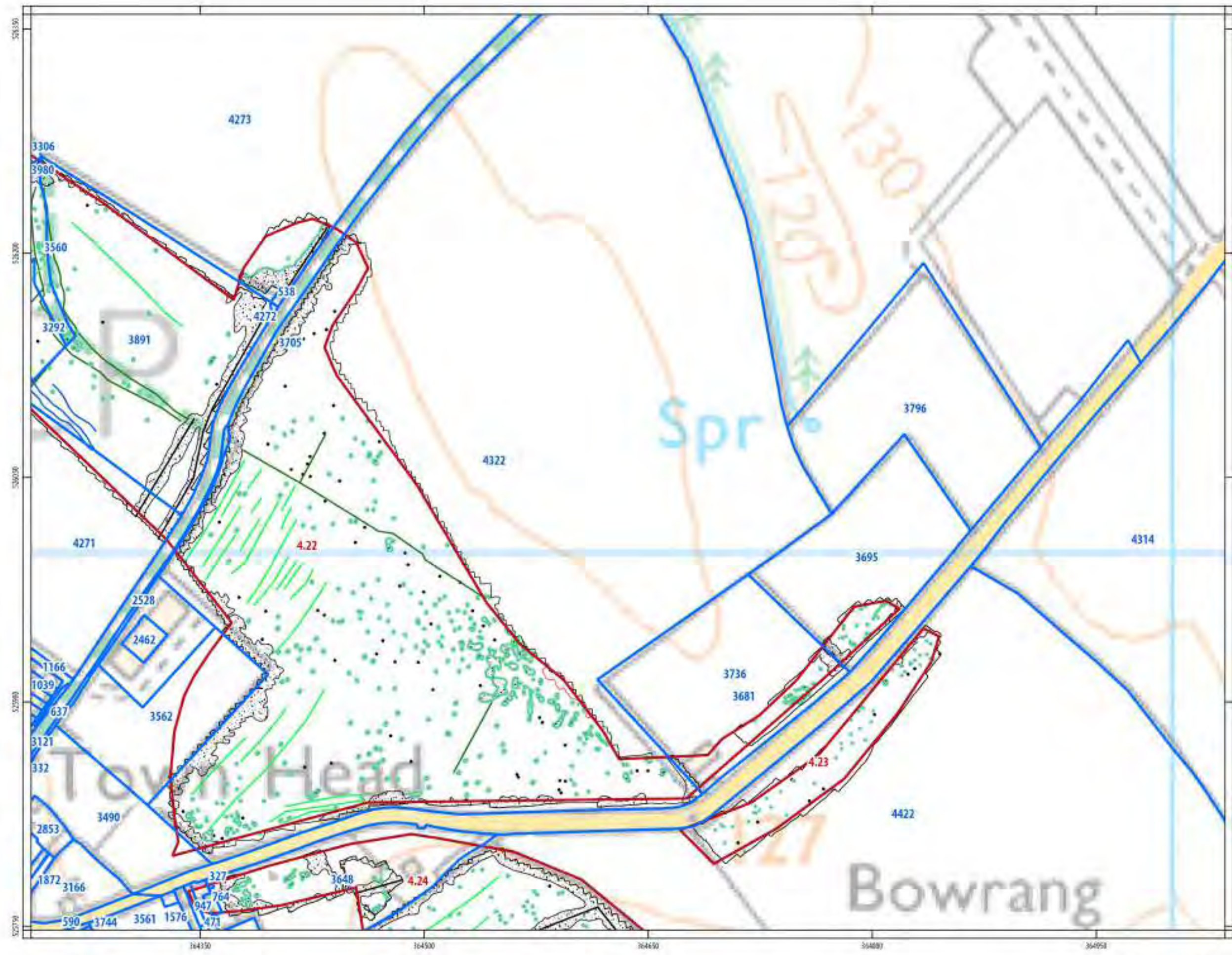
**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 346 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

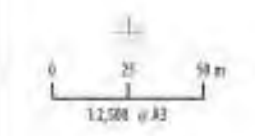




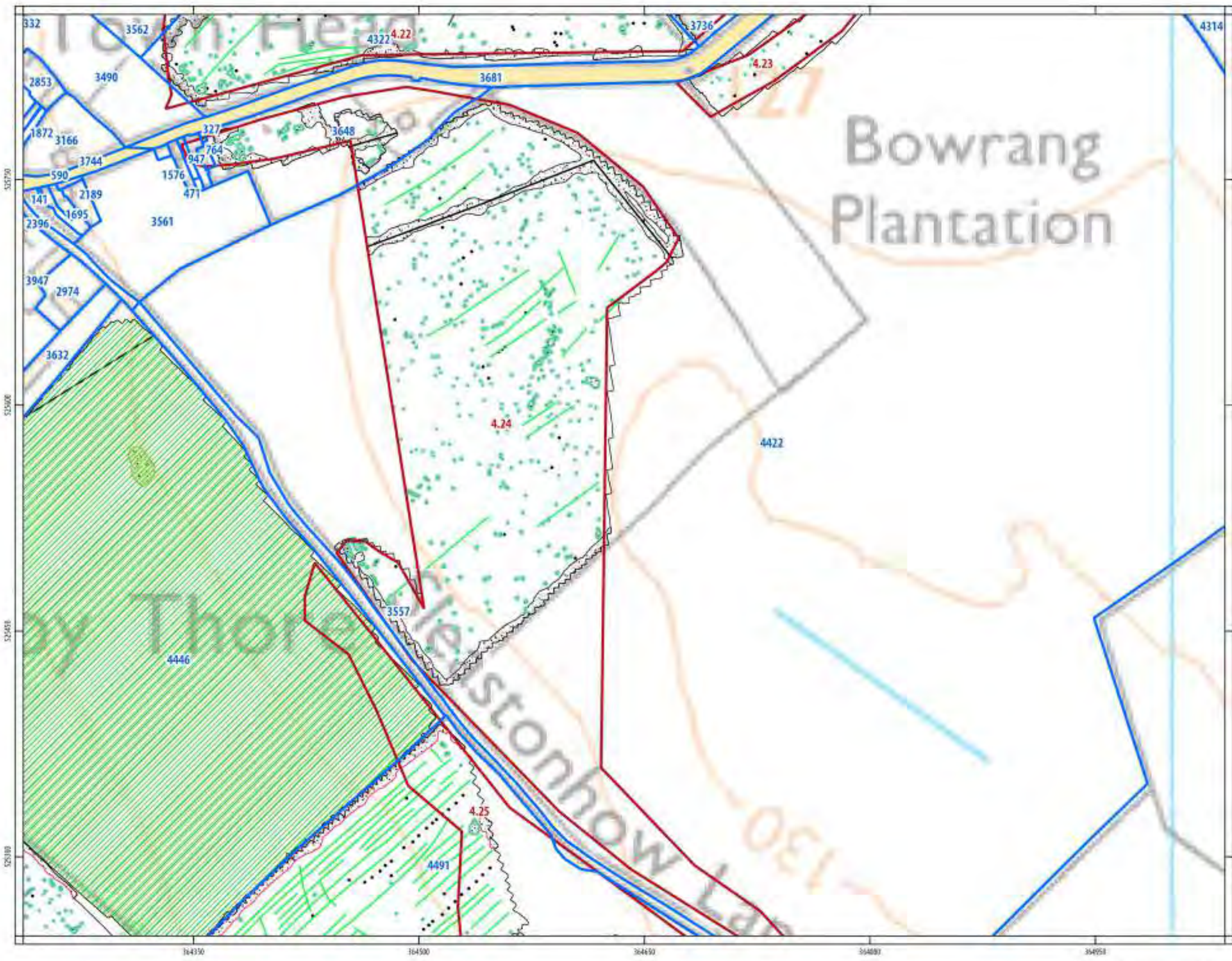
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
M20-496 Transpennine Upgrade

**CLIENT**  
Highways England



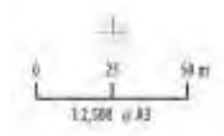




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/lin burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

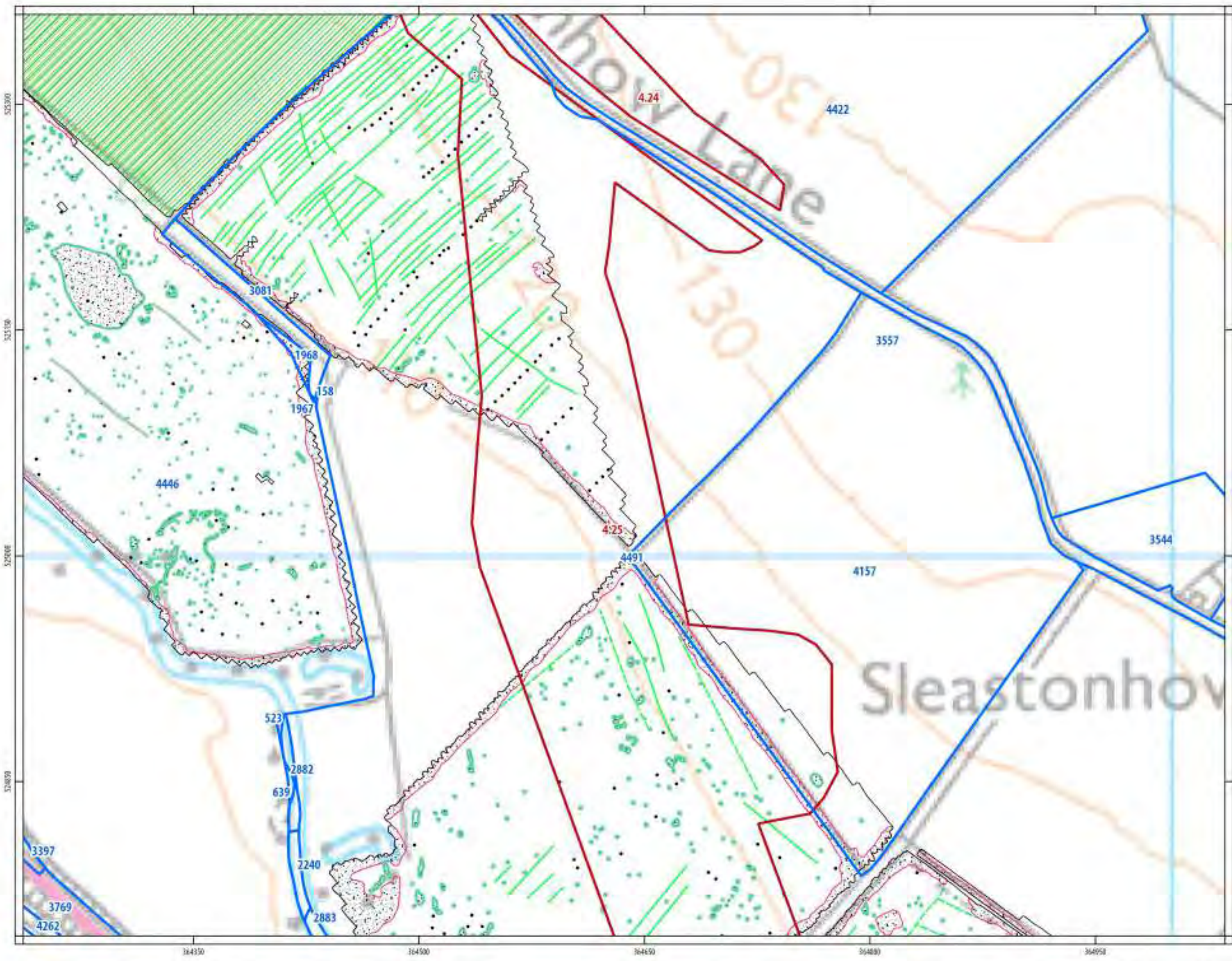
**PROJECT**  
M20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS. 348 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

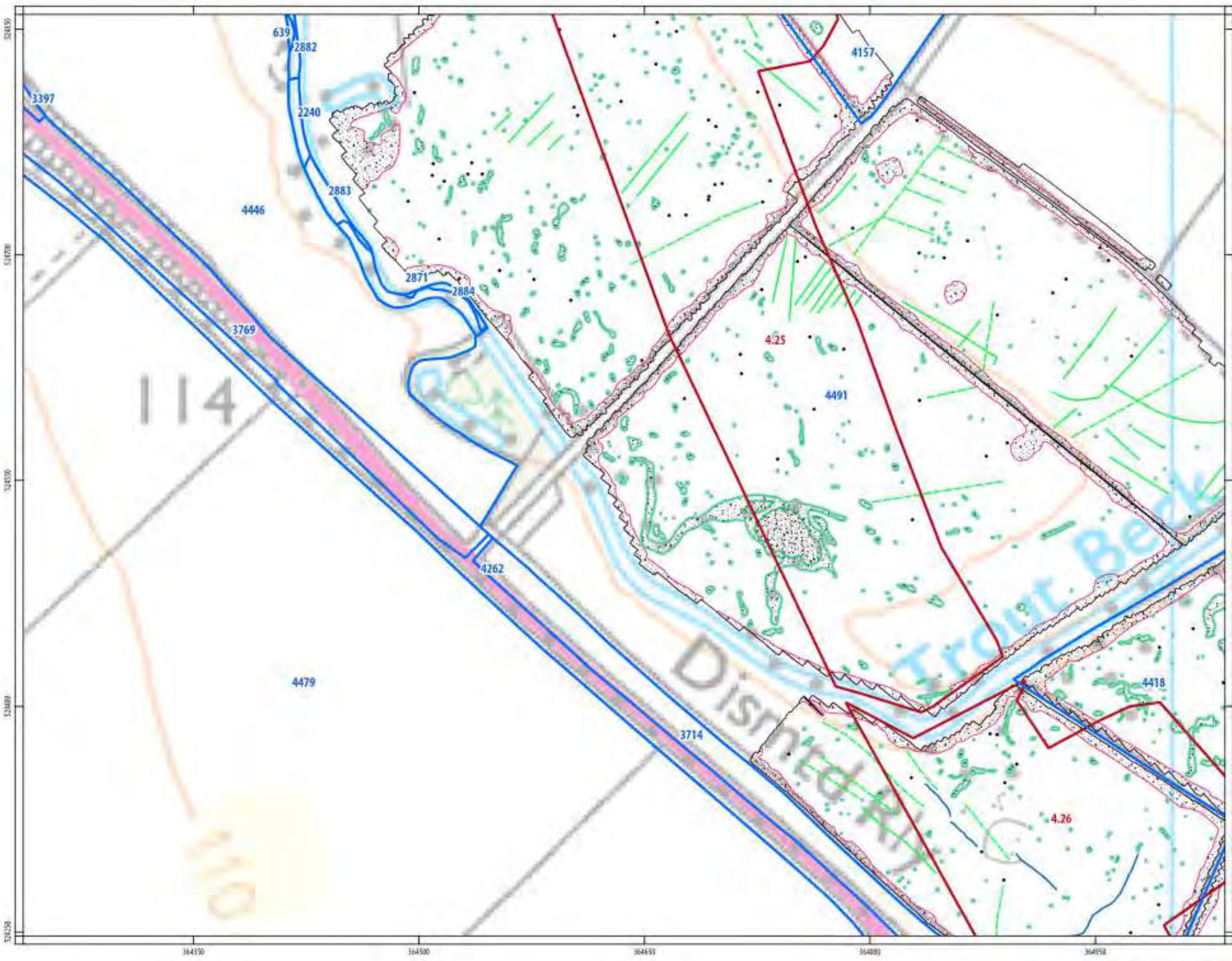
**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 349 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

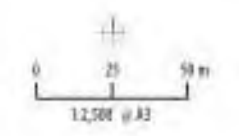




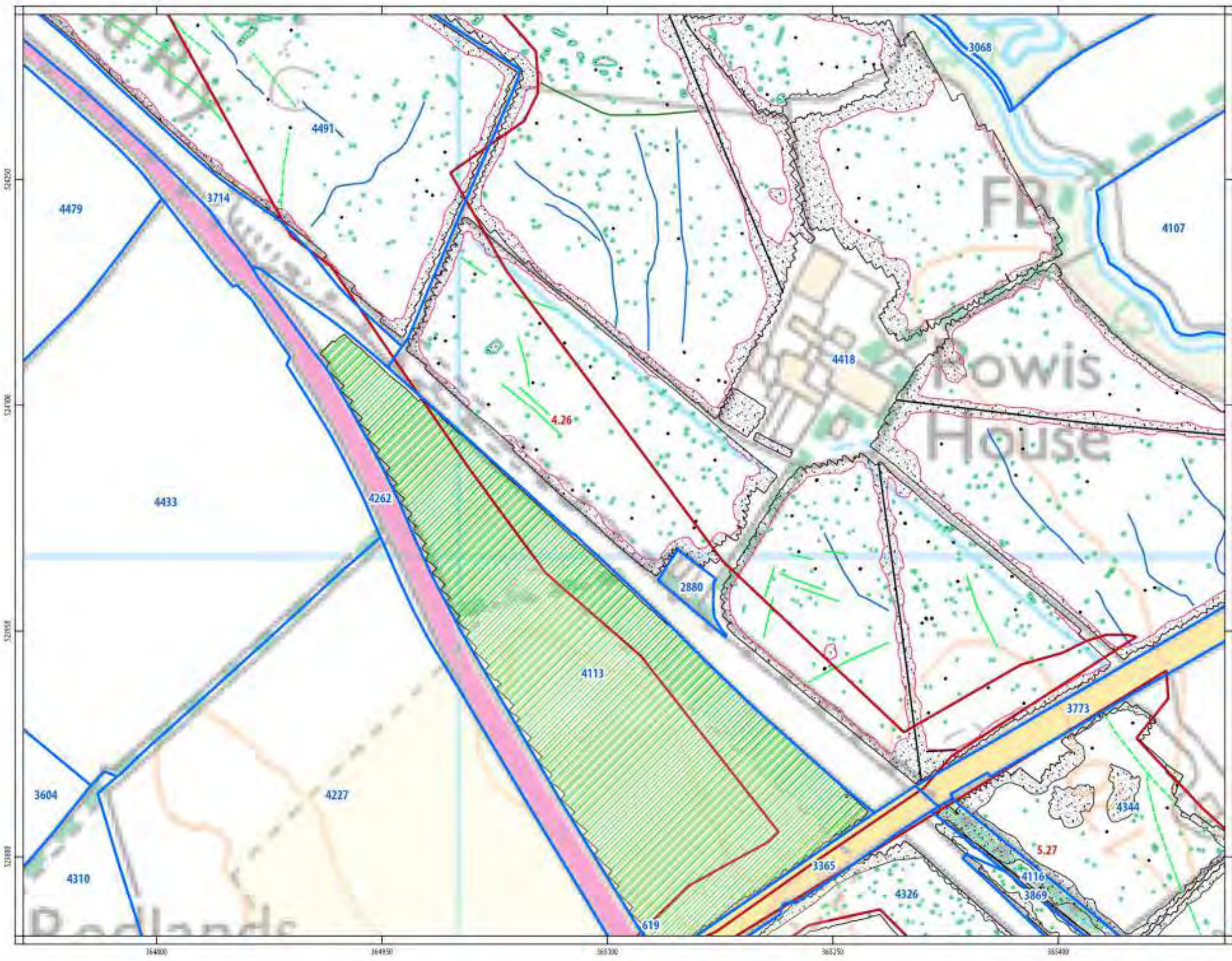
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- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LPM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
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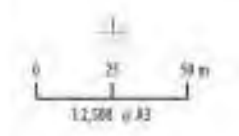




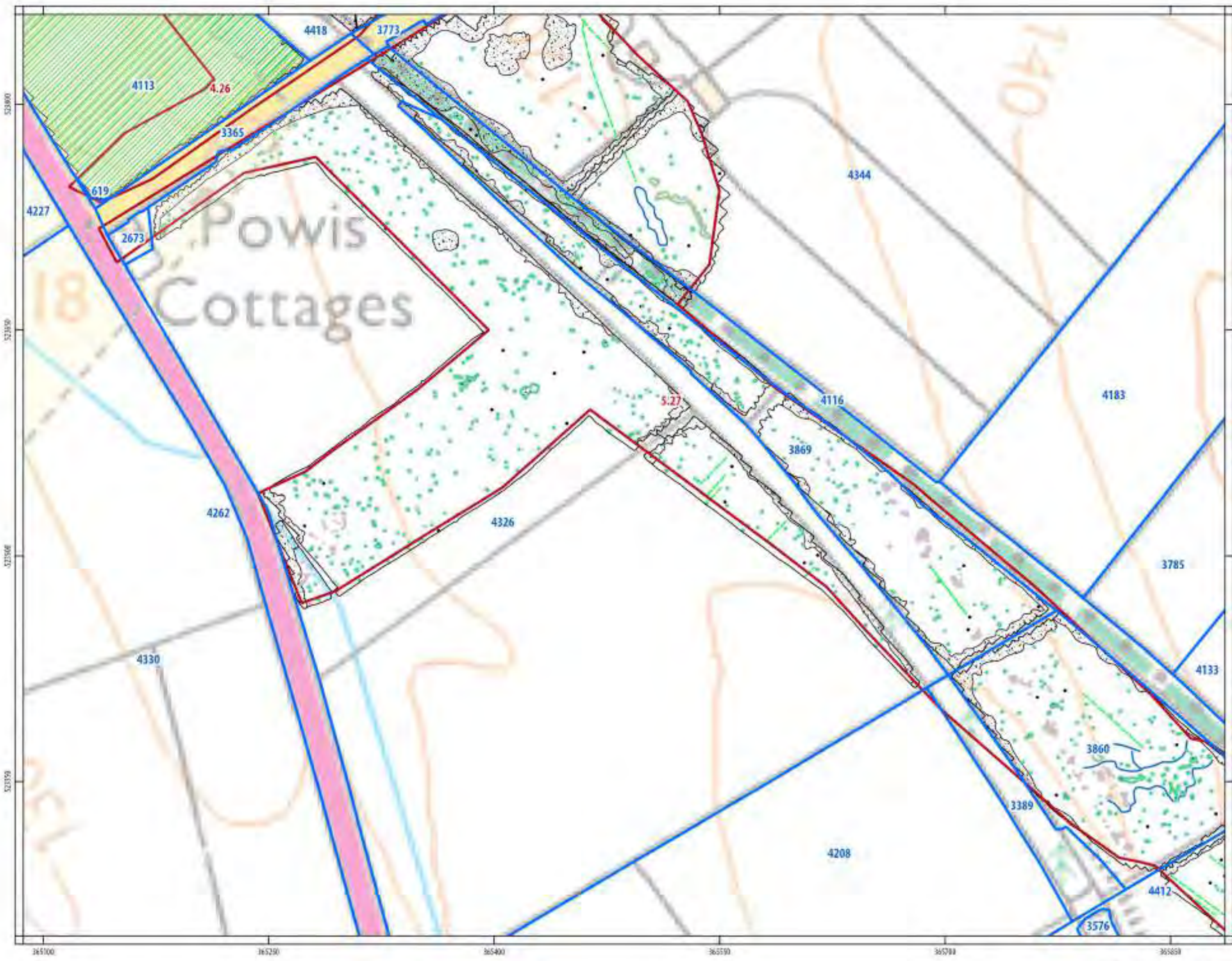
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- dipolar isolated/ferrous
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- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kin burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
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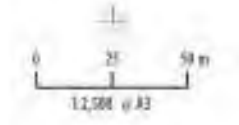




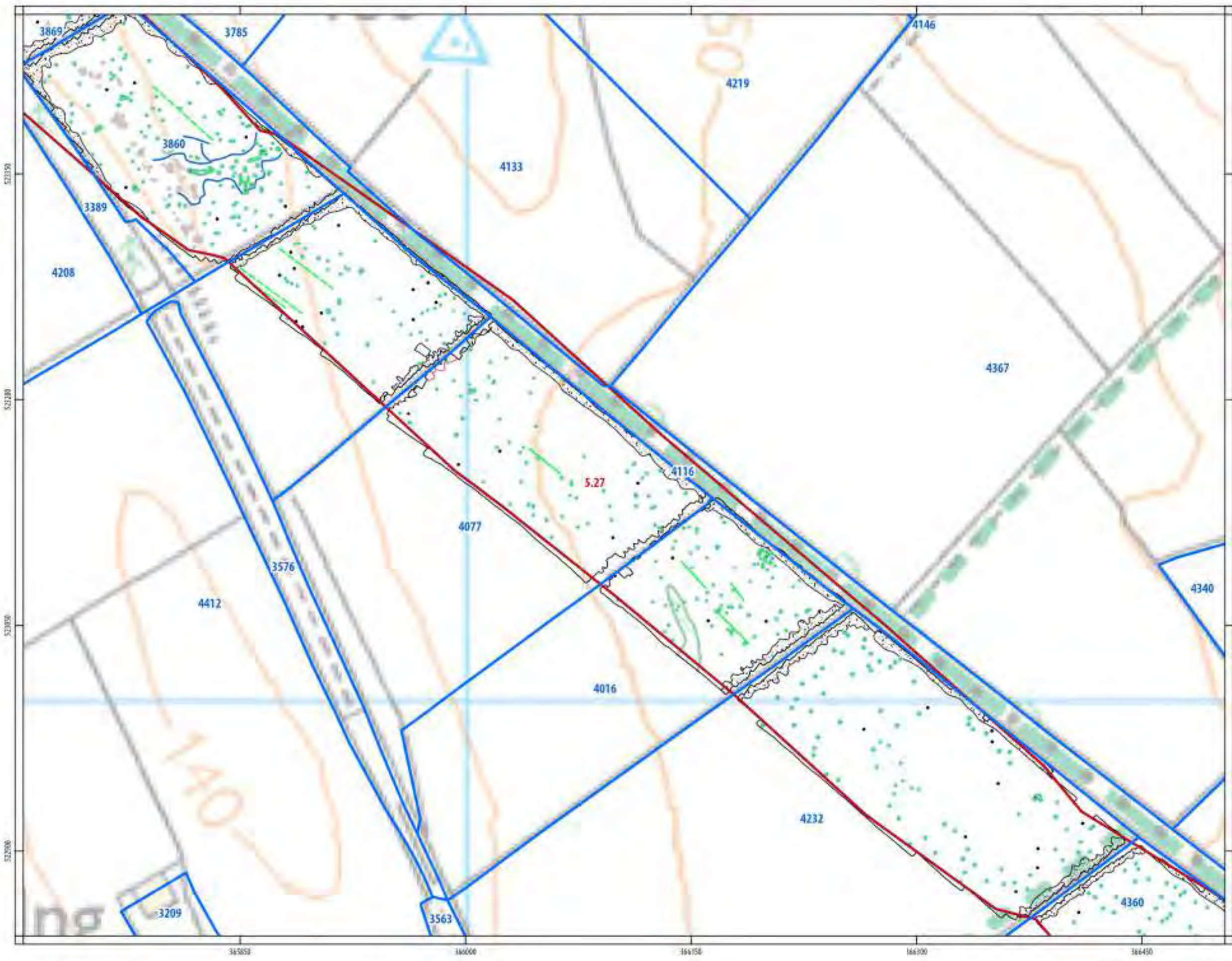
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- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kin burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

**PROJECT**  
APU20 - A96 Transpennine Upgrade

**CLIENT**  
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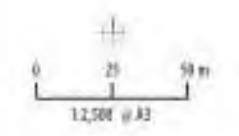




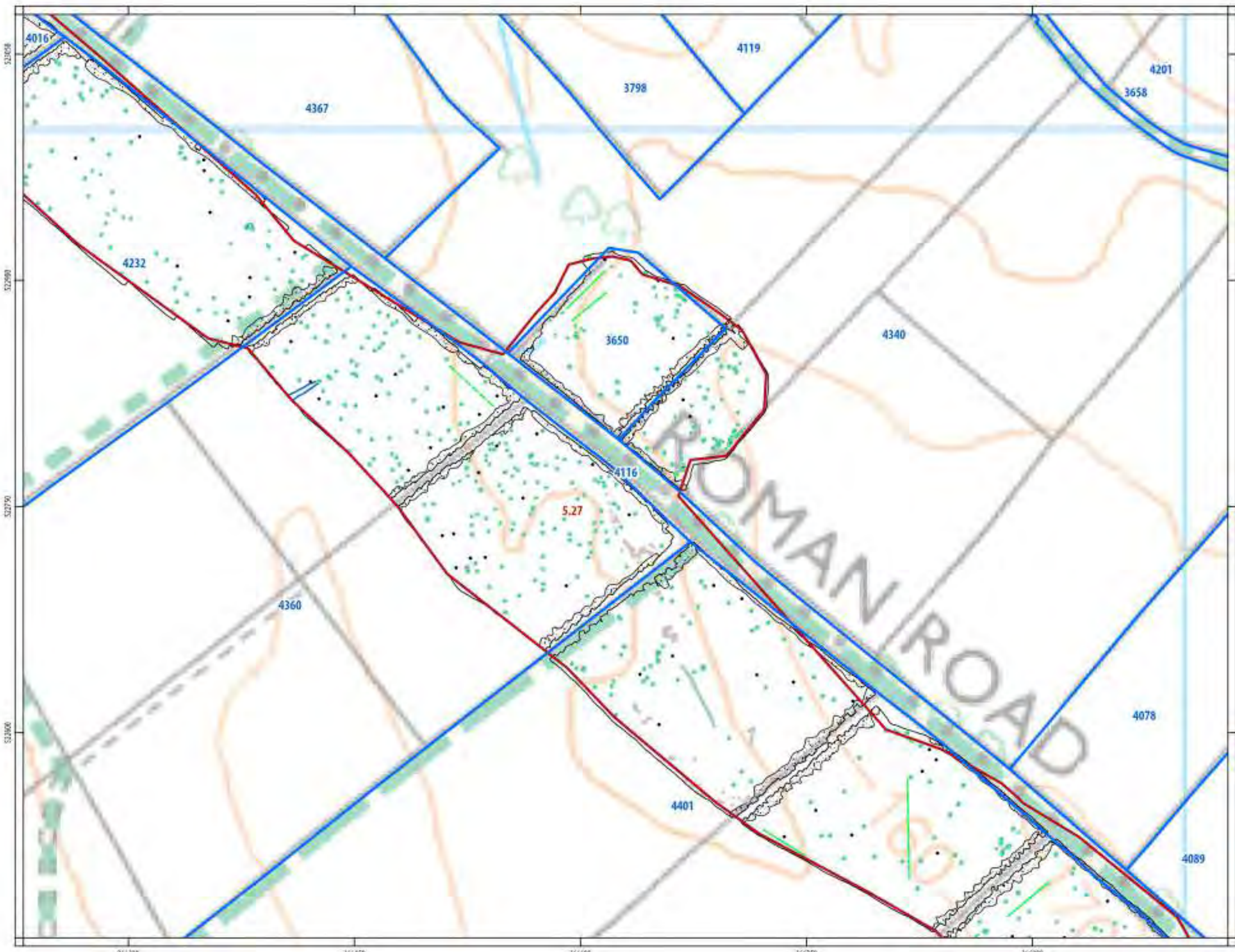
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- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
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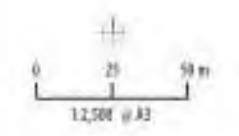




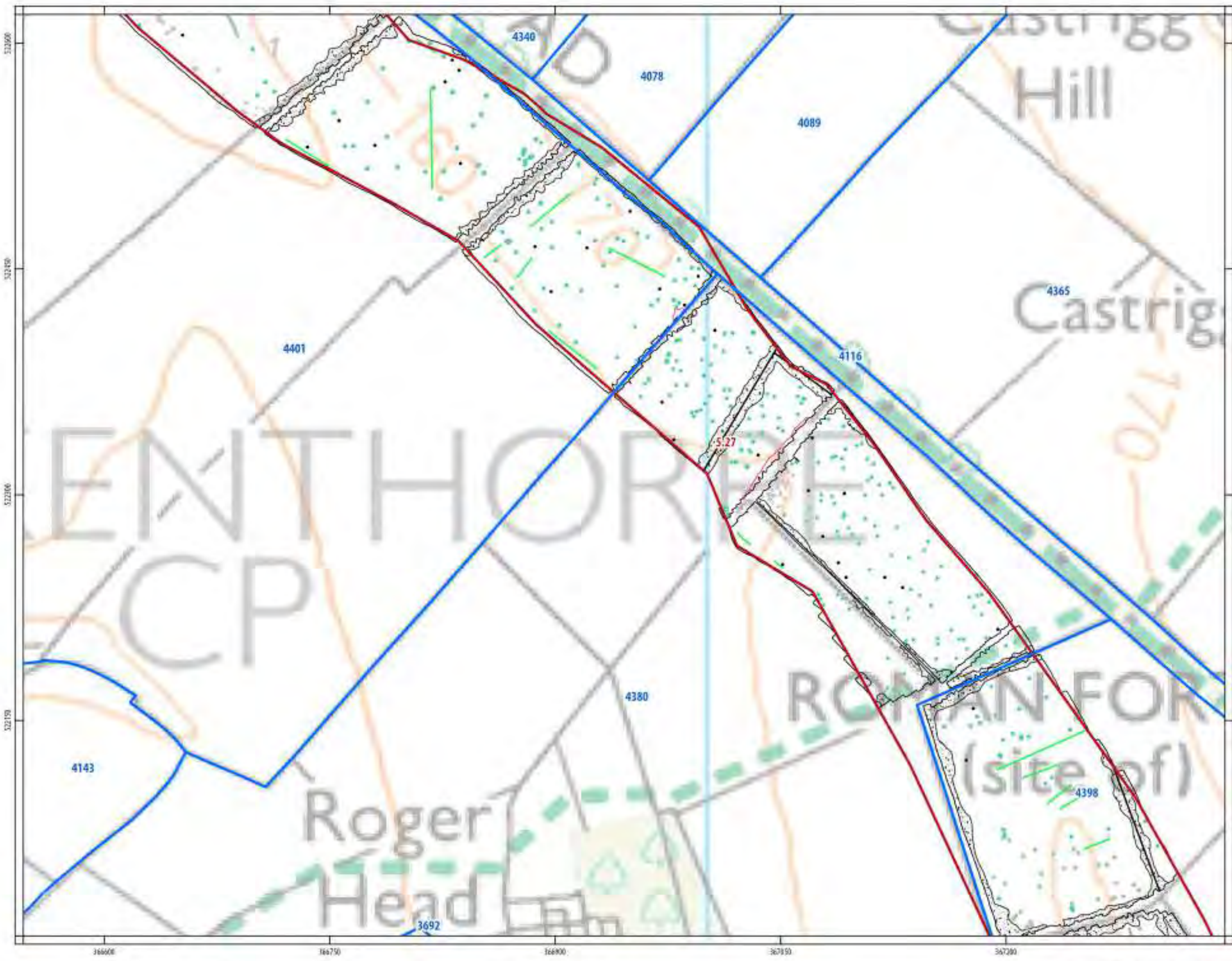
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- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



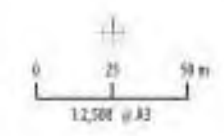




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- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- - - linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

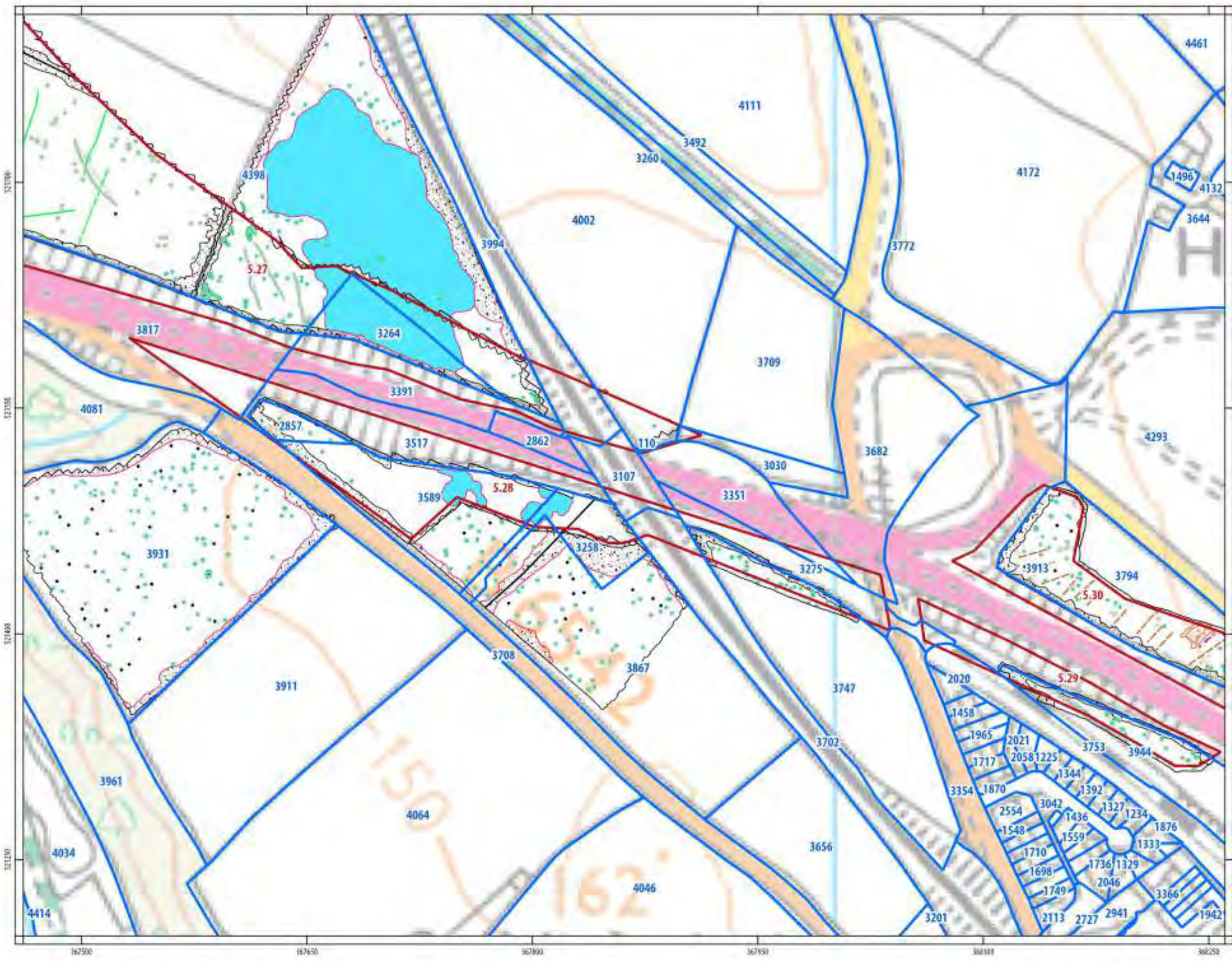
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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

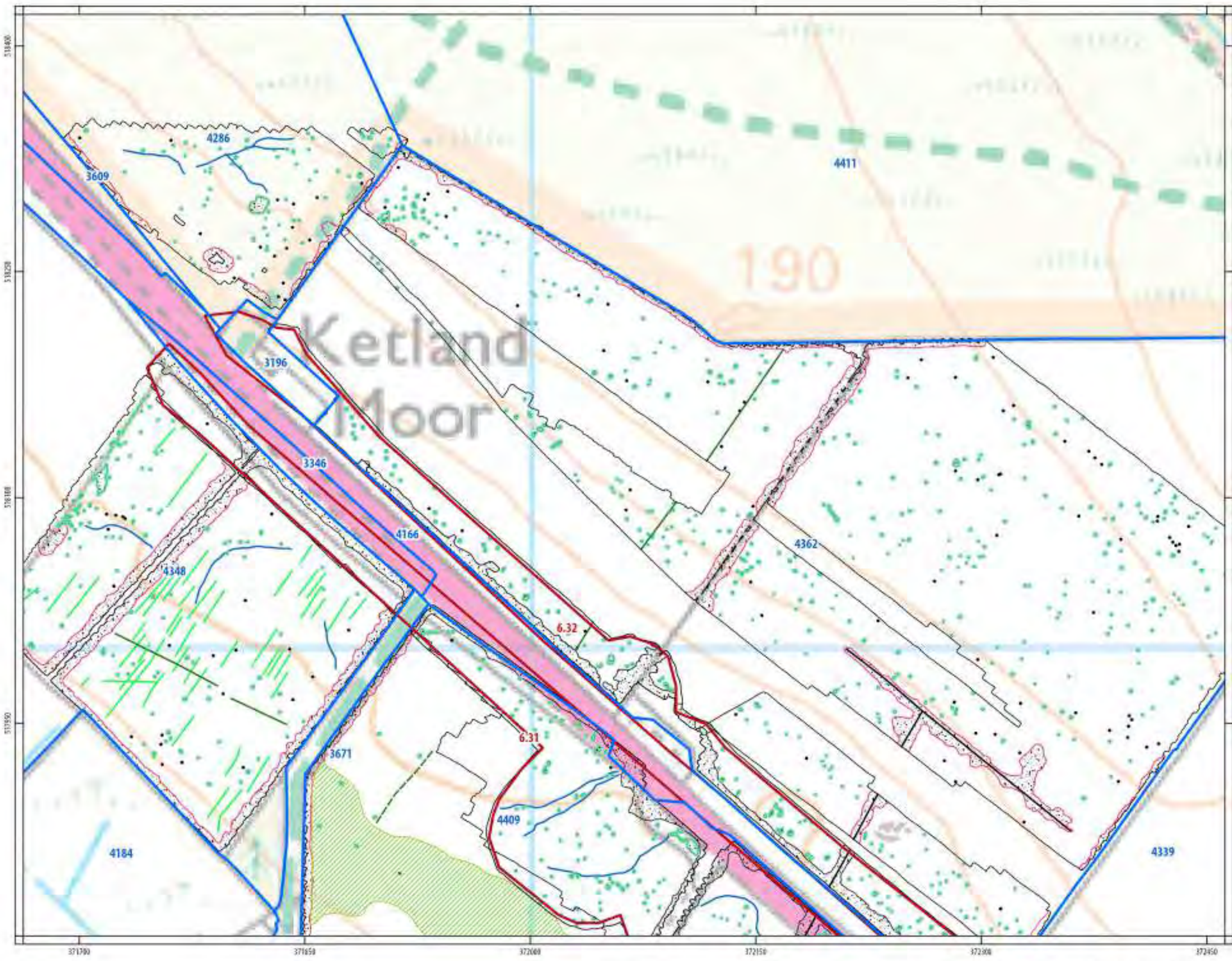
**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS. 357 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

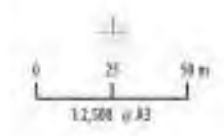




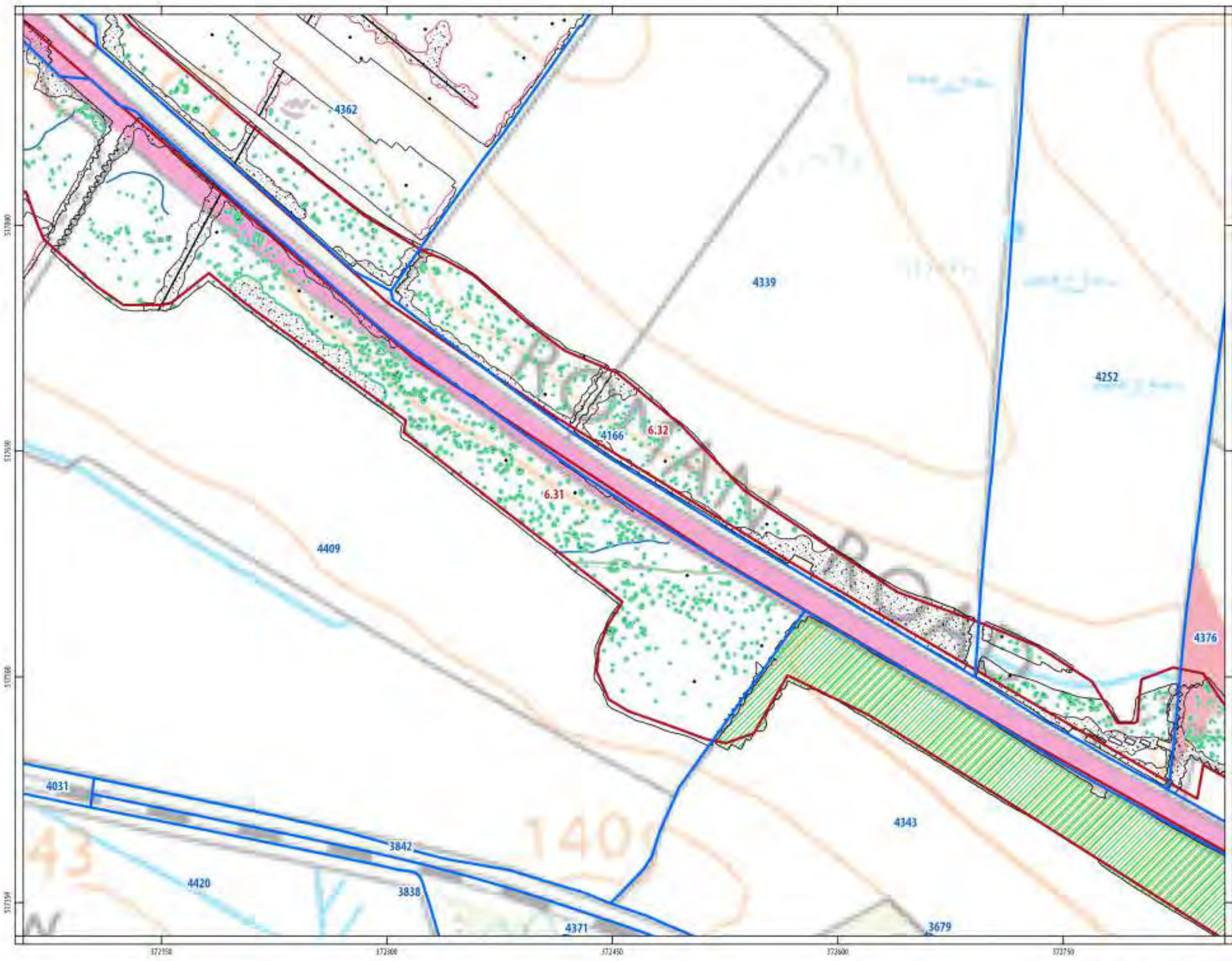
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- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kin burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
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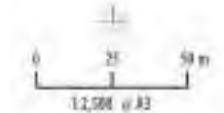




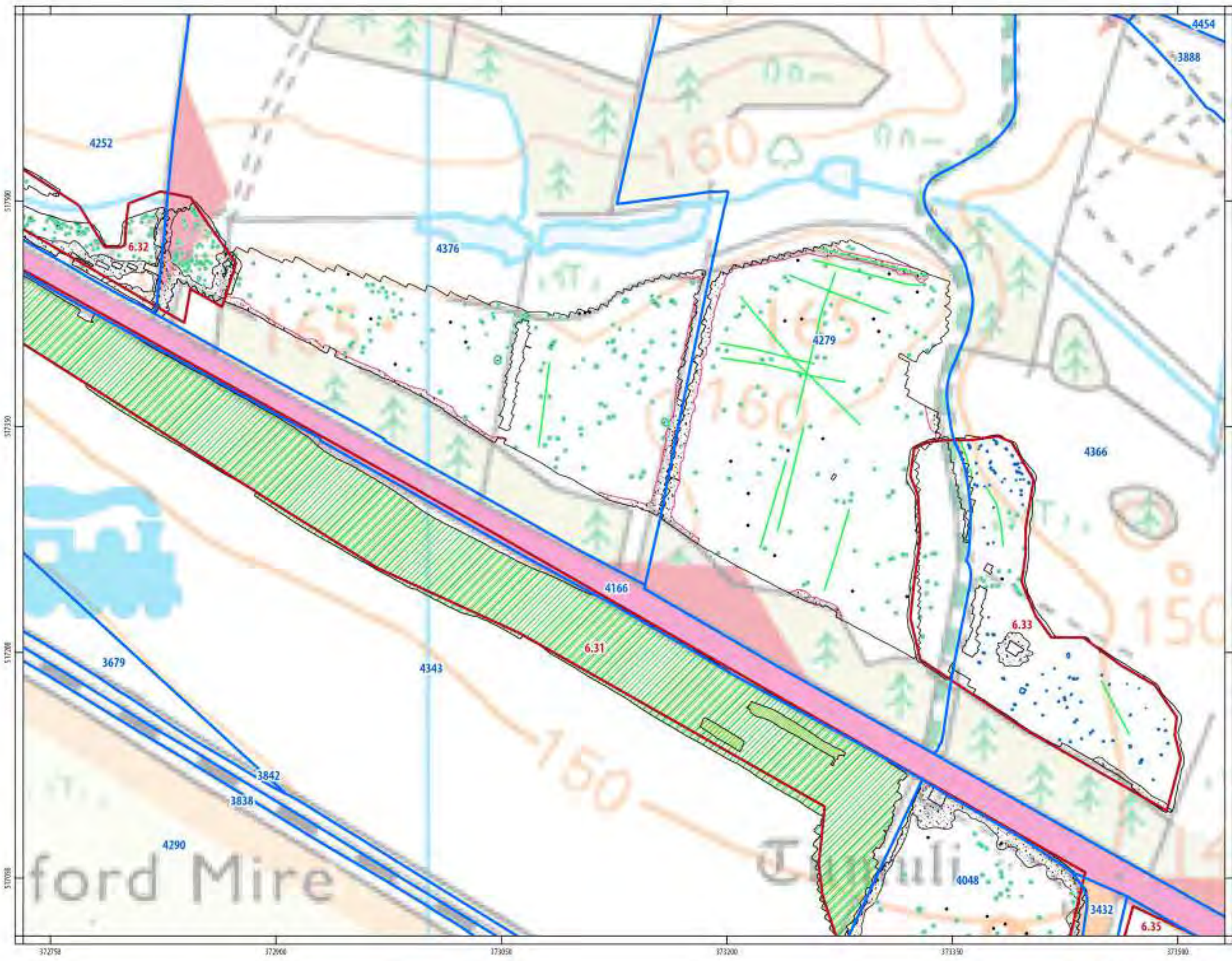
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
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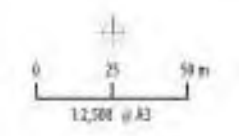




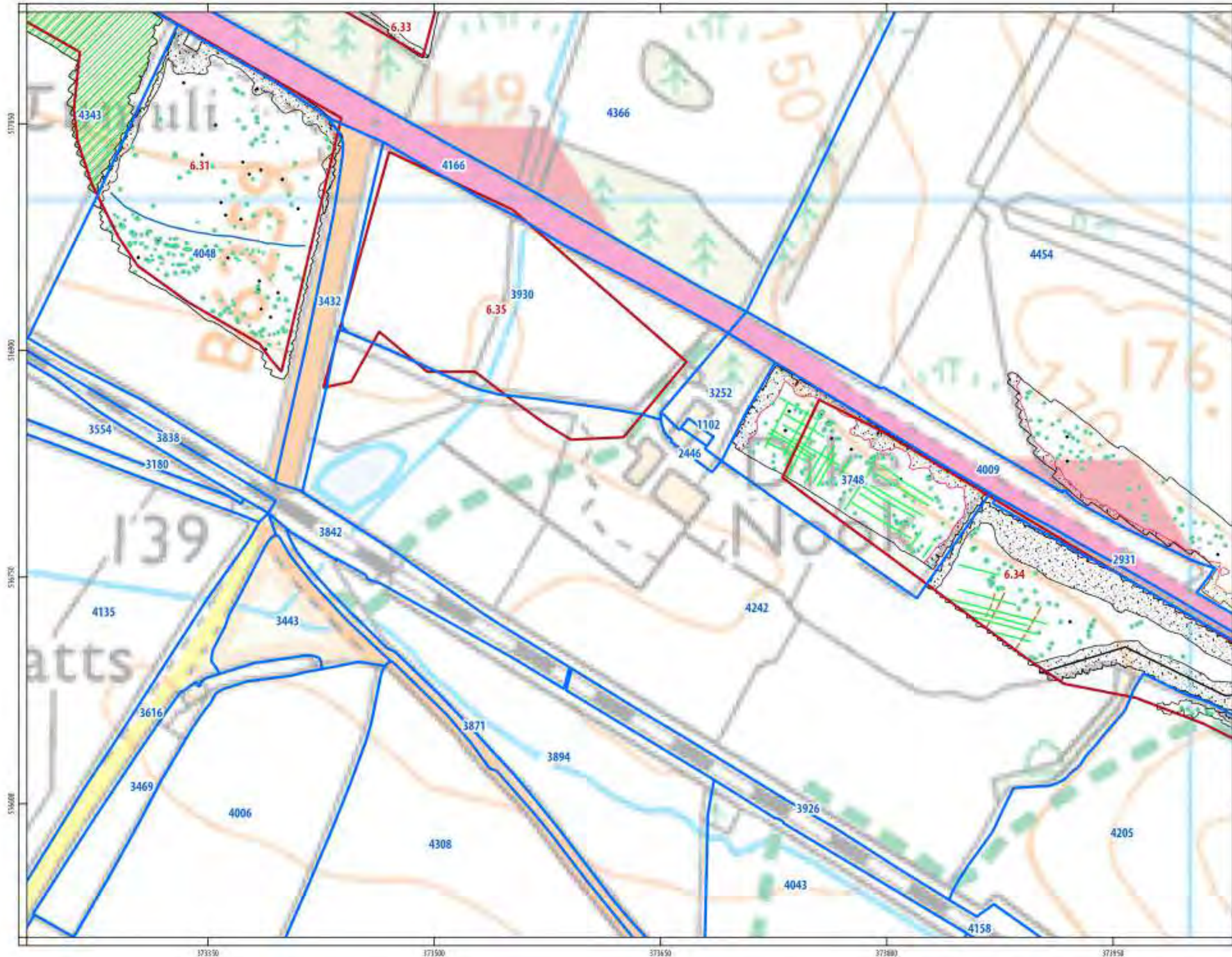
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- geophysical survey extent
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
APU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



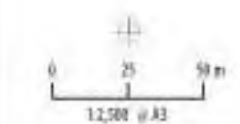




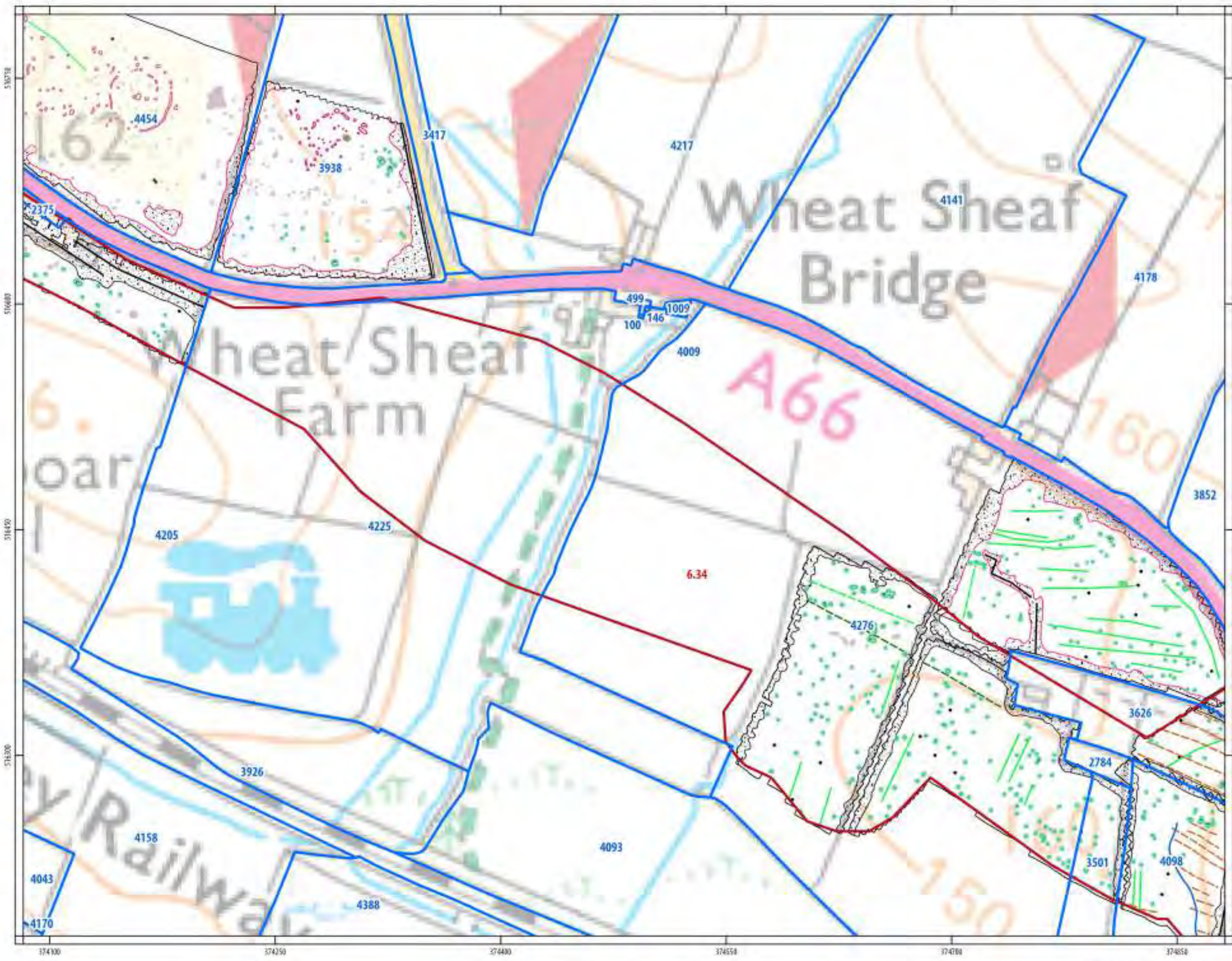
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
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- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
APU20-466 Transpennine Upgrade

**CLIENT**  
Highways England







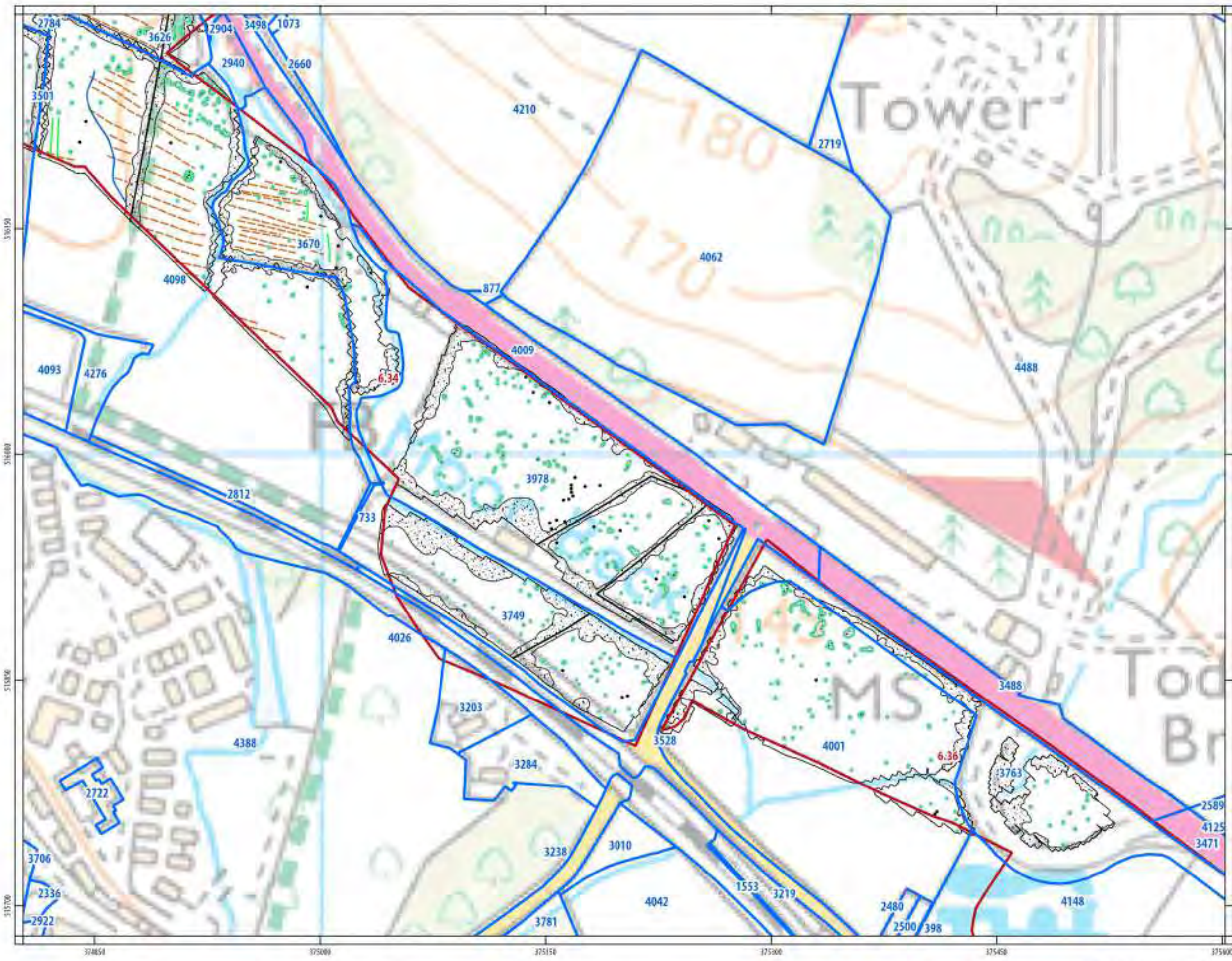
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- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
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- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



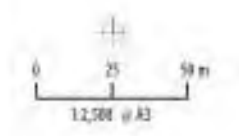




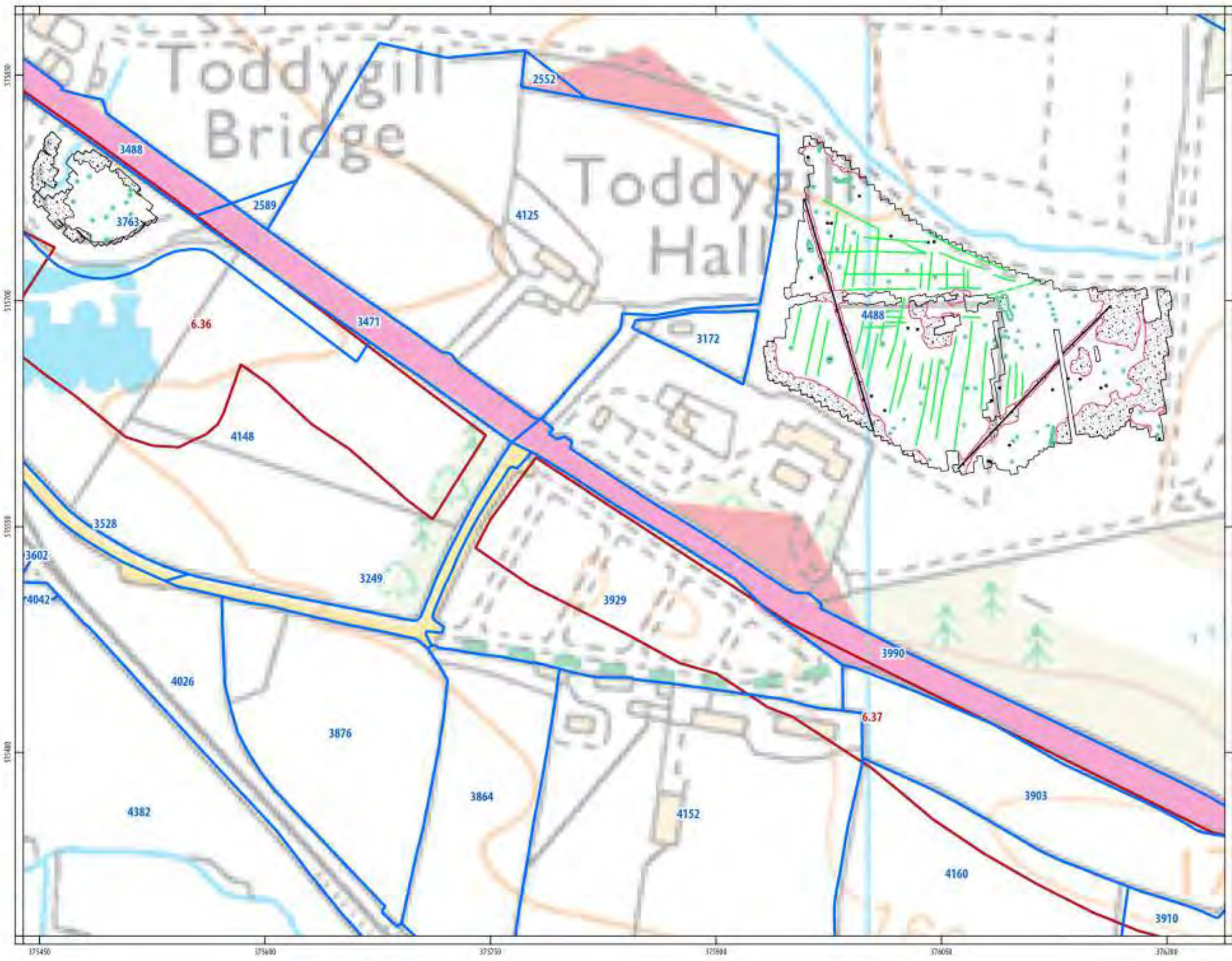
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- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A66 Transpennine Upgrade

**CLIENT**  
Highways England







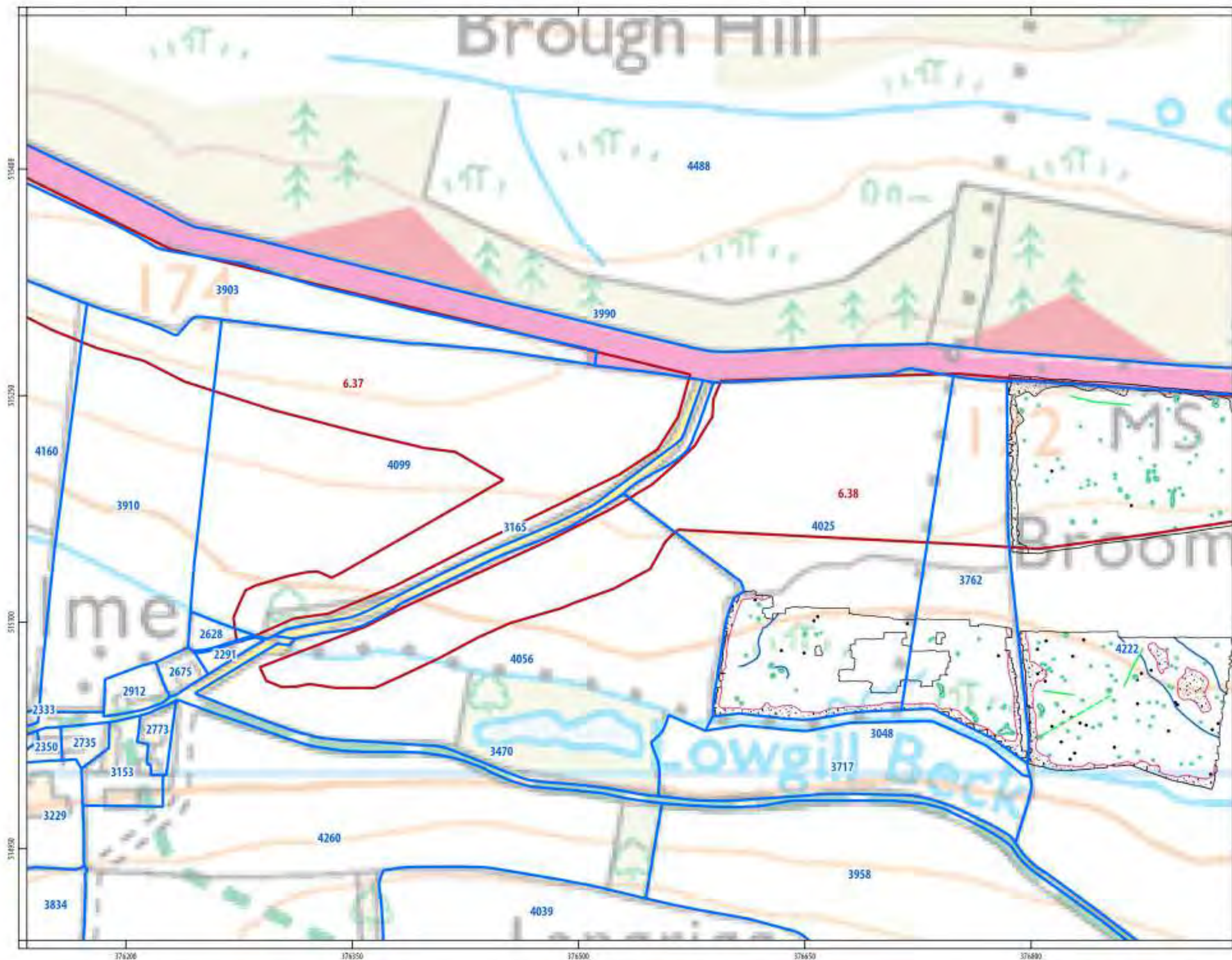
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England







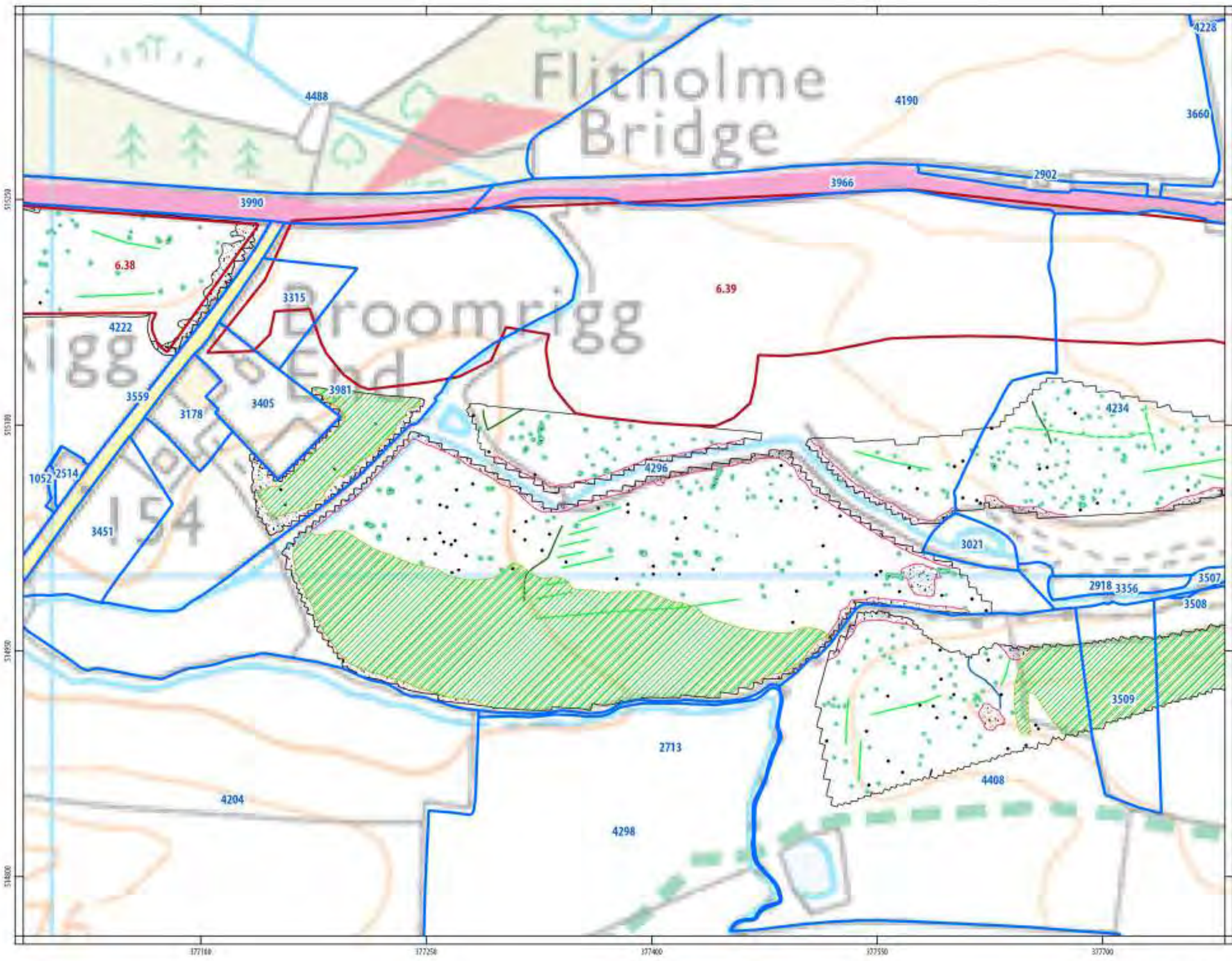
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- dipolar isolated/ferrous
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

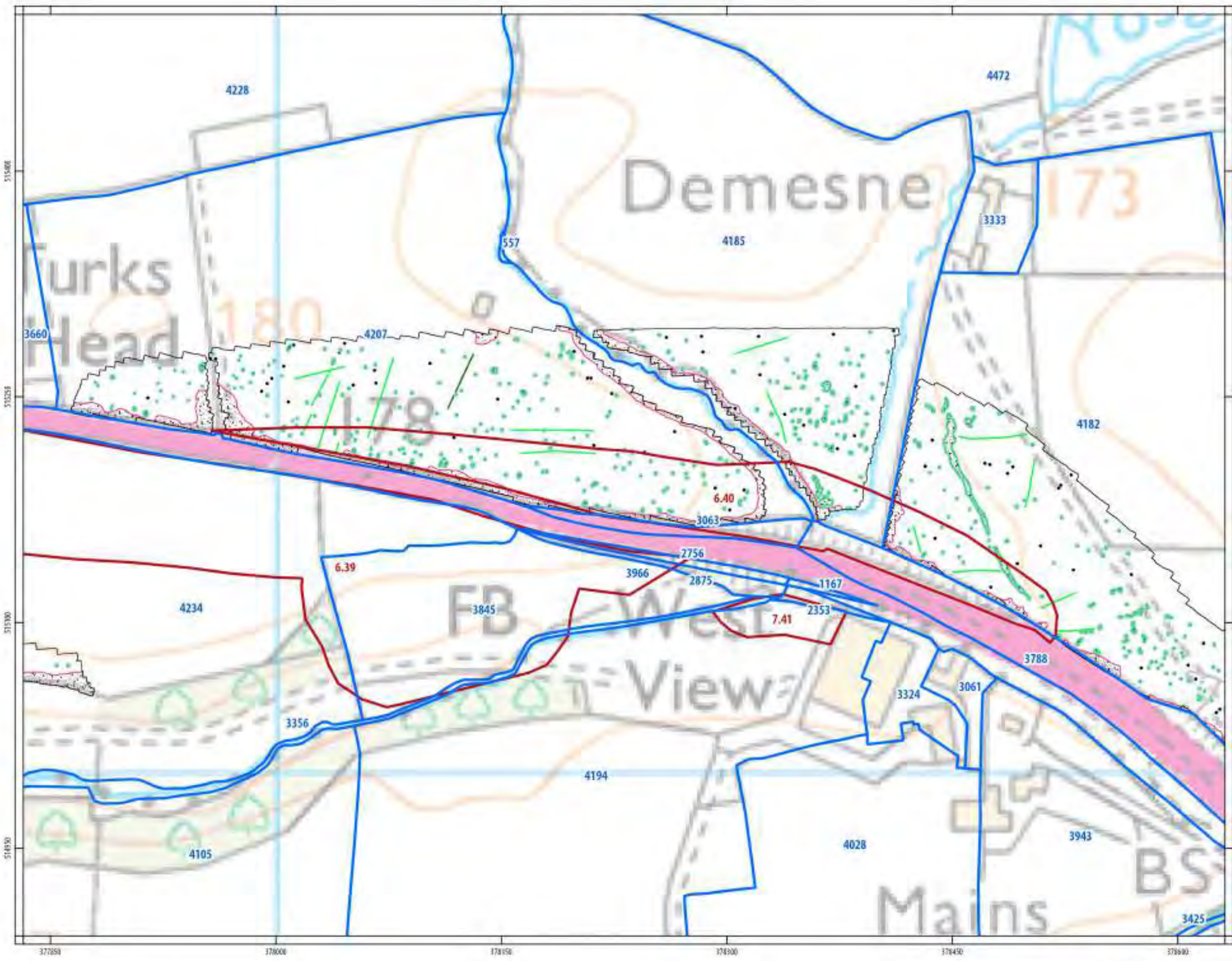
**PROJECT**  
APU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 366 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)

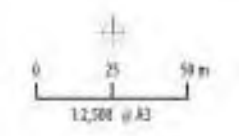




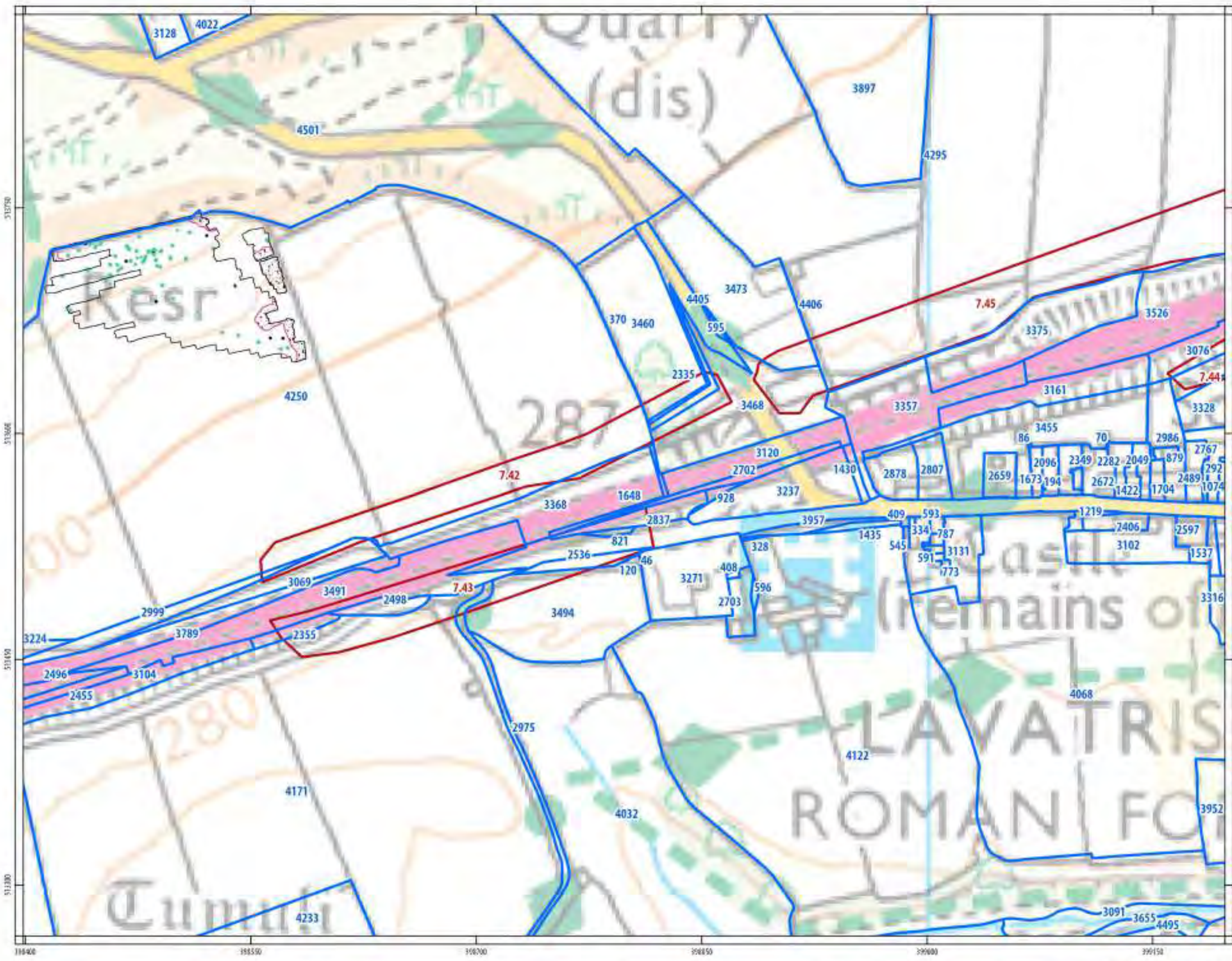
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England







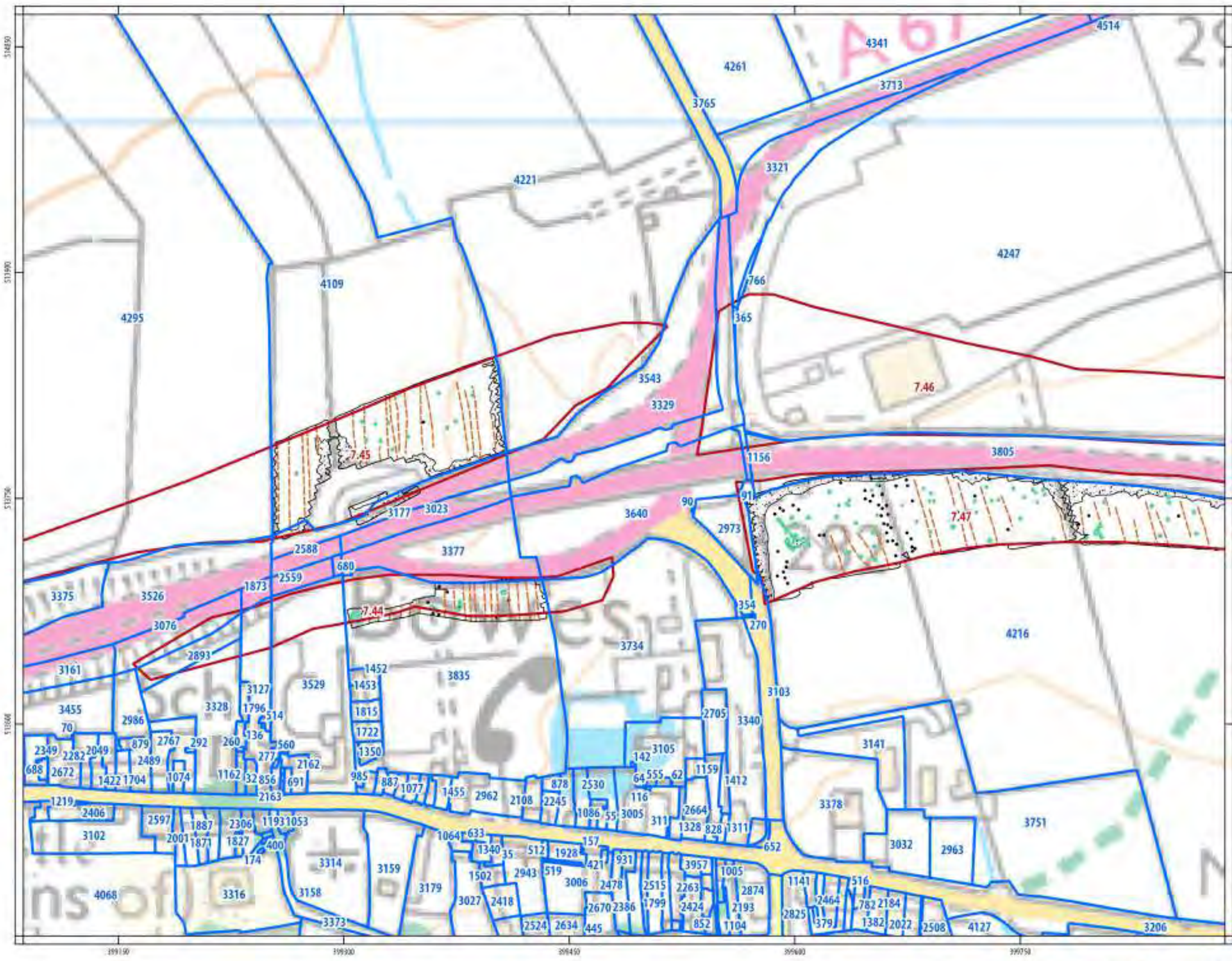
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- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
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- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kin burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

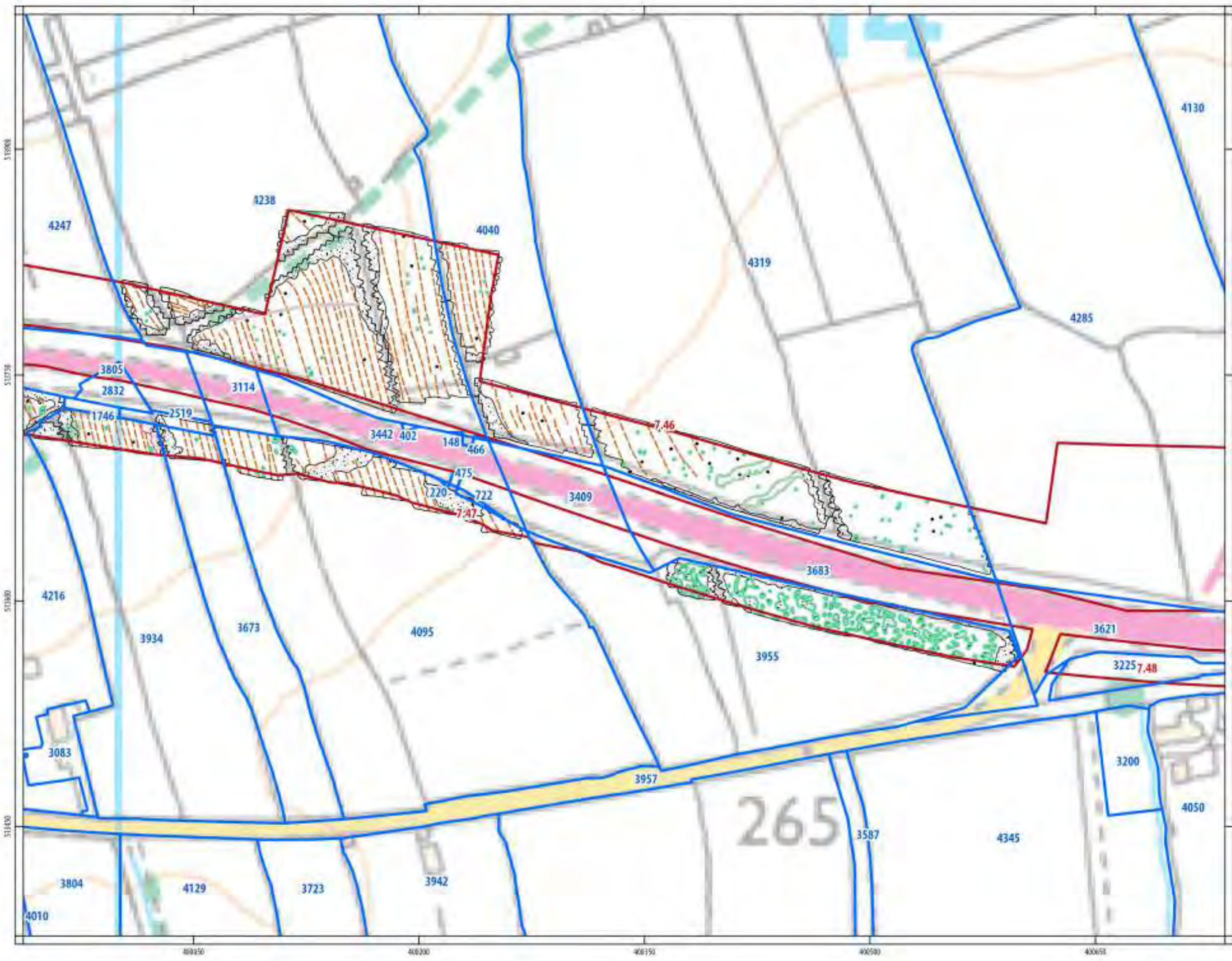
**PROJECT**  
M20-A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 369 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)

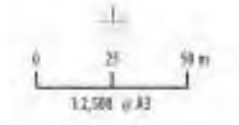




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
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- magnetic disturbance/geology
- magnetic enhancement/kin burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

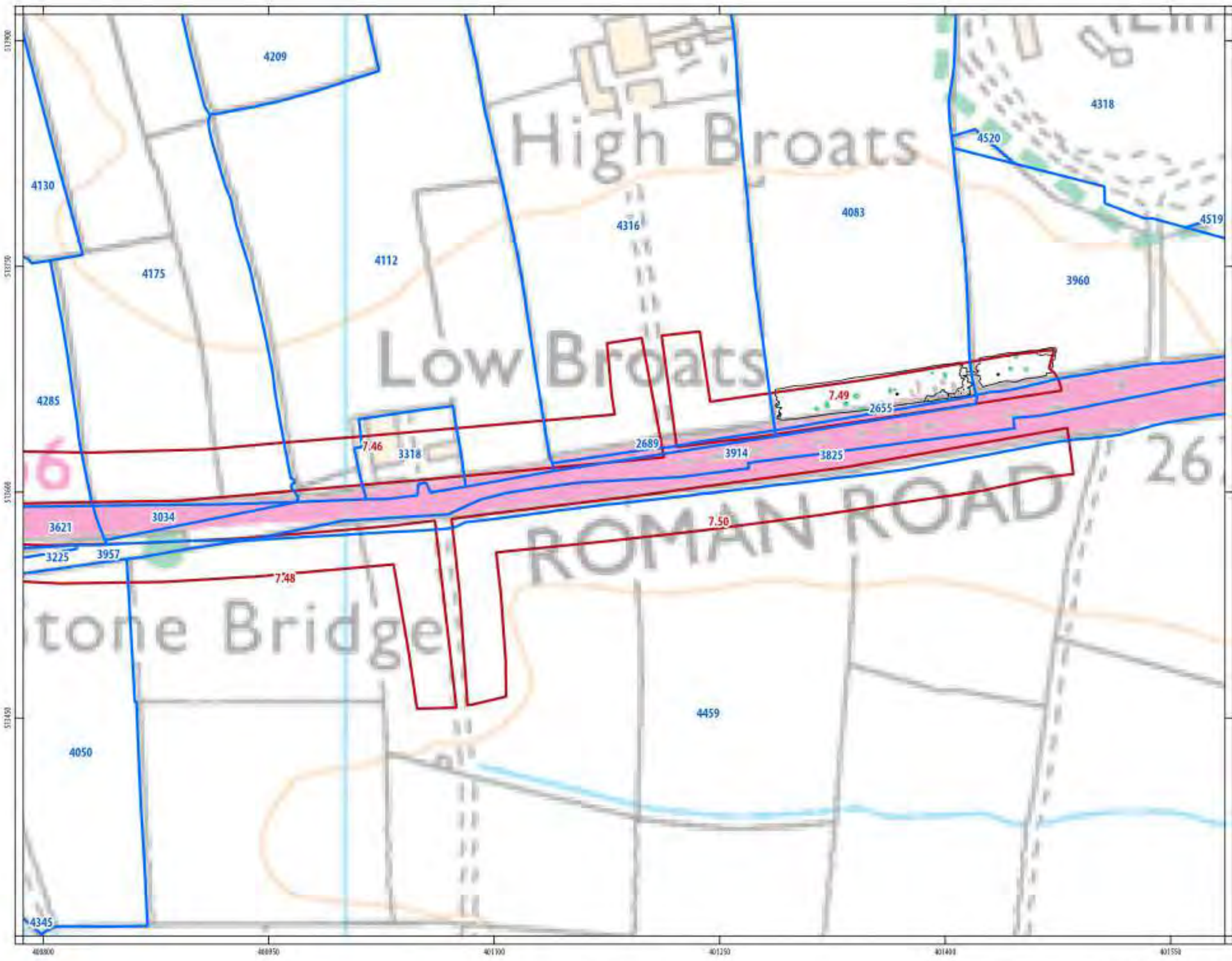
**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 370 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





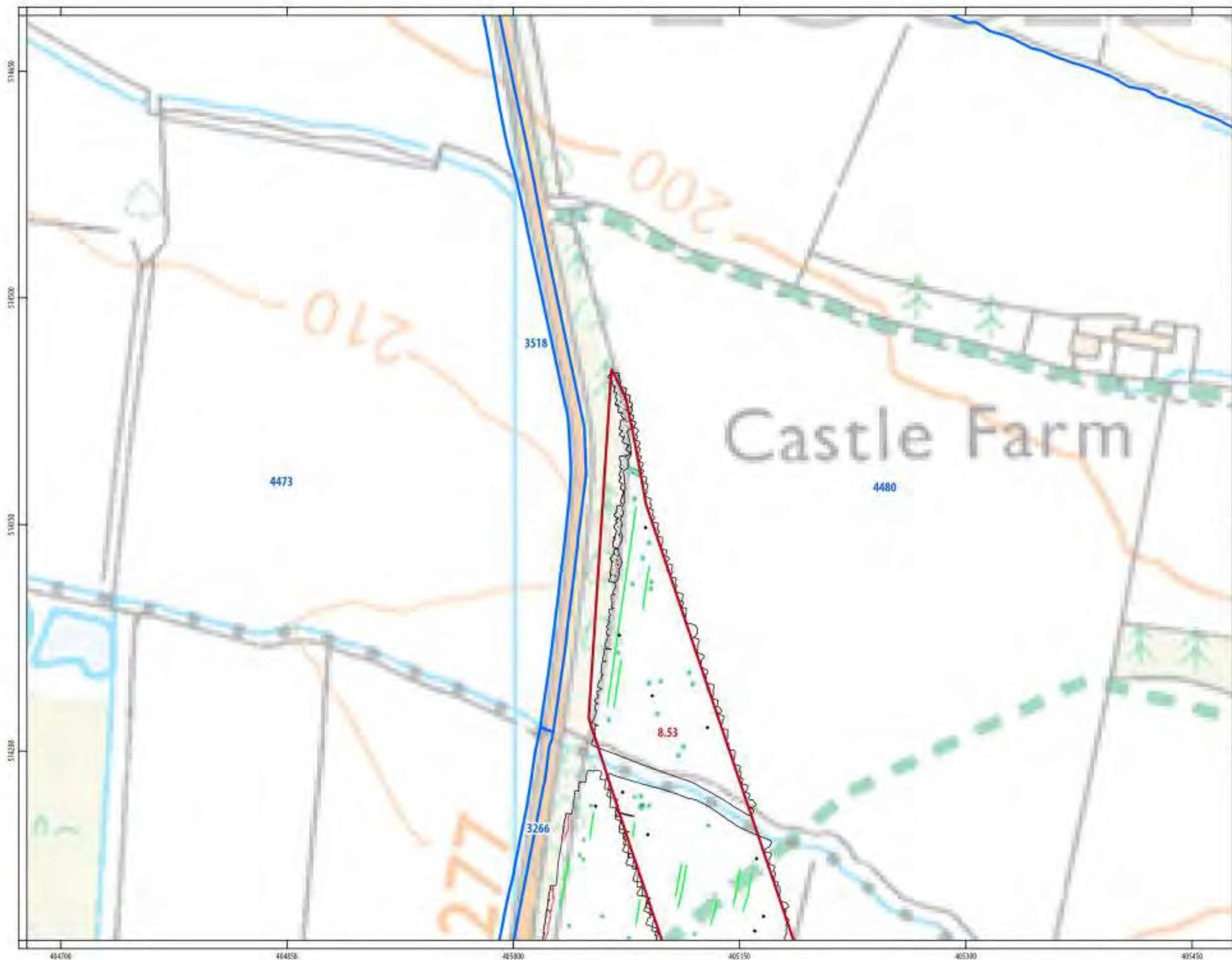
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
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**PROJECT**

AFPU20-466 Transpennine Upgrade

**CLIENT**

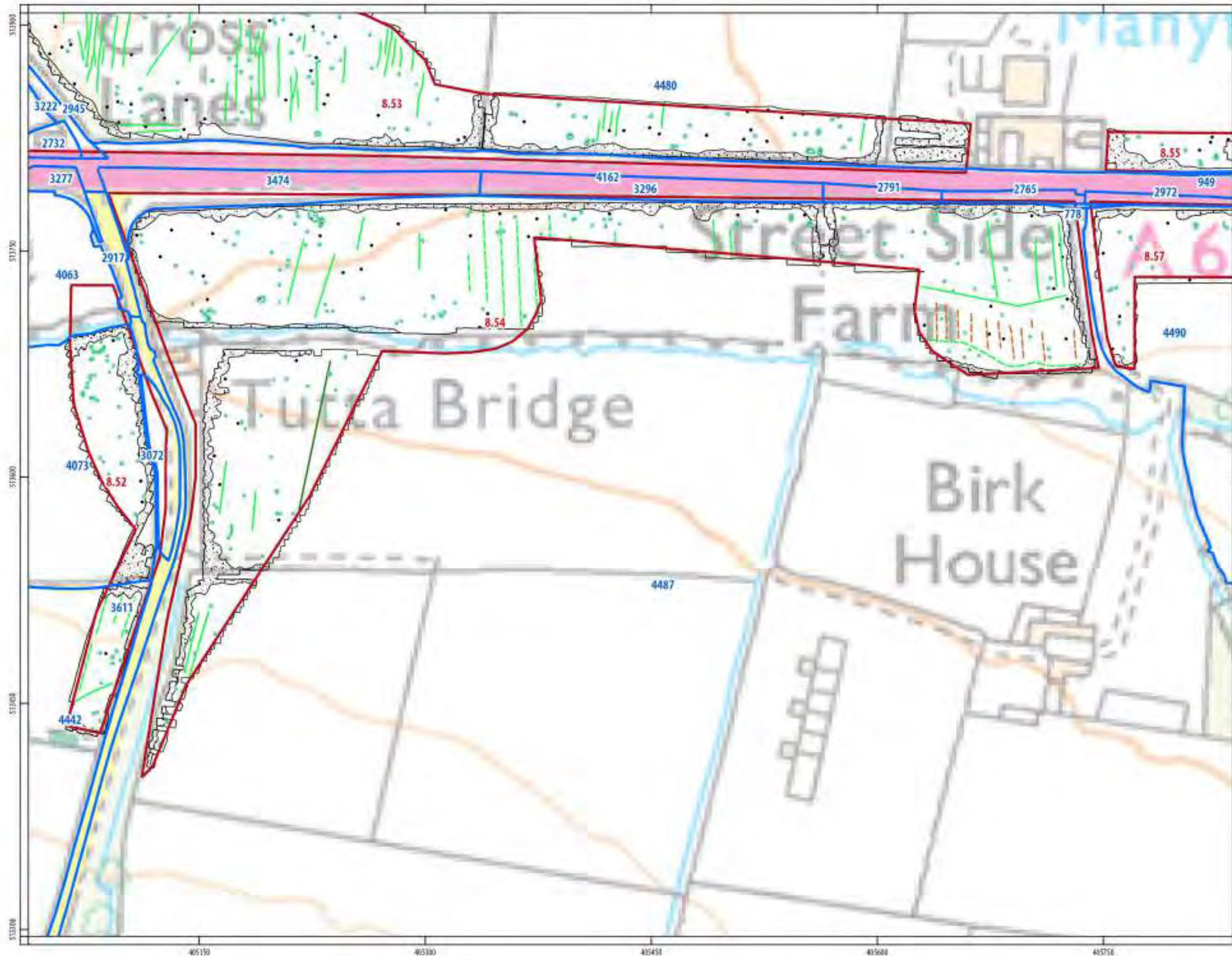
Highways England







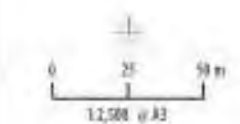




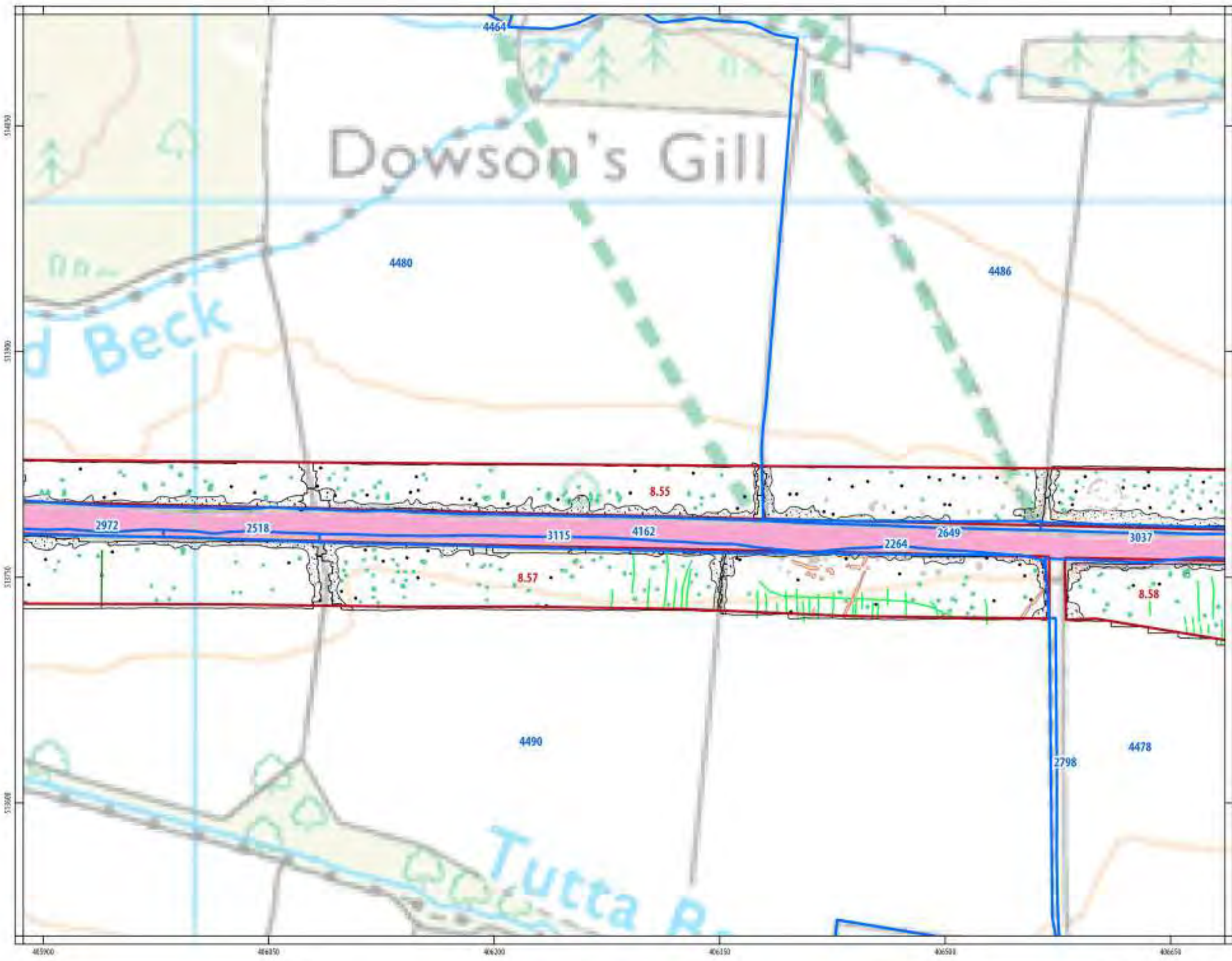
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- ▭ magnetic enhancement/kiln burning
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- ▭ uncertain
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- ▭ linear trend/field drain
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- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar lines/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







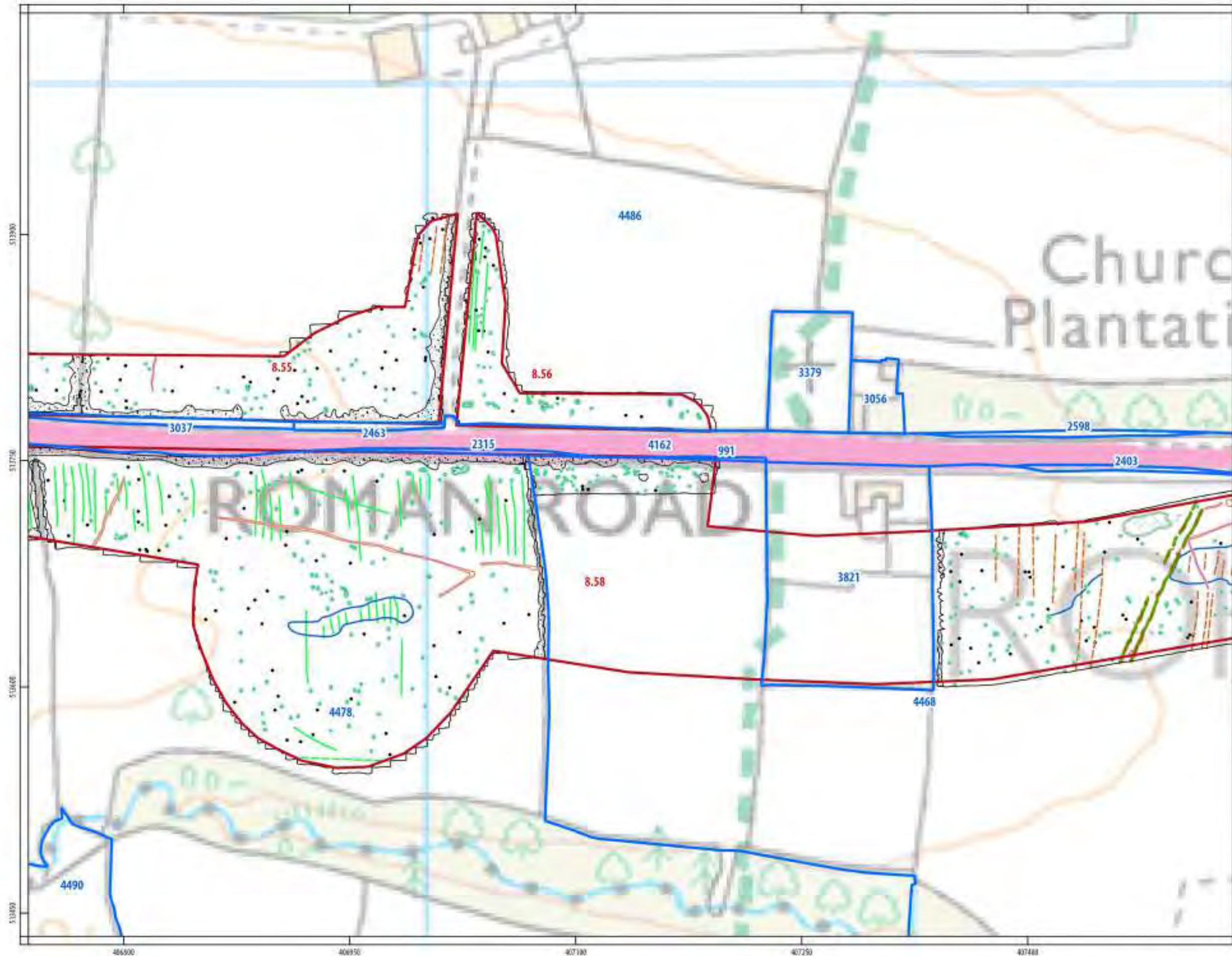
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

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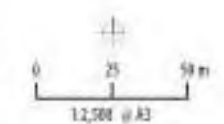




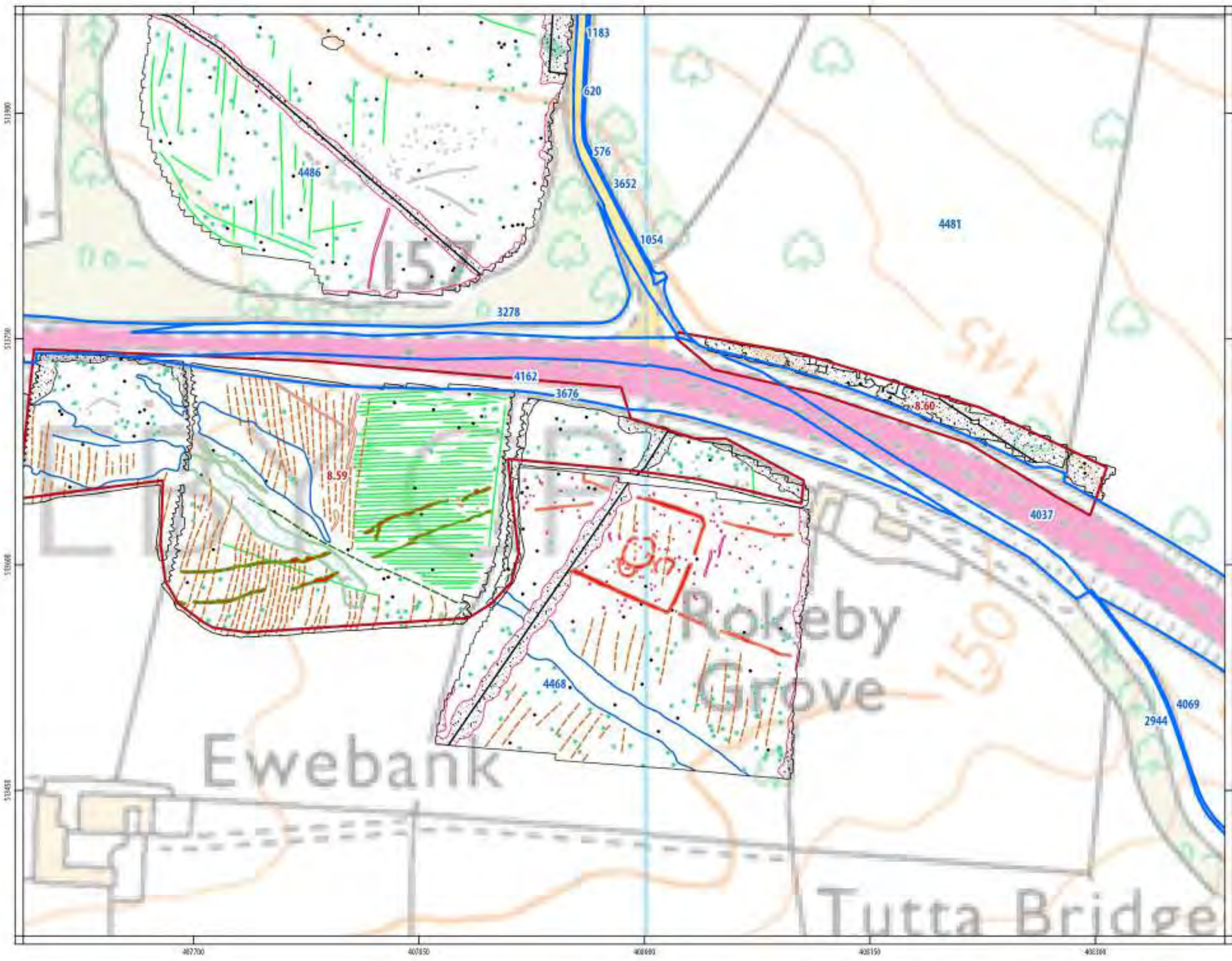
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- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kin burning
- ▭ magnetic enhancement/LPM
- ▭ magnetic disturbance/quarrying
- ▨ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

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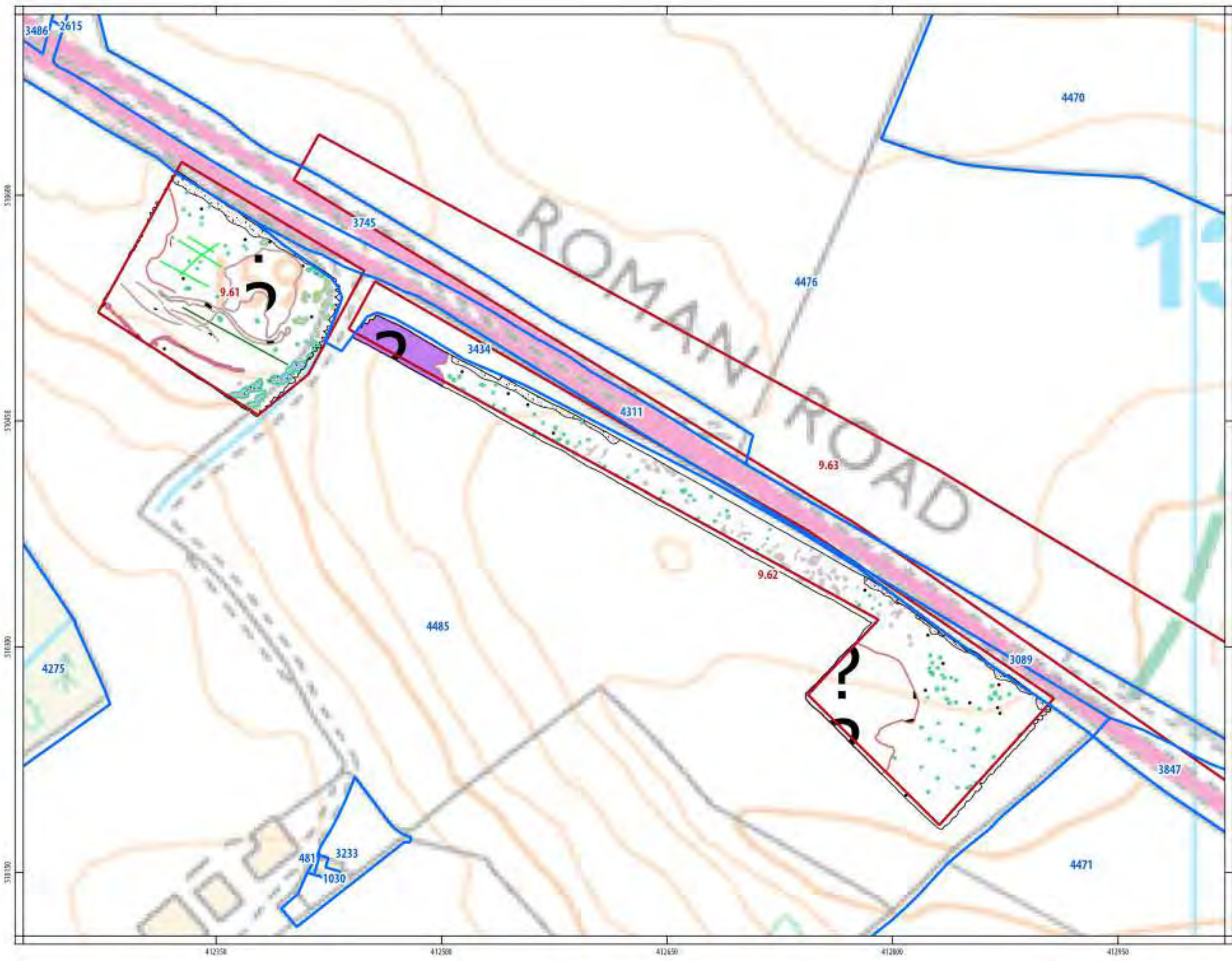
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- ▭ geophysical survey extent
- ▭ scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

**PROJECT**  
AFPU20 - A66 Transpennine Upgrade

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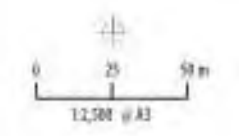




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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
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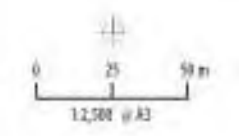




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

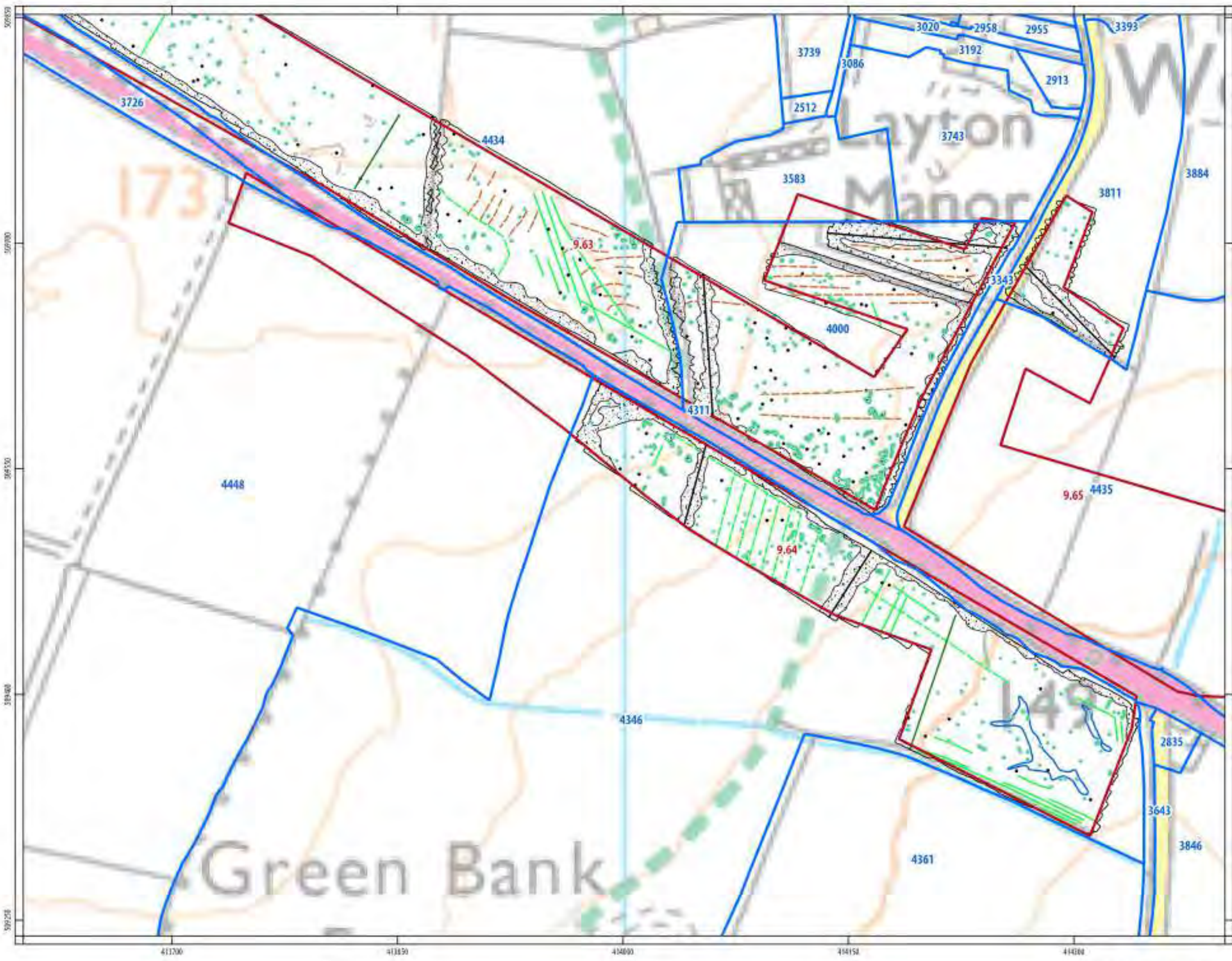
**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 379 Interpretation of processed magnetometer data; Stephen Bank to Carkin Moor

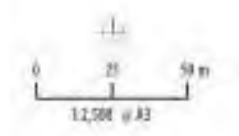




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kin burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
MPO20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



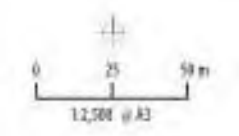




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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

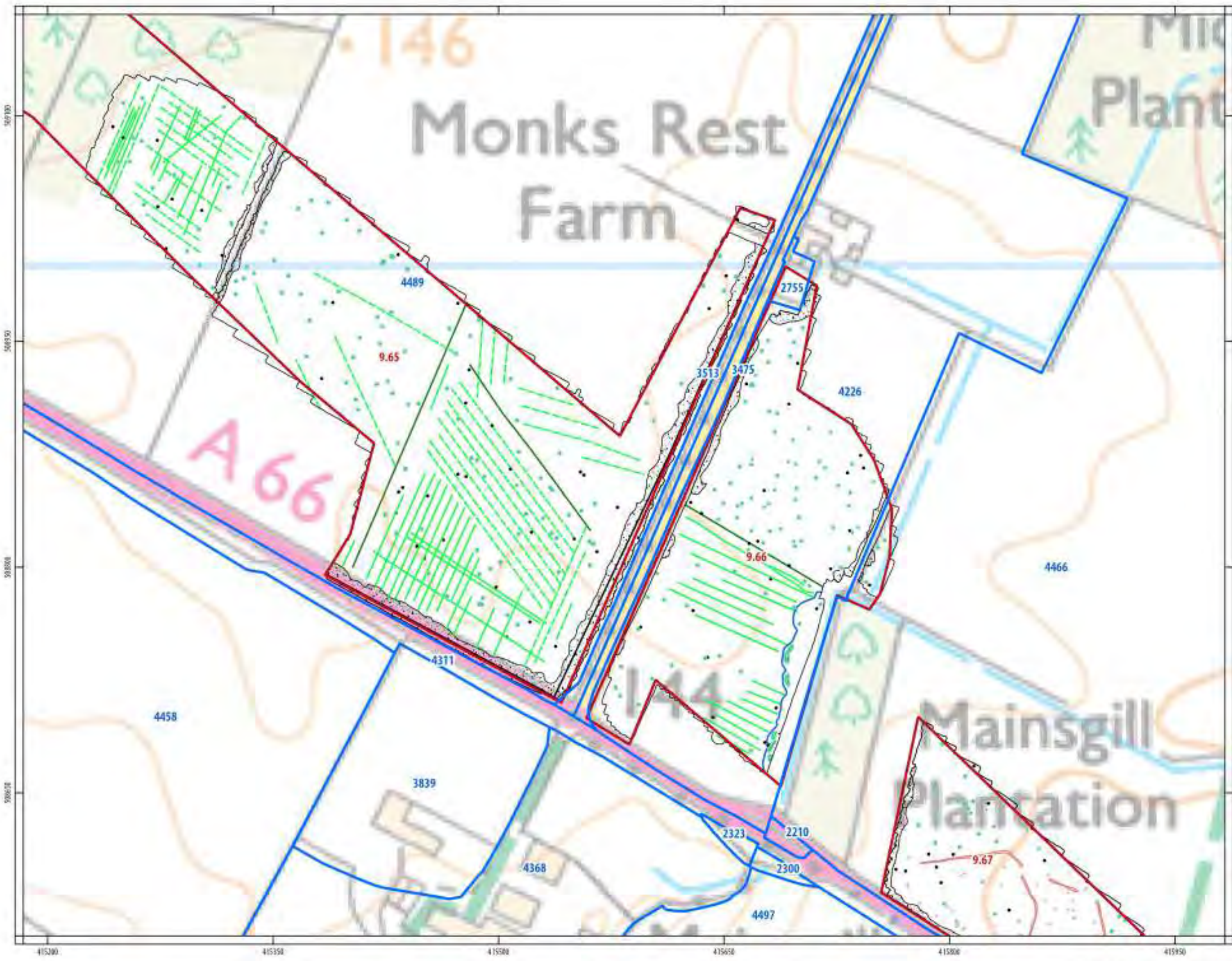
**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
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ILLUS 381: Interpretation of processed magnetometer data; Stephen Bank to Carkin Moor





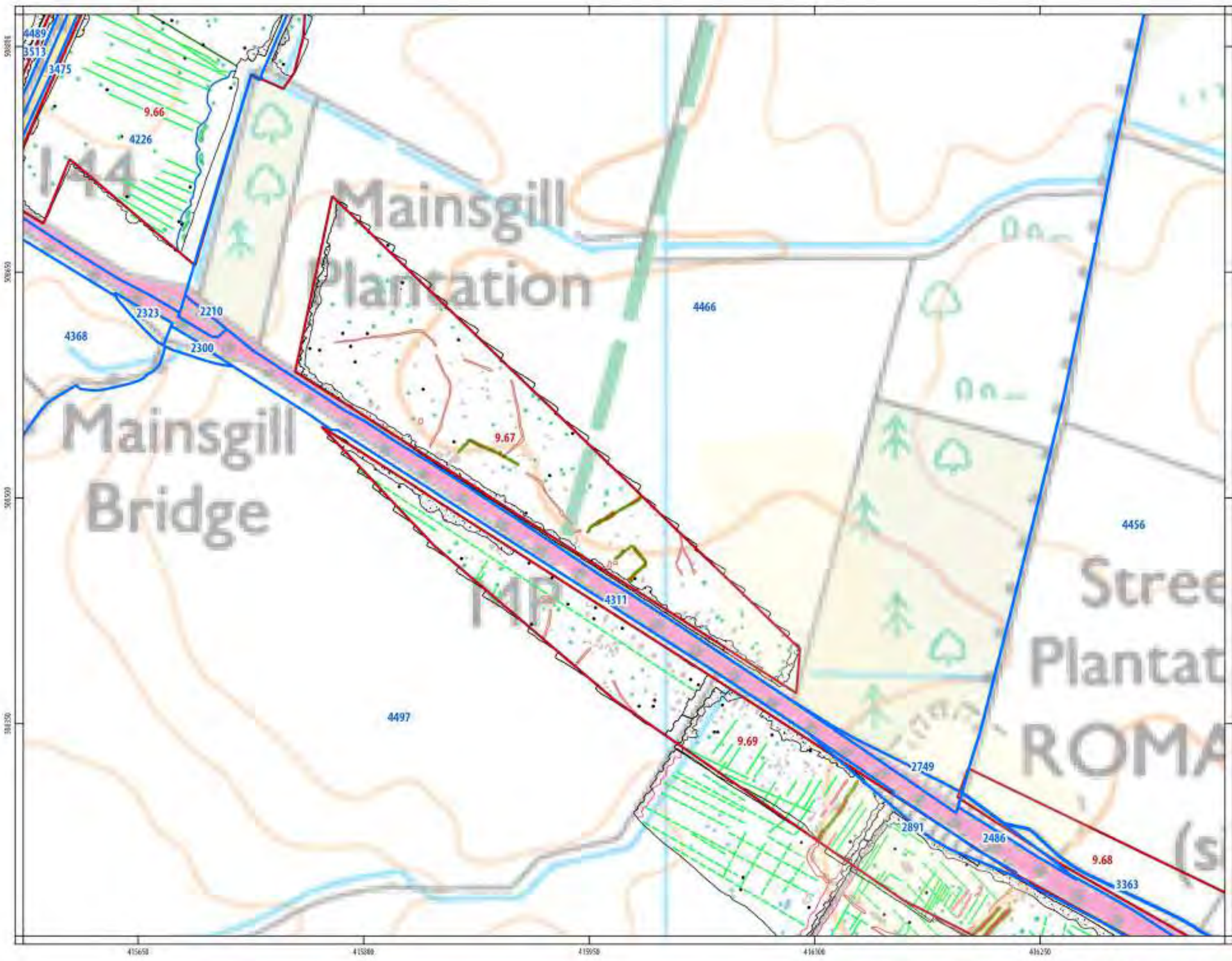
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

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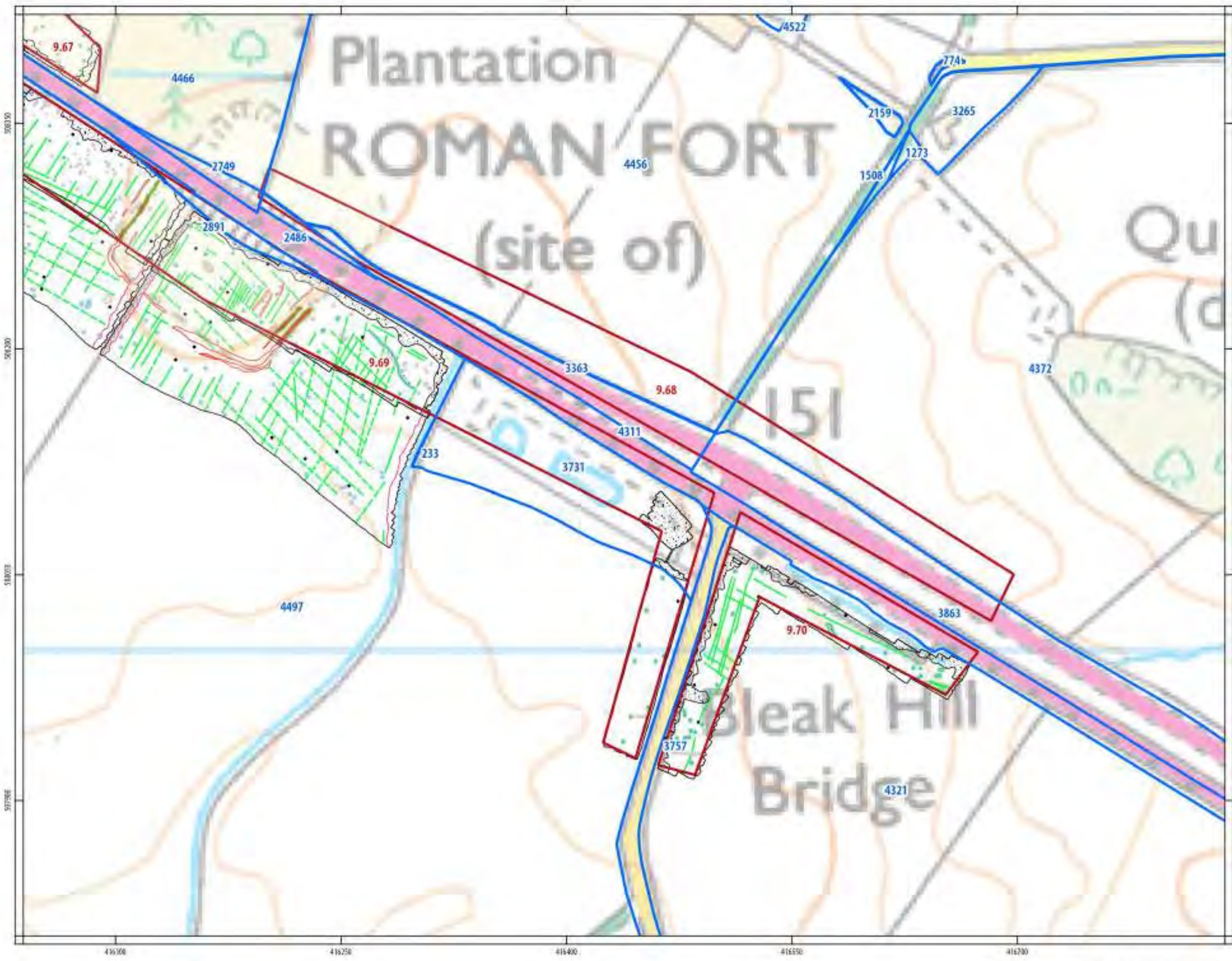
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- magnetic enhancement/kin burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England







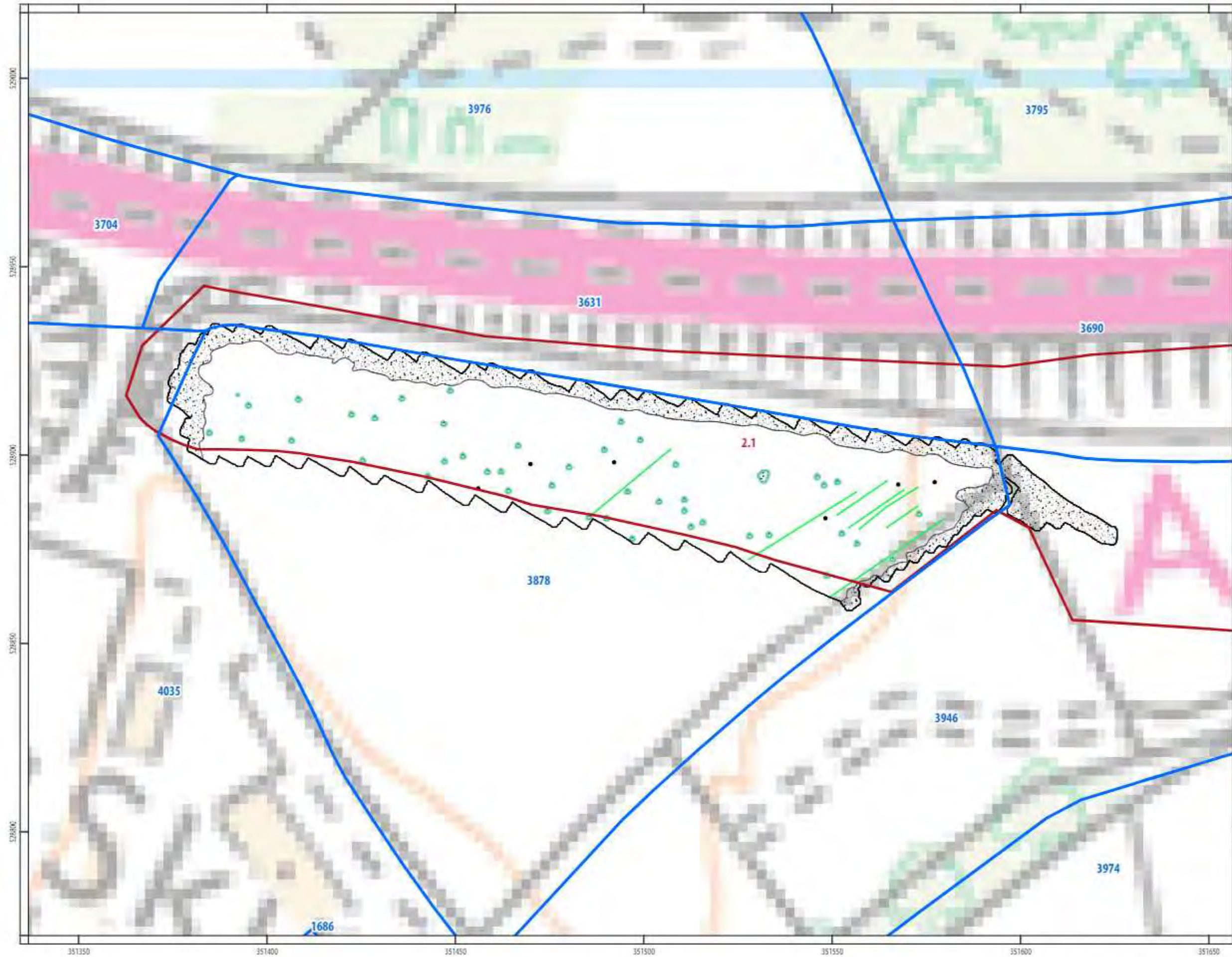
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LIPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England

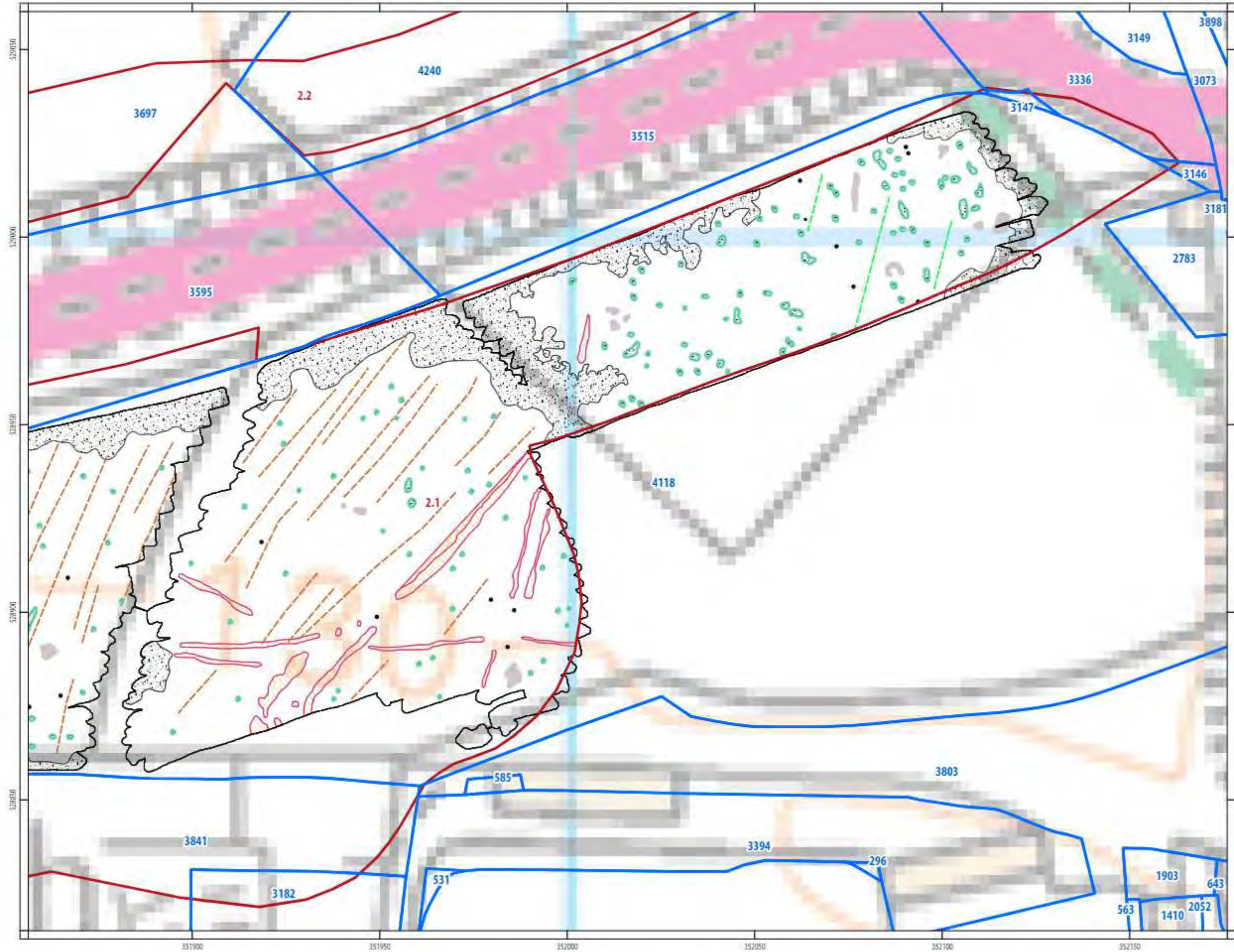


ILLUS 385 Interpretation of processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout









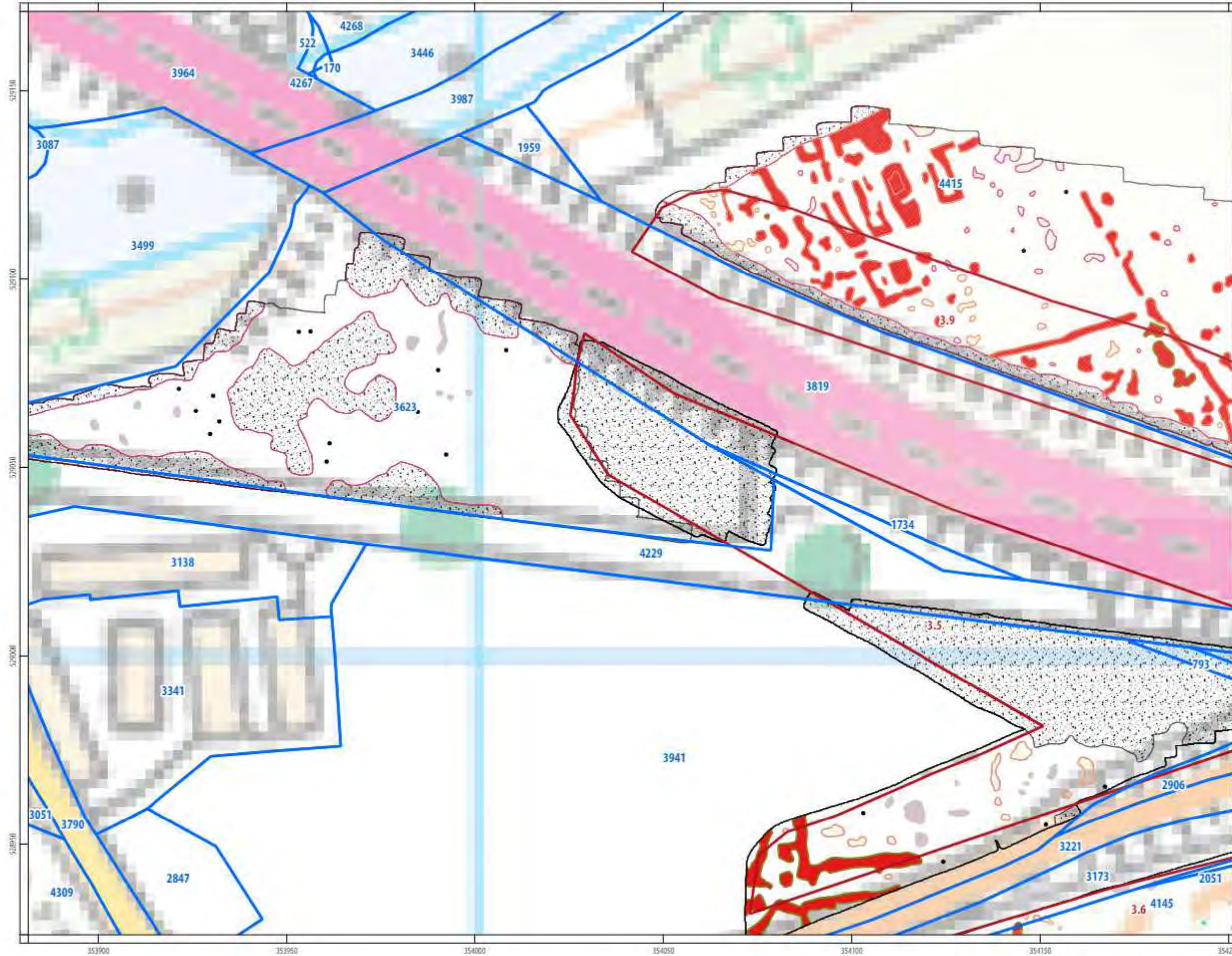
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- scheduled monument
- dipolar isolated/ferrous
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

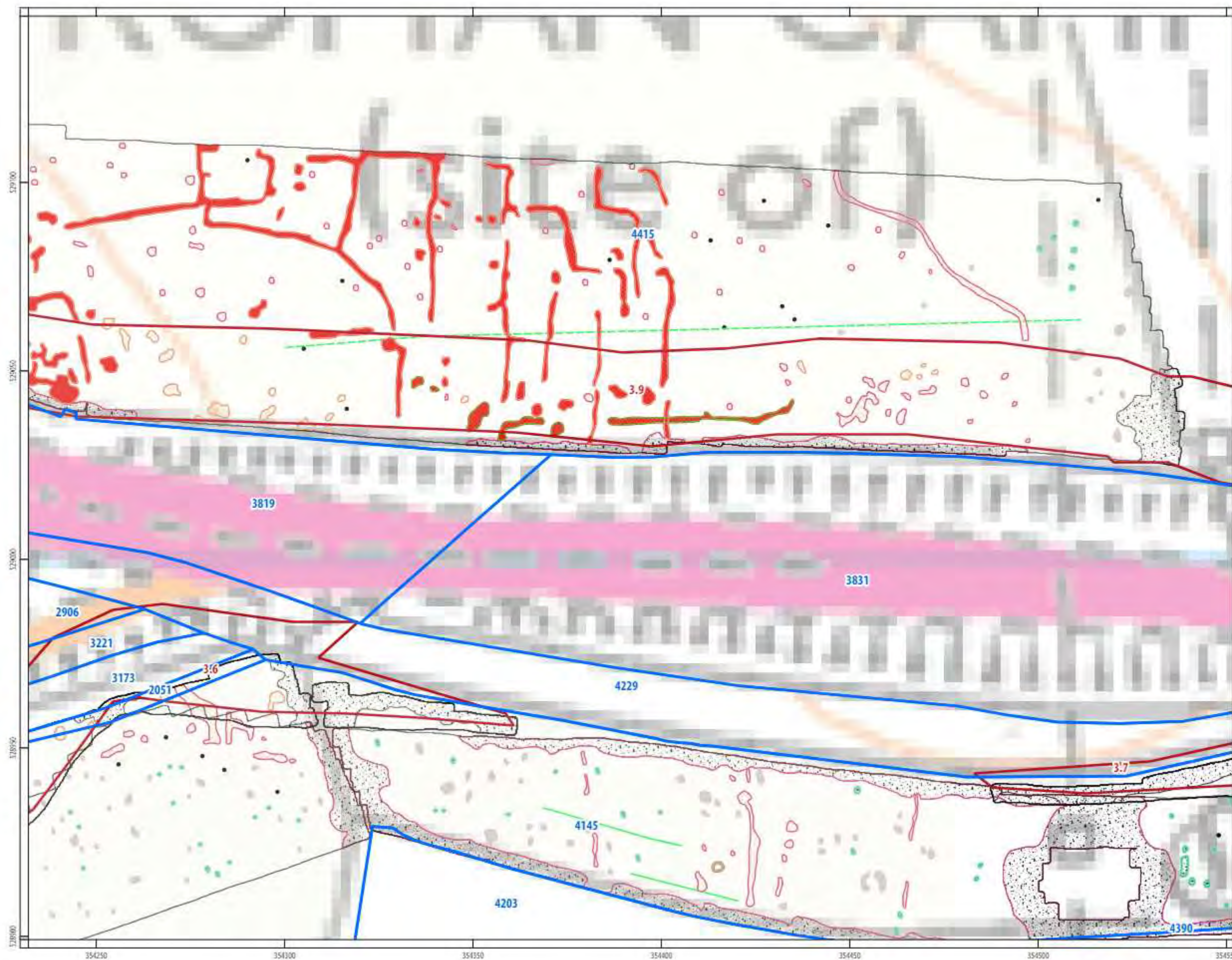
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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ILLUS 388 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





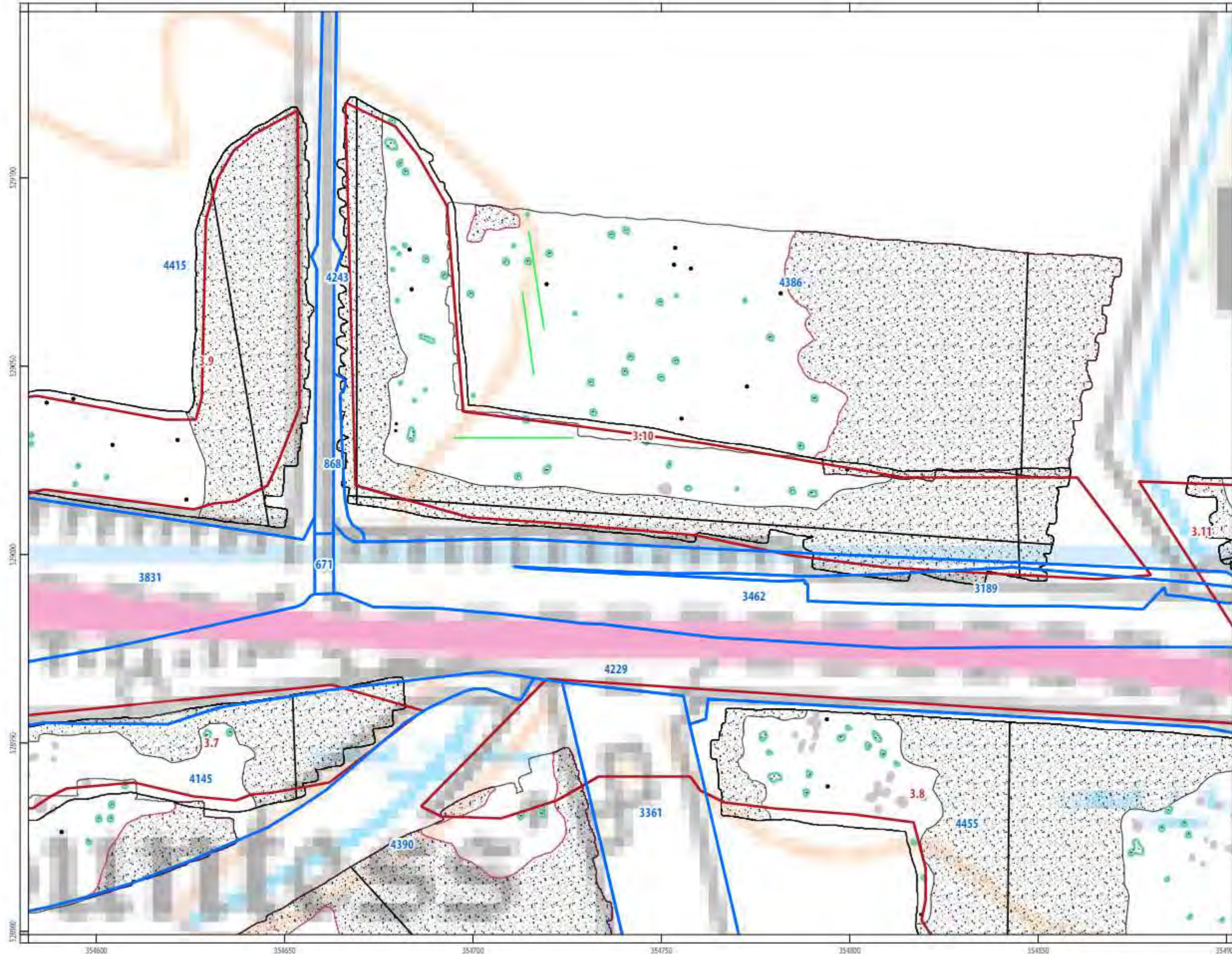
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- scheduled monument
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- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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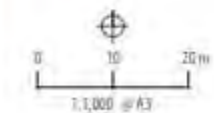




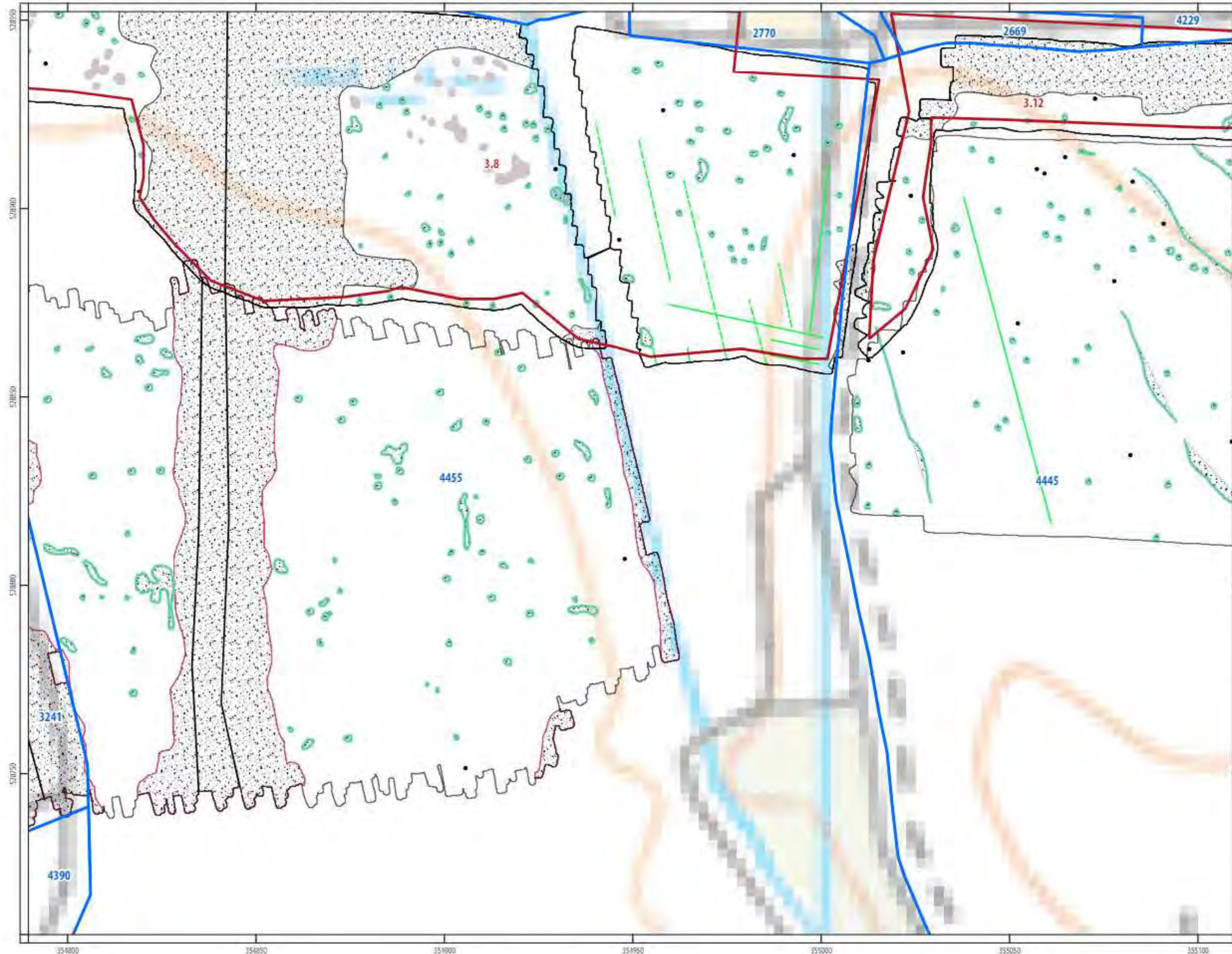
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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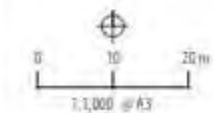




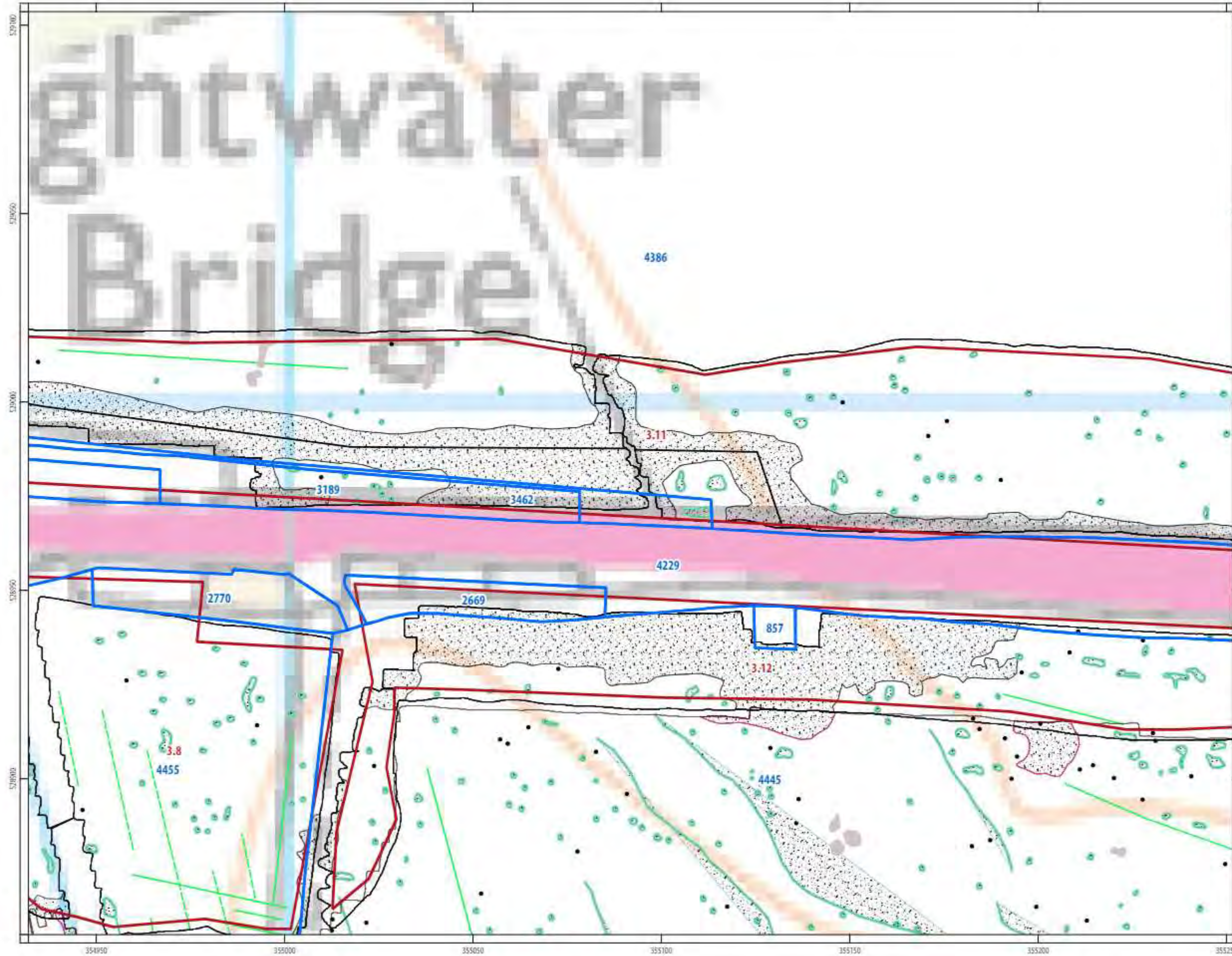
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
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**CLIENT**  
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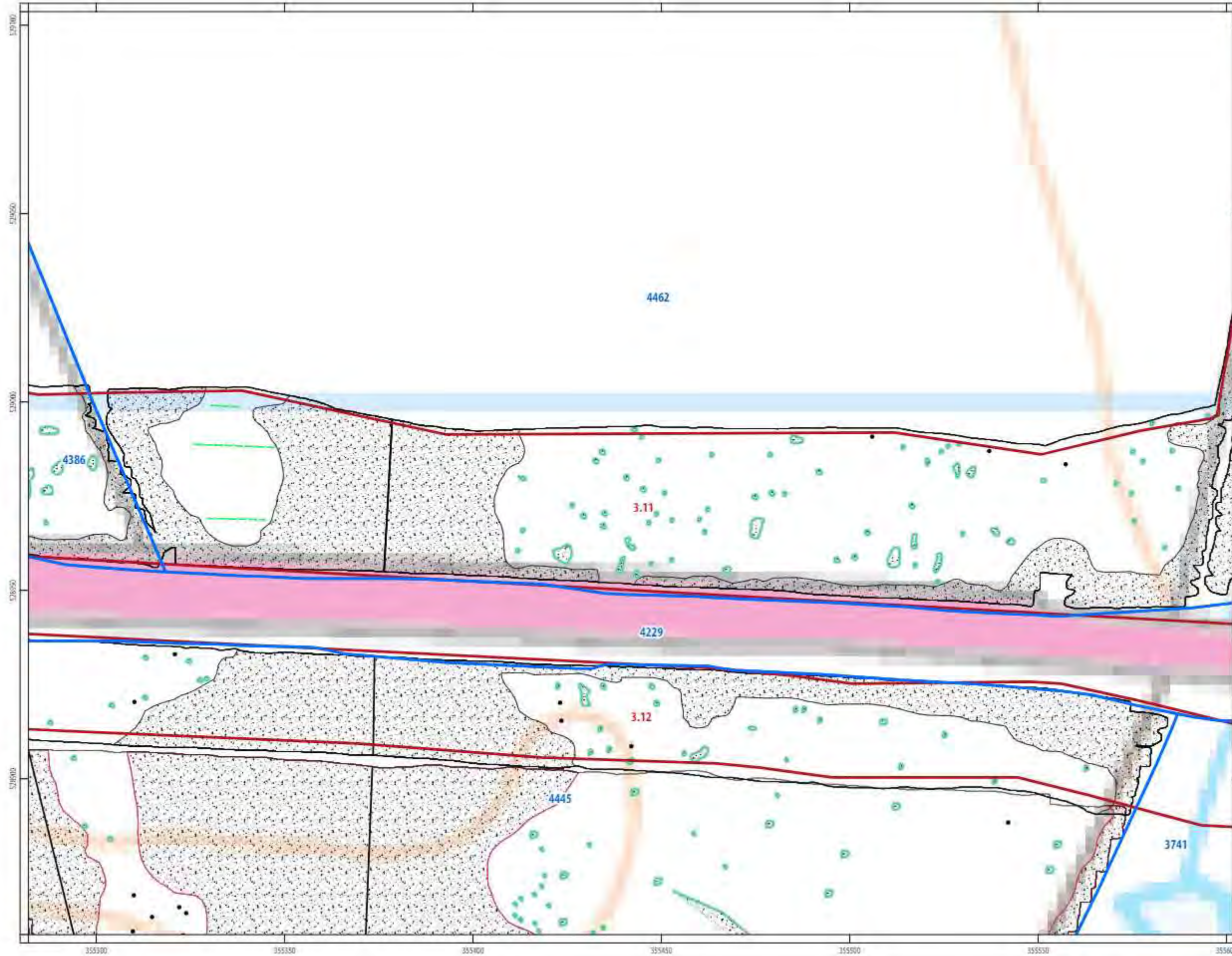
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- ▭ Phase 2 Geophysical Survey Area
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- scheduled monument
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- ▭ magnetic disturbance/geology
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- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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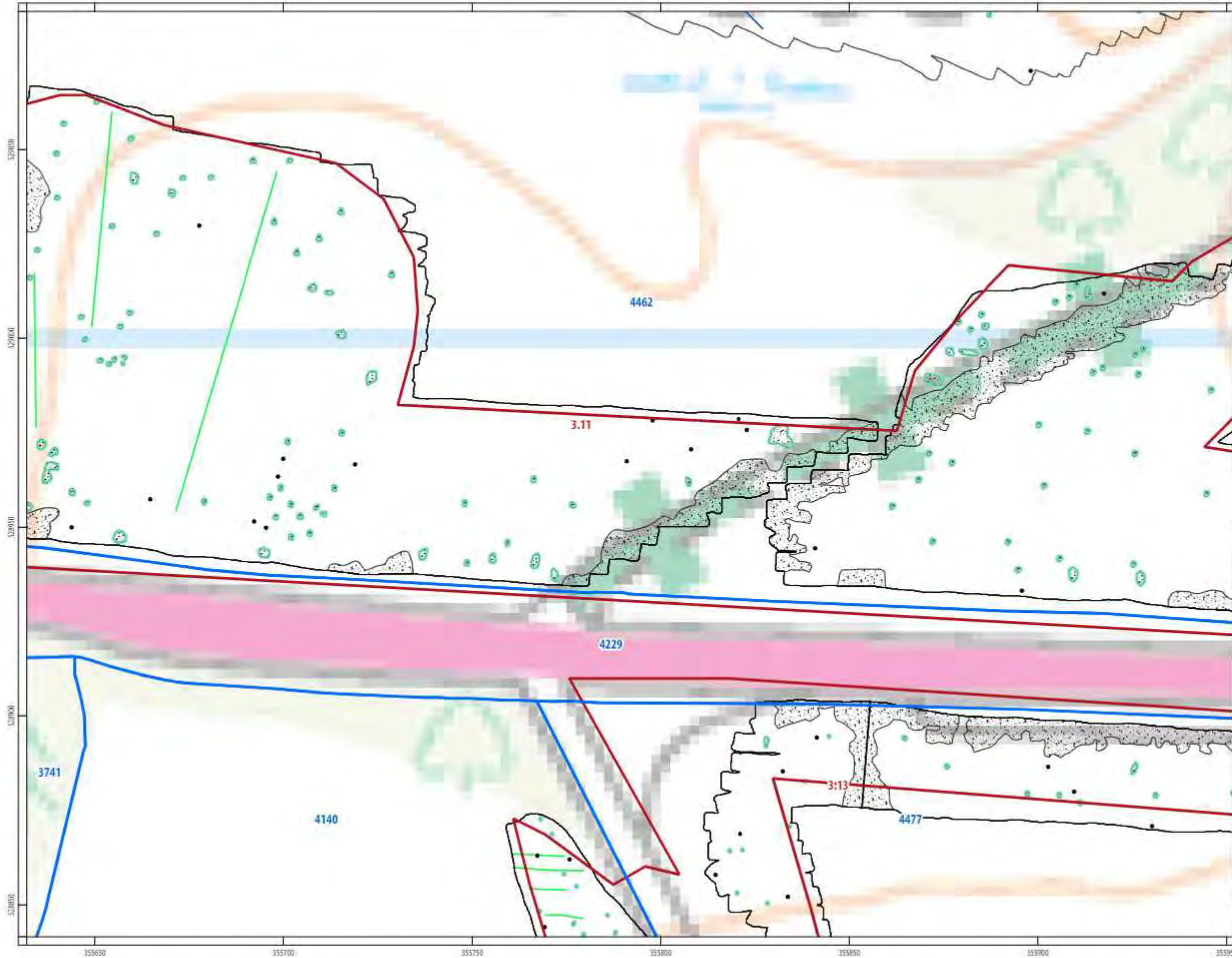
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field dump
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







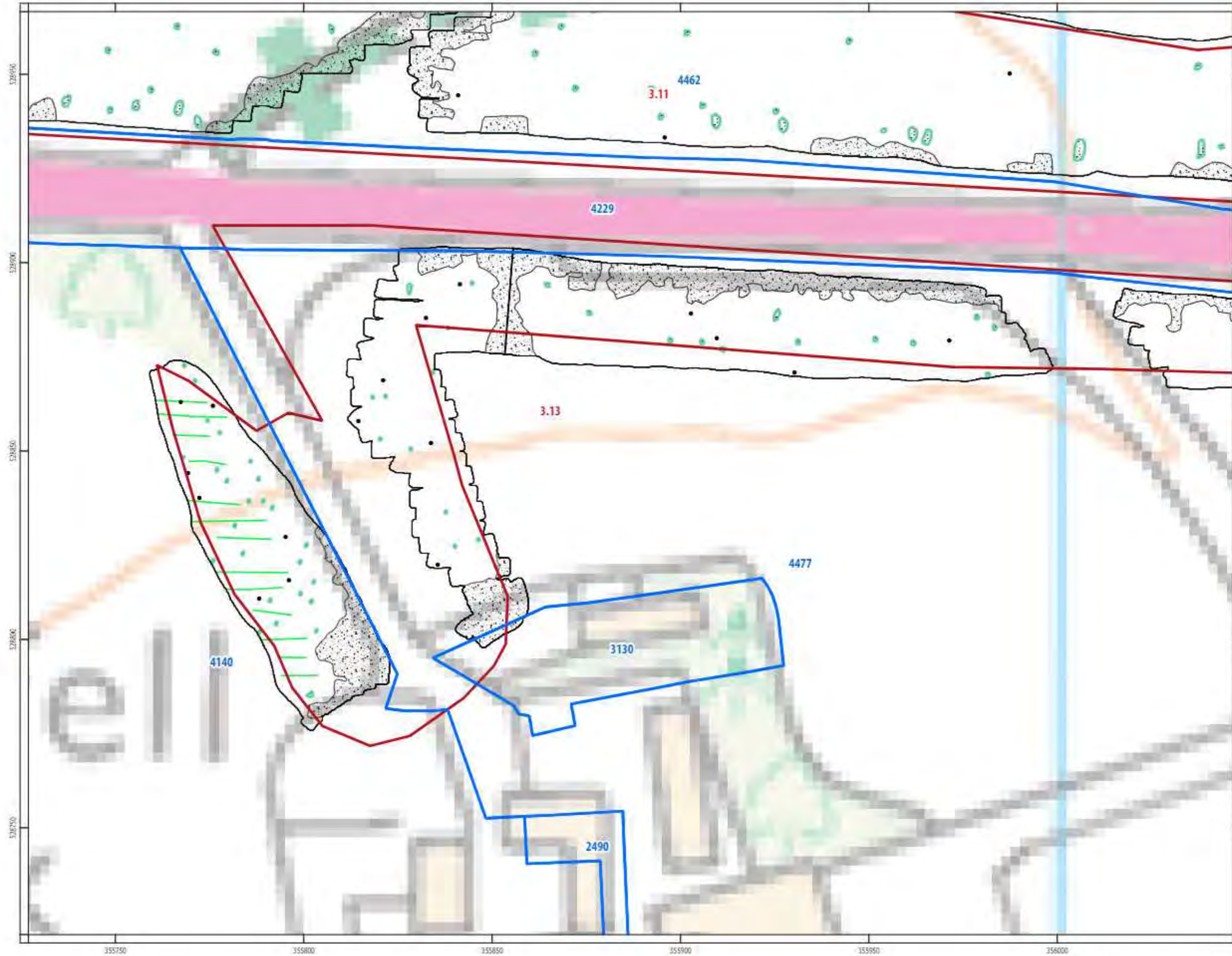
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- scheduled monument
- dipolar isolated/ferrous
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- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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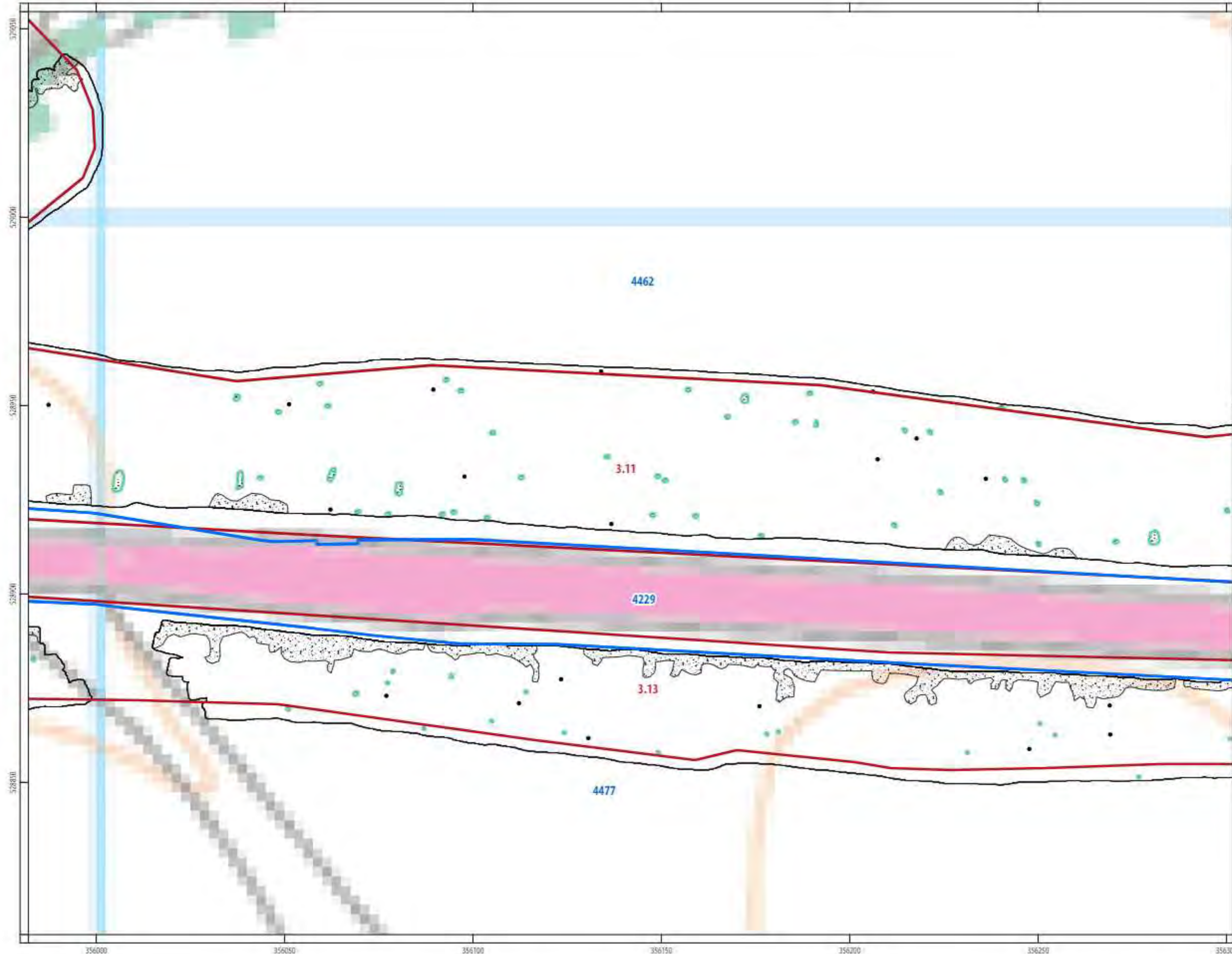
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
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- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
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- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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ILLUS 396 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

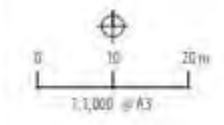




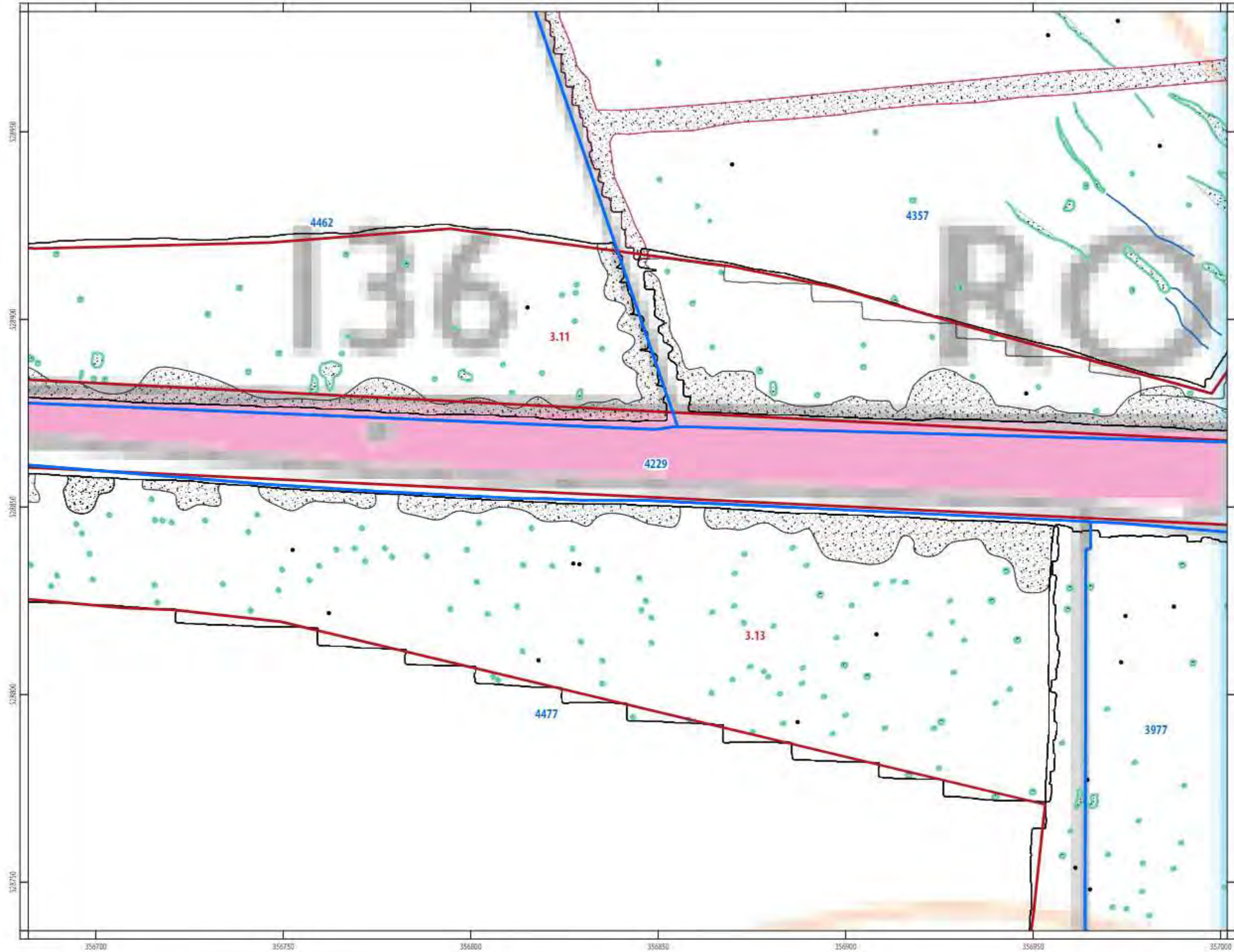
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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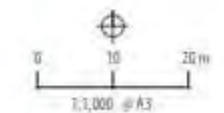




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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







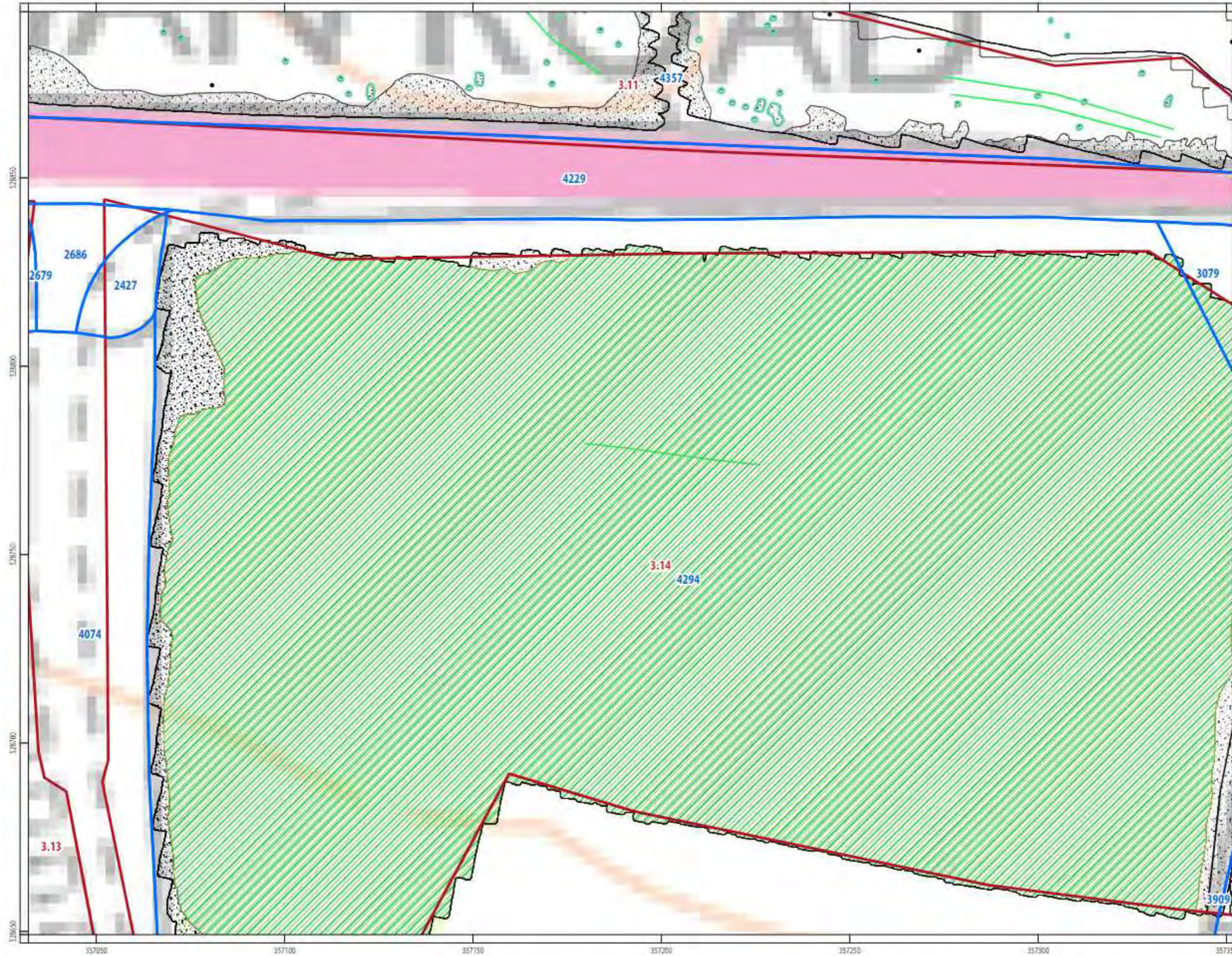
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
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- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
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- linear trend/ridge and furrow
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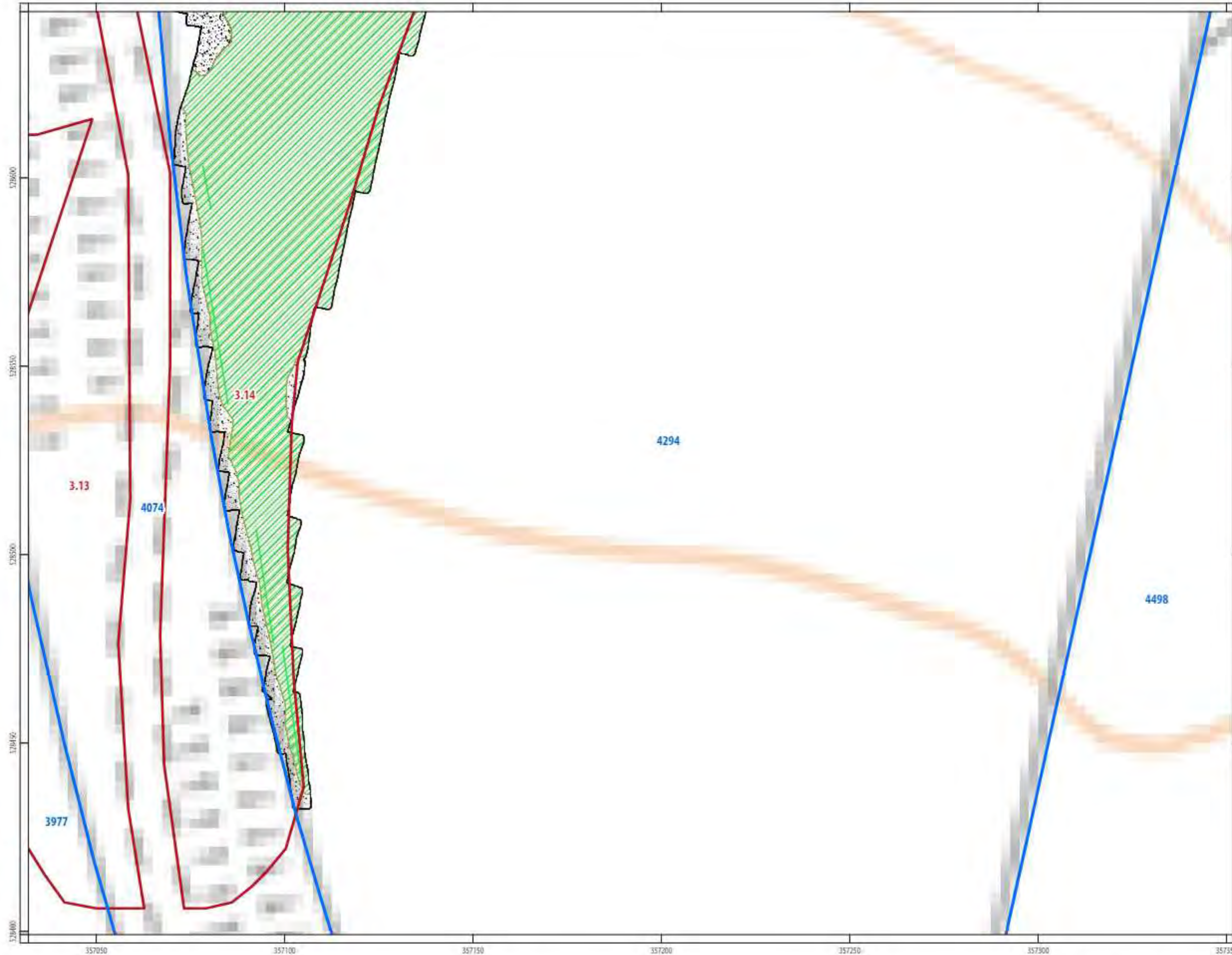
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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ILLUS 401 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
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- uncertain
- linear trend/agricultural
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- linear/former field boundary?
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

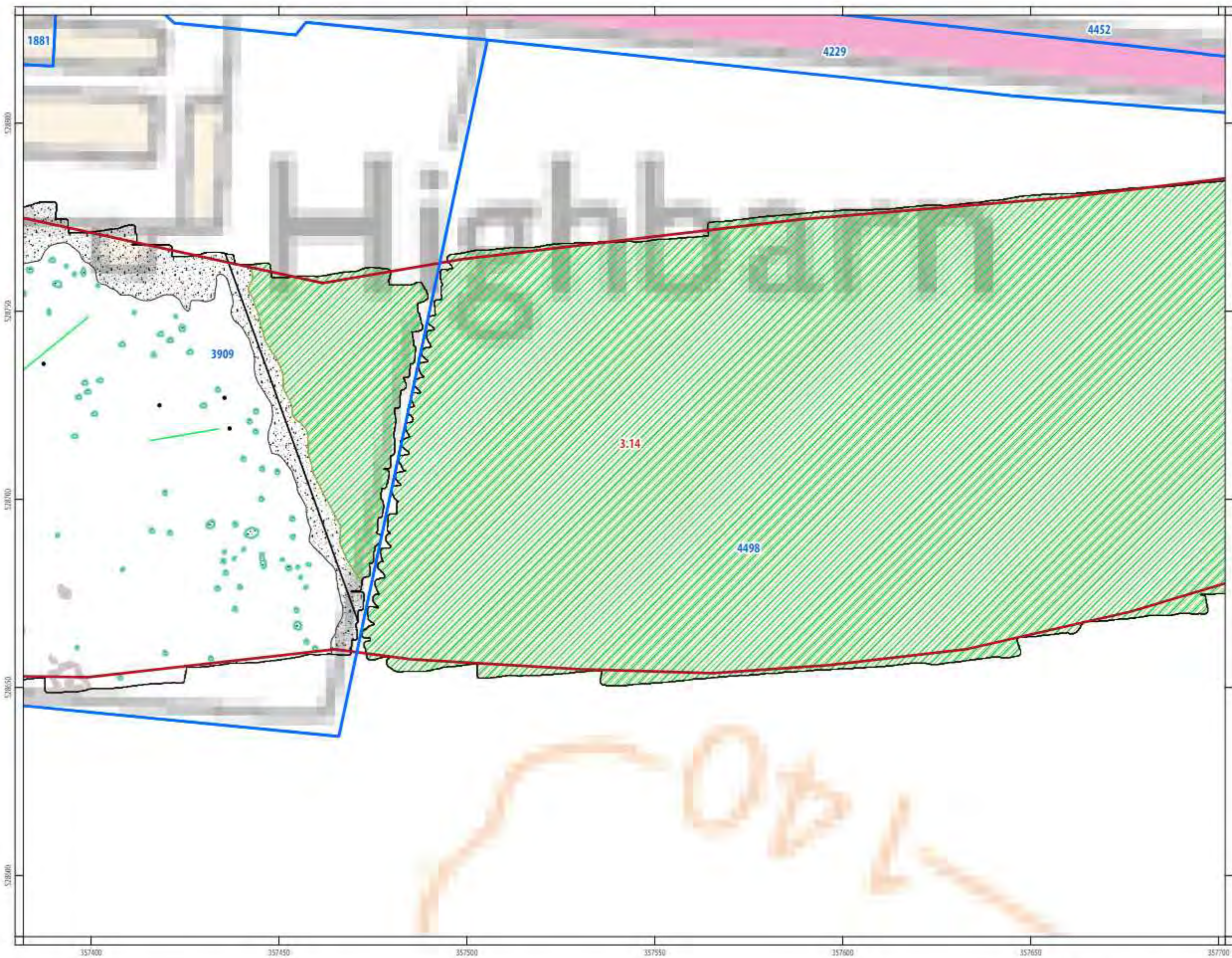
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 402 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)

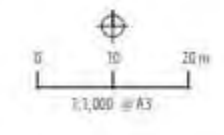




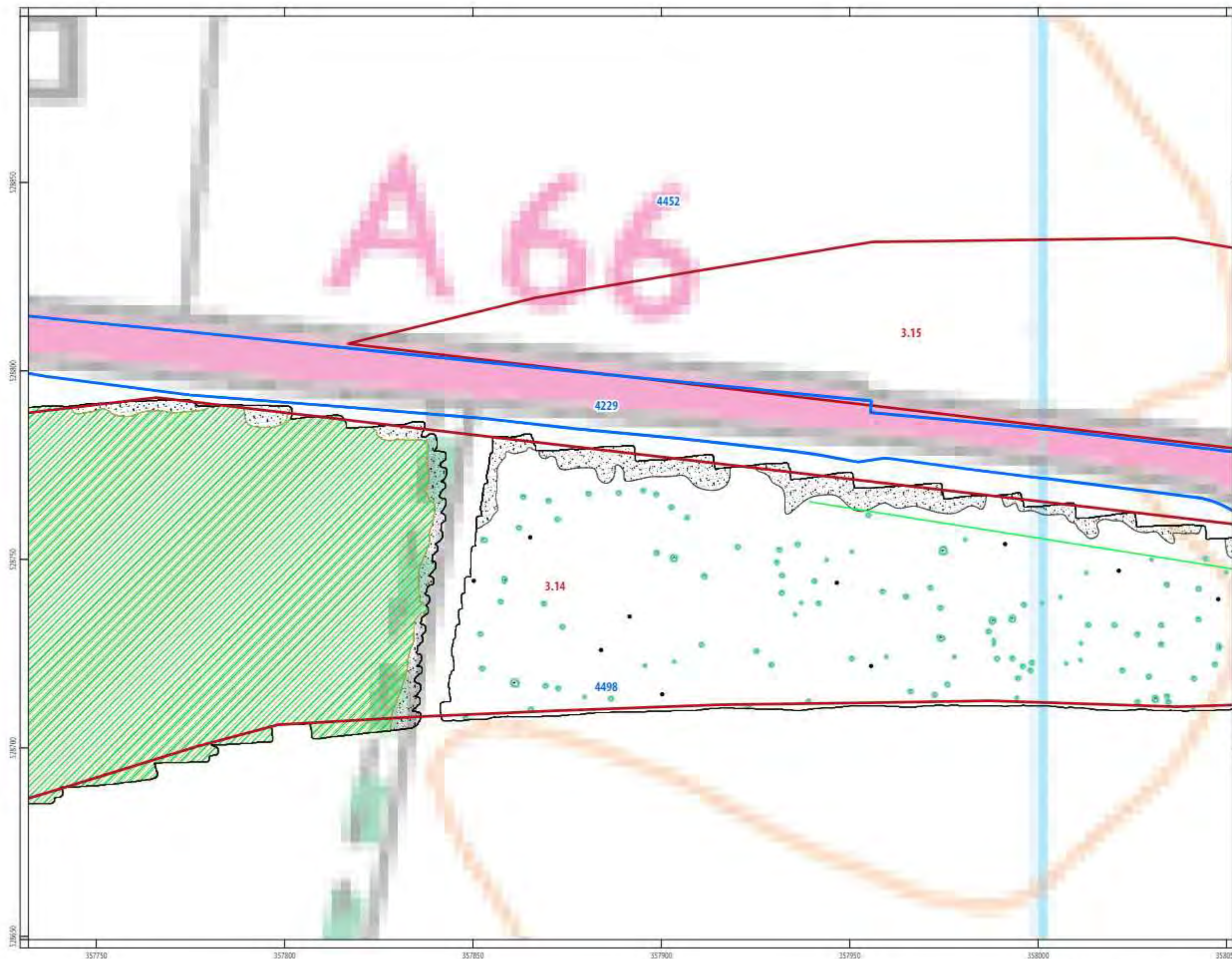
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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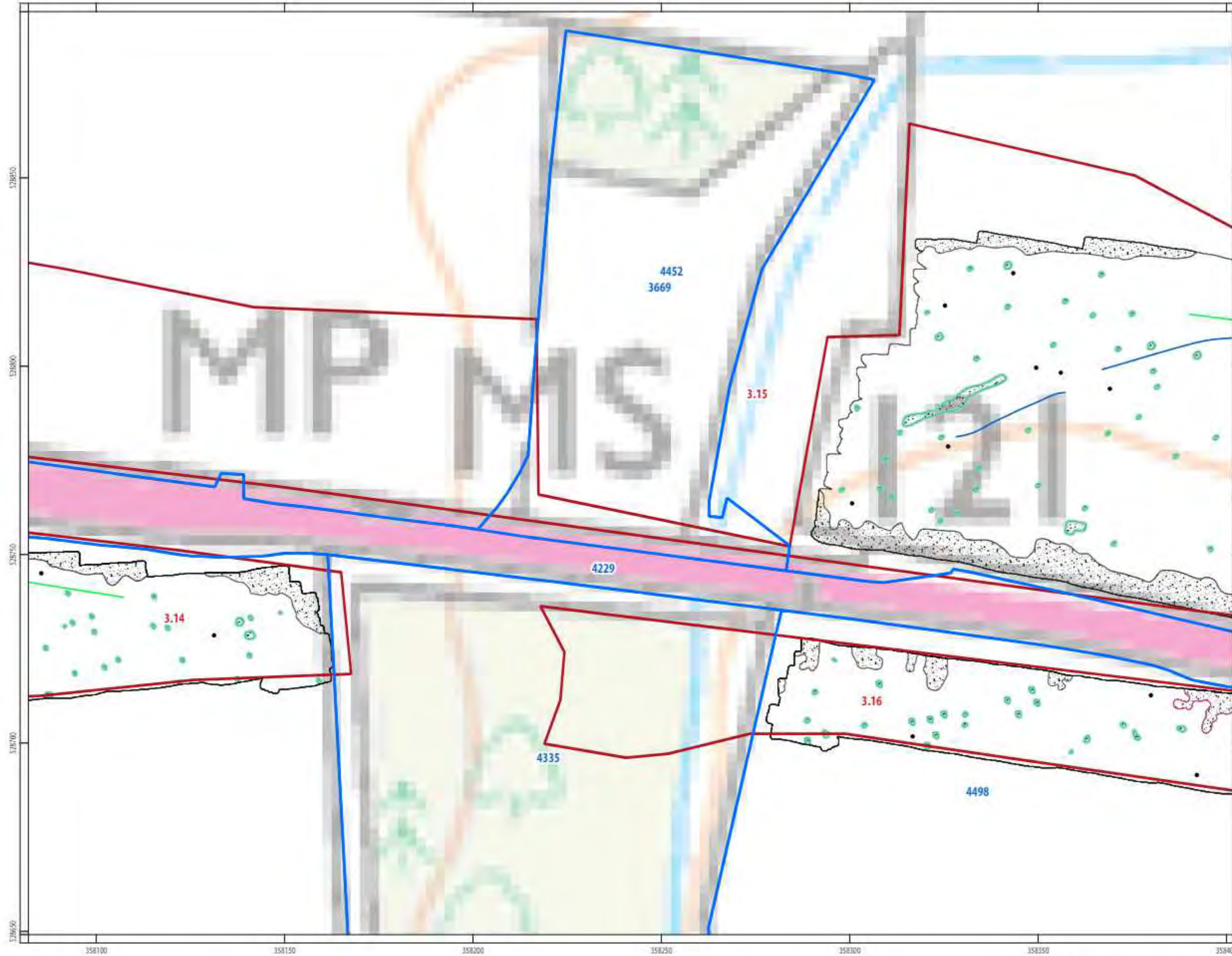
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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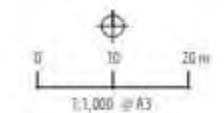




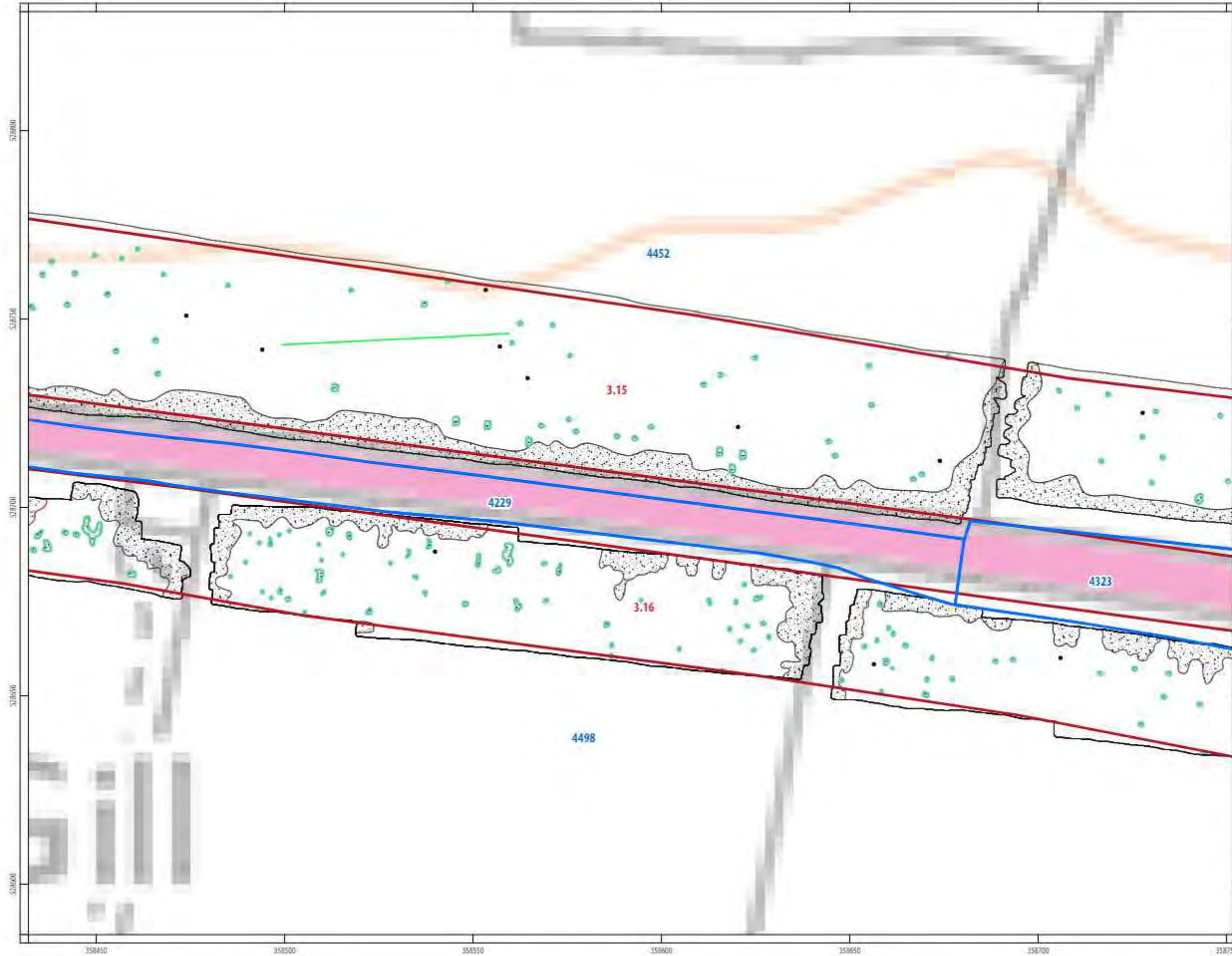
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







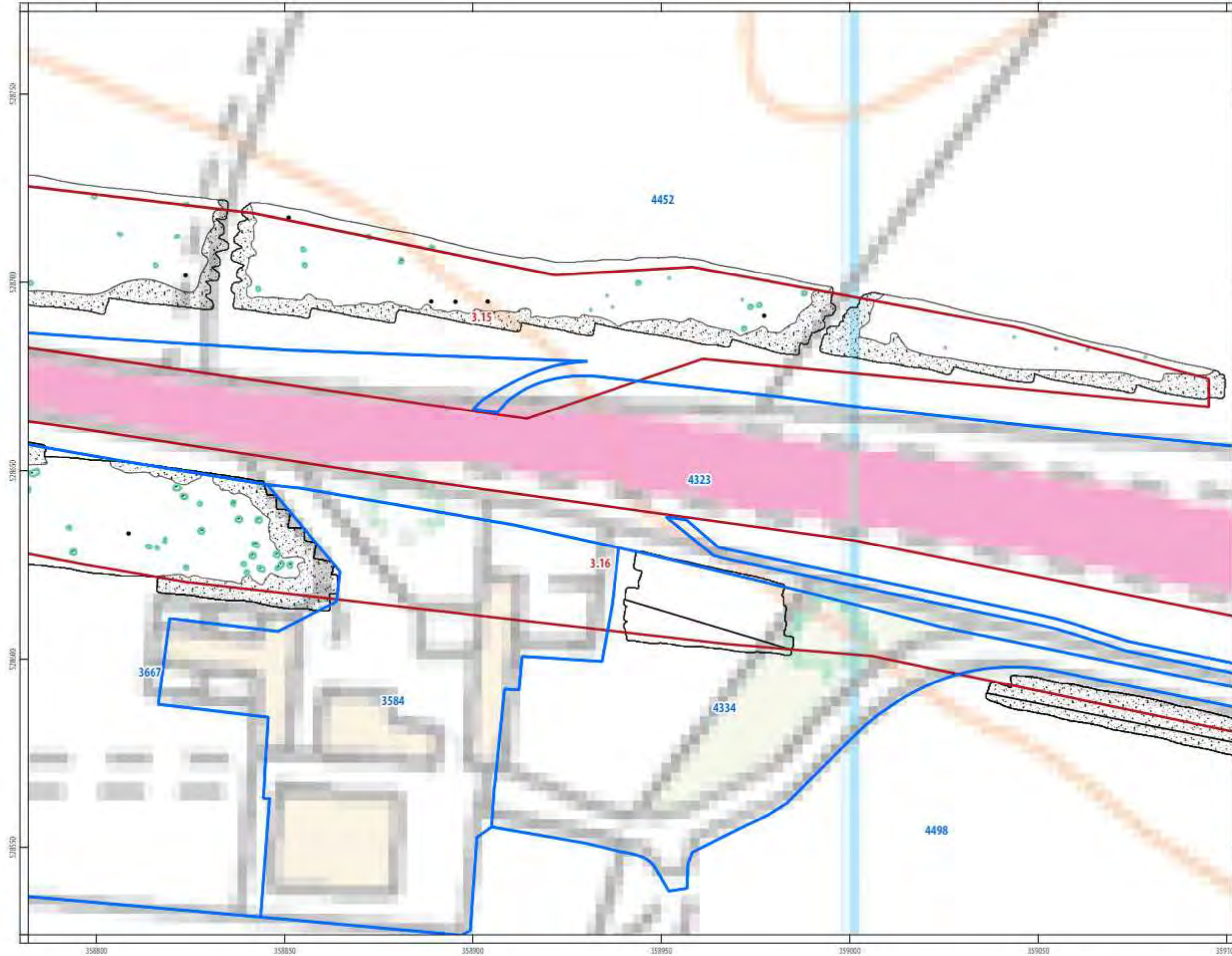
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







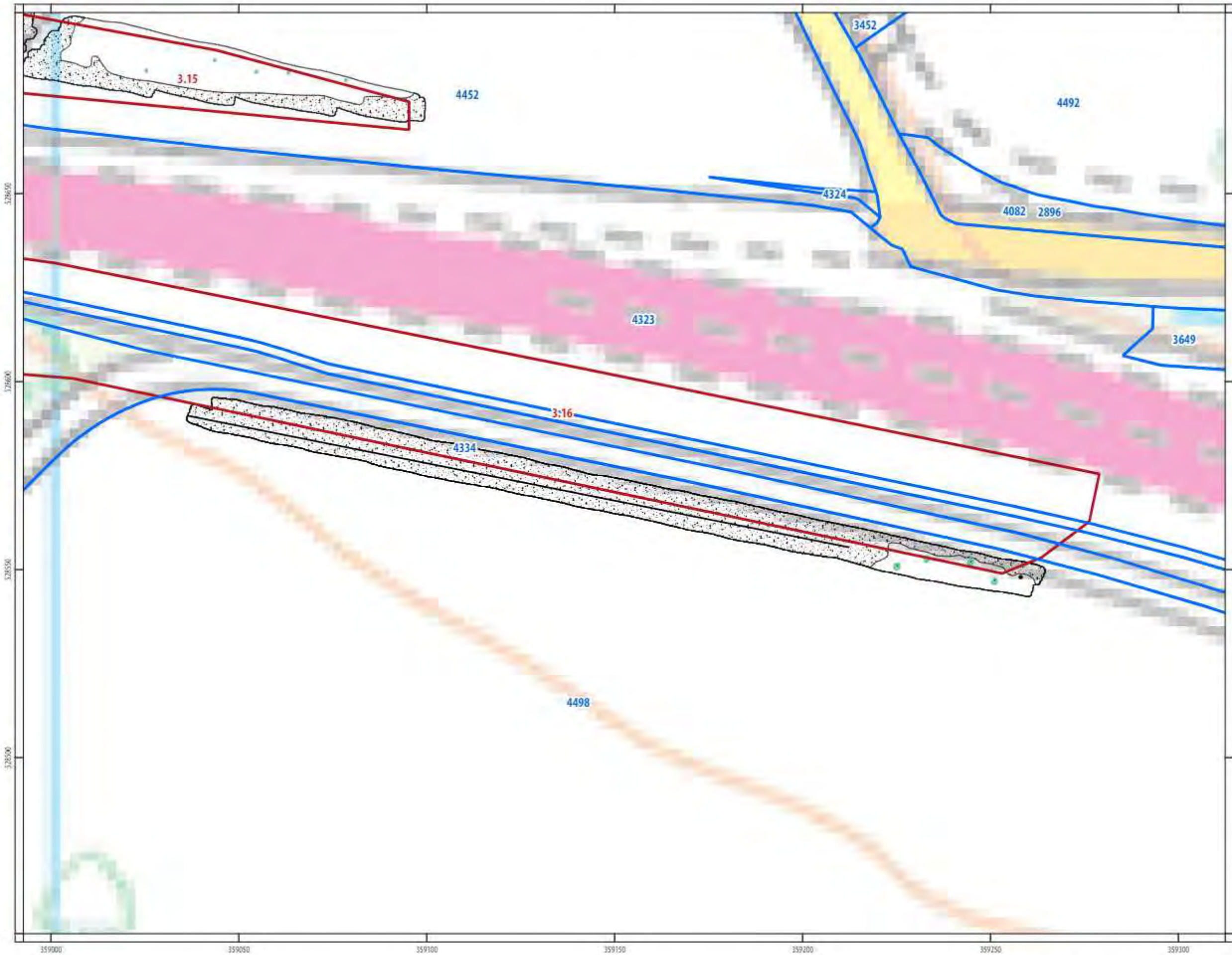
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



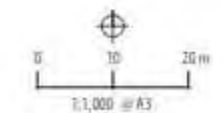




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

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ATFU20 - A66 Transpennine Upgrade

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ILLUS 408 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

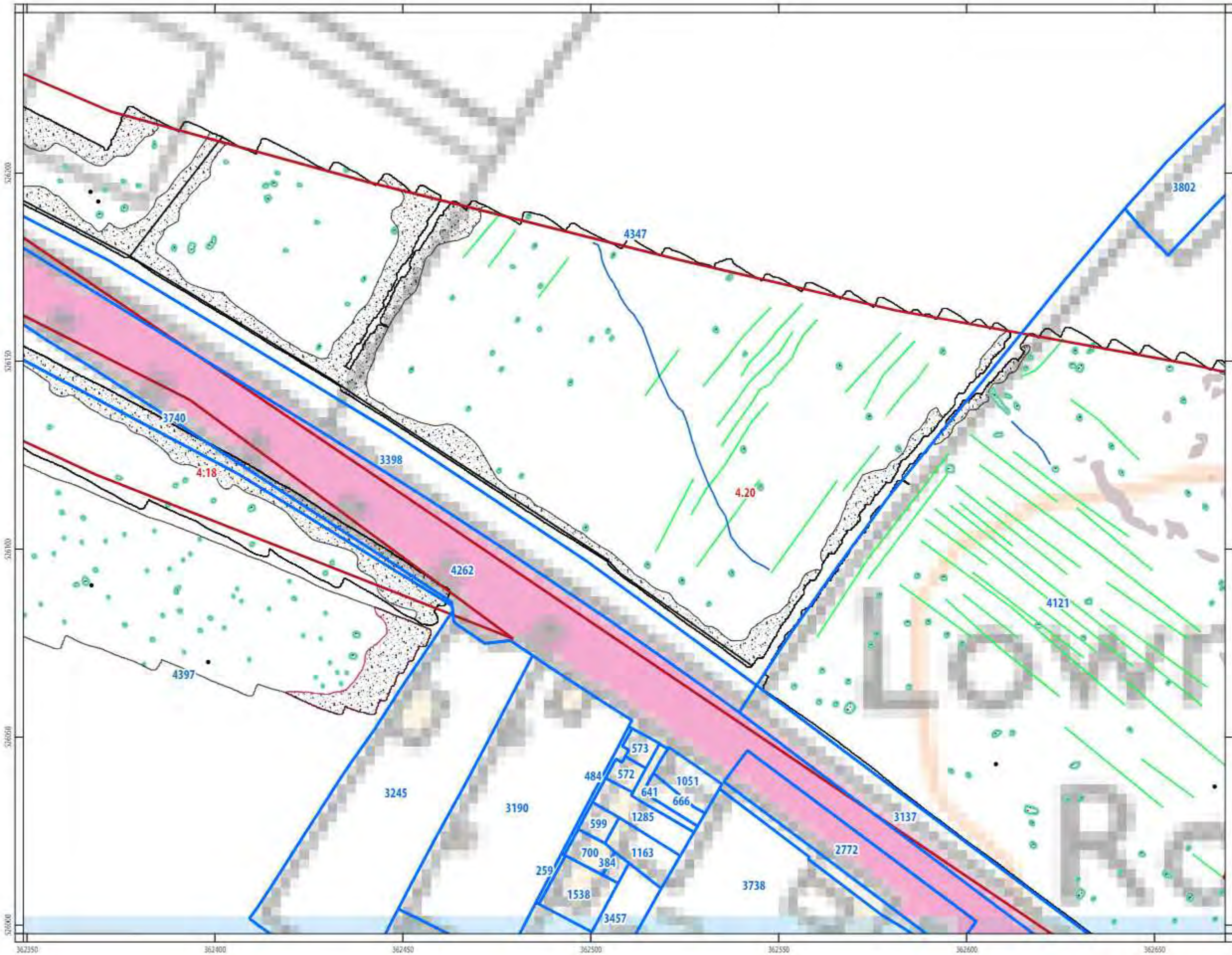
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 409 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

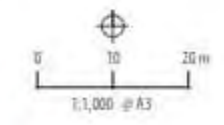




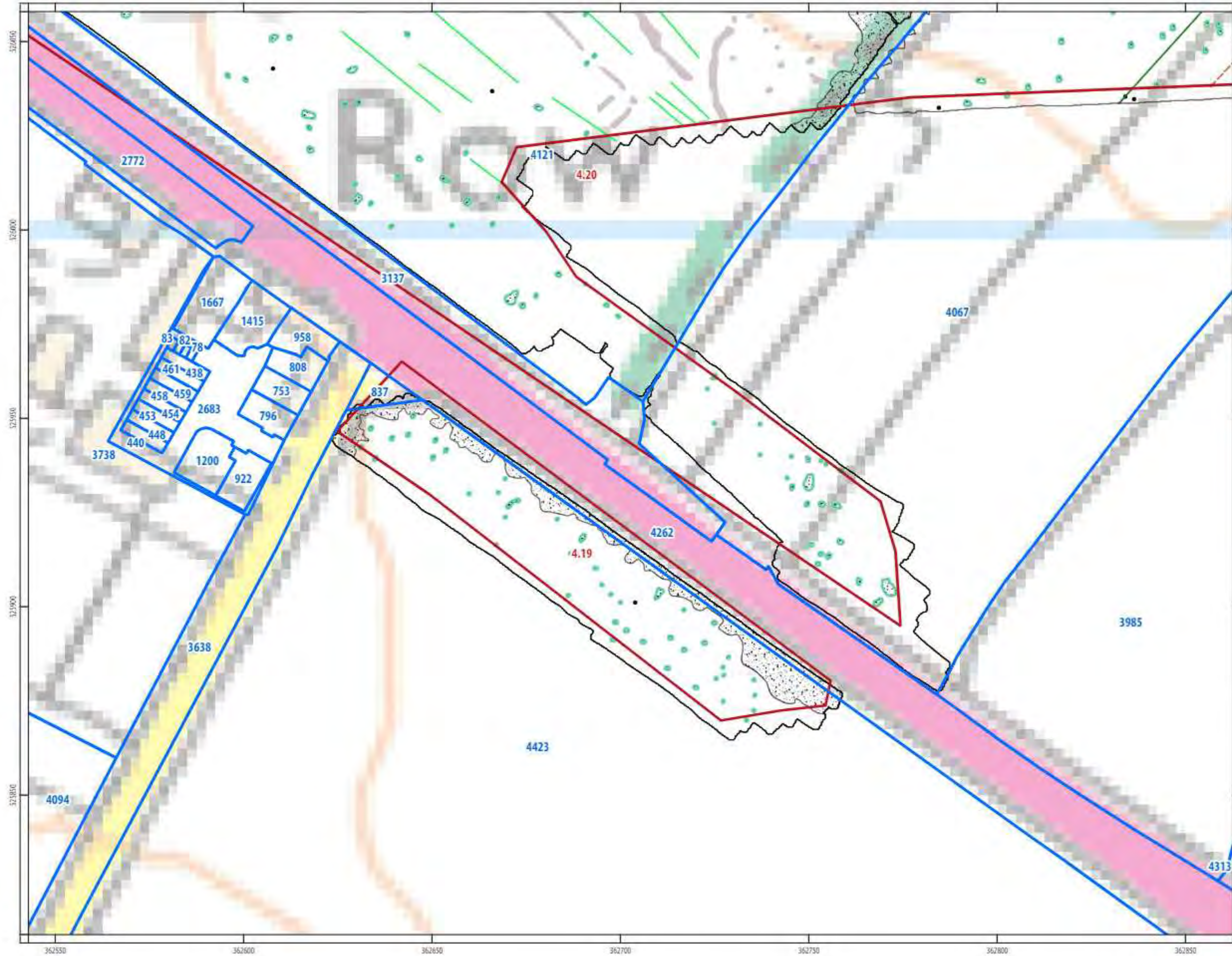
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







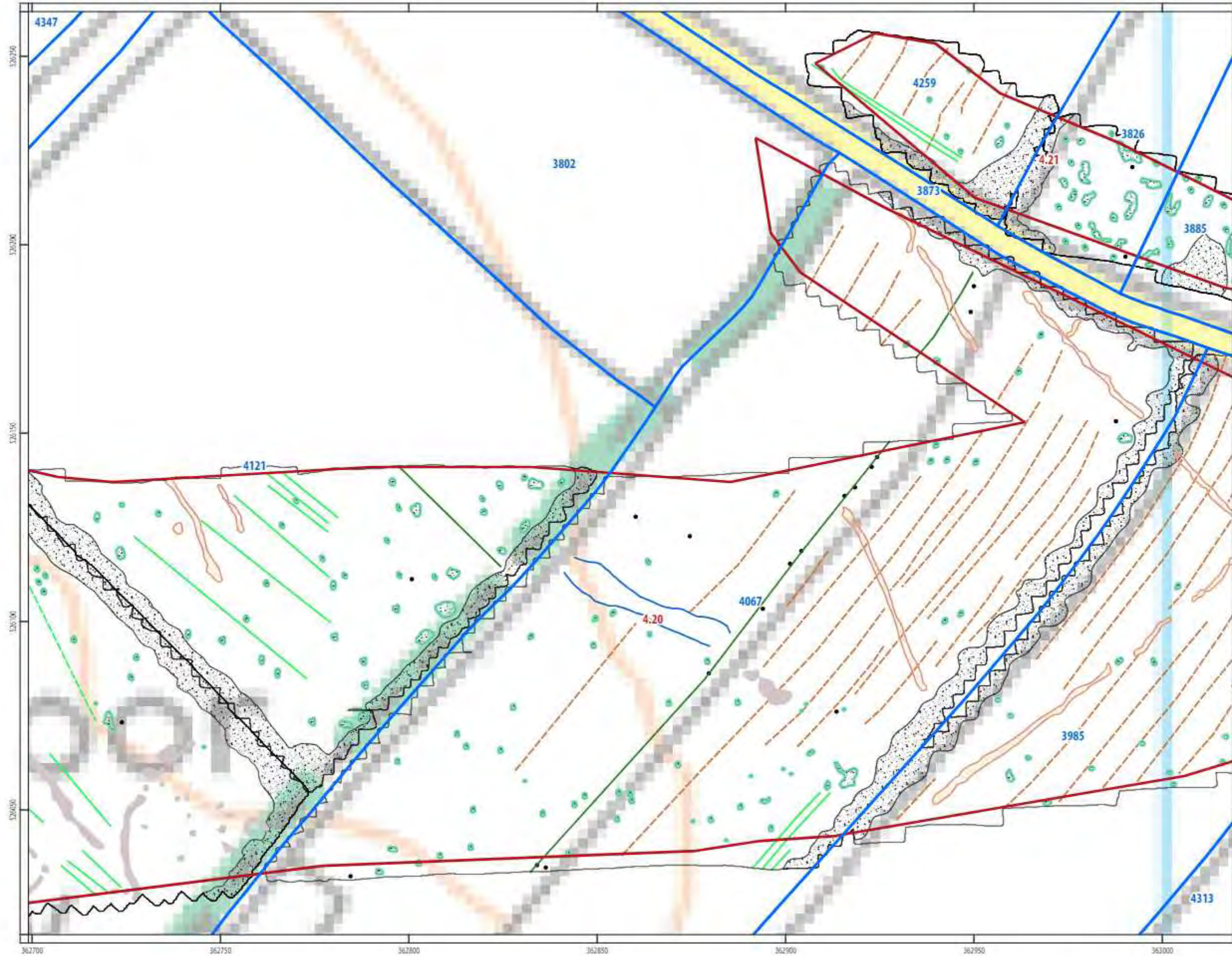
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

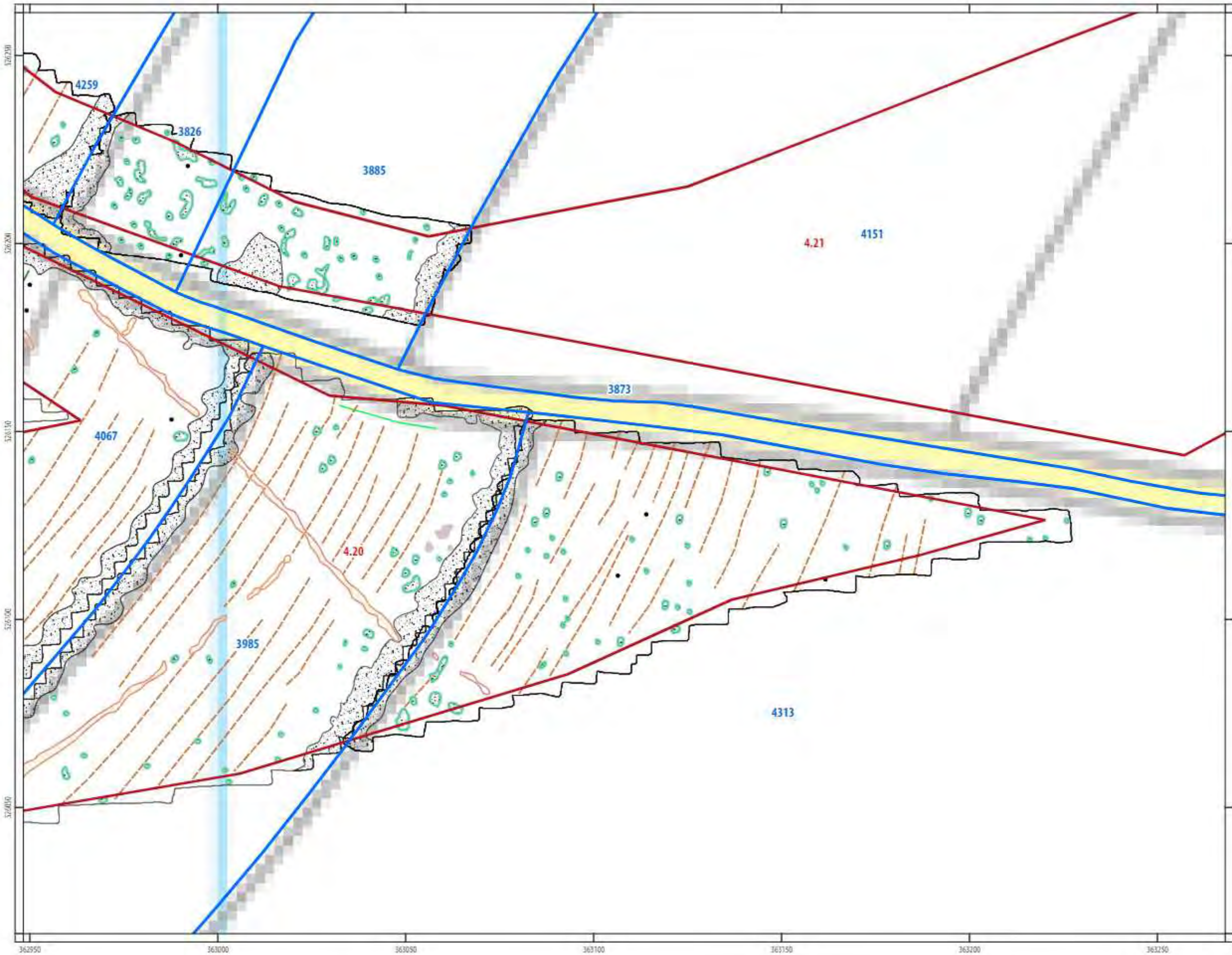
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 412 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

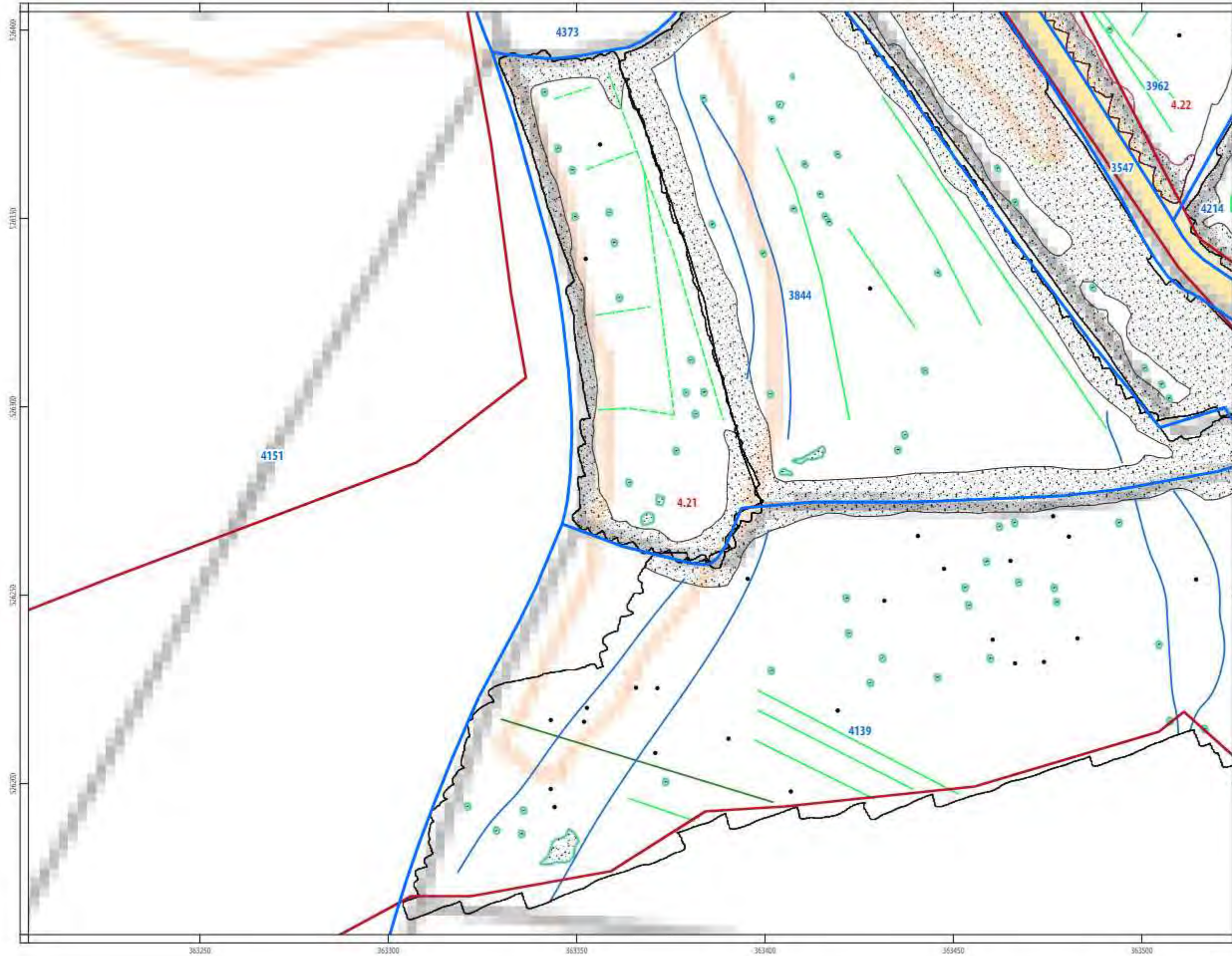
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 413 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

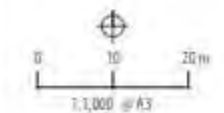




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

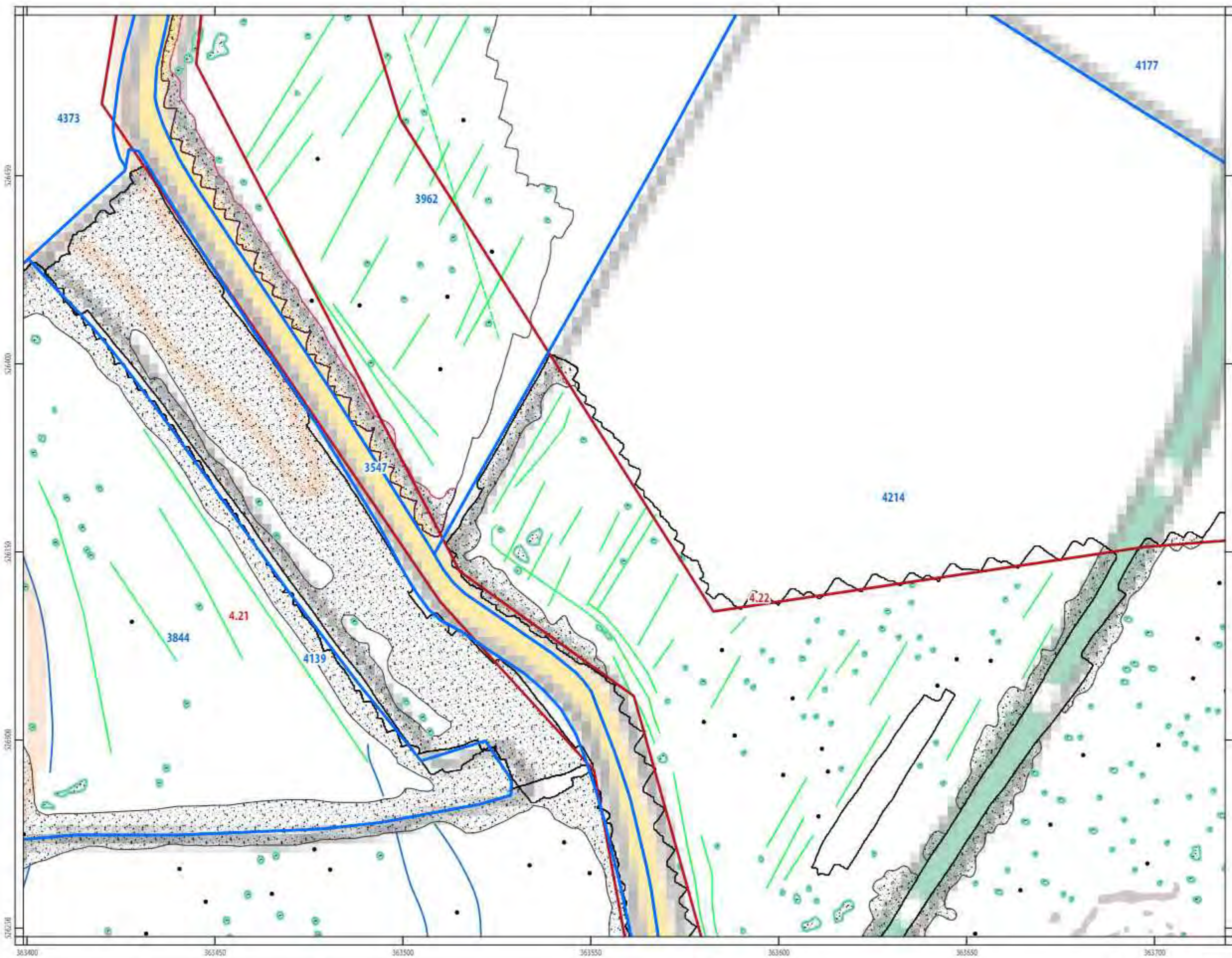
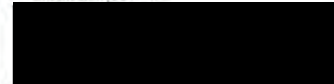
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 414 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

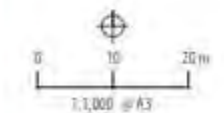




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

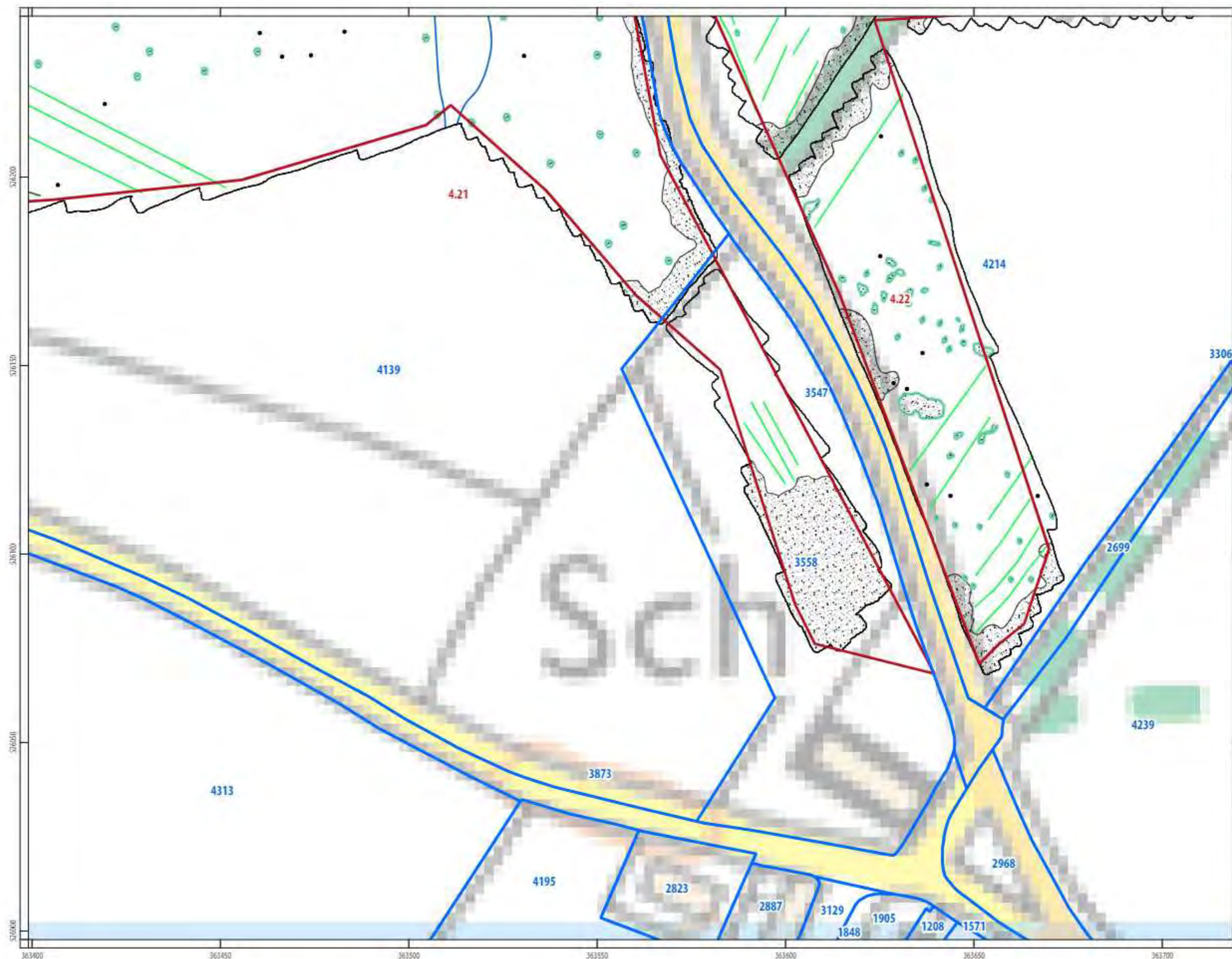
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 415 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

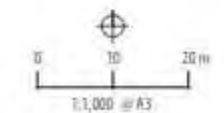




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

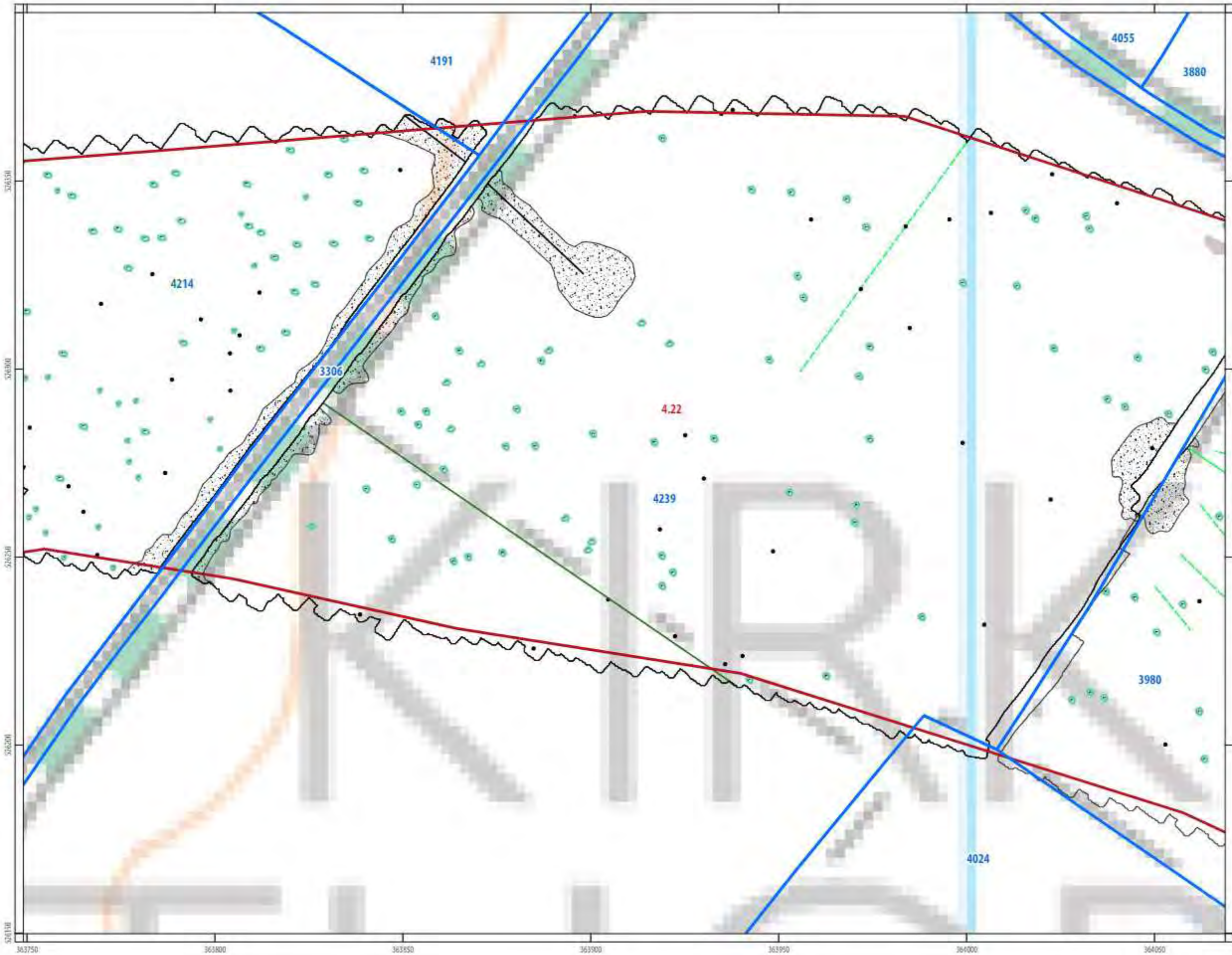
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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ILLUS 416 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

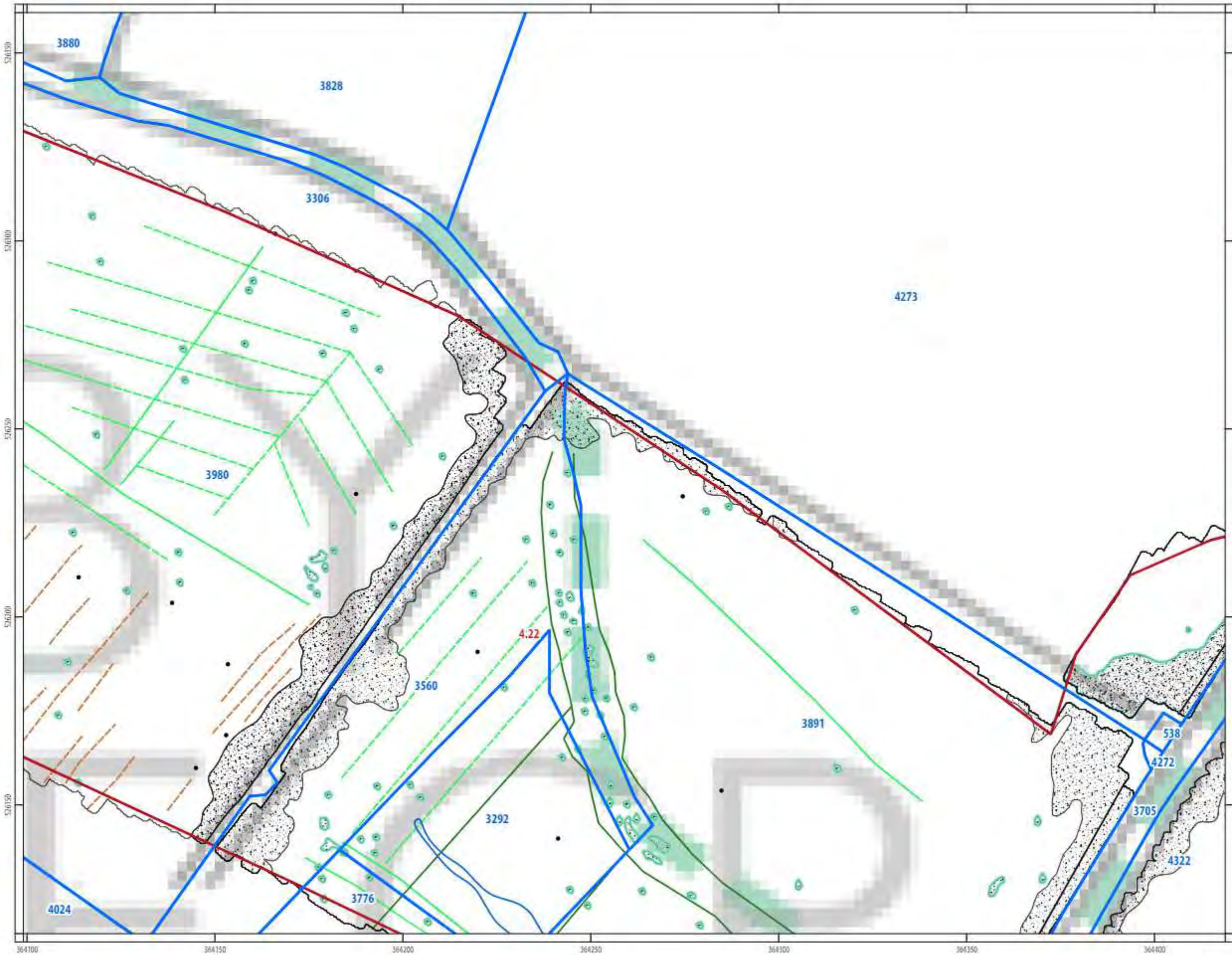
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 417 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

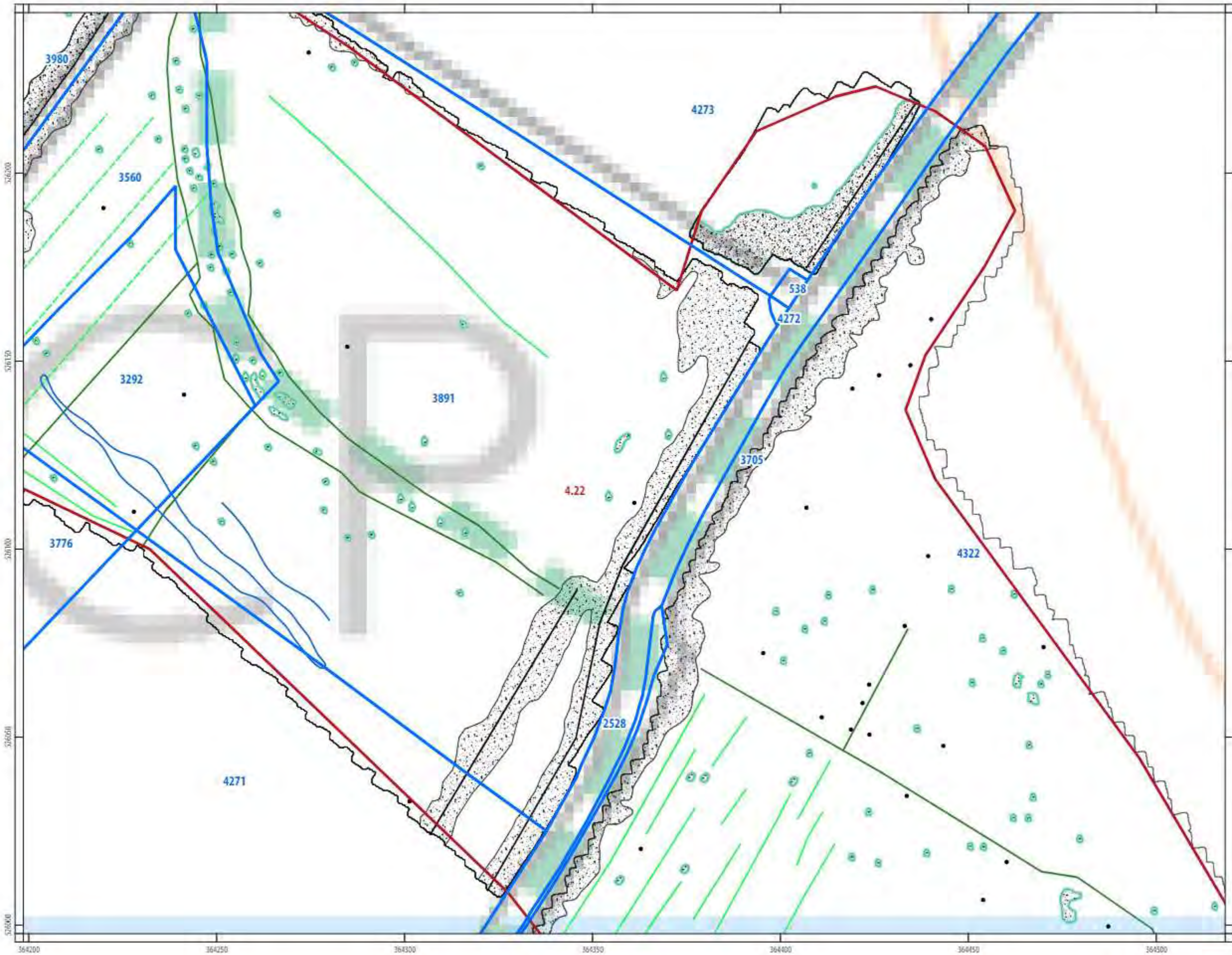
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 418 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

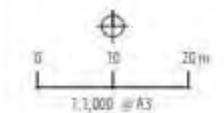




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

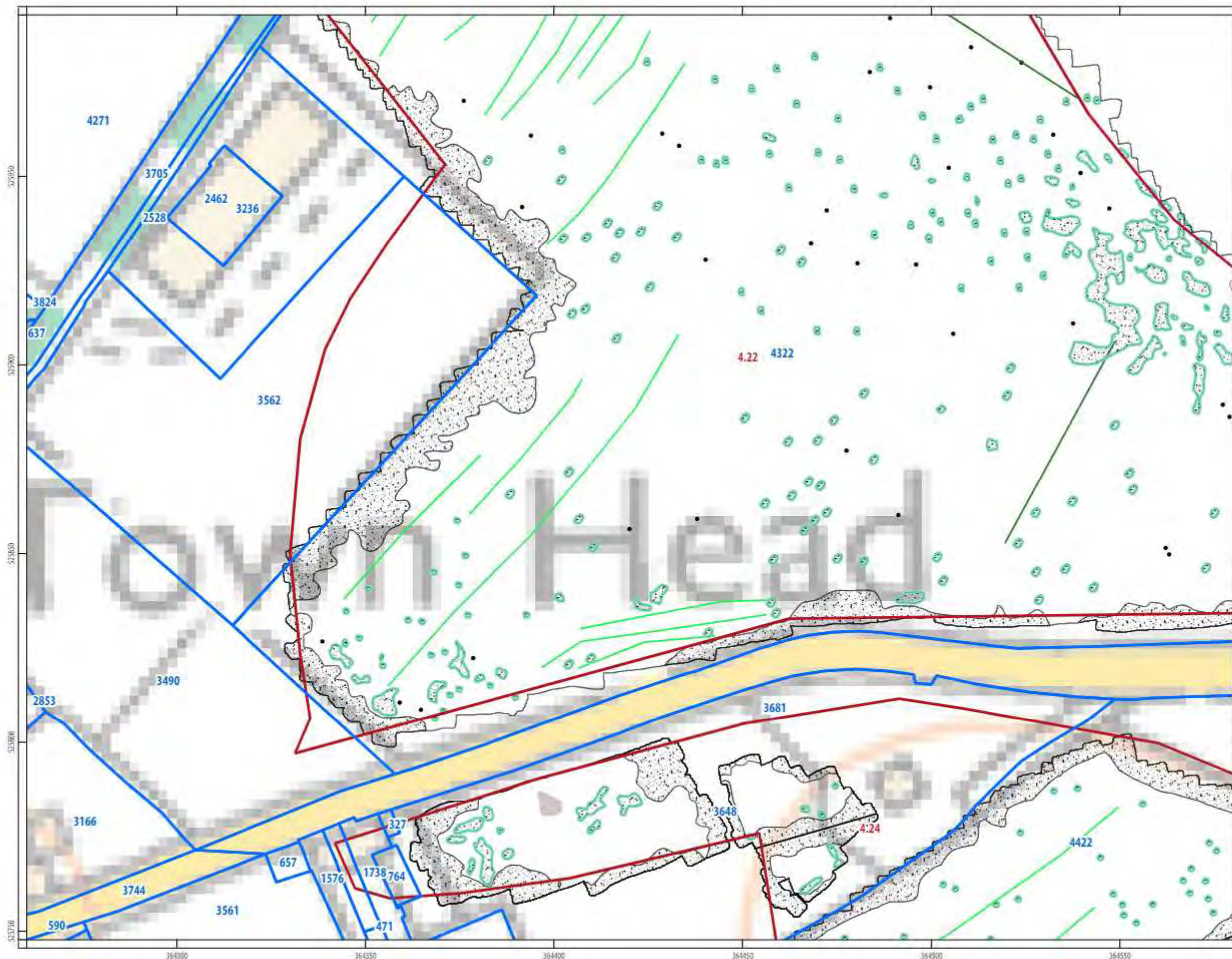
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 419 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

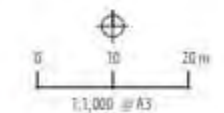




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

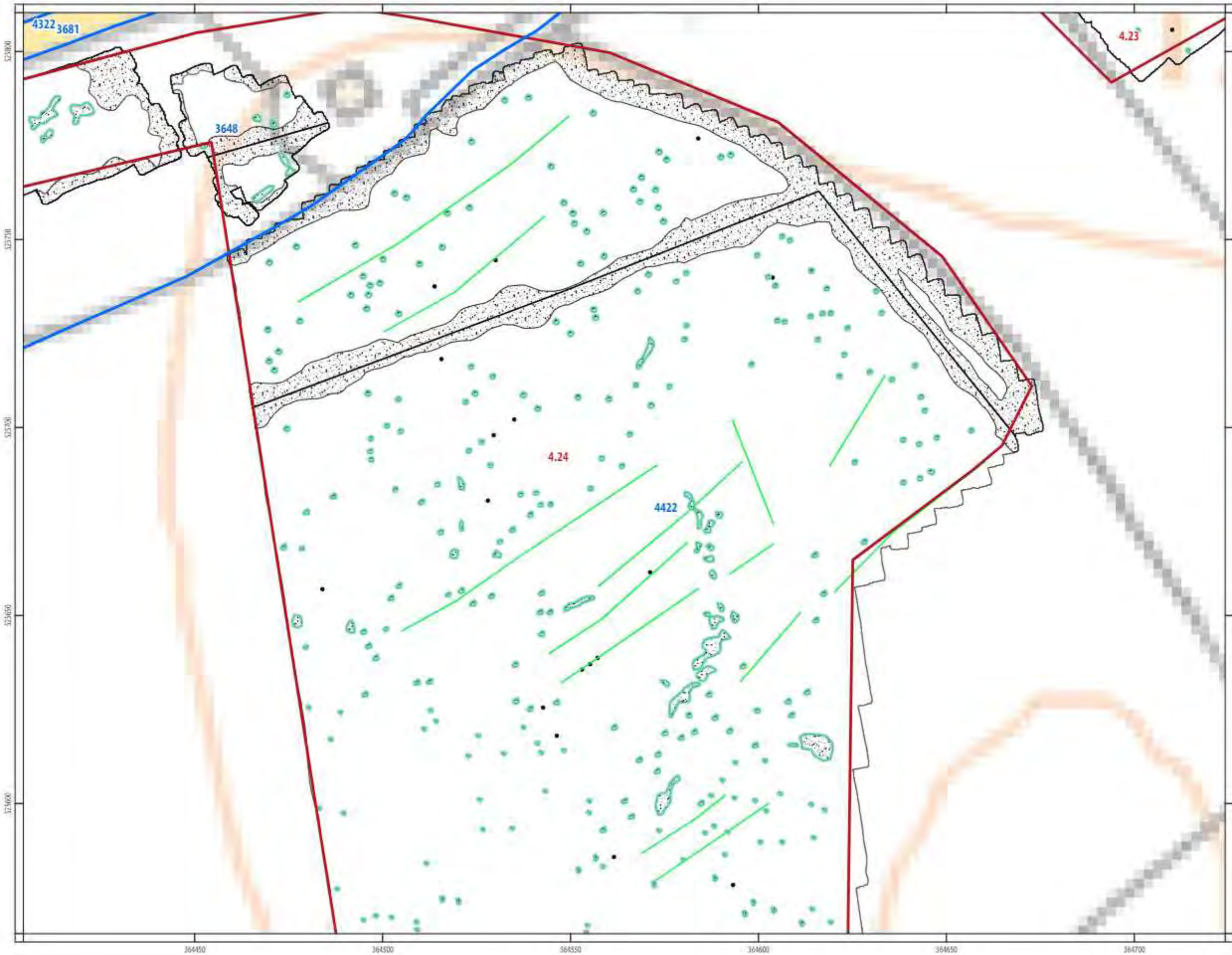
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England



ILLUS 420 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

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ILLUS 421 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

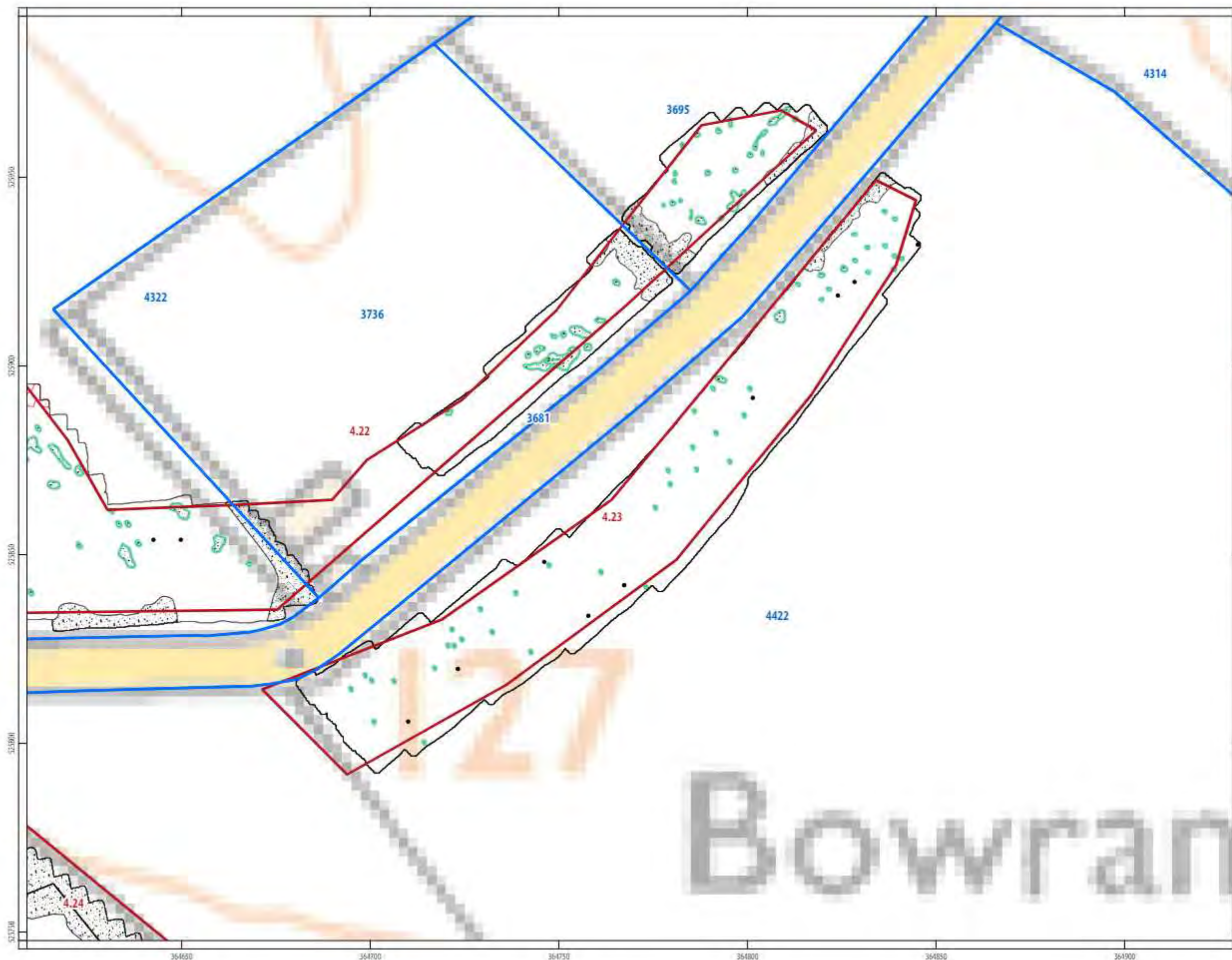
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 422 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





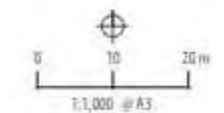
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

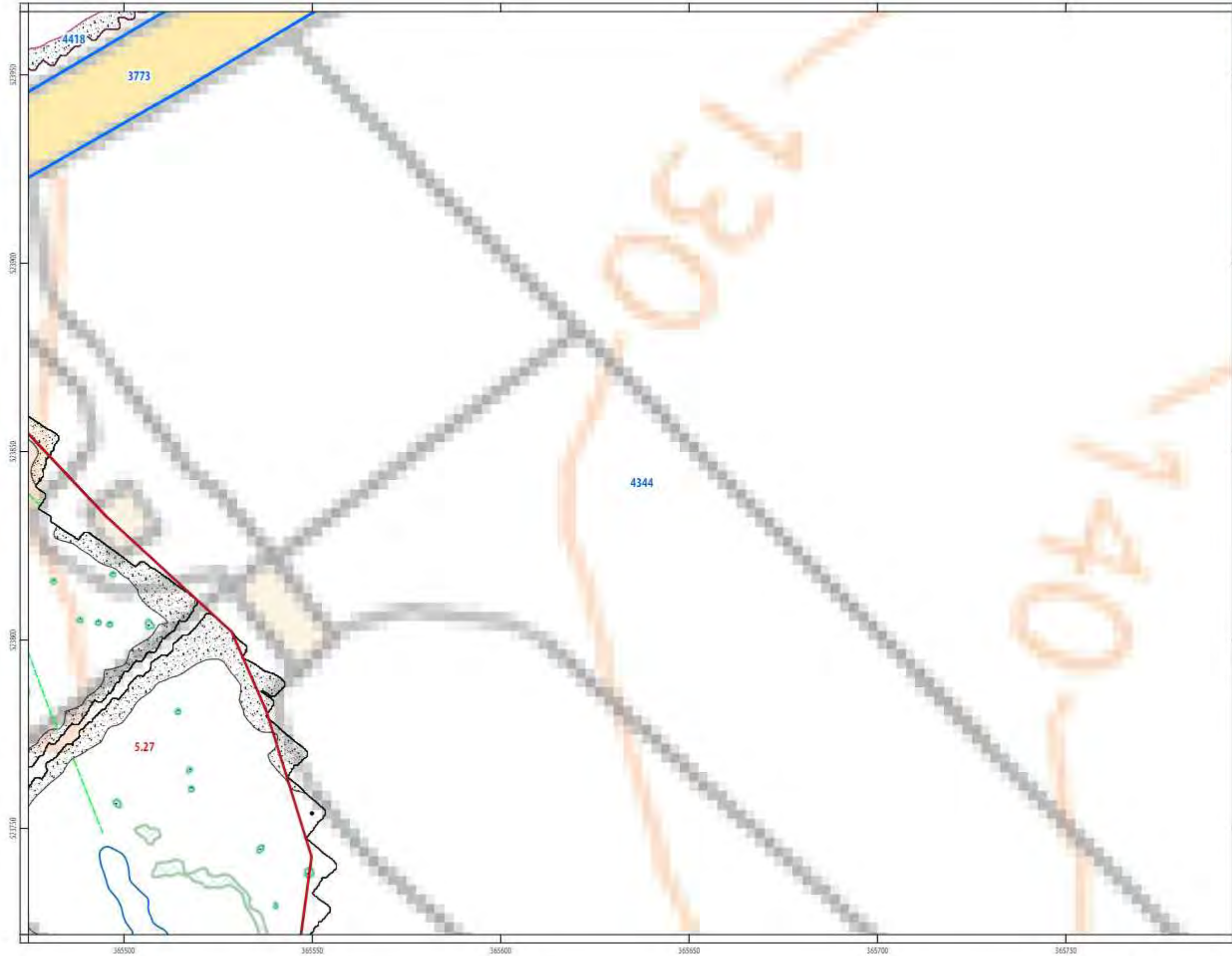
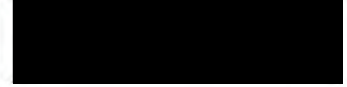
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 424 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

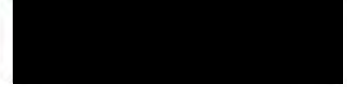
**CLIENT**

Highways England



ILLUS 425 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

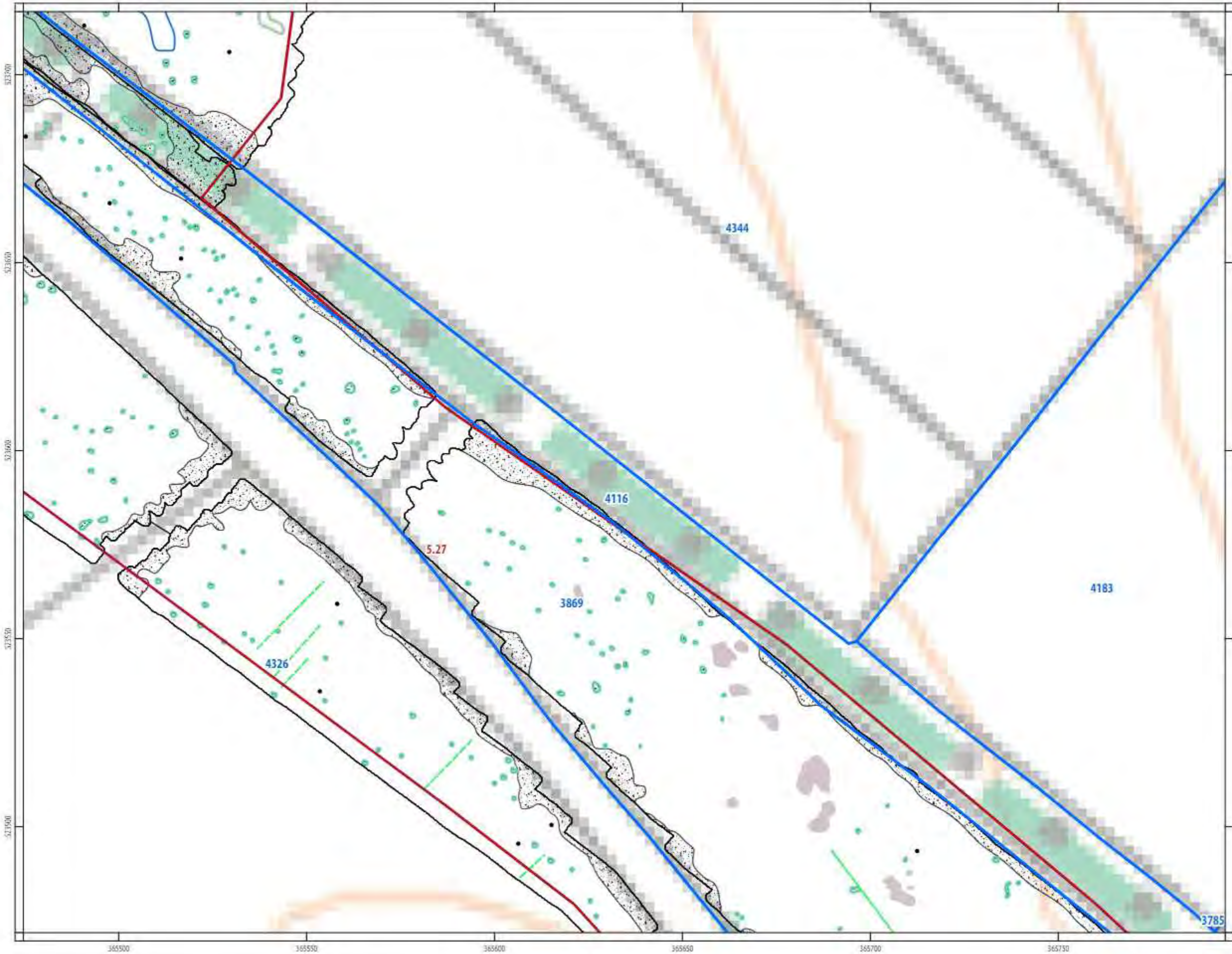
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 426 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

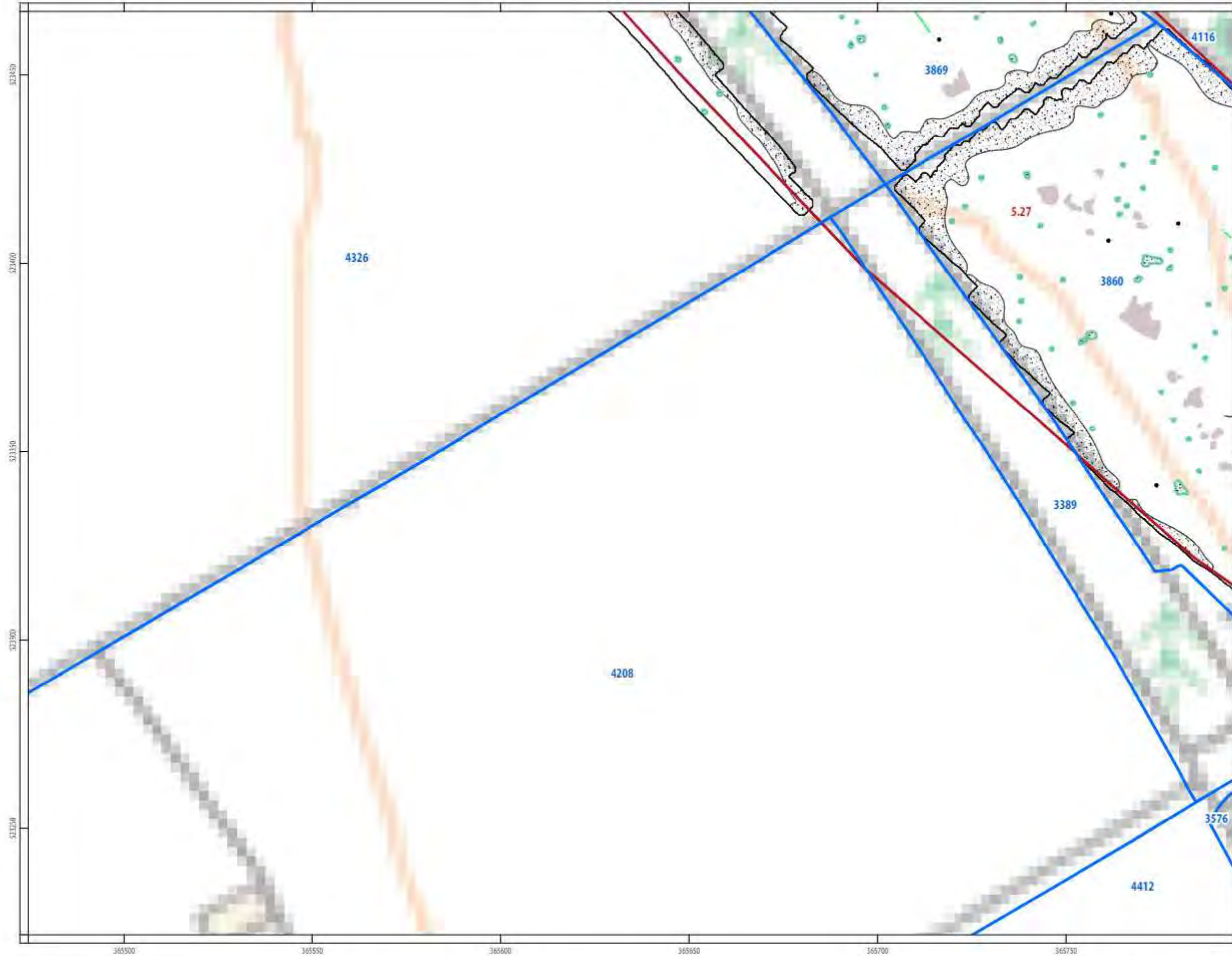
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 427 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

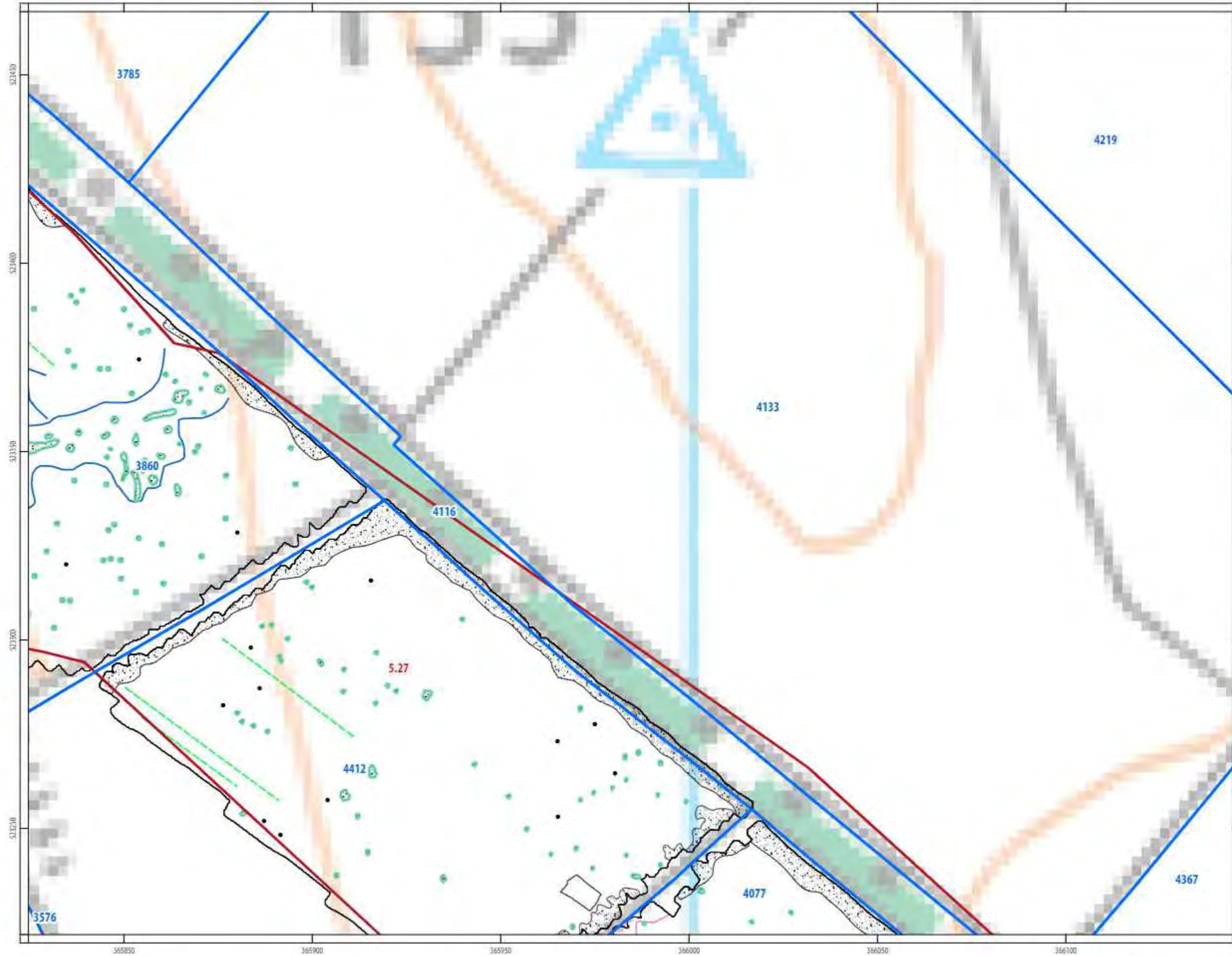
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 428 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

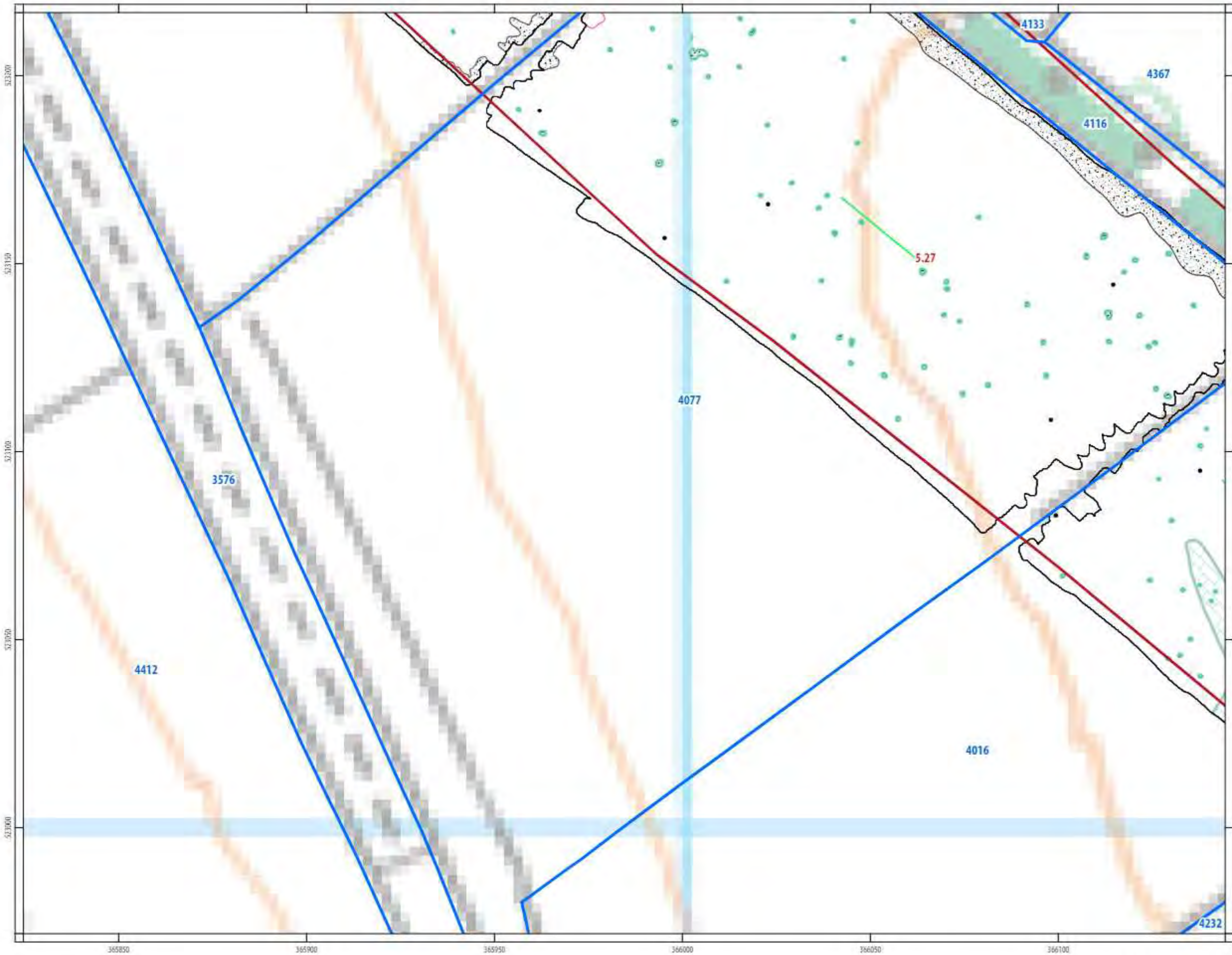
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 429 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





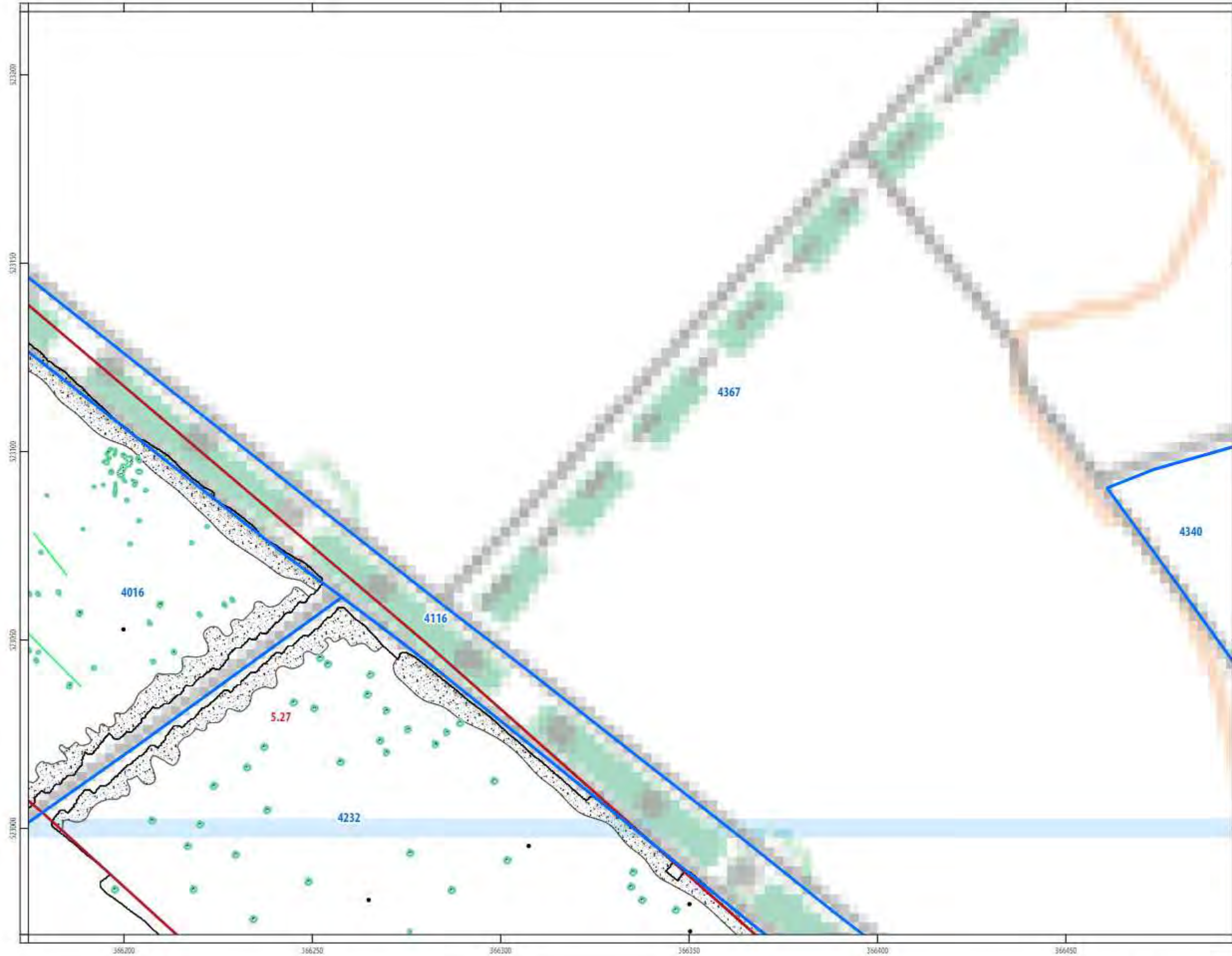
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

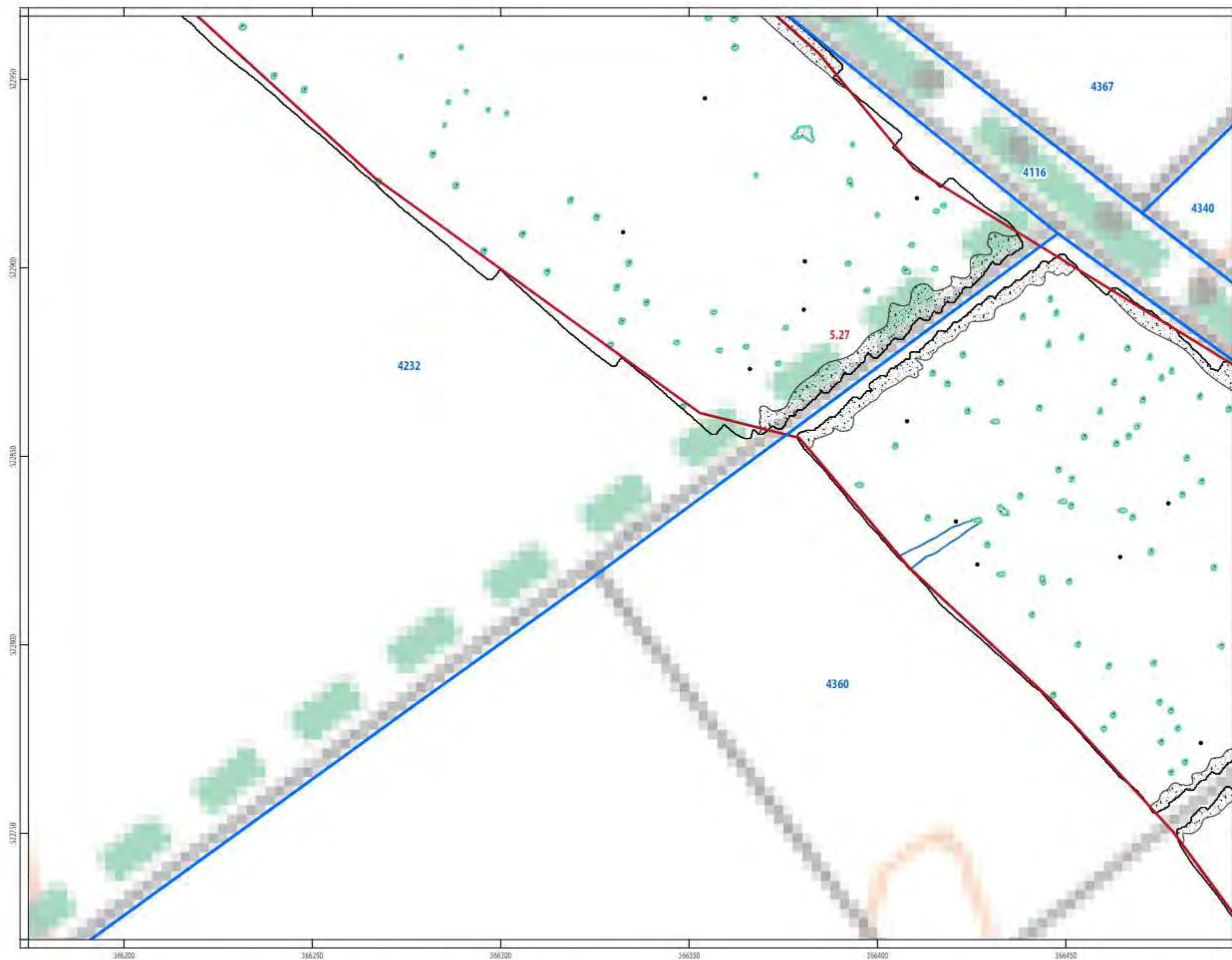
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 431 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





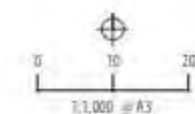
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

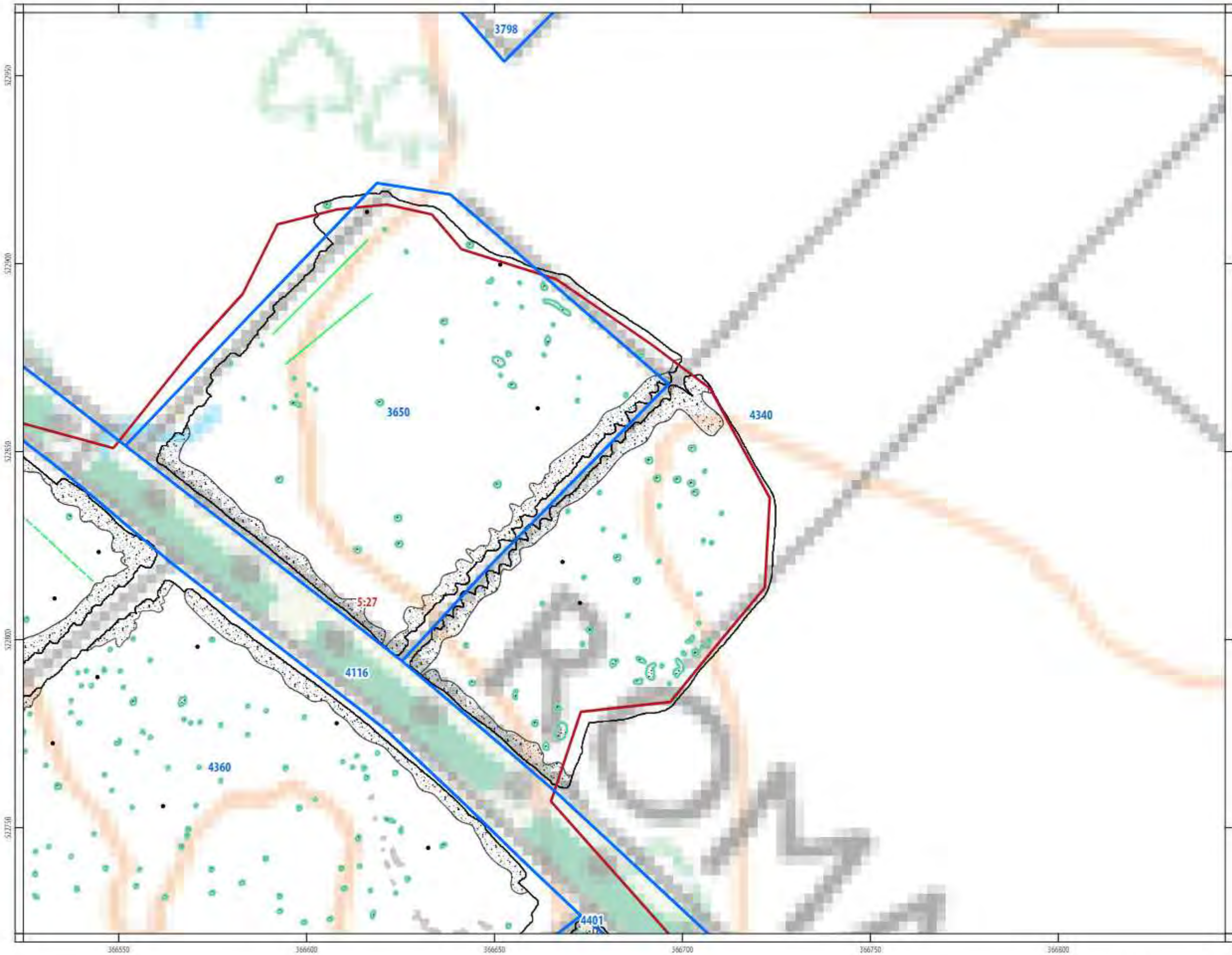
ATFU20 - A66 Transpennine Upgrade

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- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- ▭ scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

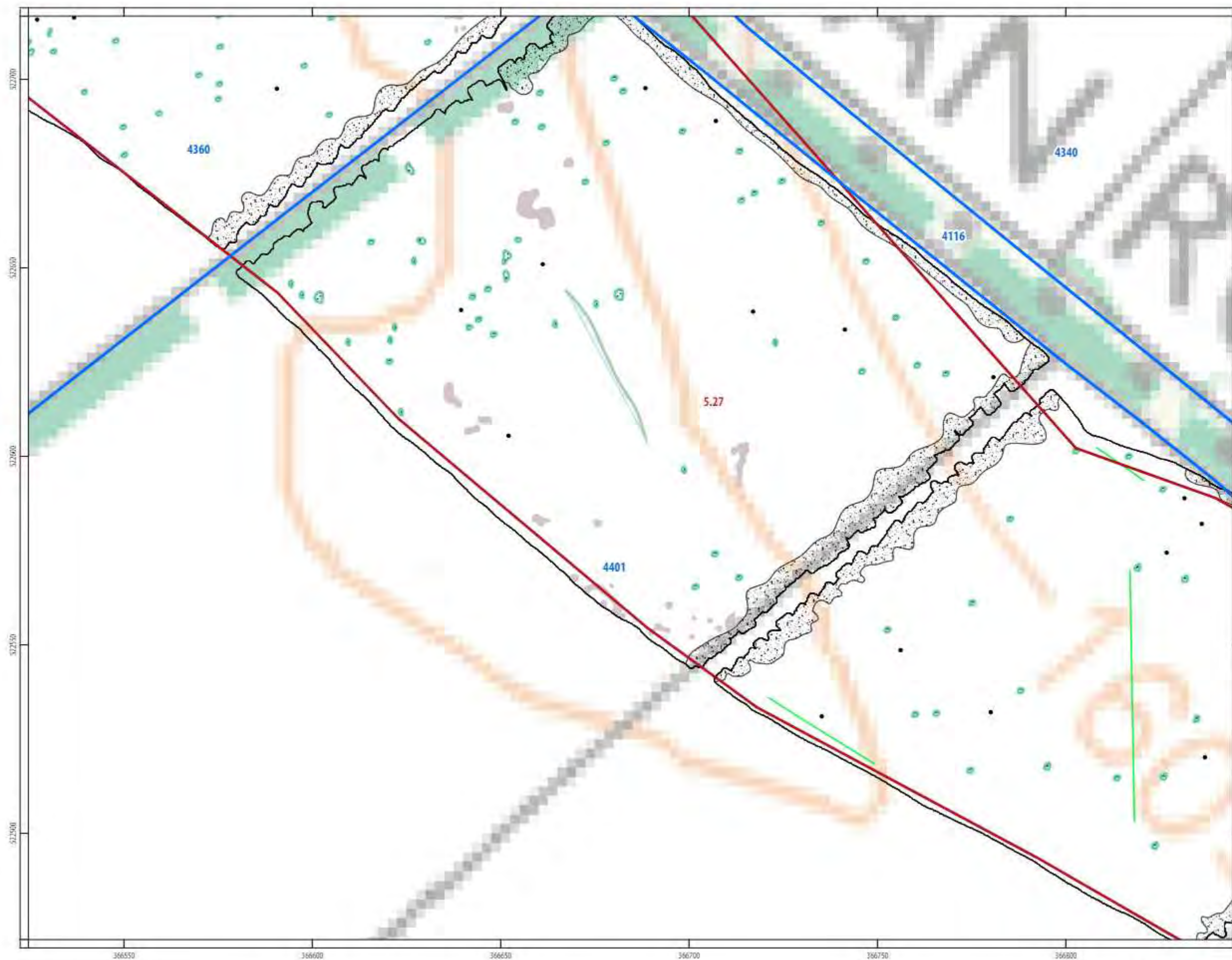
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England



ILLUS 433 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 434 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

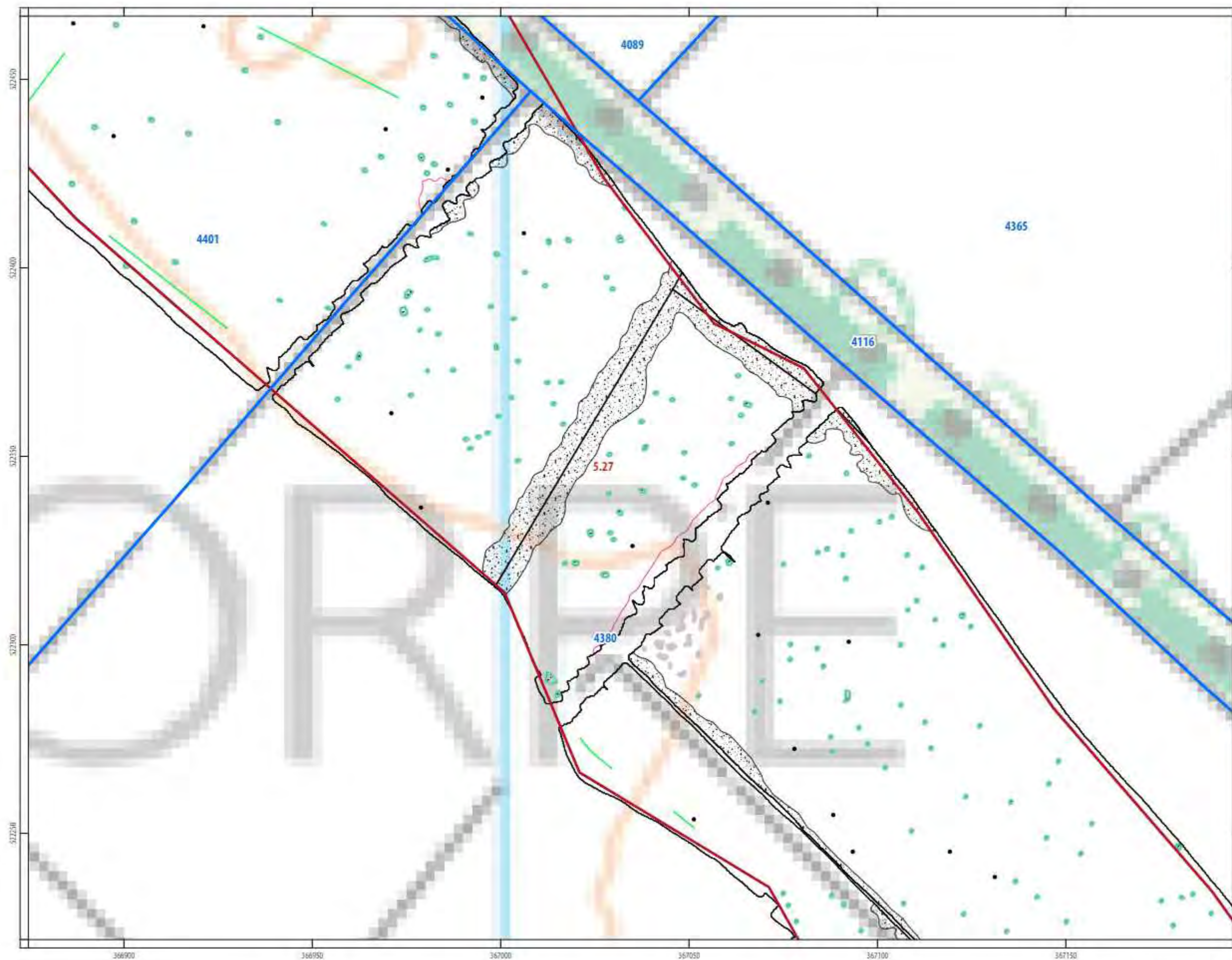
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 435 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

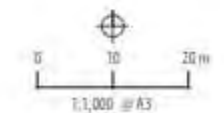




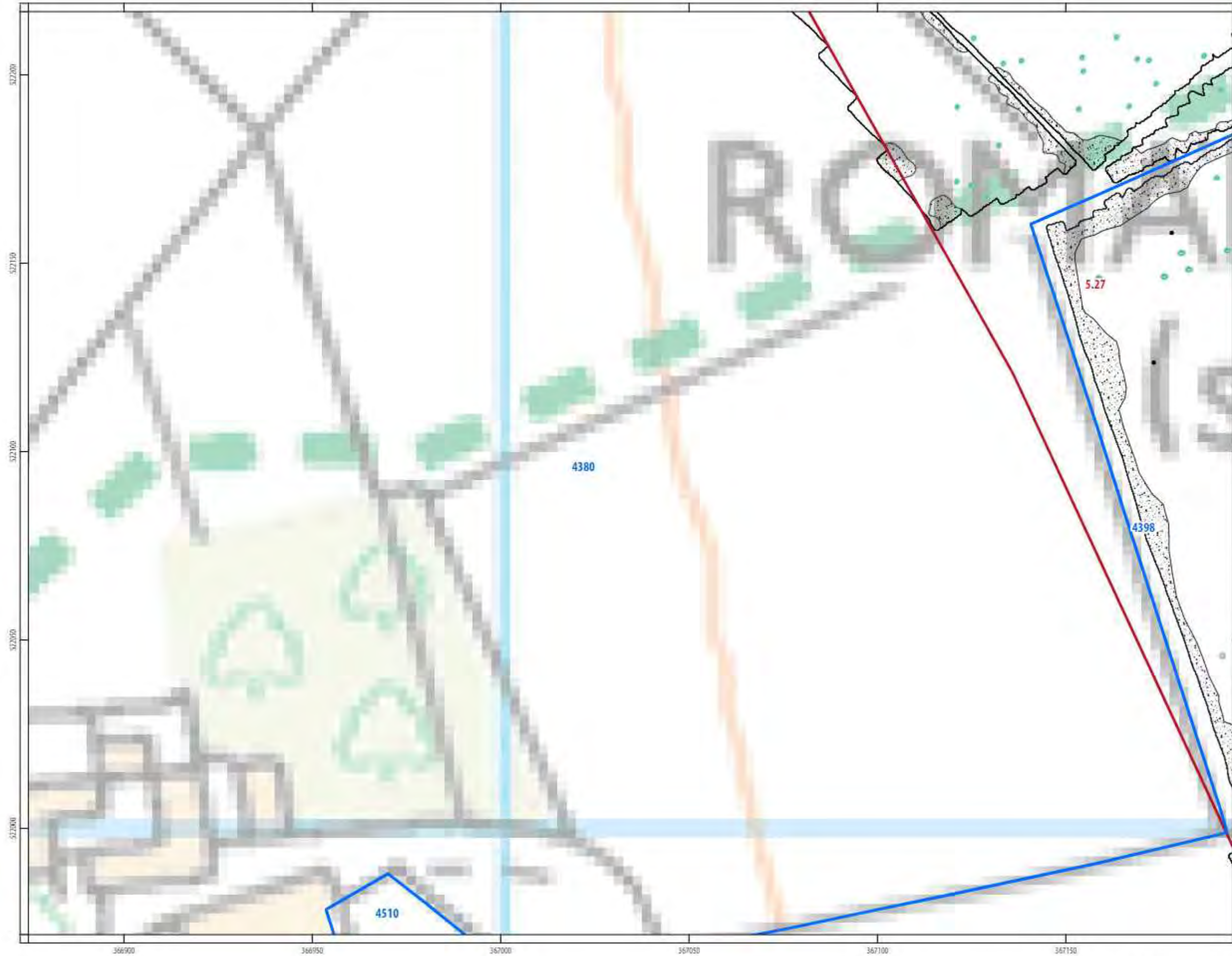
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

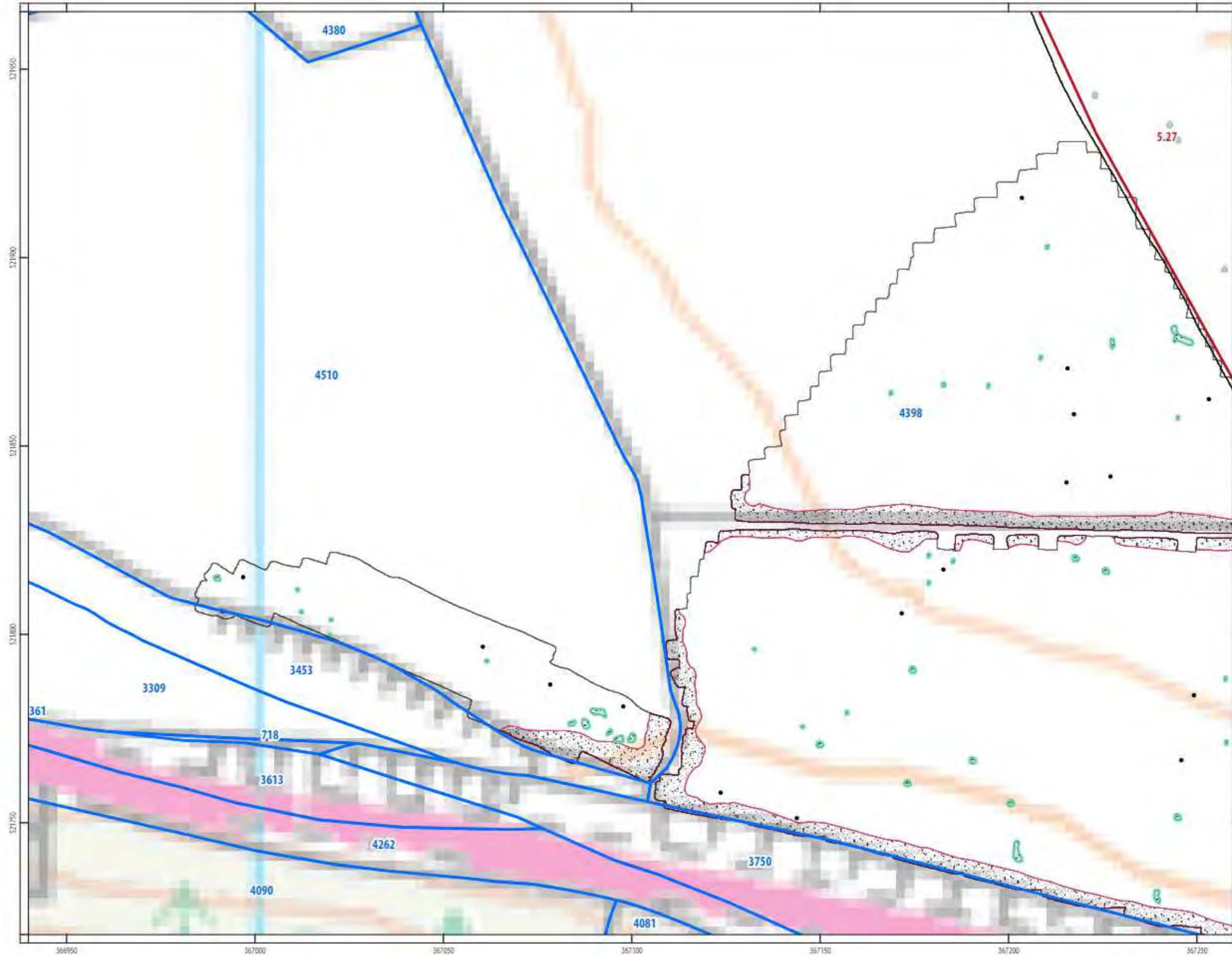
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England



ILLUS 437 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

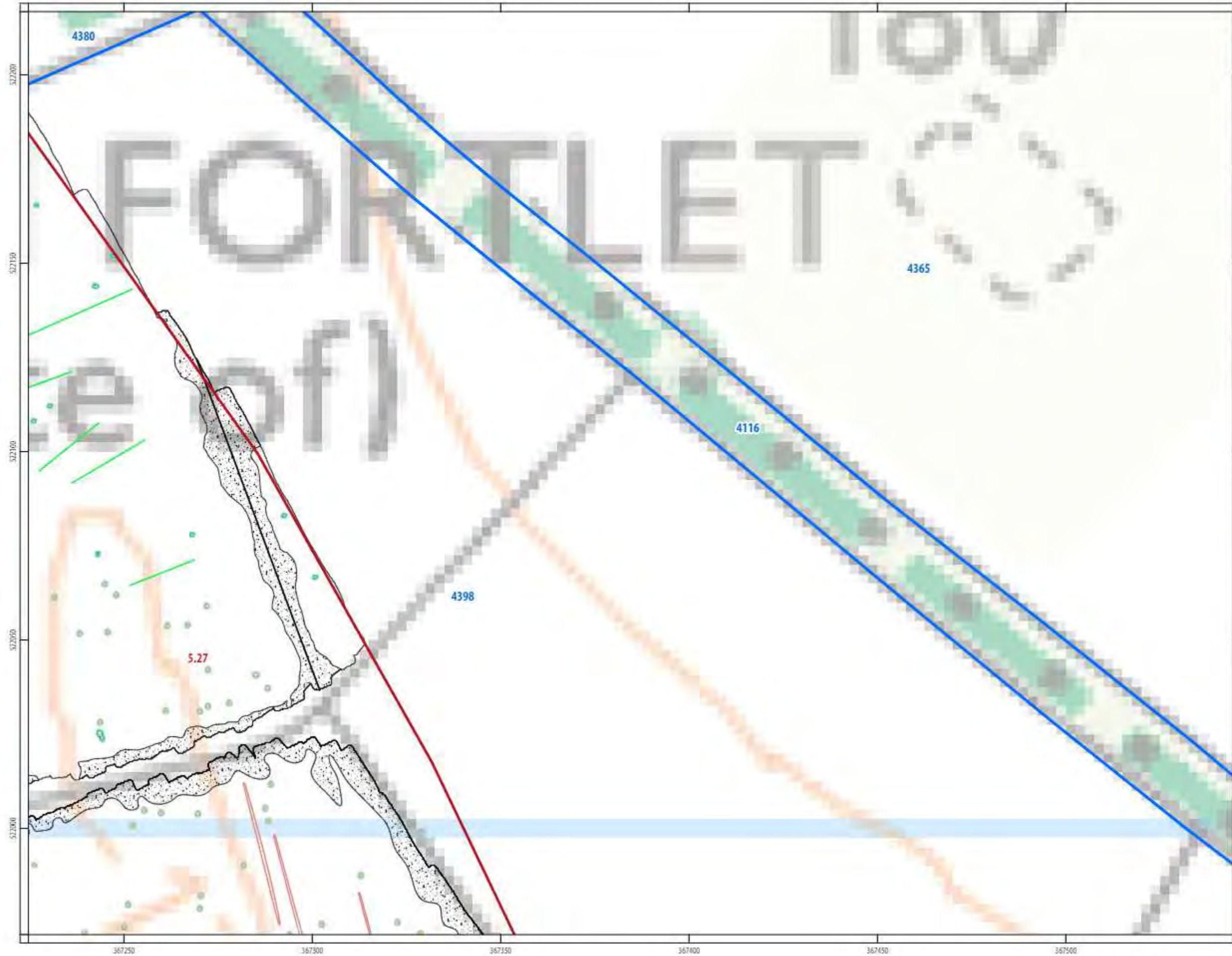
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 437 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

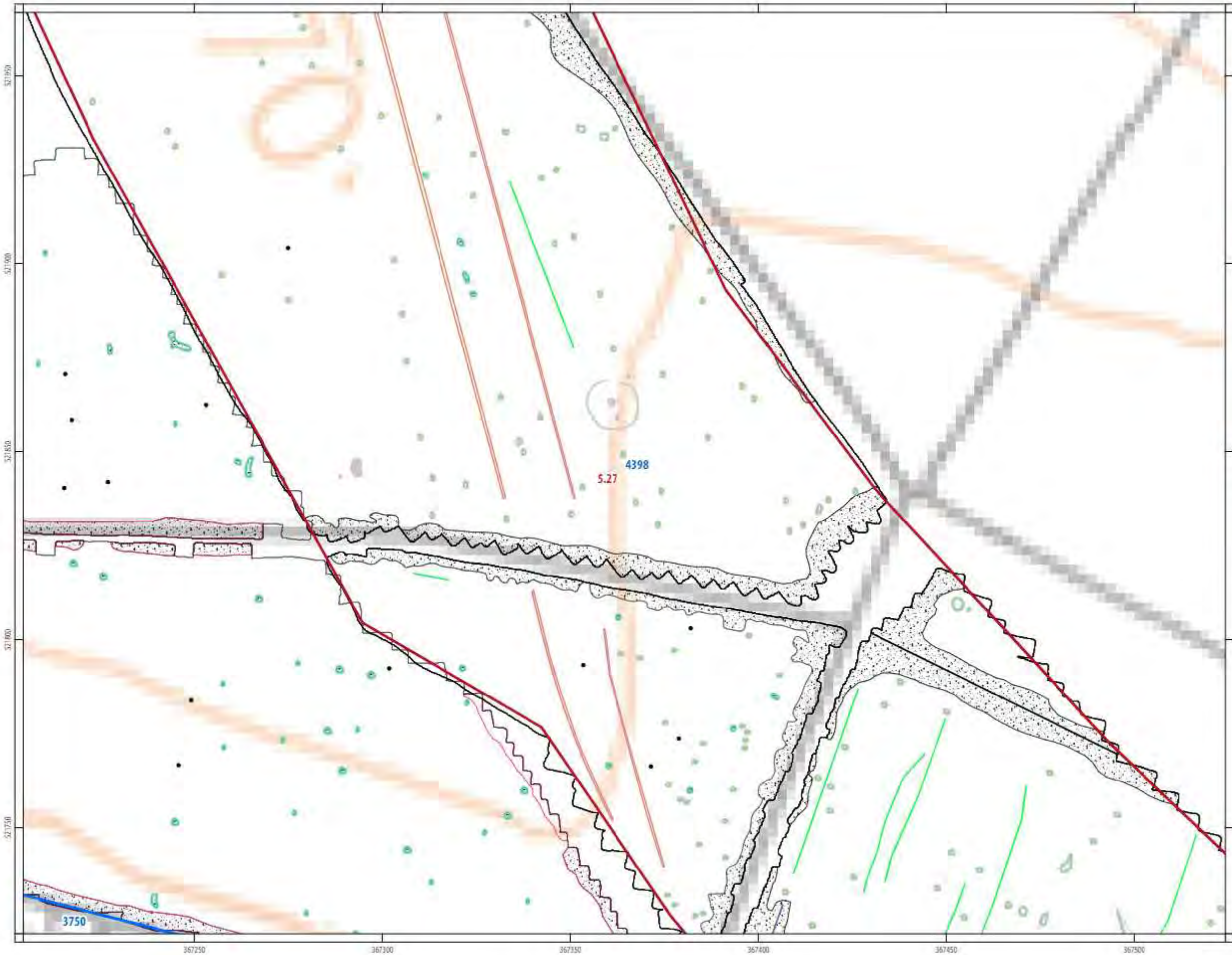
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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ILLUS 438 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

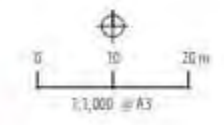




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

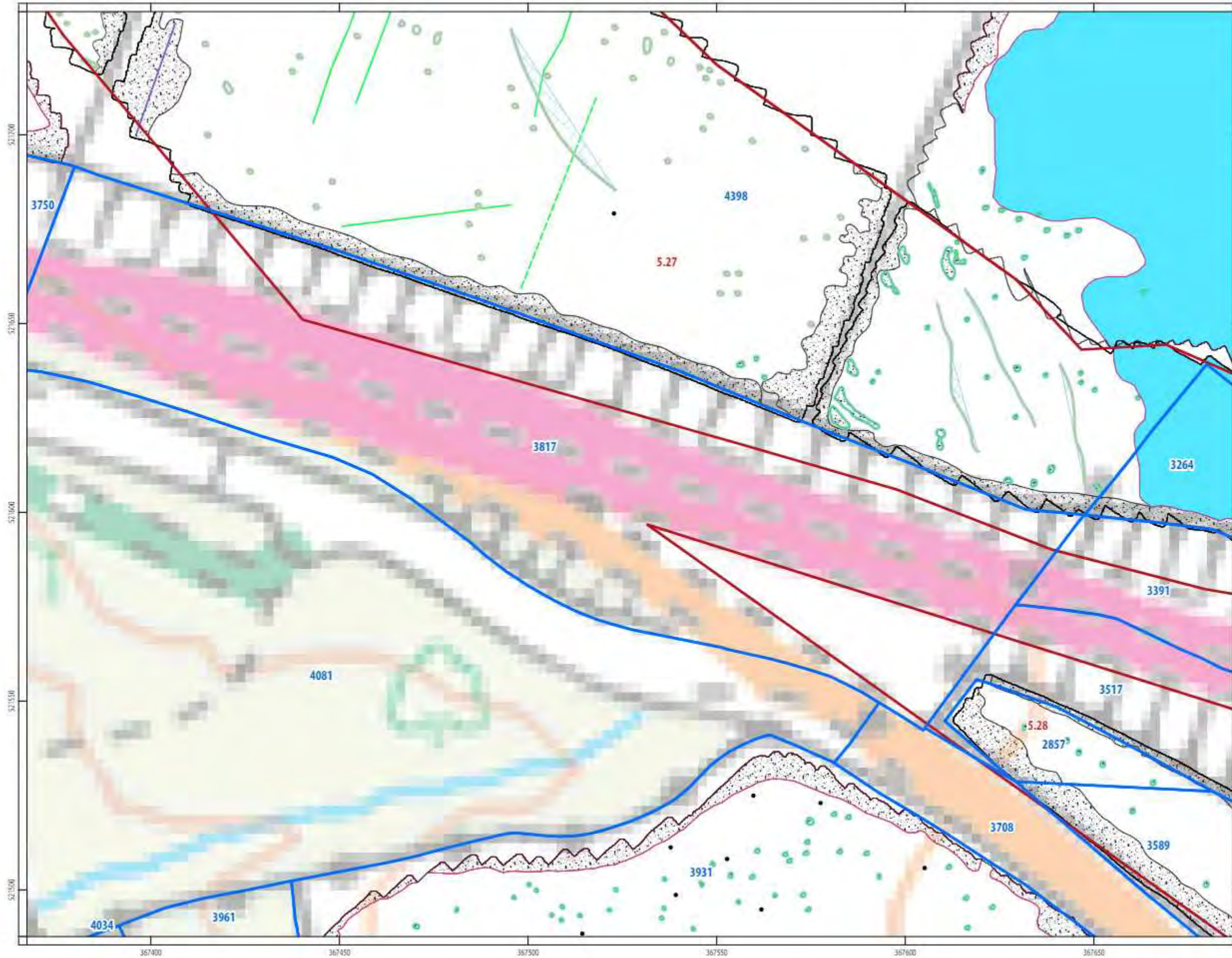
**PROJECT**  
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ILLUS 439 Interpretation of processed magnetometer data; Temple Sowerby to Appleby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

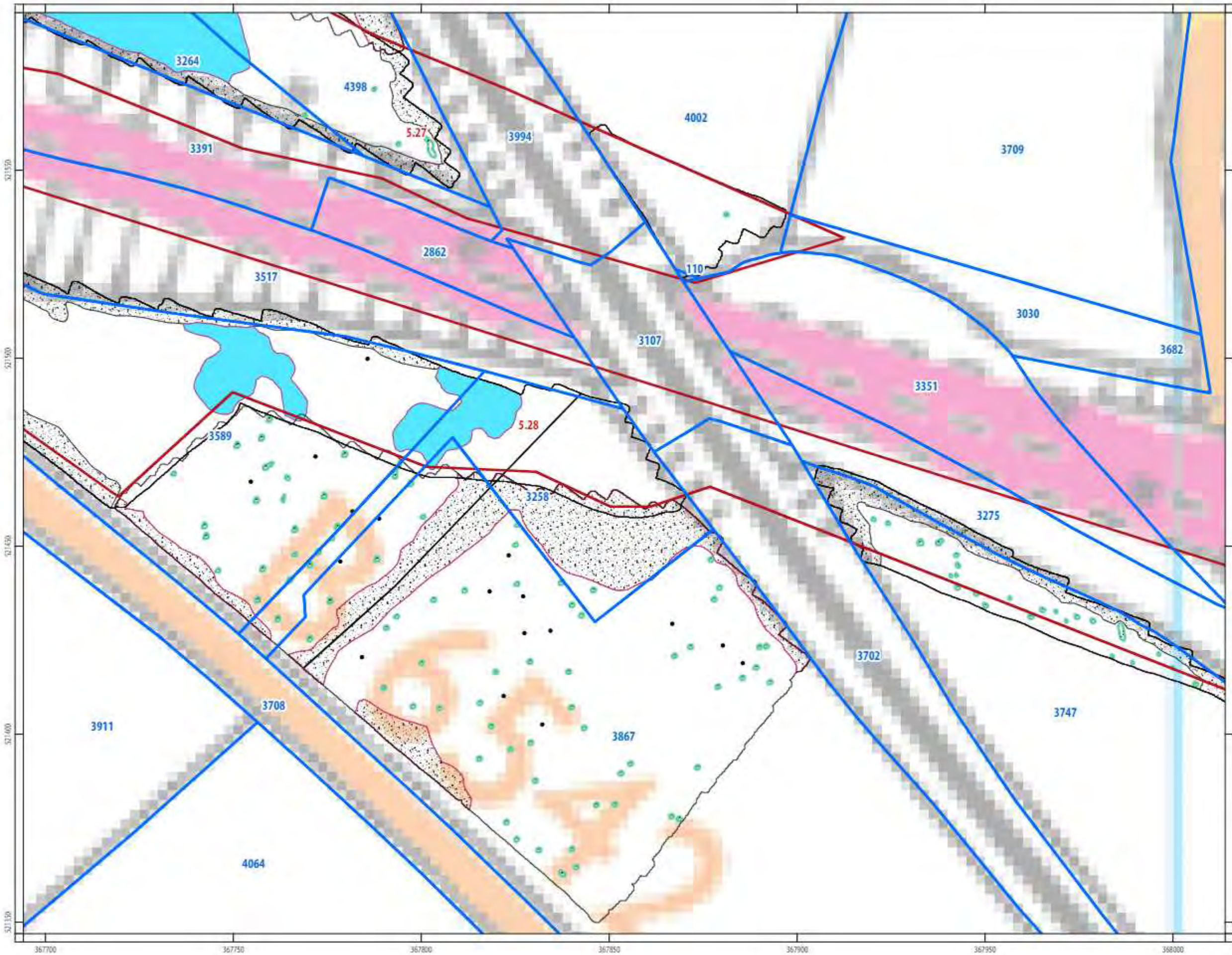
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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ILLUS 440 Interpretation of processed magnetometer data; Temple Sowerby to Appleby

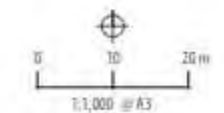




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
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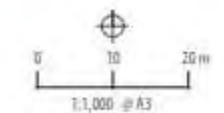




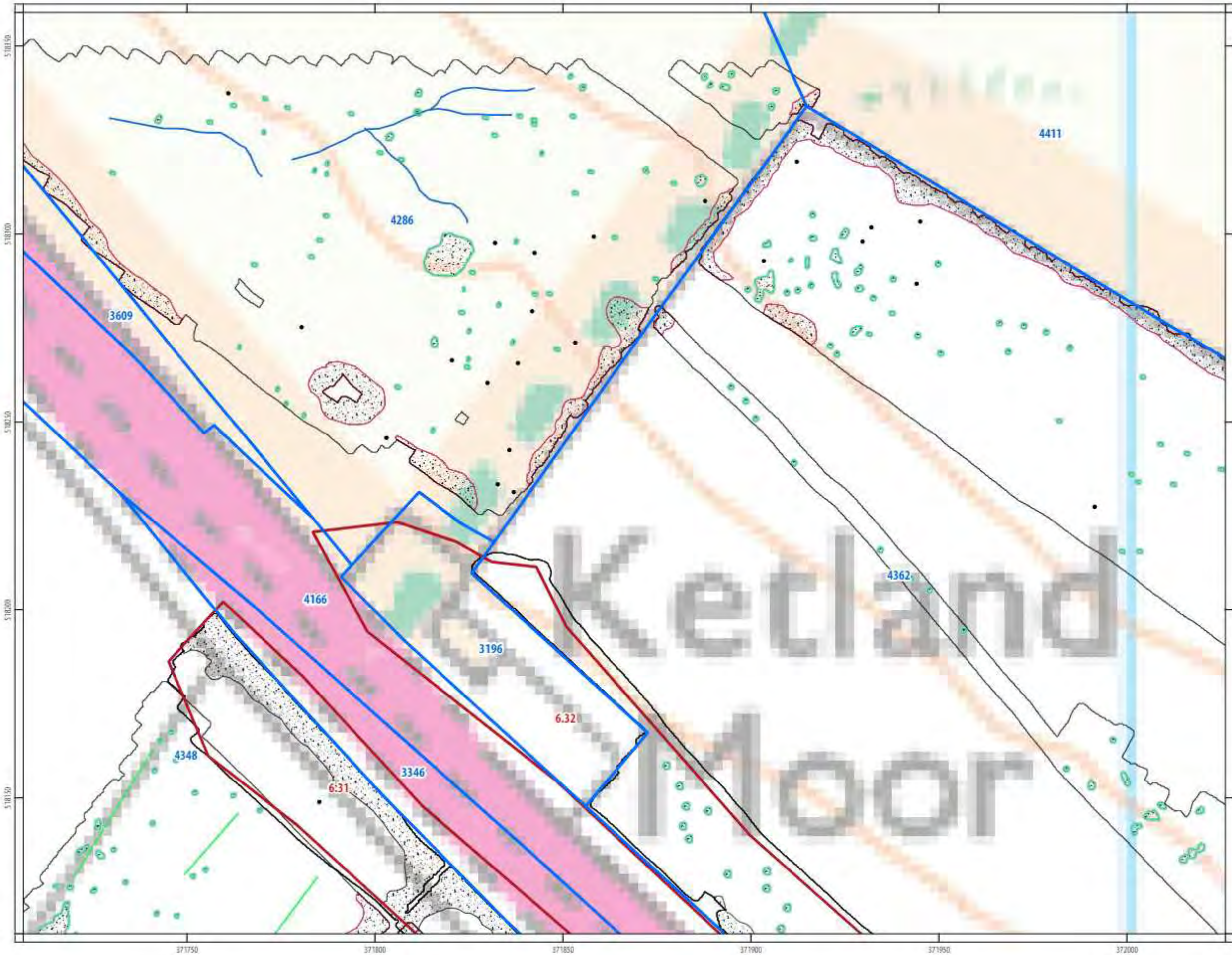
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

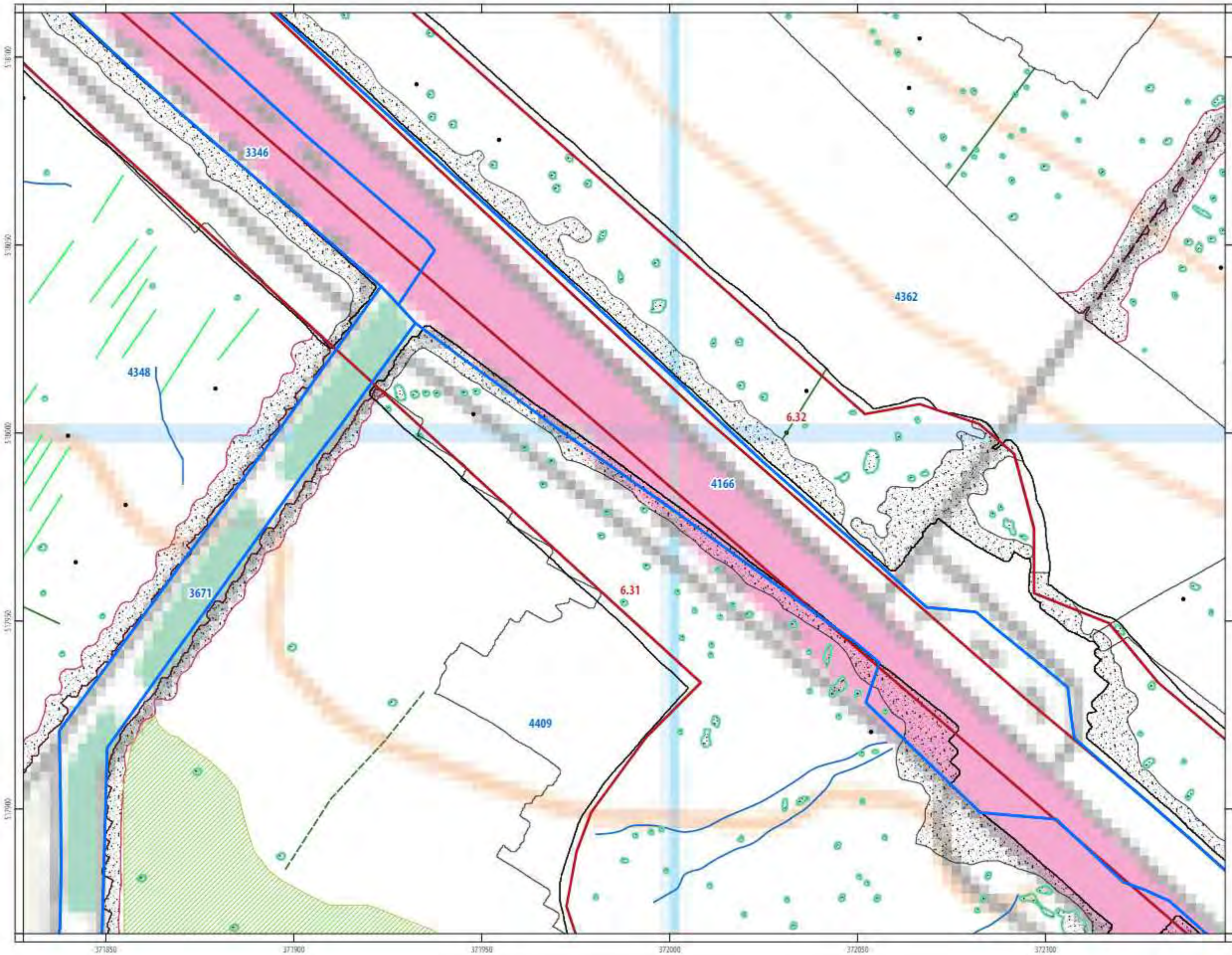
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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ILLUS 443 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

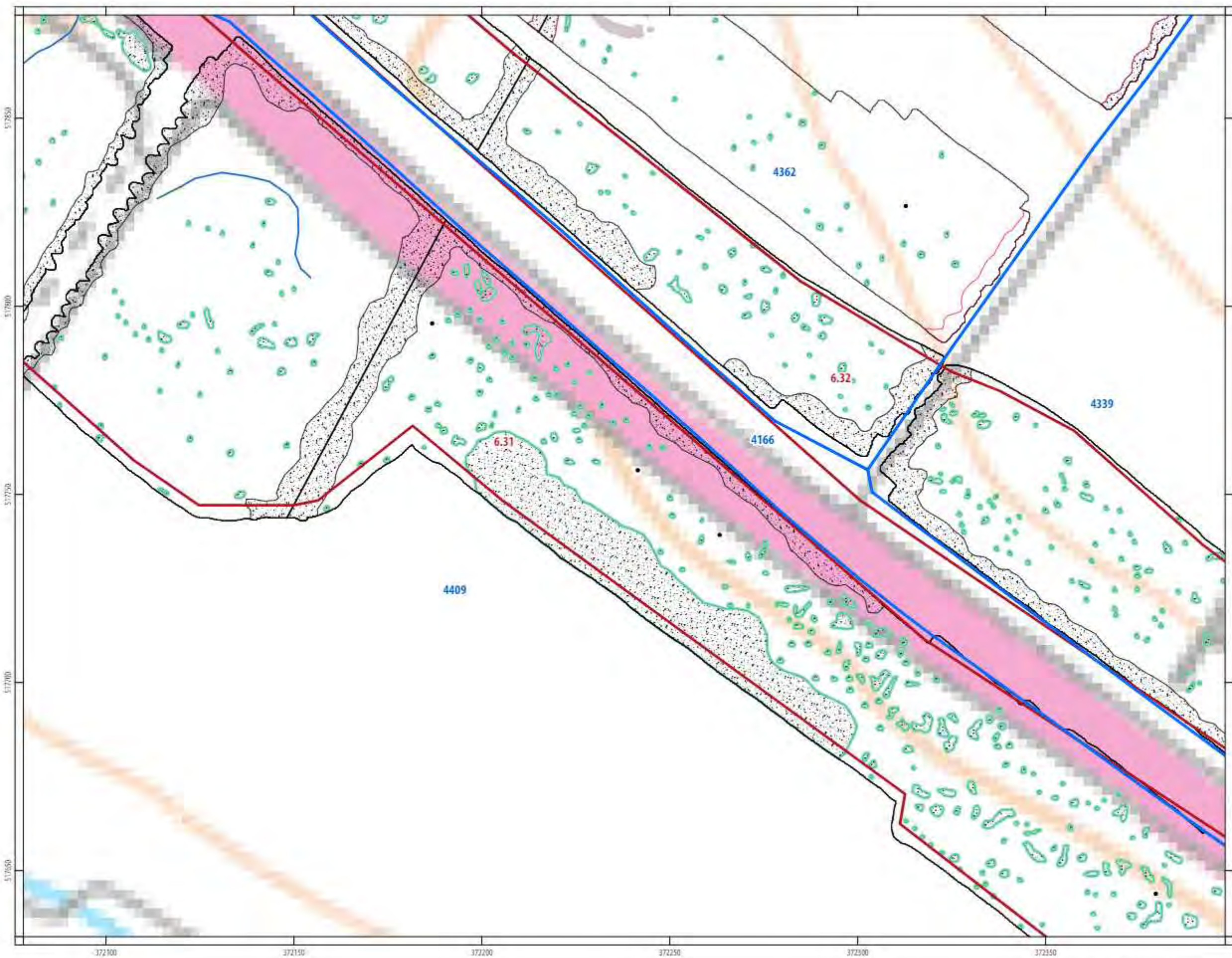
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 444 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





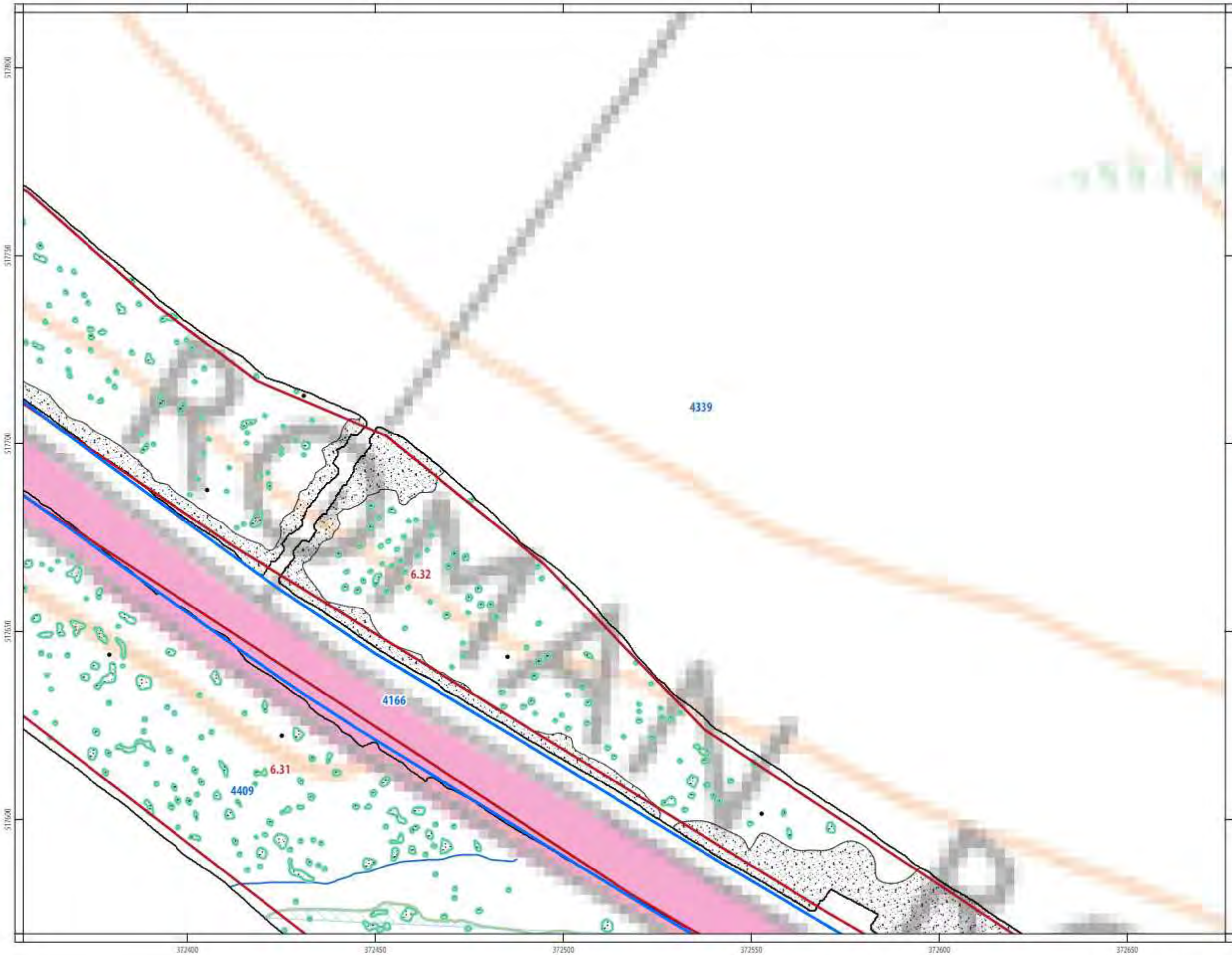
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

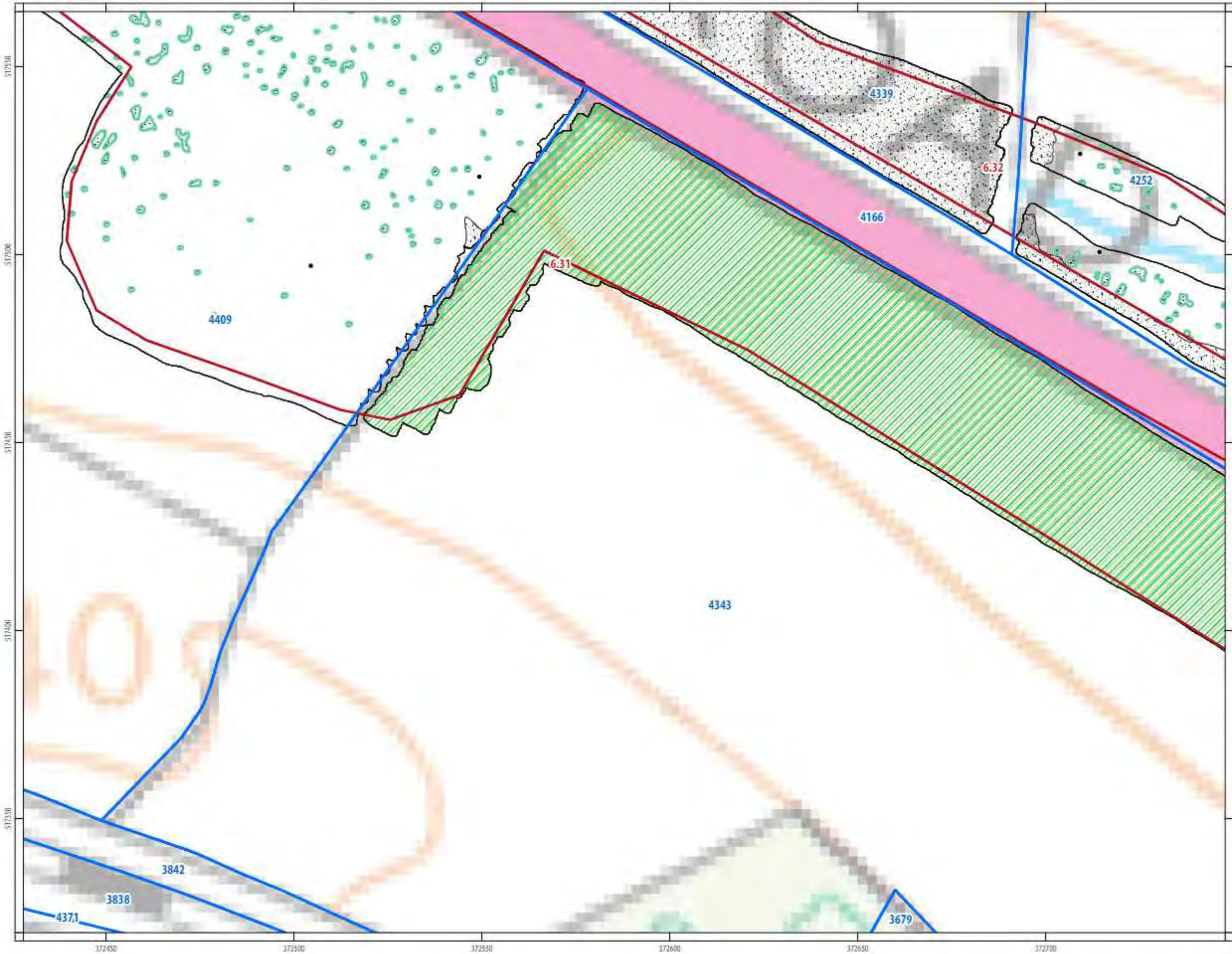
**CLIENT**

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ILLUS 446 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)

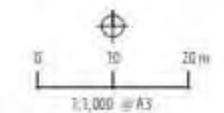




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

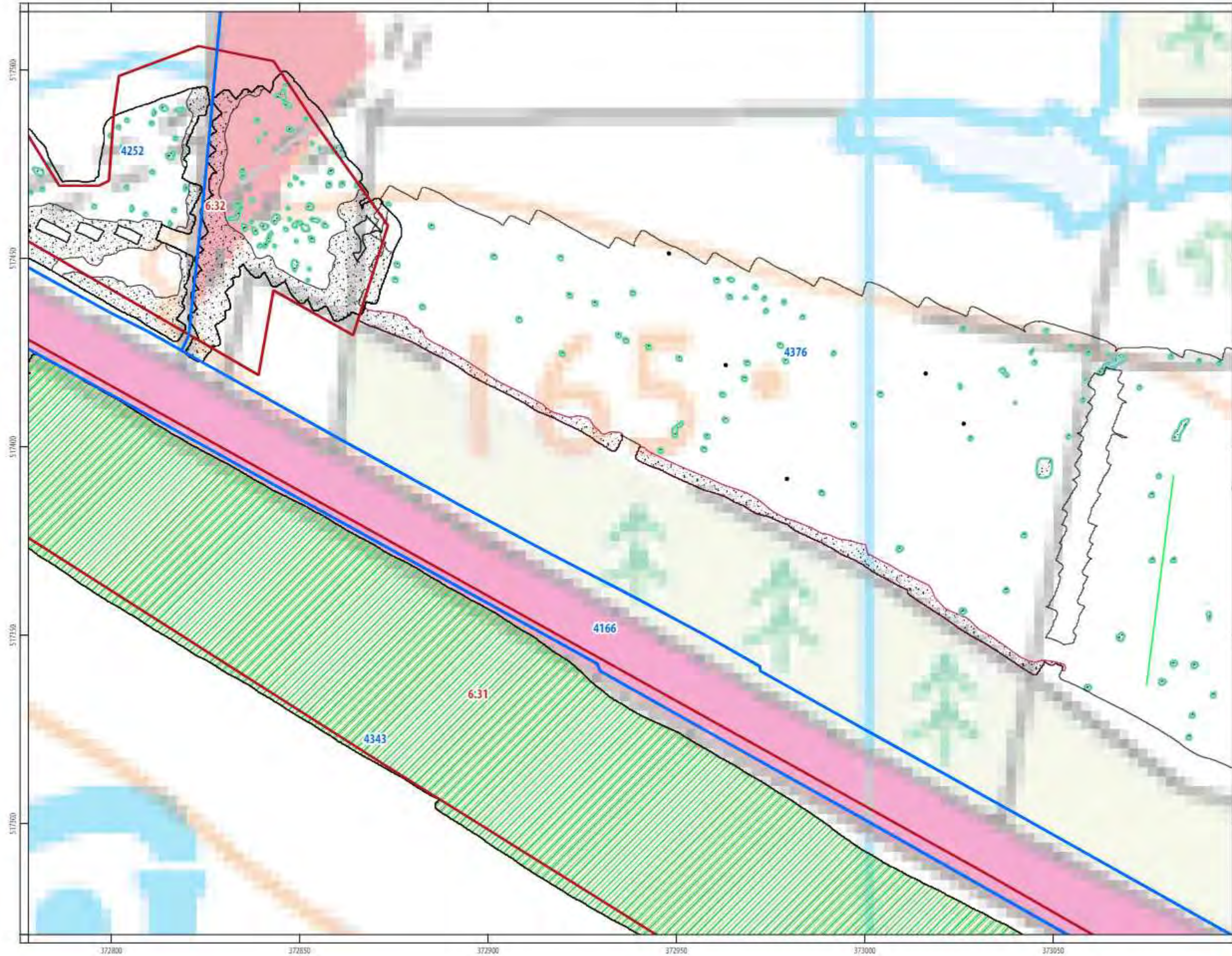
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 447 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)

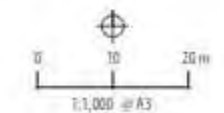




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

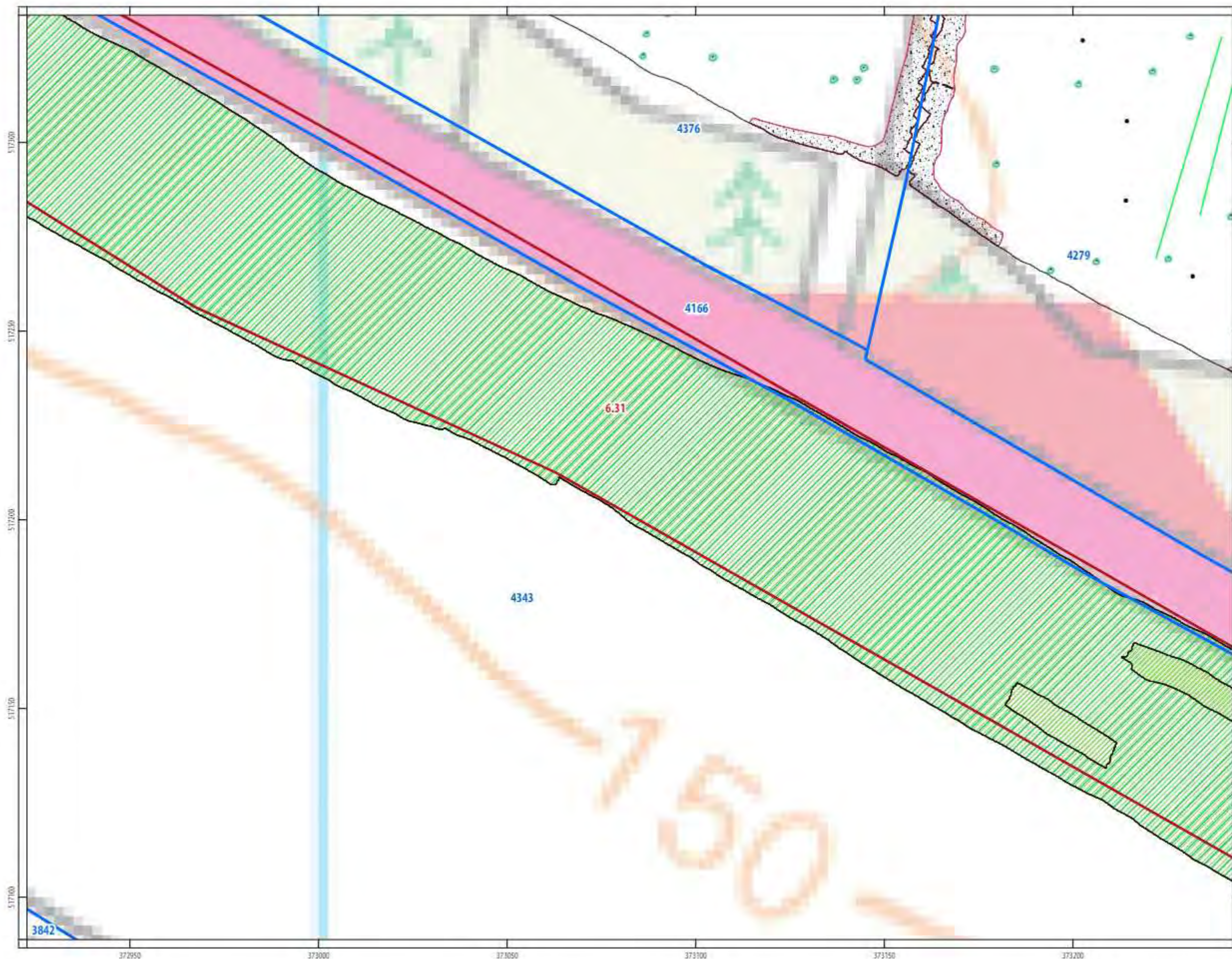
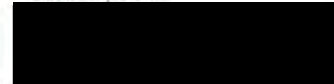
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 448 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

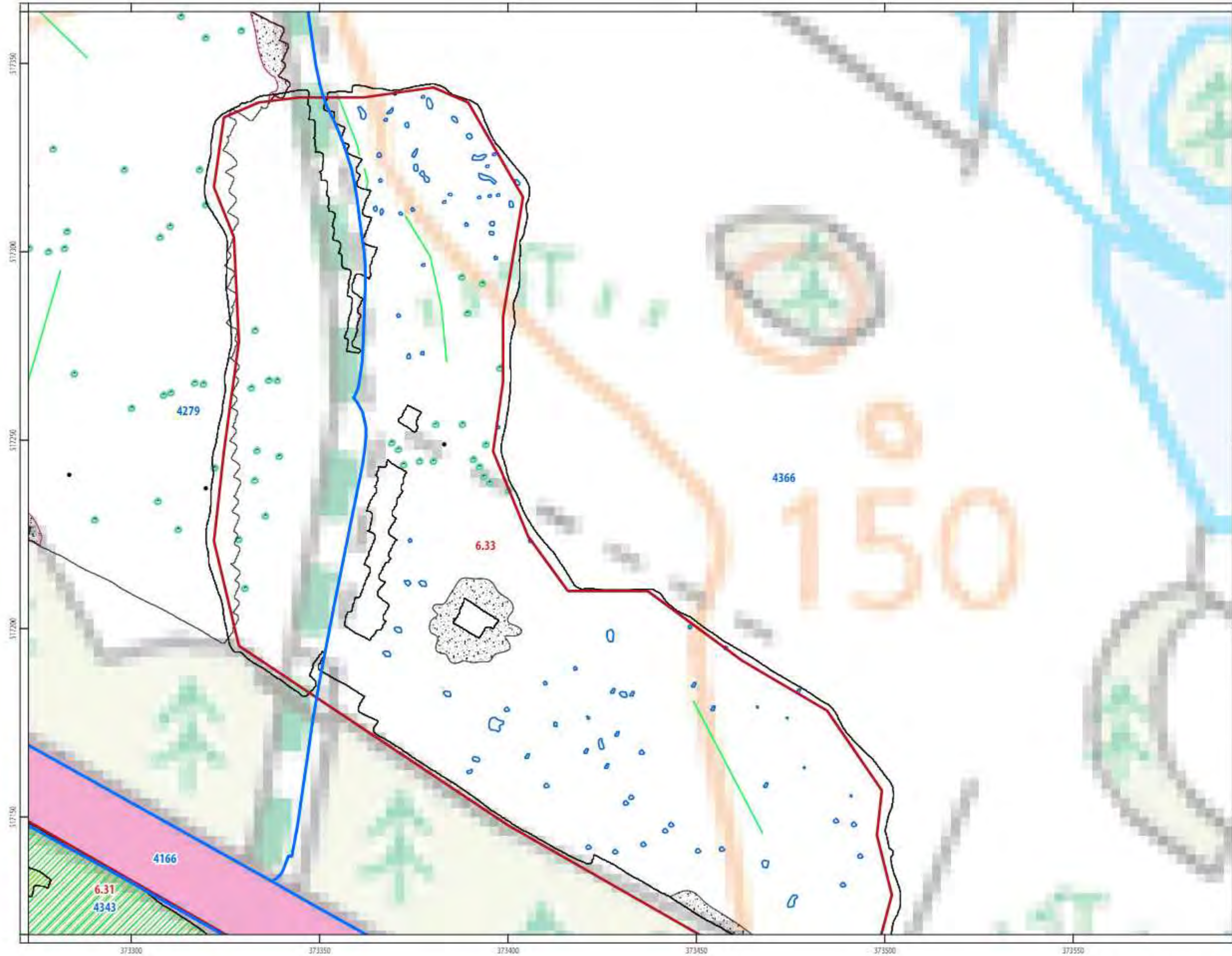
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

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Highways England



ILLUS 449 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 450 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





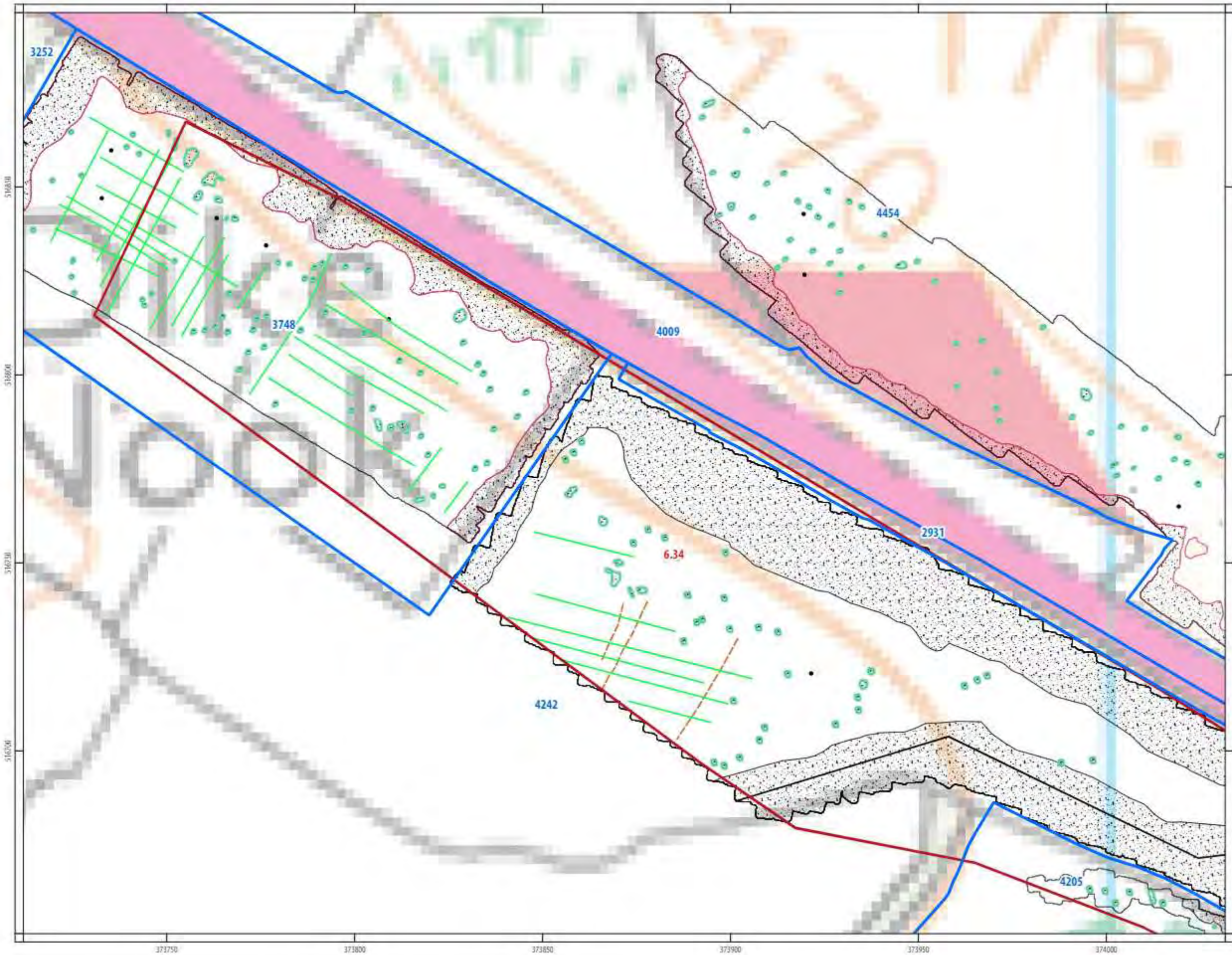
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



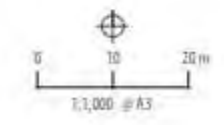




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

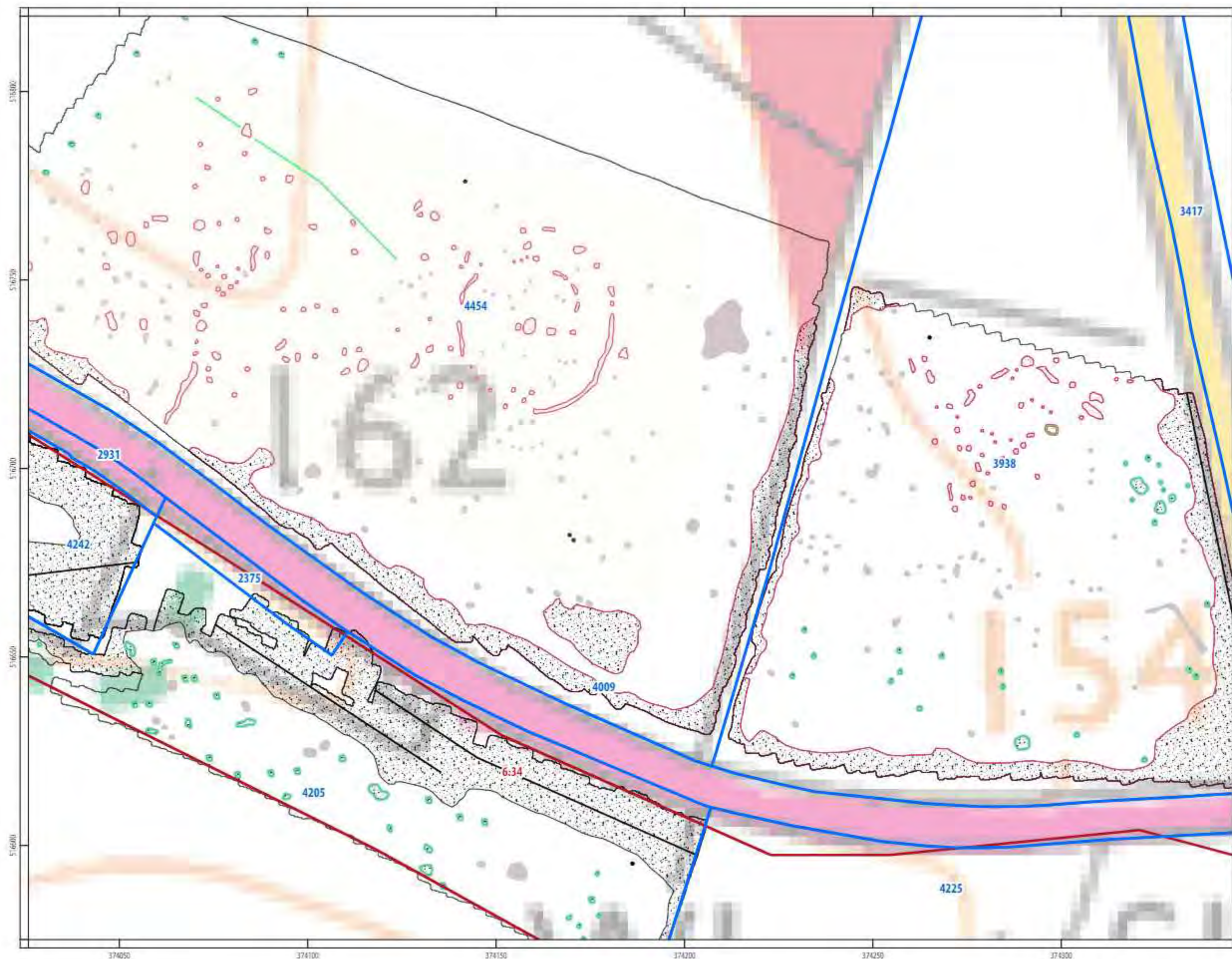
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 452 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





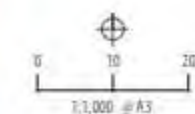
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

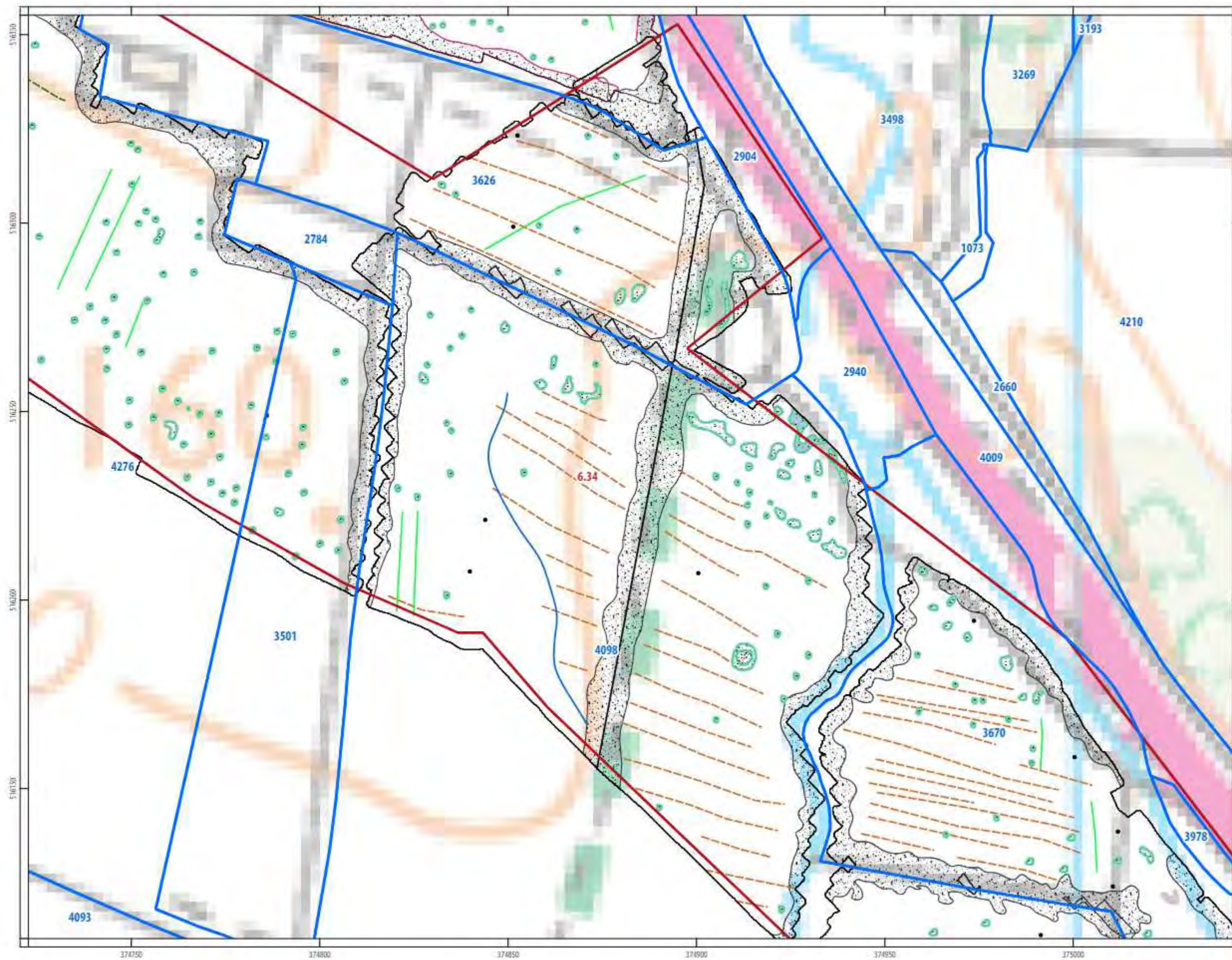
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 454 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)

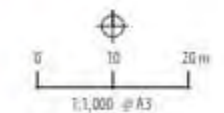




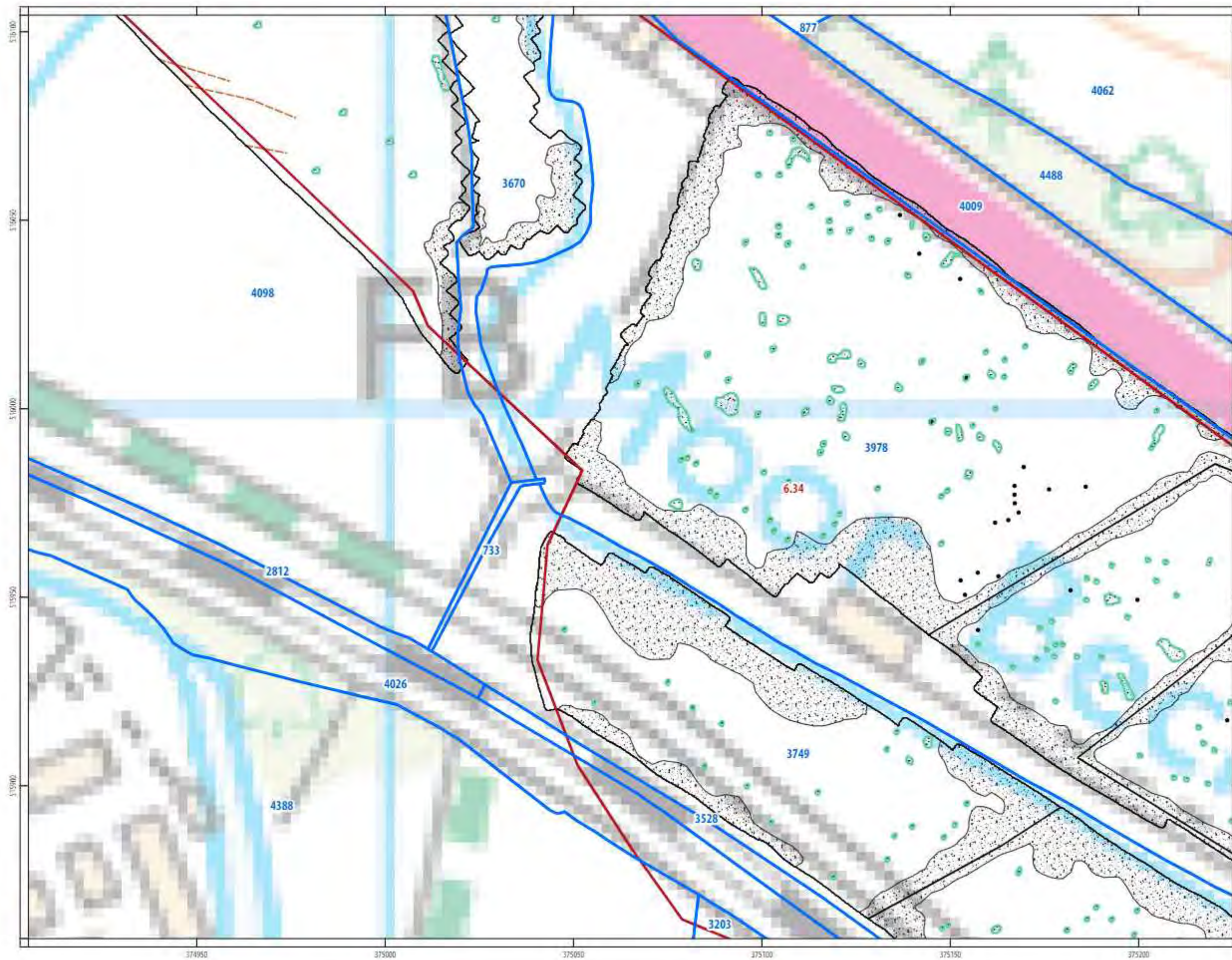
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







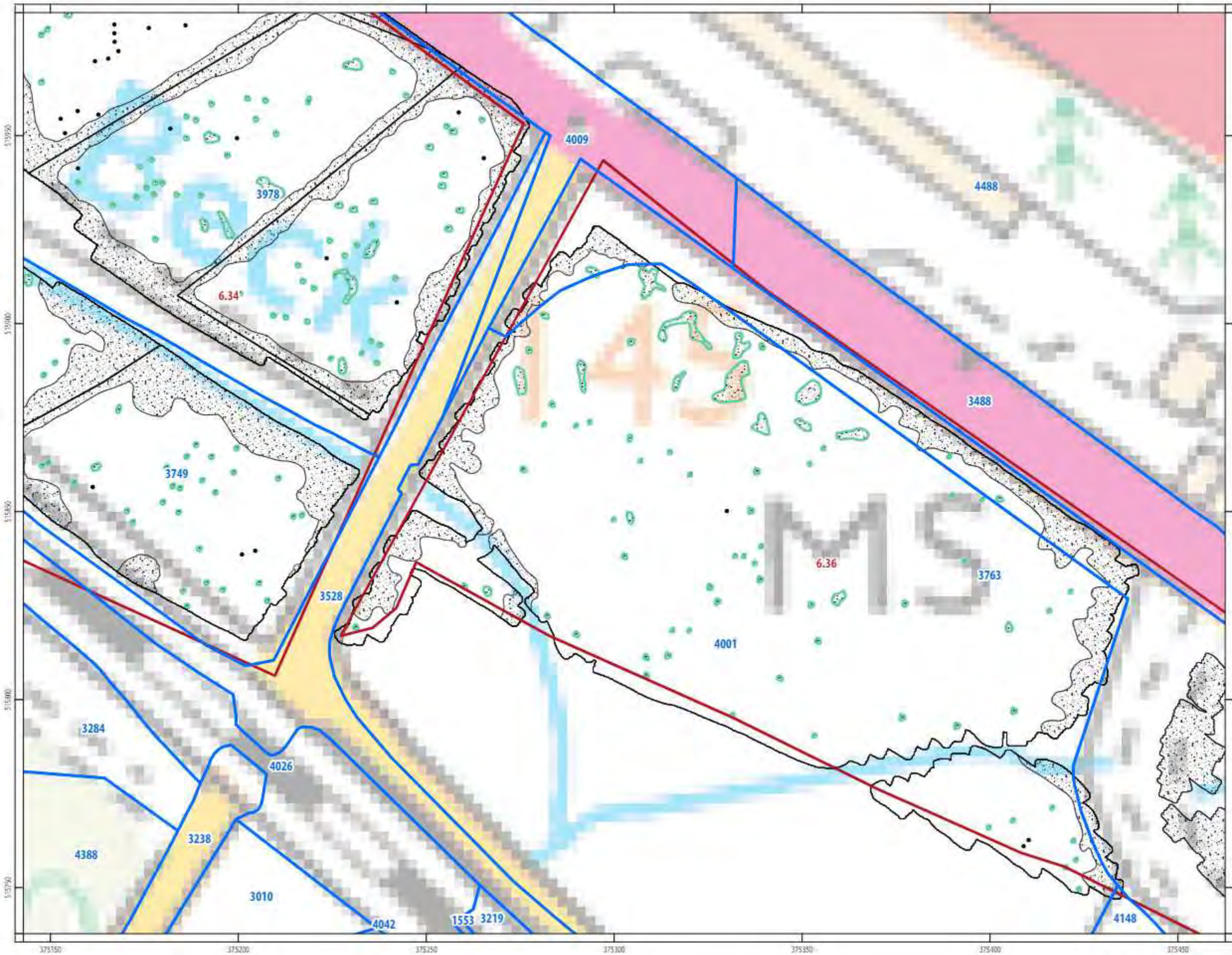
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







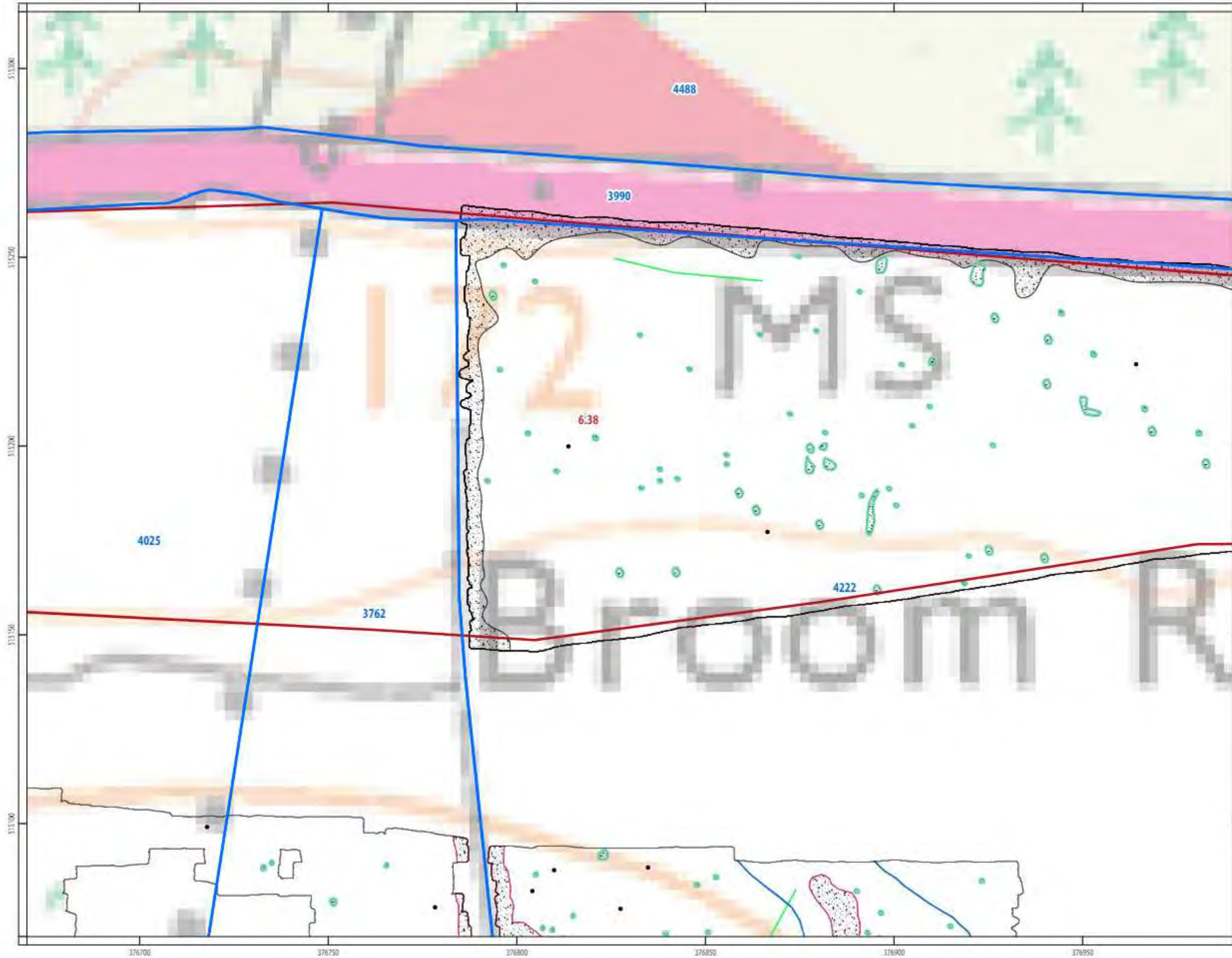
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

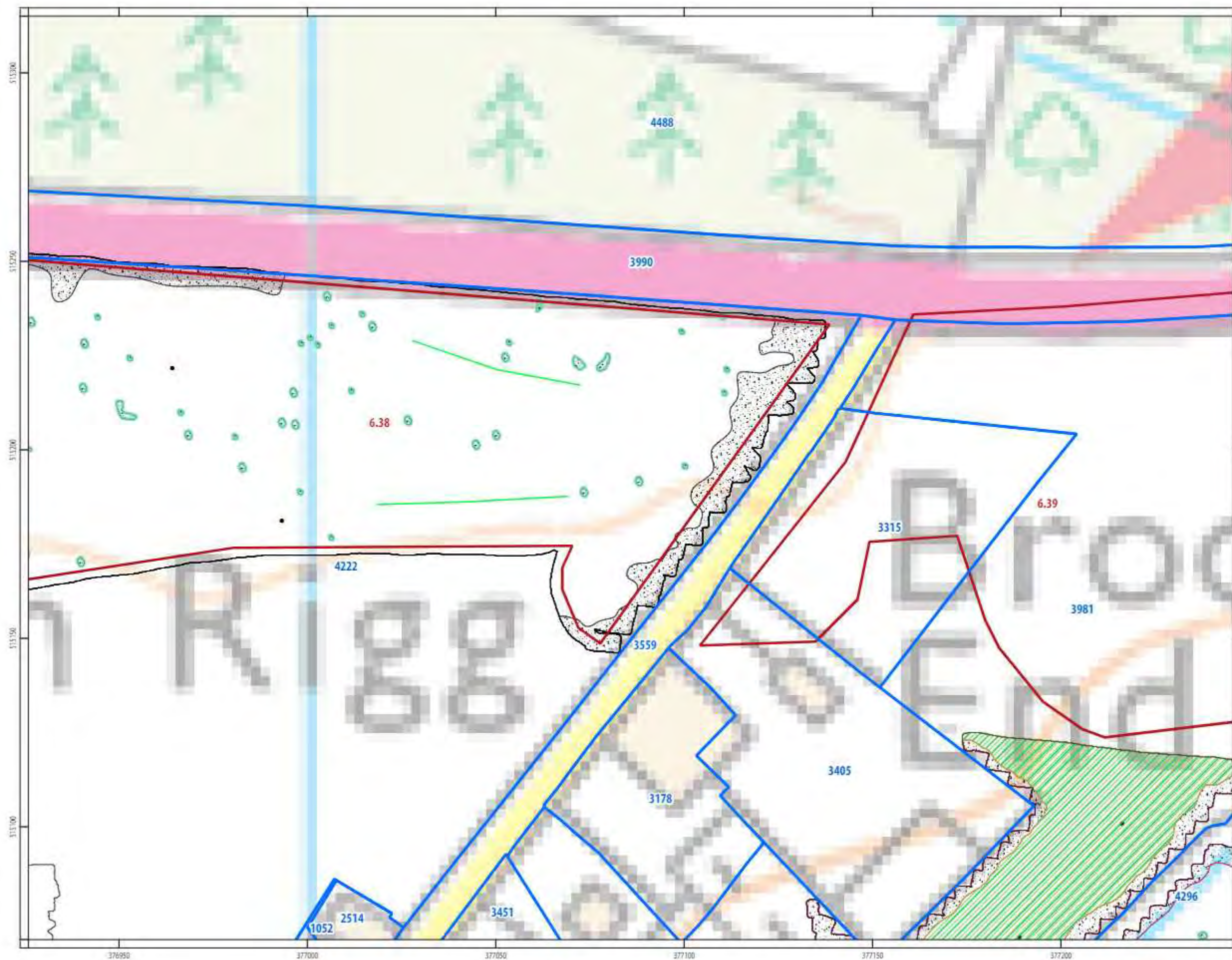
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 458 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

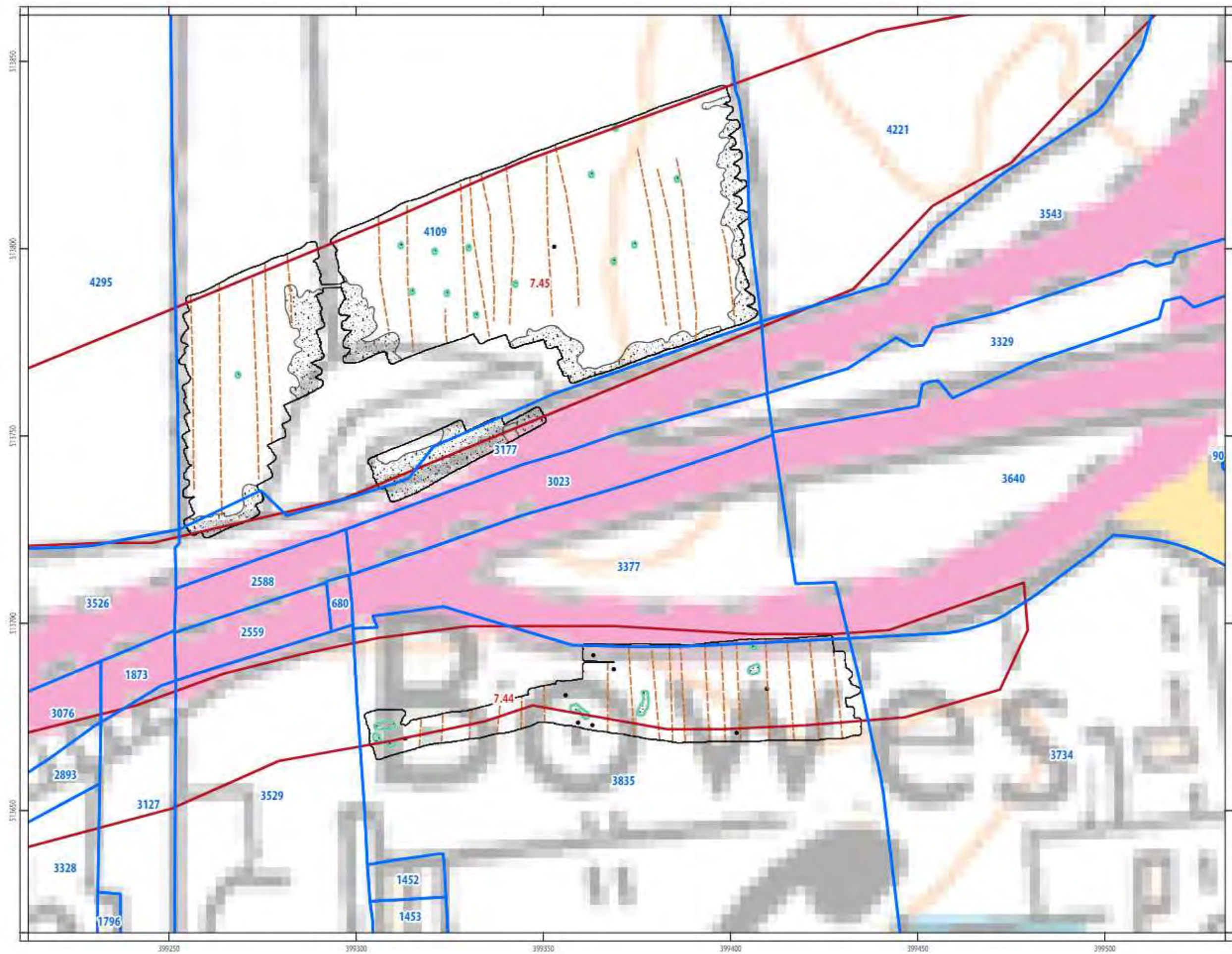
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 459 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)

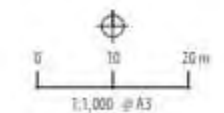




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

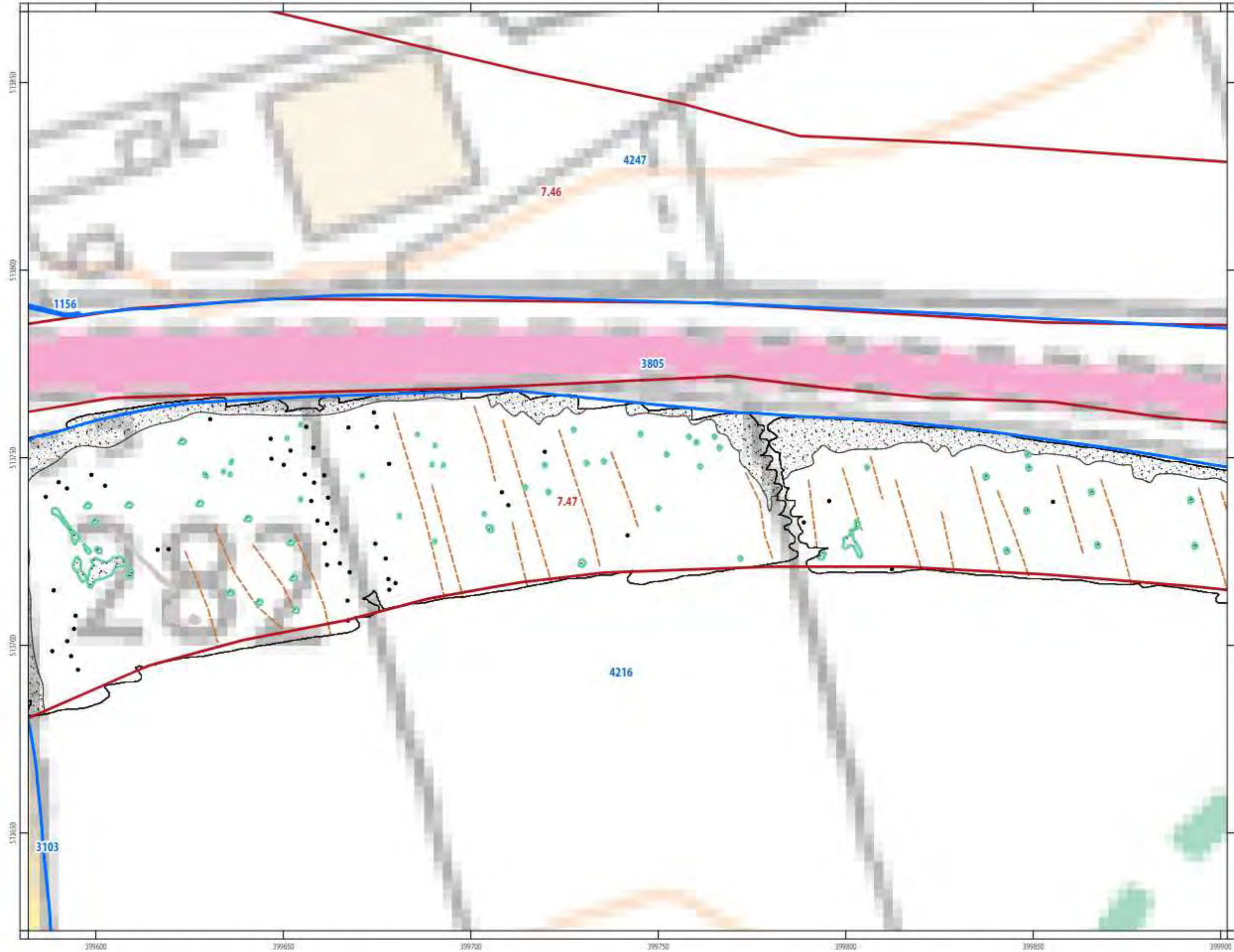
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 460 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

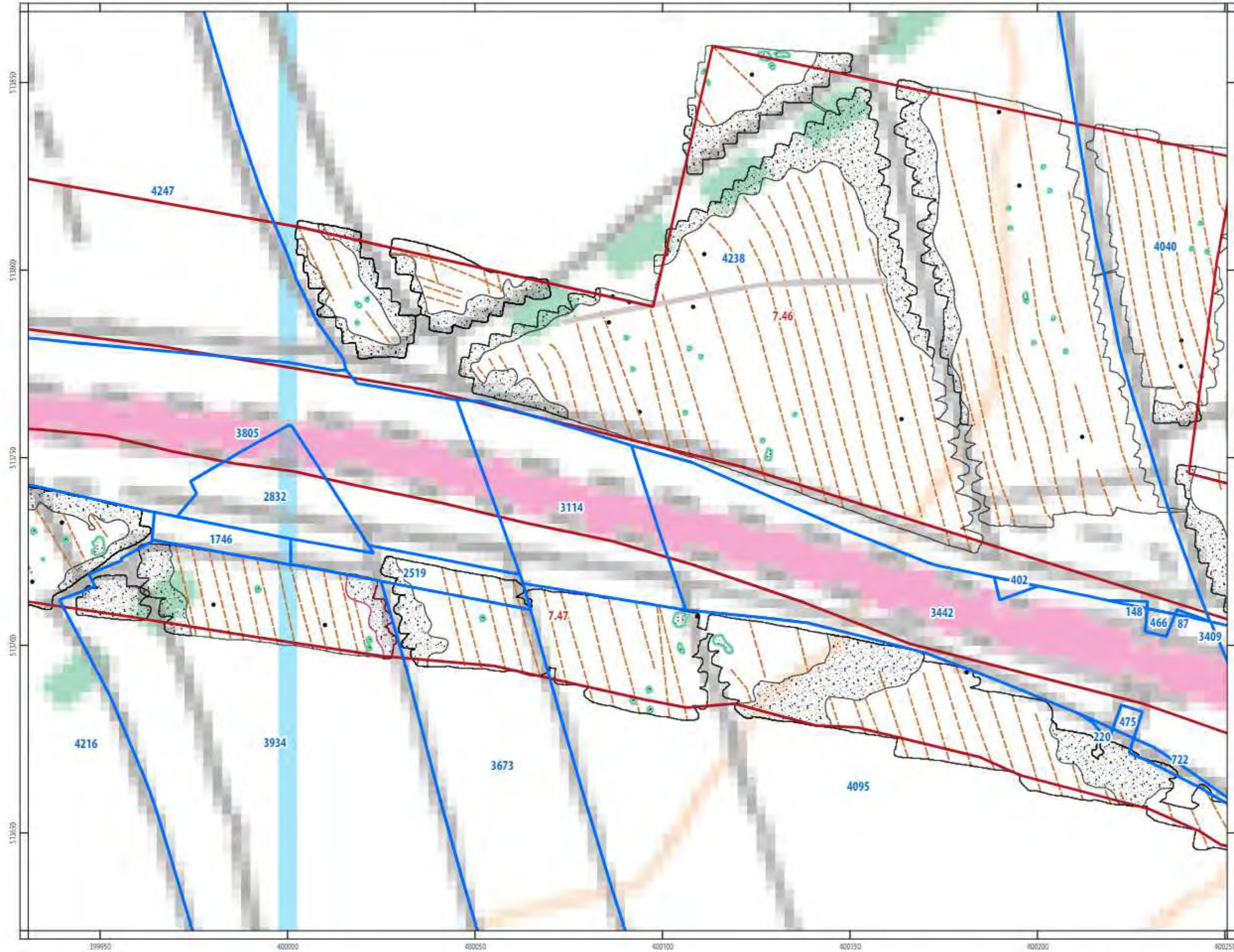
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 461 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

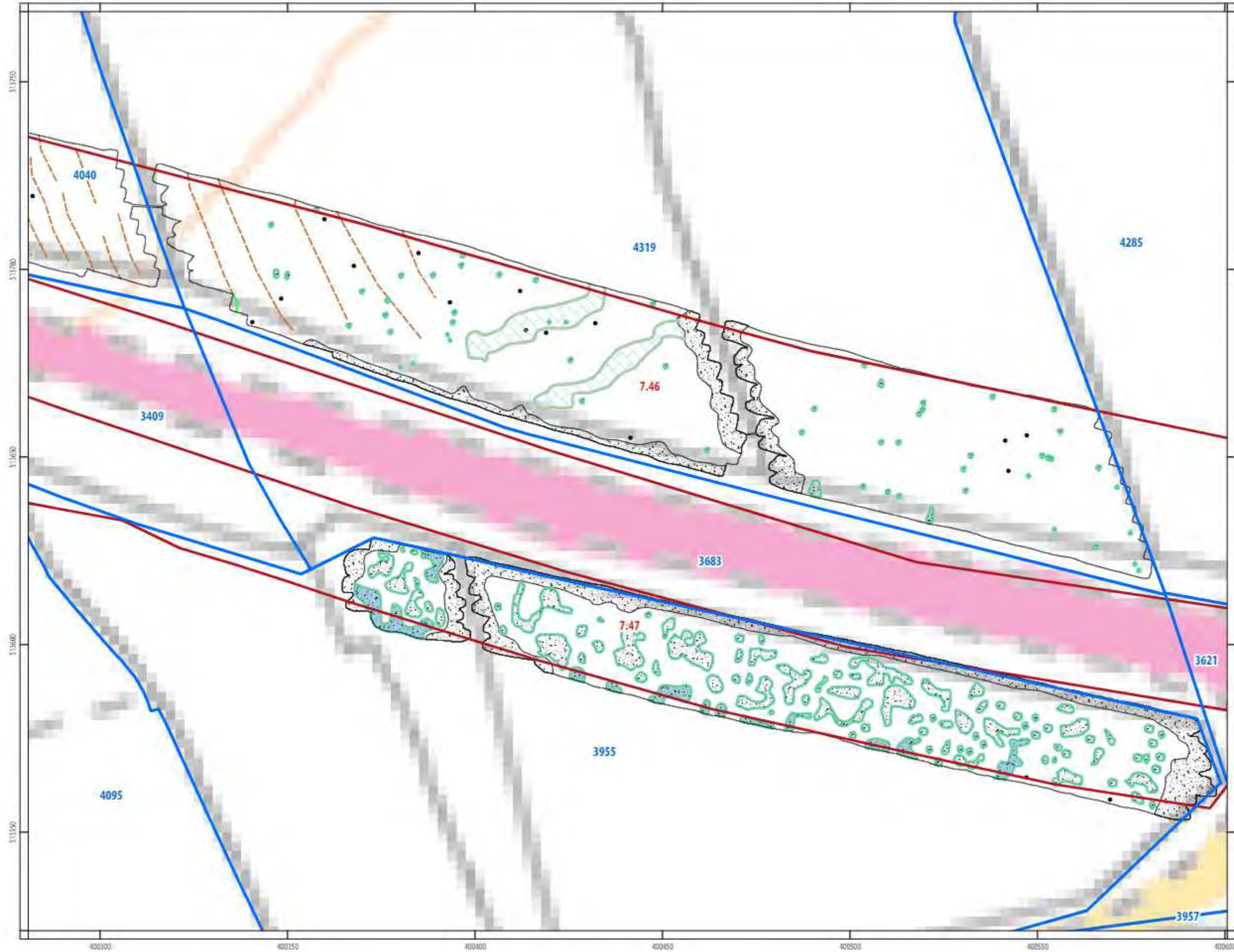
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 462 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

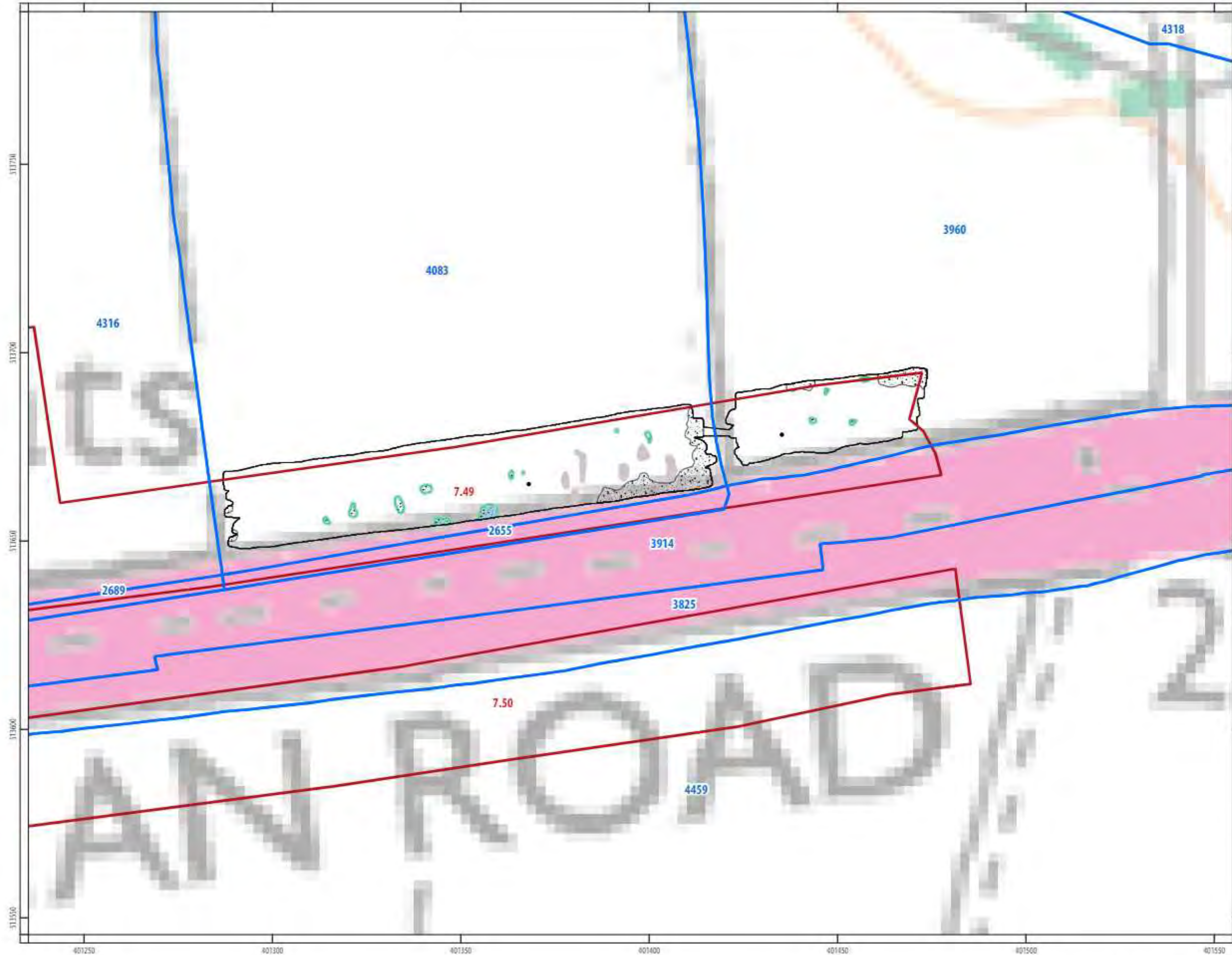
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 463 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

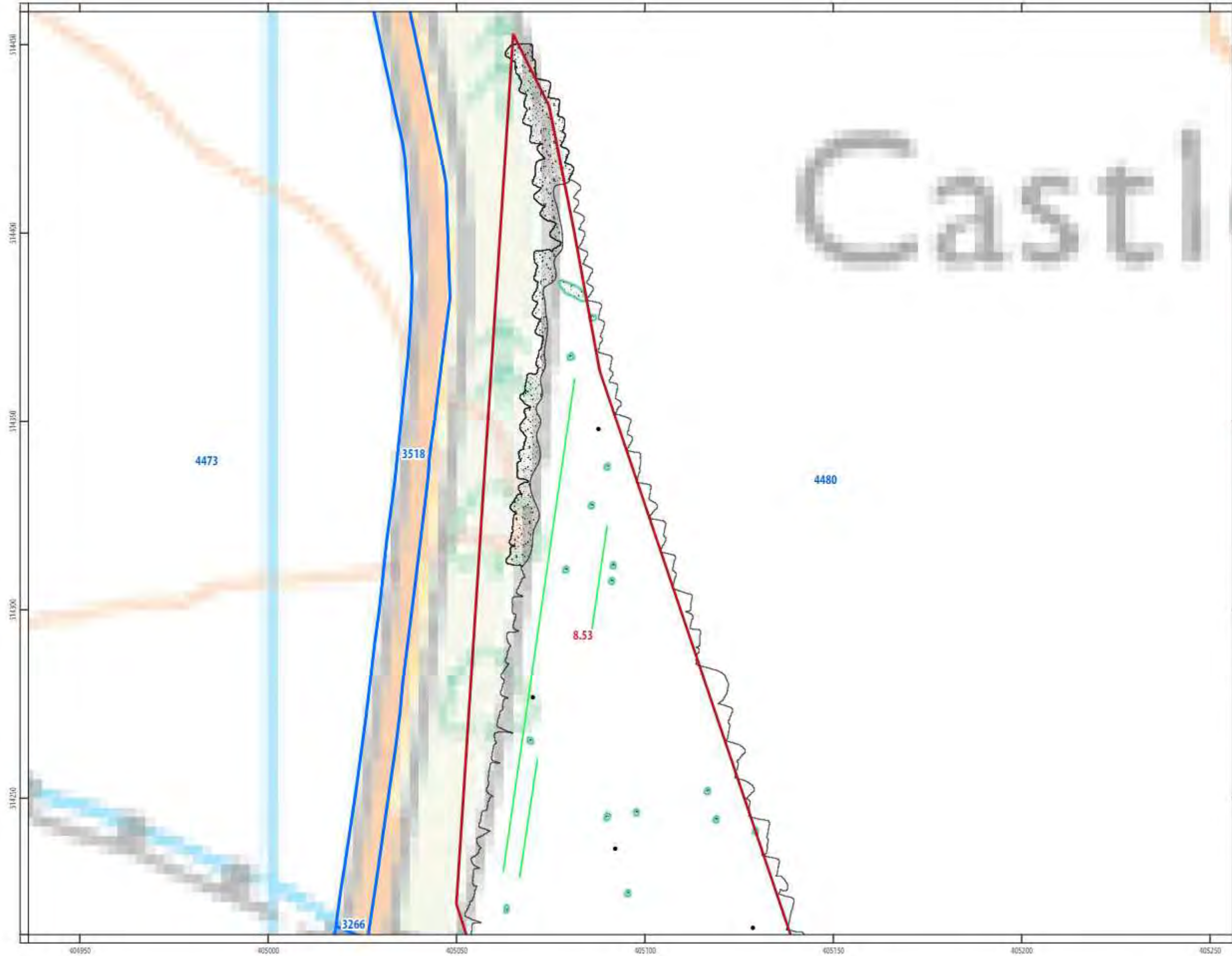
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 464 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)





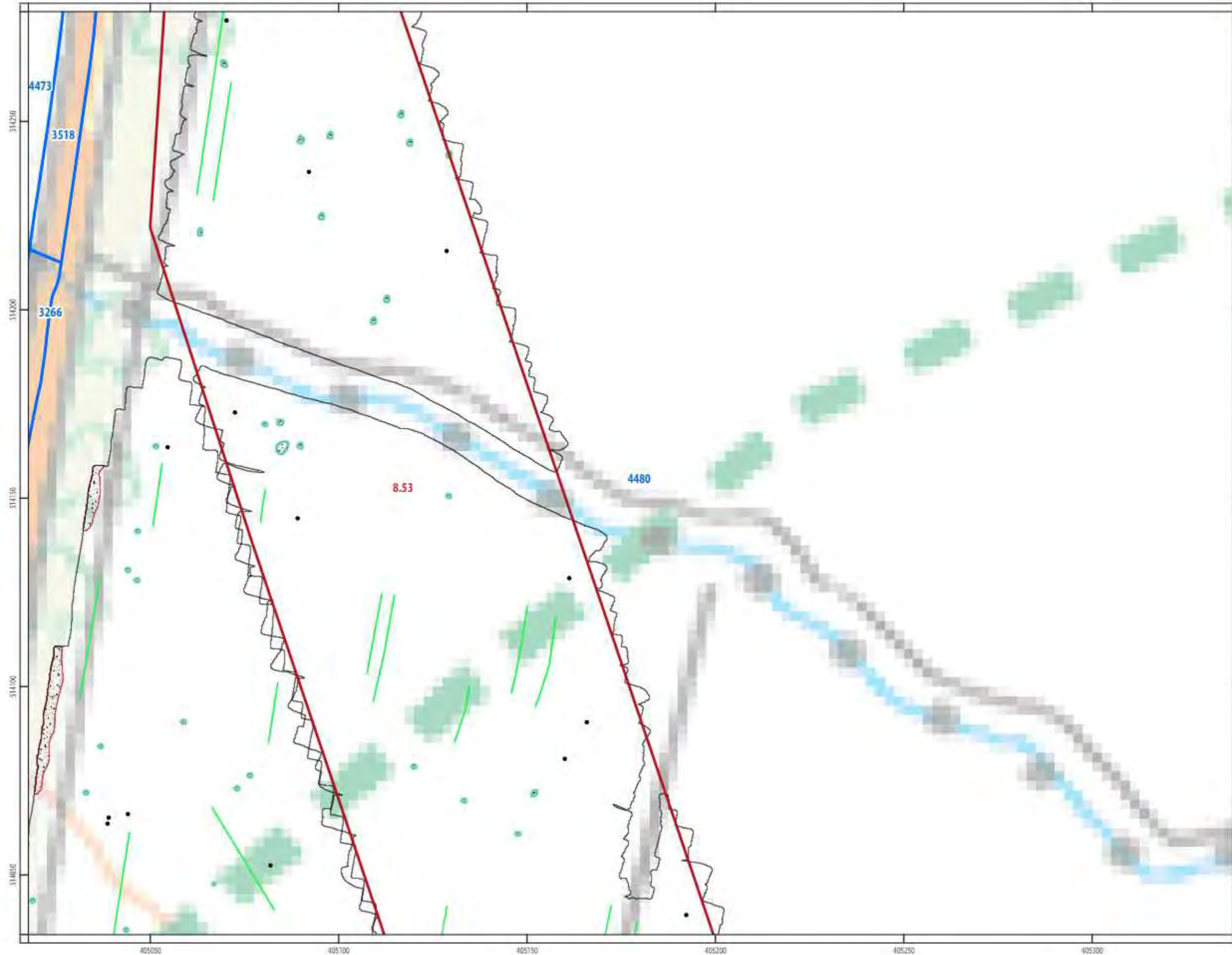
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



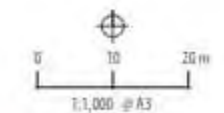




- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

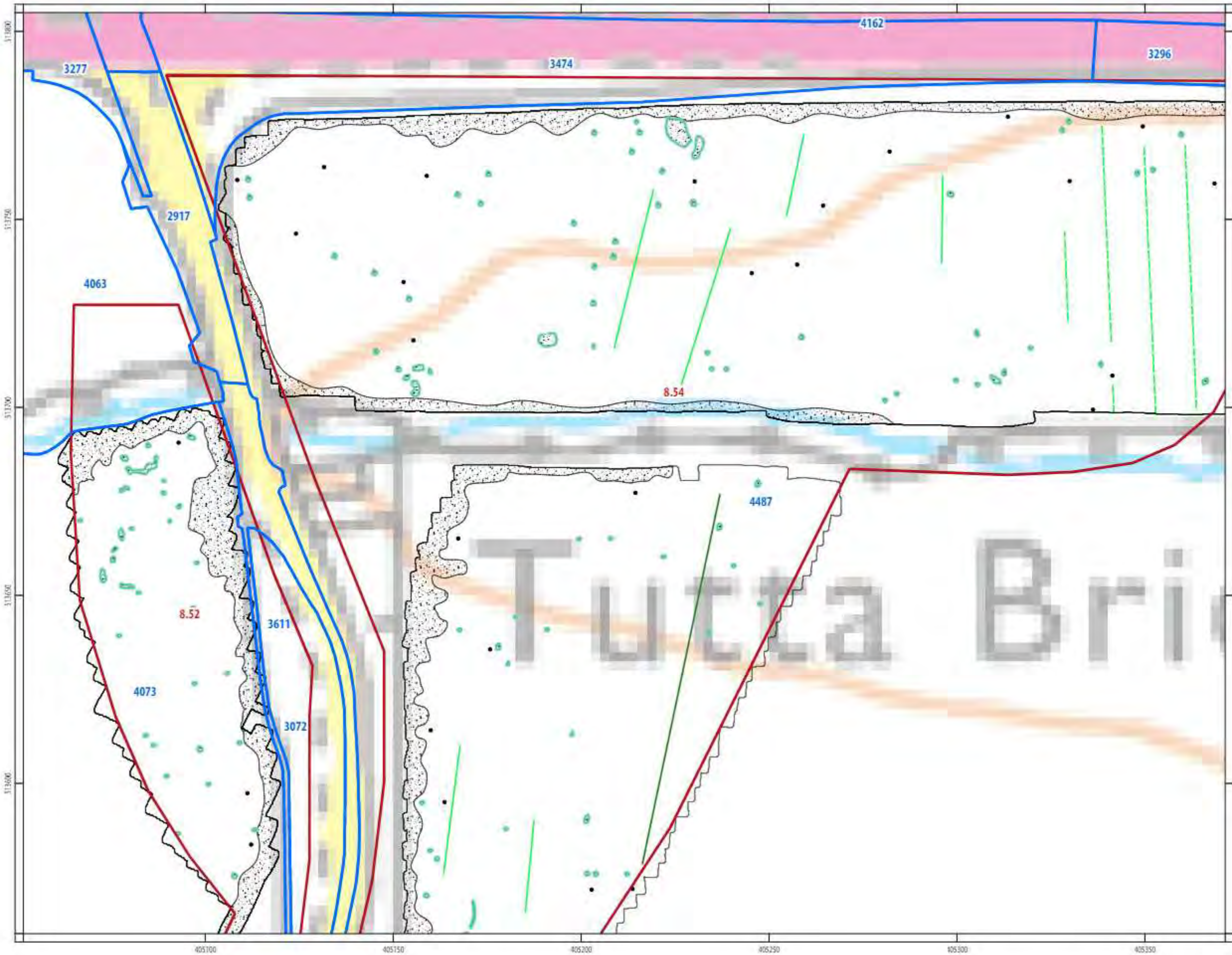
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 467 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





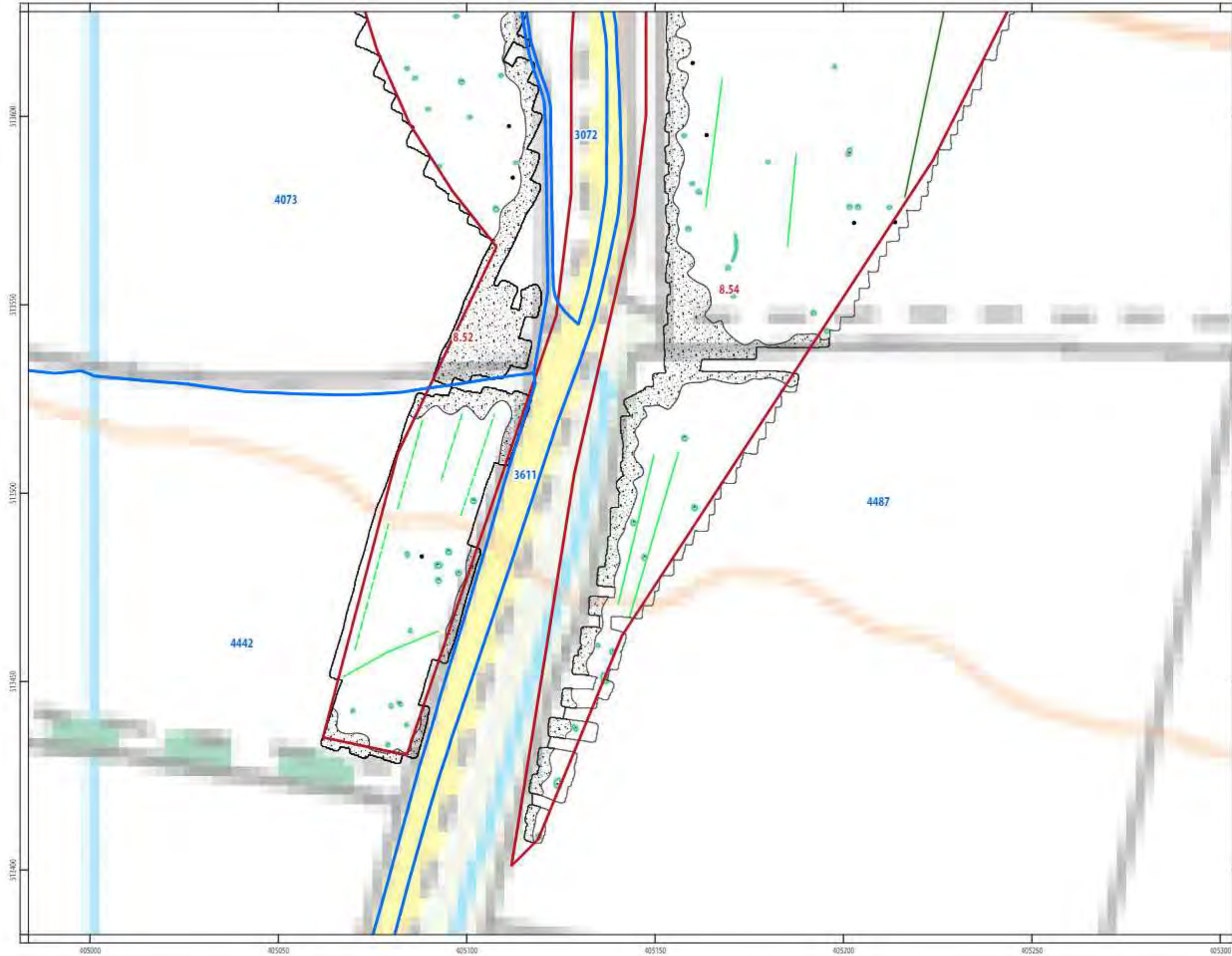
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



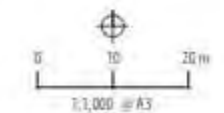




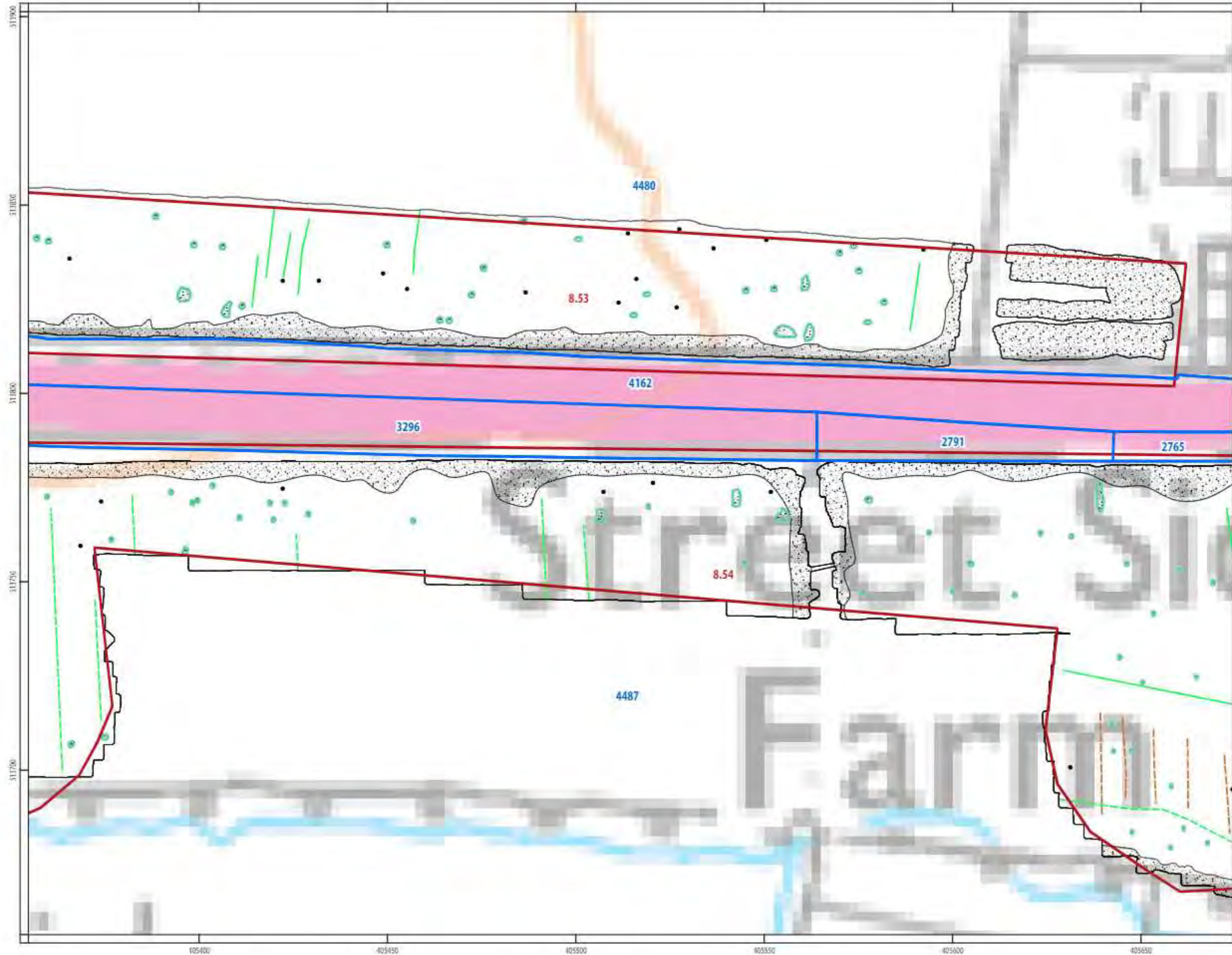
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
A17U20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

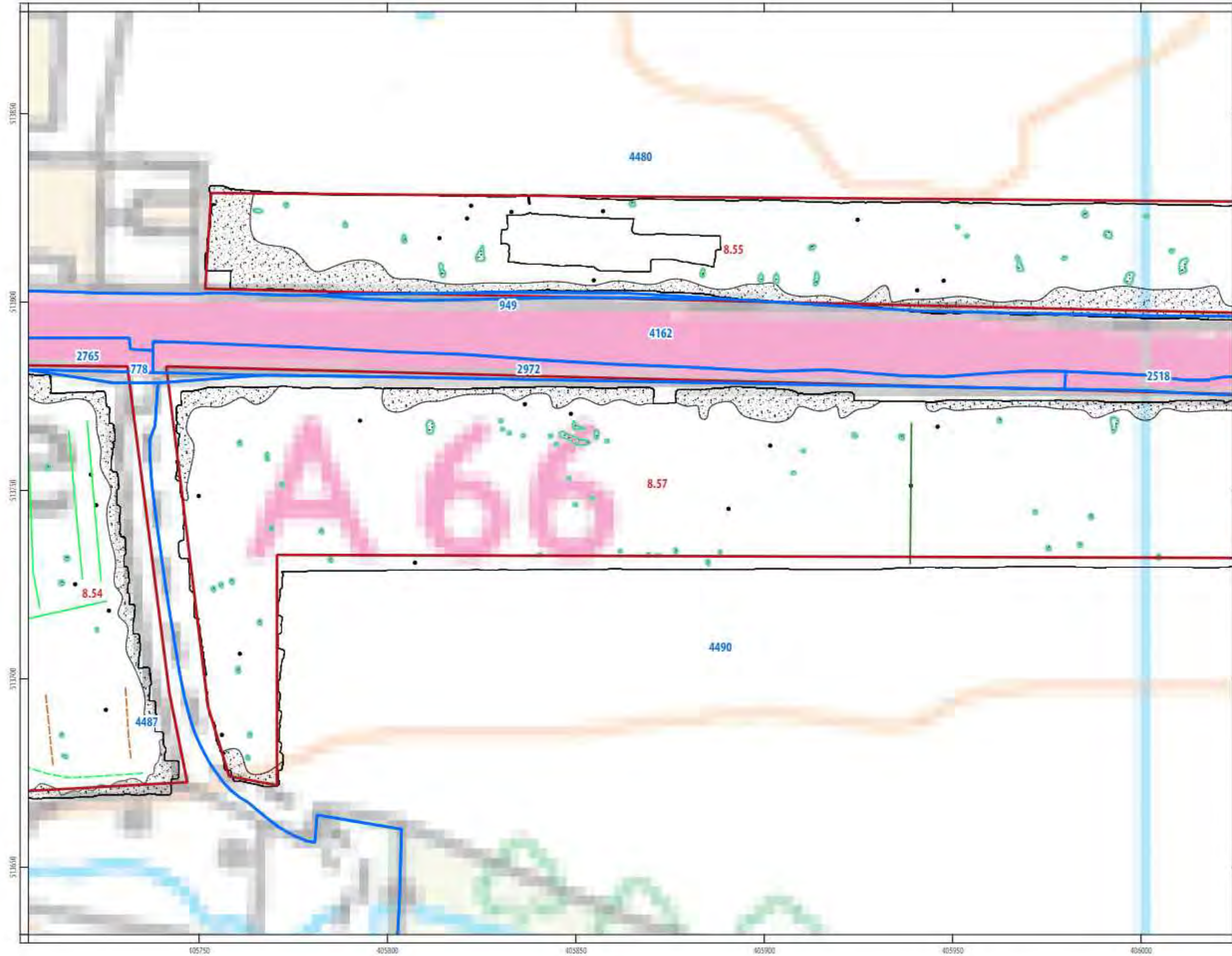
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 470 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





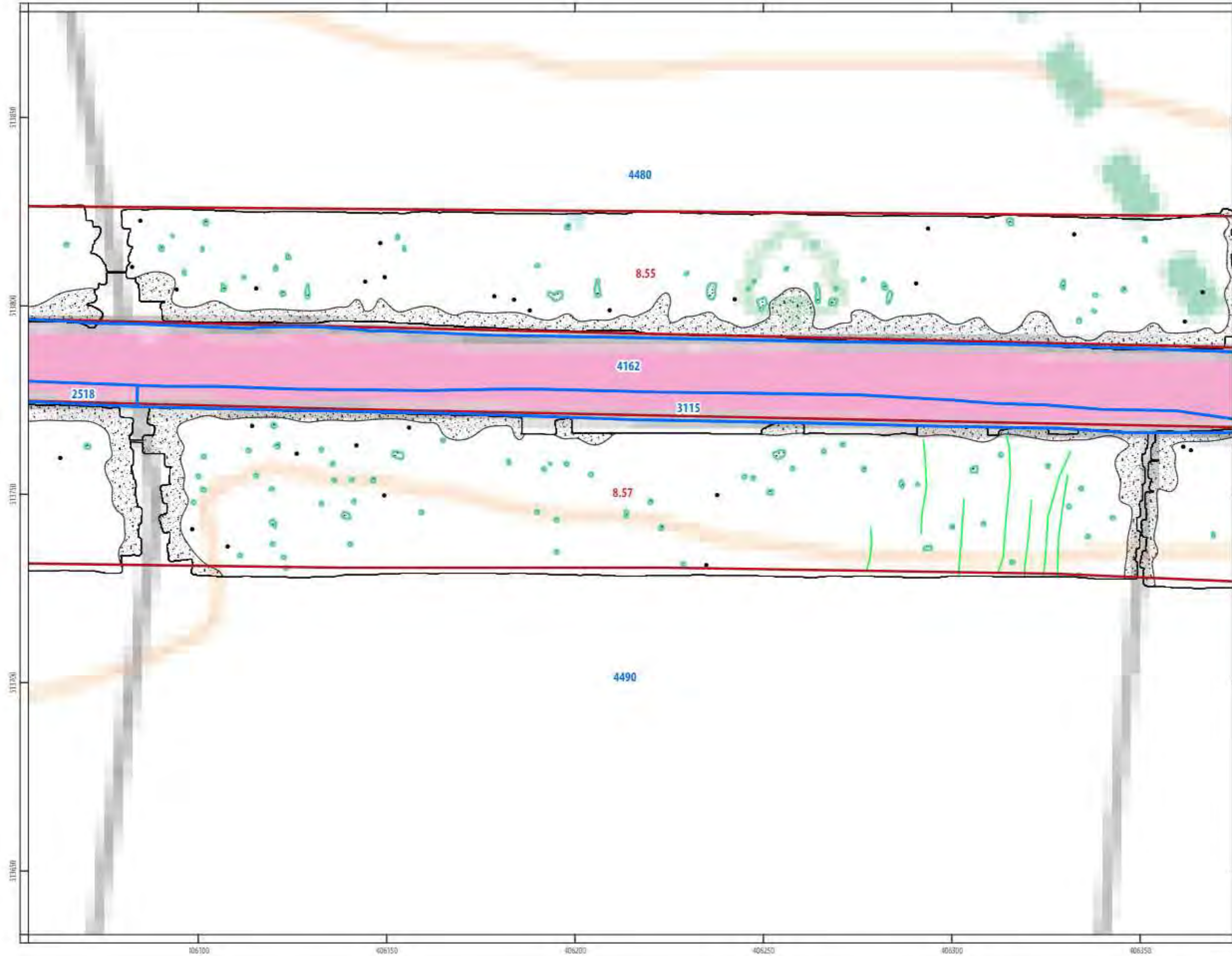
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



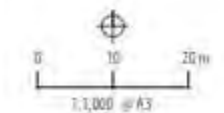




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

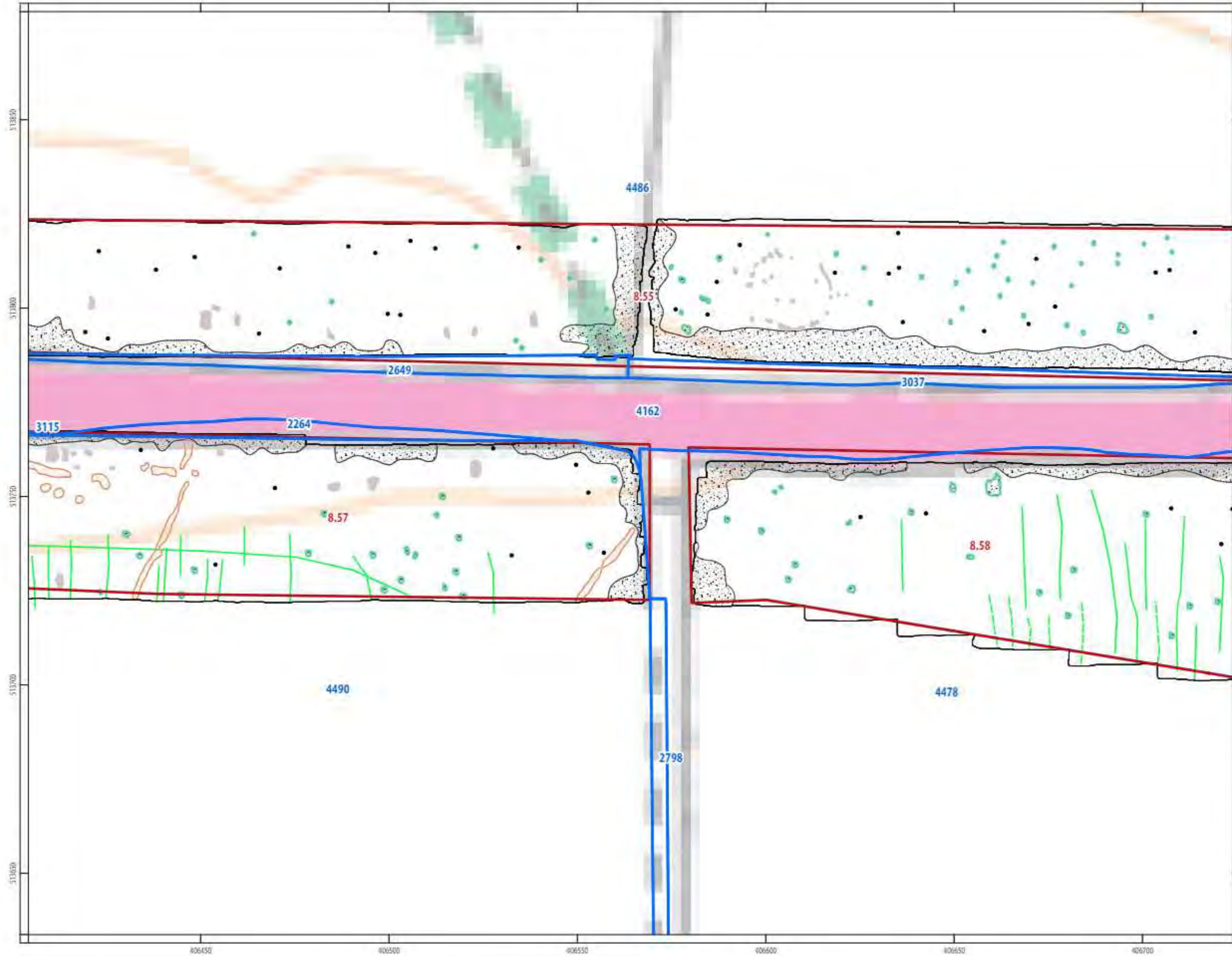
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 472 Interpretation of processed magnetometer data; Cross Lanés to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 473 Interpretation of processed magnetometer data; Cross Lanes to Rokeby

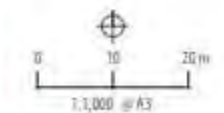




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

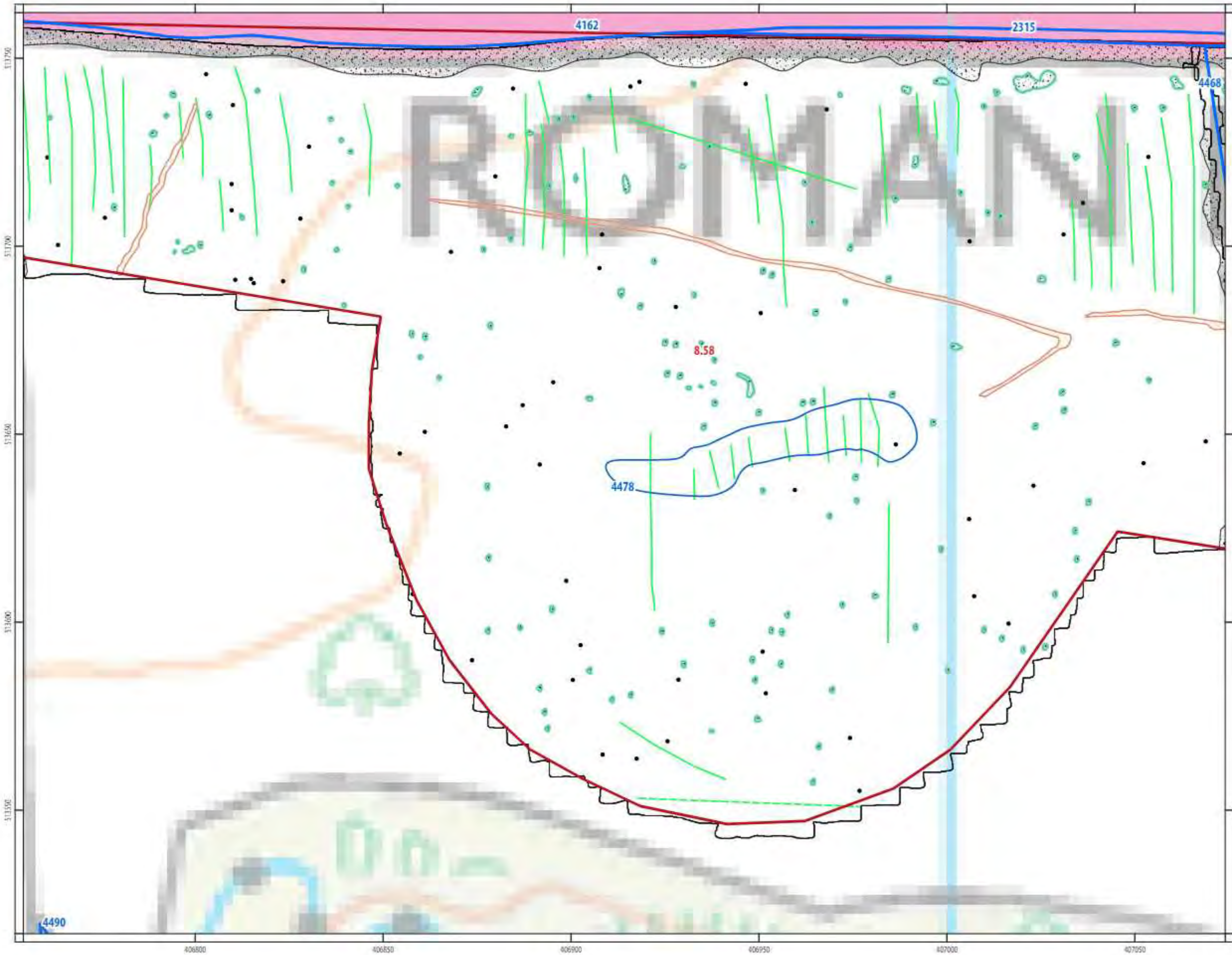
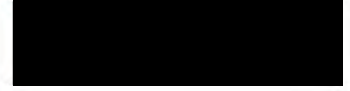
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 474 Interpretation of processed magnetometer data; Cross Lanés to Rokeby

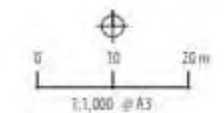




- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

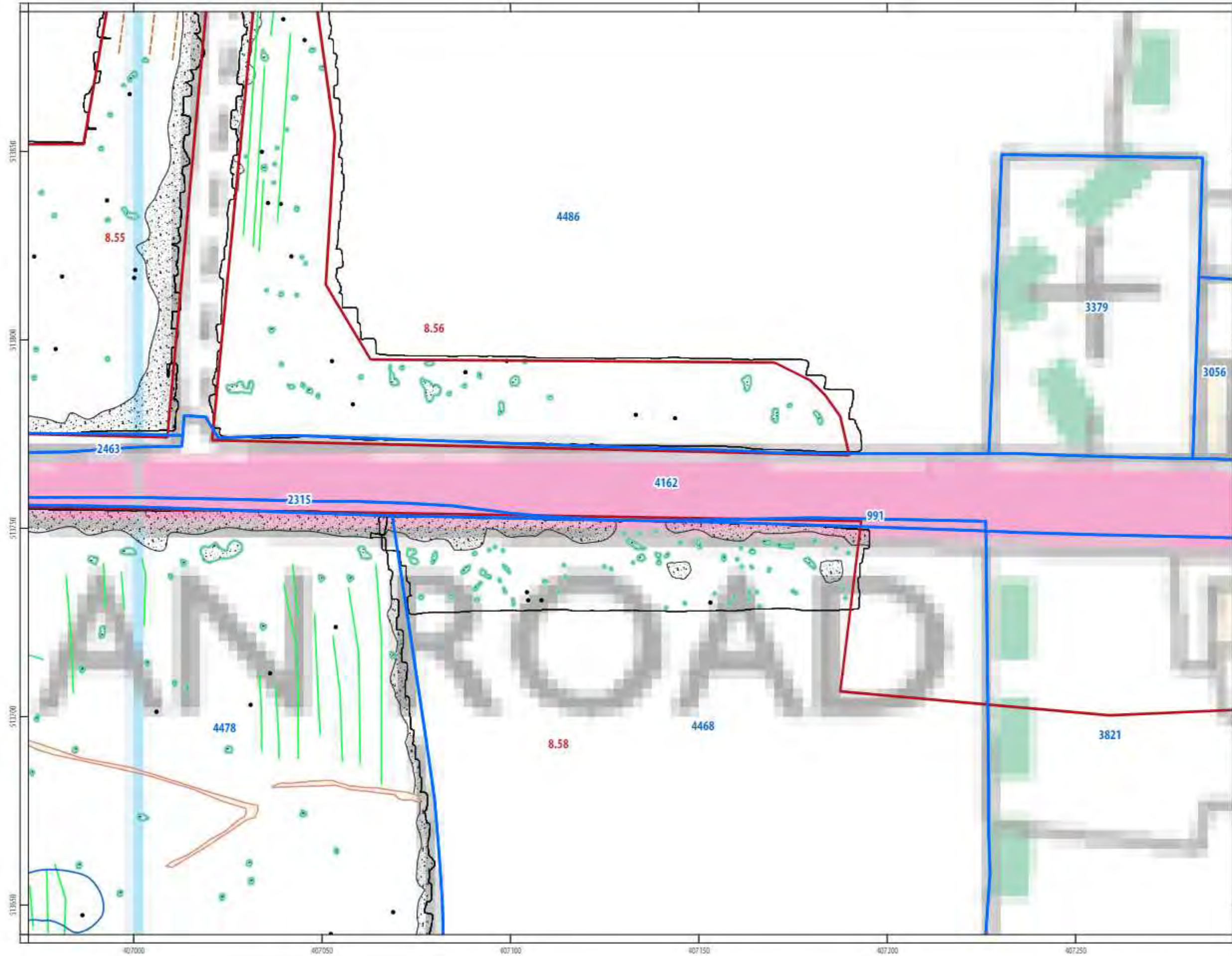
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 475 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





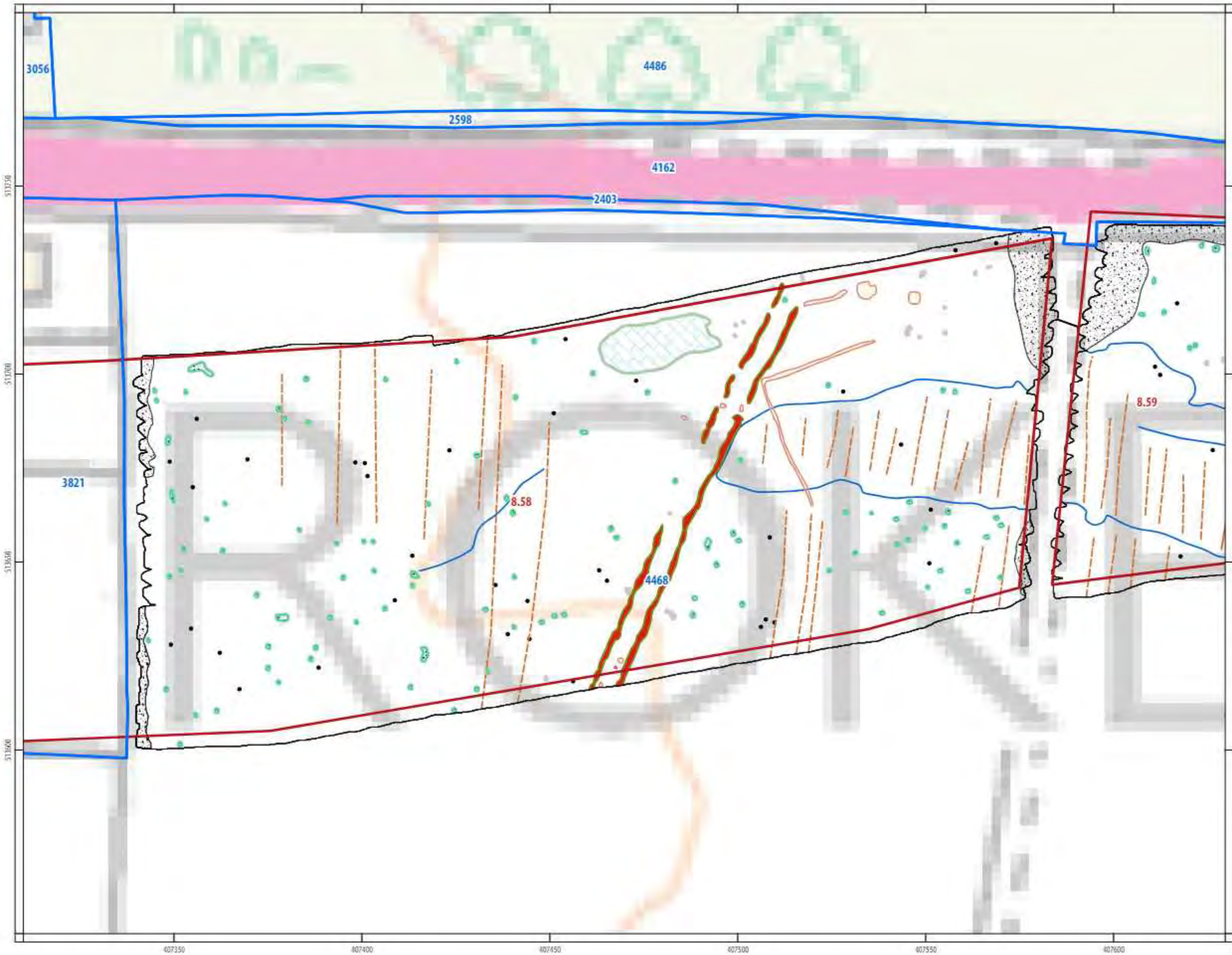
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
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- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 477 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
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- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

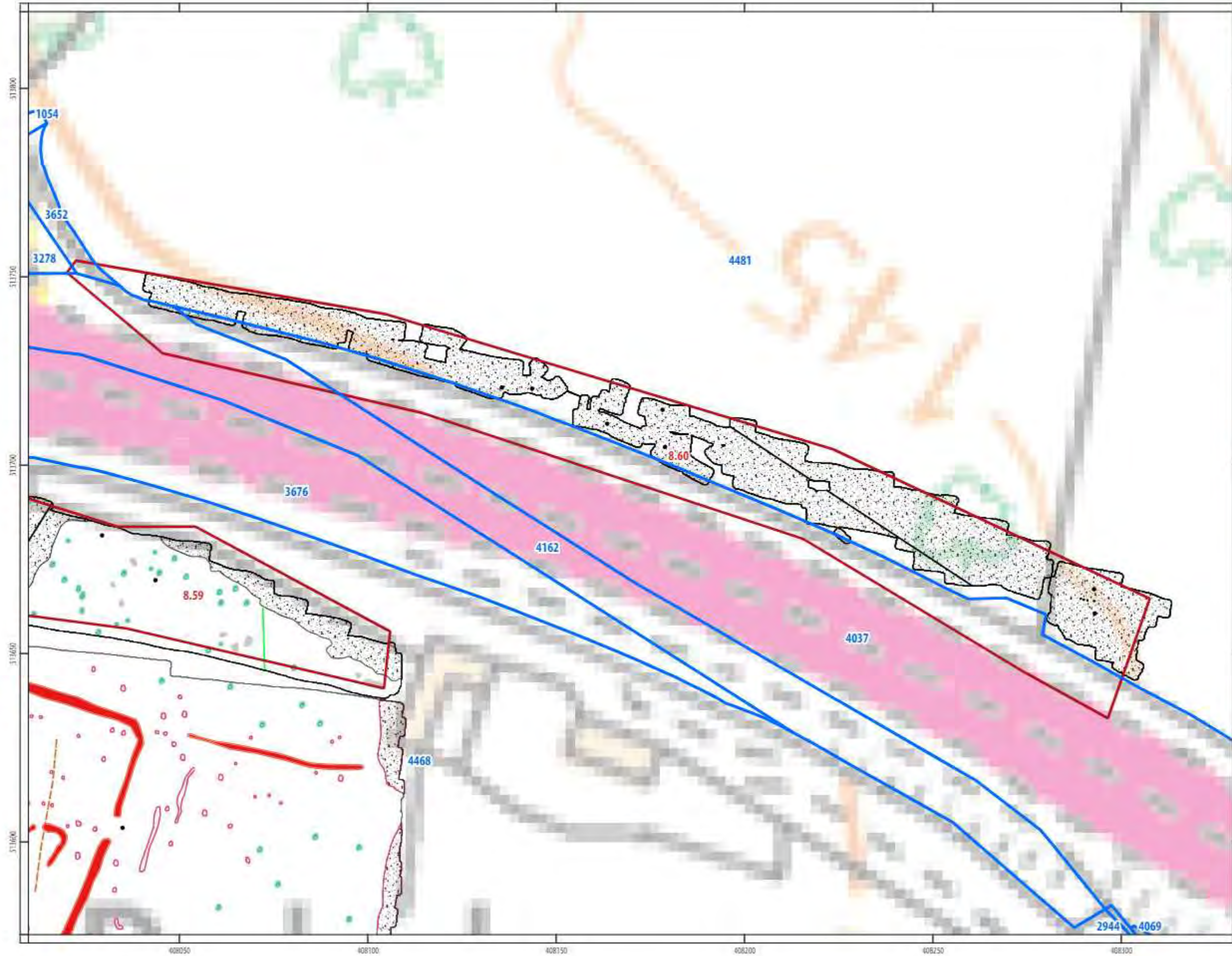
**PROJECT**  
ATPU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 478 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
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- linear trend/ridge and furrow
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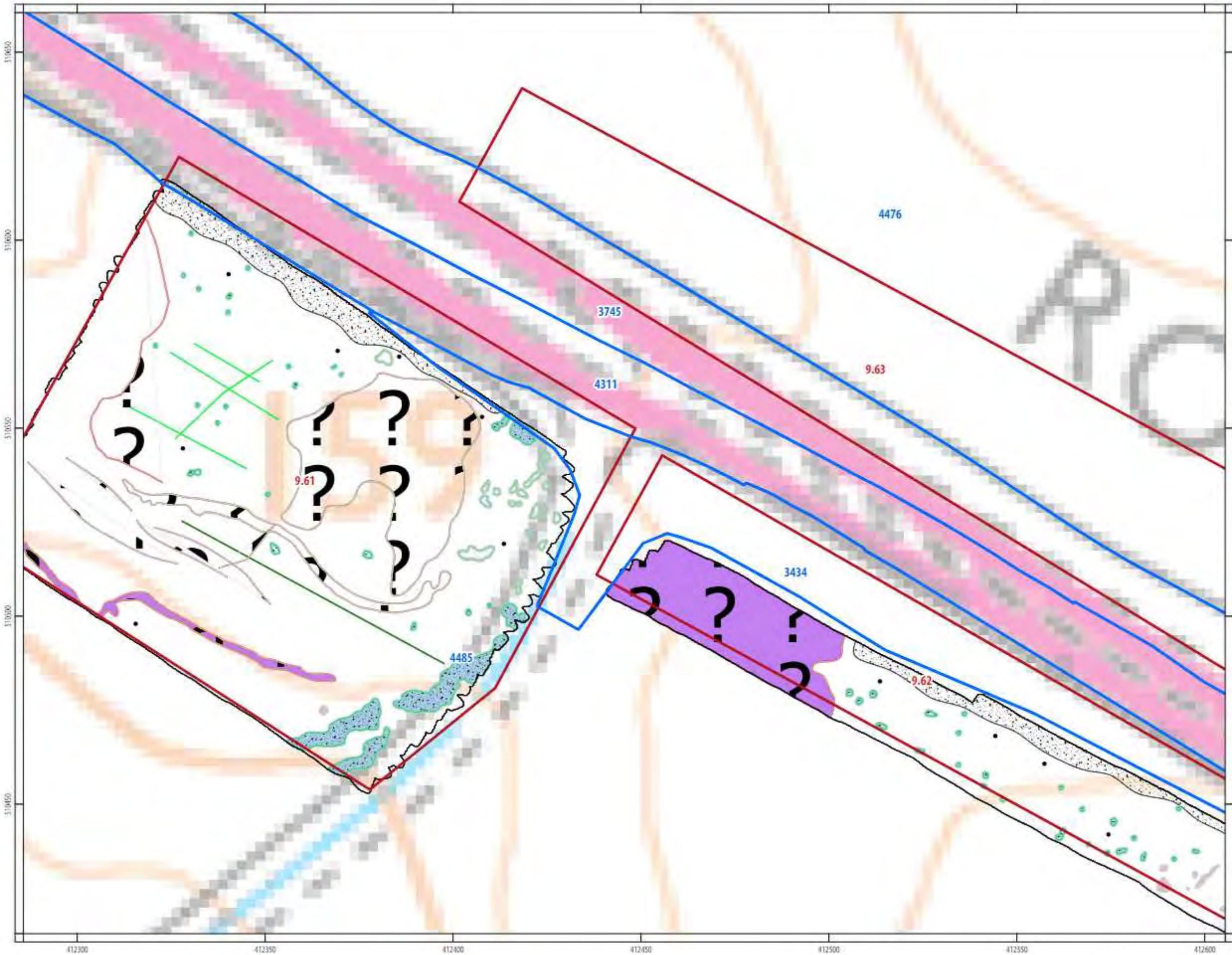
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 479 Interpretation of processed magnetometer data; Cross Lanes to Rokeby





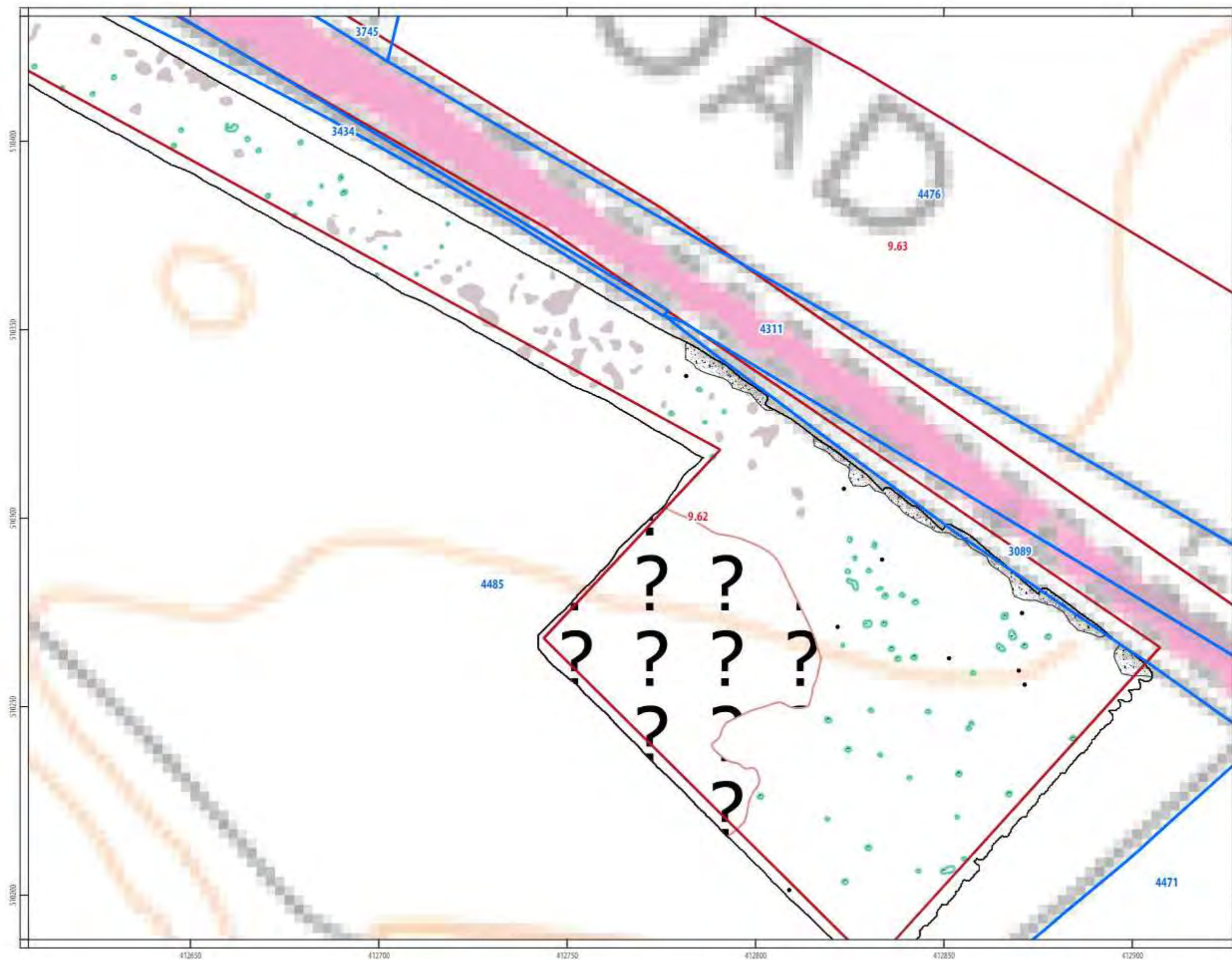
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



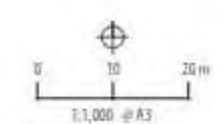




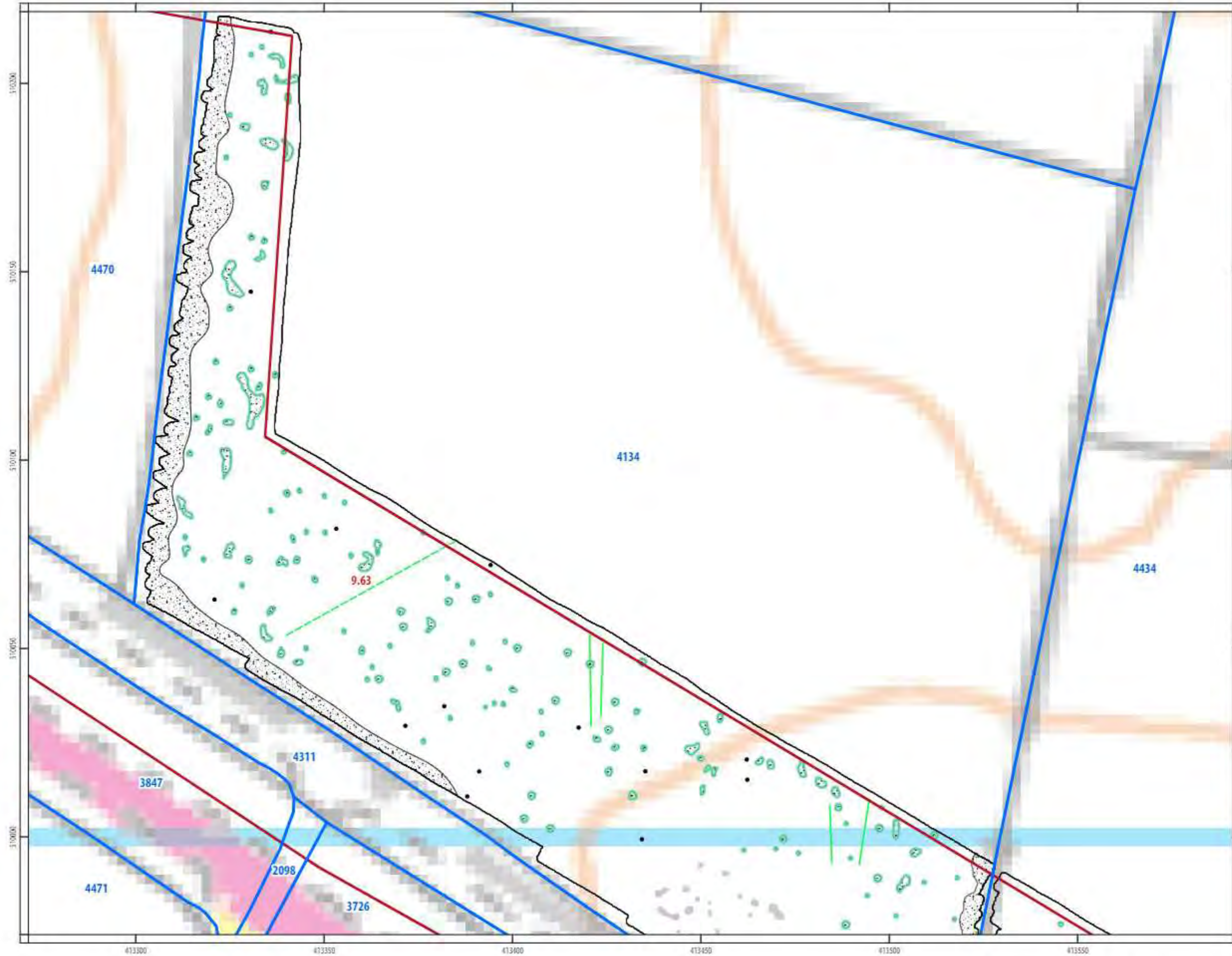
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
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- magnetic enhancement/archaeology/
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
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- magnetic enhancement/archaeology
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- linear trend/field drain
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

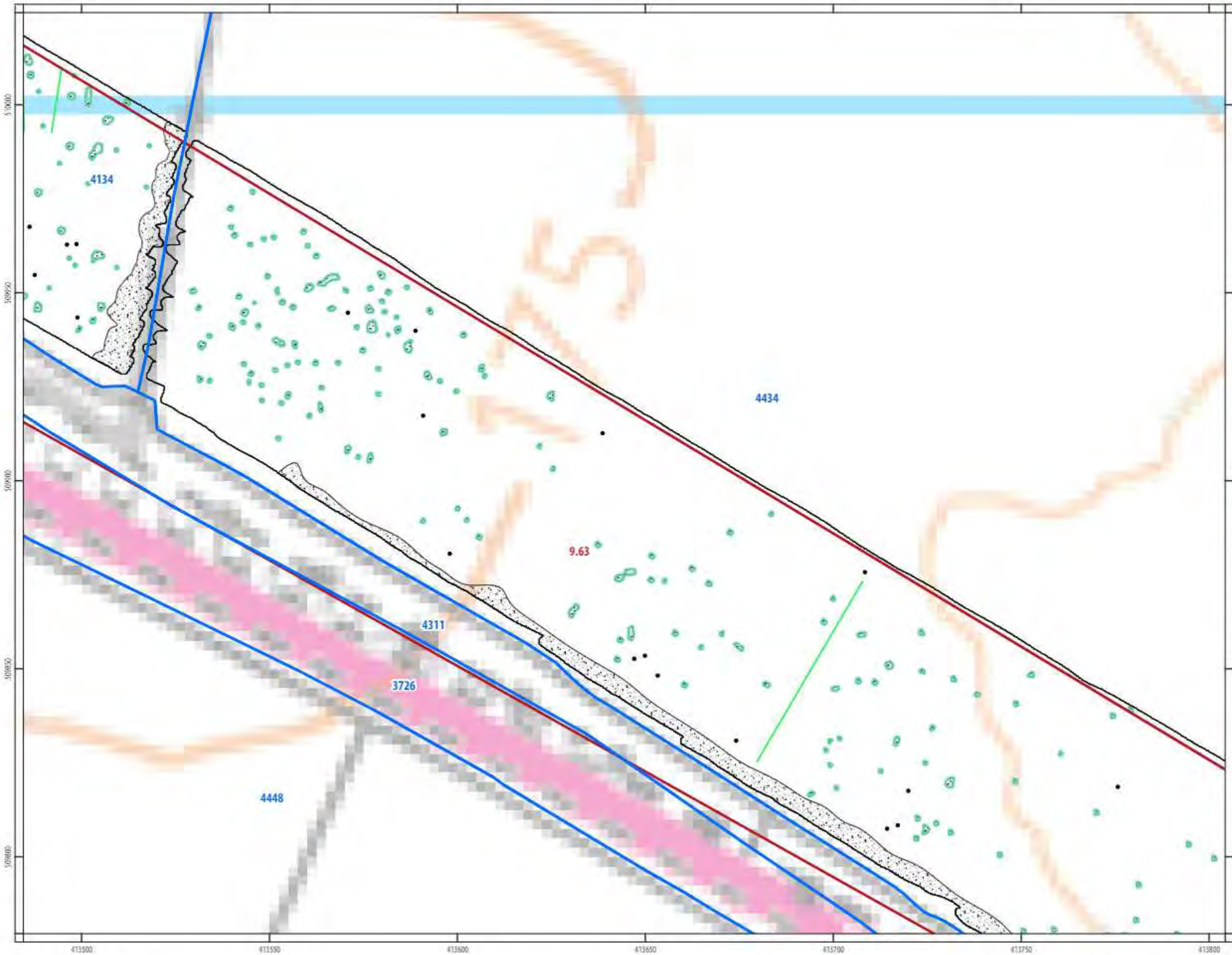
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 482 Interpretation of processed magnetometer data; Stephen Bank to Carlin Moor





- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
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- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

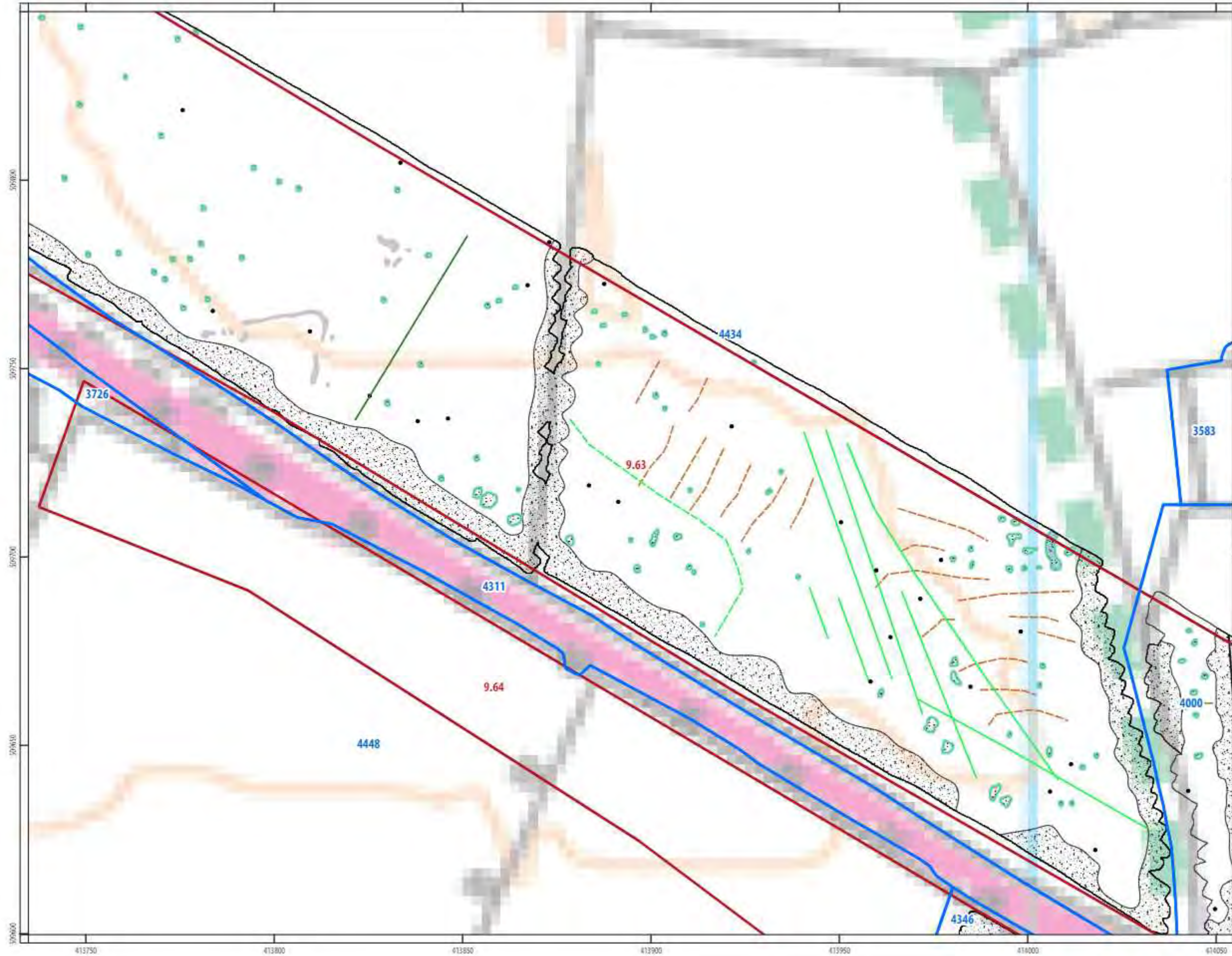
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 483 Interpretation of processed magnetometer data; Stephen Bank to Carkin Moor





- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

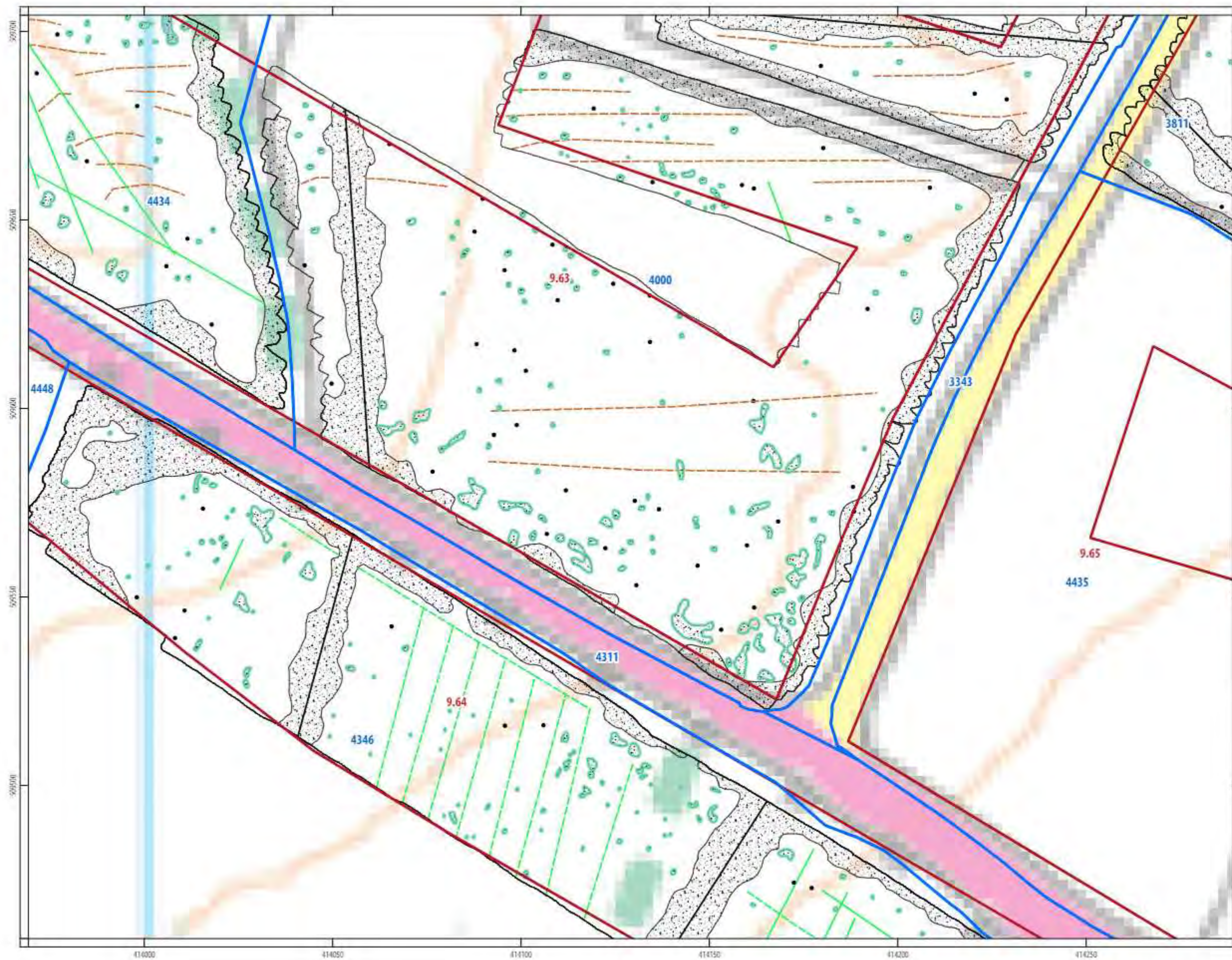
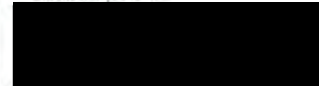
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 484 Interpretation of processed magnetometer data; Stephen Bank to Carlin Moor





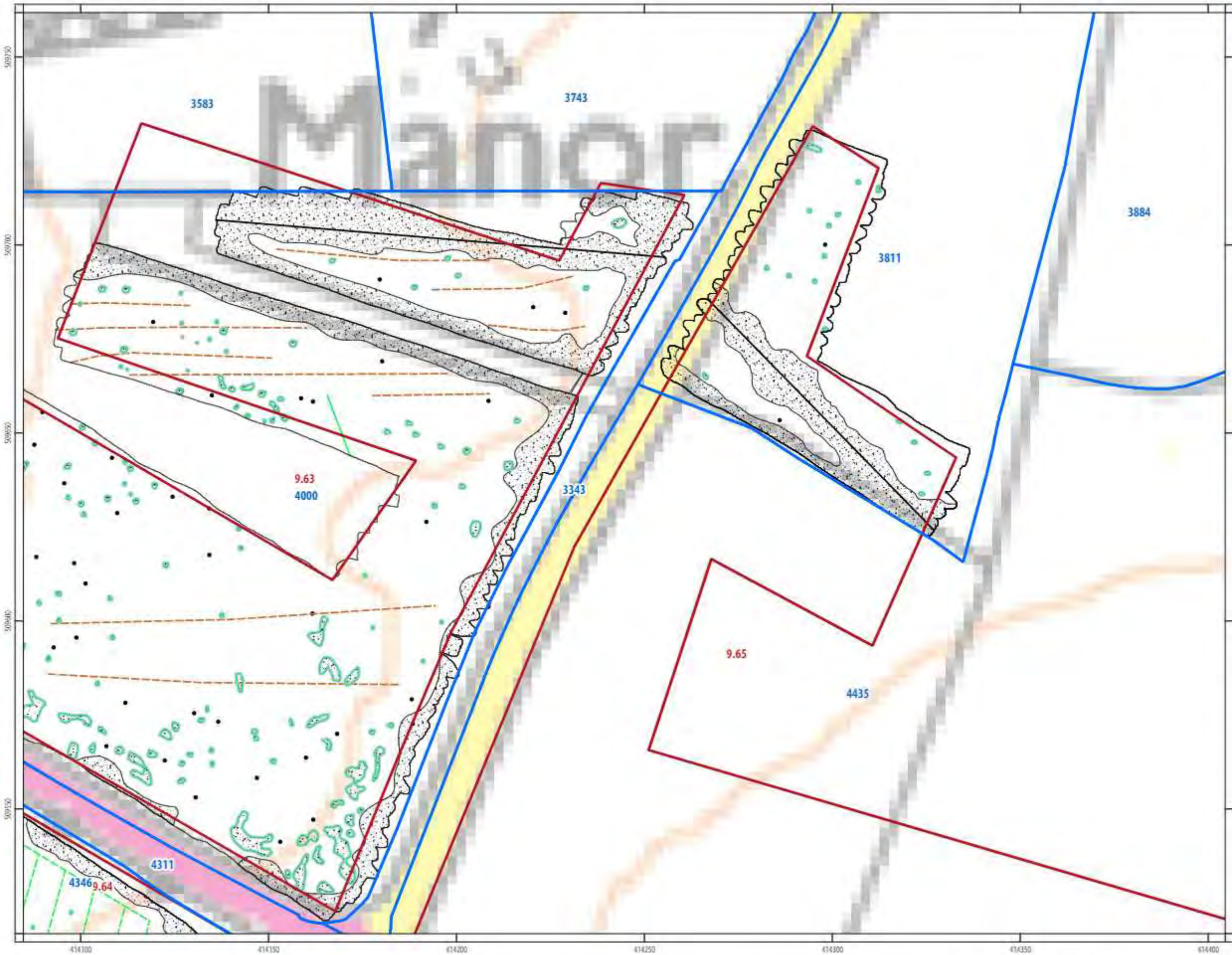
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology/
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LRM
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- ▭ modern
- ▭ uncertain
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



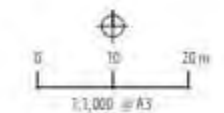




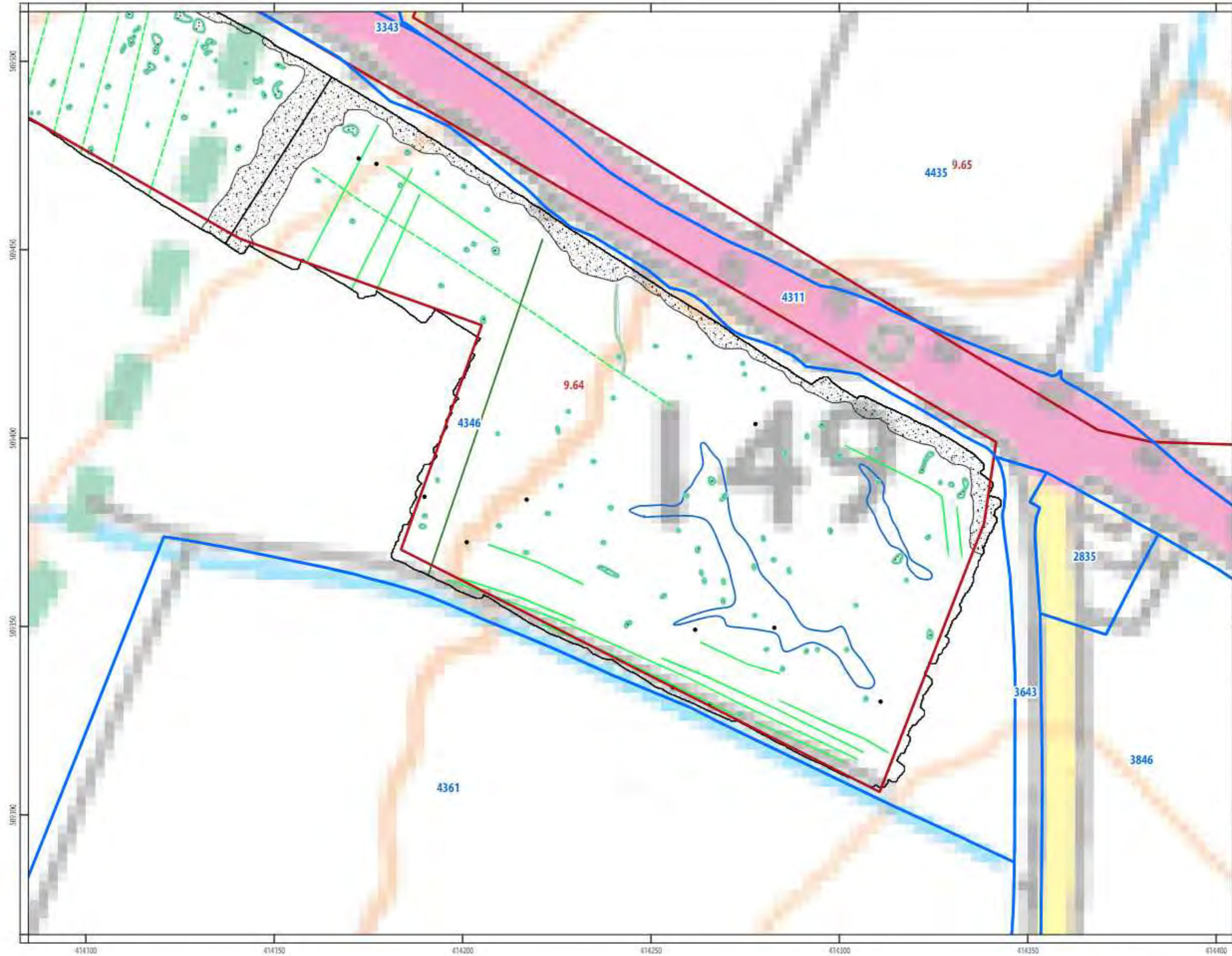
- Phase 1 Geophysical Survey Area
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



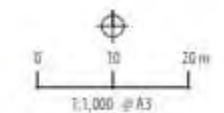




- Phase 1 Geophysical Survey Area
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- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 487 Interpretation of processed magnetometer data; Stephen Bank to Carkin Moor

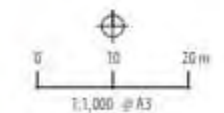




- Phase 1 Geophysical Survey Area
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- geophysical survey extent
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- dipolar isolated/ferrous
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



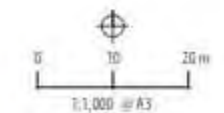




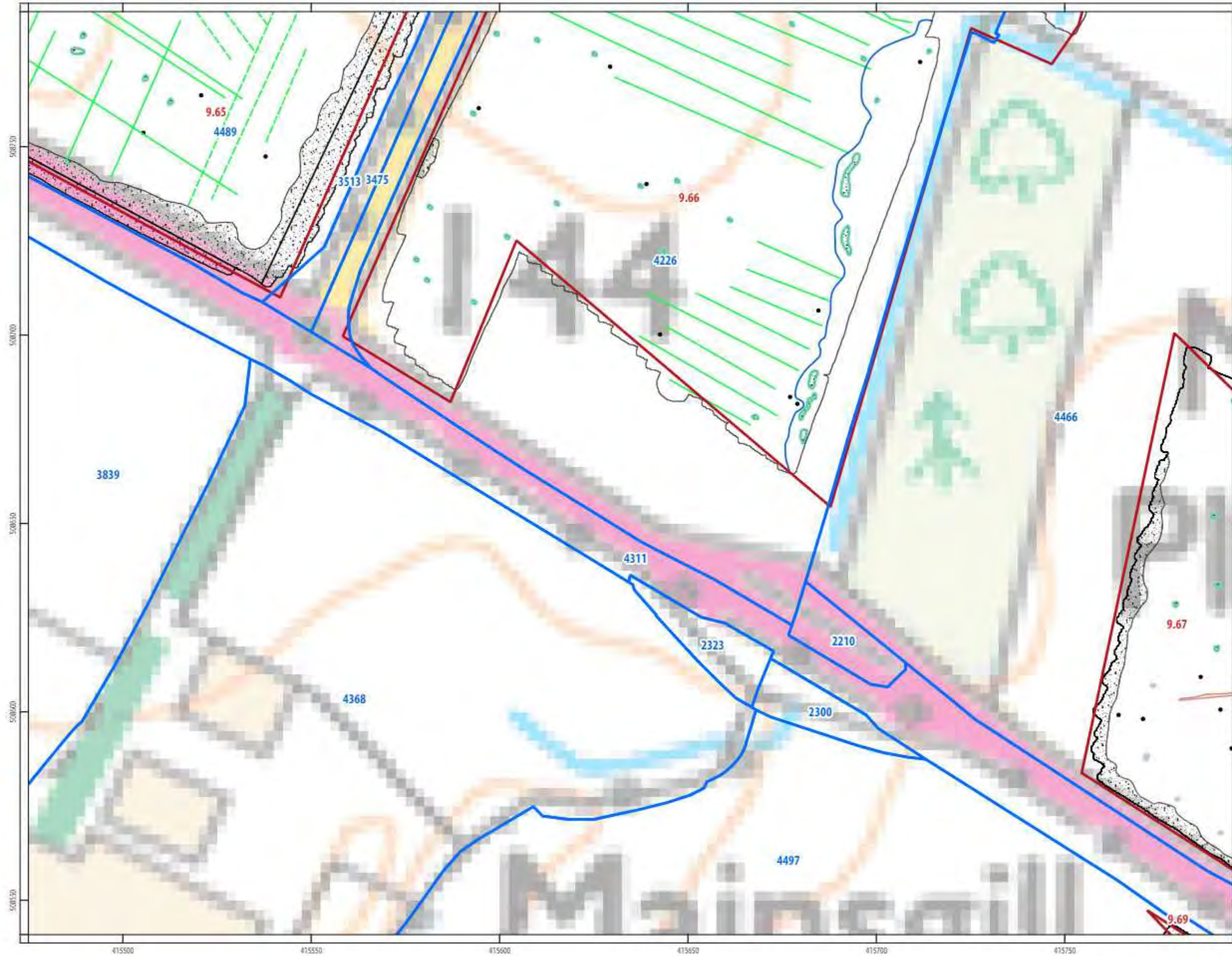
- Phase 1 Geophysical Survey Area
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- linear/former field boundary?
- lineartrend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







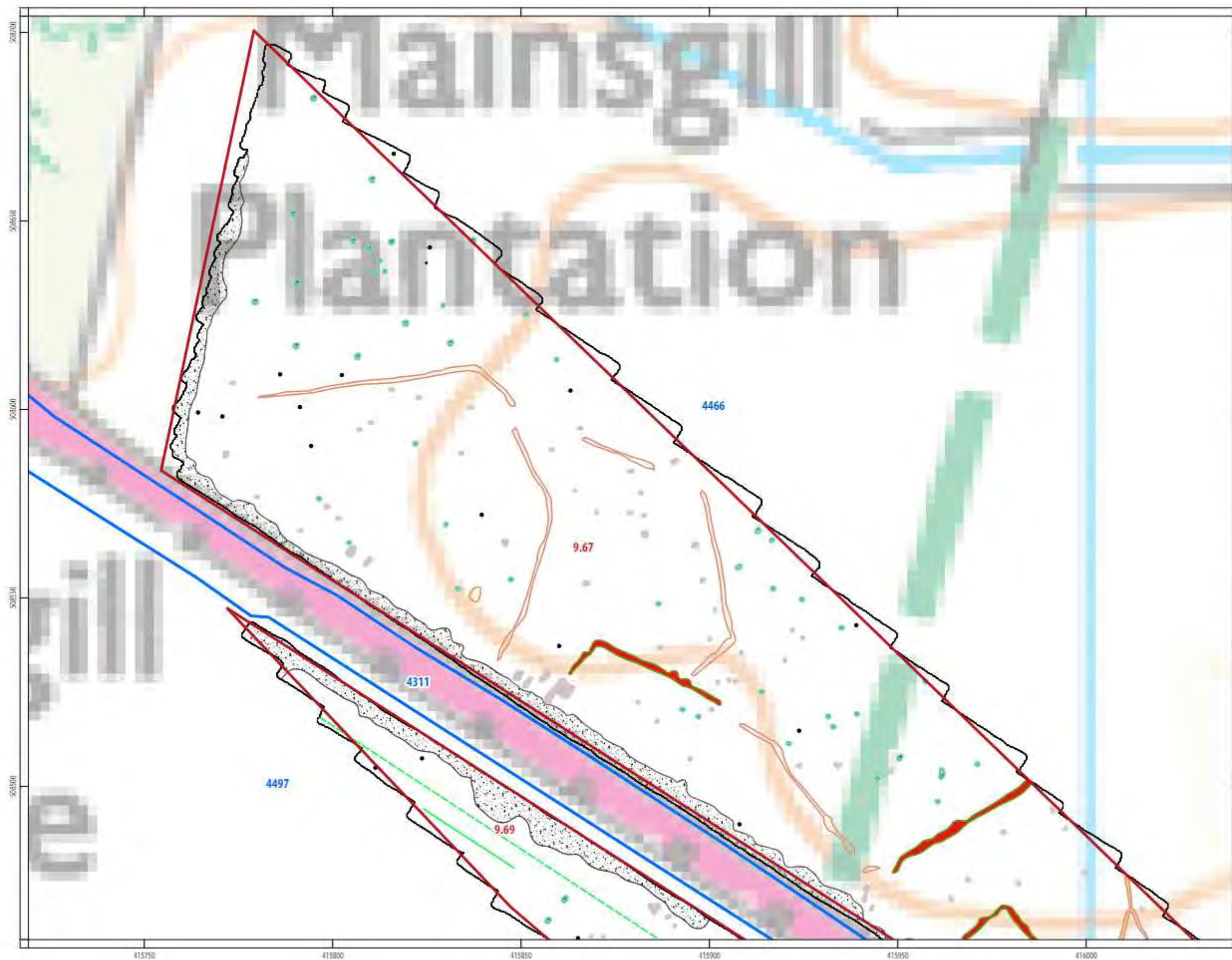
- Phase 1 Geophysical Survey Area
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- geophysical survey extent
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
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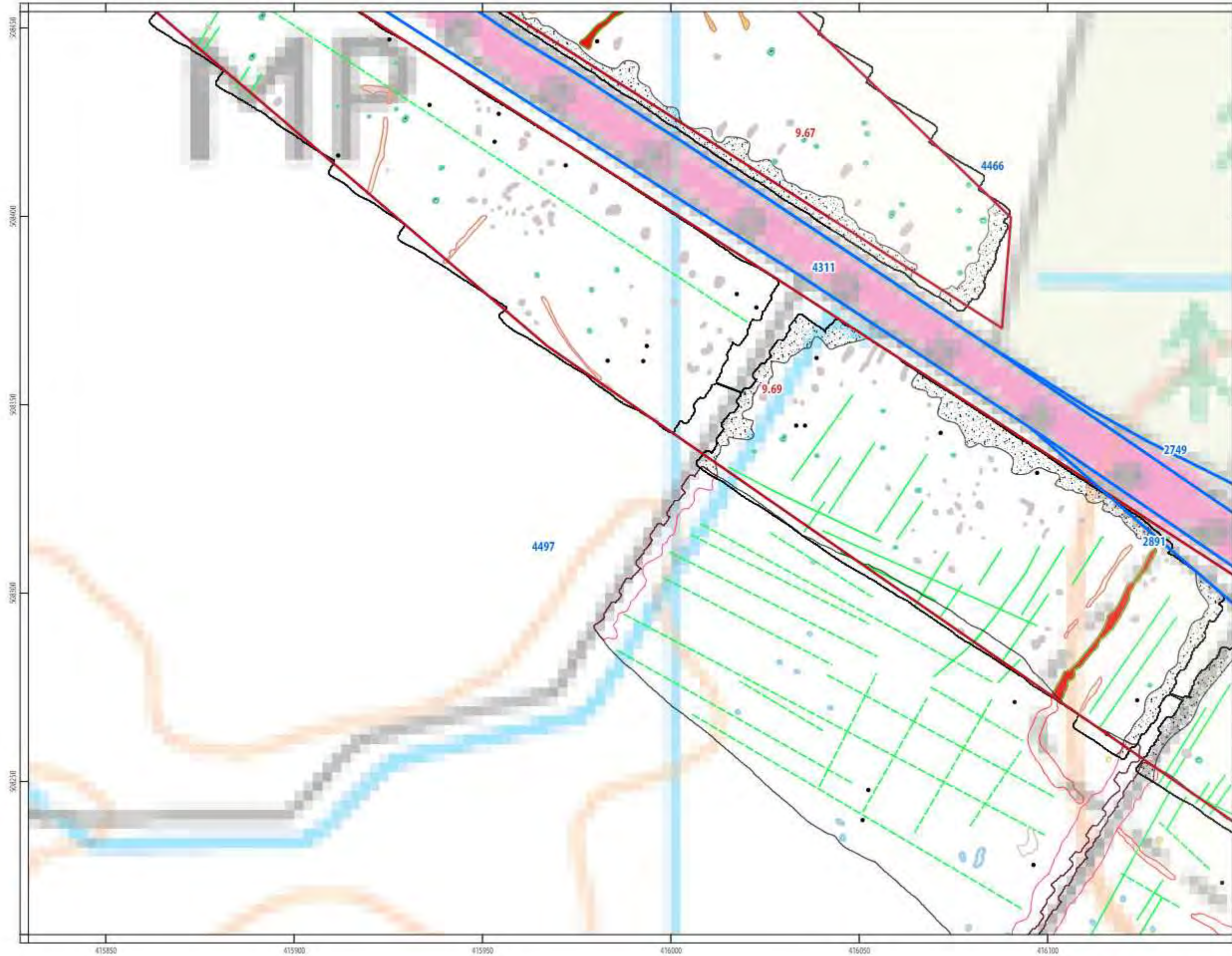
**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 492 Interpretation of processed magnetometer data; Stephen Bank to Carlin Moor





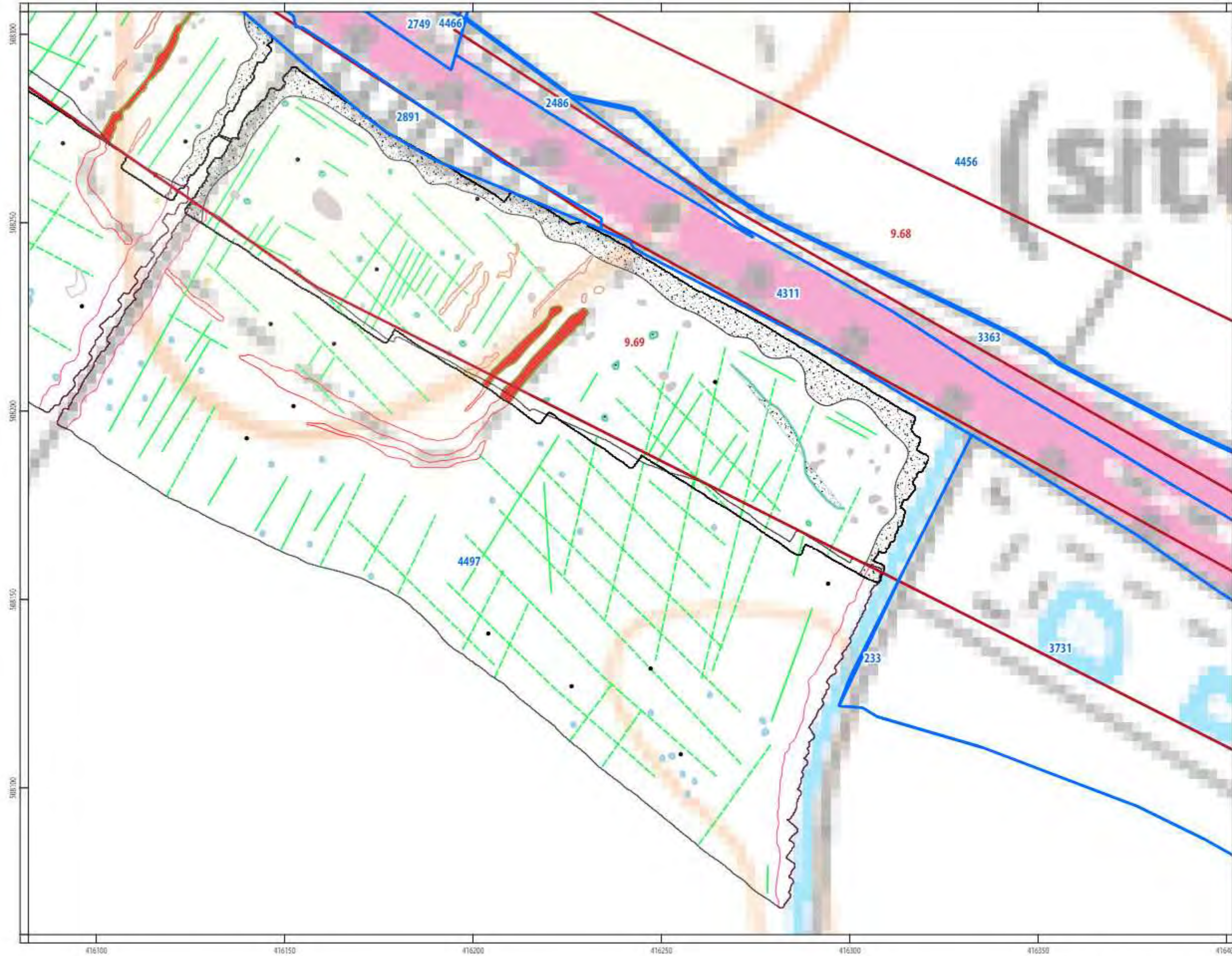
- Phase 1 Geophysical Survey Area
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- scheduled monument
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- magnetic enhancement/LIRM
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- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







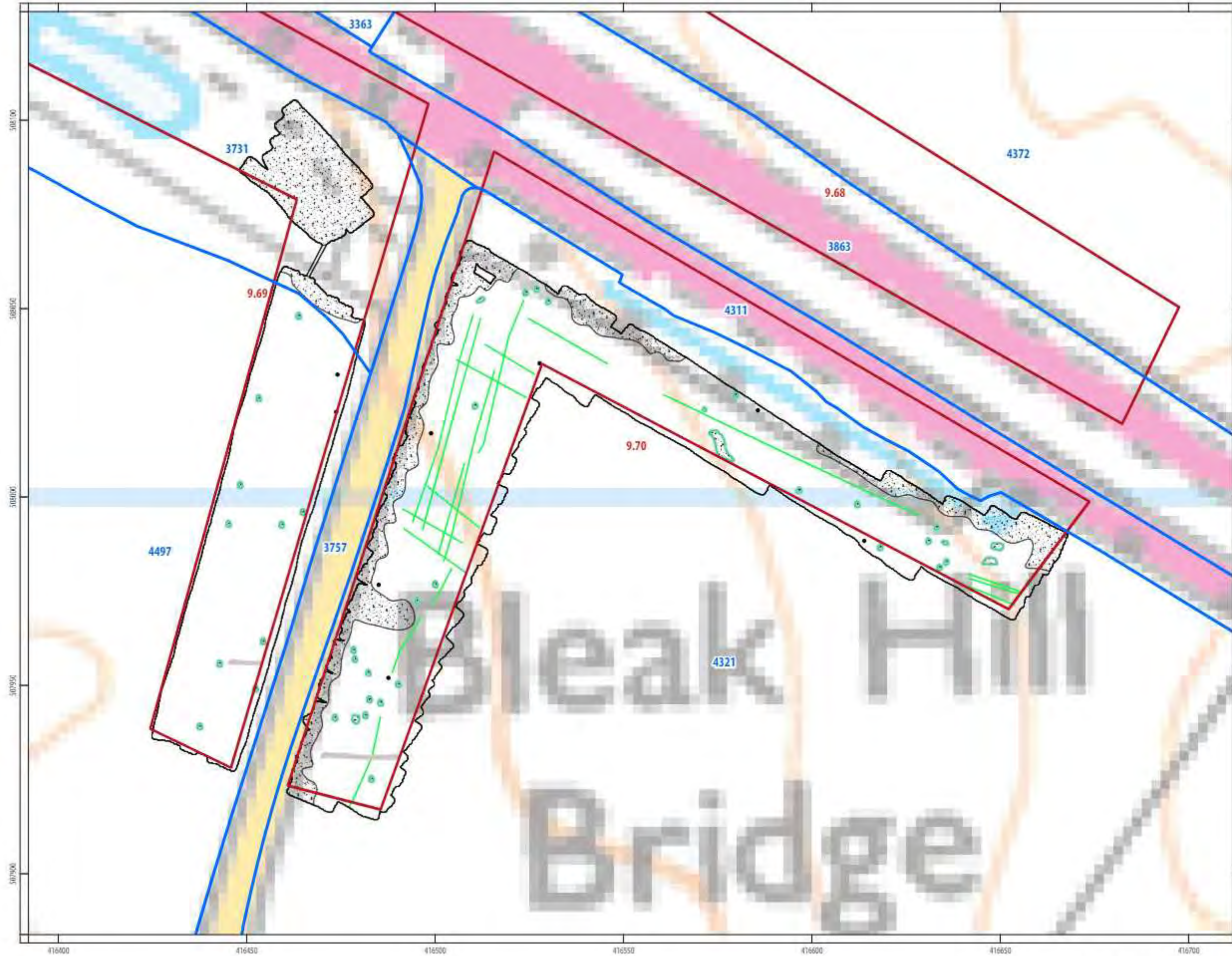
- Phase 1 Geophysical Survey Area
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- geophysical survey extent
- scheduled monument
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
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- magnetic disturbance/geology
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**PROJECT**  
ATFU20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England





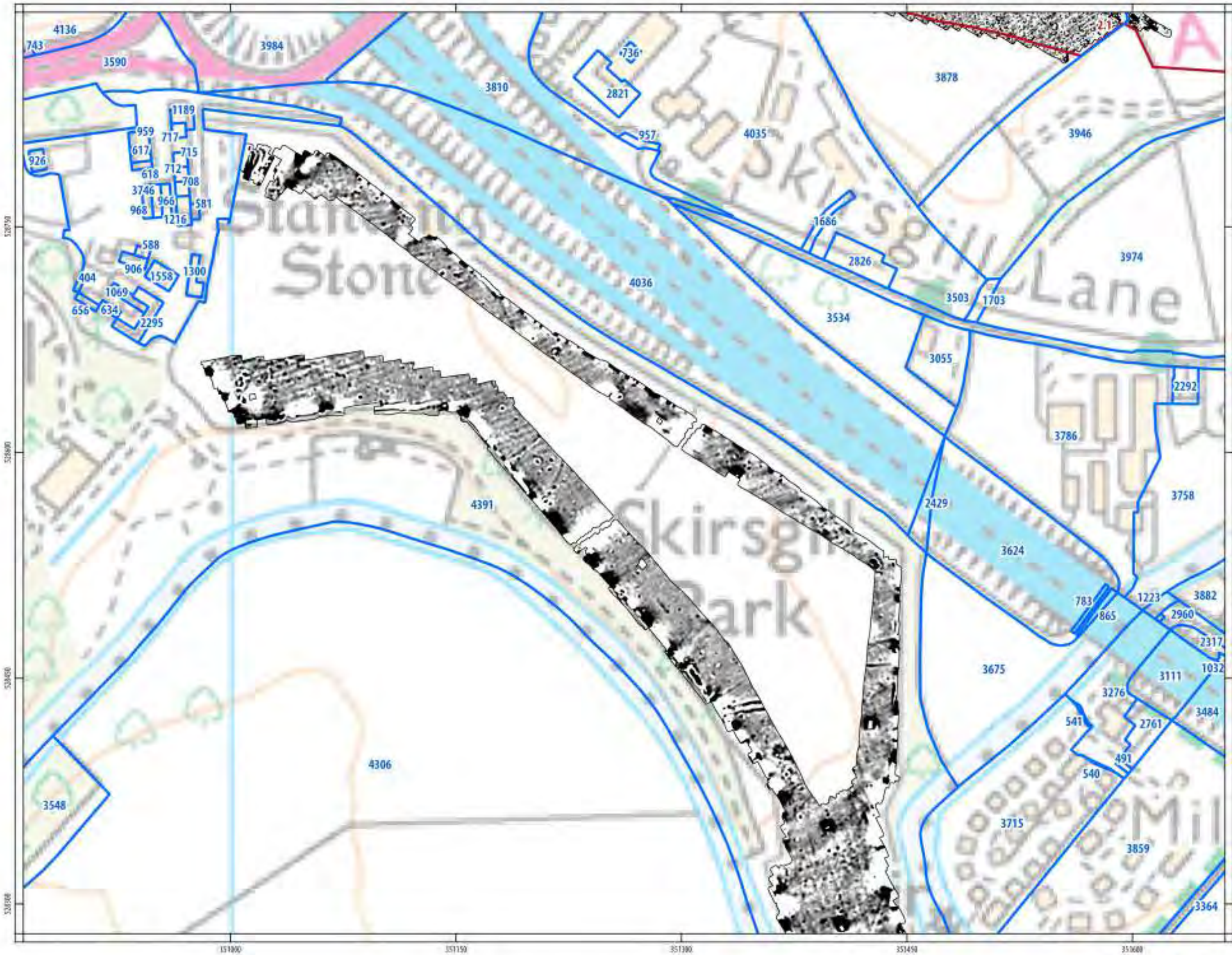
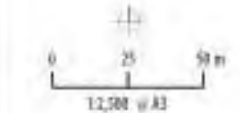
**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument



**PROJECT**  
M6 J20-466 Transpennine Upgrade

**CLIENT**  
Highways England





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

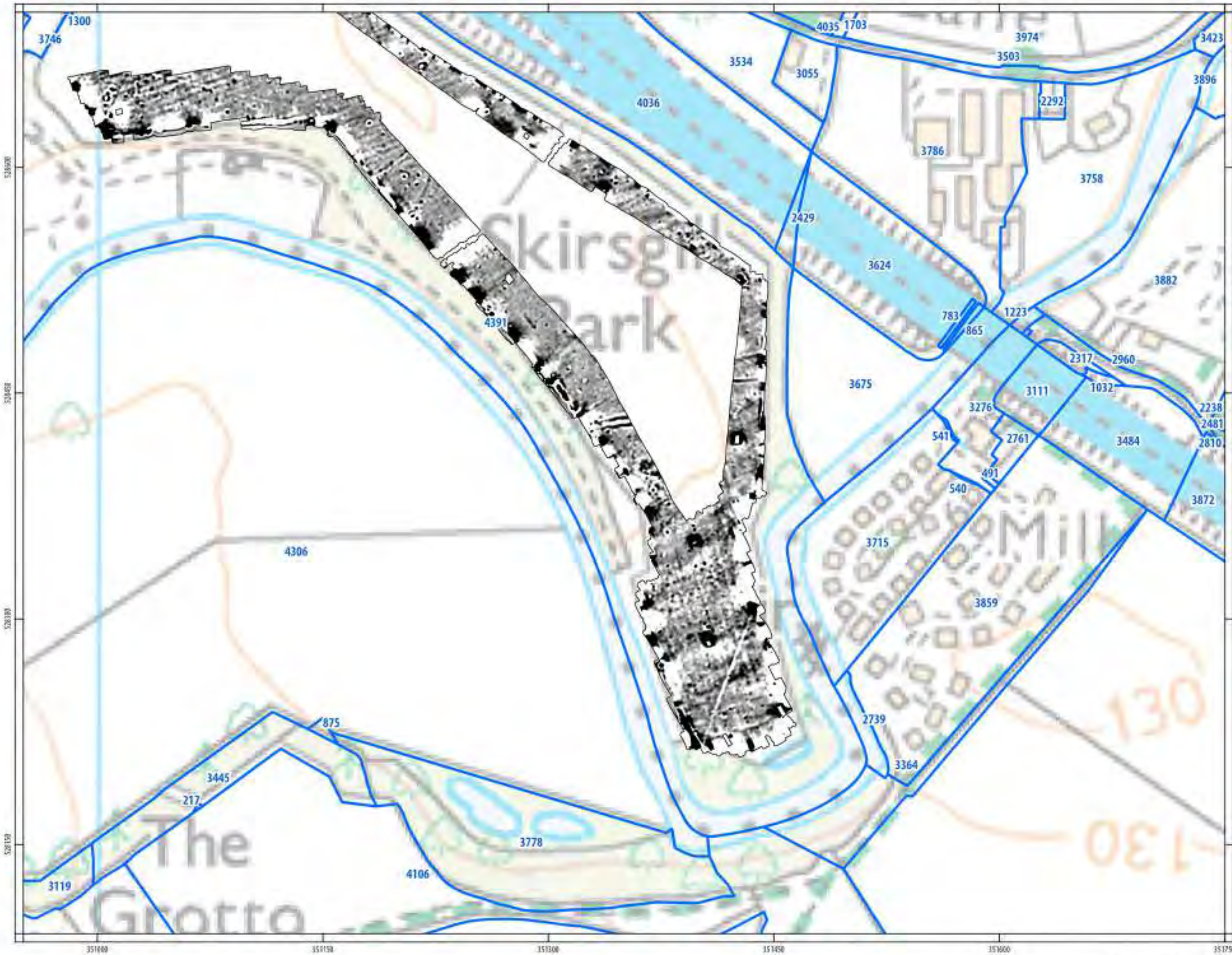
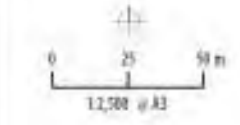


**PROJECT**

M6/J20-466 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M6/J20 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







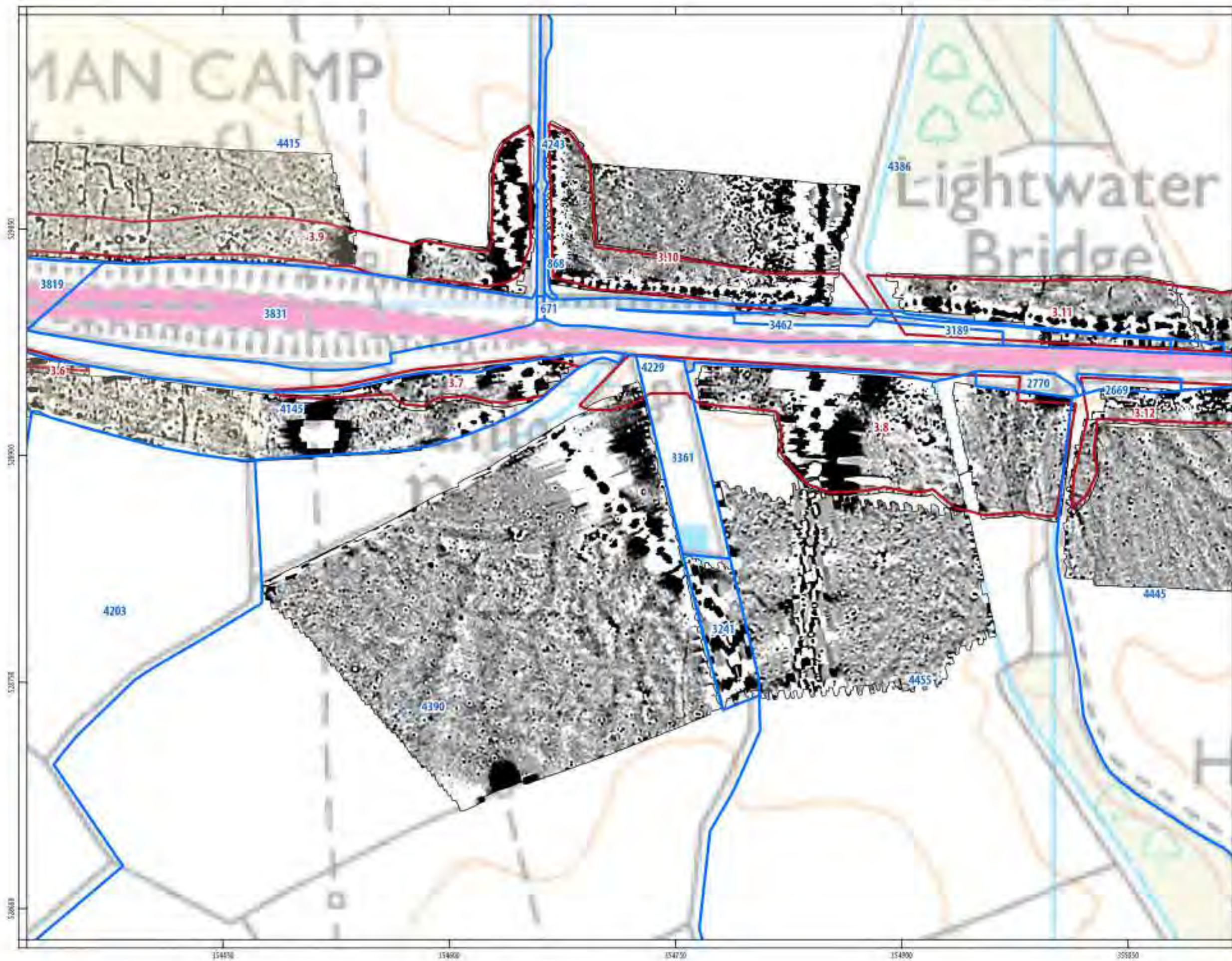






**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

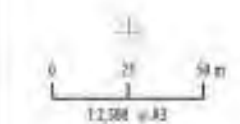


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**





Highways England







**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

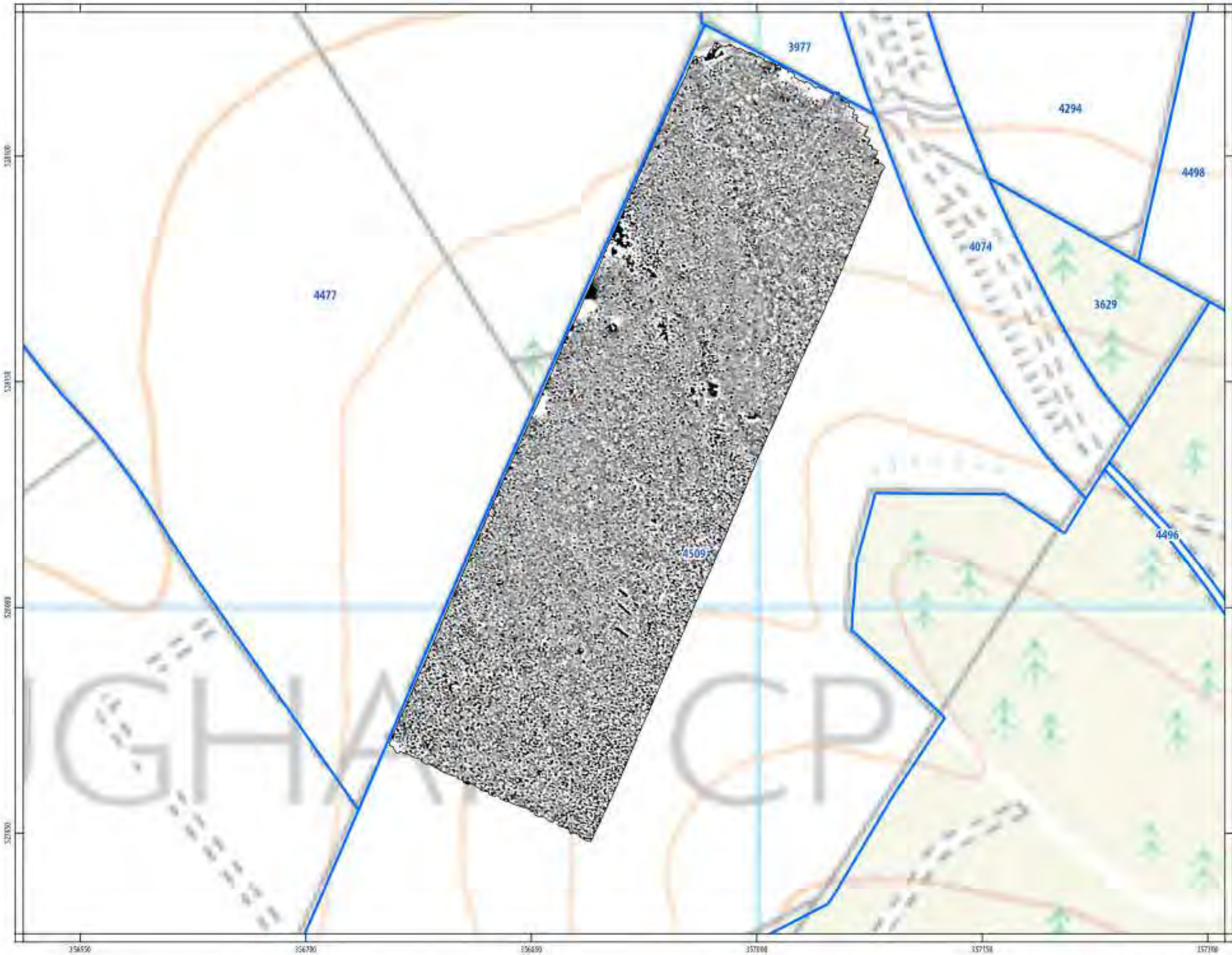
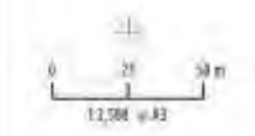


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 501 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

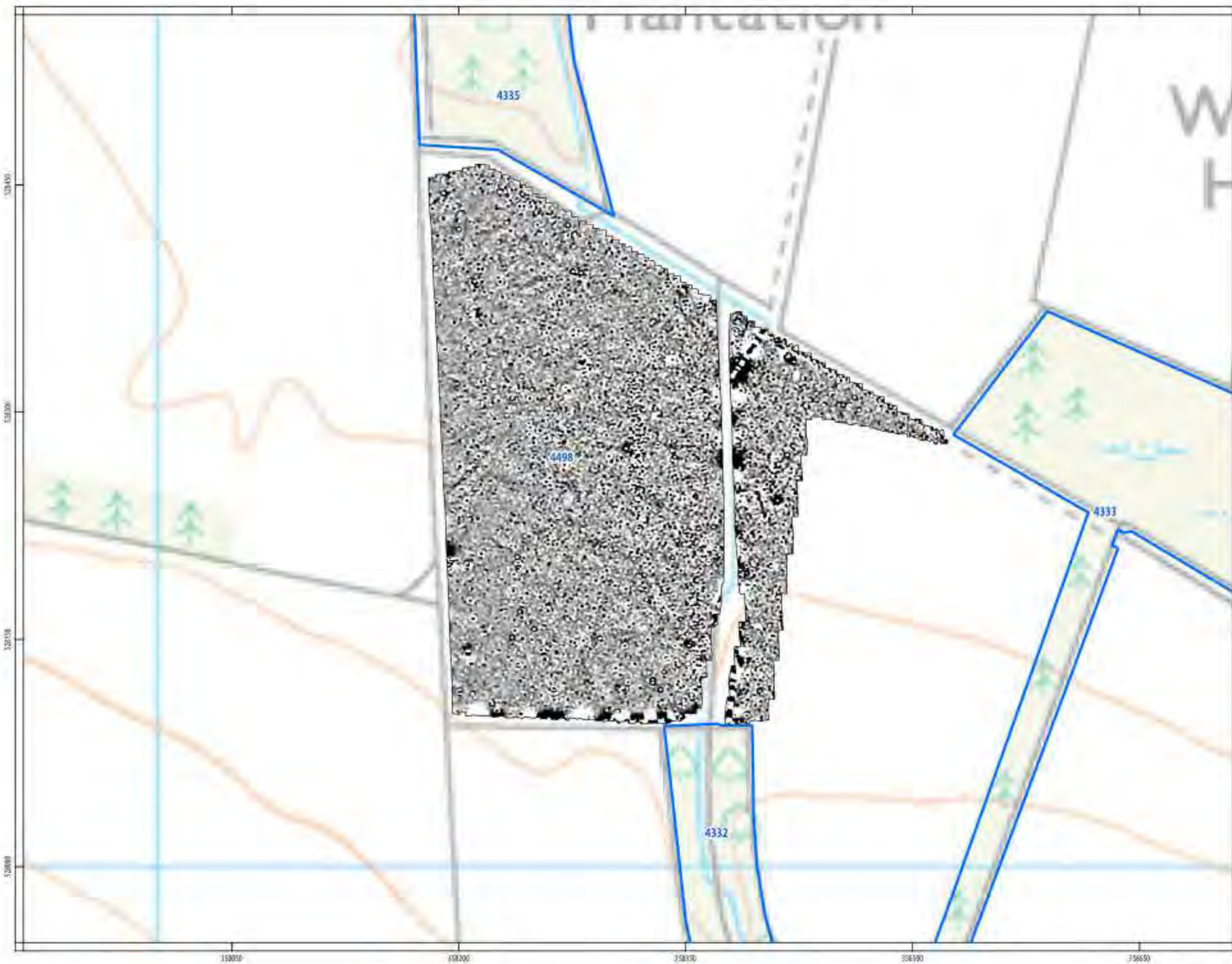


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England







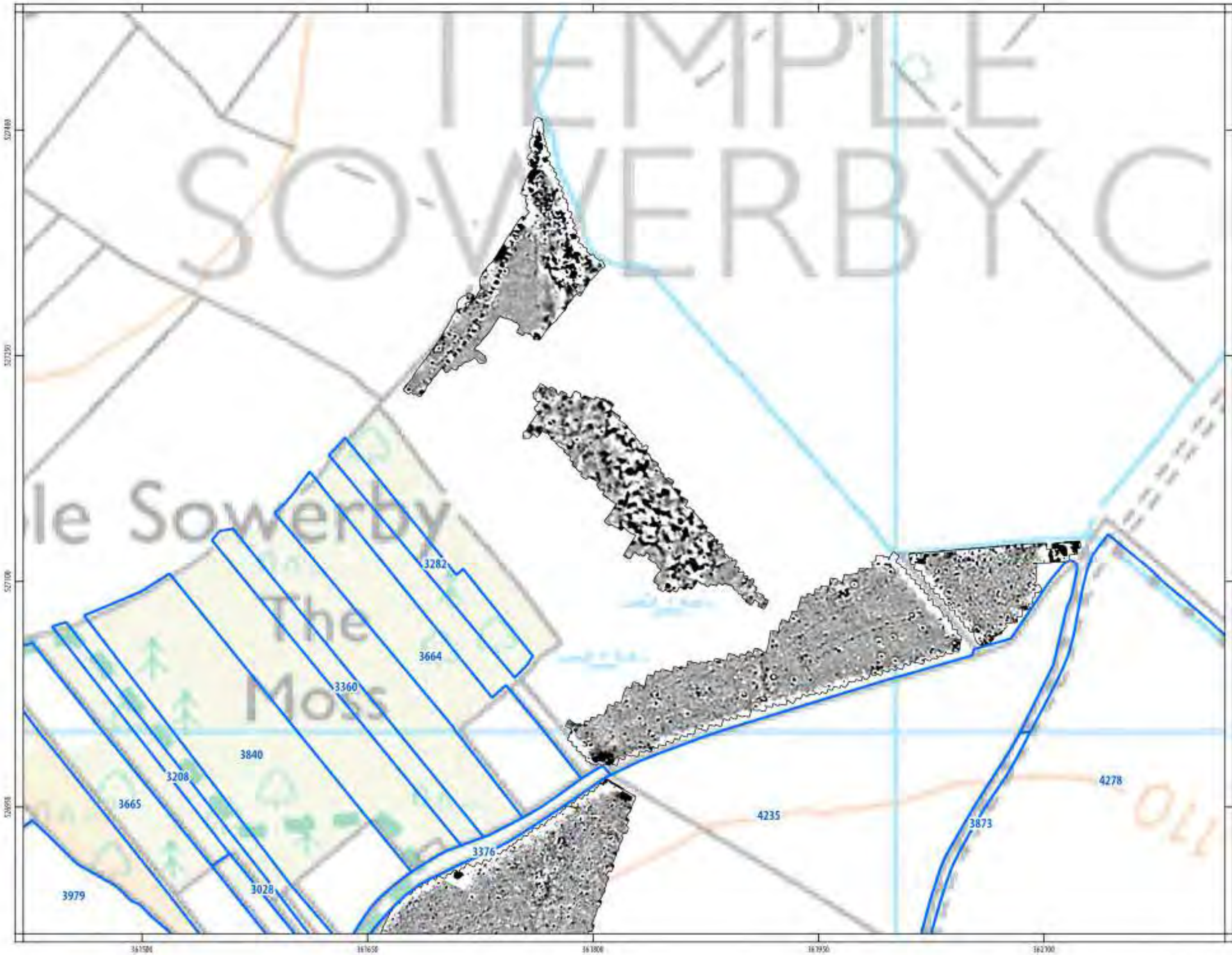
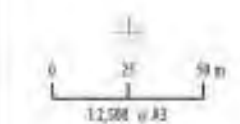
**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument



**PROJECT**  
M20-696 Transpennine Upgrade

**CLIENT**  
Highways England





**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▬ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▬ Scheduled Monument



**PROJECT**  
M20-696 Transpennine Upgrade

**CLIENT**  
Highways England

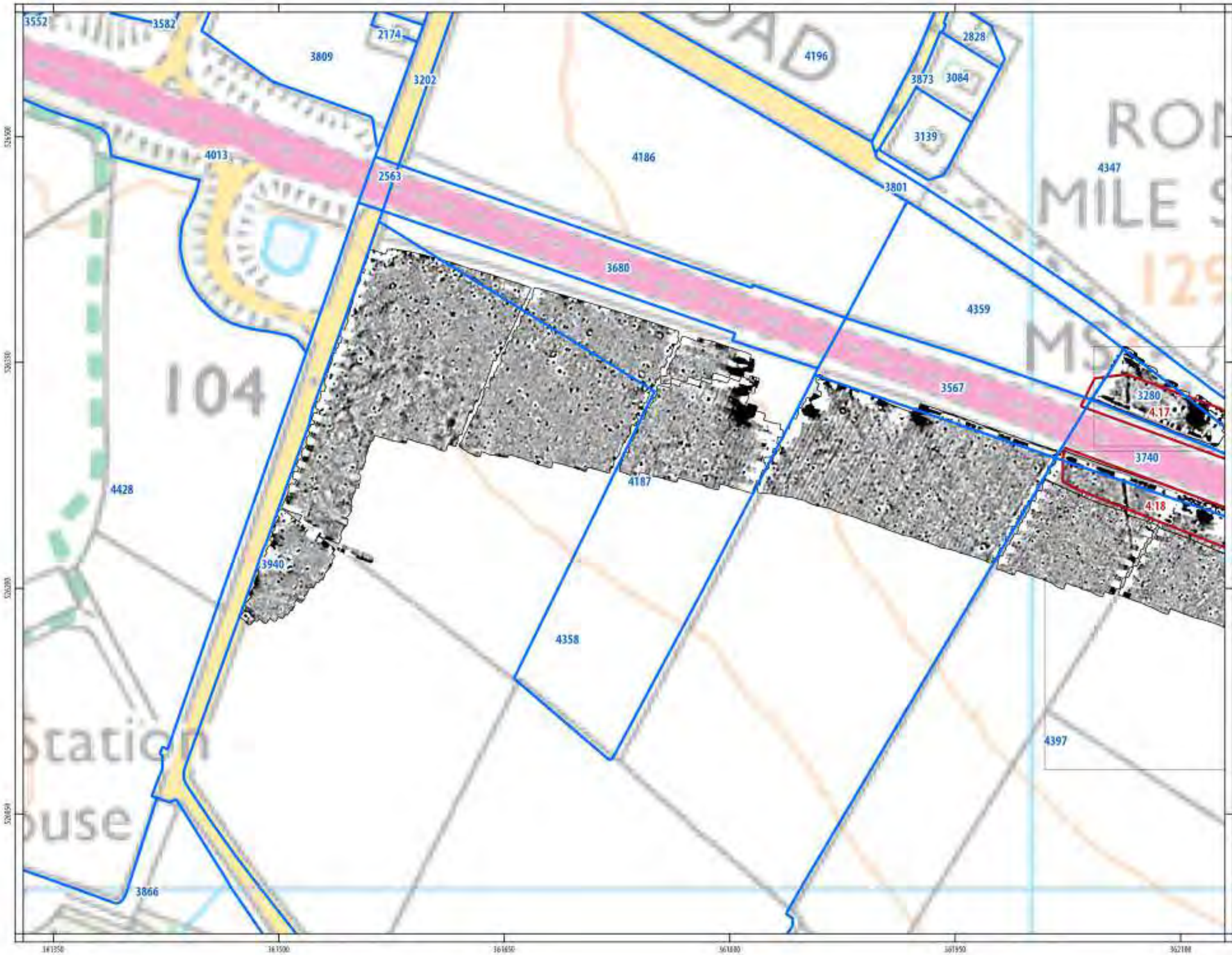






**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

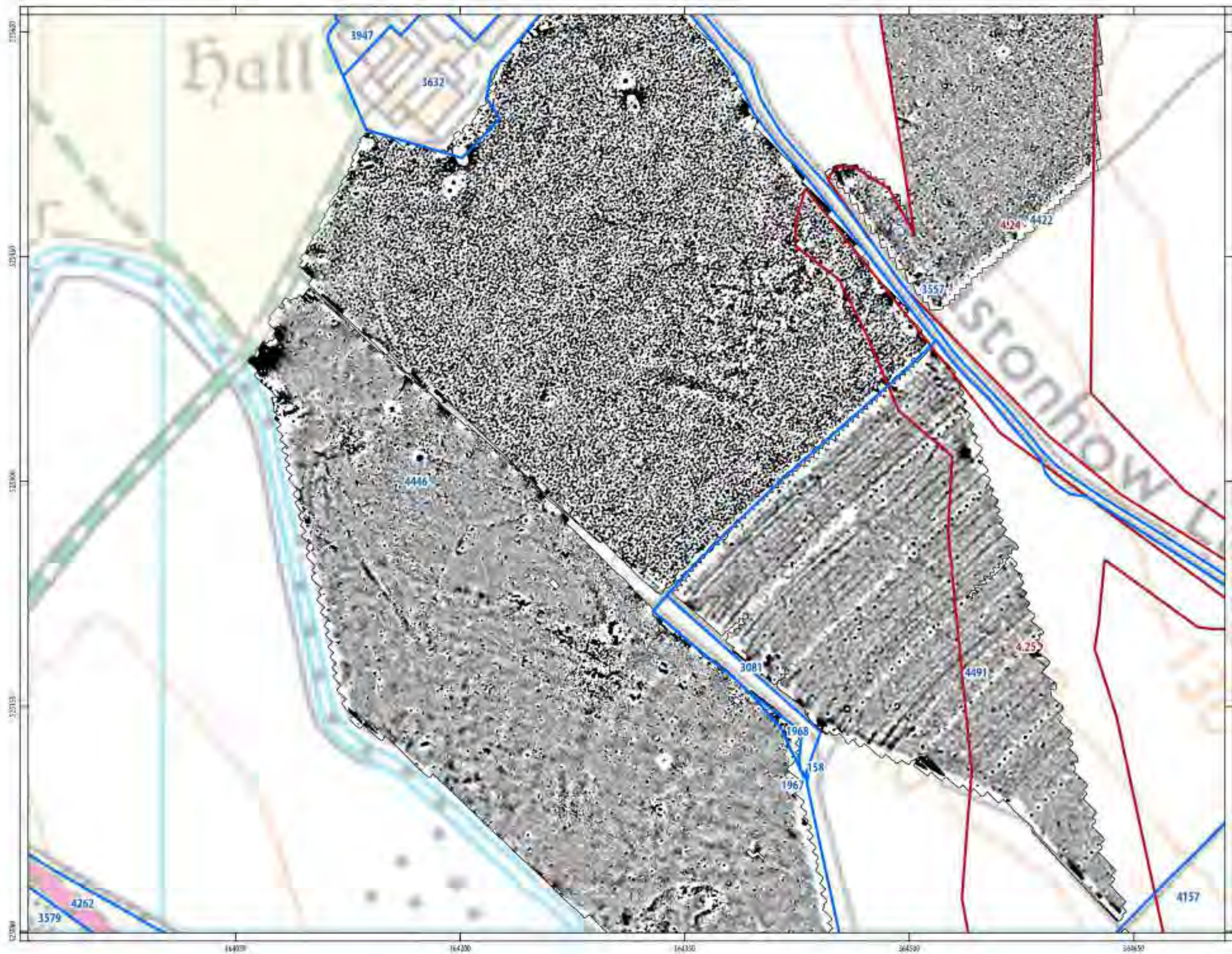


**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England







**Phase 2 Survey**

- ▭ Phase 1 (overhead) Survey Area
- ▭ Phase 2 (excavated) Survey Area
- ▭ Constructed Features (Fences)
- ▭ Scheduled Monuments



**PROJECT**

A1110 - A66 Transverse Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

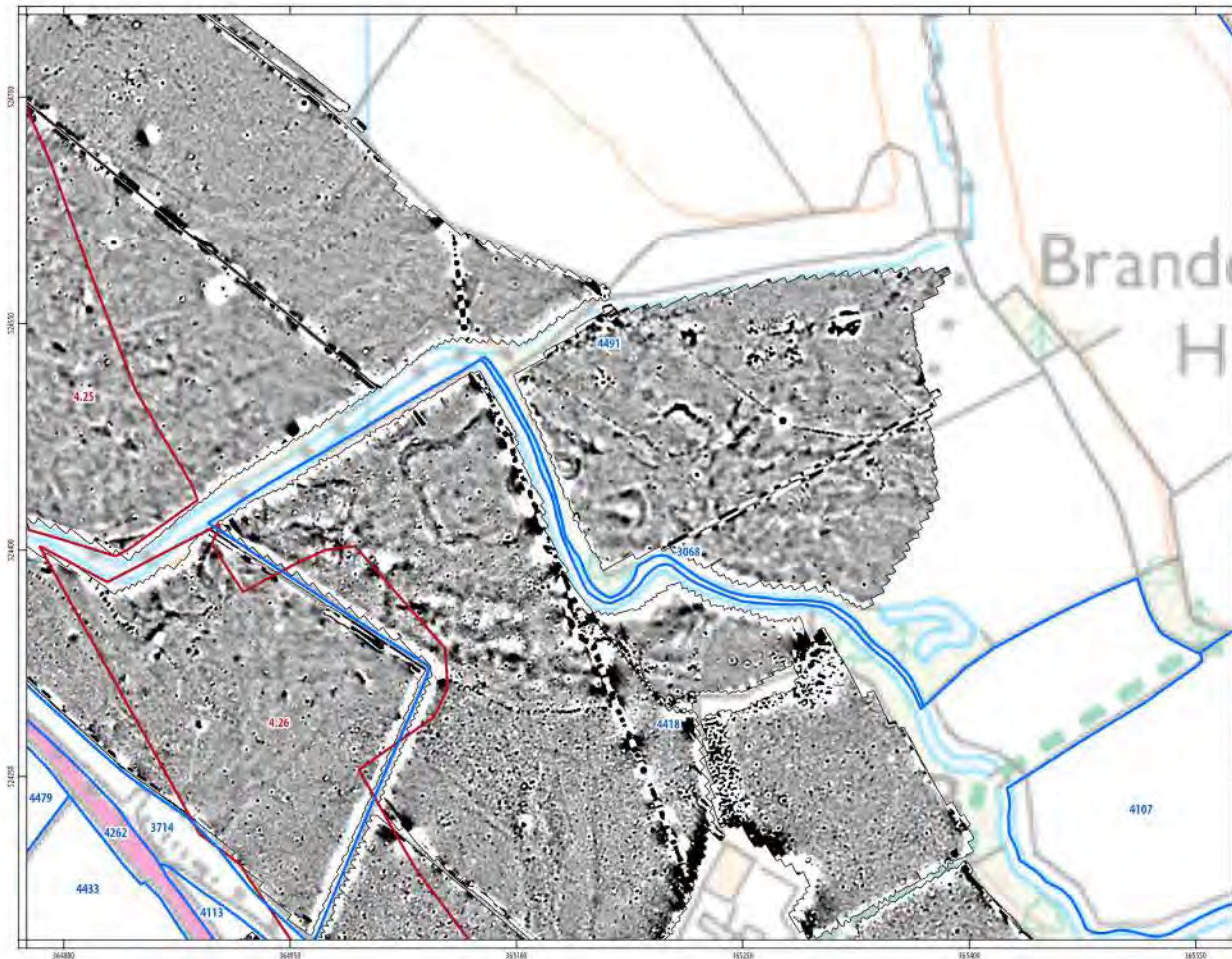


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument



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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

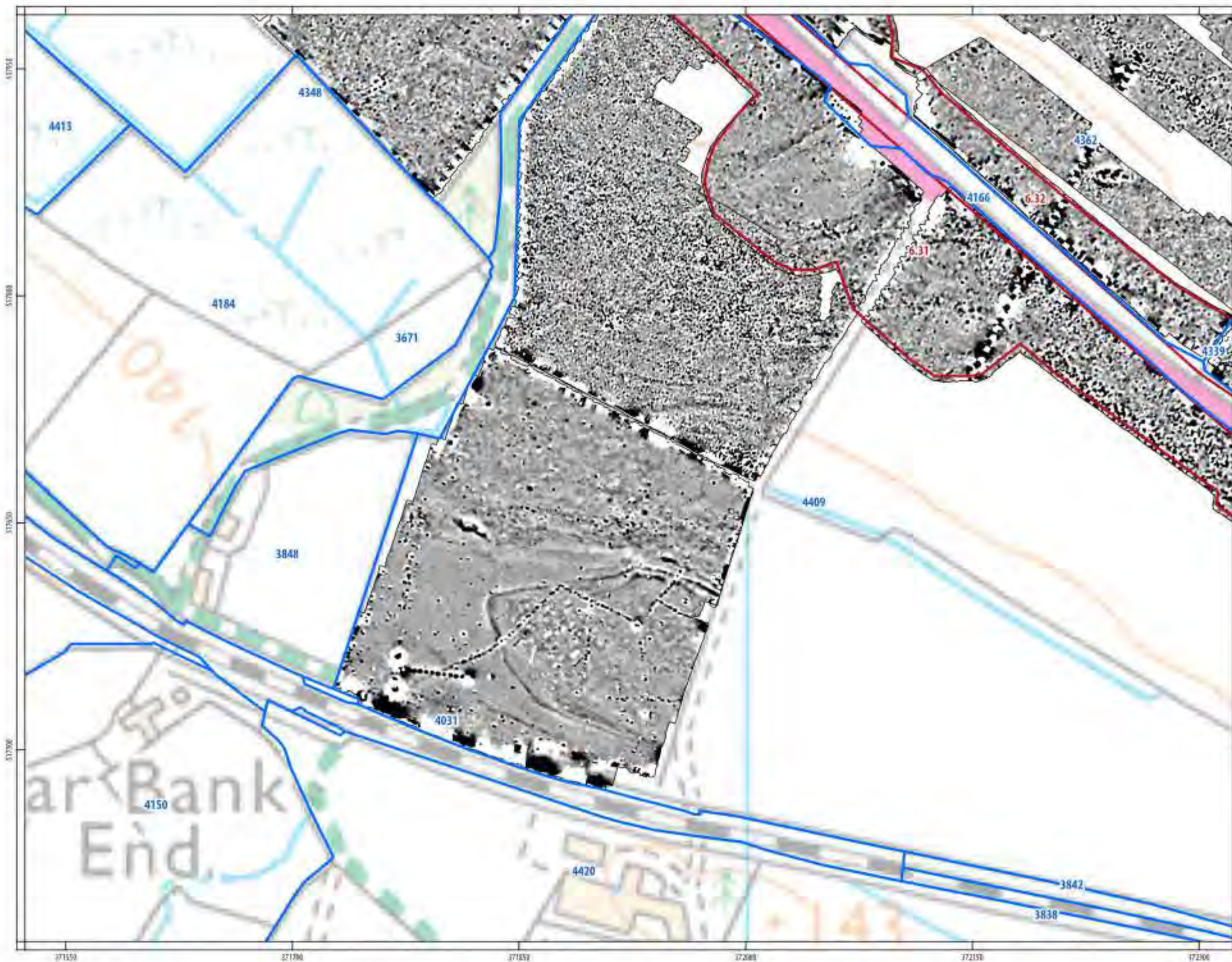


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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument

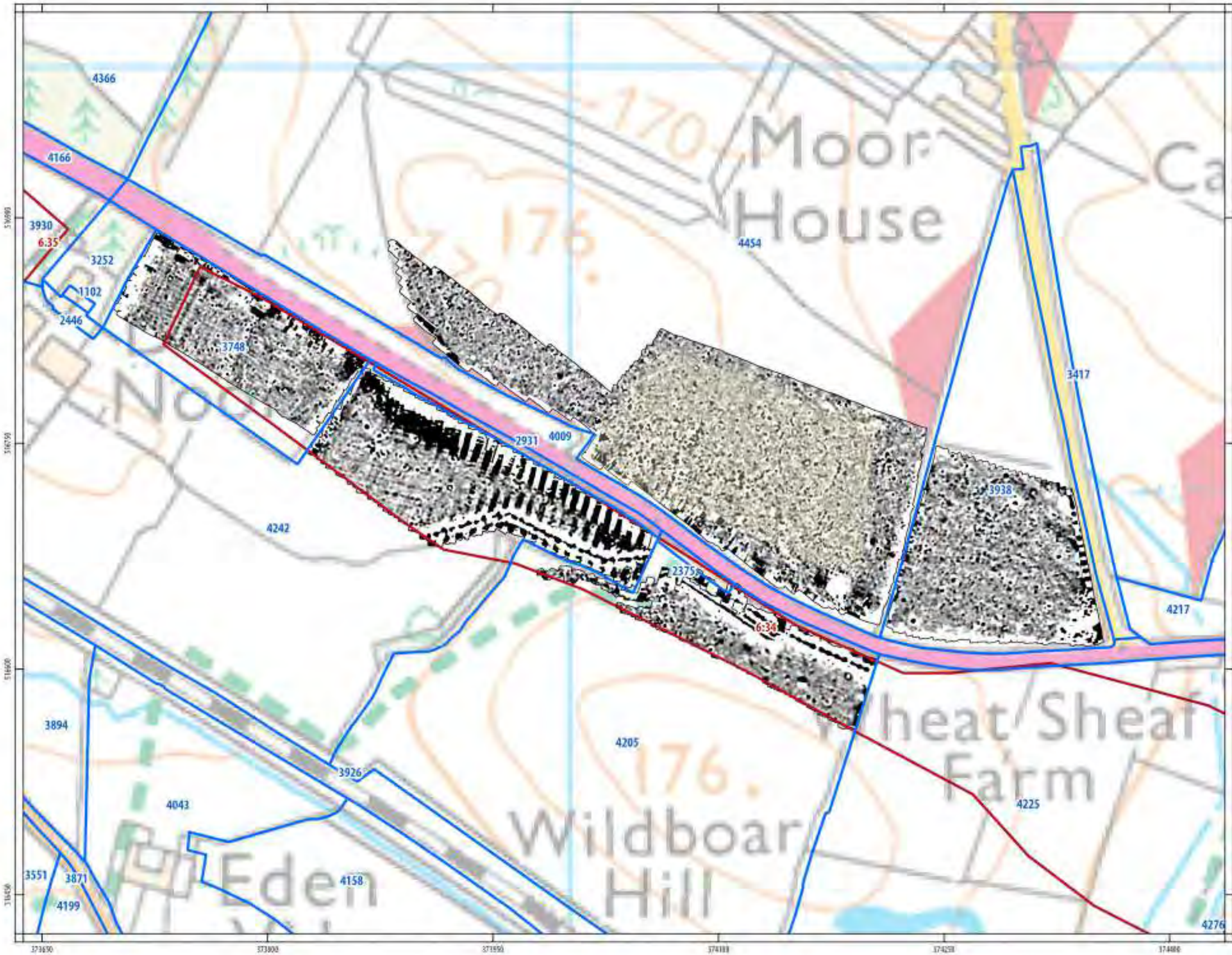
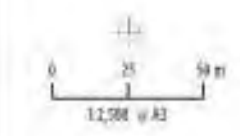


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**Phase 2 Survey**

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- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

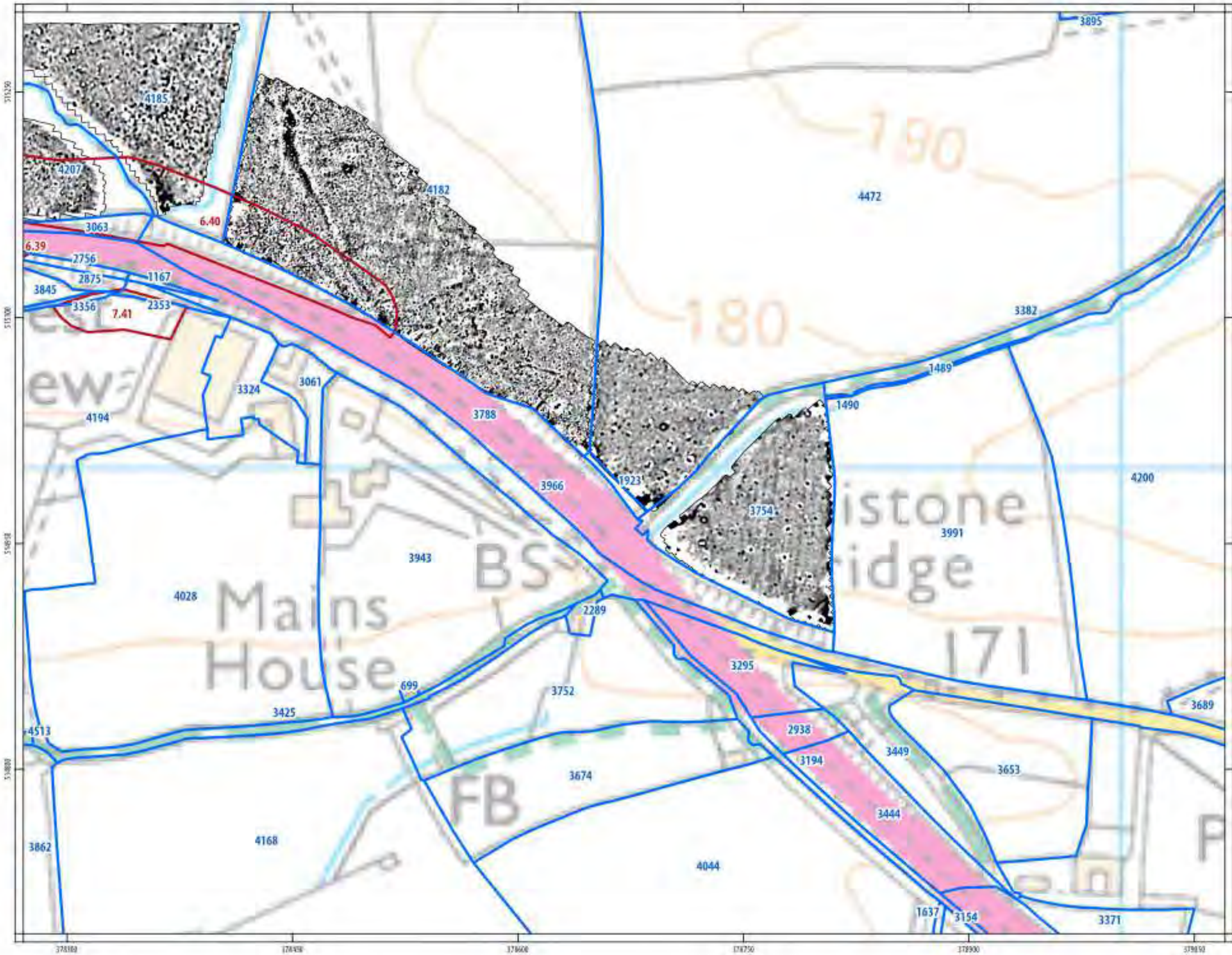
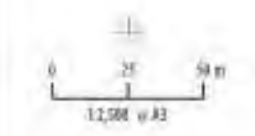


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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

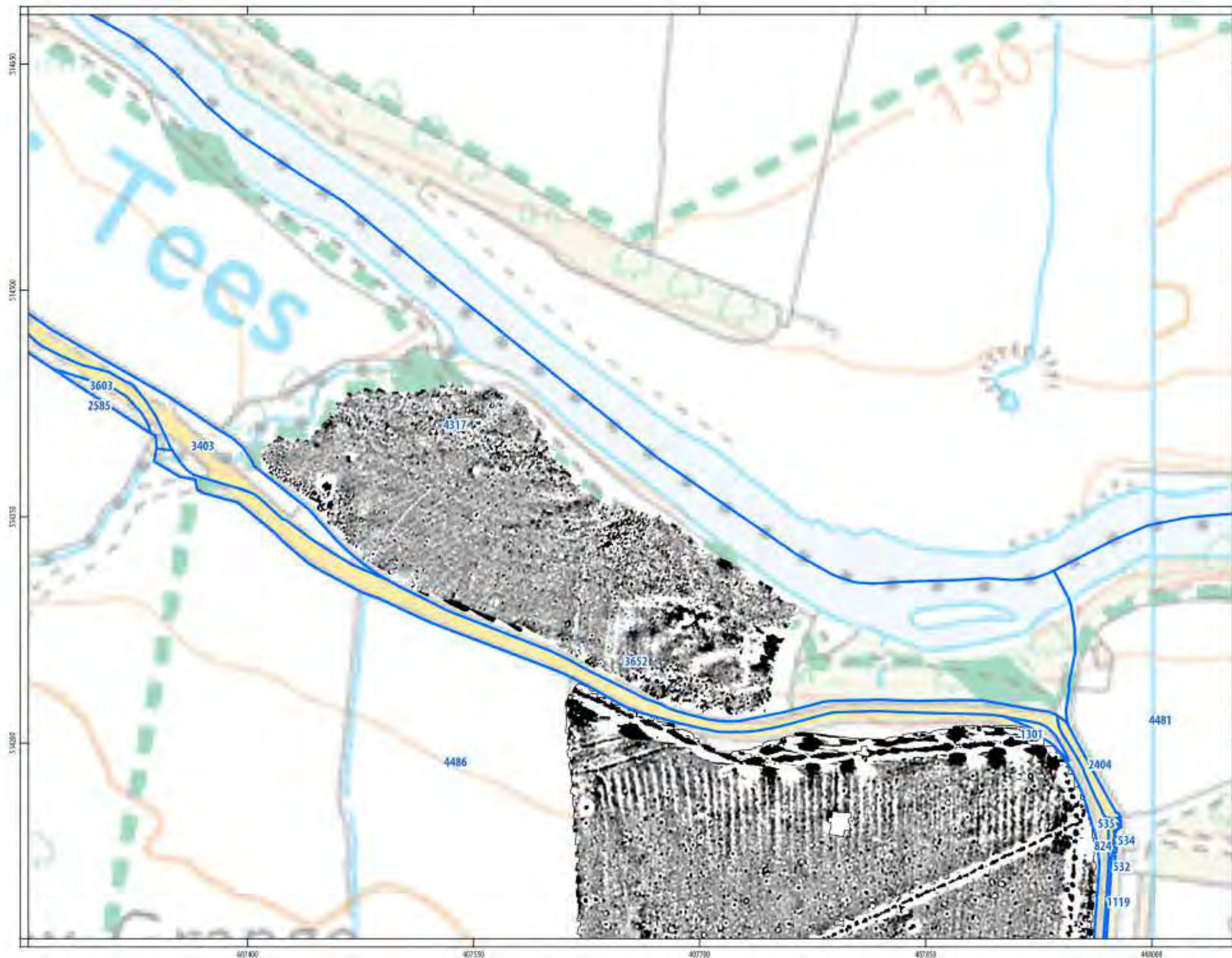
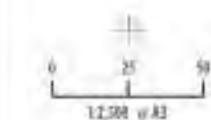


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**Phase 2 Survey**

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- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ Scheduled Monument

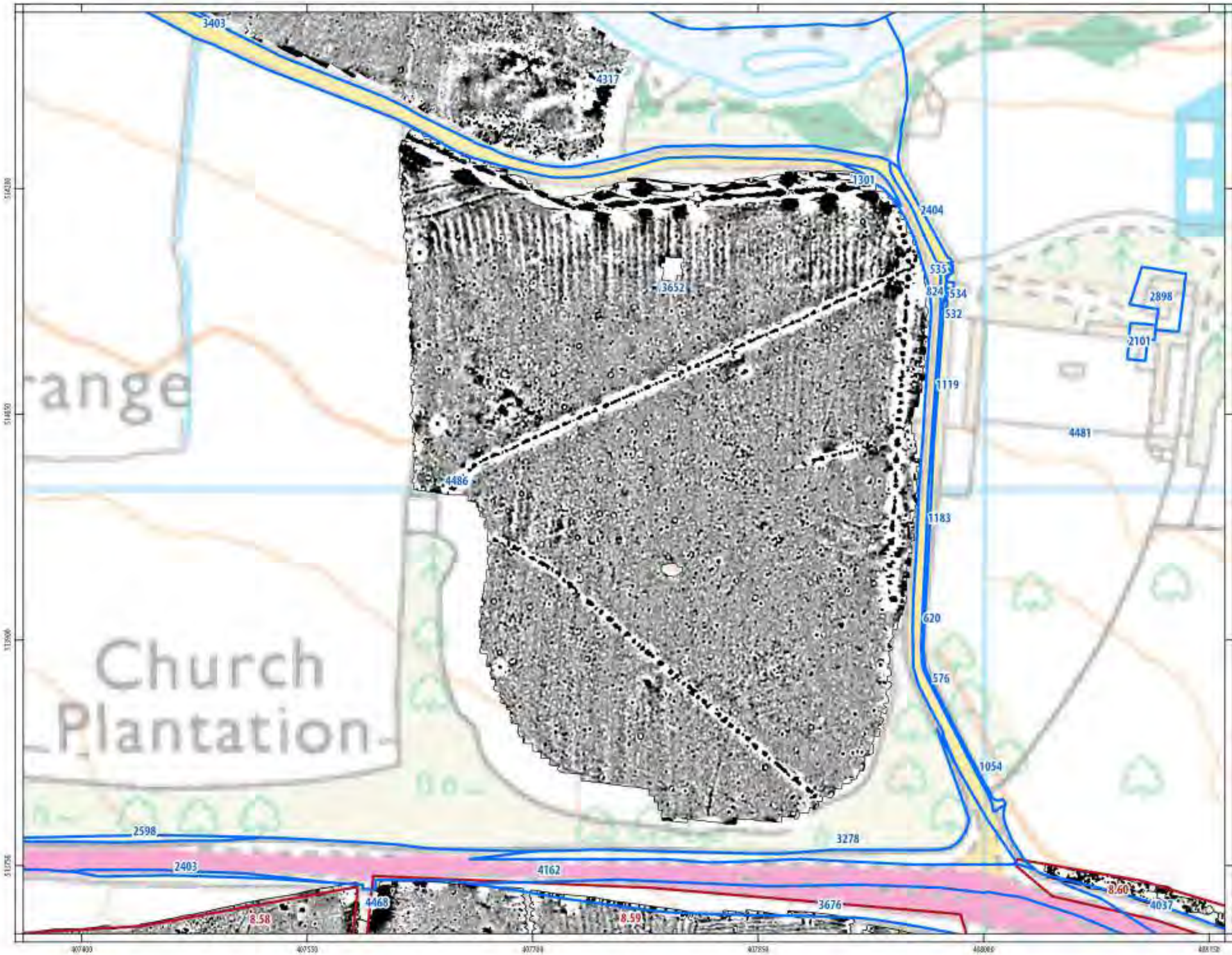
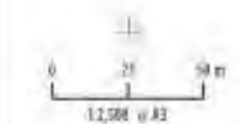


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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

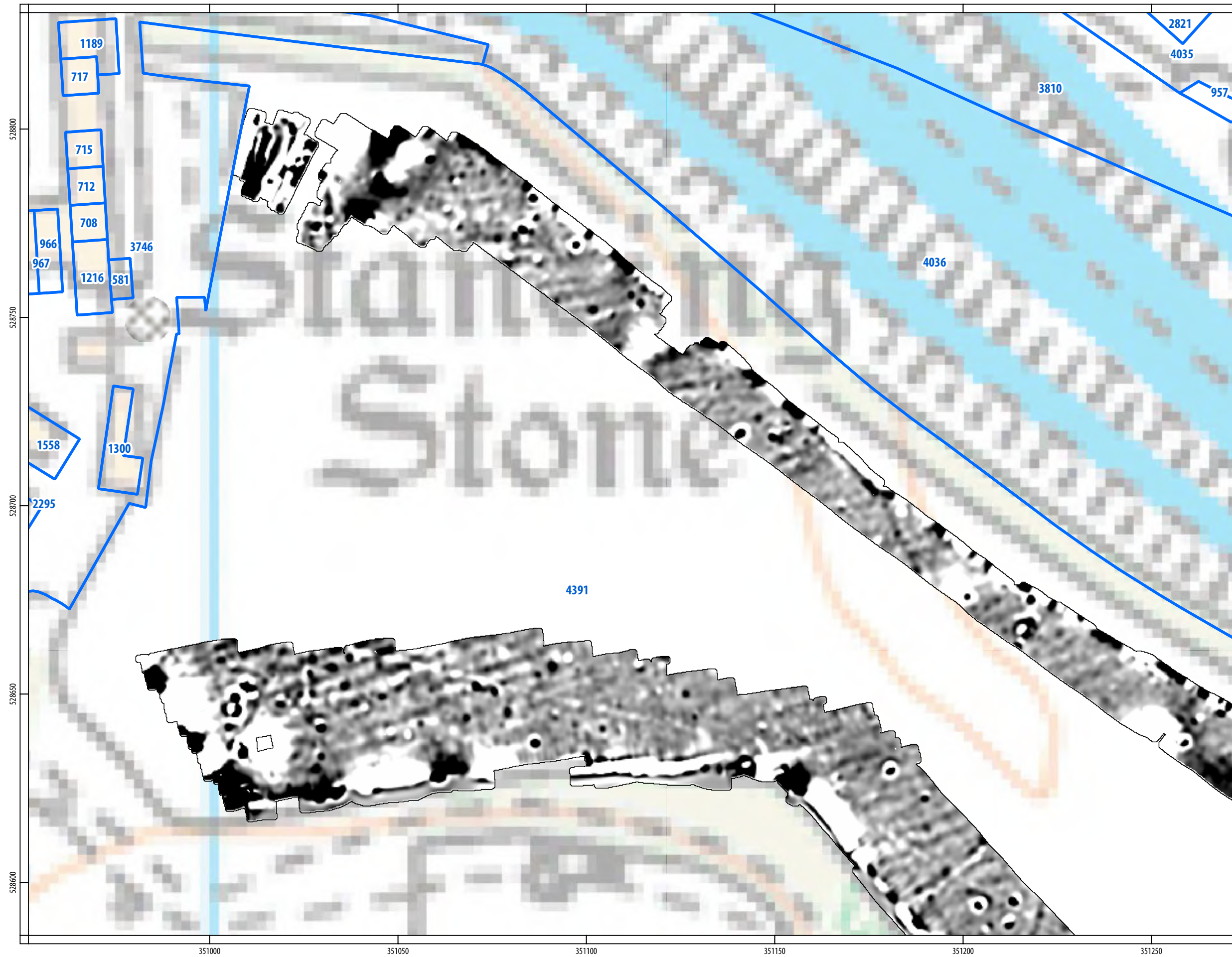


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

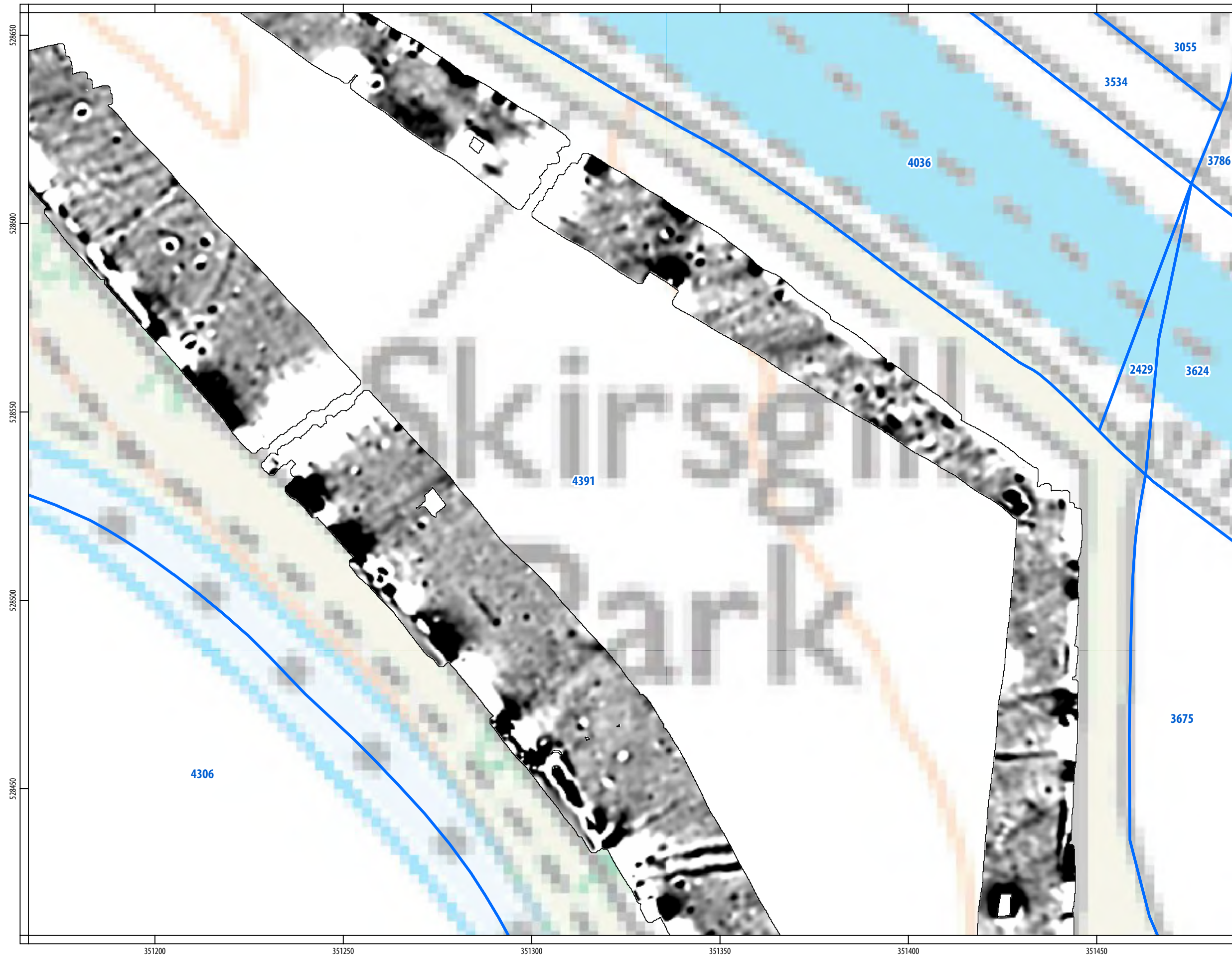


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument



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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
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- Scheduled Monument

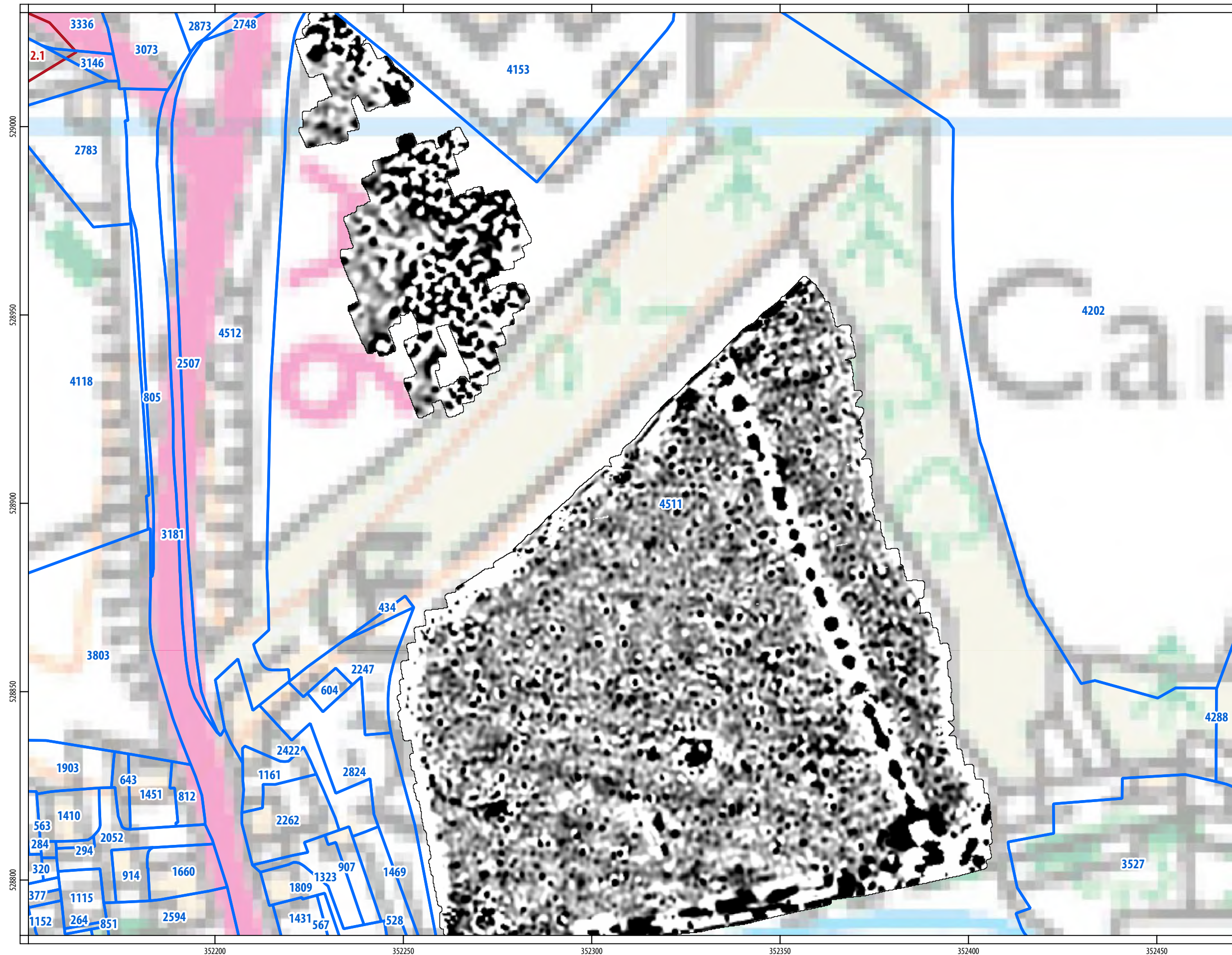
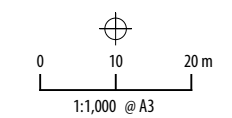


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument

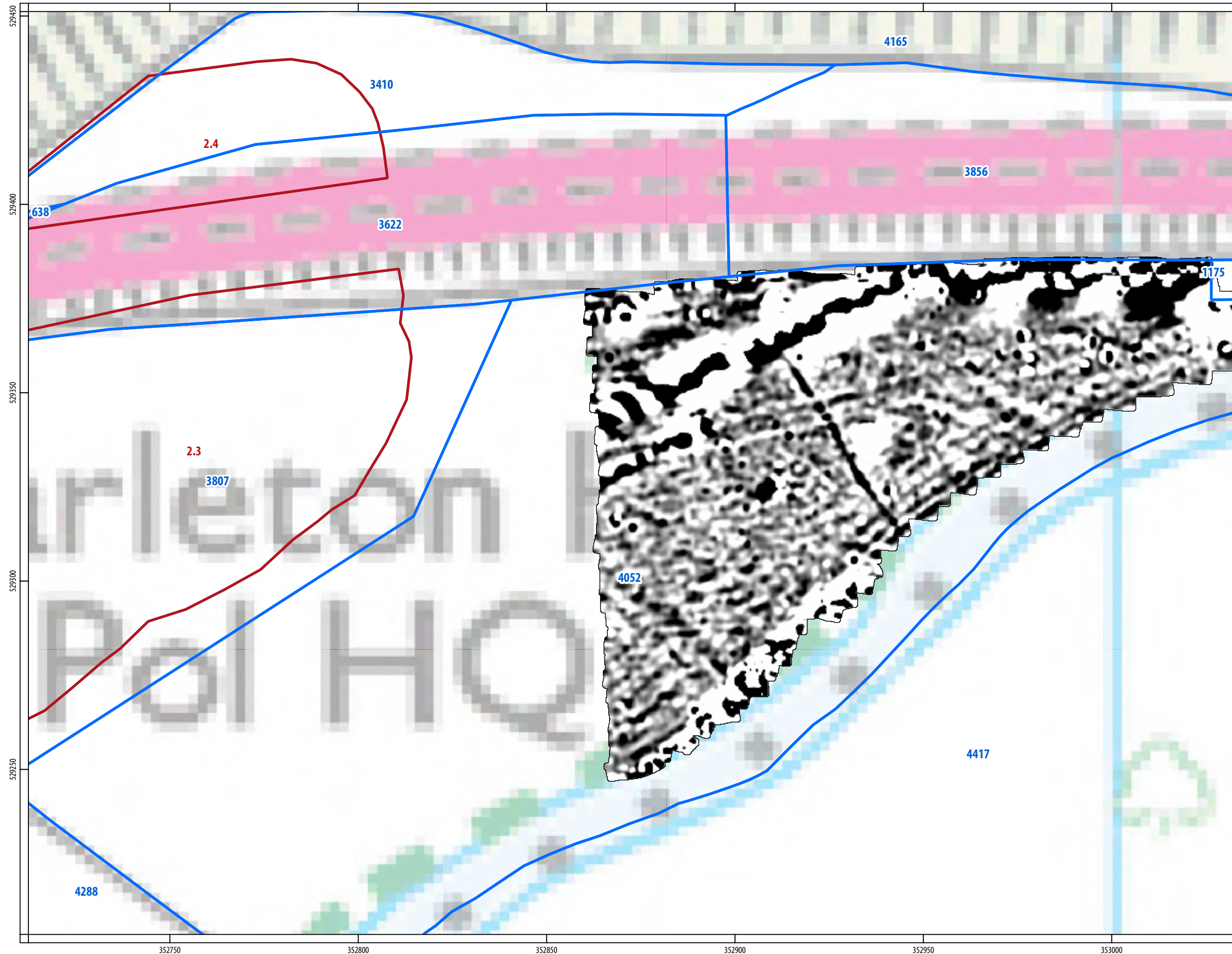


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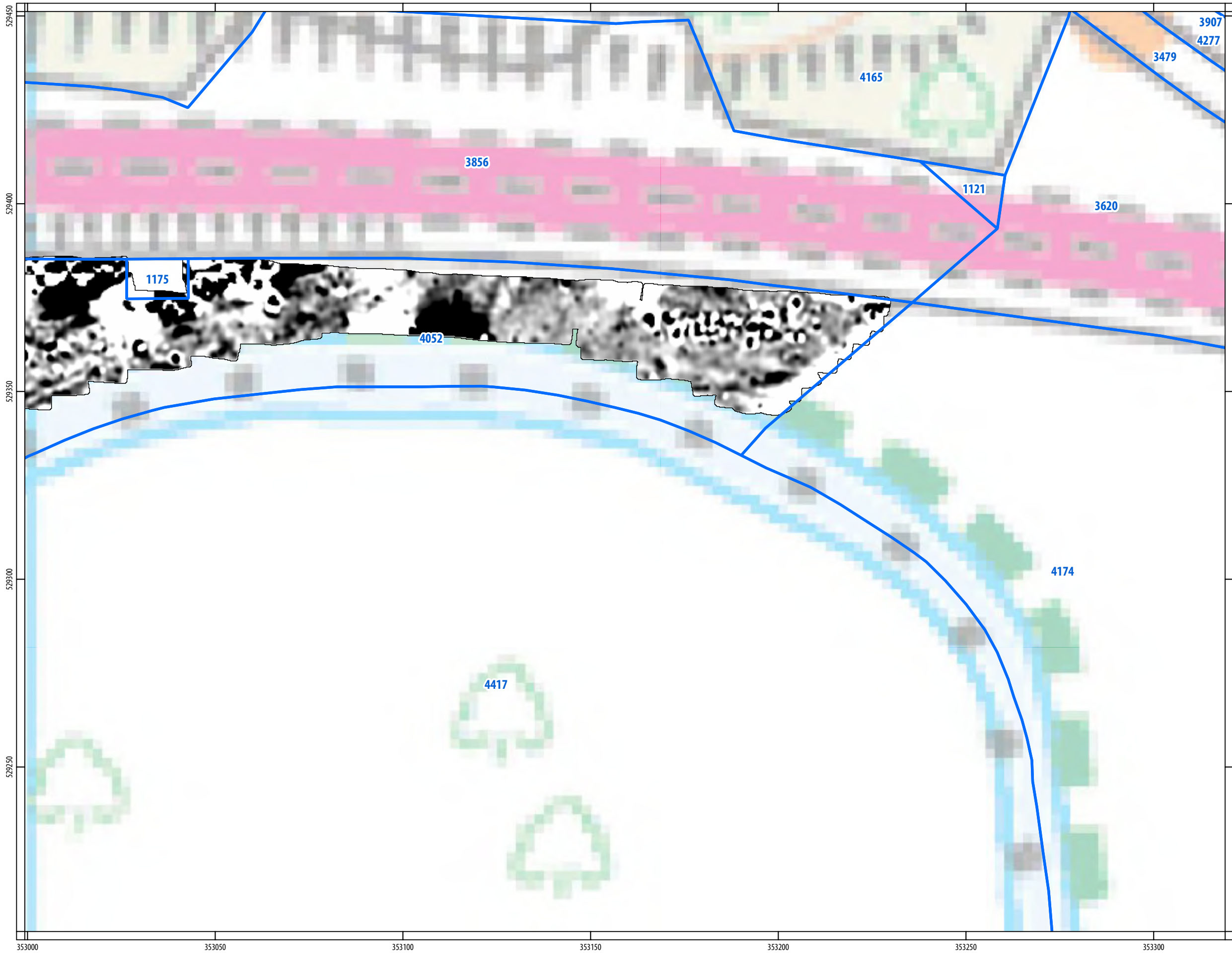
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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

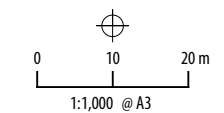


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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

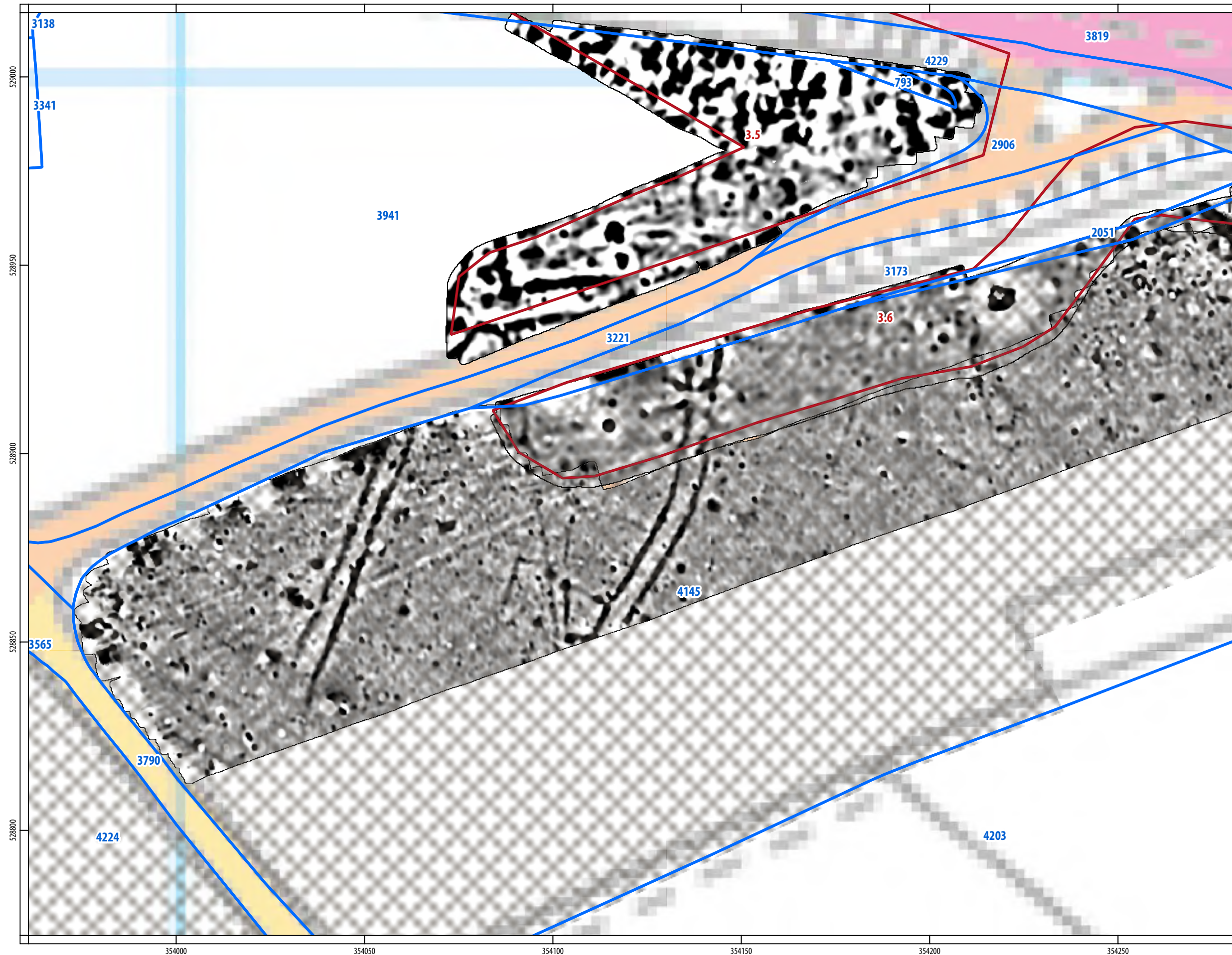


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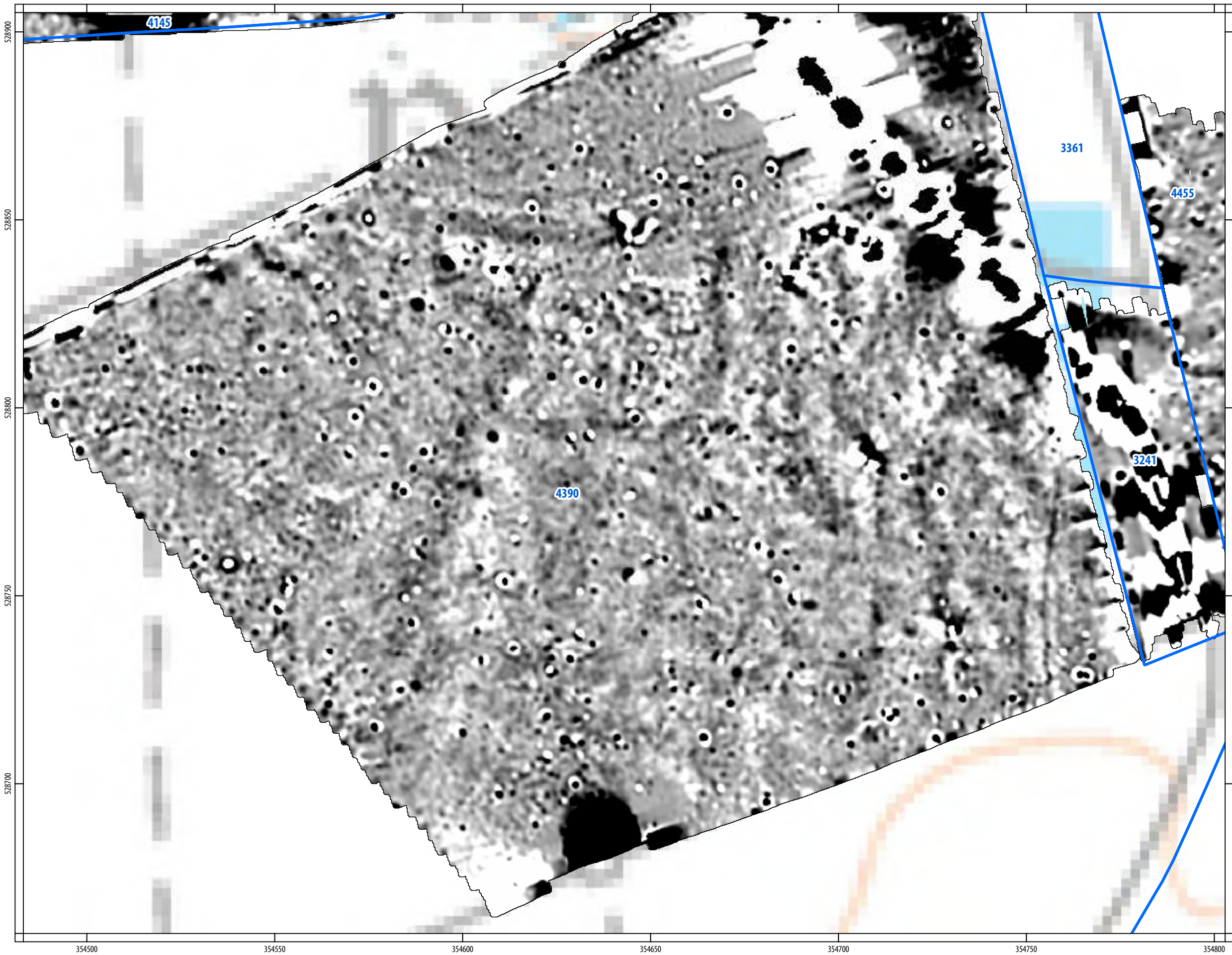
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**Phase 2 Survey**

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- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- ▭ Scheduled Monument

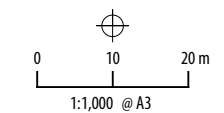


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**Phase 2 Survey**

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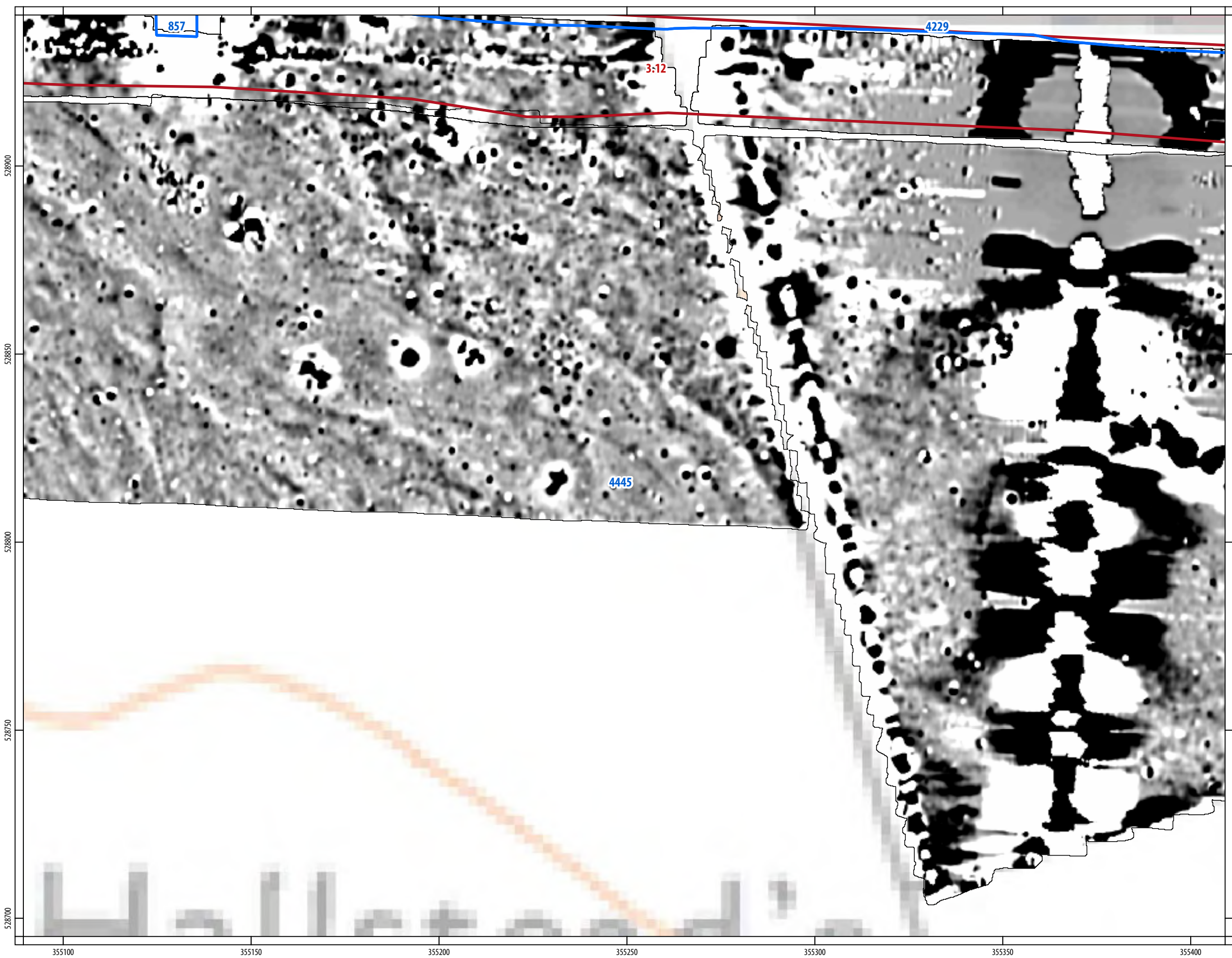
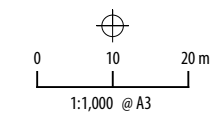


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

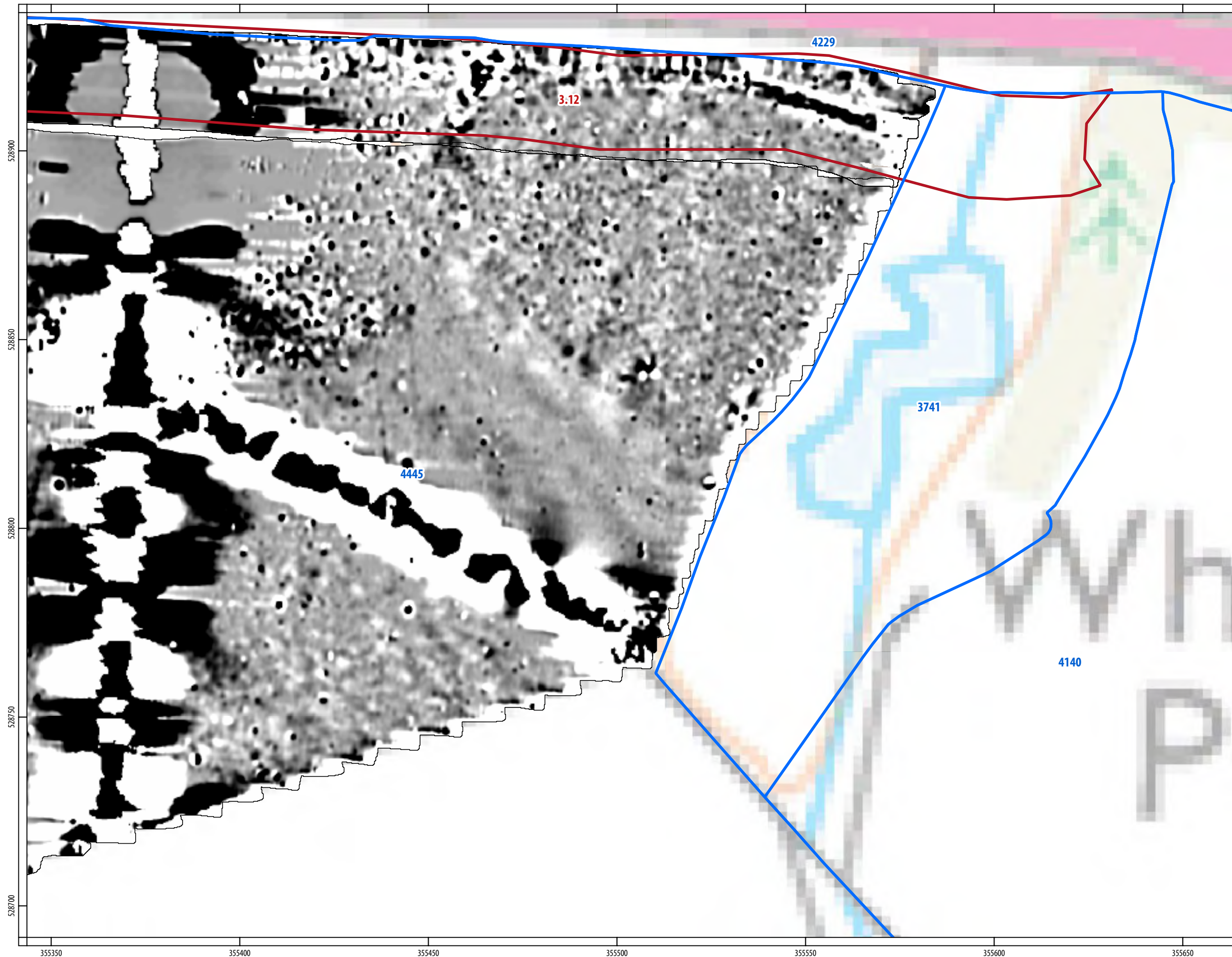


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**Phase 2 Survey**

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-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

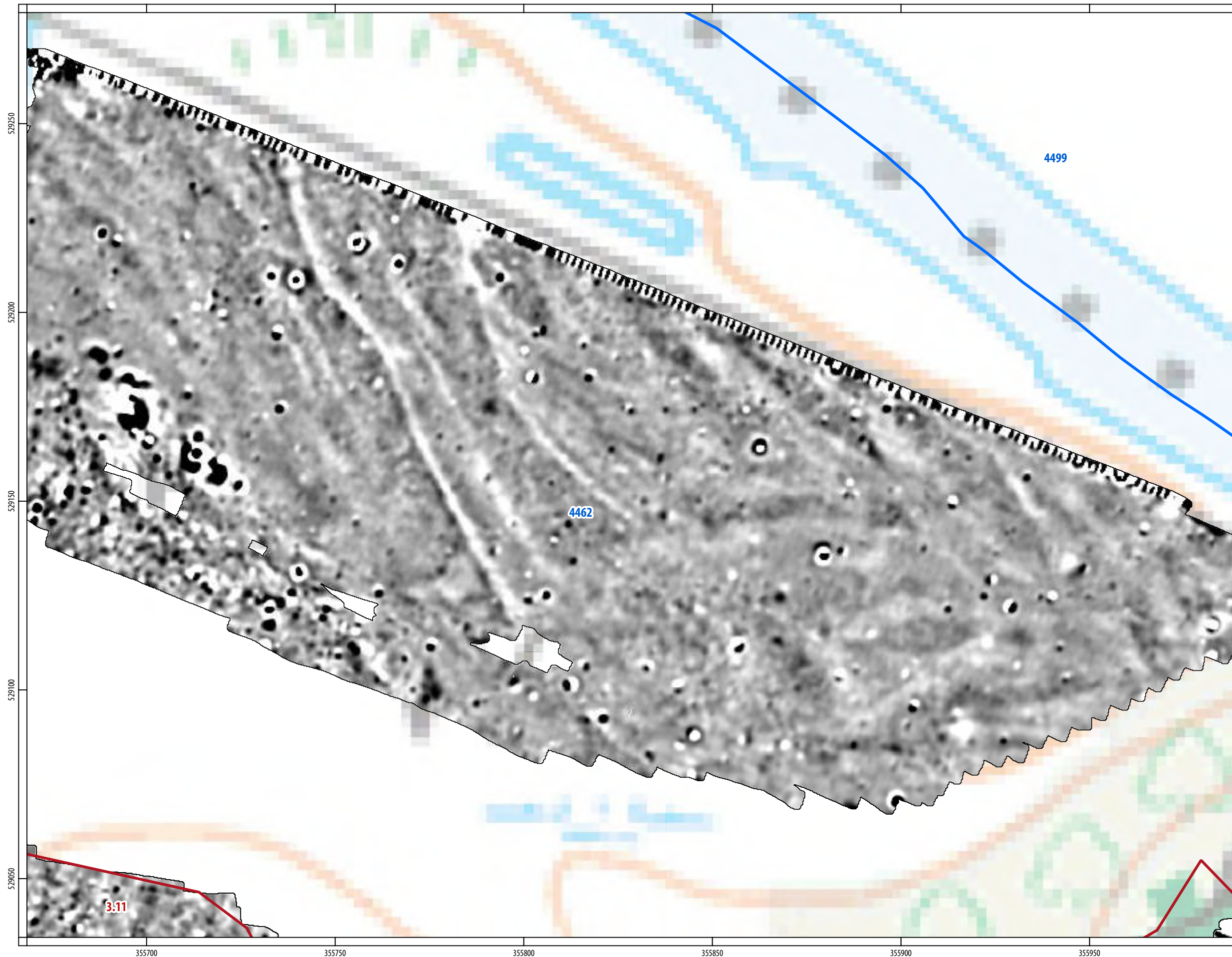


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**Phase 2 Survey**

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-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

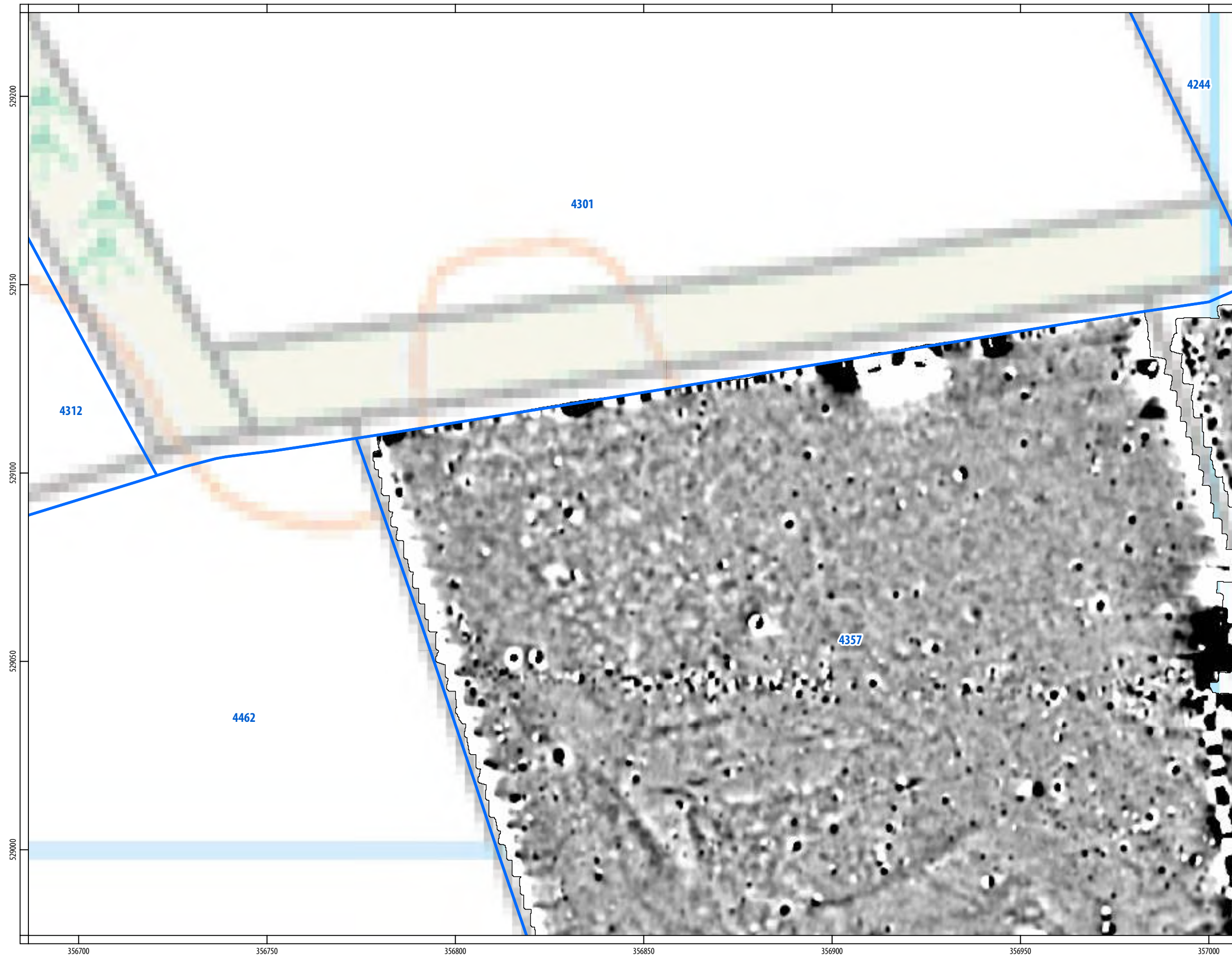


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**Phase 2 Survey**

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-  Phase 2 Geophysical Survey Area
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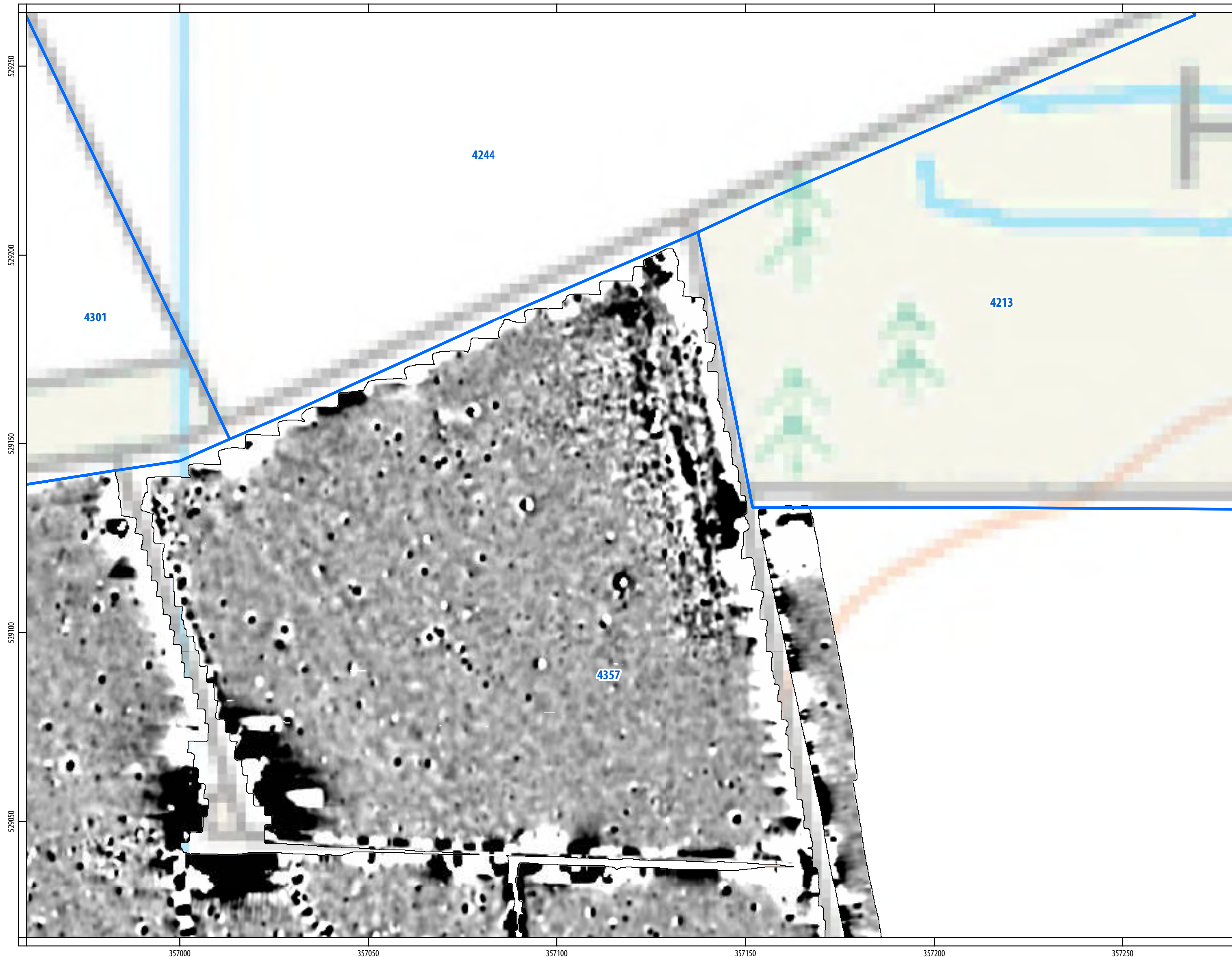


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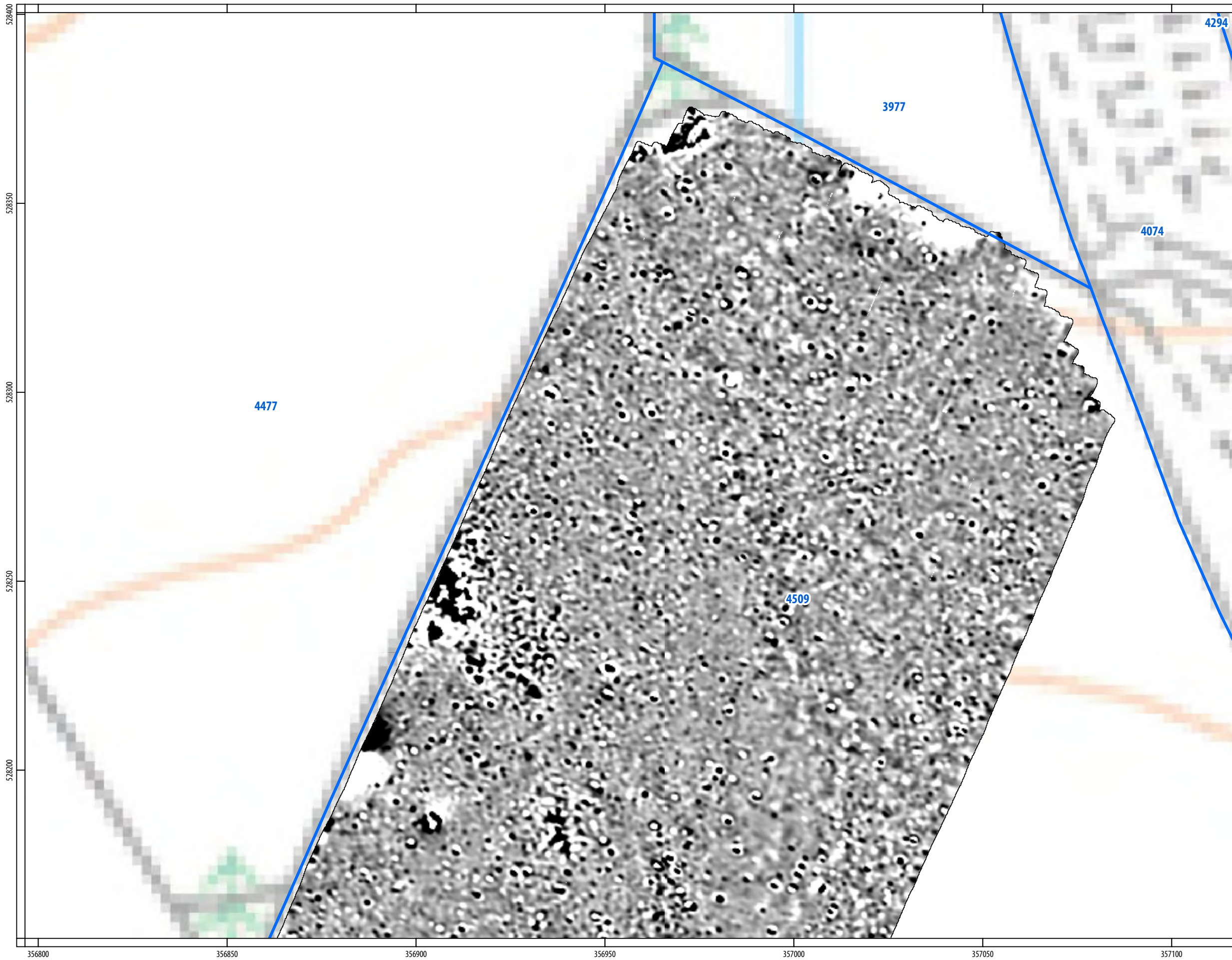
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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
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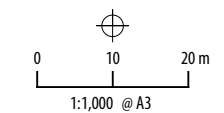


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

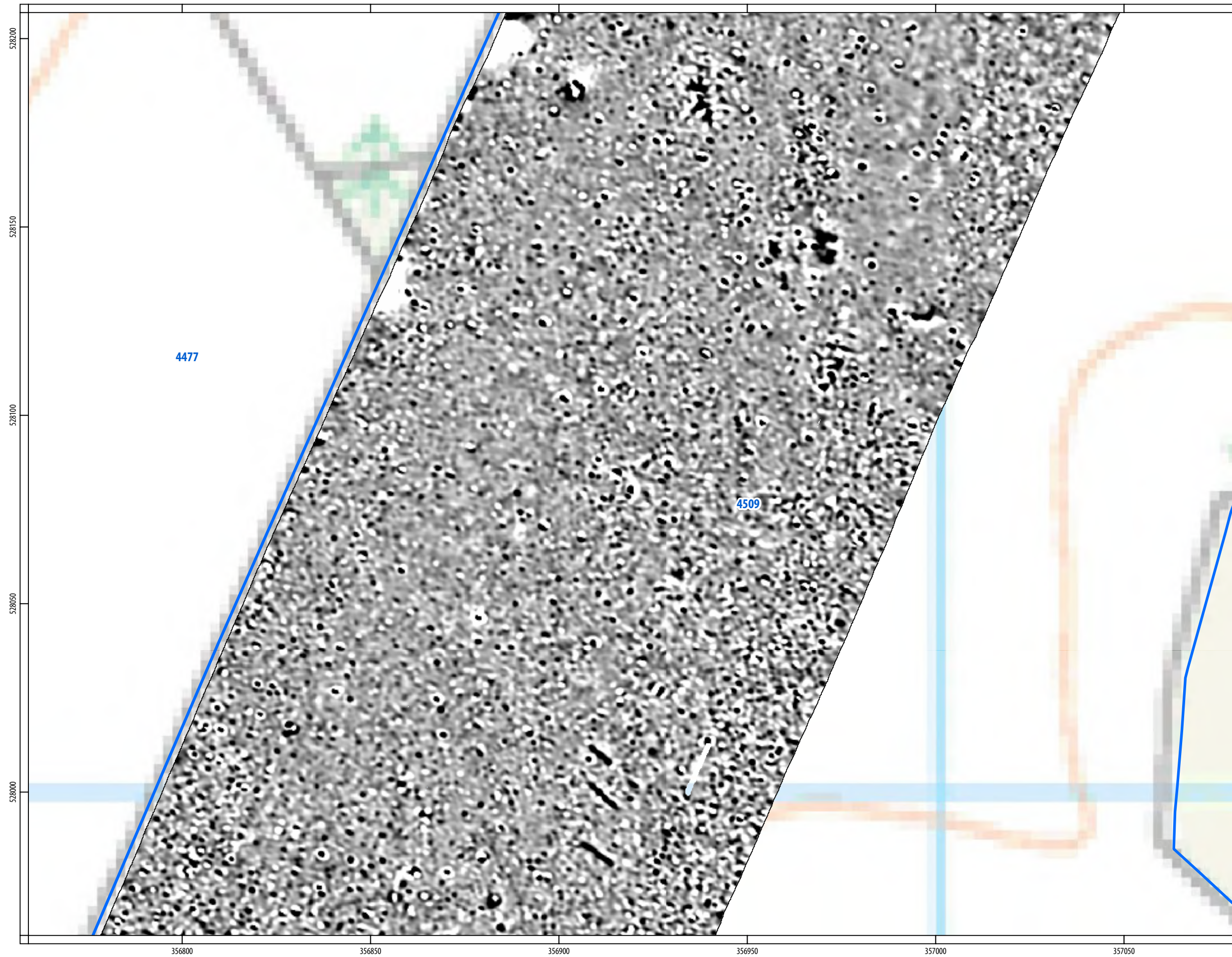
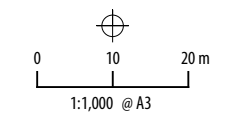


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

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ILLUS 528 Processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

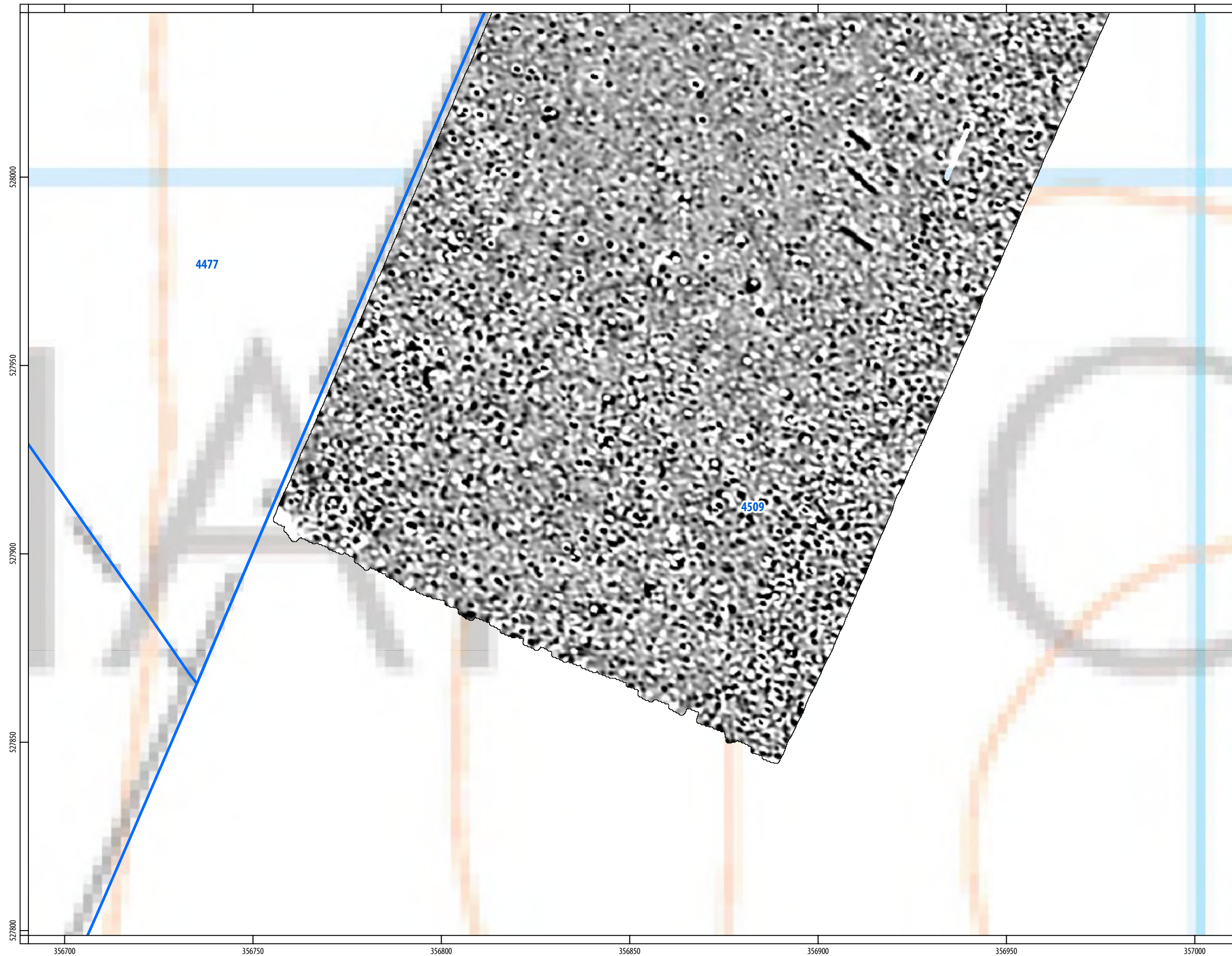
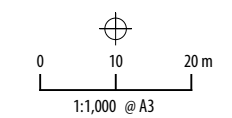


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument

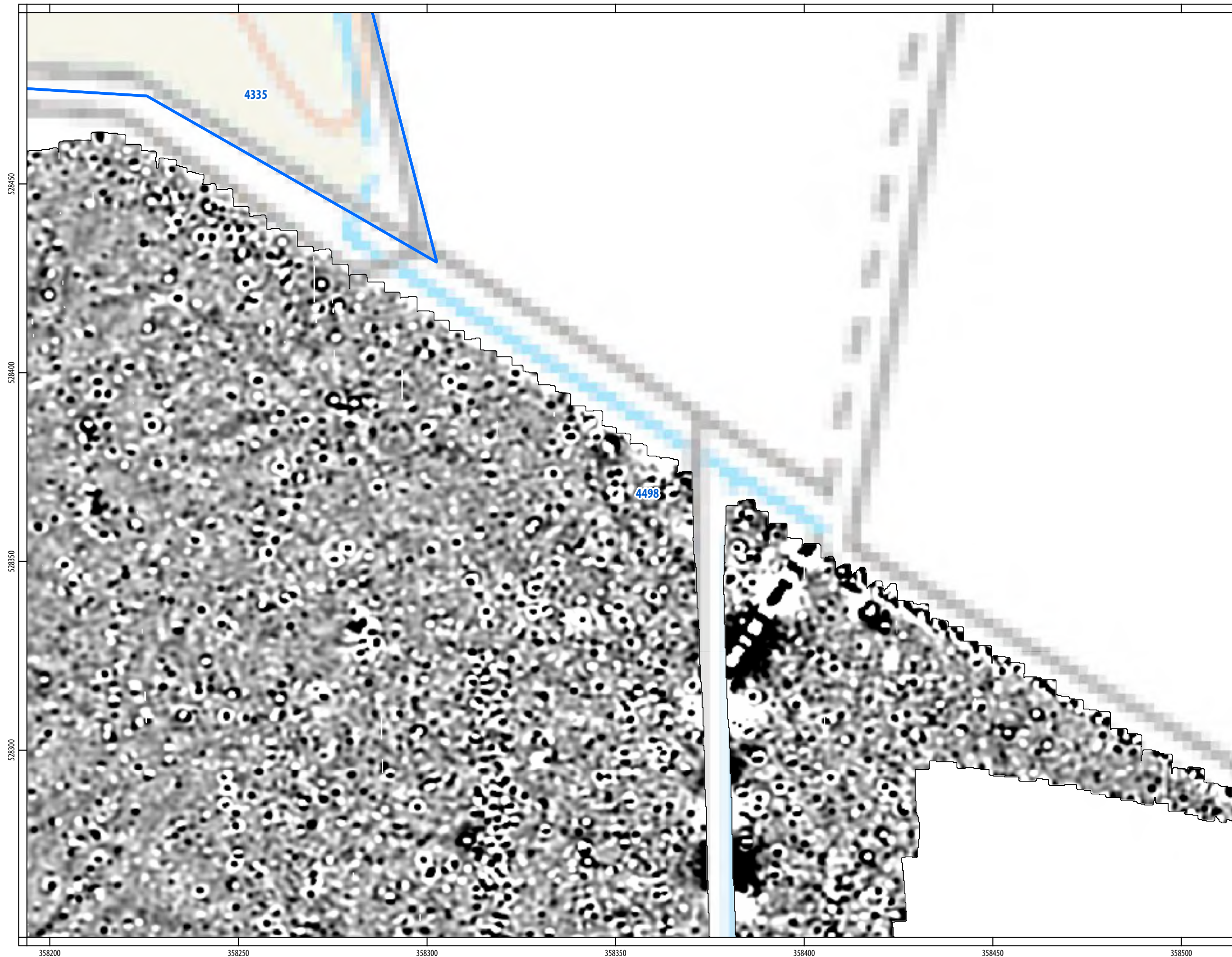


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument

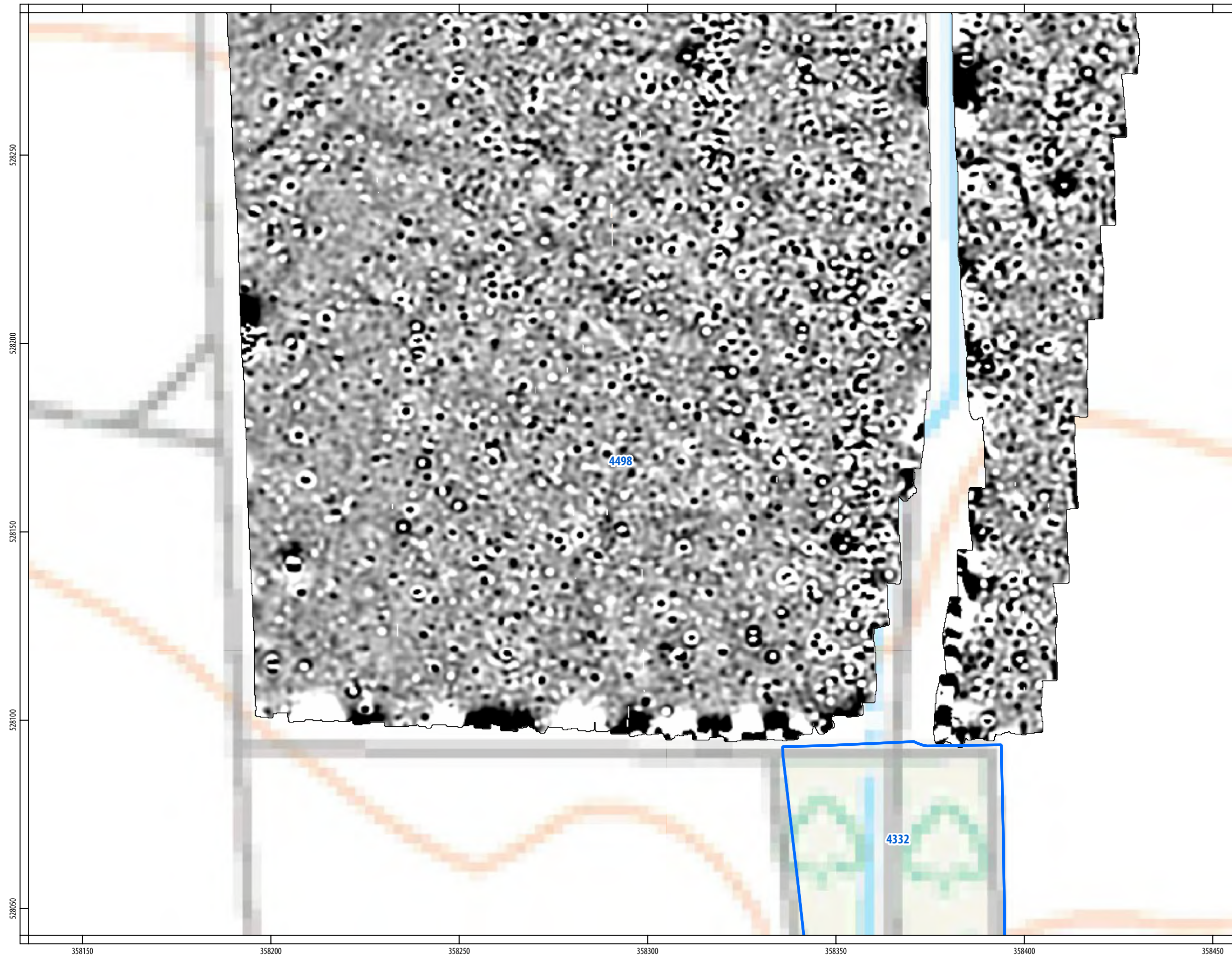


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

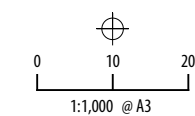


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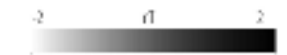
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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

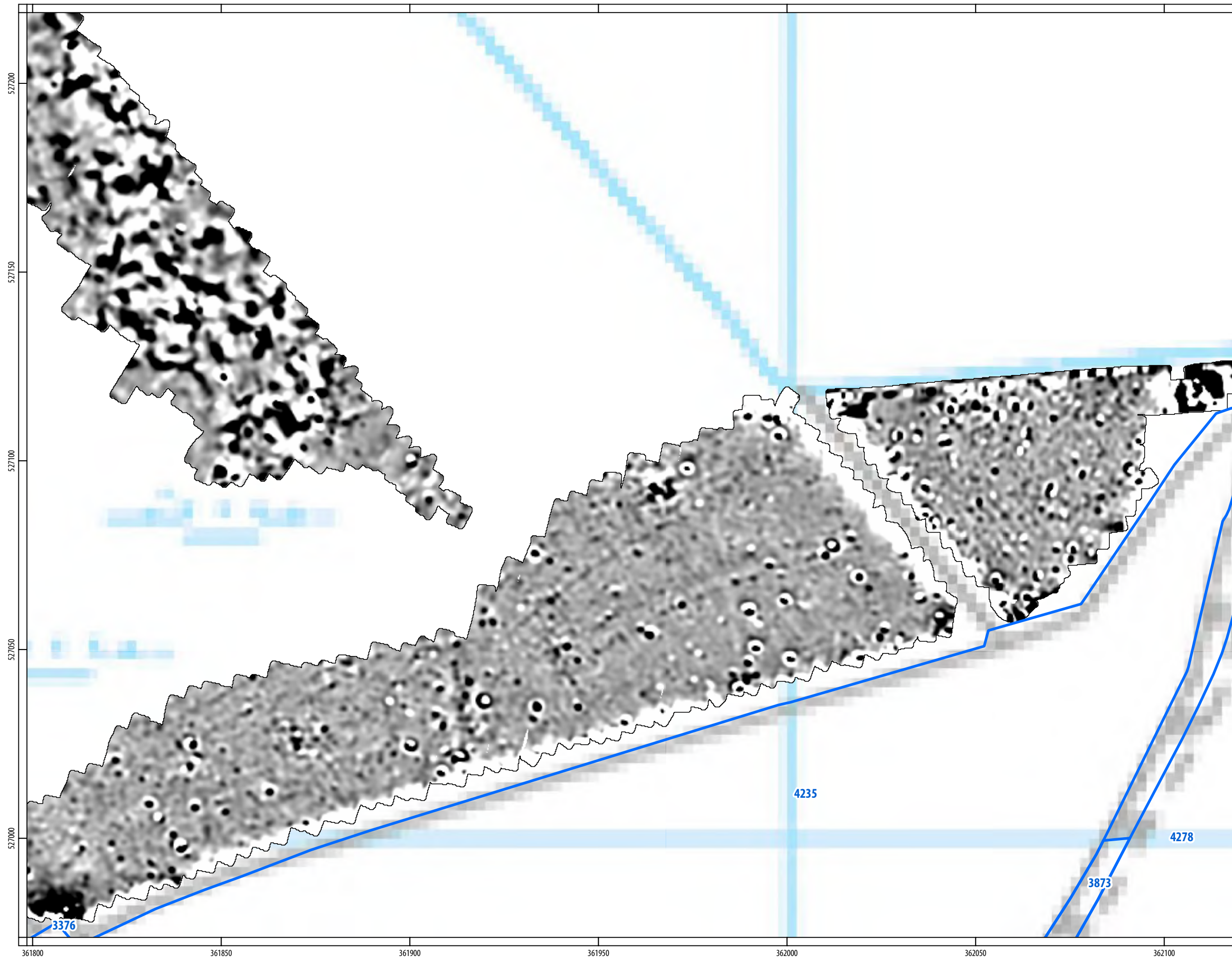


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument

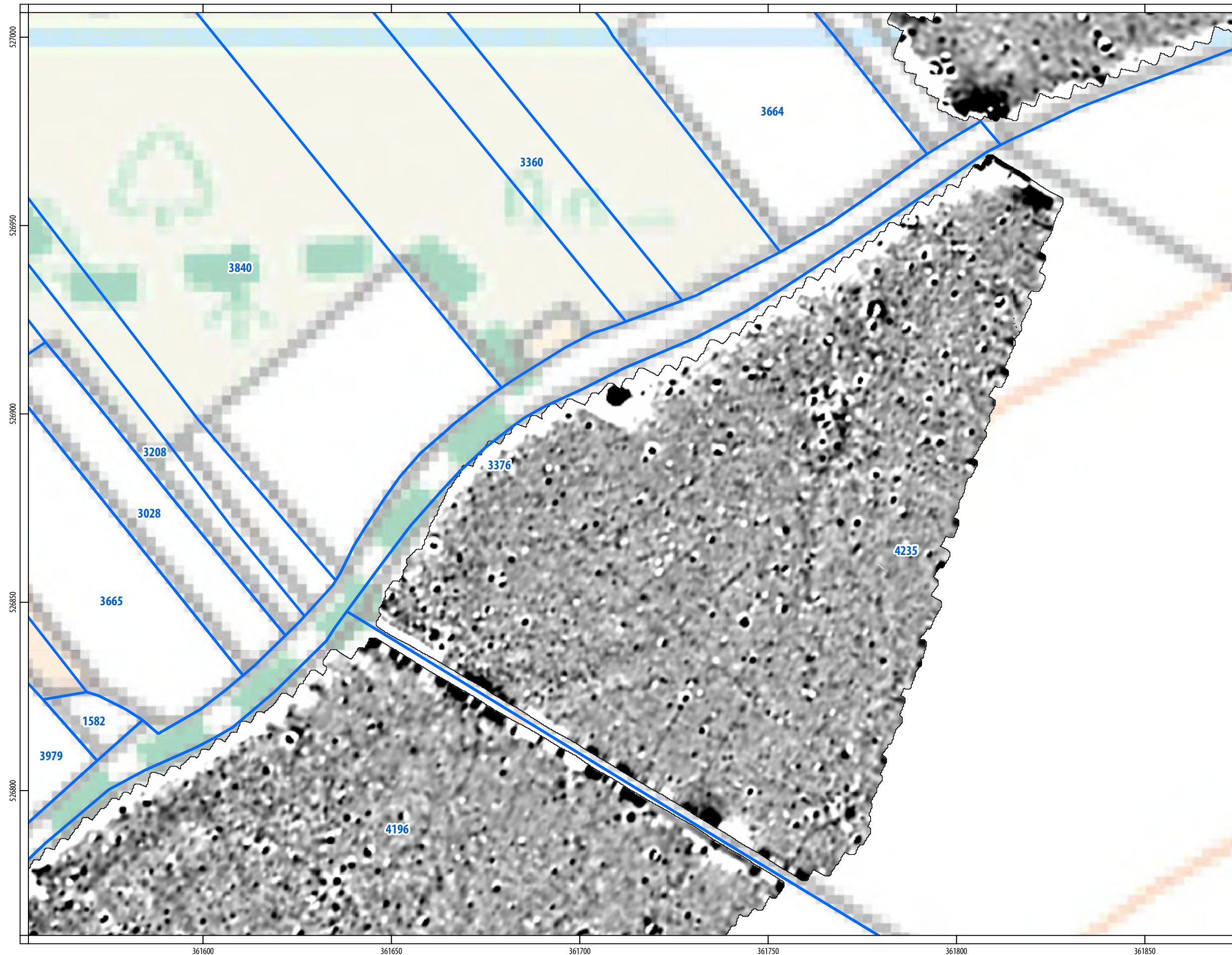


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

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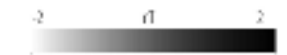
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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

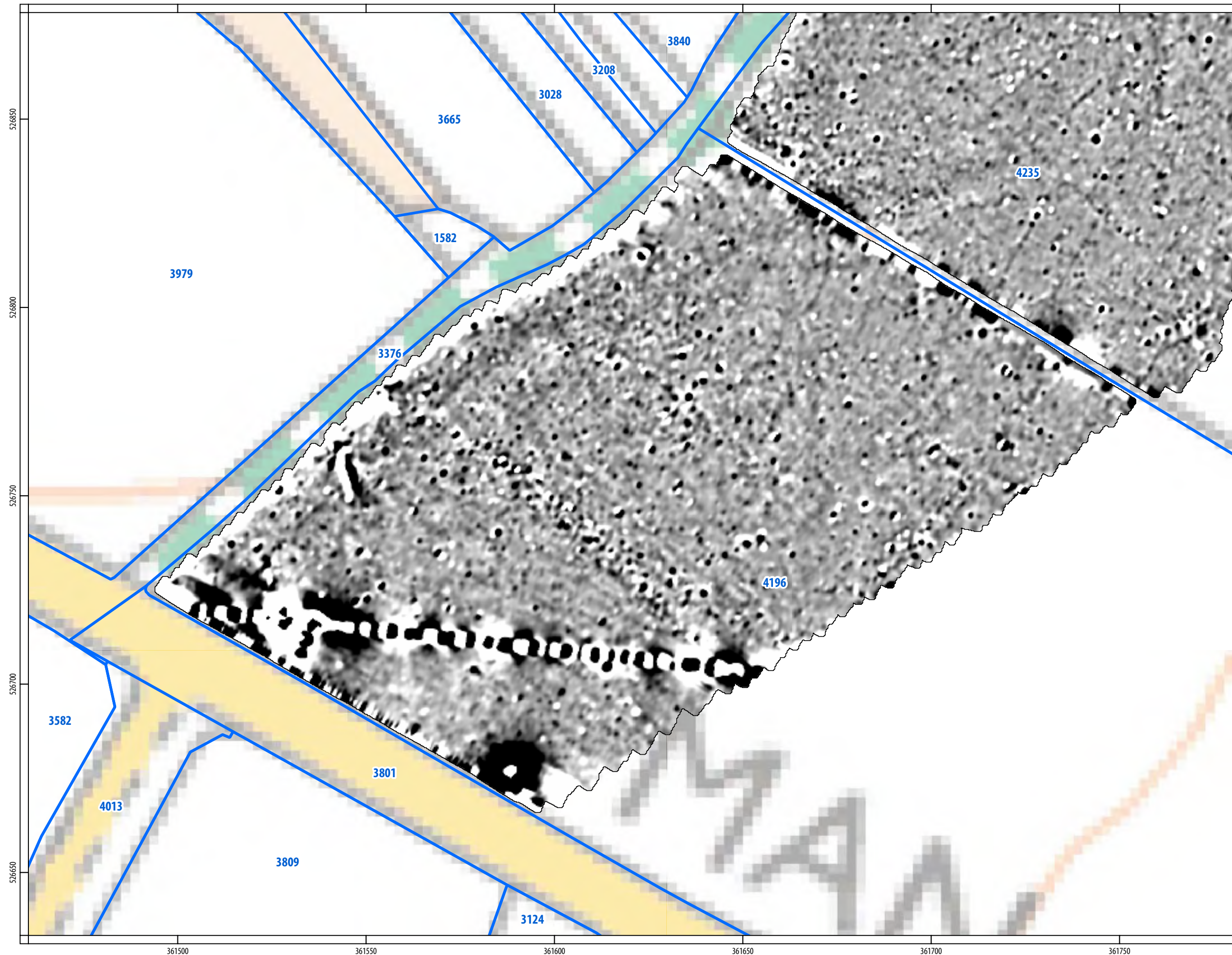


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
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-  Scheduled Monument

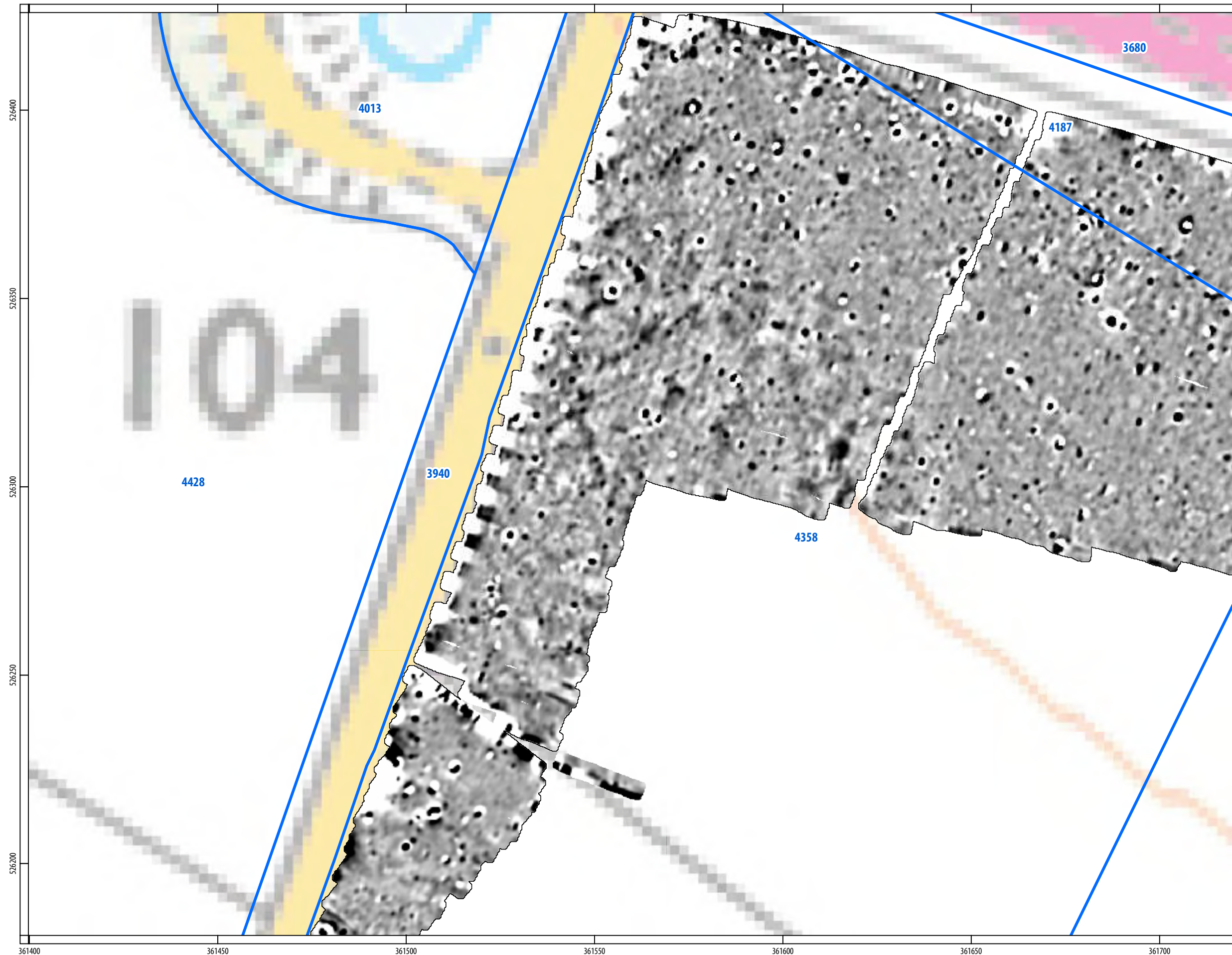
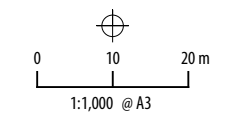


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

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**Phase 2 Survey**

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-  Scheduled Monument

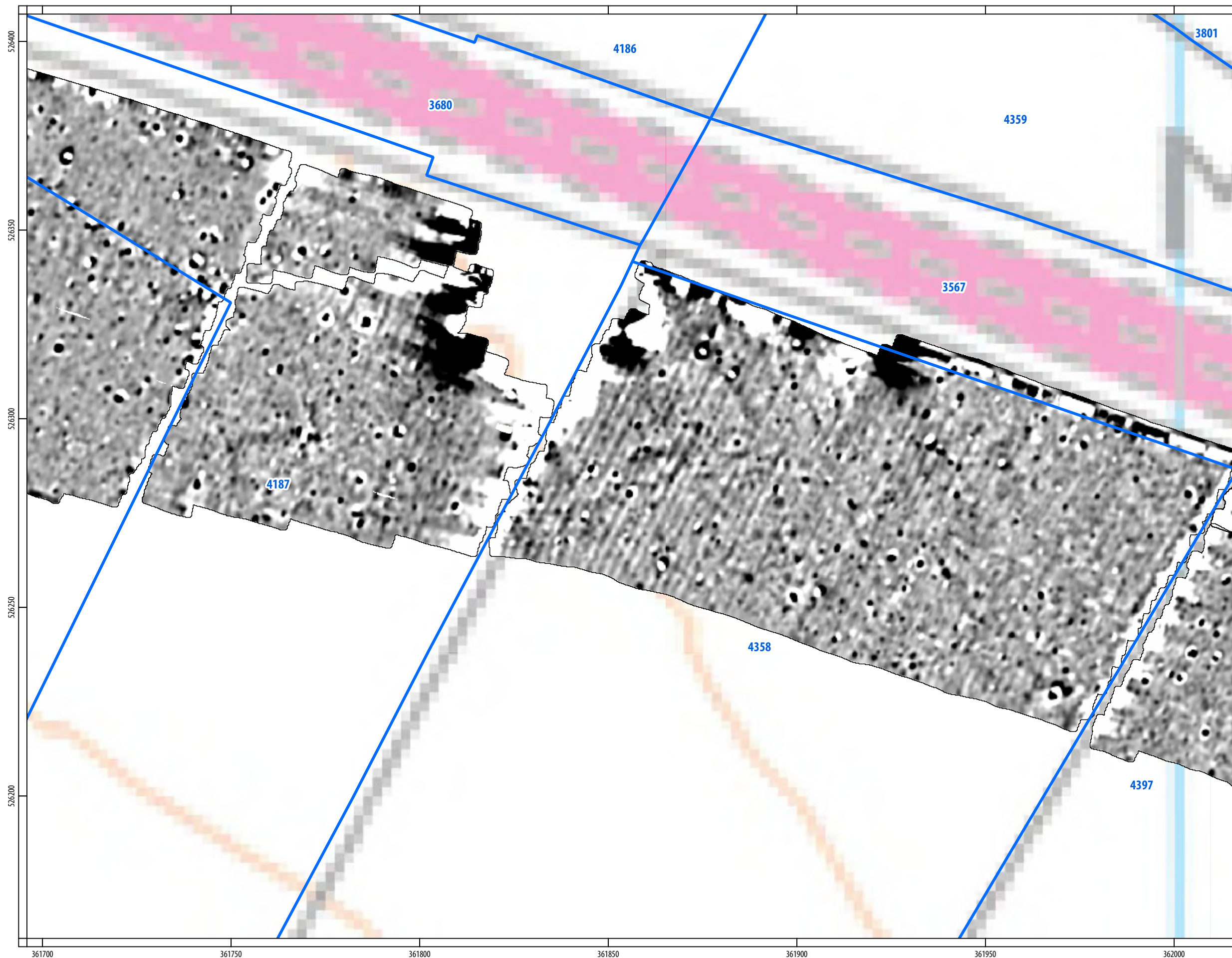


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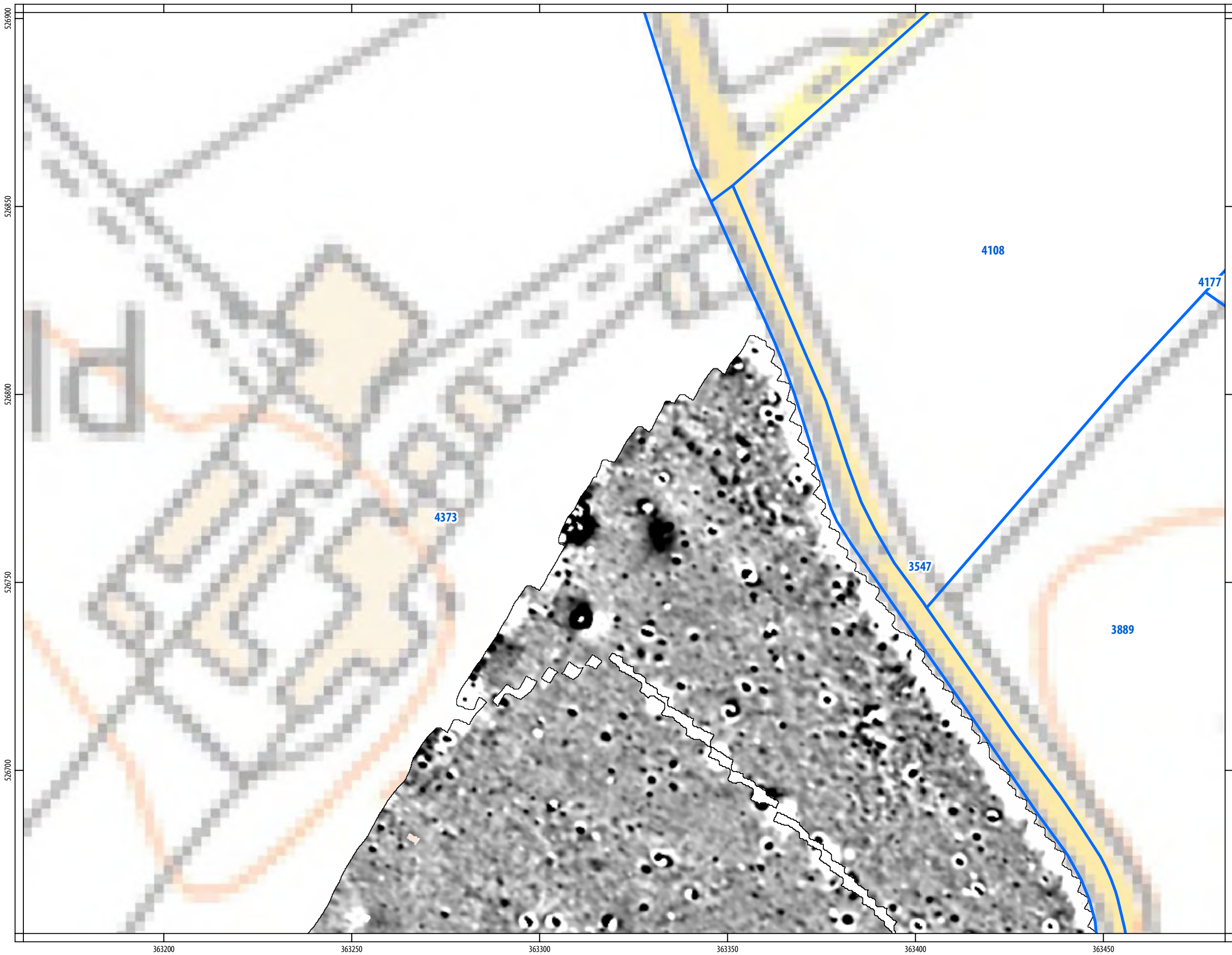
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**Phase 2 Survey**

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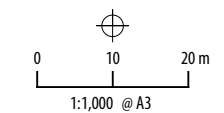


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363200 363250 363300 363350 363400 363450

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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
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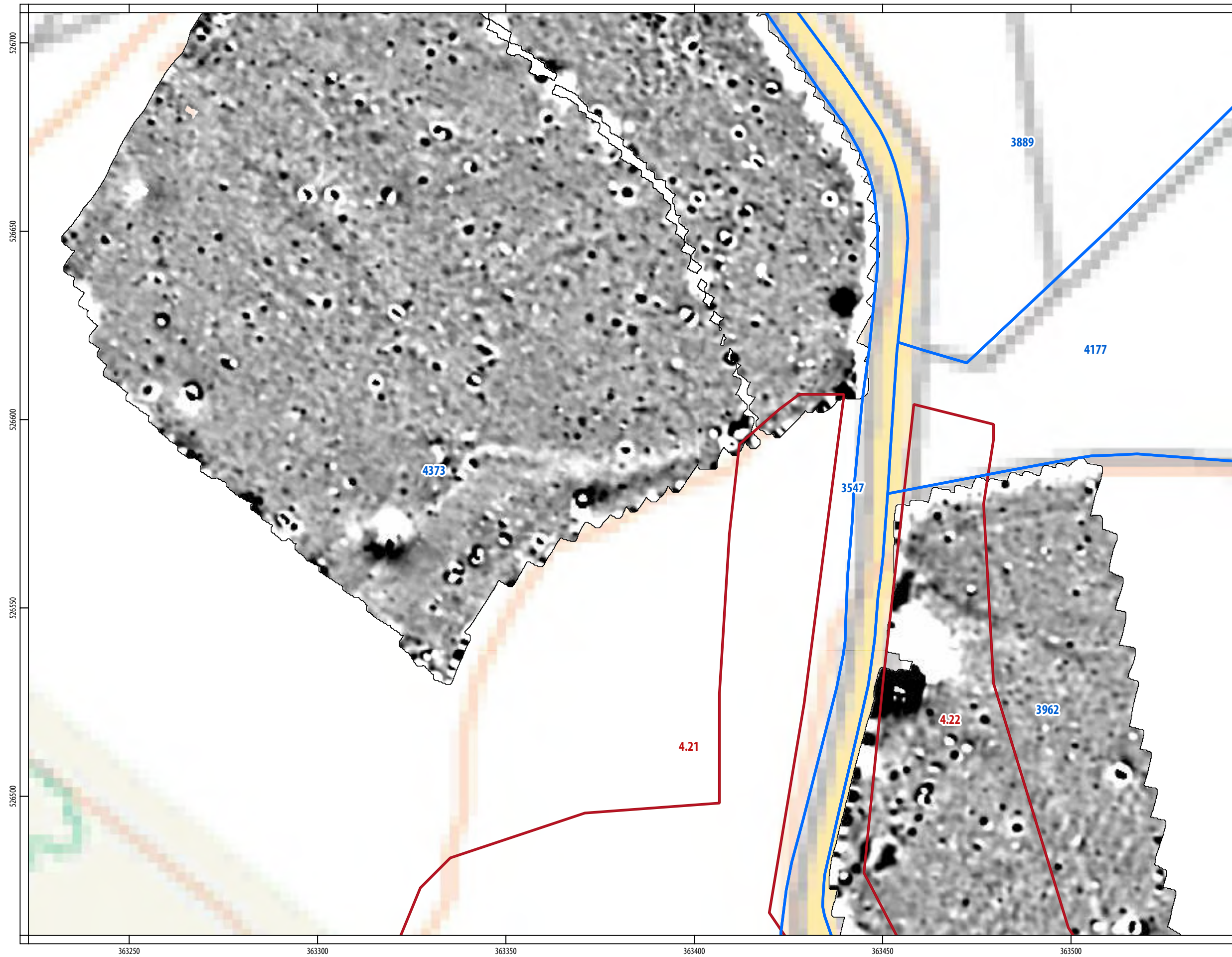


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**Phase 2 Survey**

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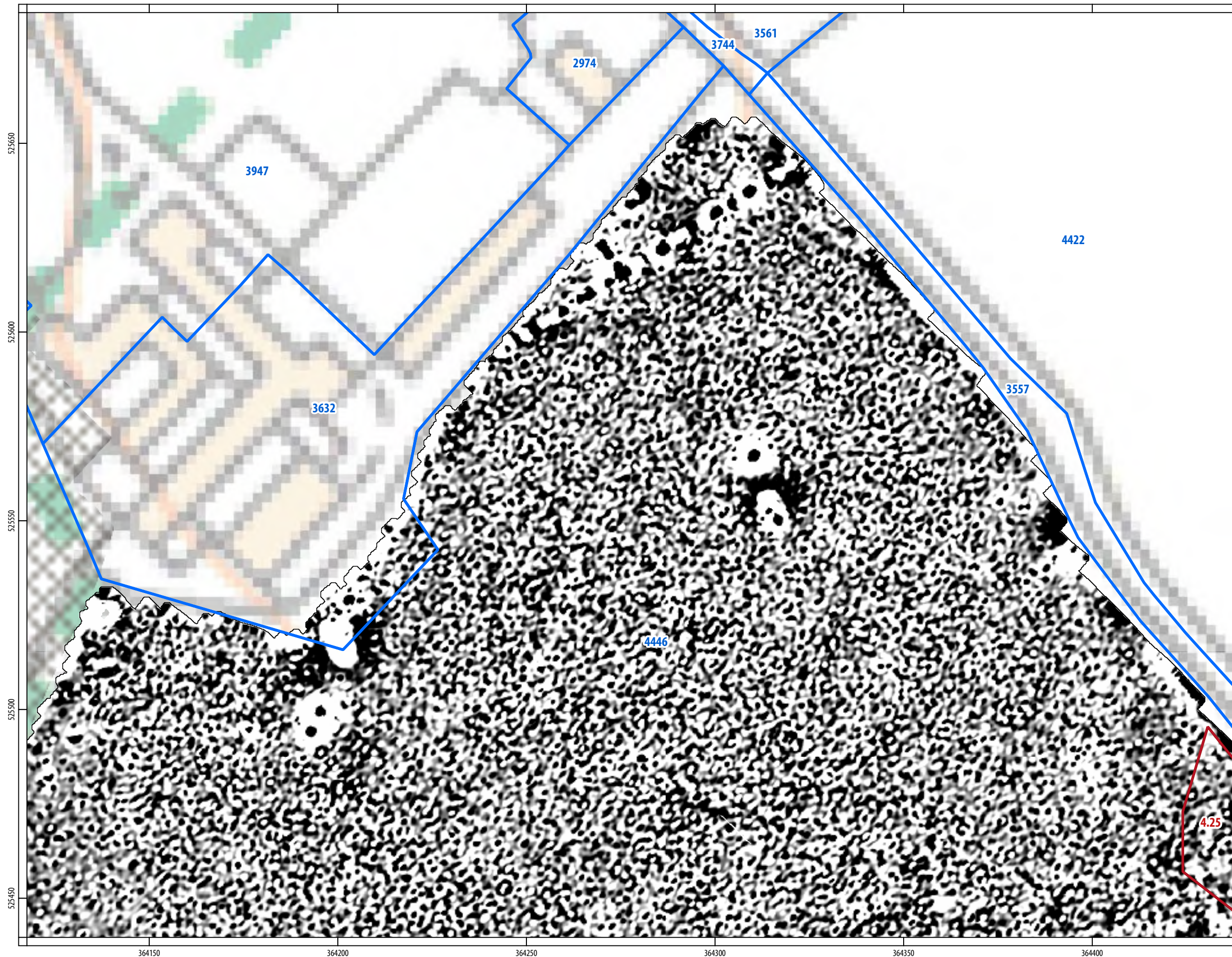
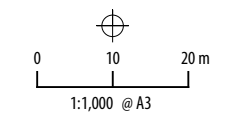


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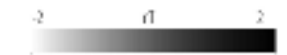
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**Phase 2 Survey**

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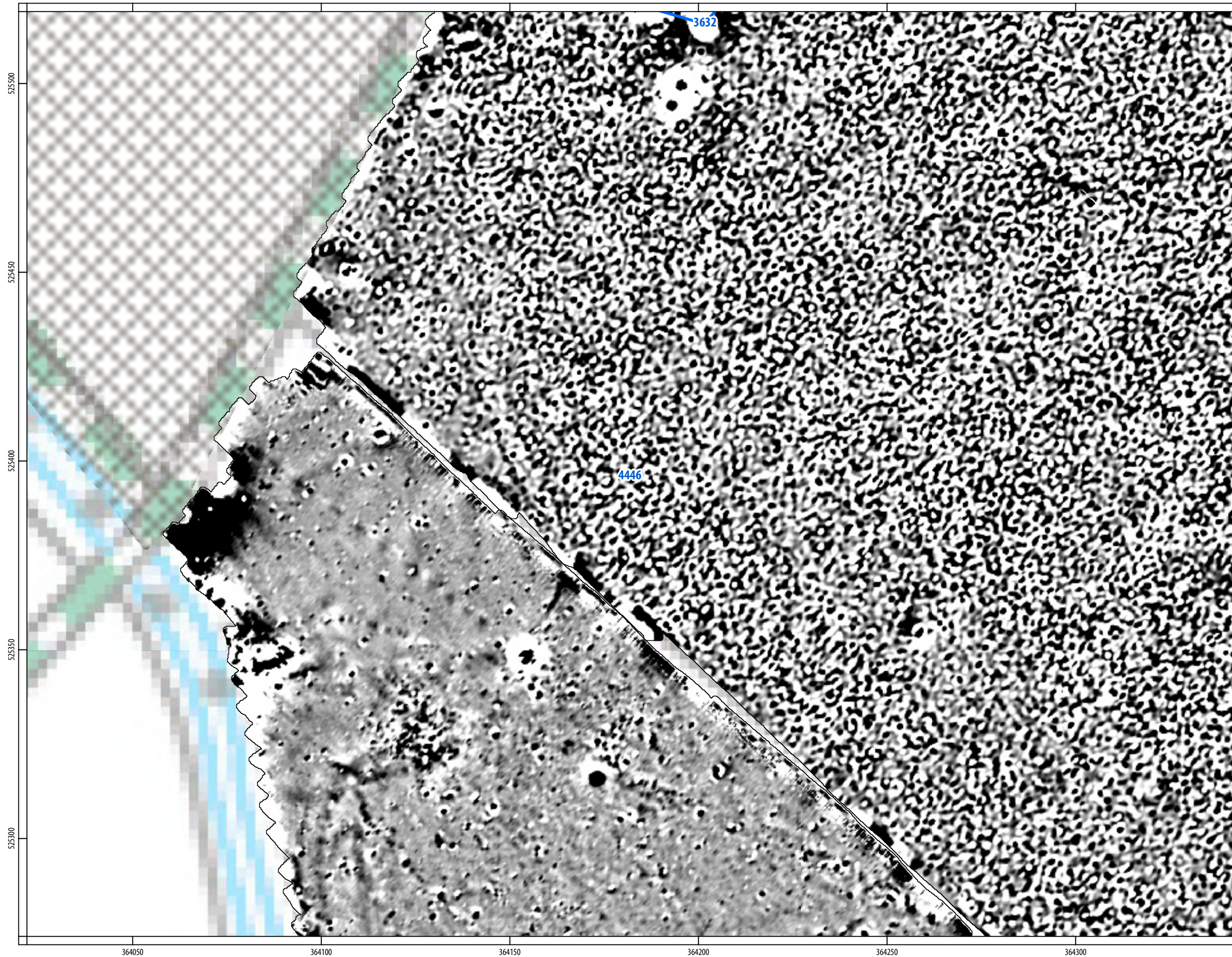


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**Phase 2 Survey**

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-  Phase 2 Geophysical Survey Area
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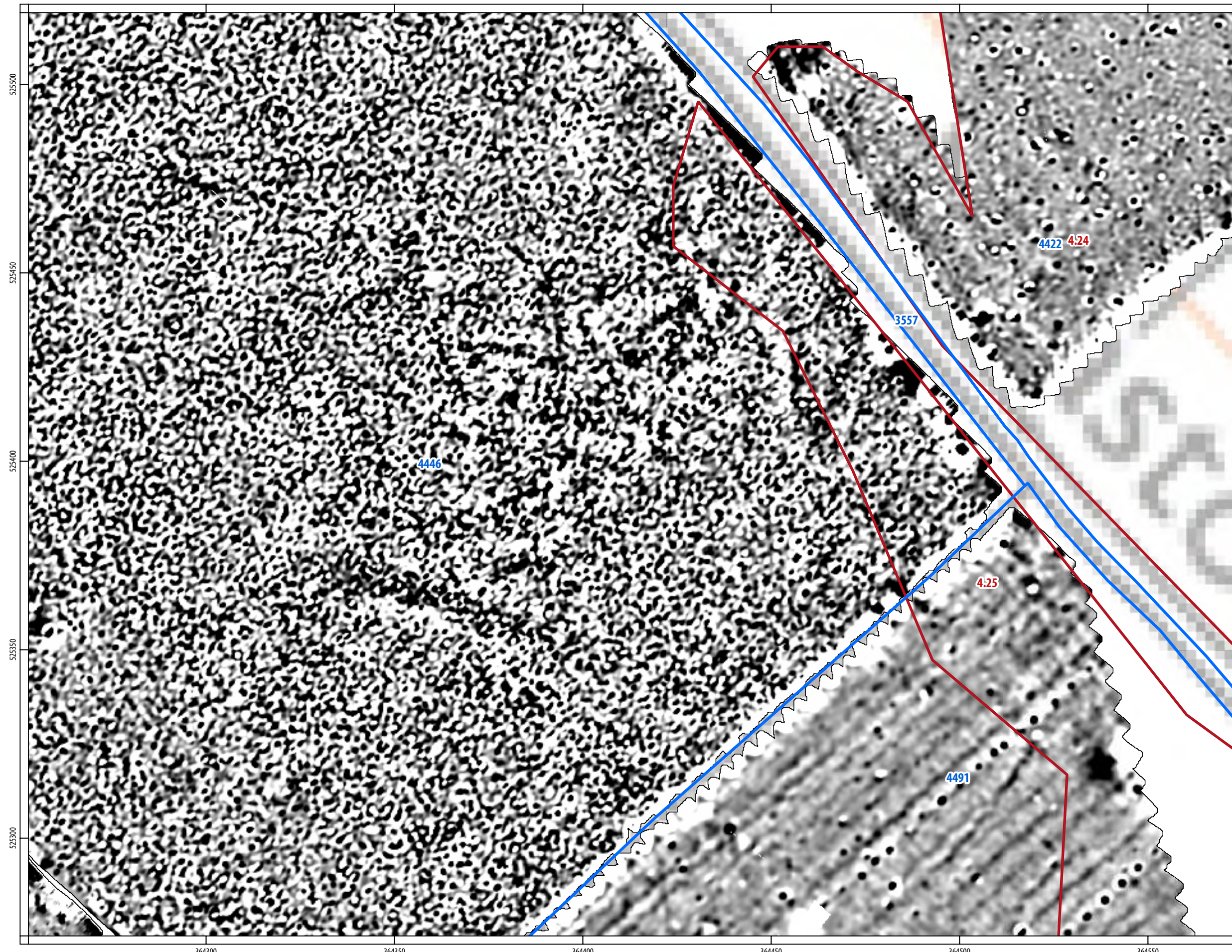


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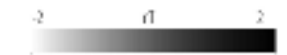
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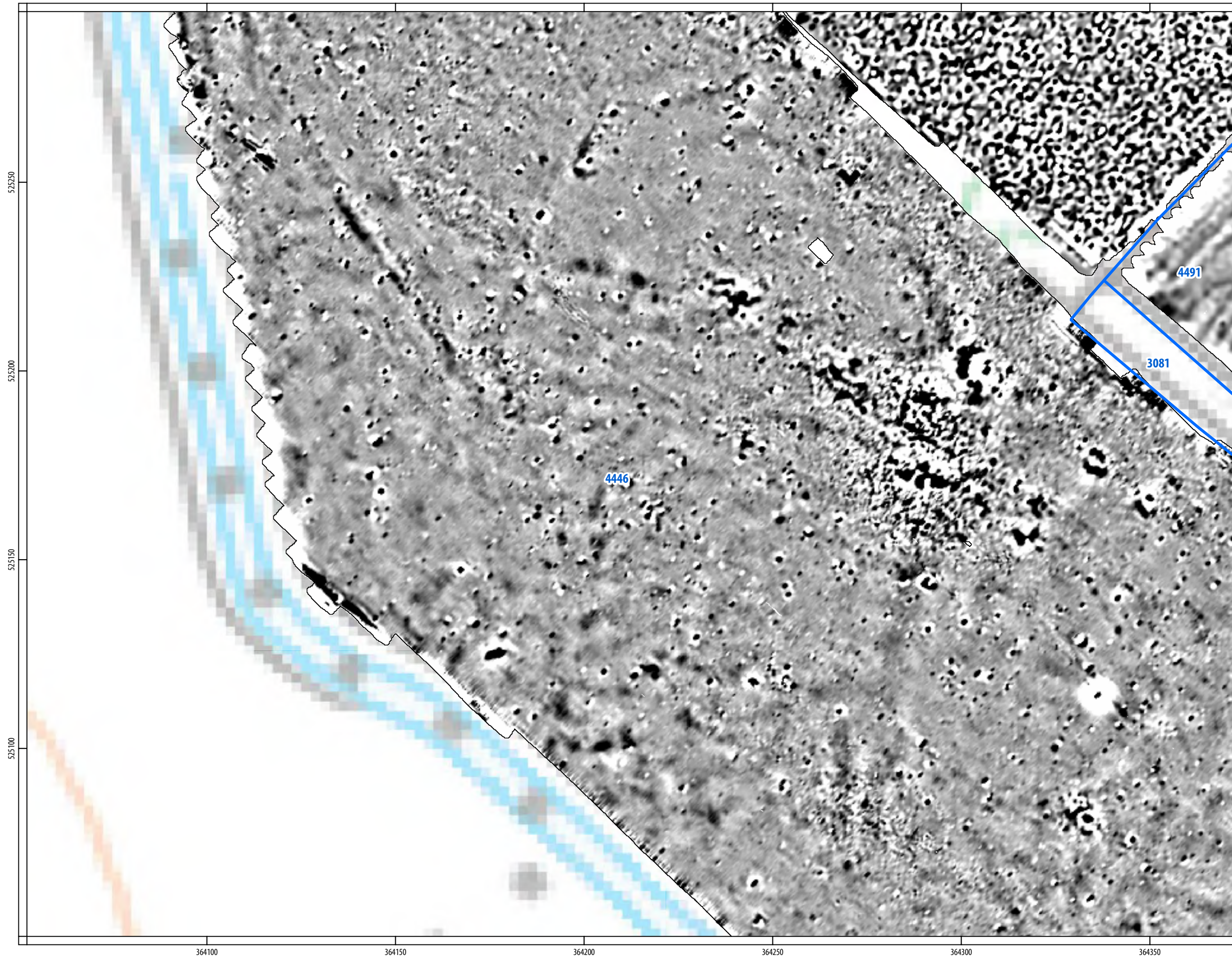
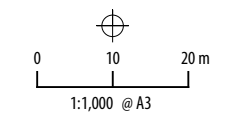


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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

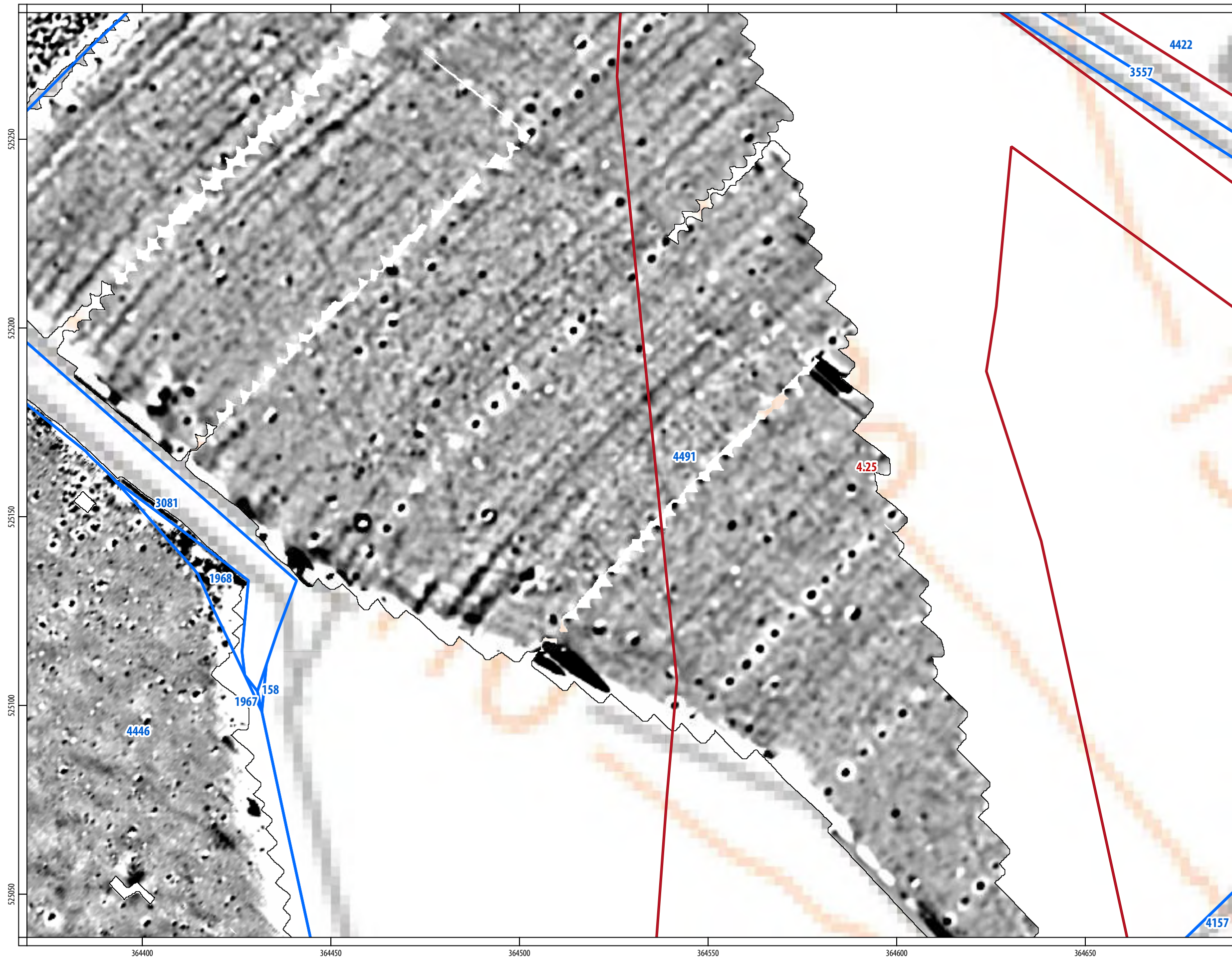
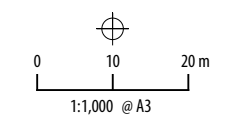


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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

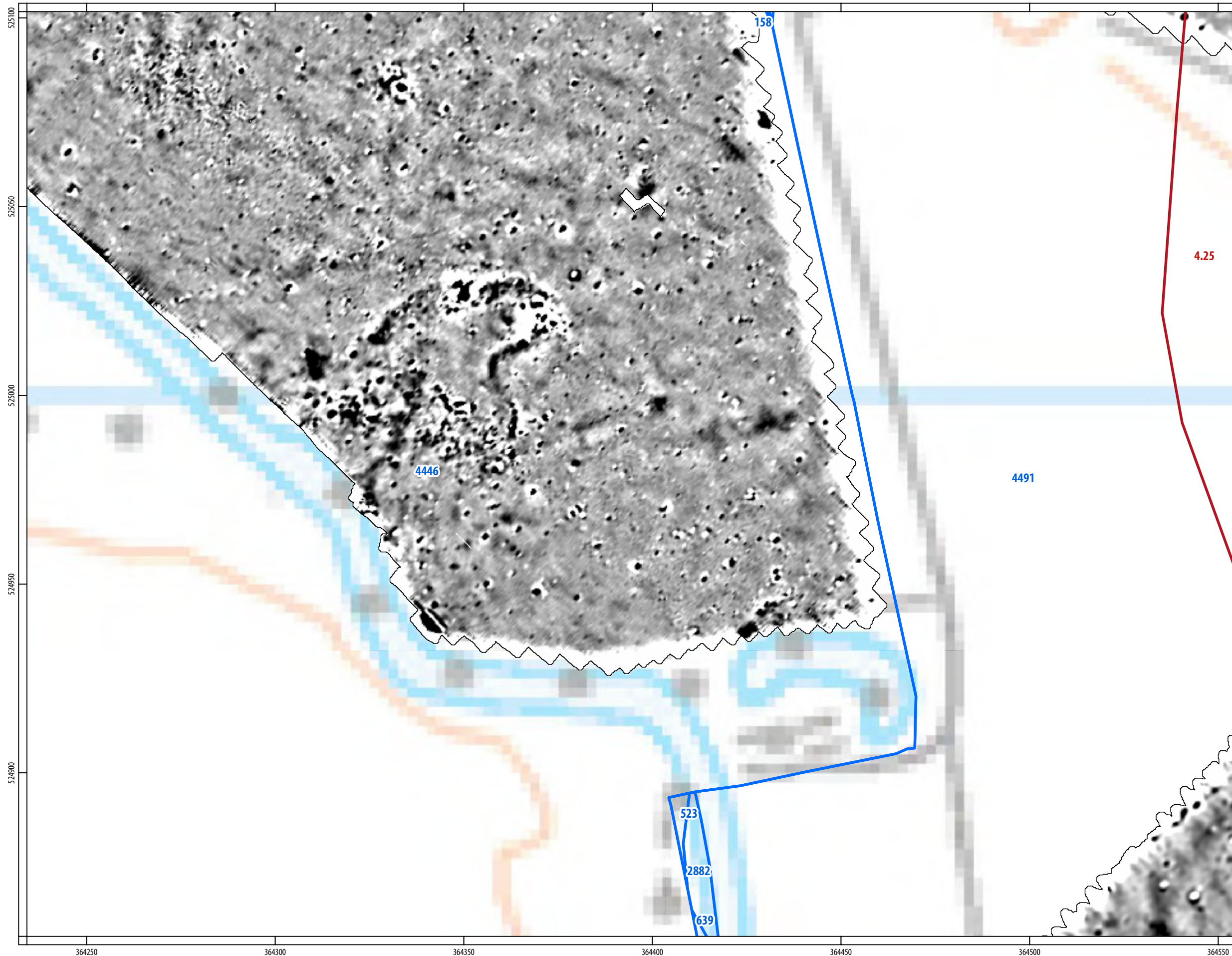


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

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

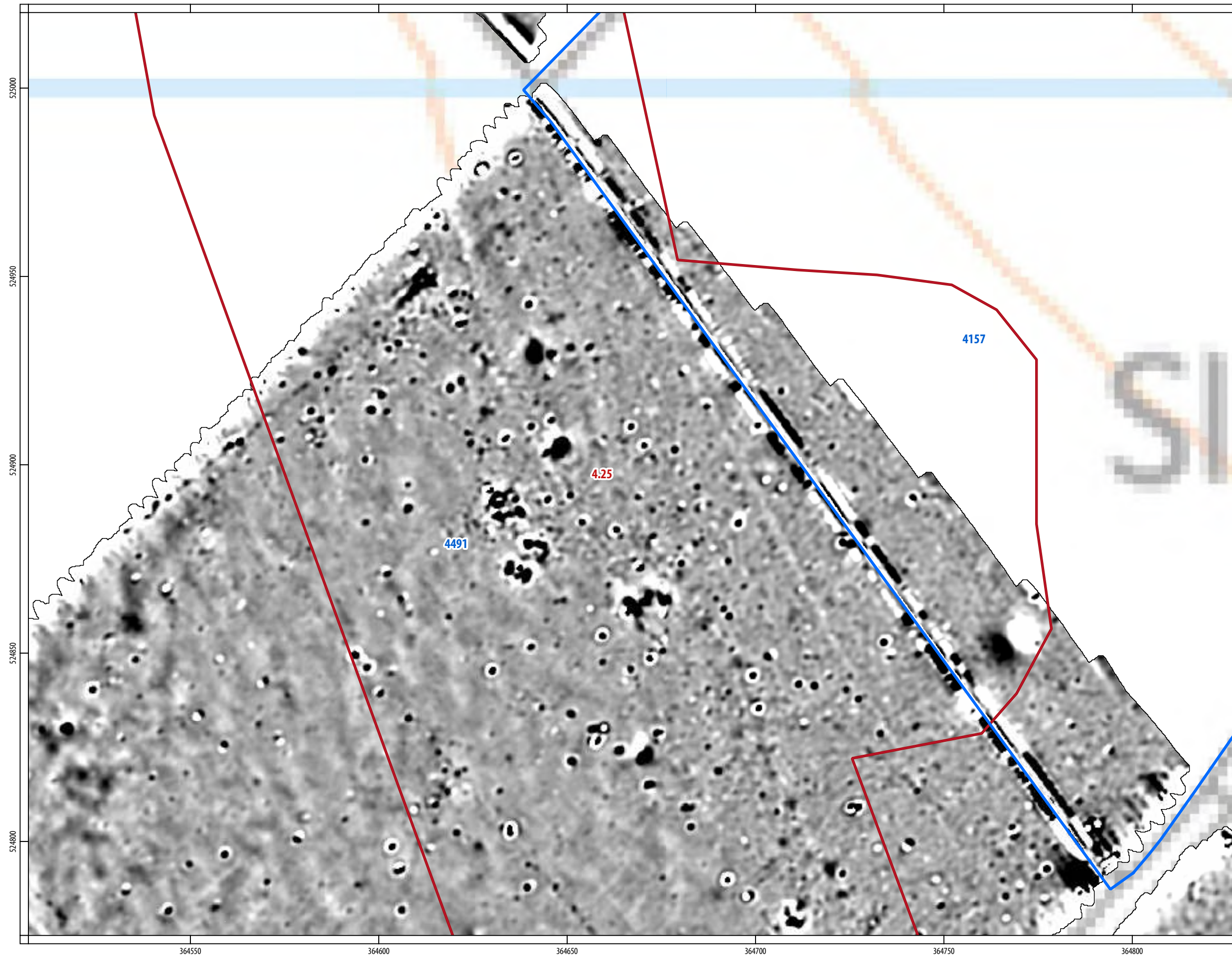


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

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**Phase 2 Survey**

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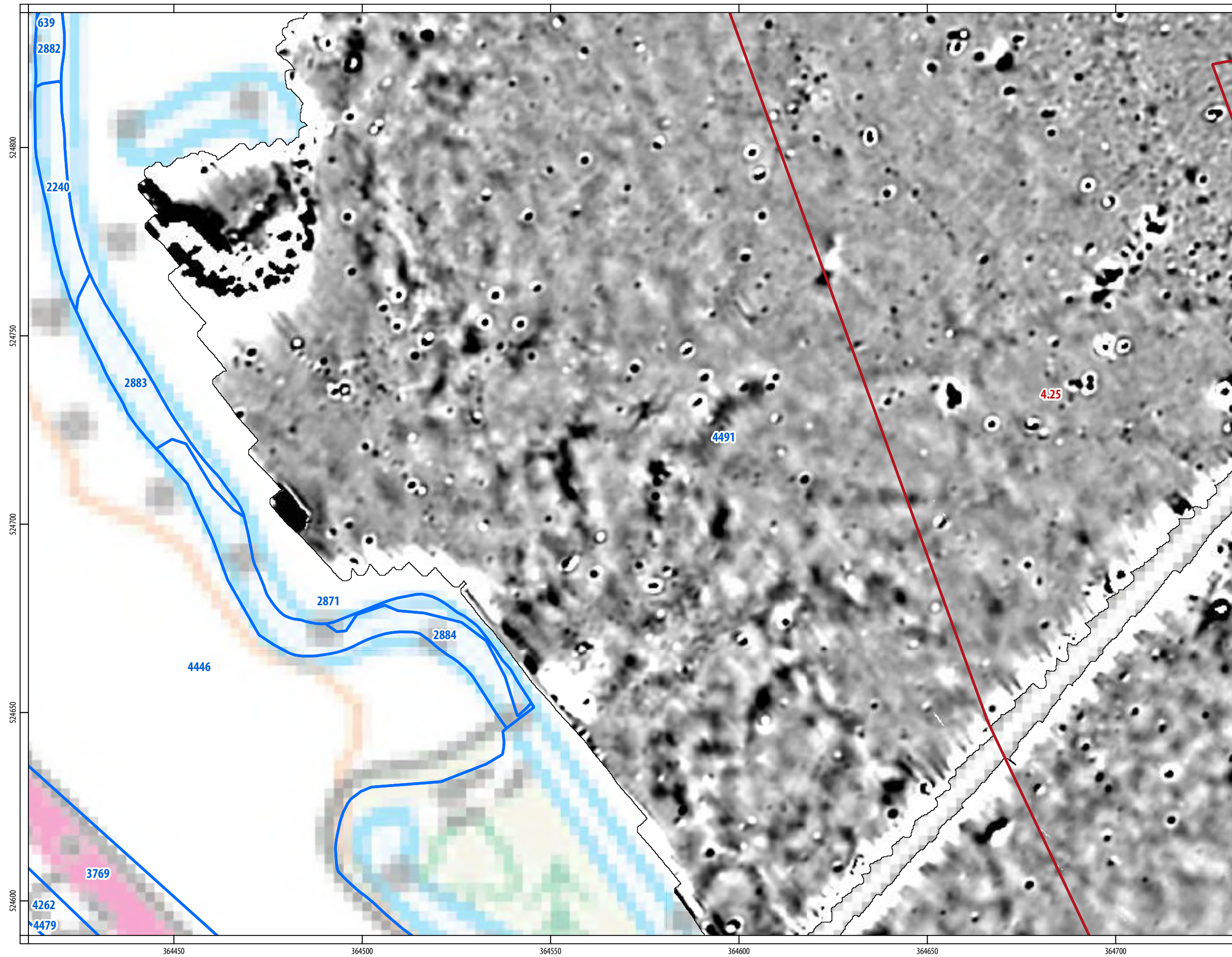
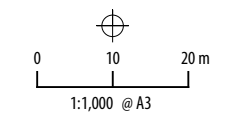


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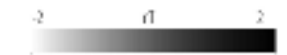
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**Phase 2 Survey**

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-  Scheduled Monument

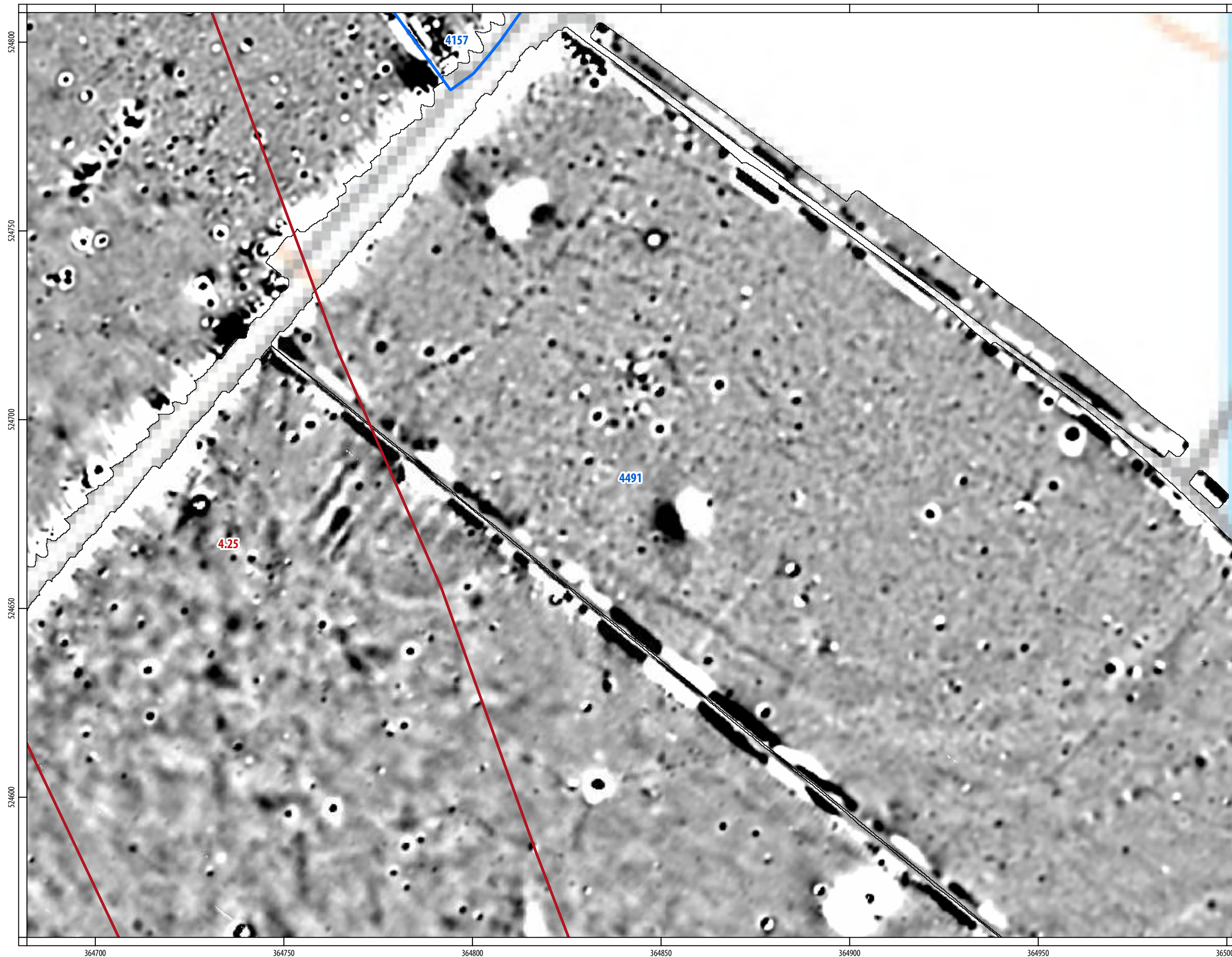


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

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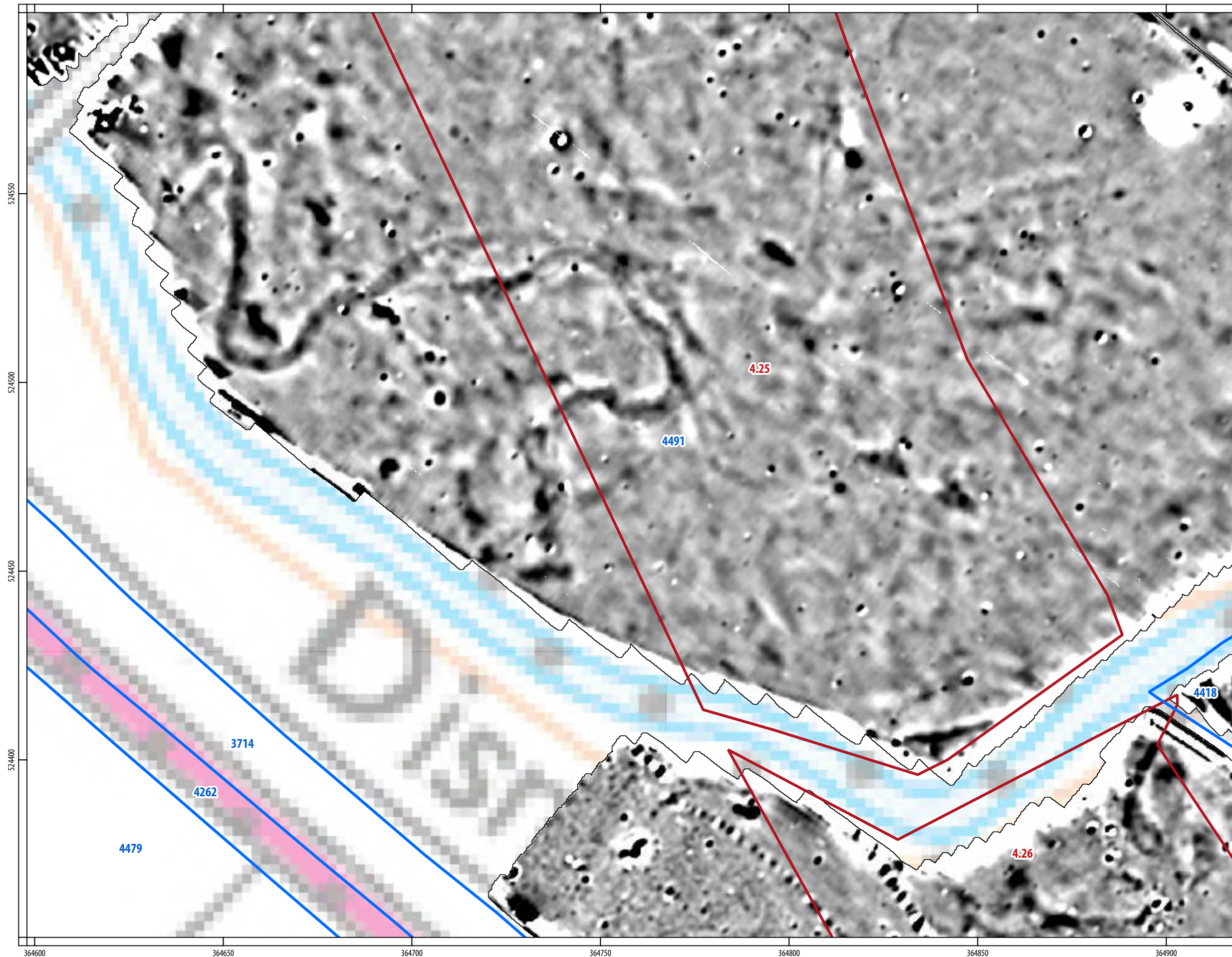


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

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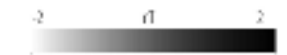
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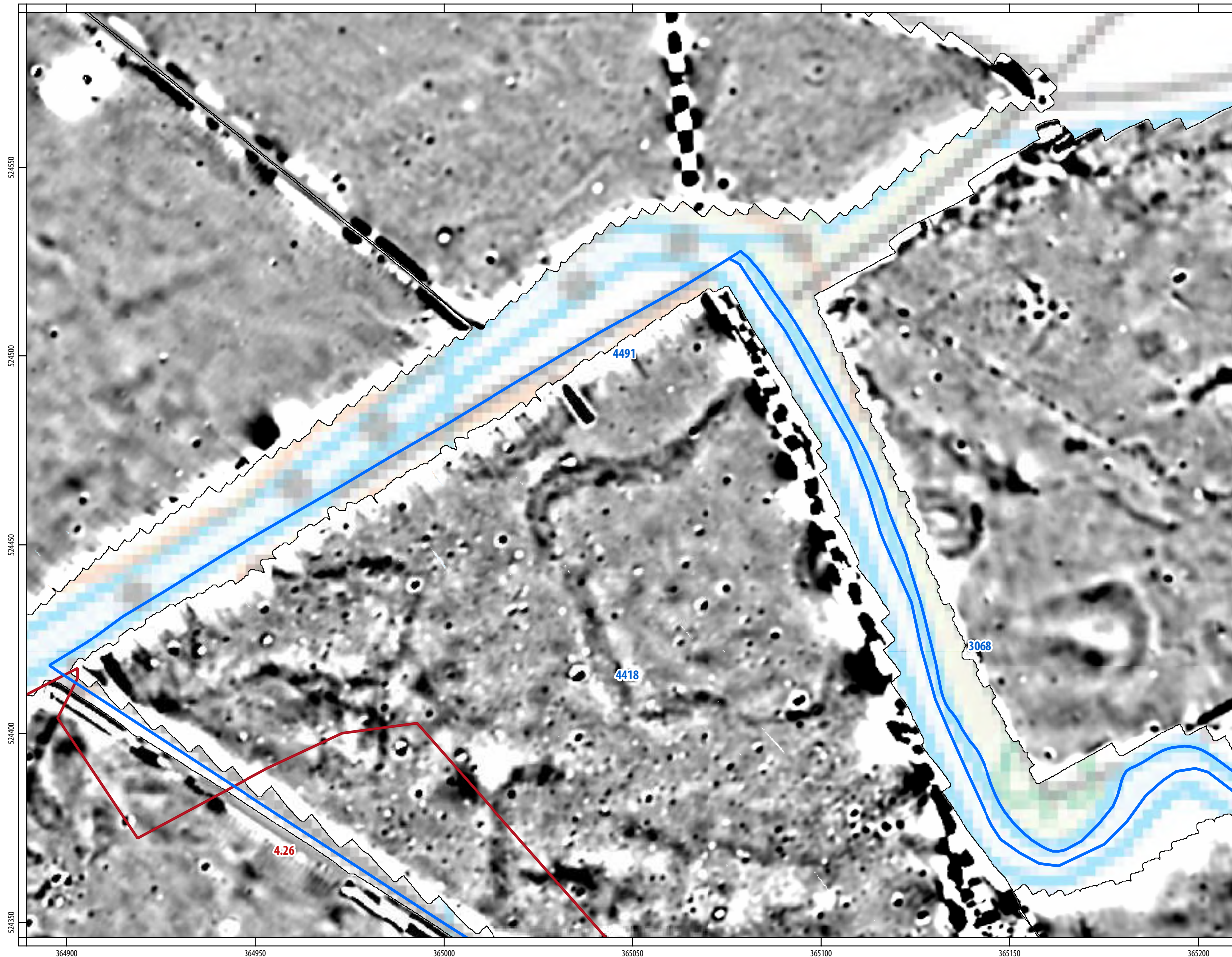
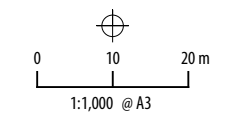


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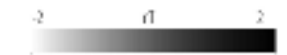
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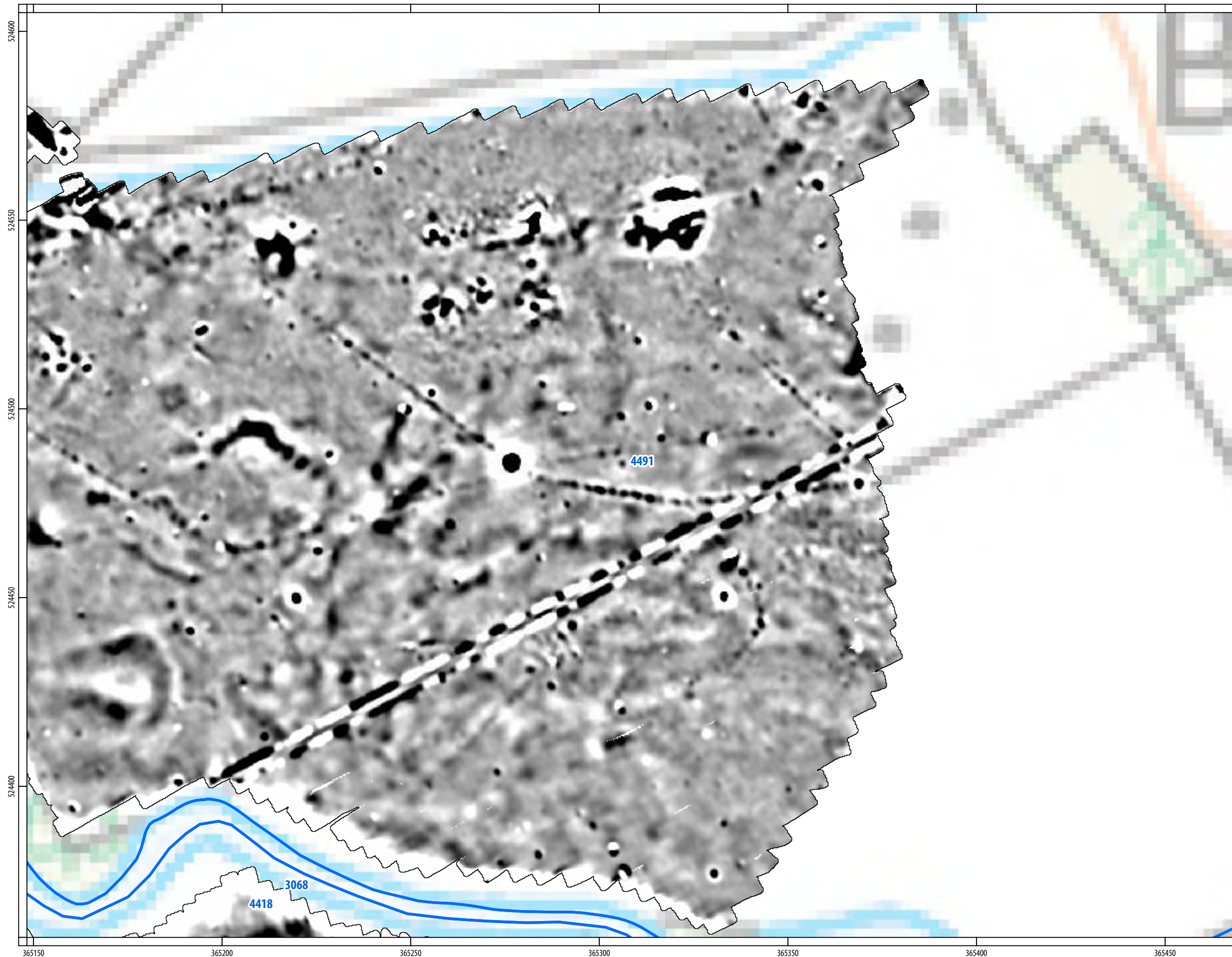
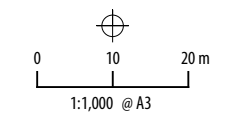


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

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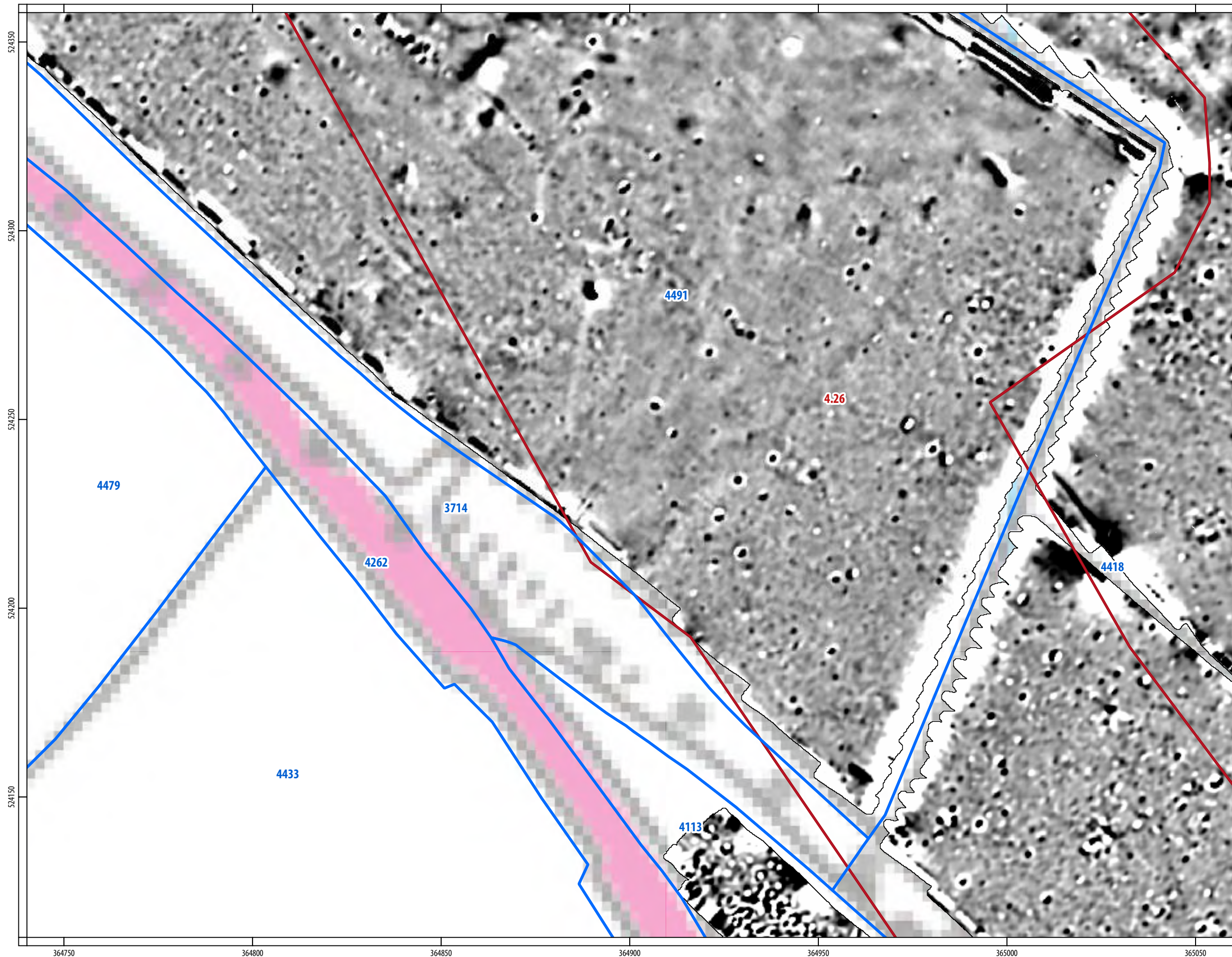


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

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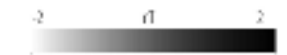
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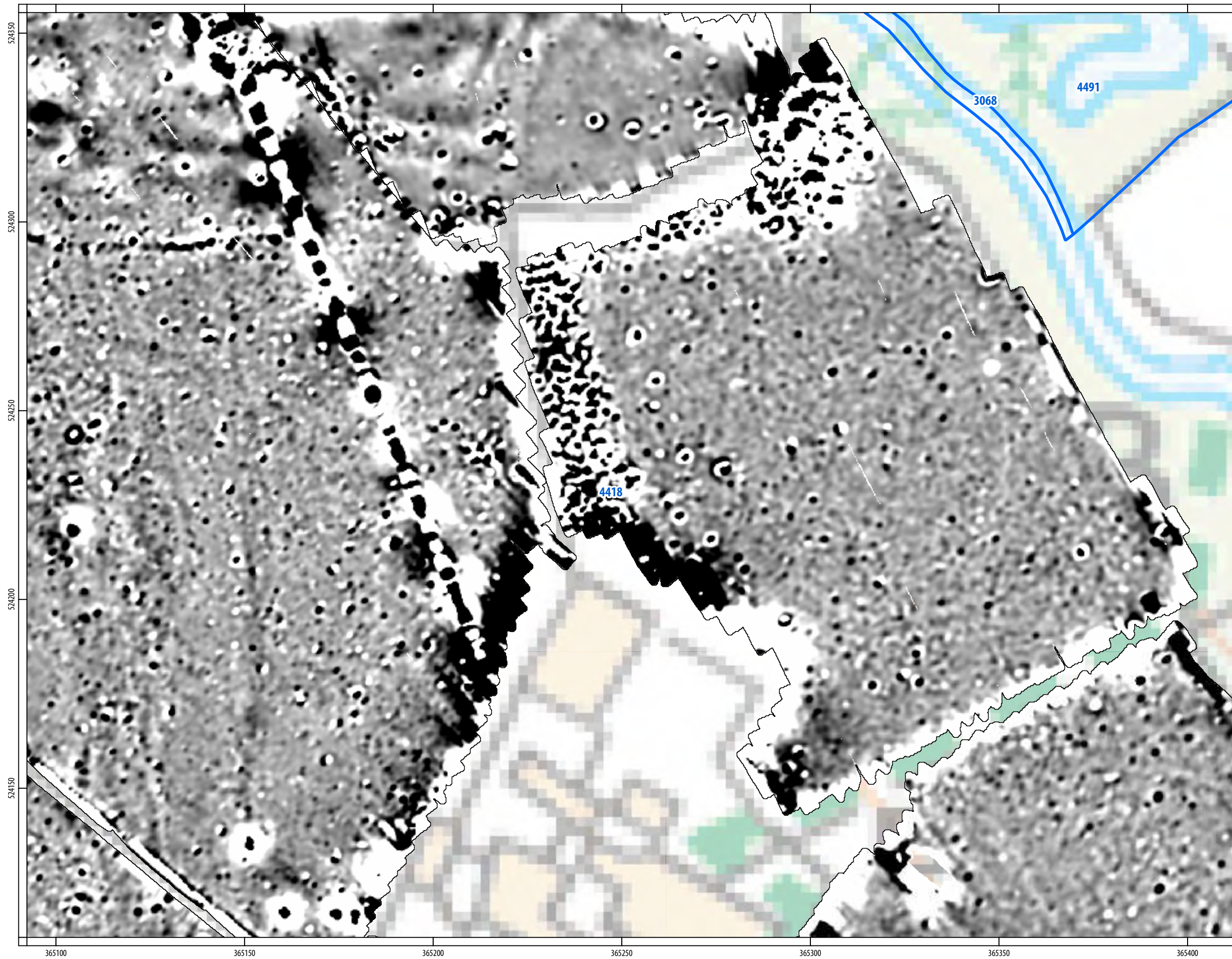
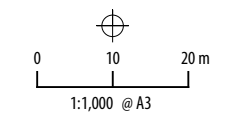


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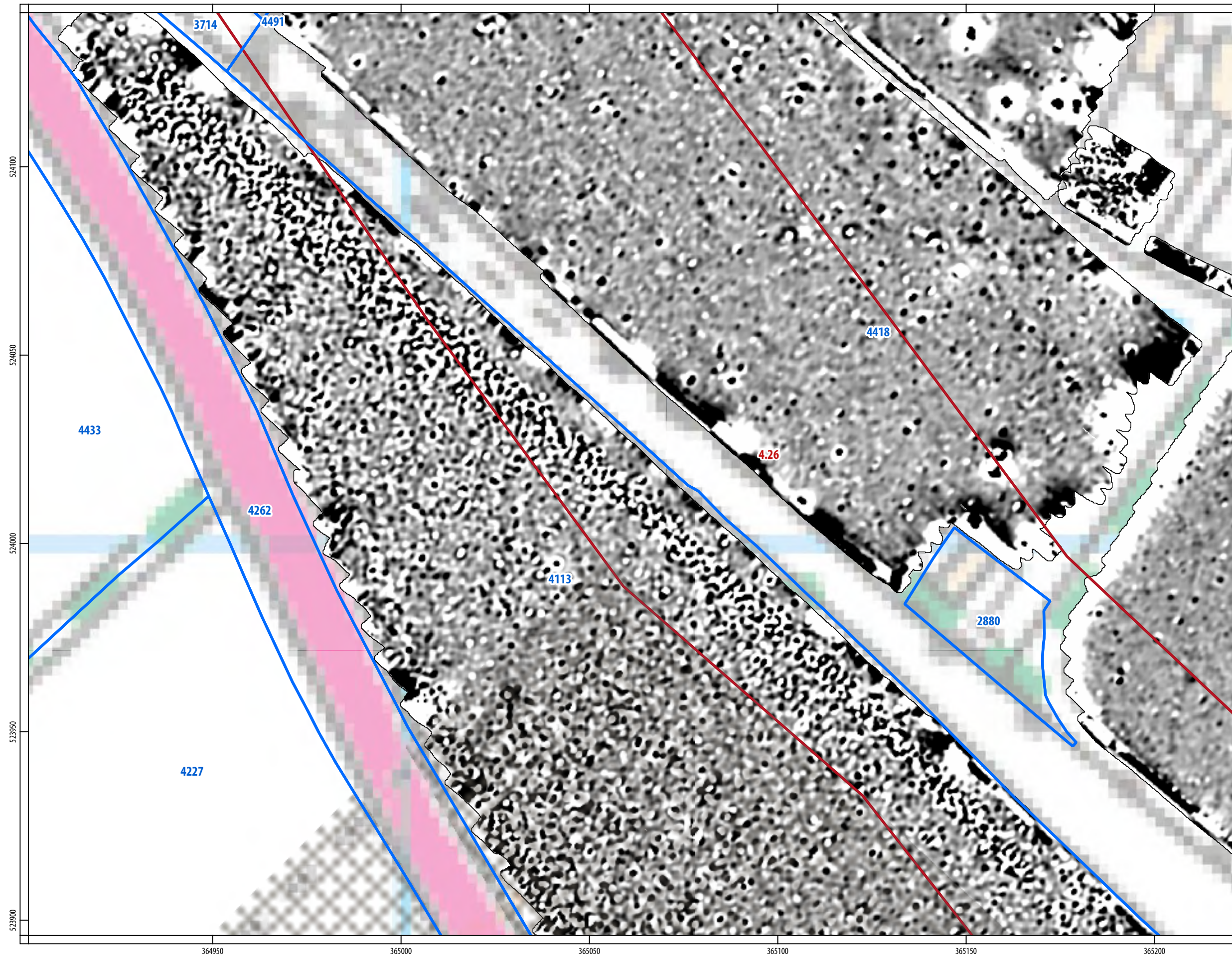


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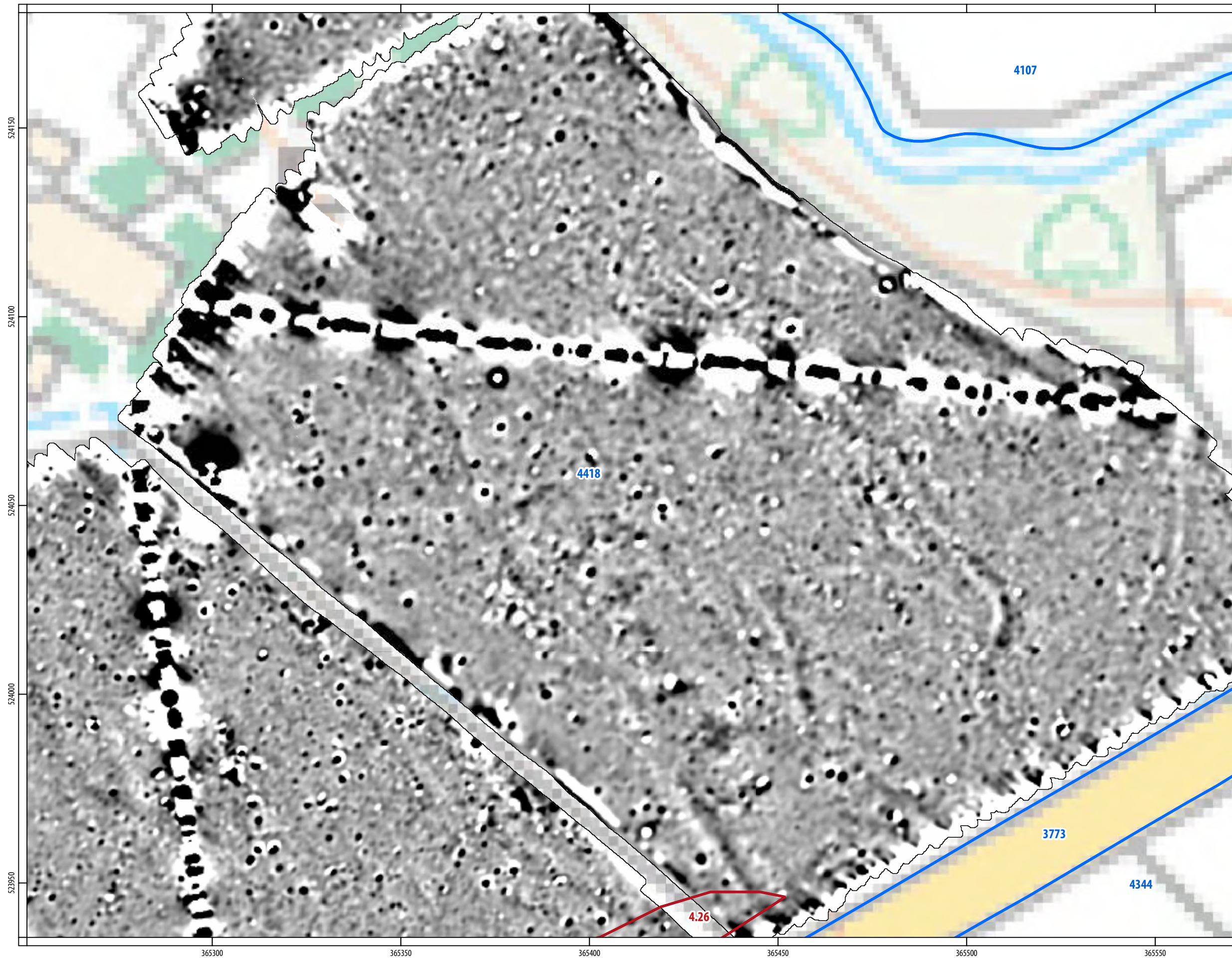
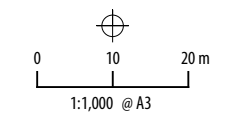


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

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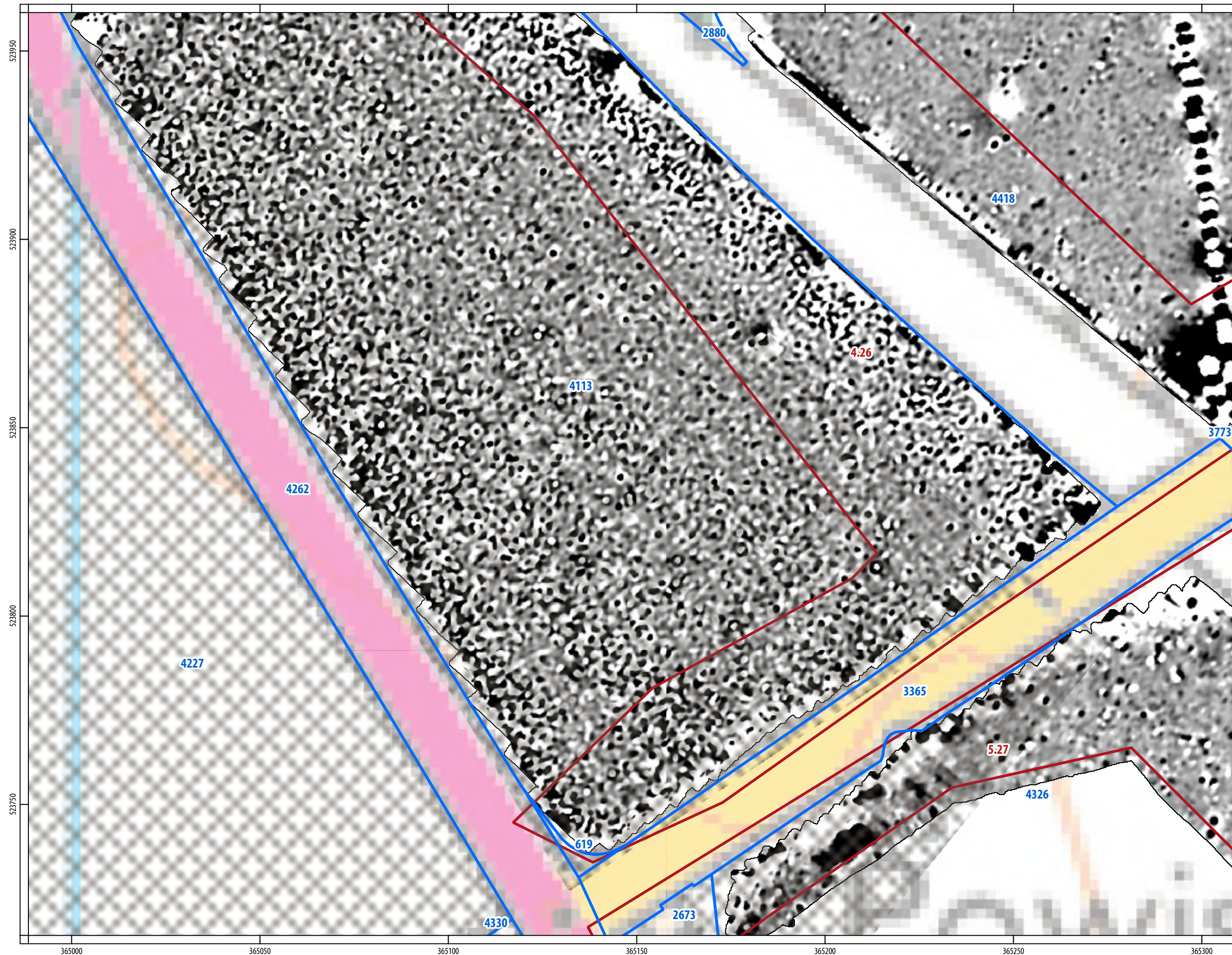


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

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**Phase 2 Survey**

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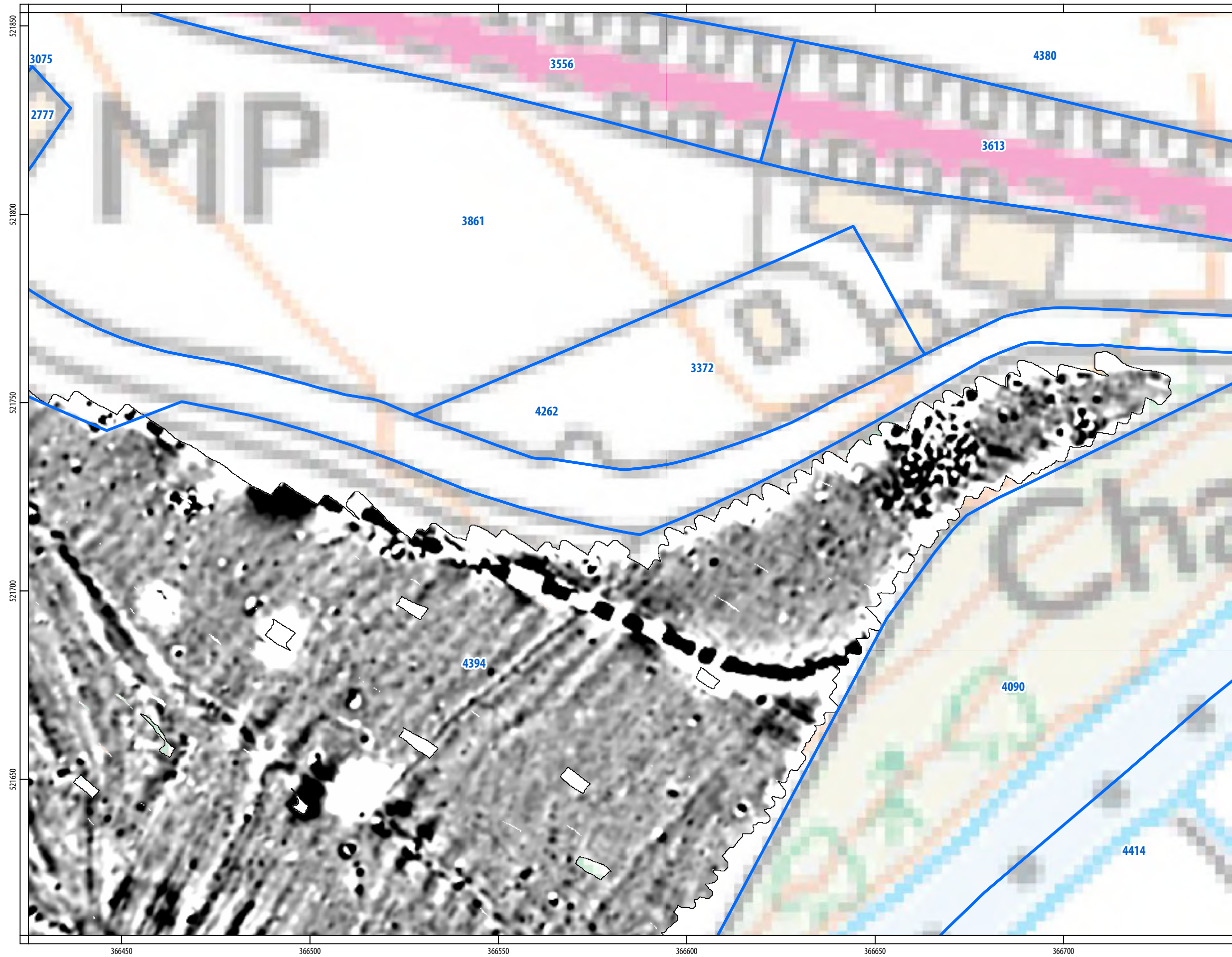
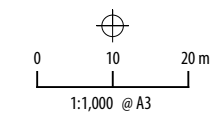


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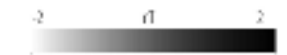
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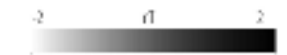
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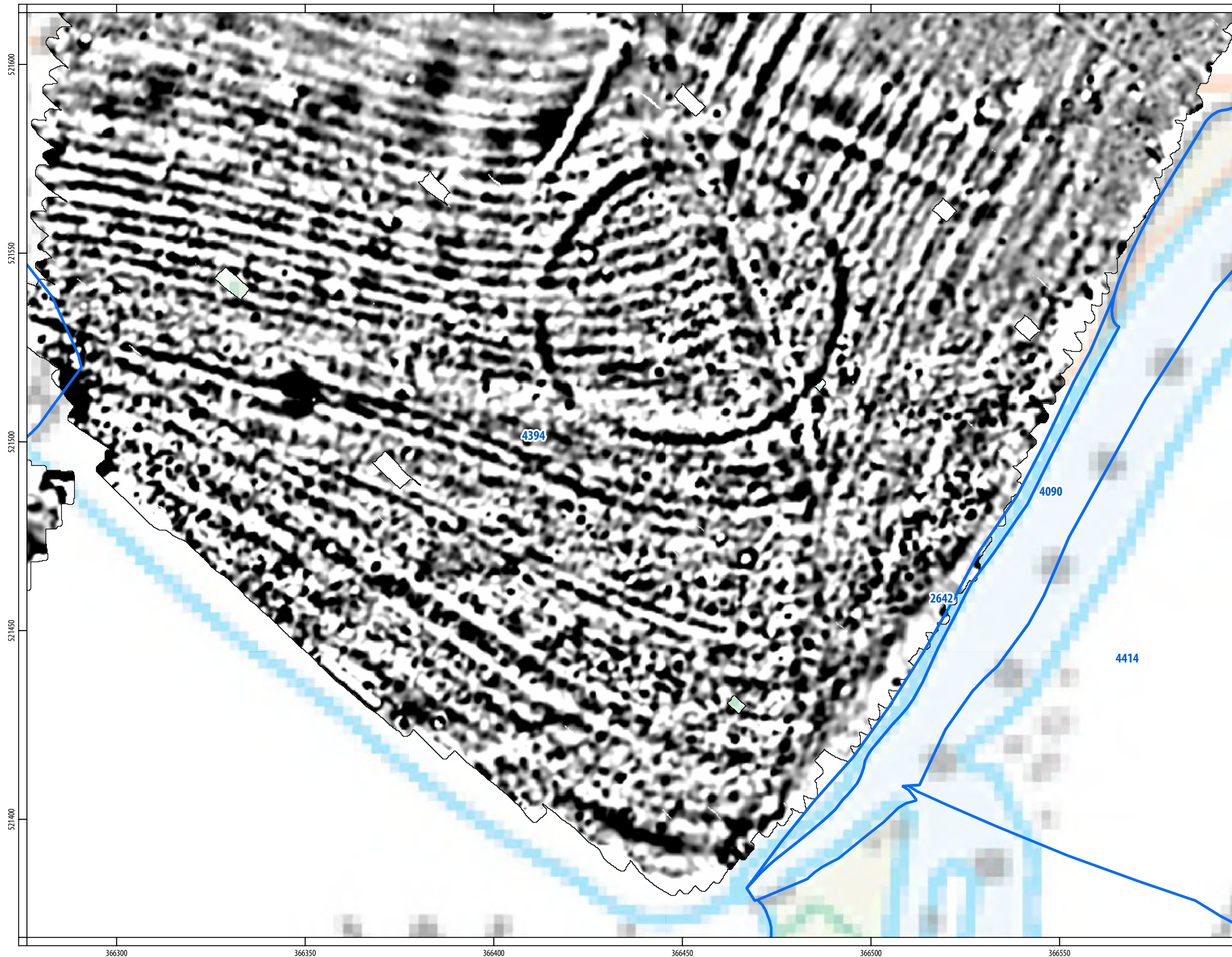


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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
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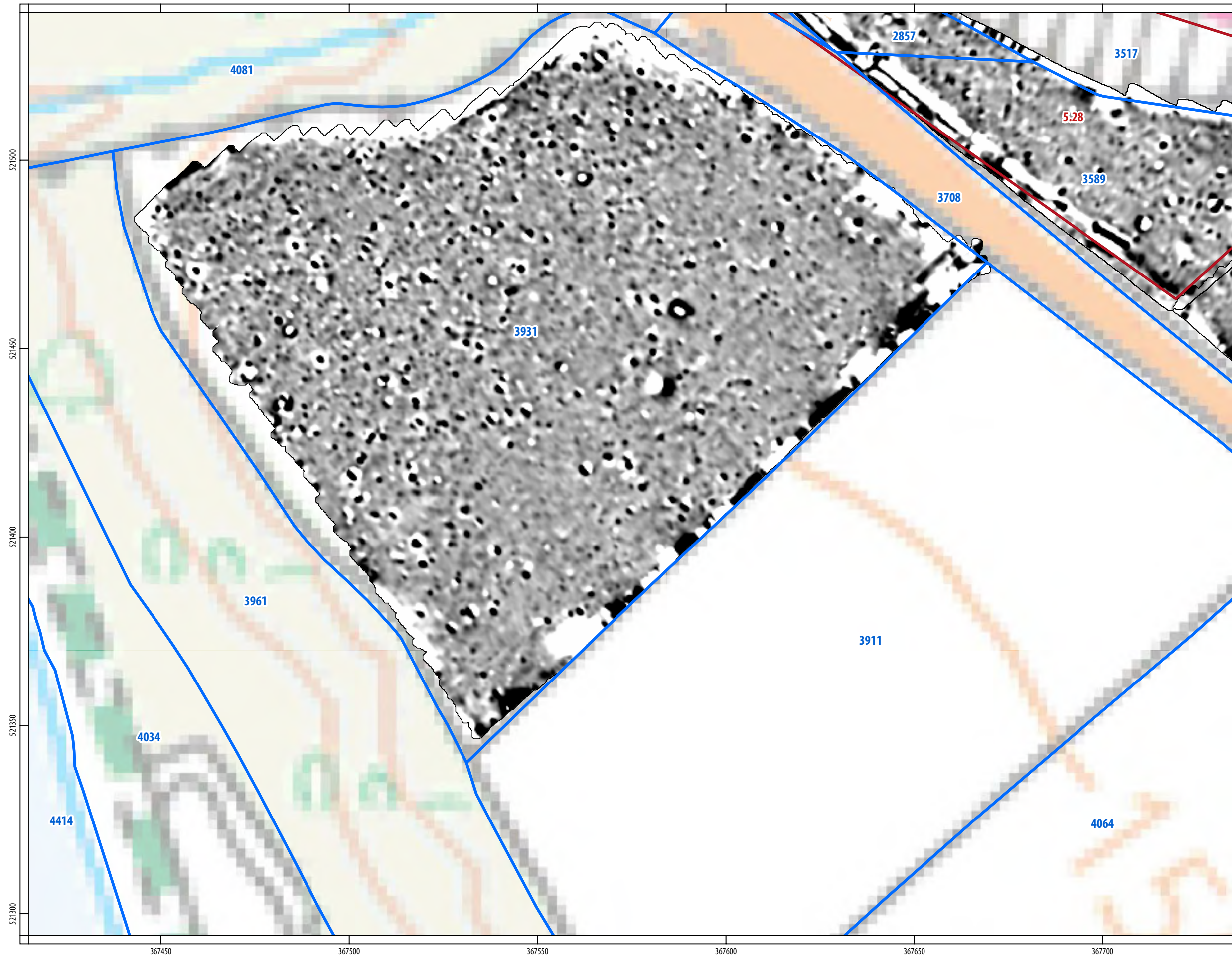


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

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**Phase 2 Survey**

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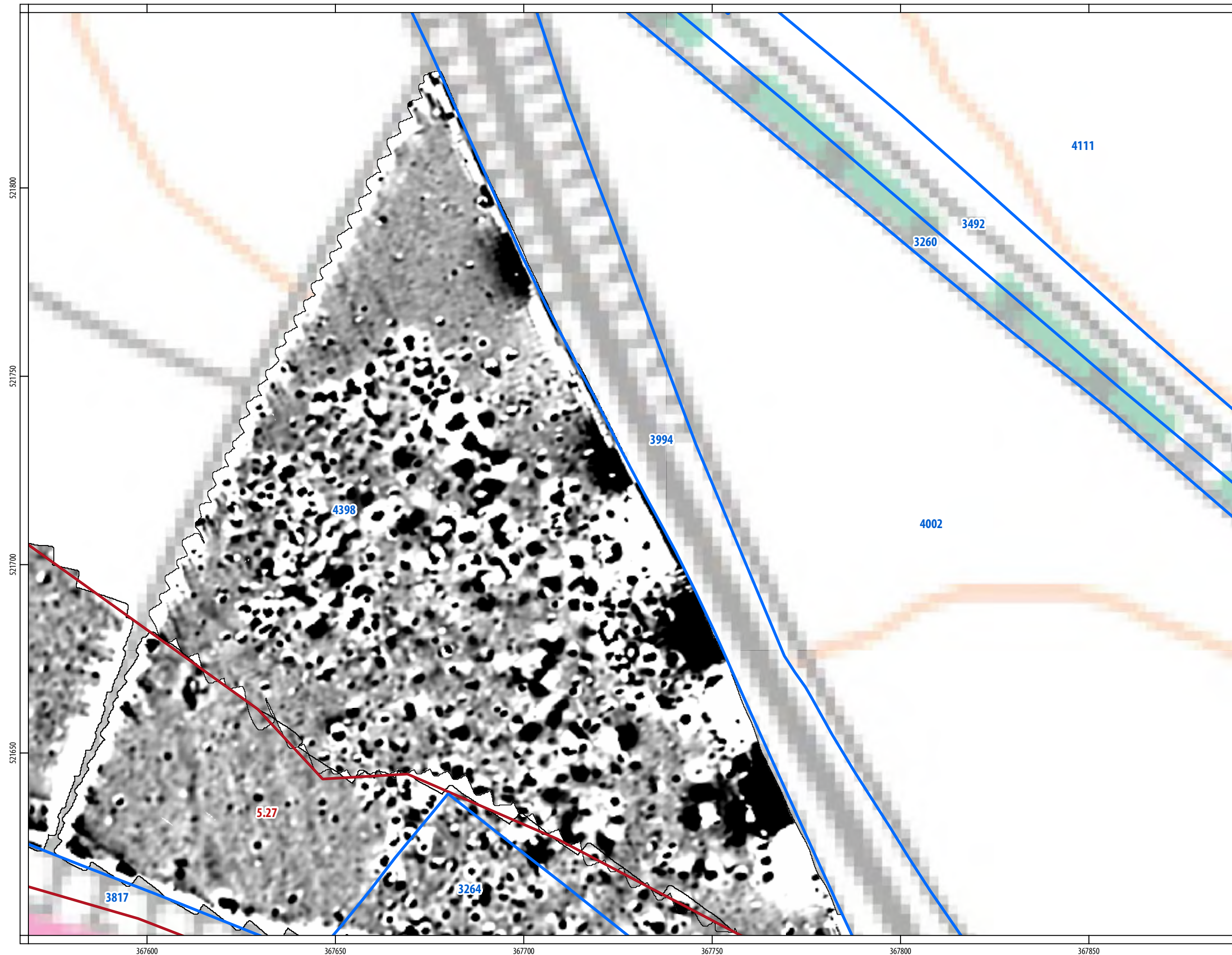


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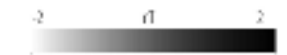
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**Phase 2 Survey**

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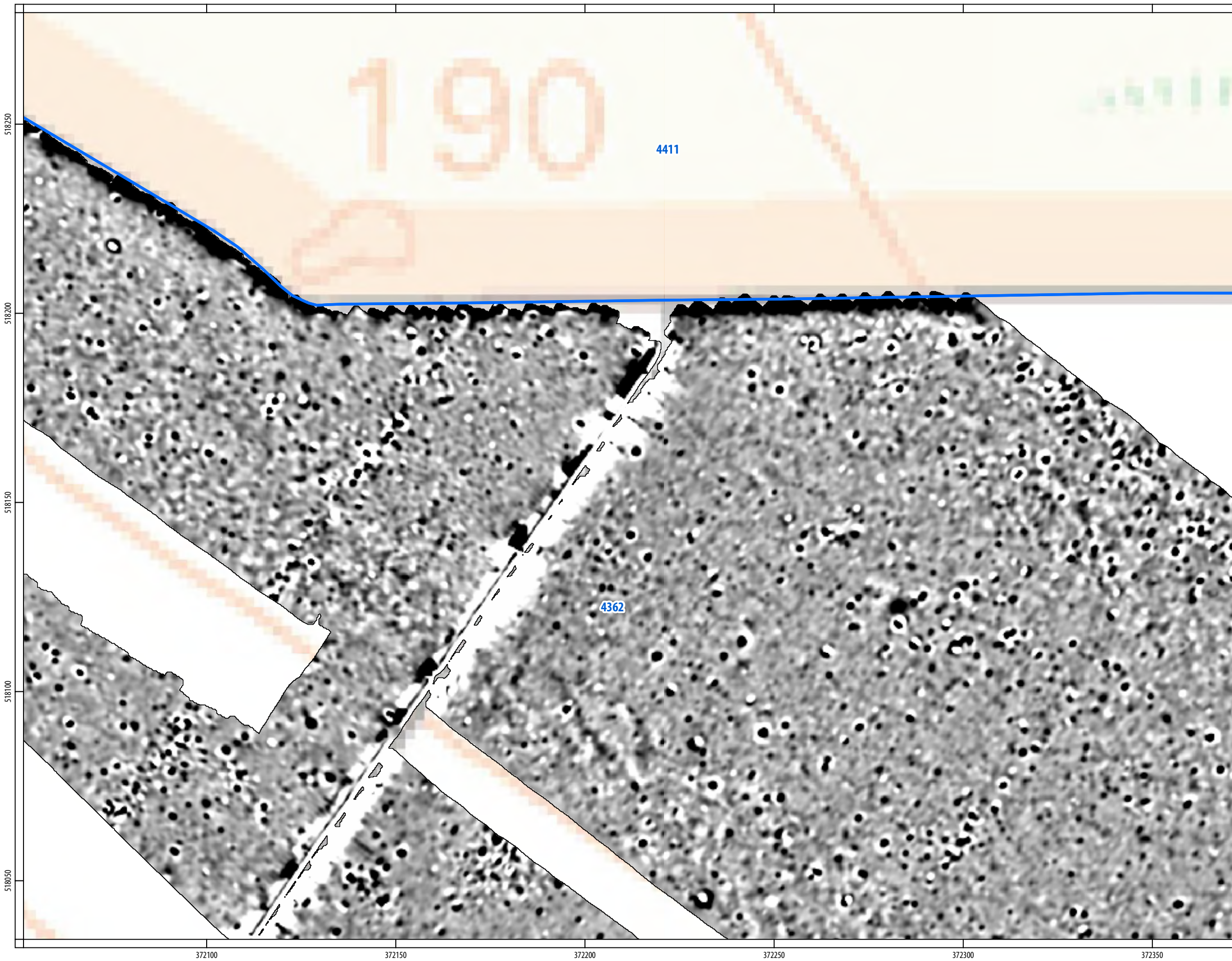


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

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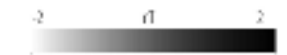
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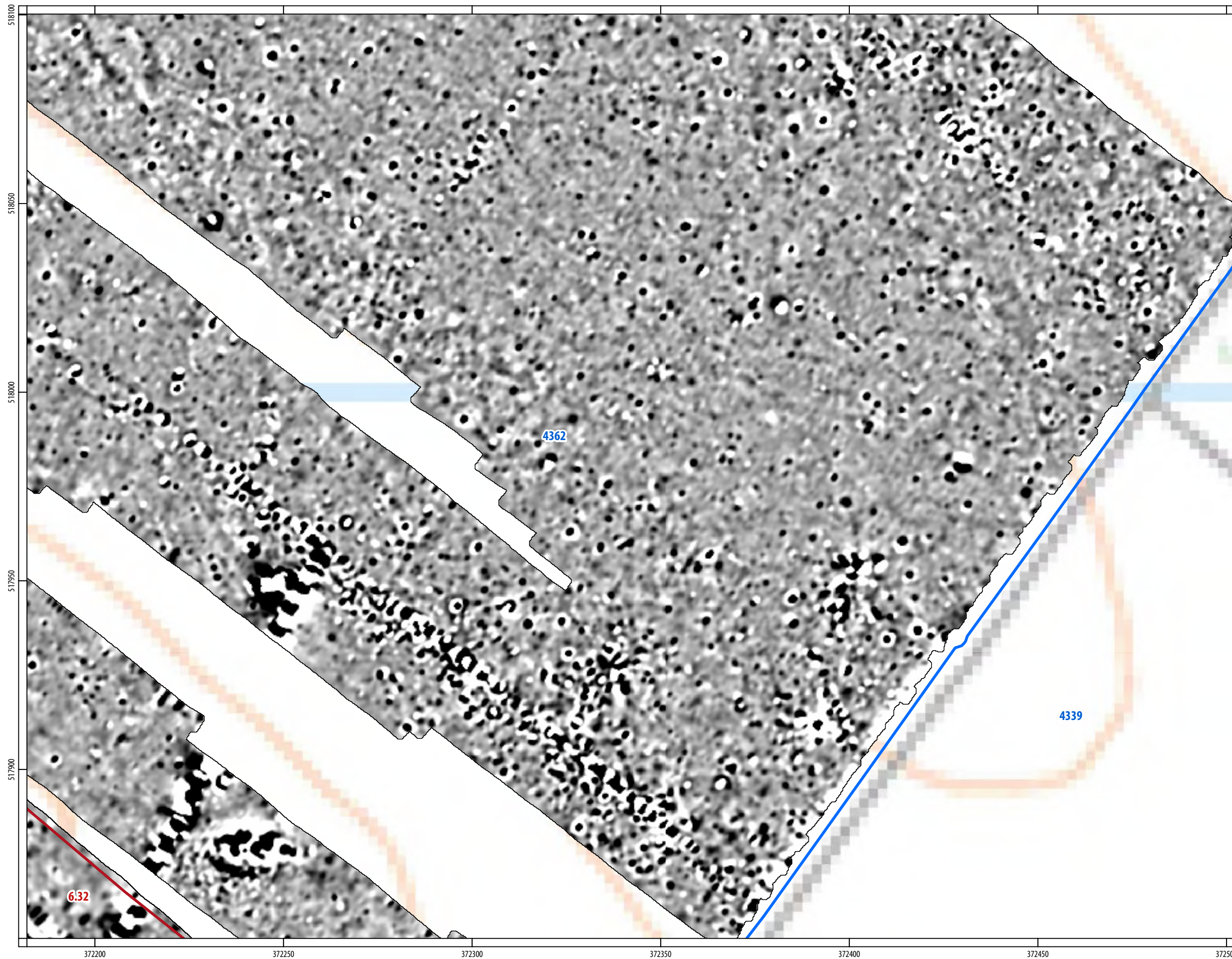


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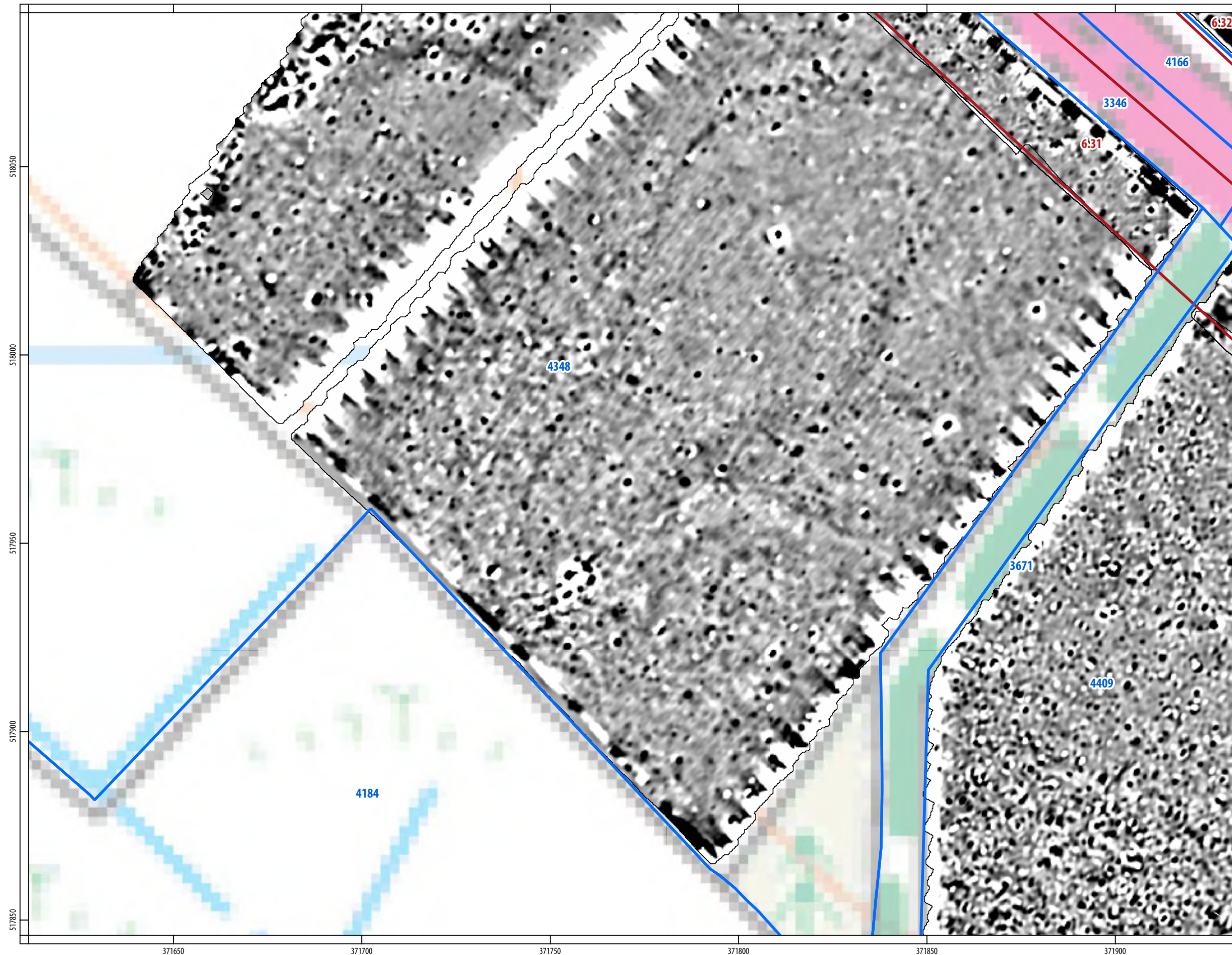


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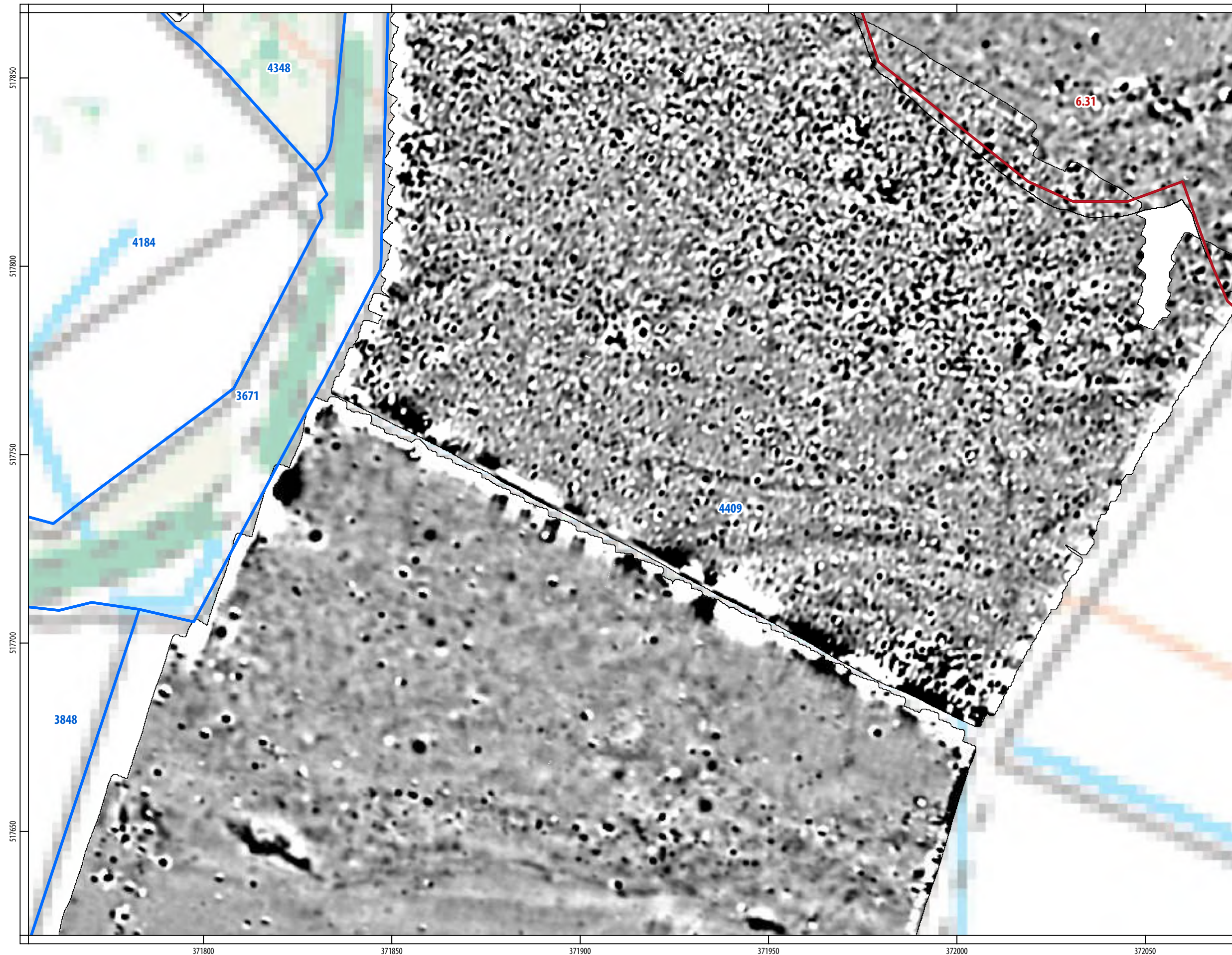


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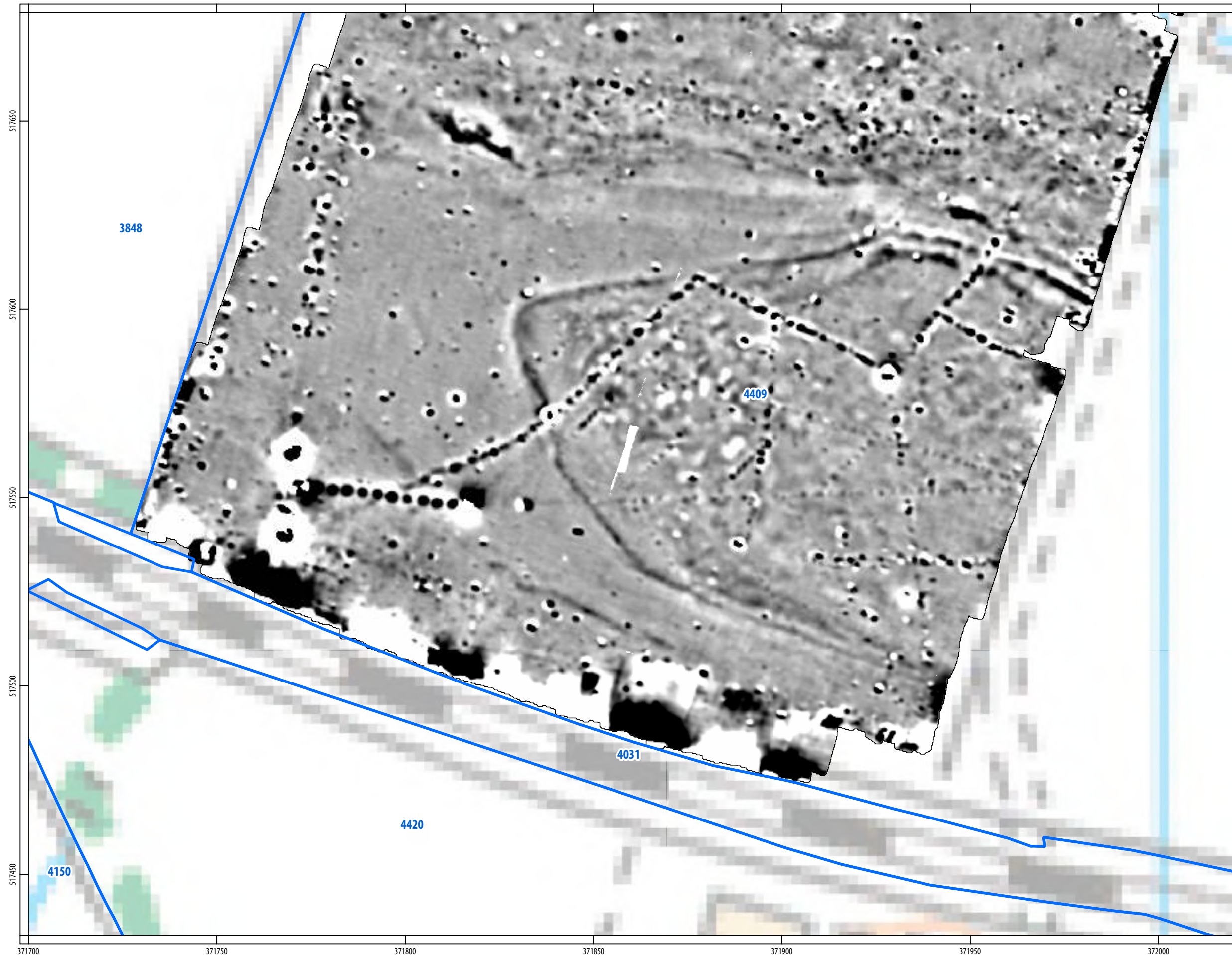


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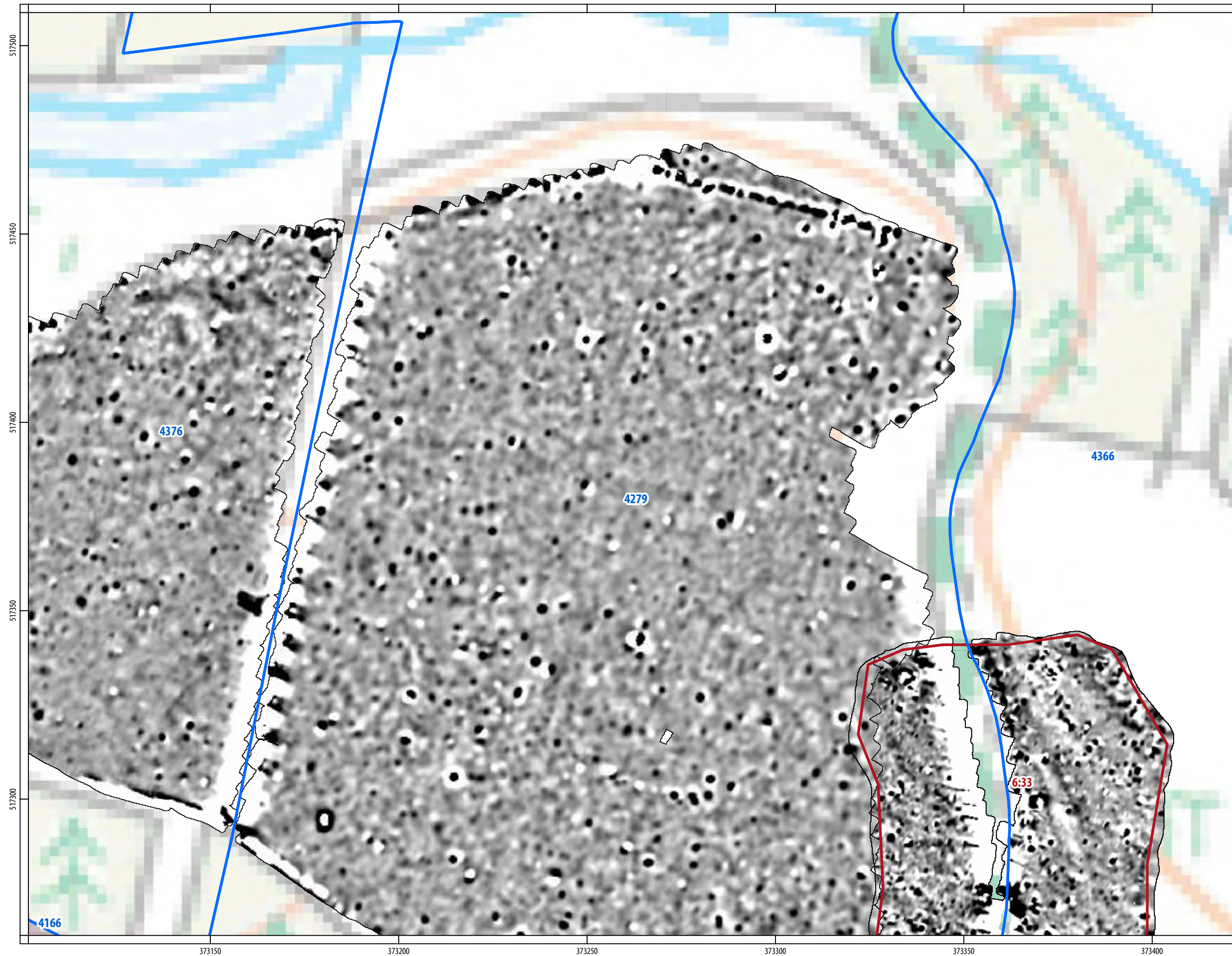


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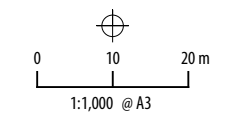


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

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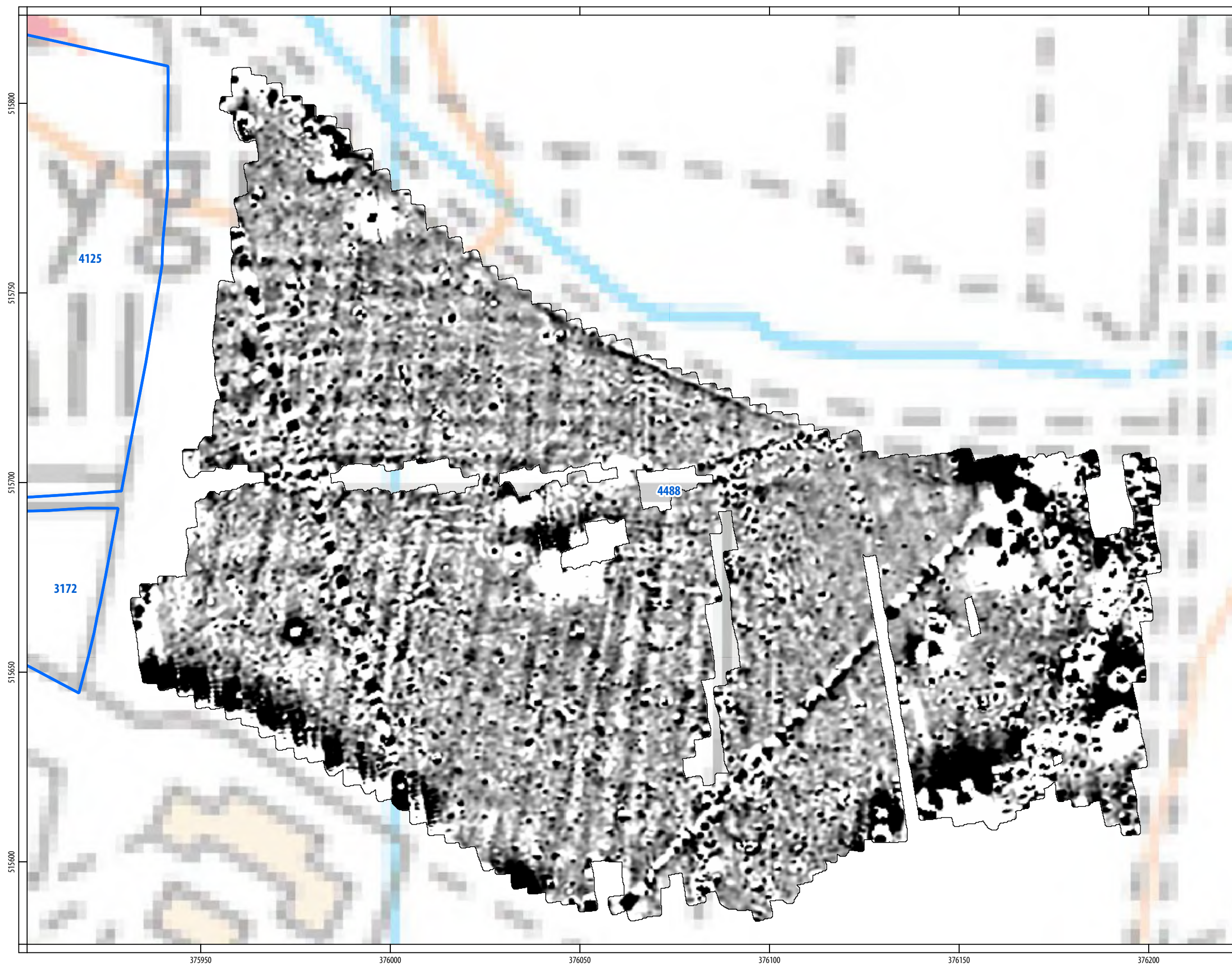
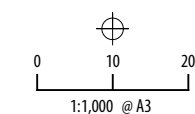


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

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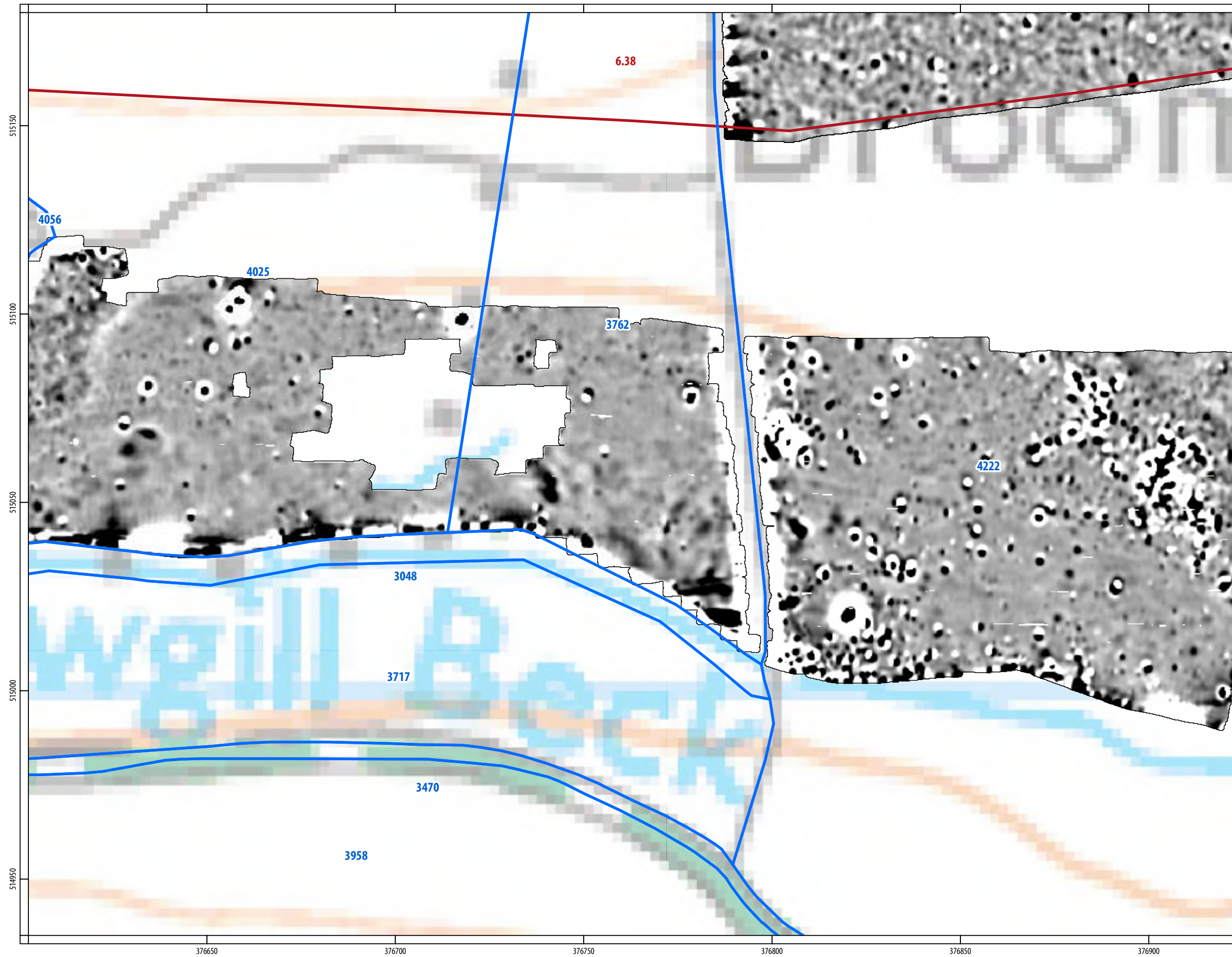


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

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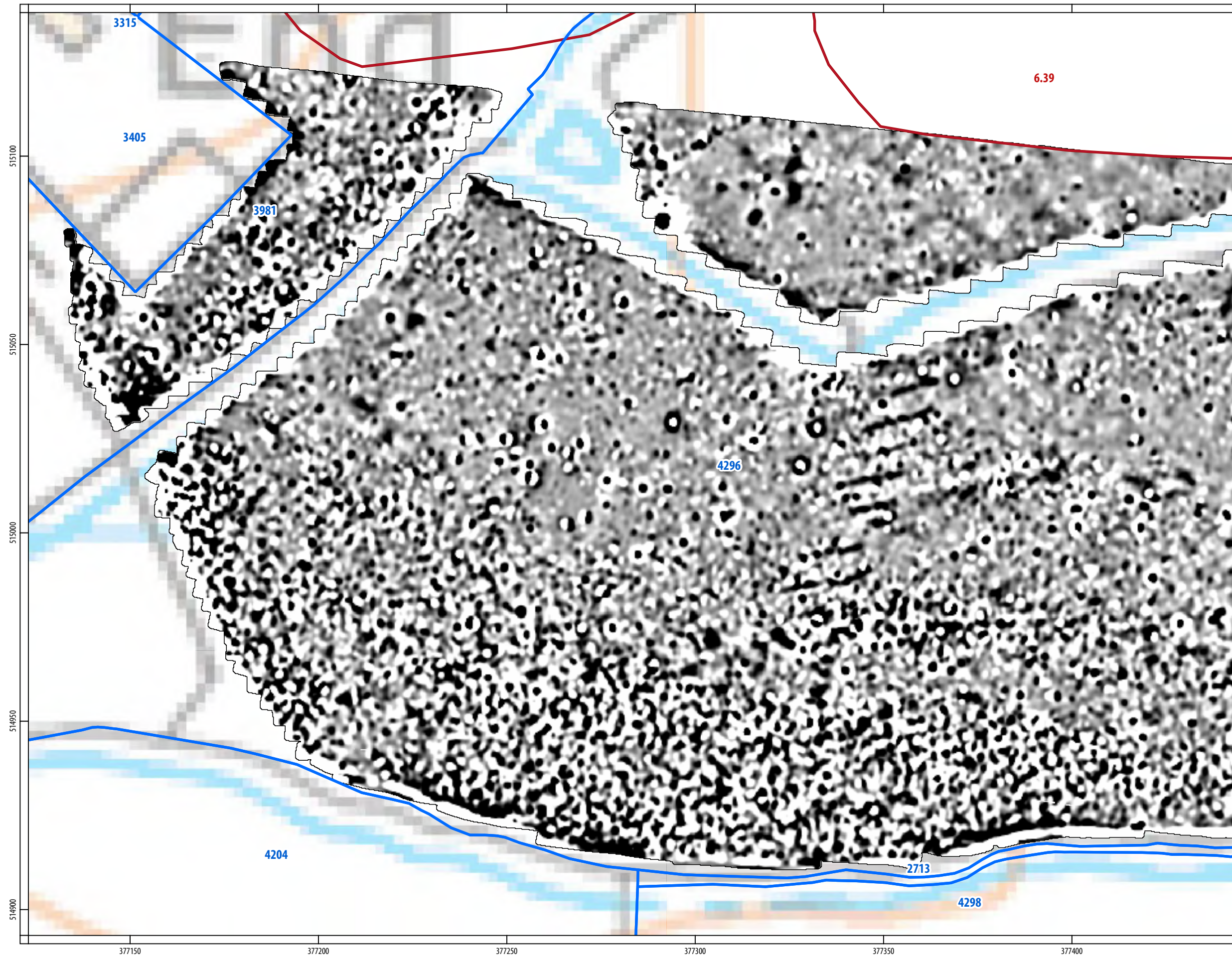


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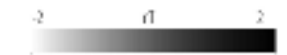
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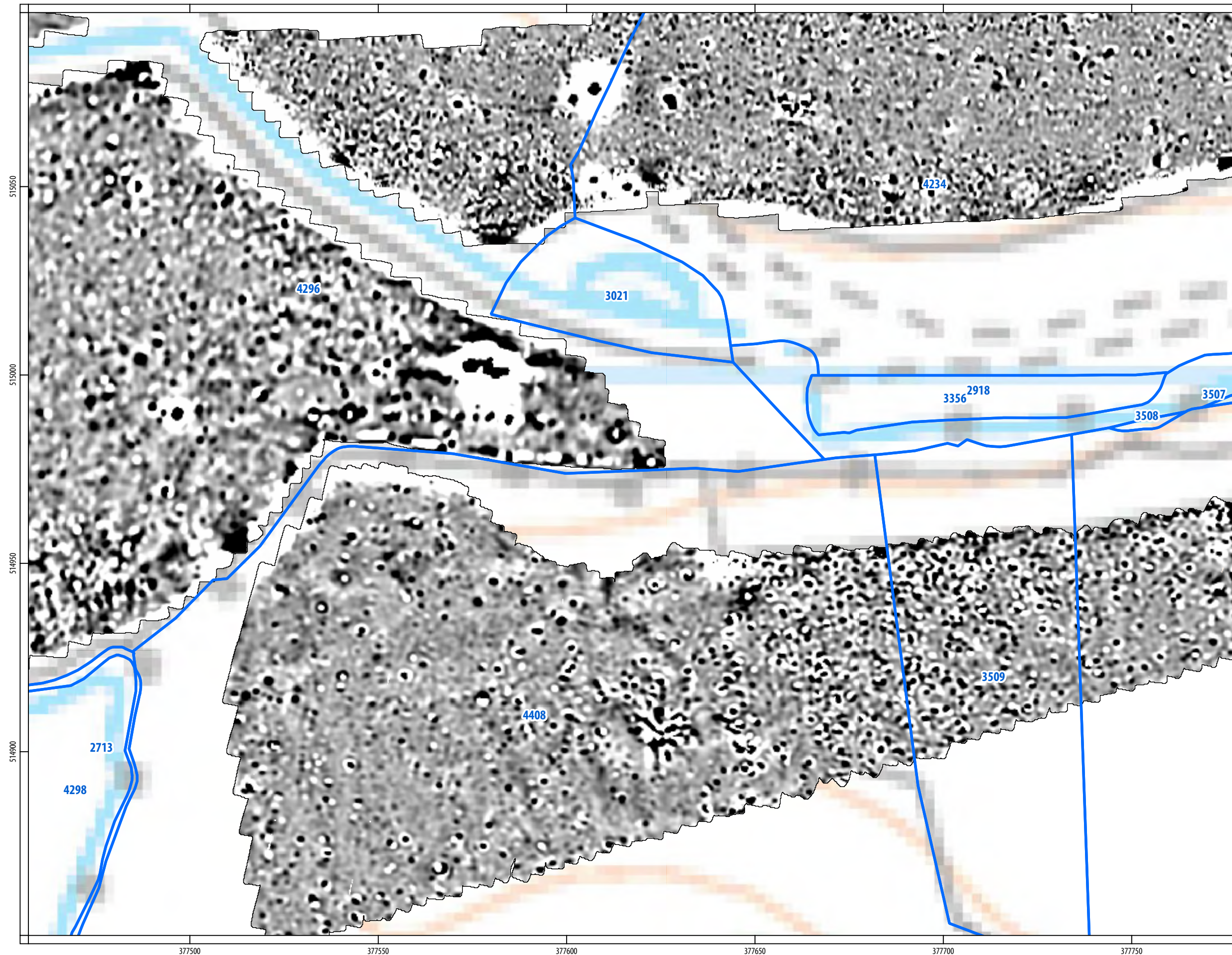


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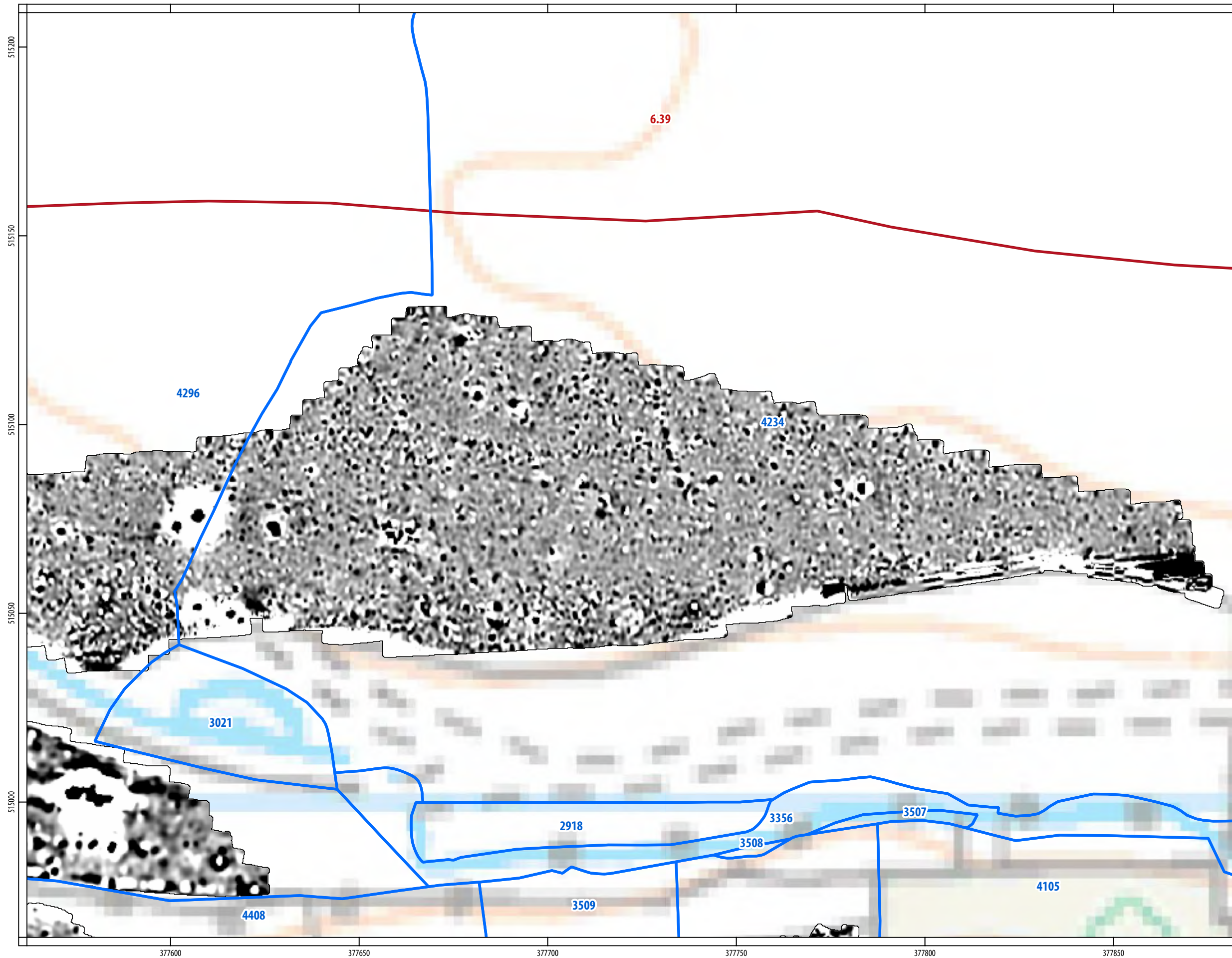


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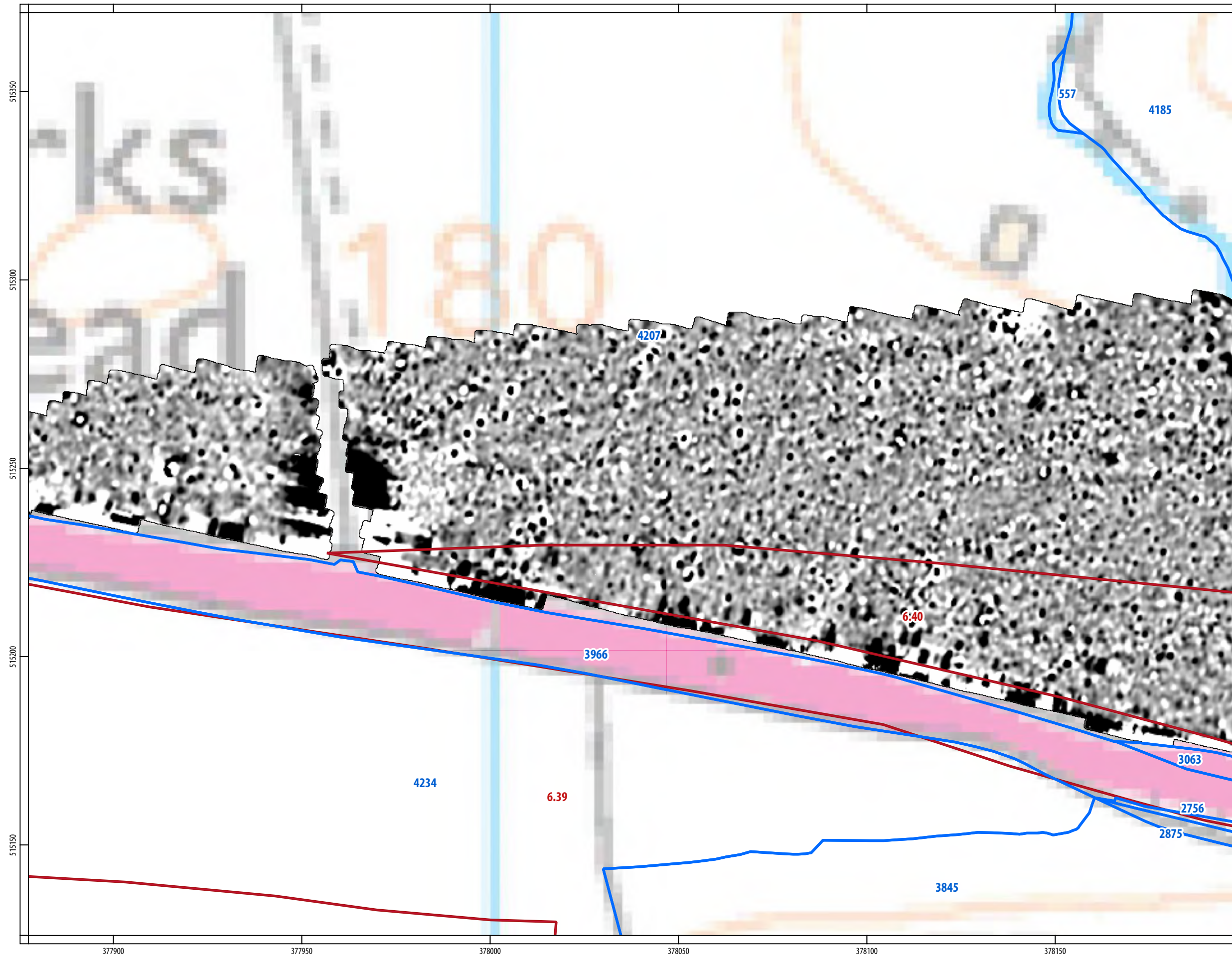


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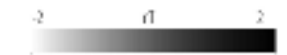
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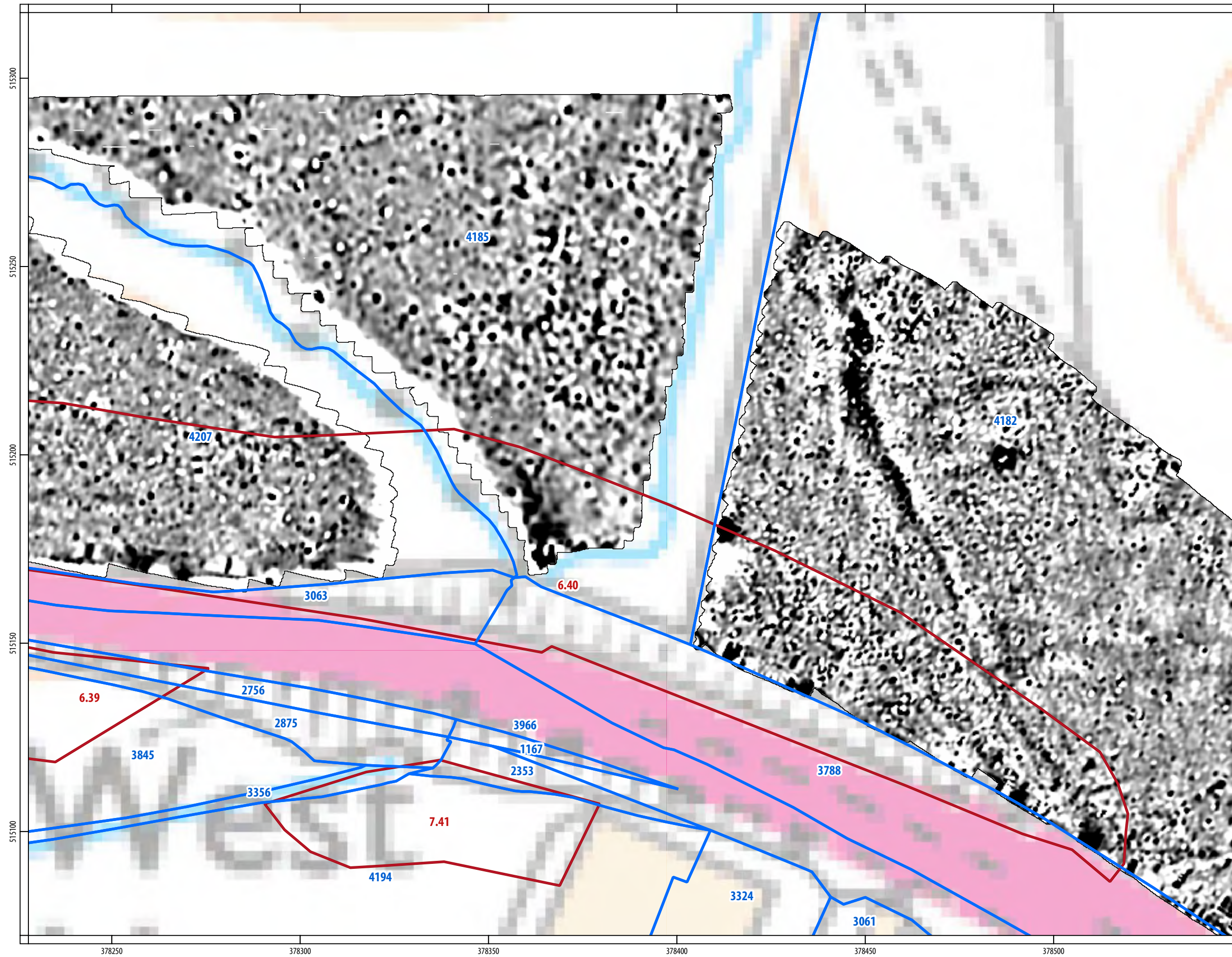
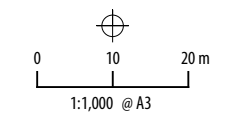


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

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-  Geophysical Survey Extent
-  Scheduled Monument

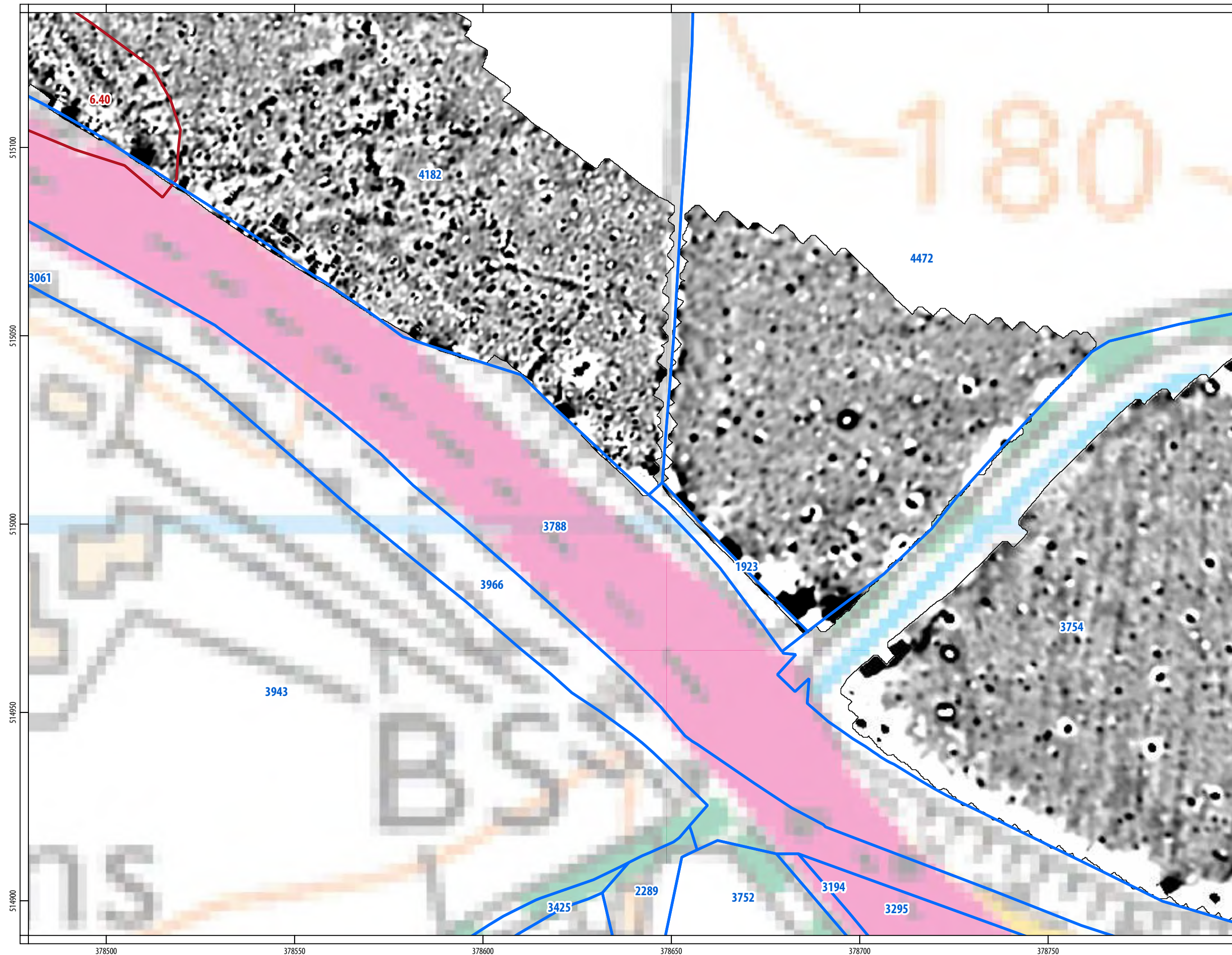


**PROJECT**

ATPU20 - A66 Transpennine Upgrade





**CLIENT**

Highways England





**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

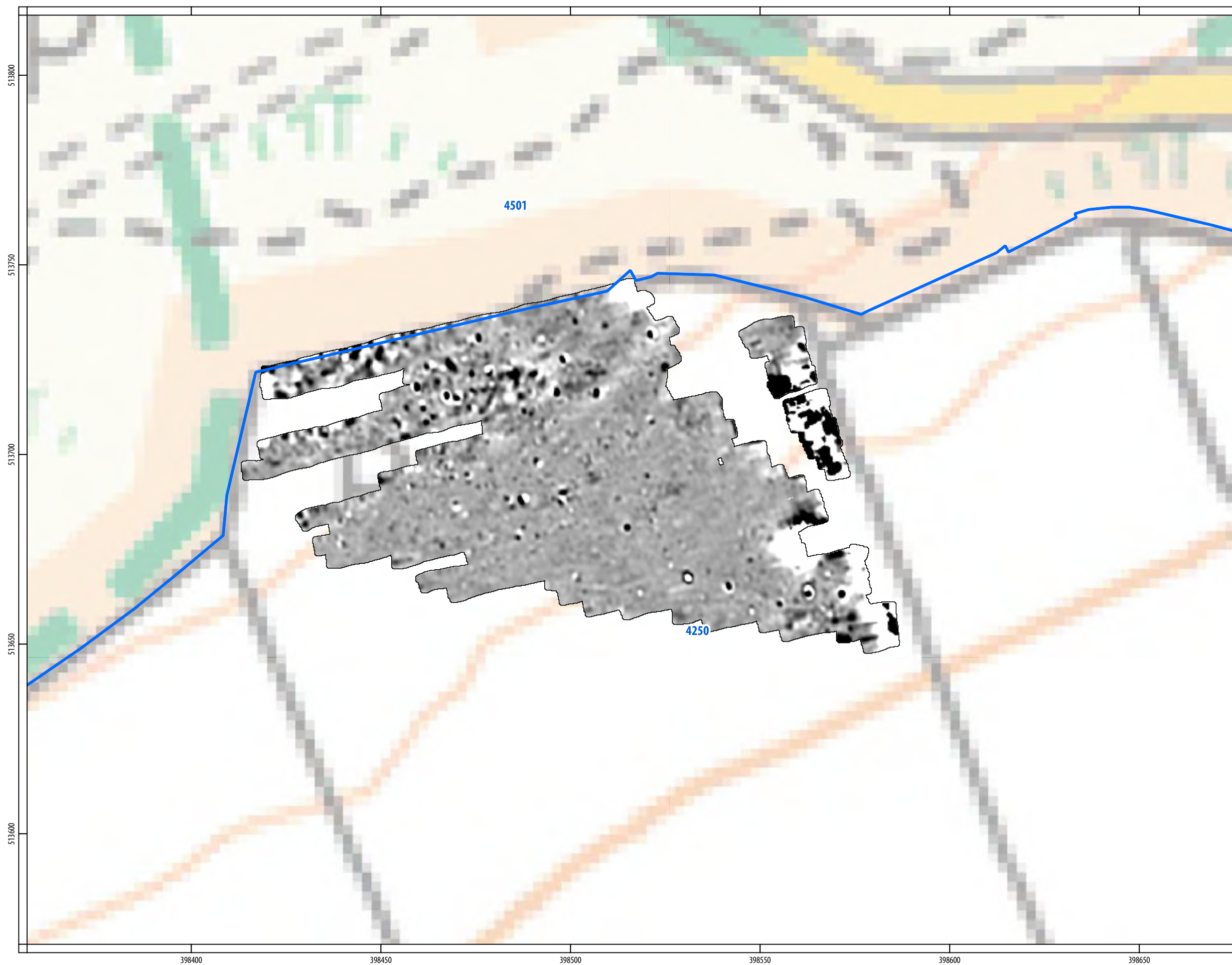
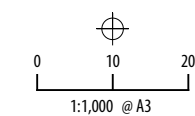


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

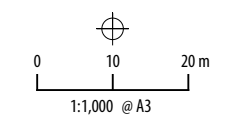


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

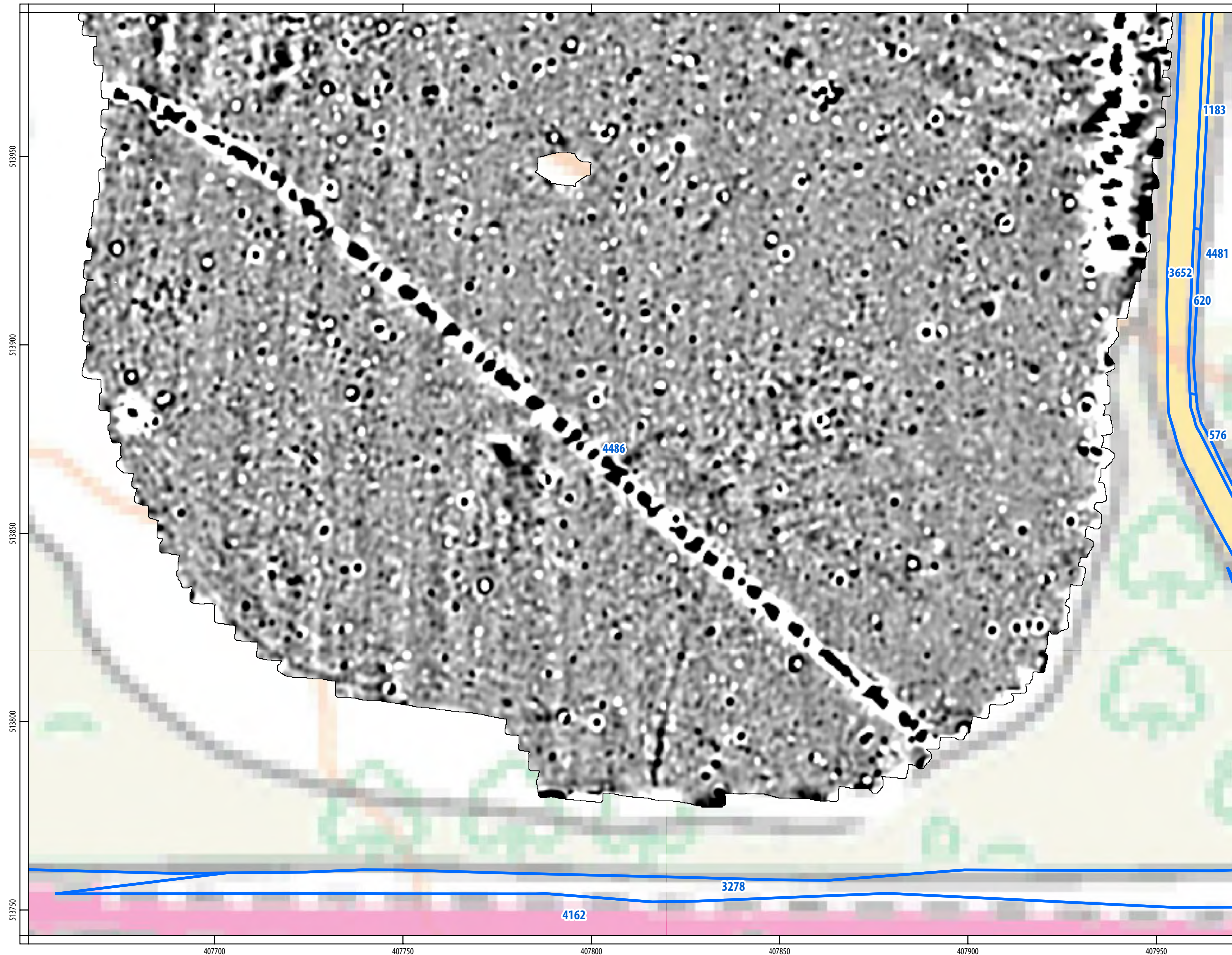


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

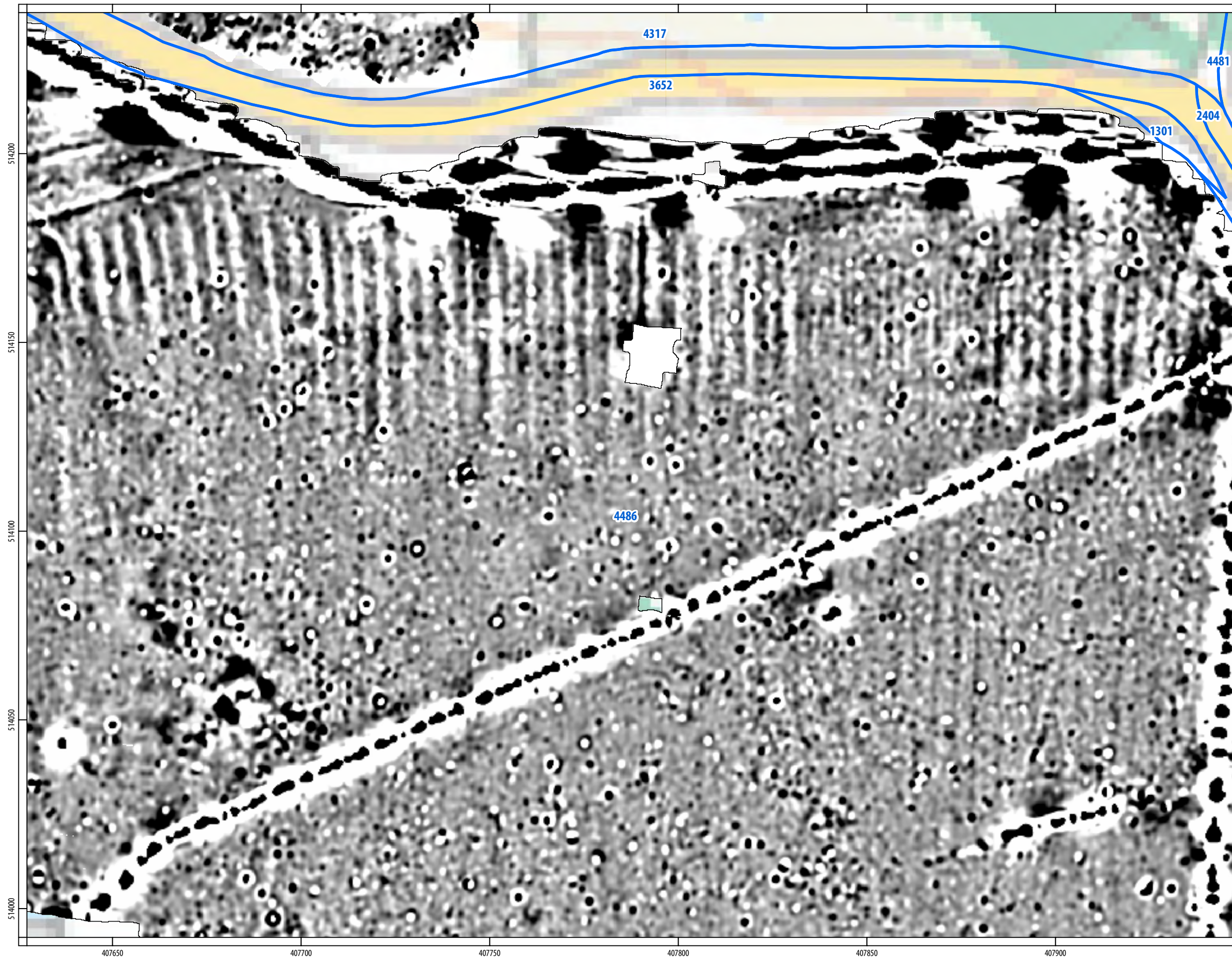


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

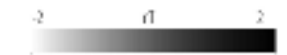
Highways England





**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

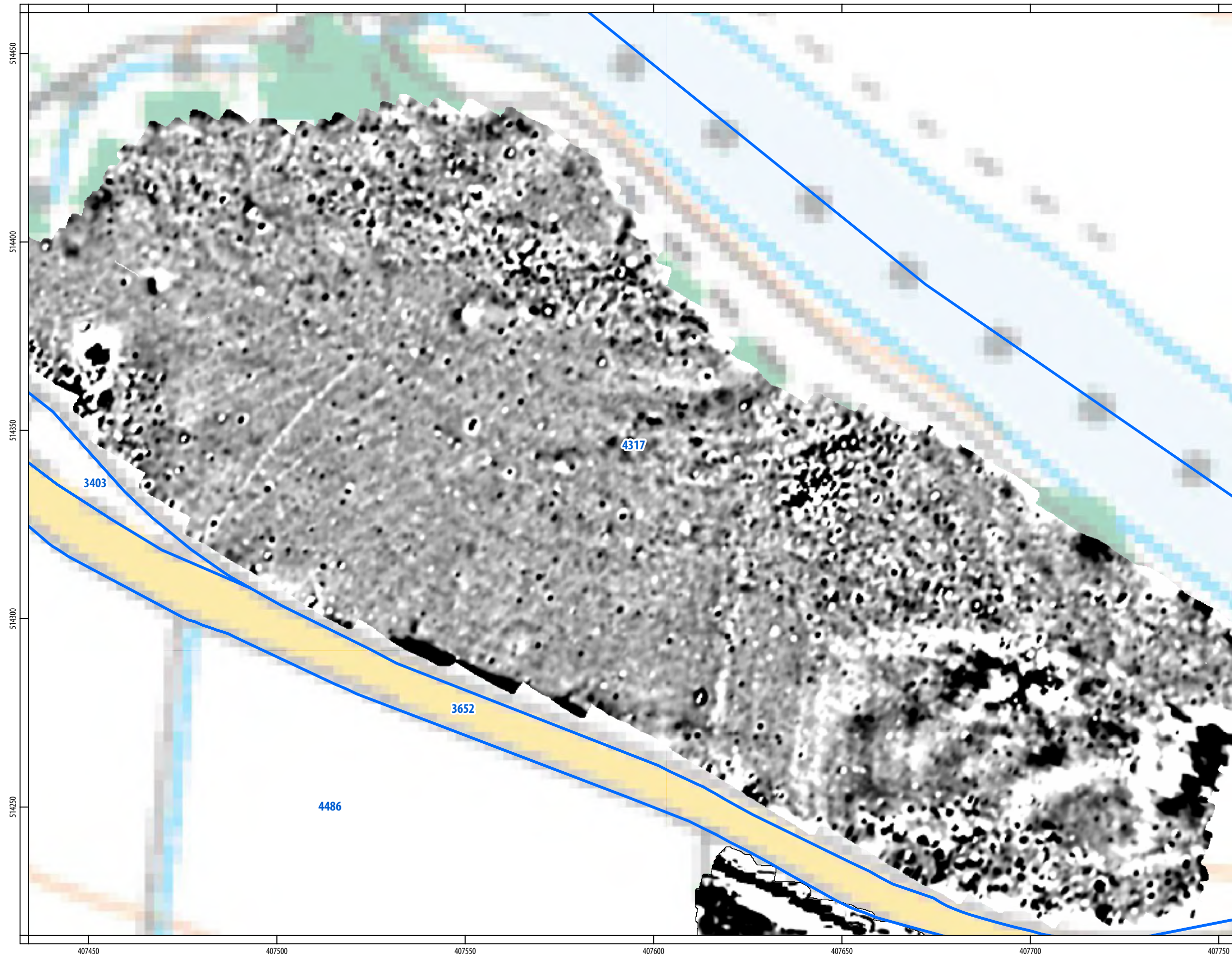


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  Scheduled Monument

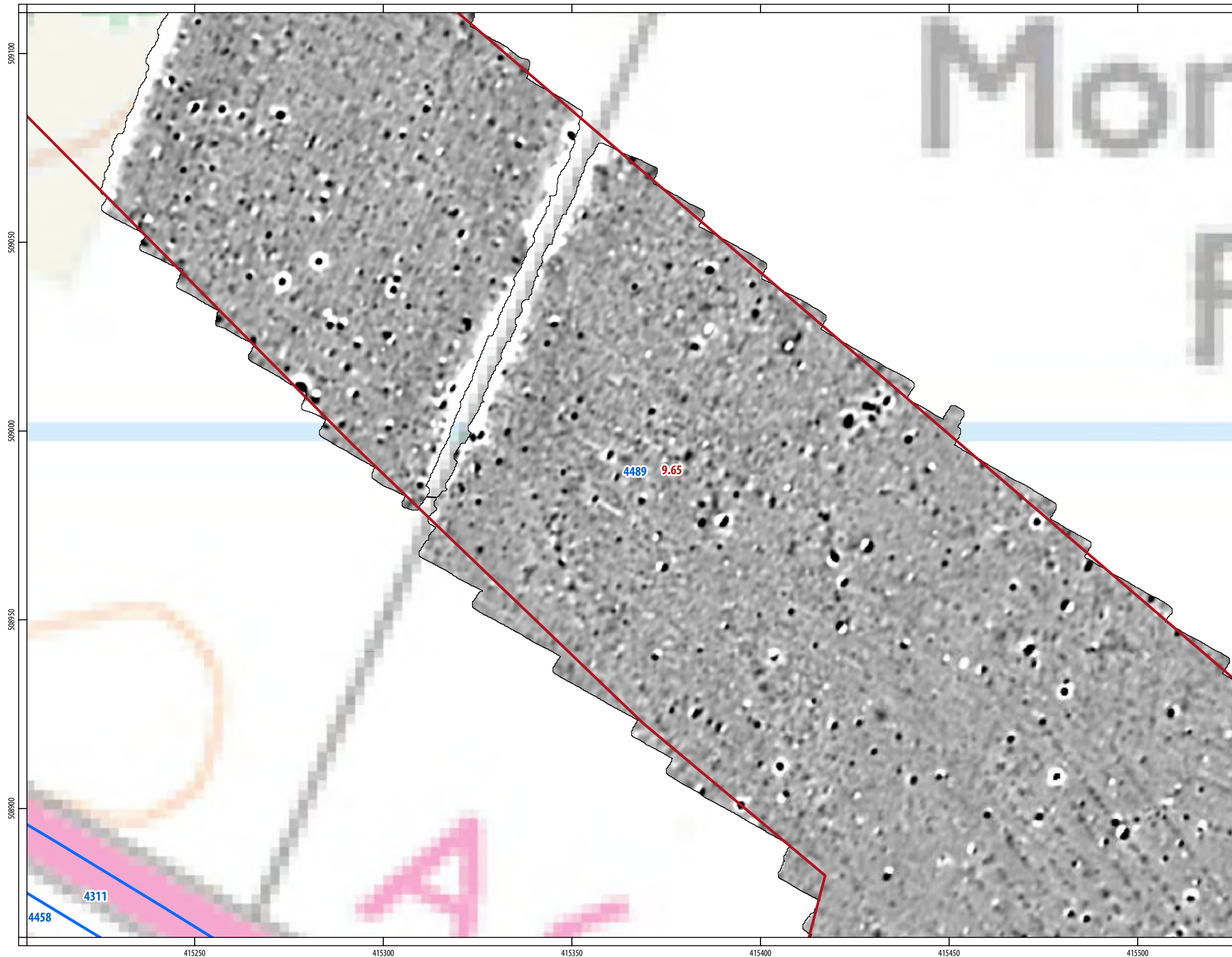


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Scheduled Monument

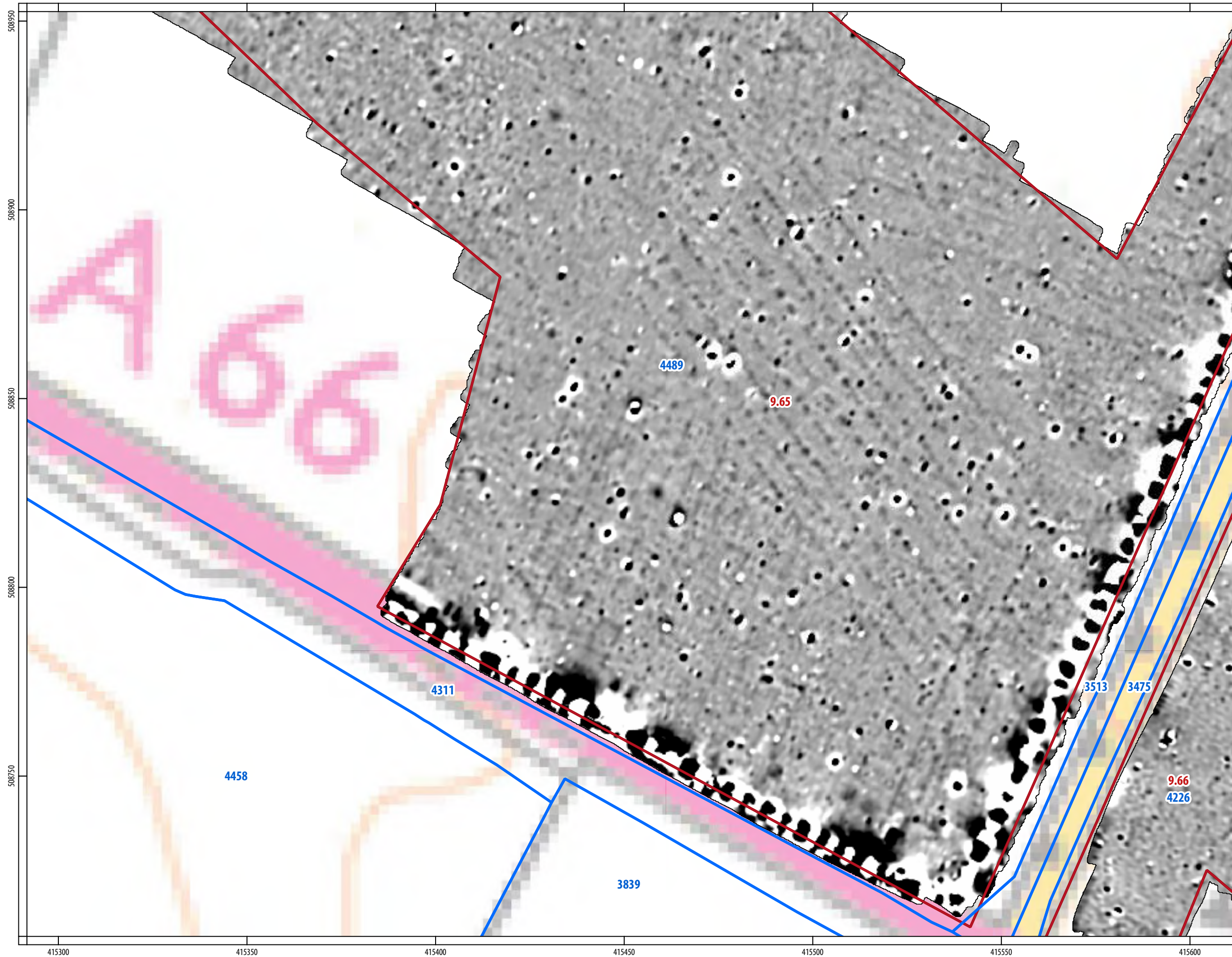


**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

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**Phase 2 Survey**

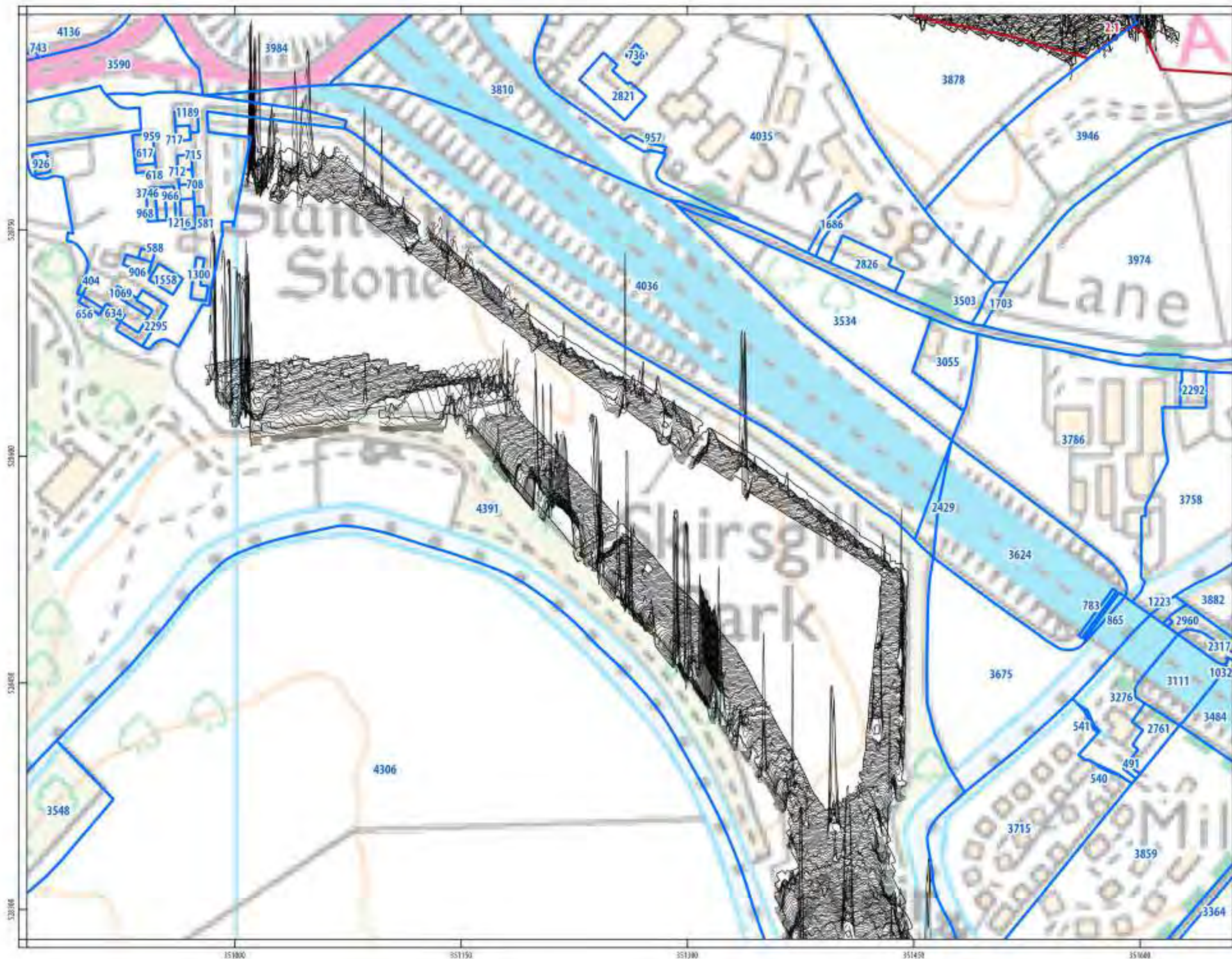
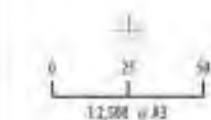
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY, 10m/1cm
- Scheduled Monument

**PROJECT**

MFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 585 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

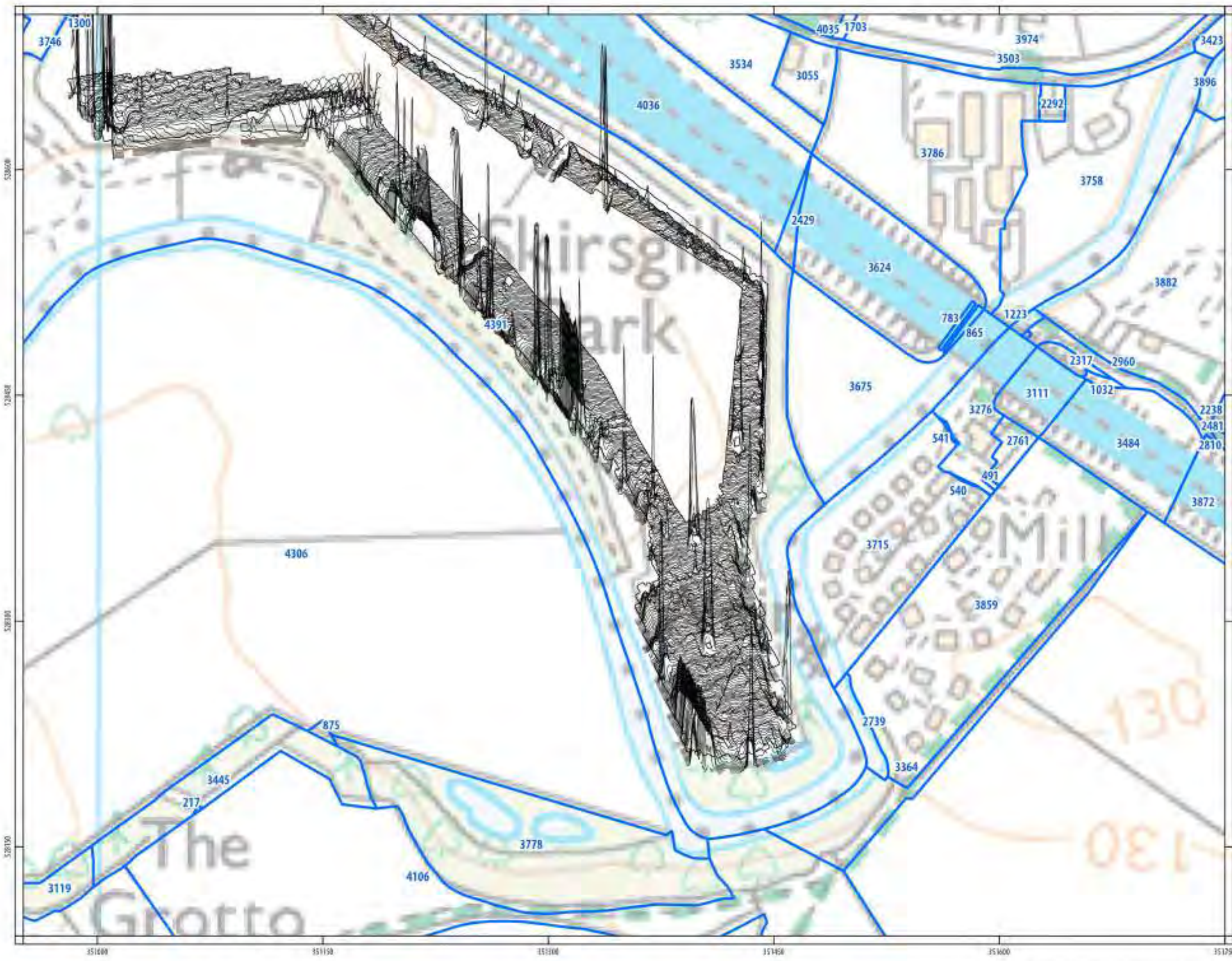
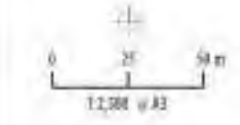
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10m/10m
- Scheduled Monument

**PROJECT**

M6J20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 586 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10m/20m
- Scheduled Monument

**PROJECT**  
M1020 - A66 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 587 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

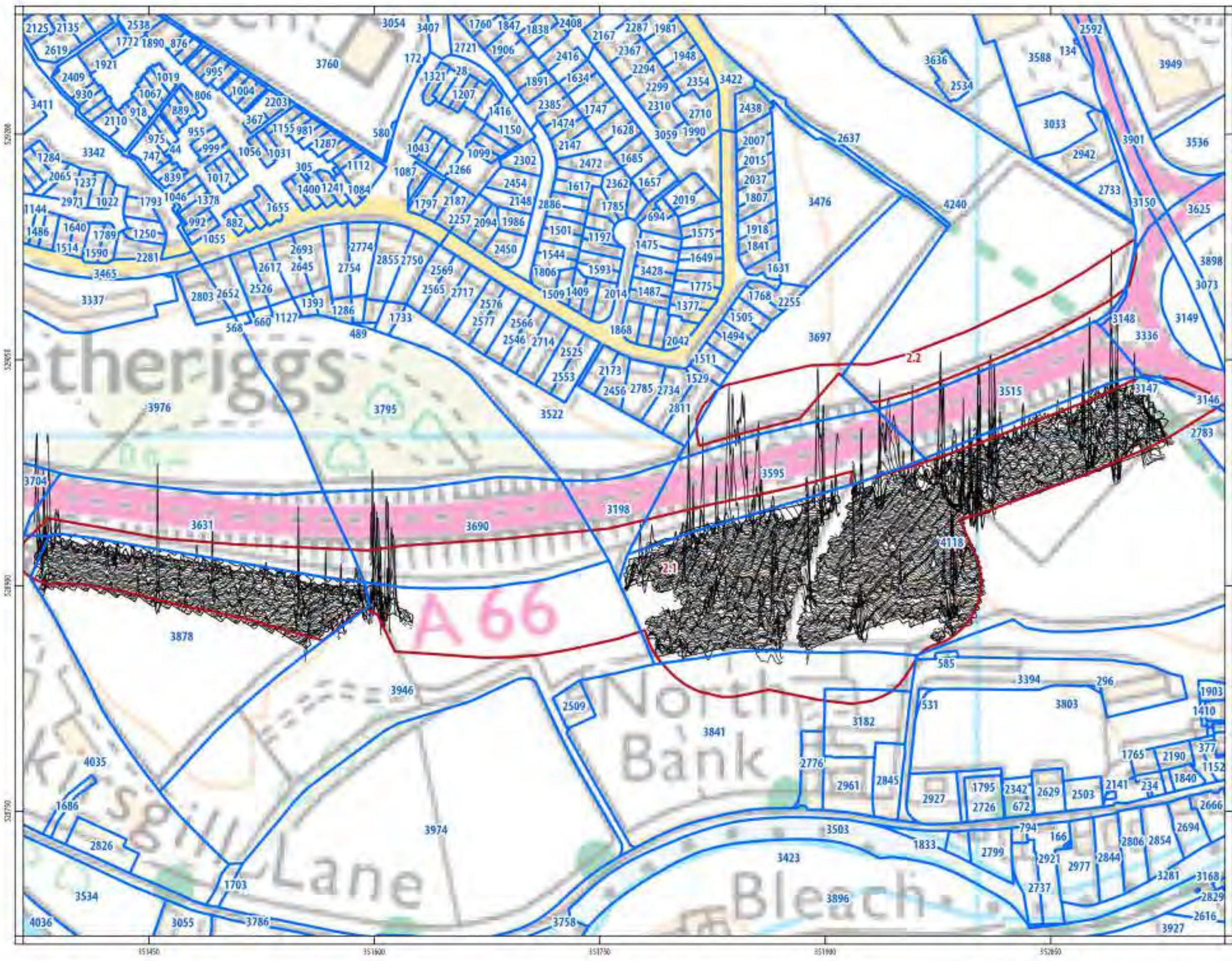
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m/2cm
- Scheduled Monument

**PROJECT**

MJPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS S88 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

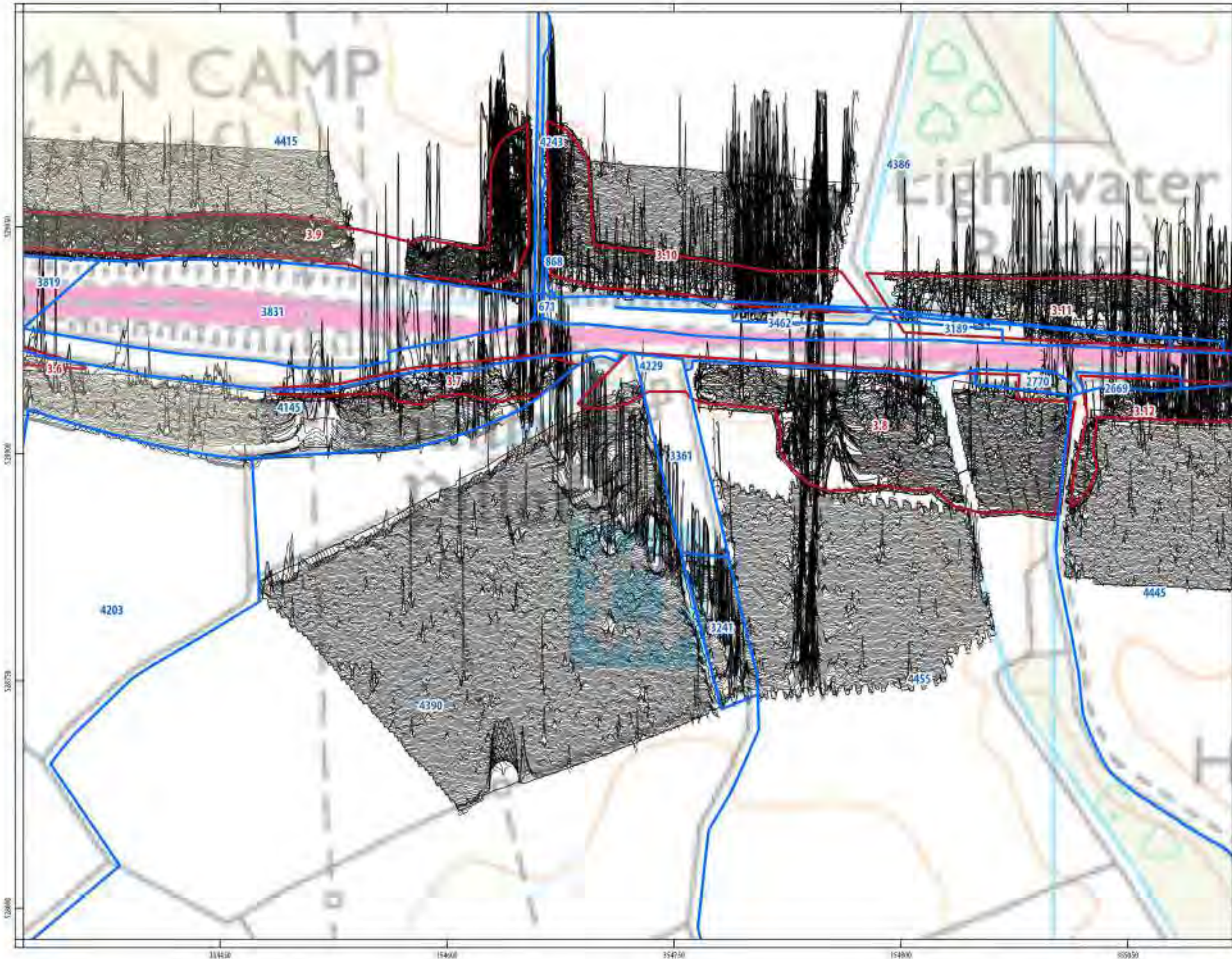
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Extent
- ▭ XY - 10m/2m
- ▭ Simulated Minimums

**PROJECT**

M10-496 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 589 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

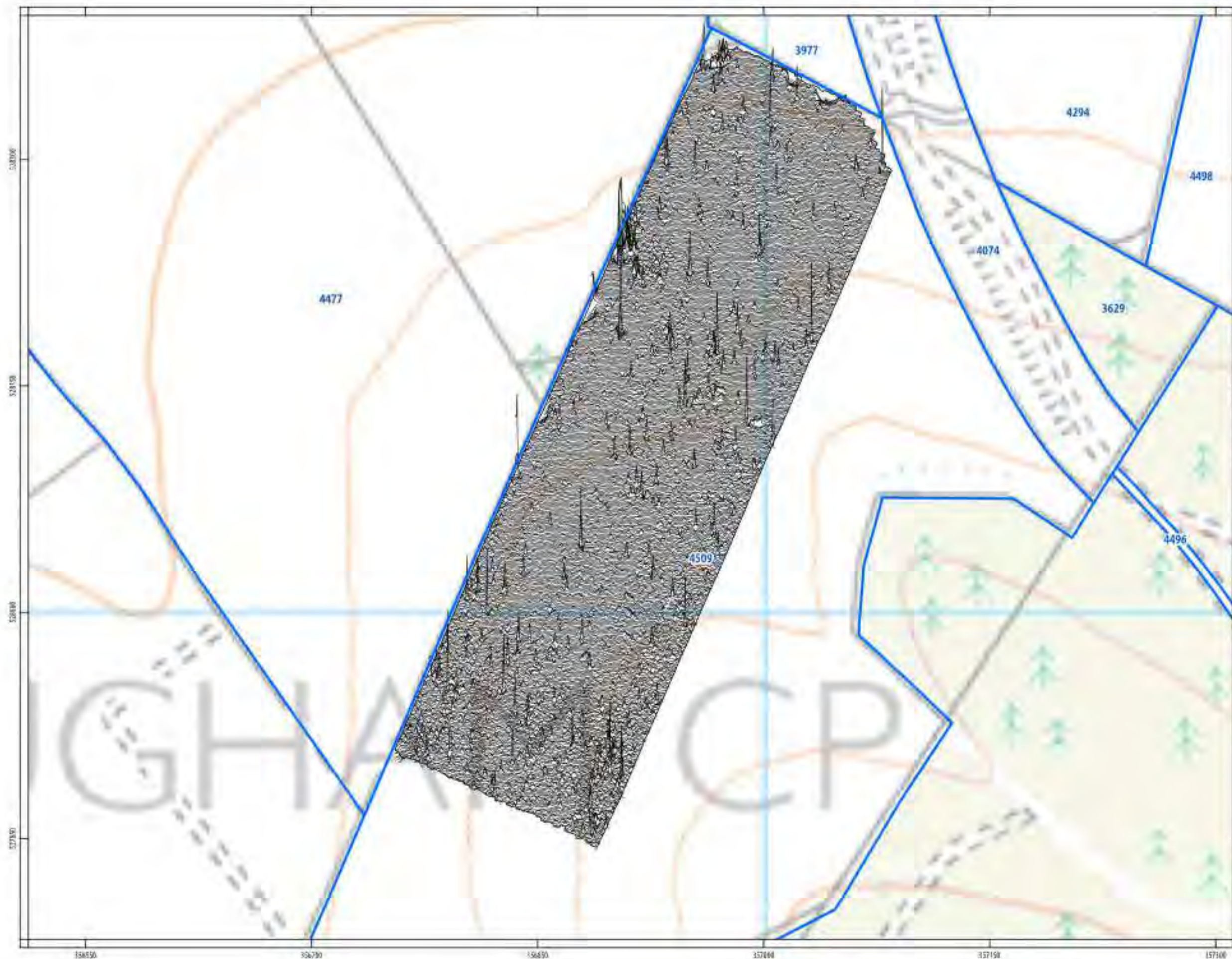
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY 10m/5m
-  Scheduled Monument

**PROJECT**

A1020-A66 Trunk Road Upgrade

**CLIENT**






Highways England



ILLUS 590 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

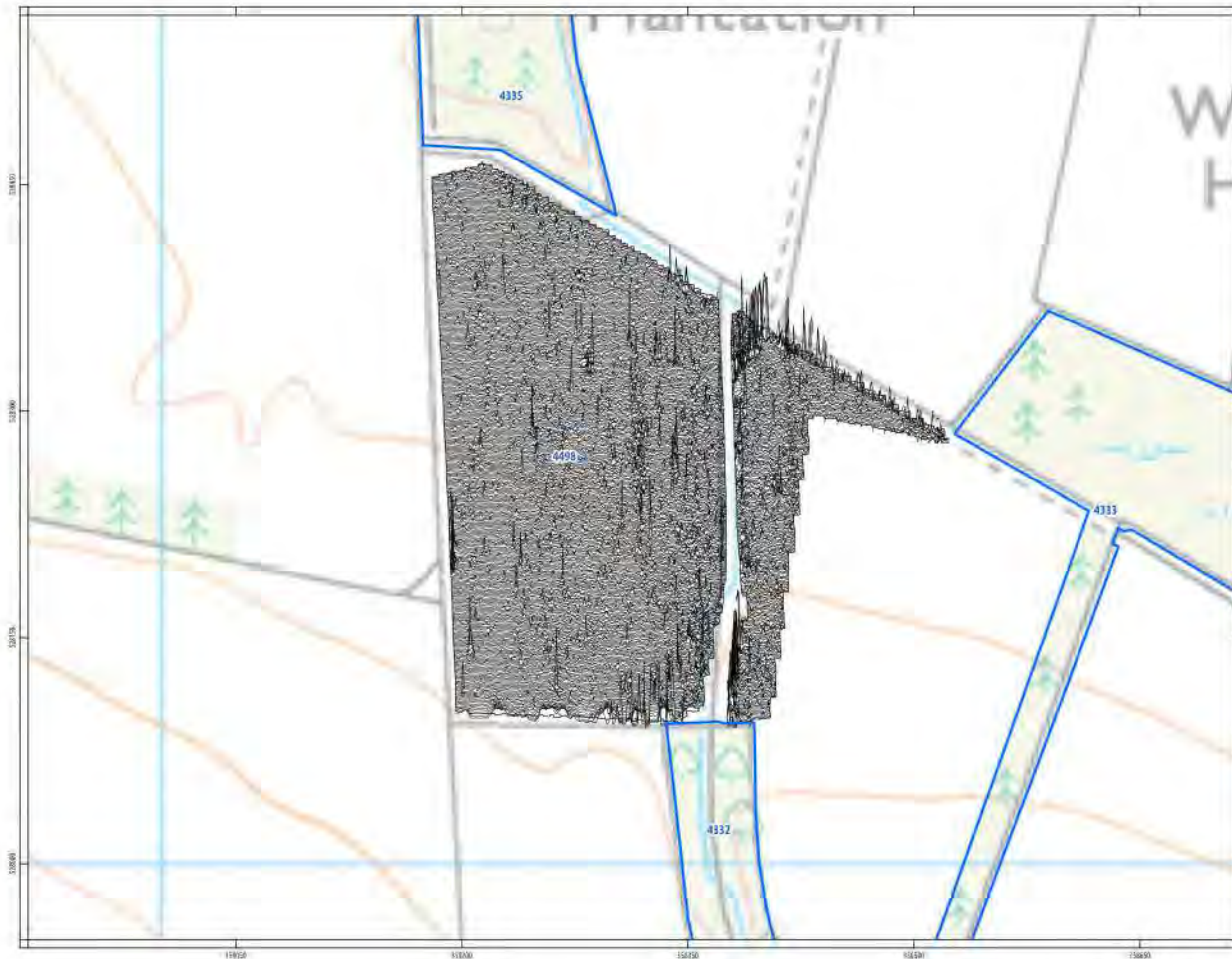
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  XY Grid Line
-  Considered Monument

**PROJECT**

A120 - A96 Transport Upgrade

**CLIENT**






Highways England



ILLUS 591 XY trace plot of minimally processed magnetometer data; Penitri to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

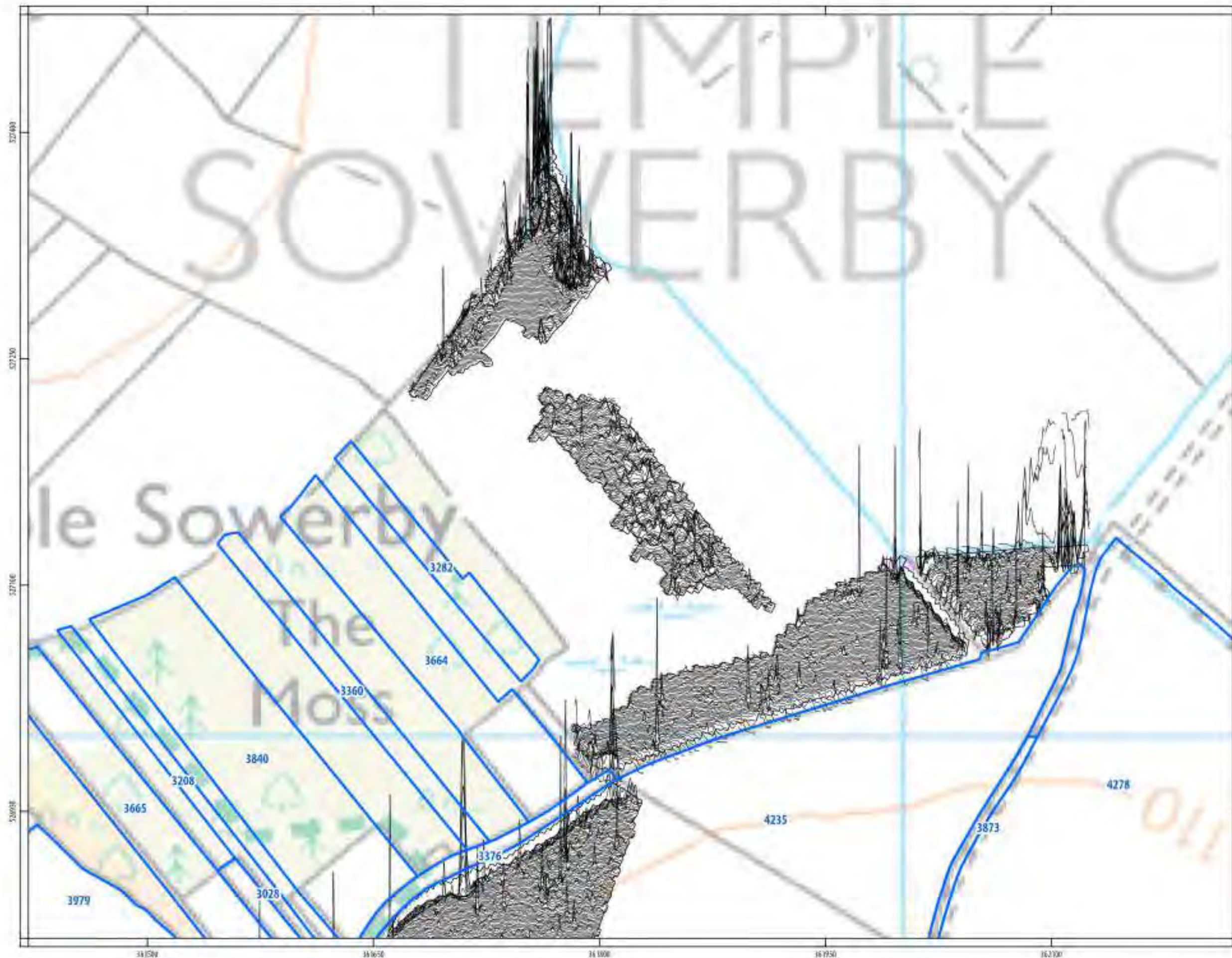
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY - 10m/5m
-  Scheduled Monument

**PROJECT**

A1620 - A96 Transpennine Upgrade

**CLIENT**

Highways England



ILLU5 592 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby

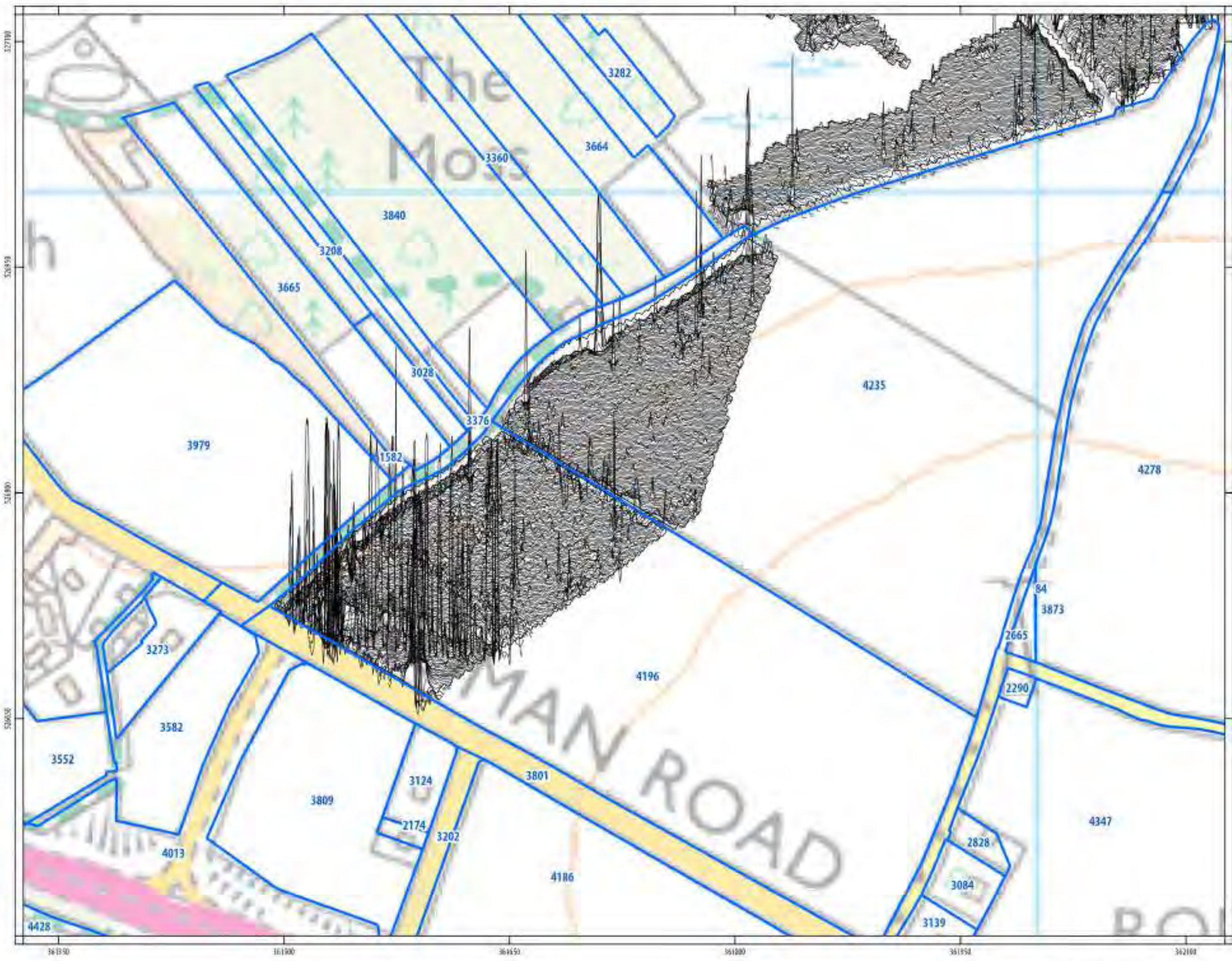
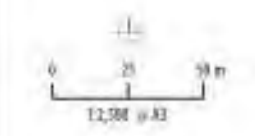


**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▭ Geophysical Survey Patient
- ▭ XY - 10m/20m
- ▭ Scheduled Monument

**PROJECT**  
M20-496 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 593 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

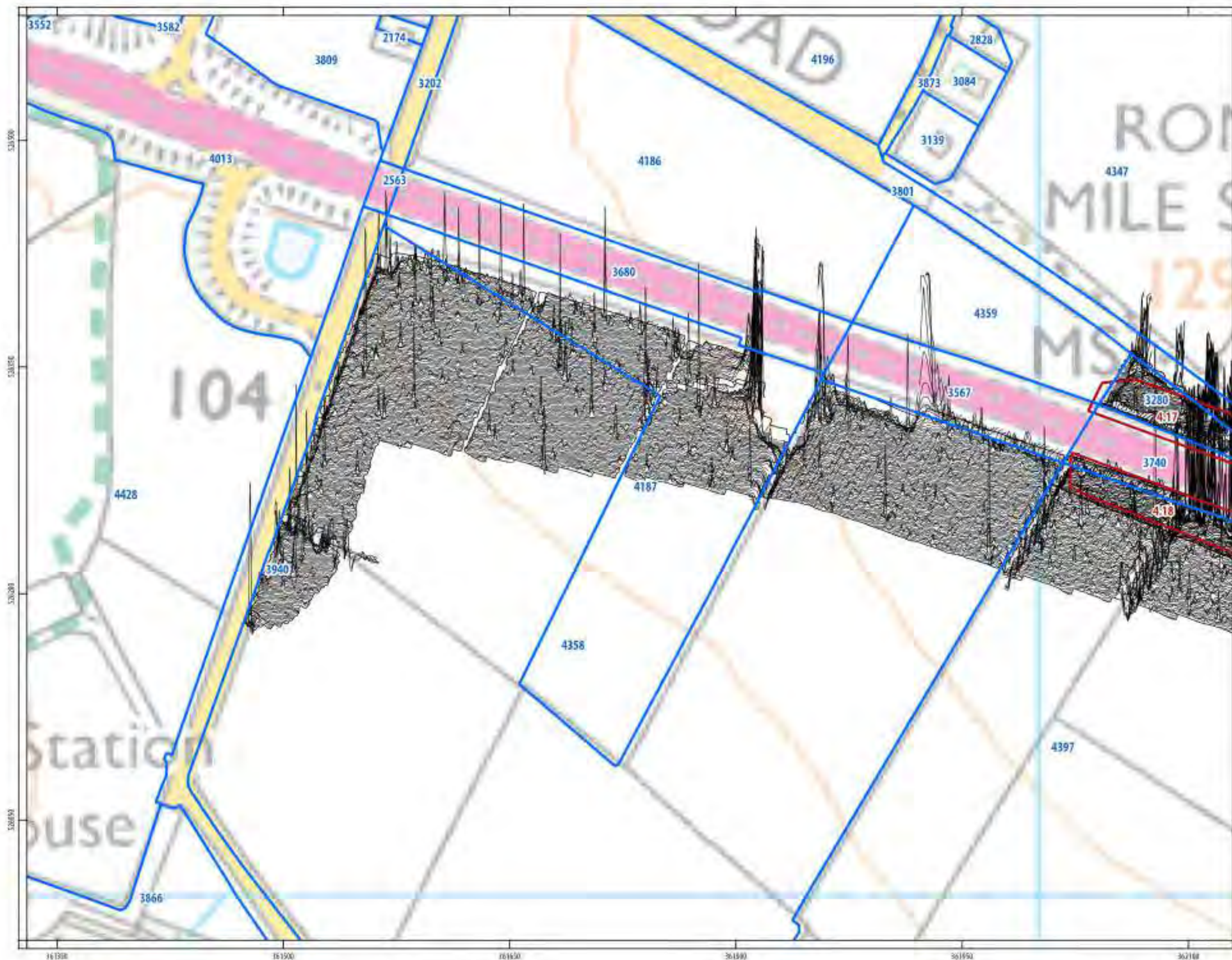
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m/5m
- Scheduled Monument

**PROJECT**

M7020 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 594 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby
















**Phase 2 Survey**

-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY - 10m/5m
-  Simulated Monument

**PROJECT**

MPU20-A66 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 597 XY trace plot of minimally processed magnetometer data; Temple Saverby to Appleby



**Phase 2 Survey**

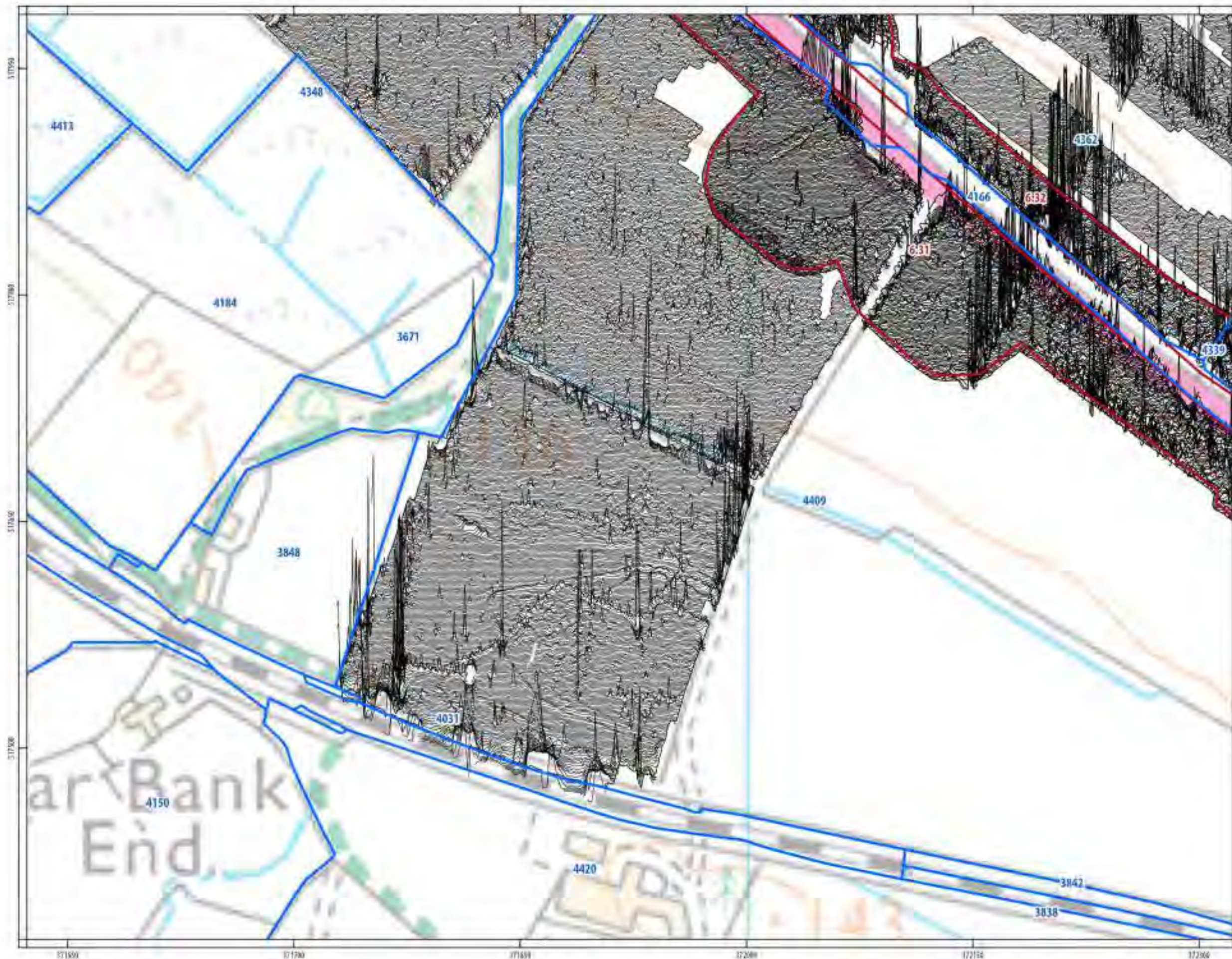
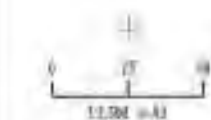
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY Limit Line
-  Scheduled Monument

**PROJECT**

M7020 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 598 XY trace plot of minimally processed magnetometer data; Appleby to Bimugh (Warcop)



**Phase 2 Survey**

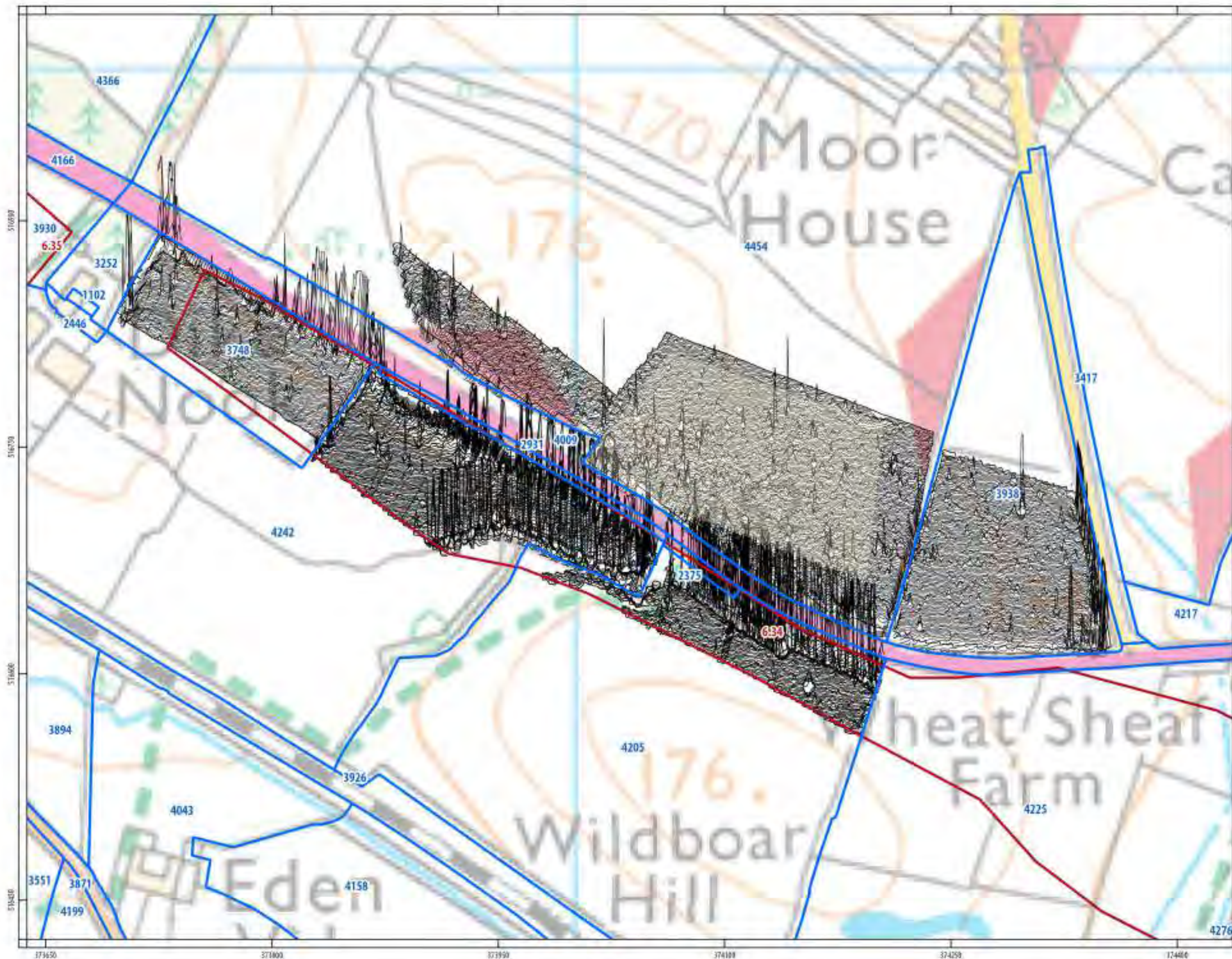
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▬ XY - 10m/5m
- ▬ Scheduled Monument

**PROJECT**

APU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

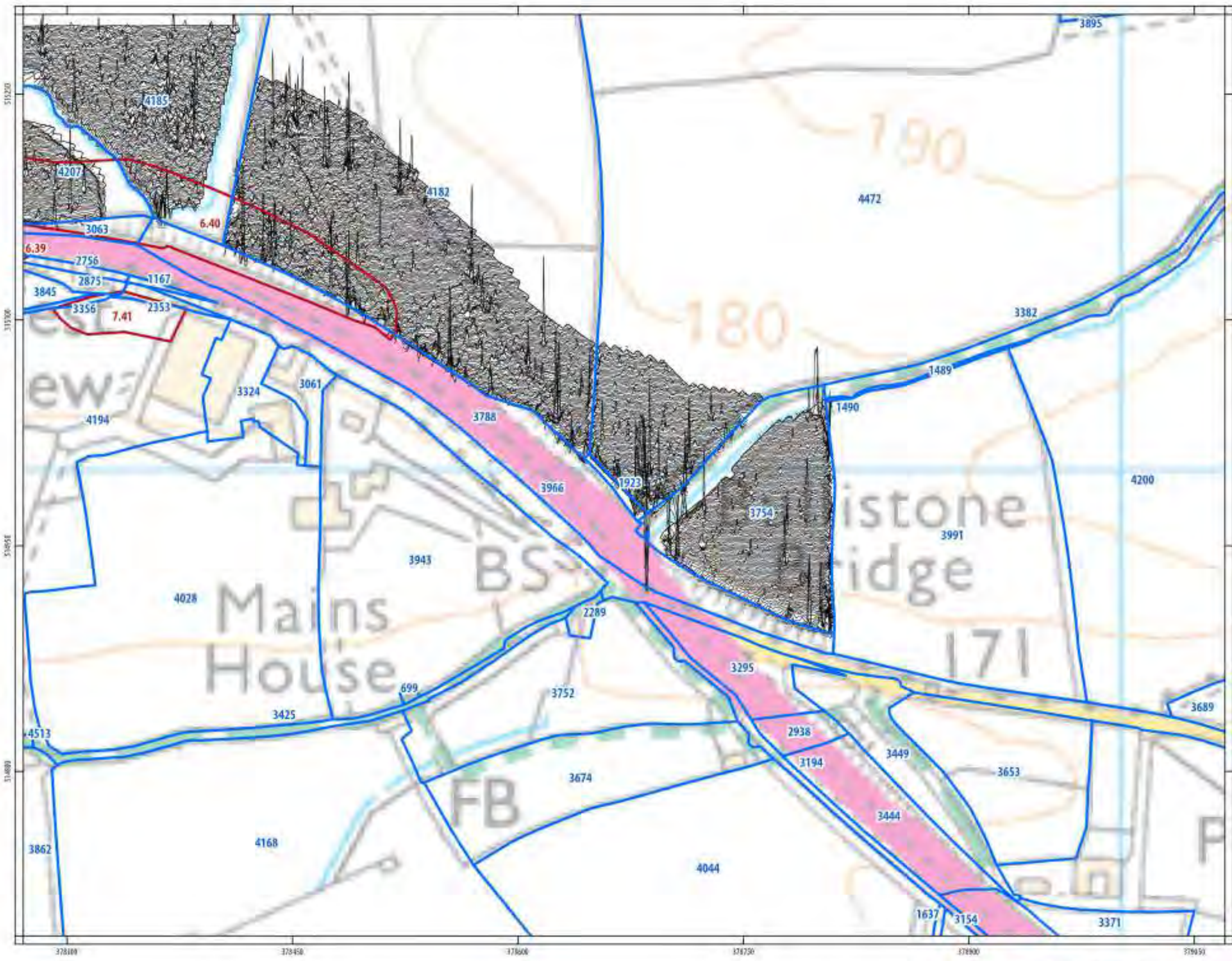
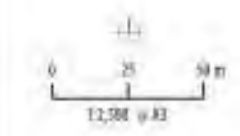
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m/5m
- Scheduled Monument

**PROJECT**

A7020-406 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 600 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

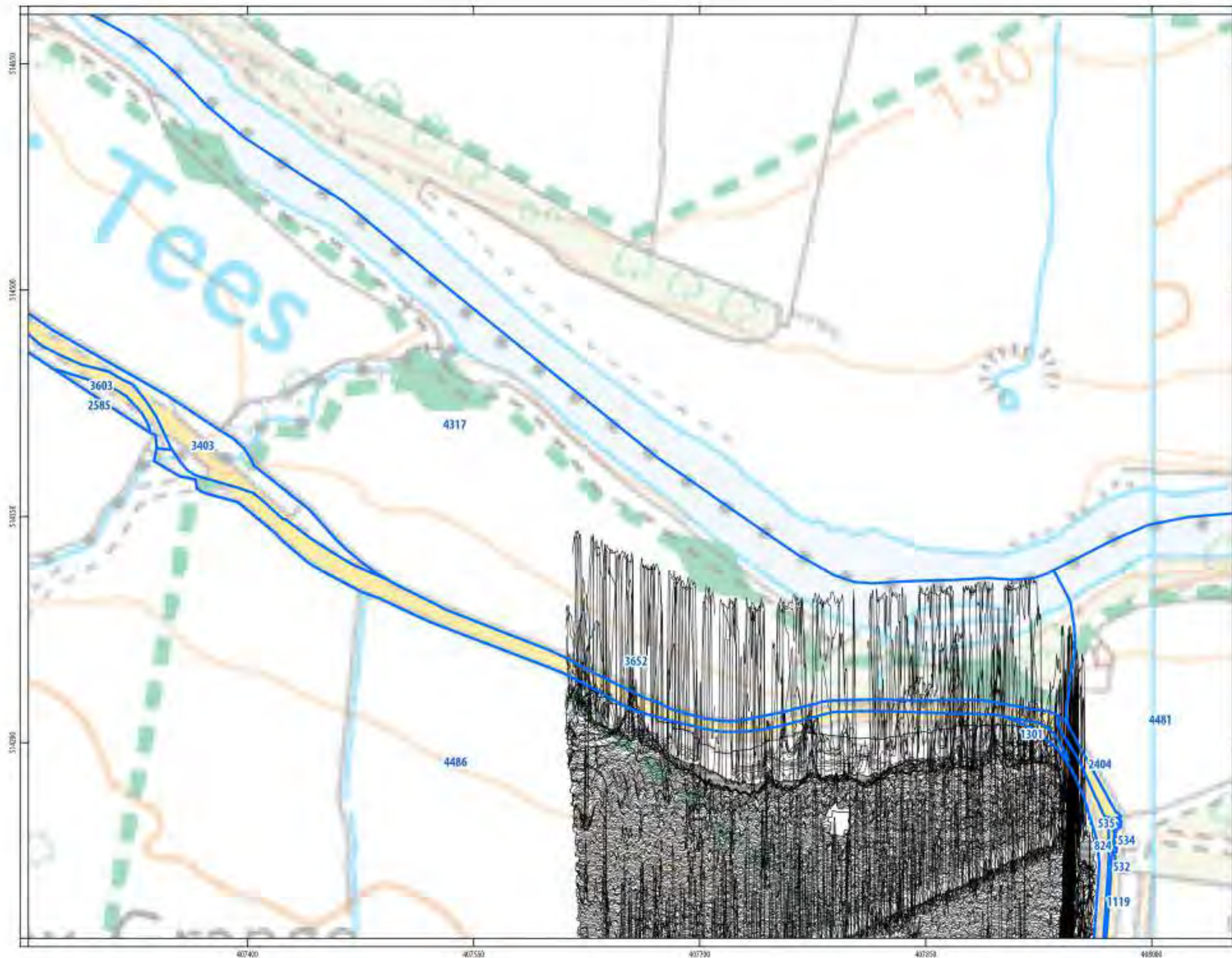
- ▭ Phase 1 Geophysical Survey Area
- ▬ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Extent
- ▬ XY - 10m/2cm
- ▬ Scheduled Monument

**PROJECT**

A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 601 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby

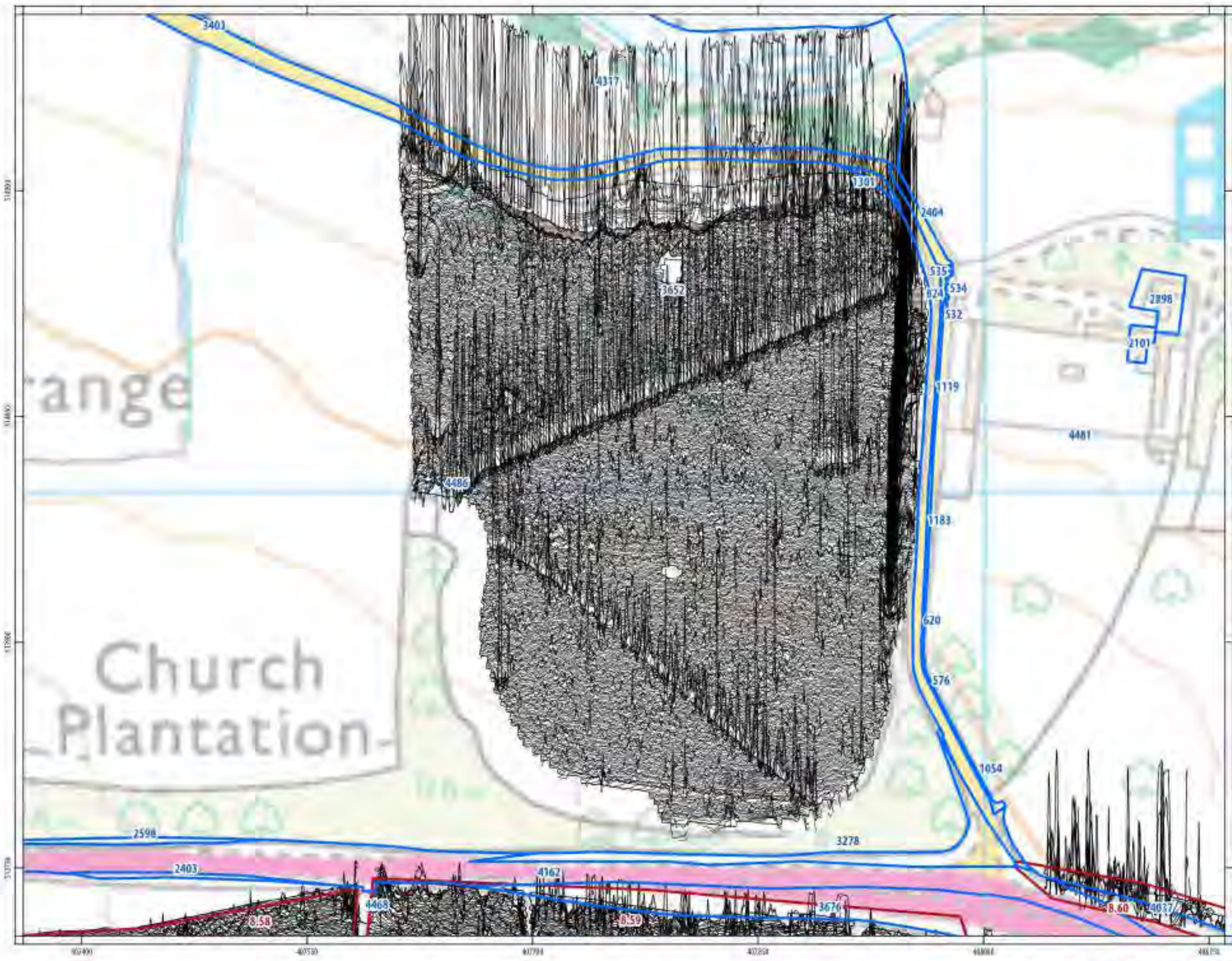


**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▬ Phase 2 Geophysical Survey Area
- ▬ Geophysical Survey Point
- ▬ XY Trace Area
- ▬ Proposed Alignment

**PROJECT**  
M1120-4M Transport Upgrade

**CLIENT**  
Highways England



ILLUS 602 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

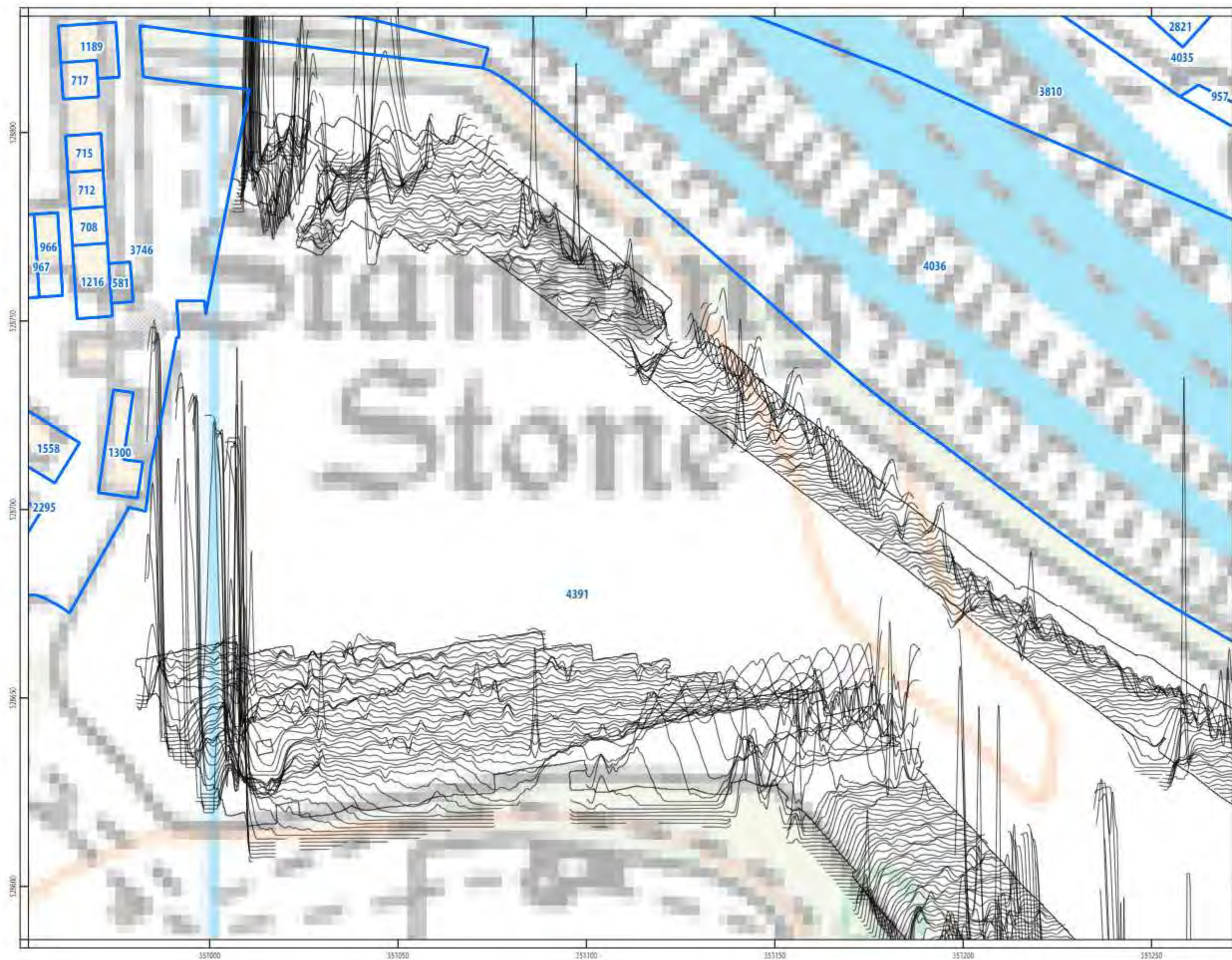
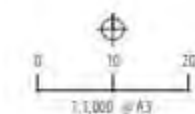
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 603 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

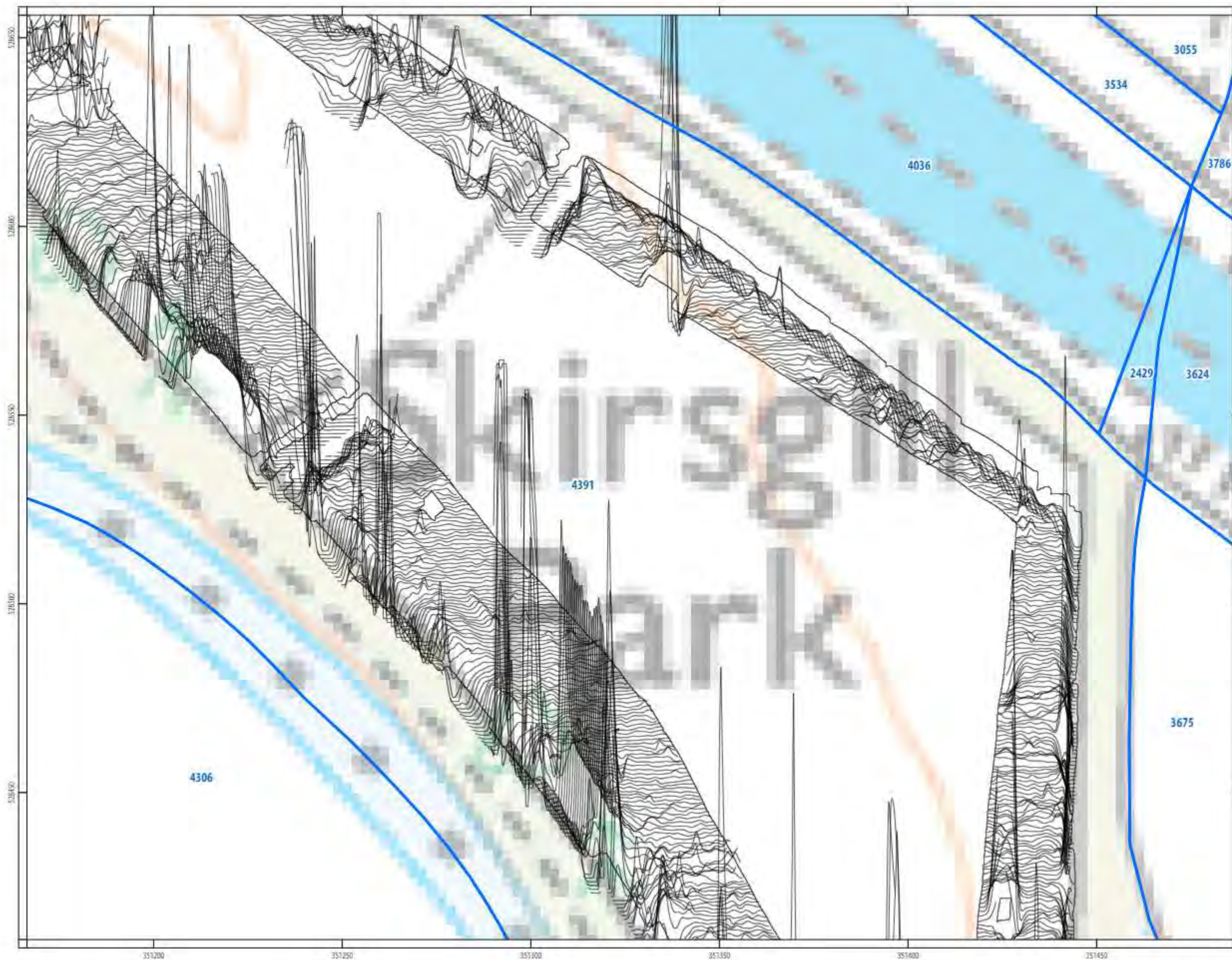
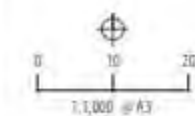
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 604 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

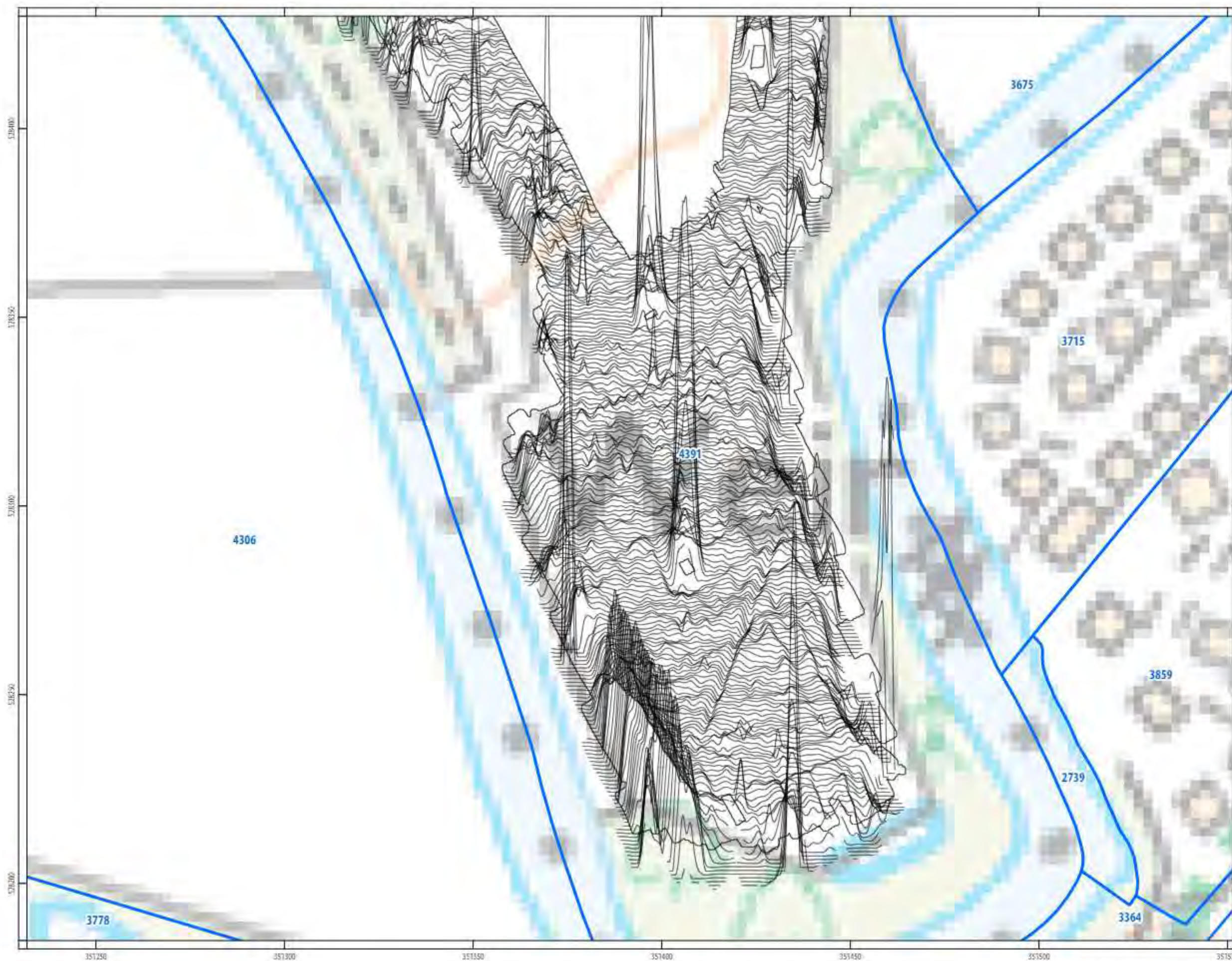
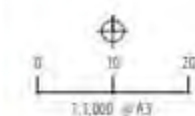
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY - 10m / cm
-  Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 605 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

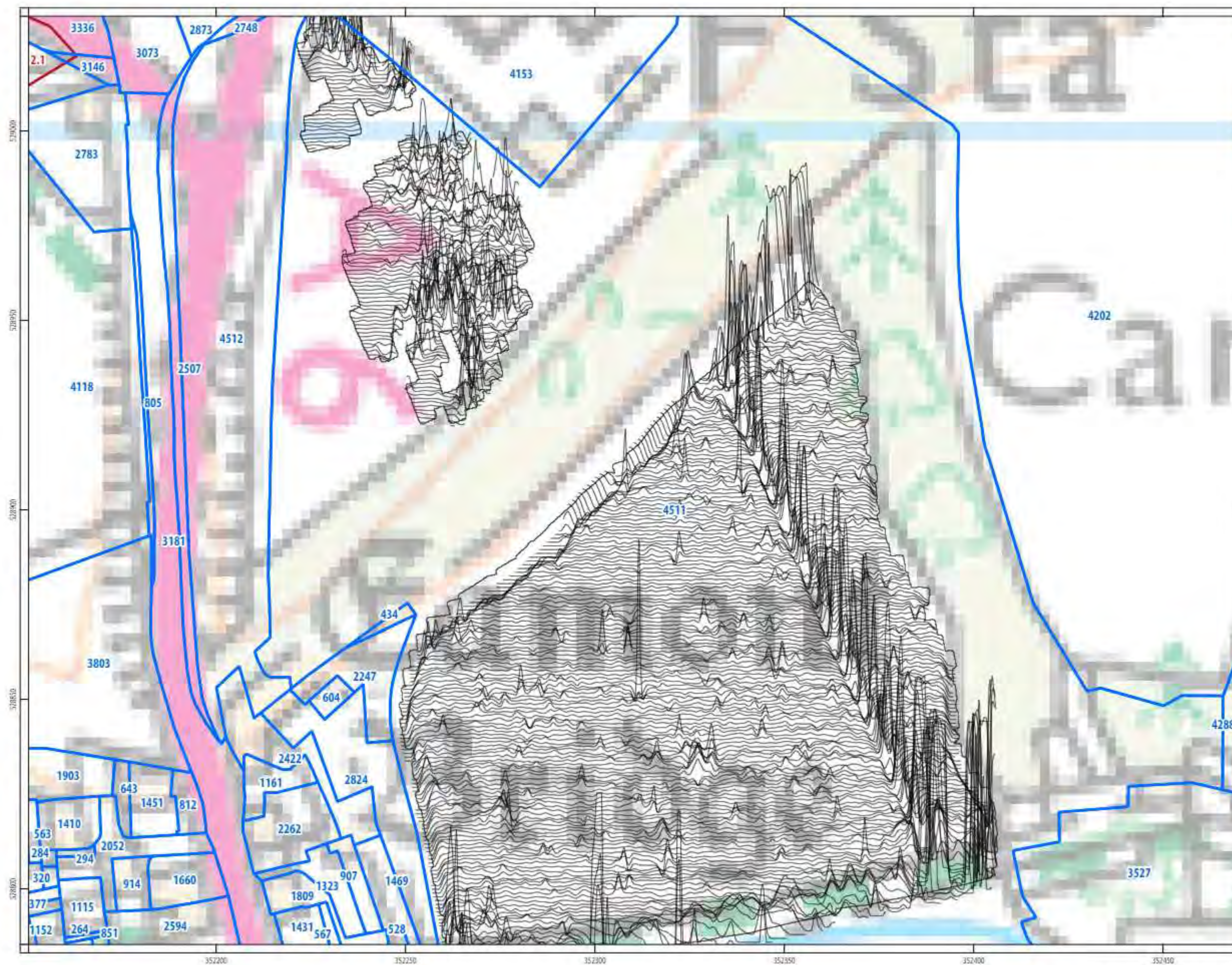
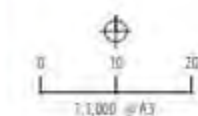
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 606 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

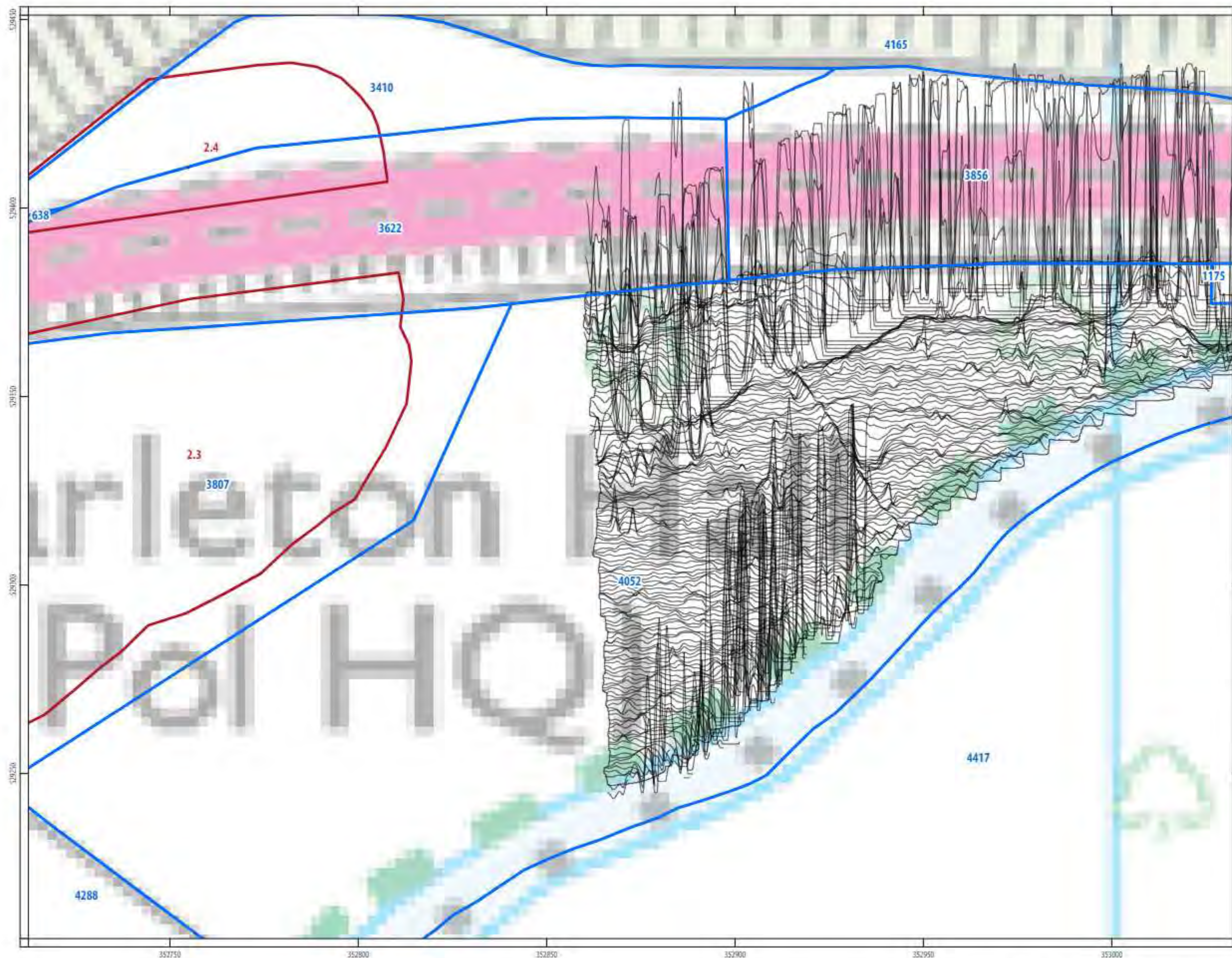
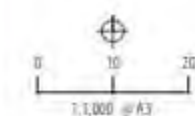
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

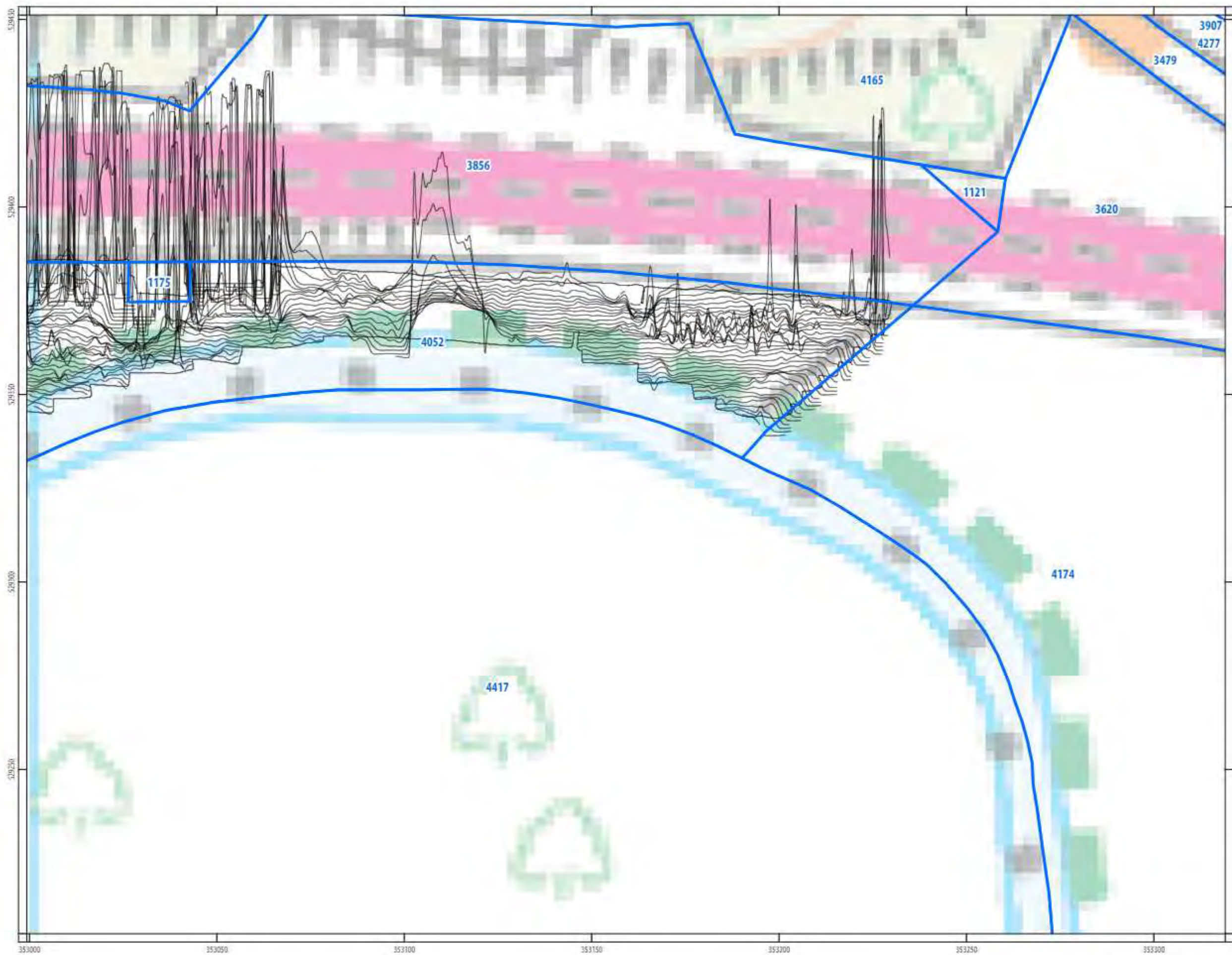
**CLIENT**

Highways England



ILLUS 607 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / 1cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 608 XY trace plot of minimally processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

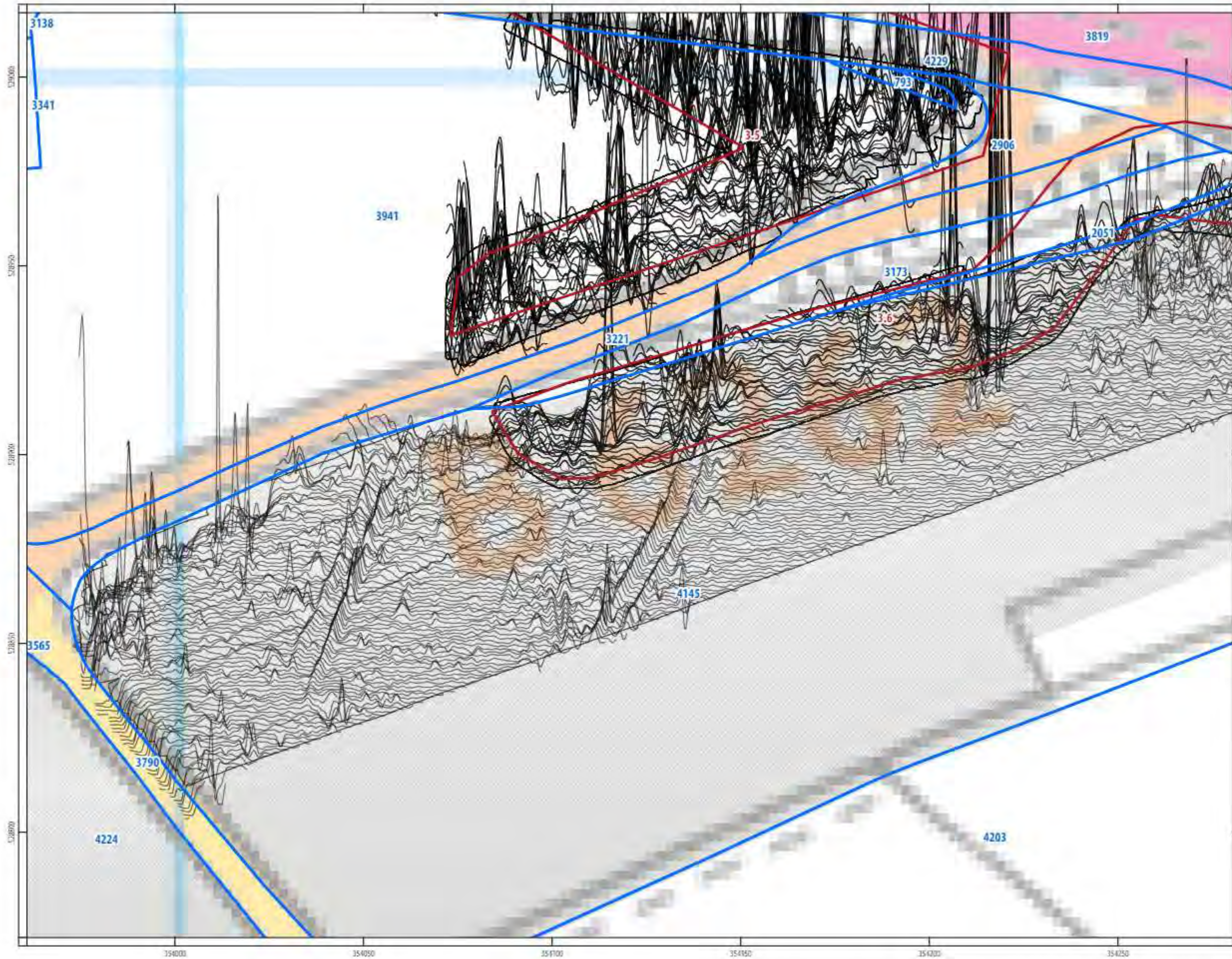
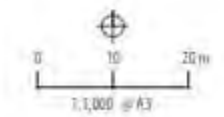
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY = 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 609 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

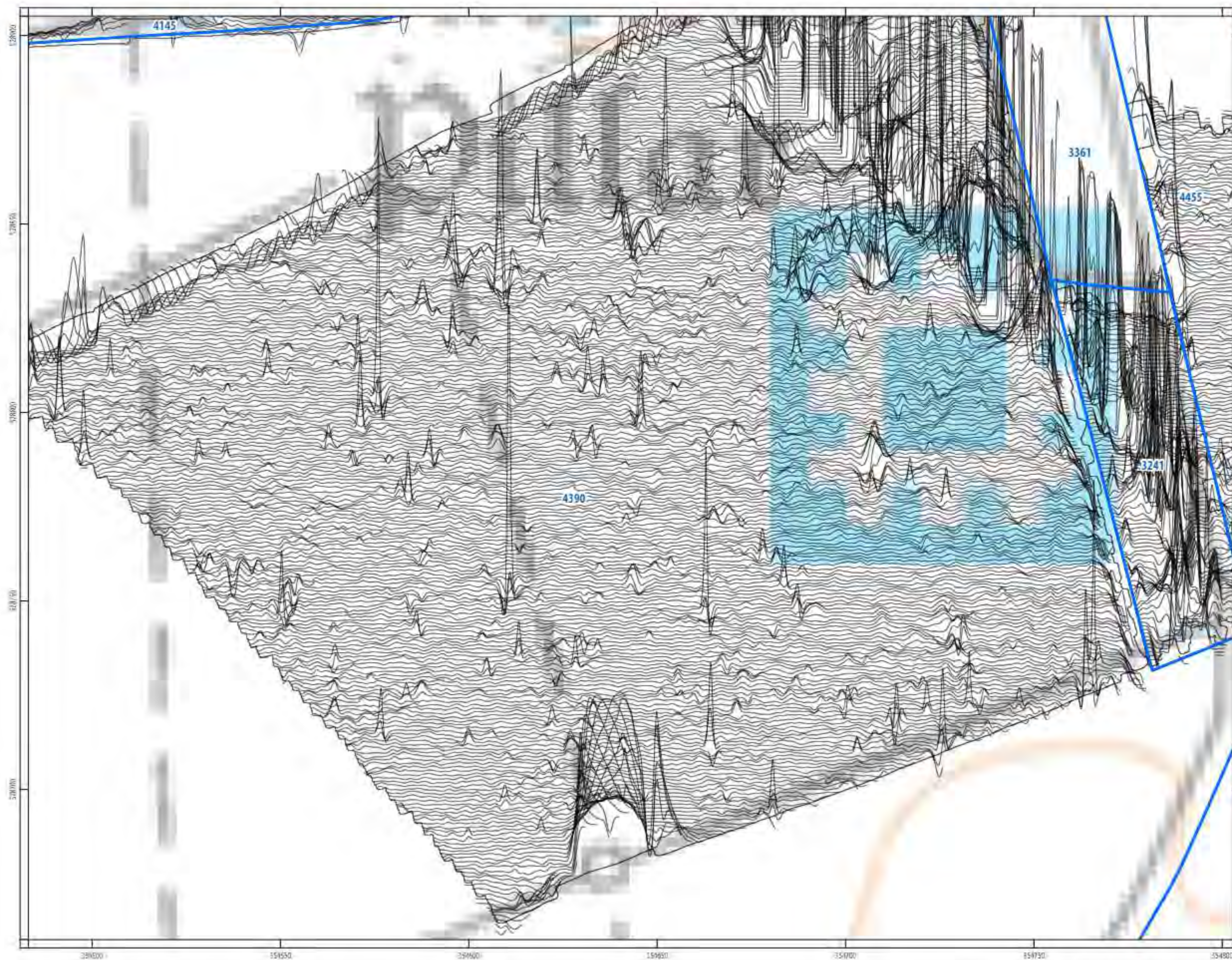
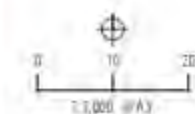
-  Phase 1 Magnetometry Locations
-  Phase 2 Geophysical Survey Lines
-  Geophysical Survey Lines
-  Utility Locations
-  Scheduled Monuments

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**






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ILLUS 610 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



**Phase 2 Survey**

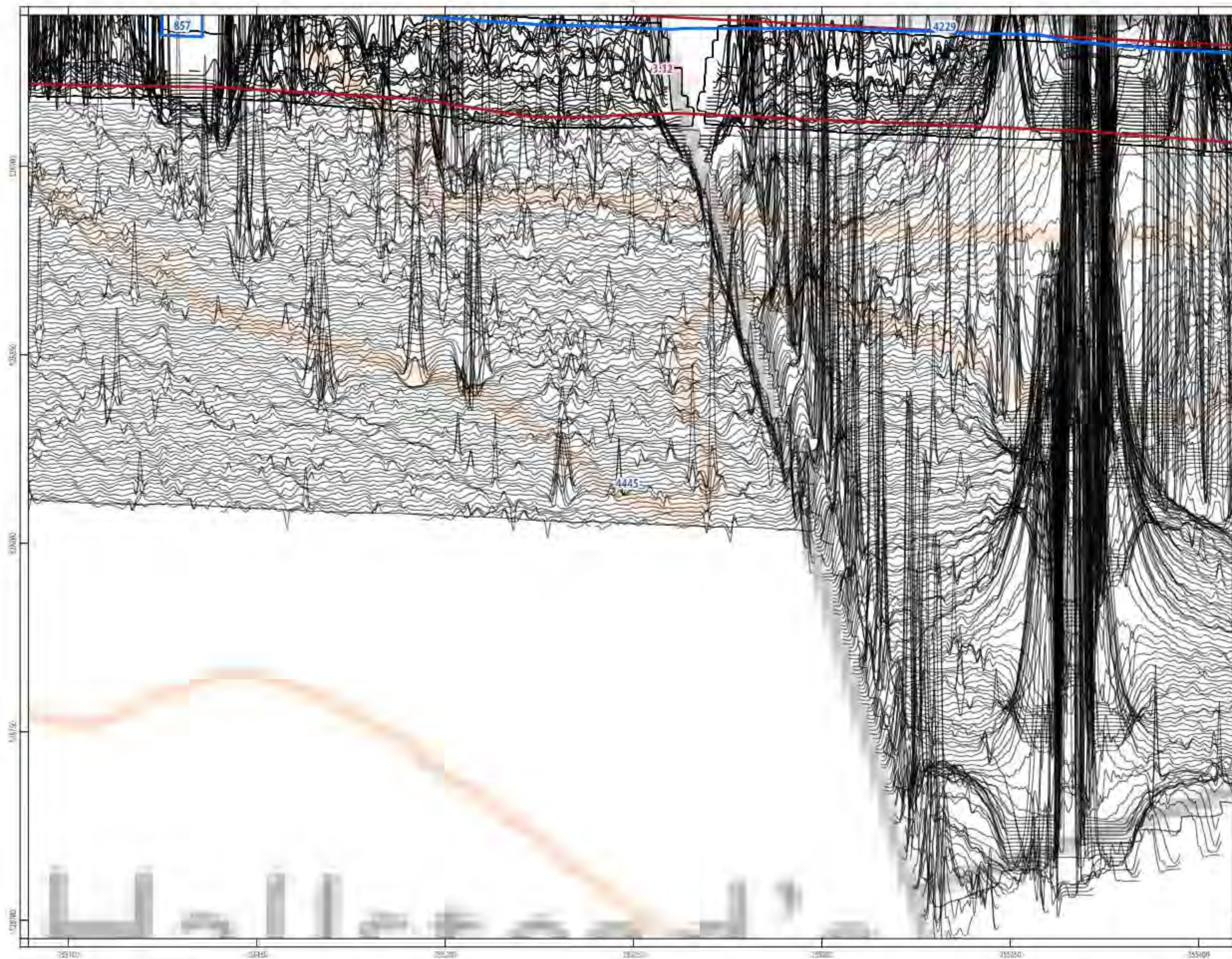
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey Lines
-  Boundary
-  Excavation Area

**PROJECT**

A17120 - A66 Transport Improvement

**CLIENT**

Highways England



ILLUS 611 XY trace plot of minimally processed magnetometer data, Pennith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

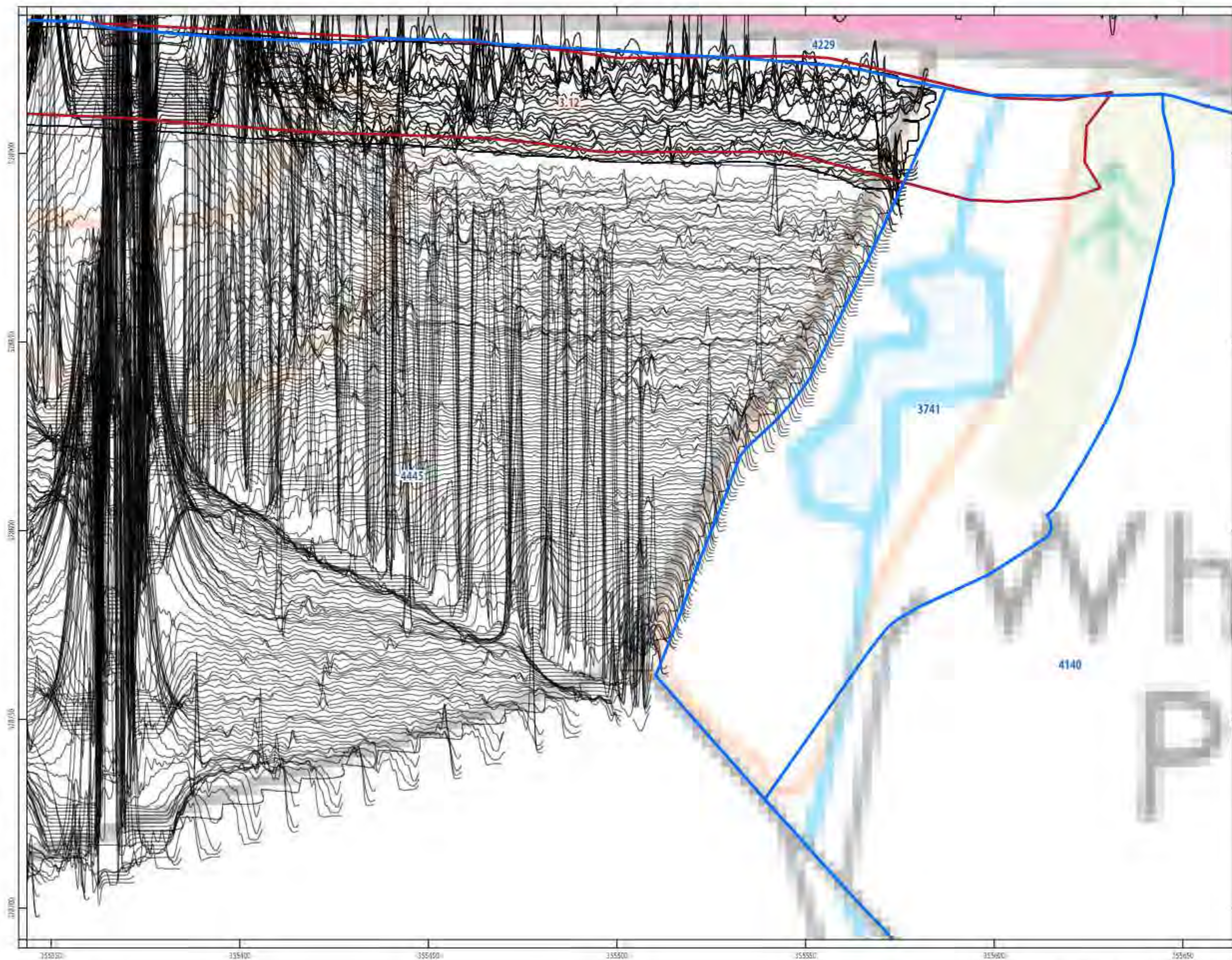
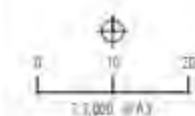
- ▭ Phase 1 Magnetometry
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY Locations
- ▭ Scheduled Monuments

**PROJECT**

A7120 - A66 Transverse Upgrade

**CLIENT**

Highways England



ILLUS 612 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

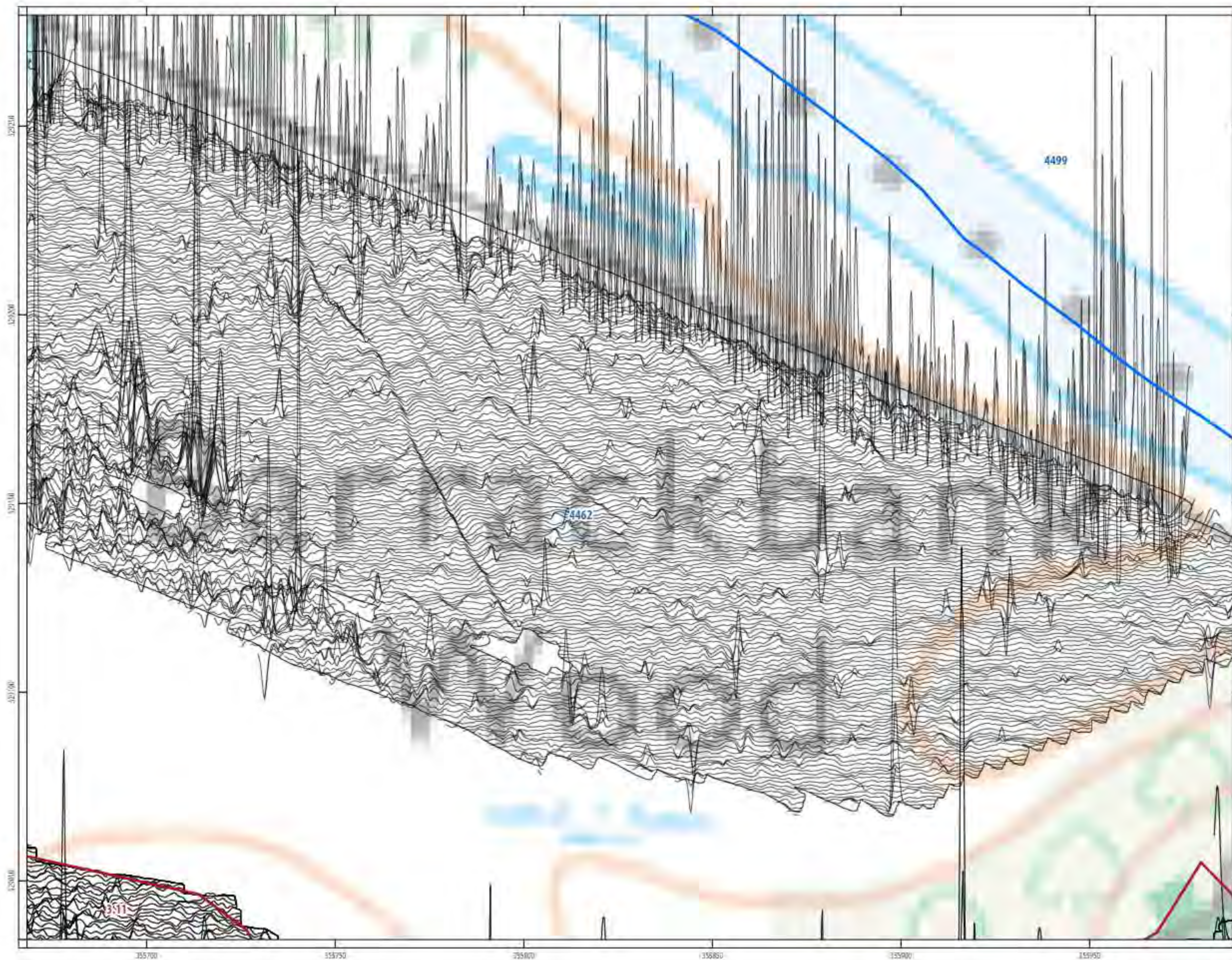
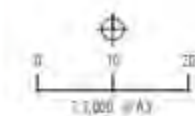
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY 100m Grid
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 613 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

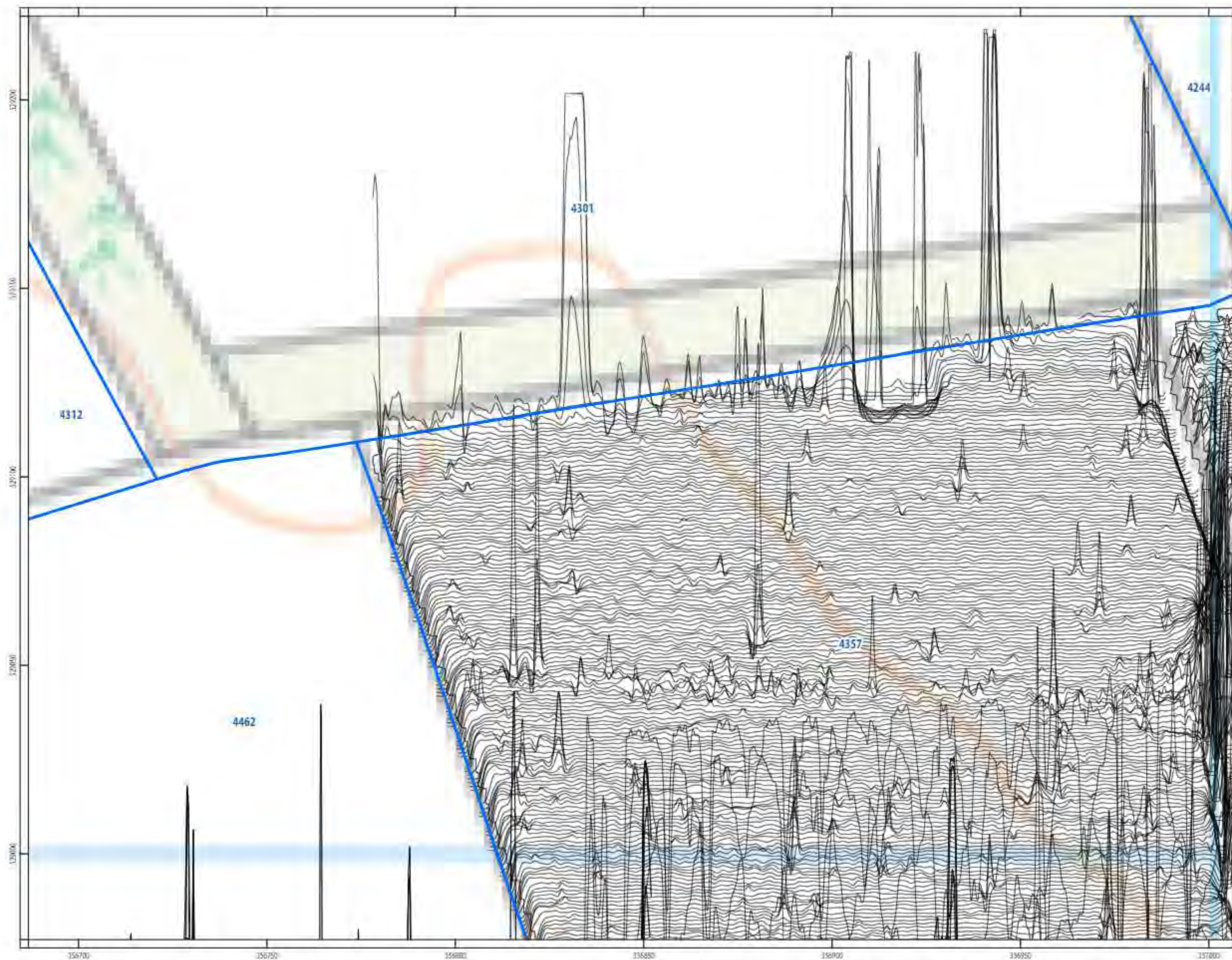
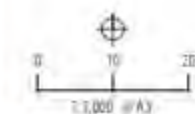
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  X: 100/100m
-  Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 614 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



**Phase 2 Survey**

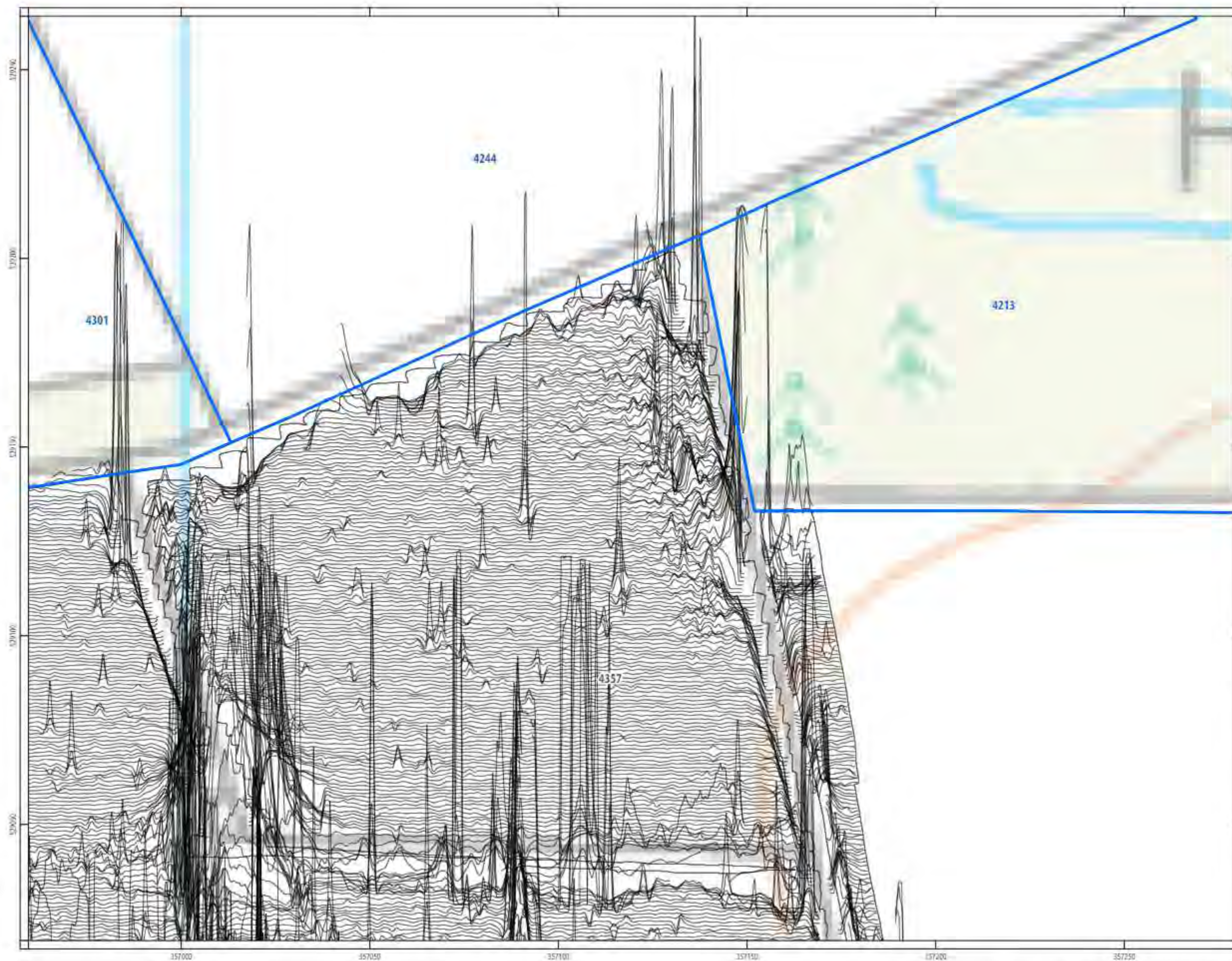
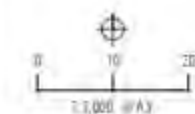
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Line
-  XY Location
-  Scheduled Monument

**PROJECT**

A7120 - A66 Transpennine Upgrade

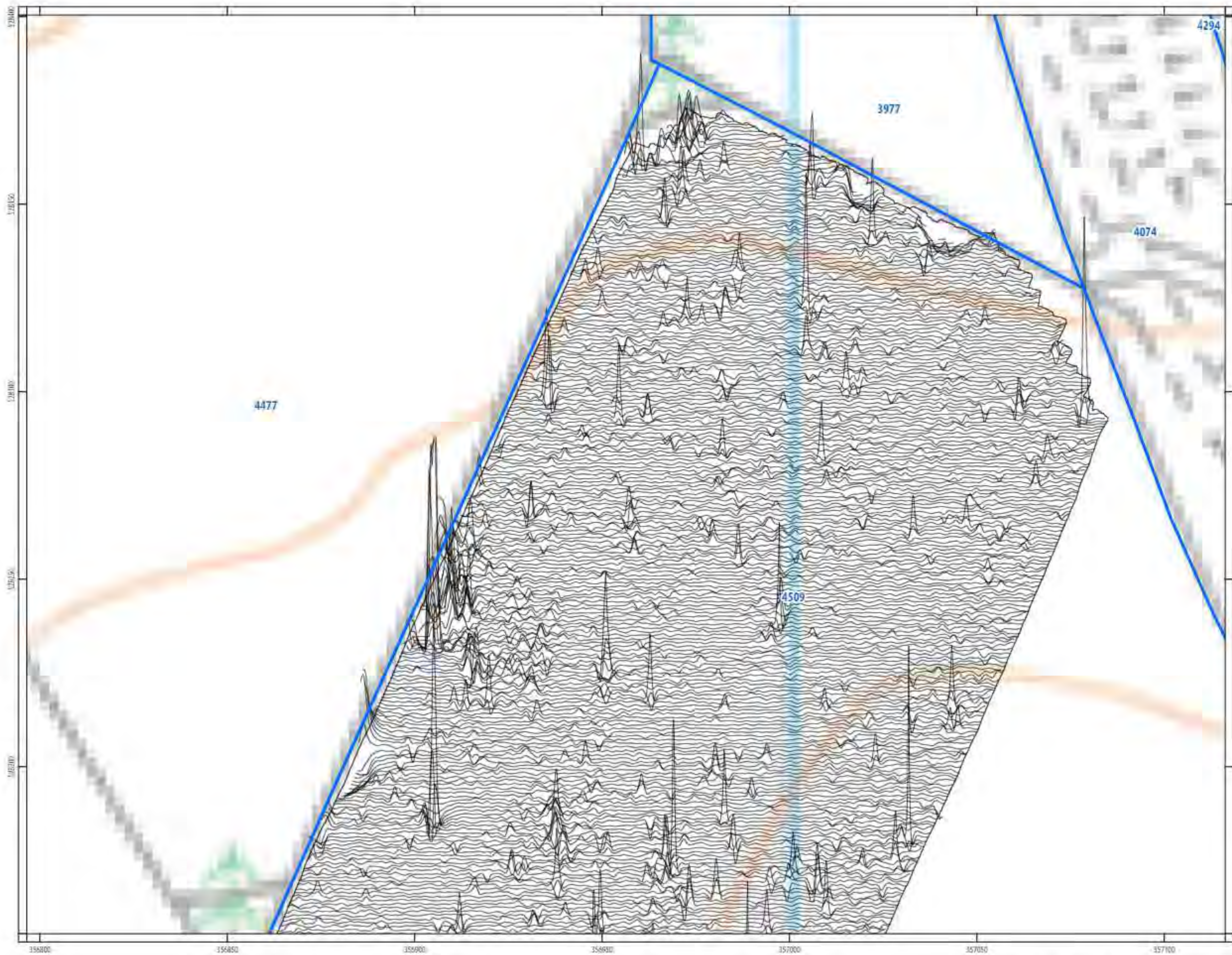
**CLIENT**

Highways England



ILLUS 615 XY trace plot of minimally processed magnetometer data, Penrith to Temple Sowerby (Center Parcs)





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY 100m Grid
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 616 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parc)



**Phase 2 Survey**

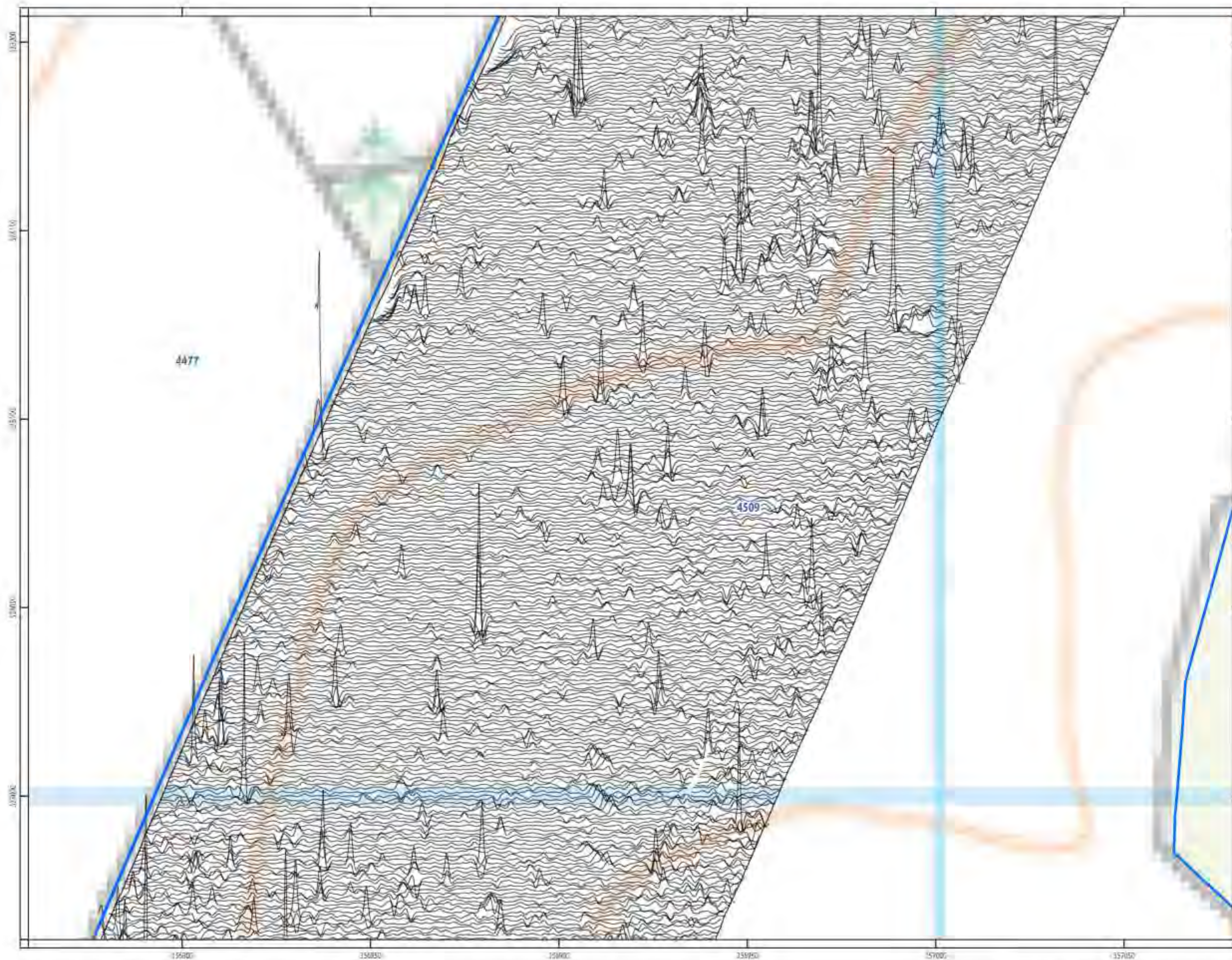
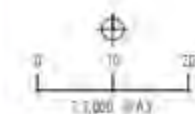
-  Phase 1 Geophysical Monitoring
-  Phase 2 Geophysical Survey Lines
-  Geophysical Survey Lines
-  Site Boundaries
-  Scheduled Monuments

**PROJECT**

A17120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 617 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

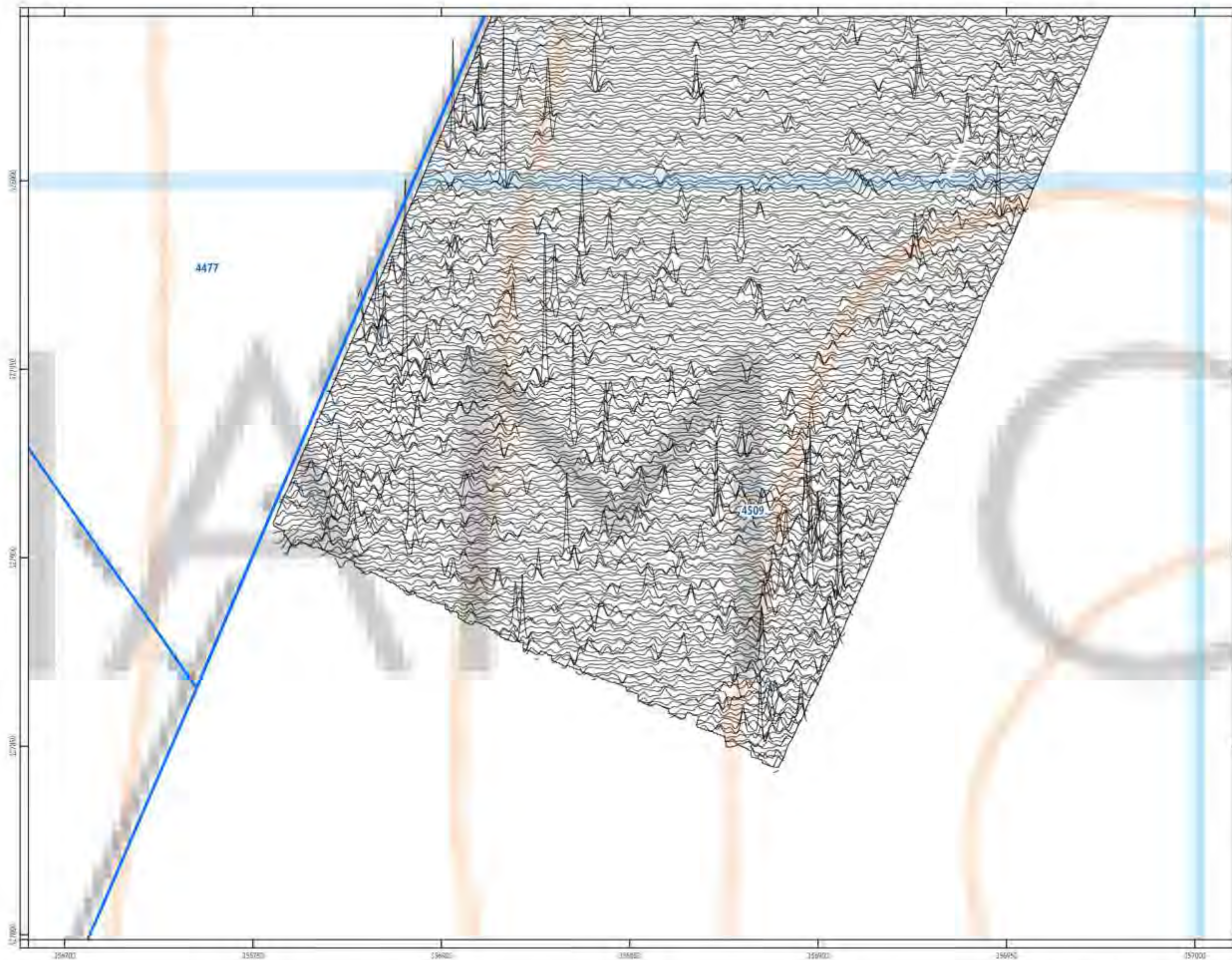
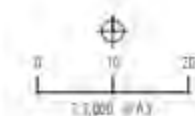
-  Phase 1 Geophysical Magnetometry
-  Phase 2 Geophysical Survey Lines
-  Geophysical Survey Lines
-  Site Boundaries
-  Scheduled Monuments

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**






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ILLUS 618 XY trace plot of minimally processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

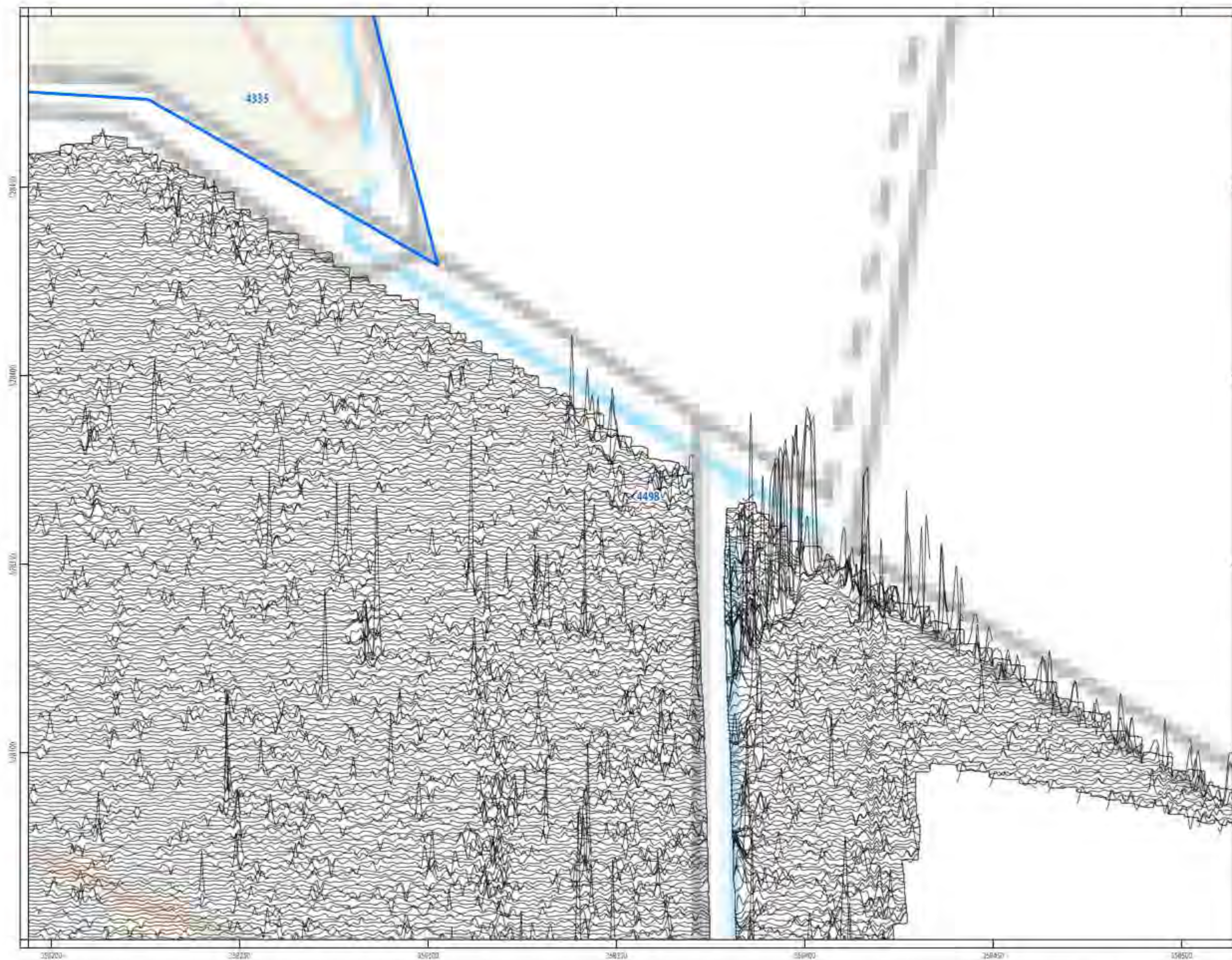
-  Phase 1 Magnetometer Maximums
-  Phase 2 Magnetometer Maximums
-  Topographic Survey (1:1000)
-  10m Grid Lines
-  Topographic Maximums

**PROJECT**

ATTU20 - A66 Transport Upgrade

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ILLUS 619 XY trace plot of minimally processed magnetometer data, Pennith to Temple Sowerby (Center Parc)



**Phase 2 Survey**

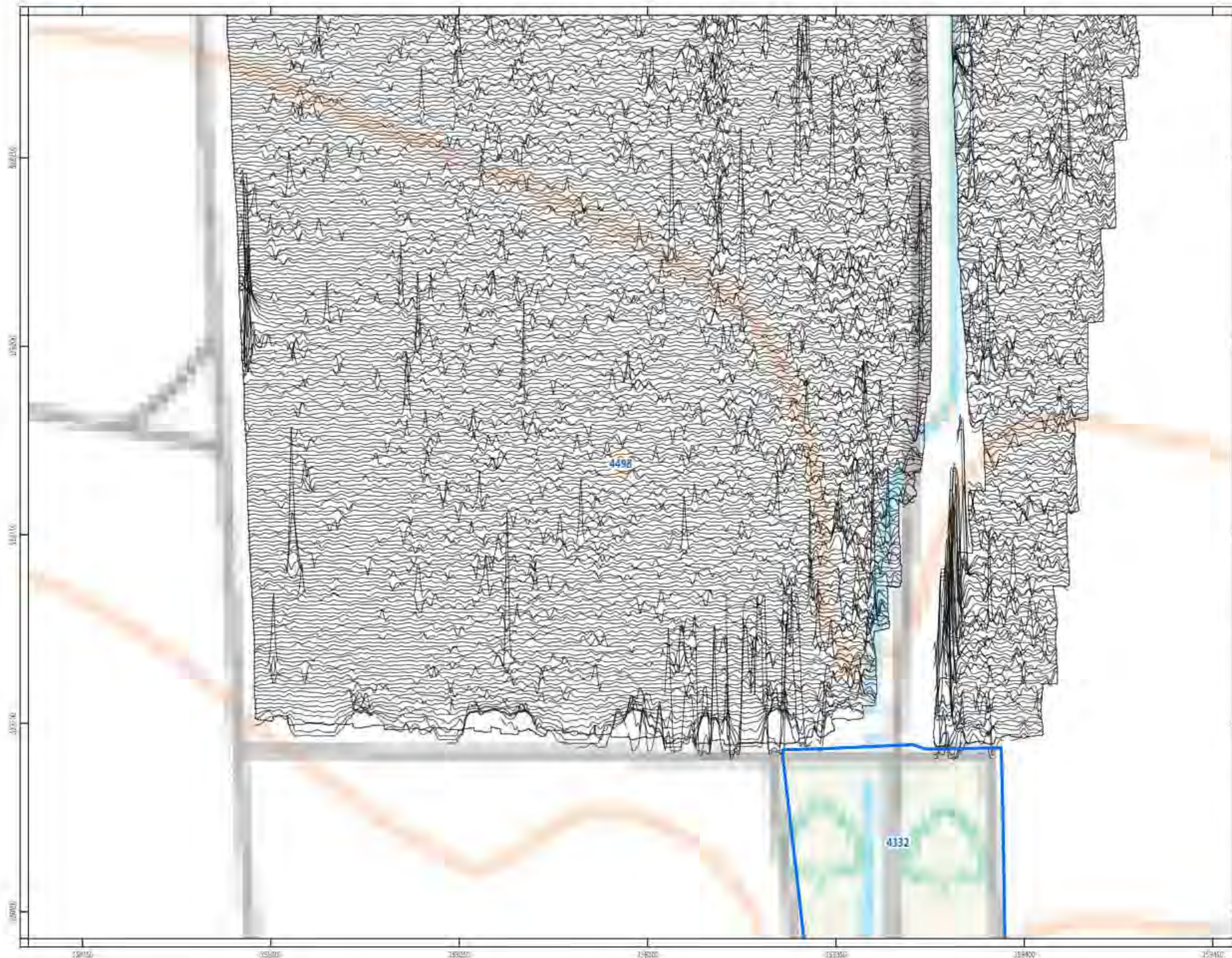
-  Phase 1 Magnetometer Maximums
-  Phase 2 Geophysics Survey Lines
-  Geophysics Survey Lines
-  10m Grid Lines
-  10m Geophysics Maximums

**PROJECT**

A1120 - A66 Transport Upgrade

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ILLUS 620 XY trace plot of minimally processed magnetometer data, Penrith to Temple Sowerby (Center Parc)



**Phase 2 Survey**

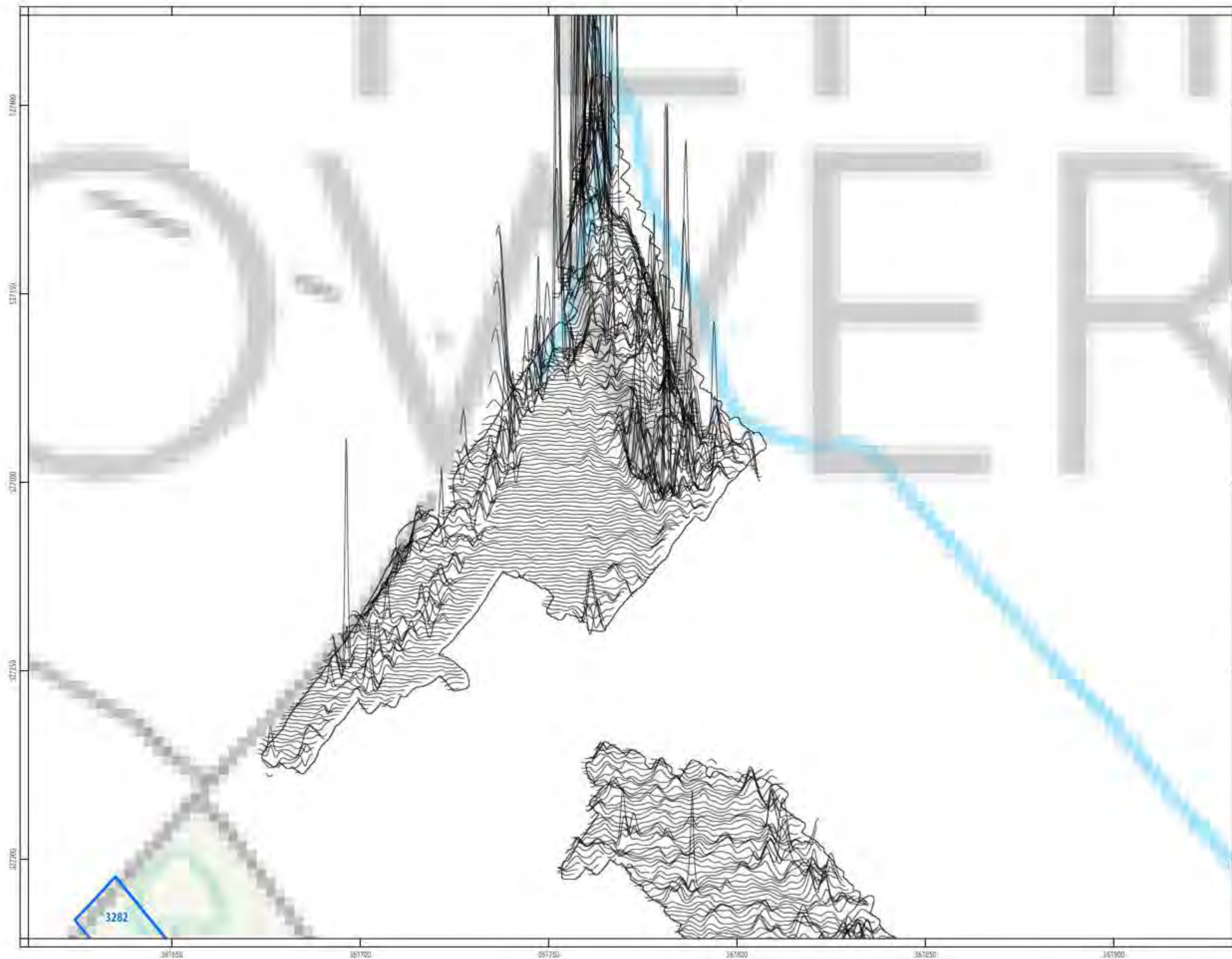
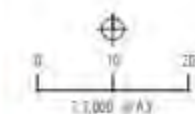
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  XY Location
-  Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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ILLUS 621 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

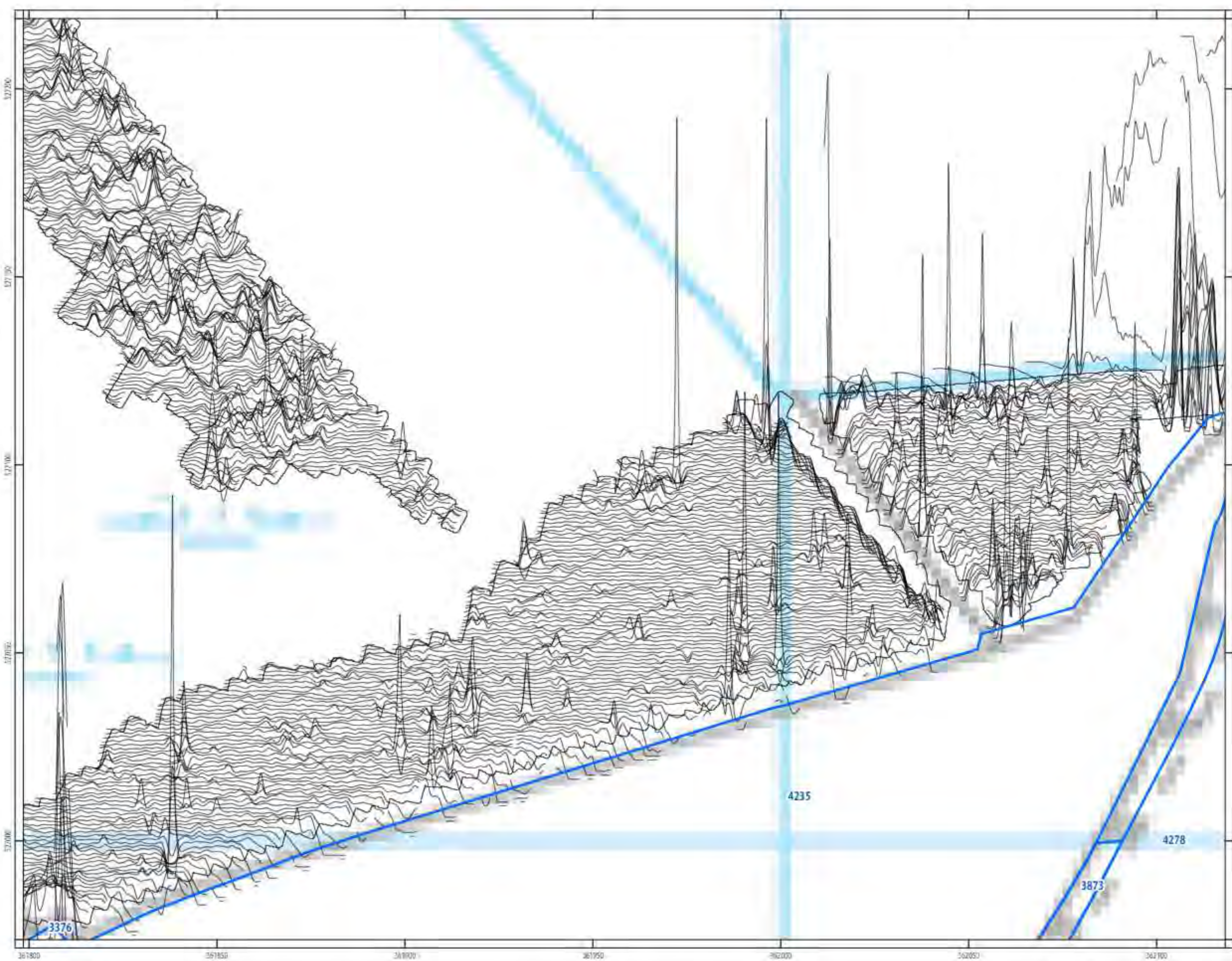
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- Xr 100m
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 622. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

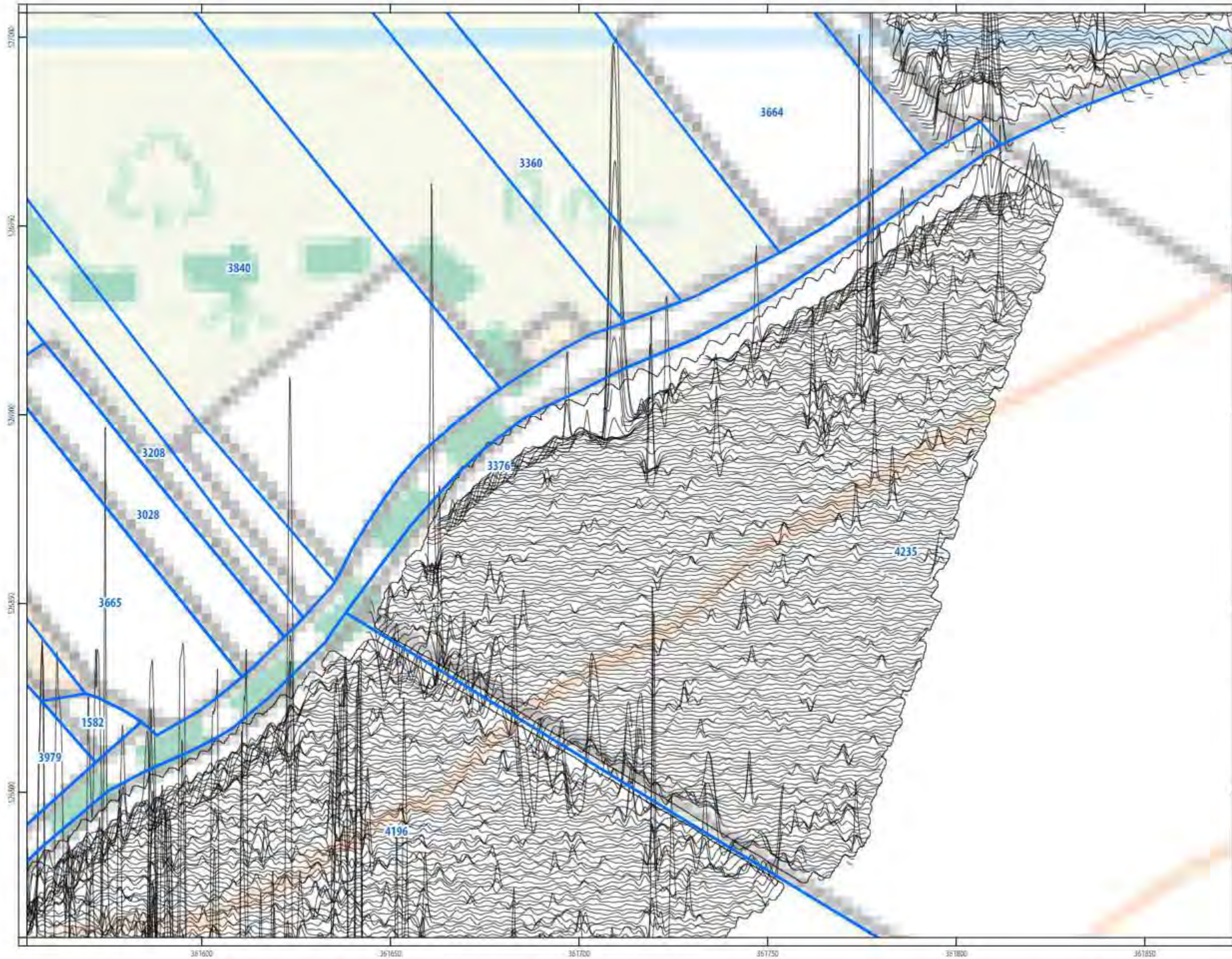
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY = 10m / cm
-  Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 623 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

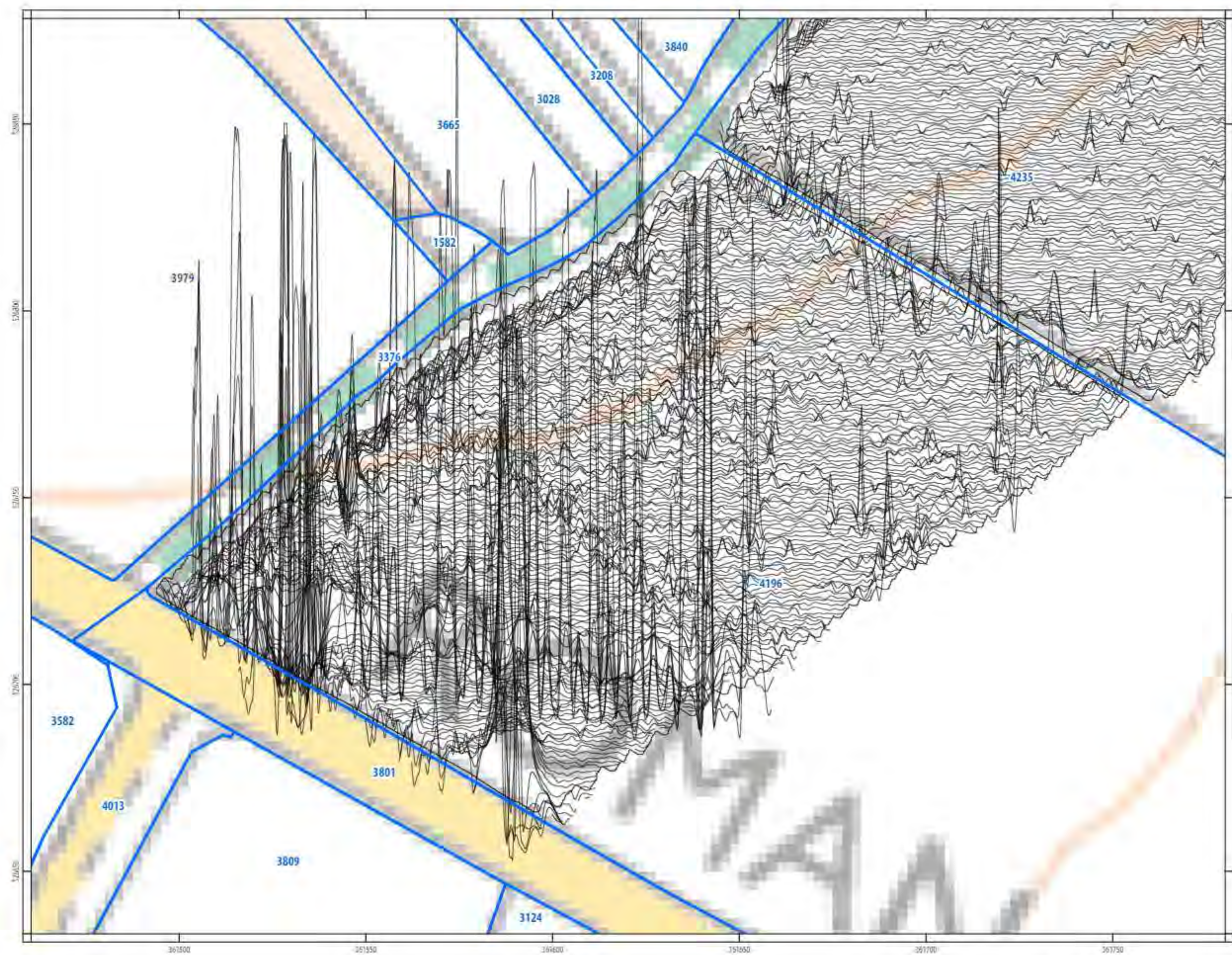
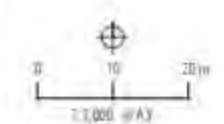
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY Location
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 624 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

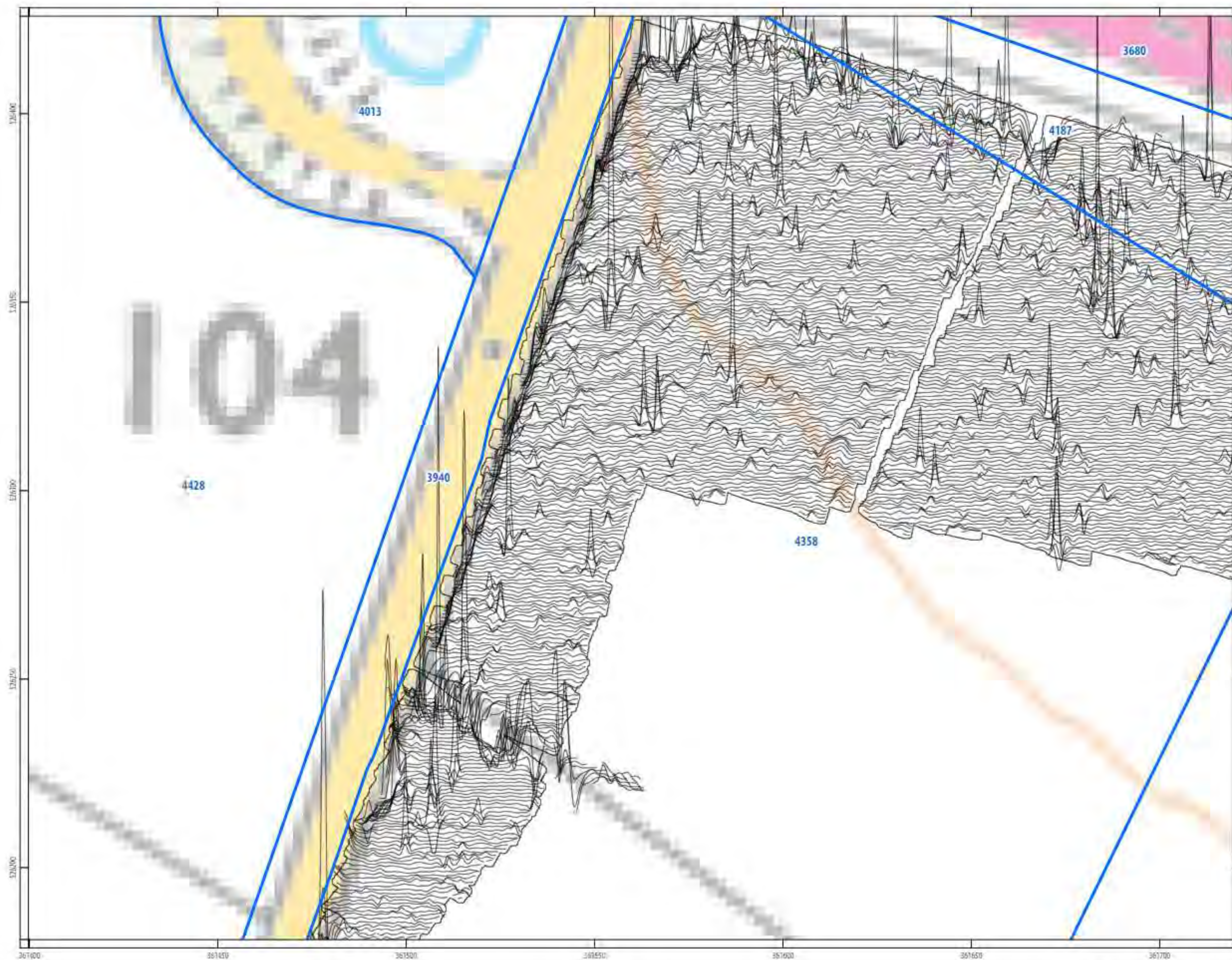
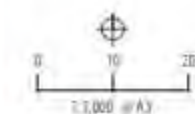
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10m/cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 625 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

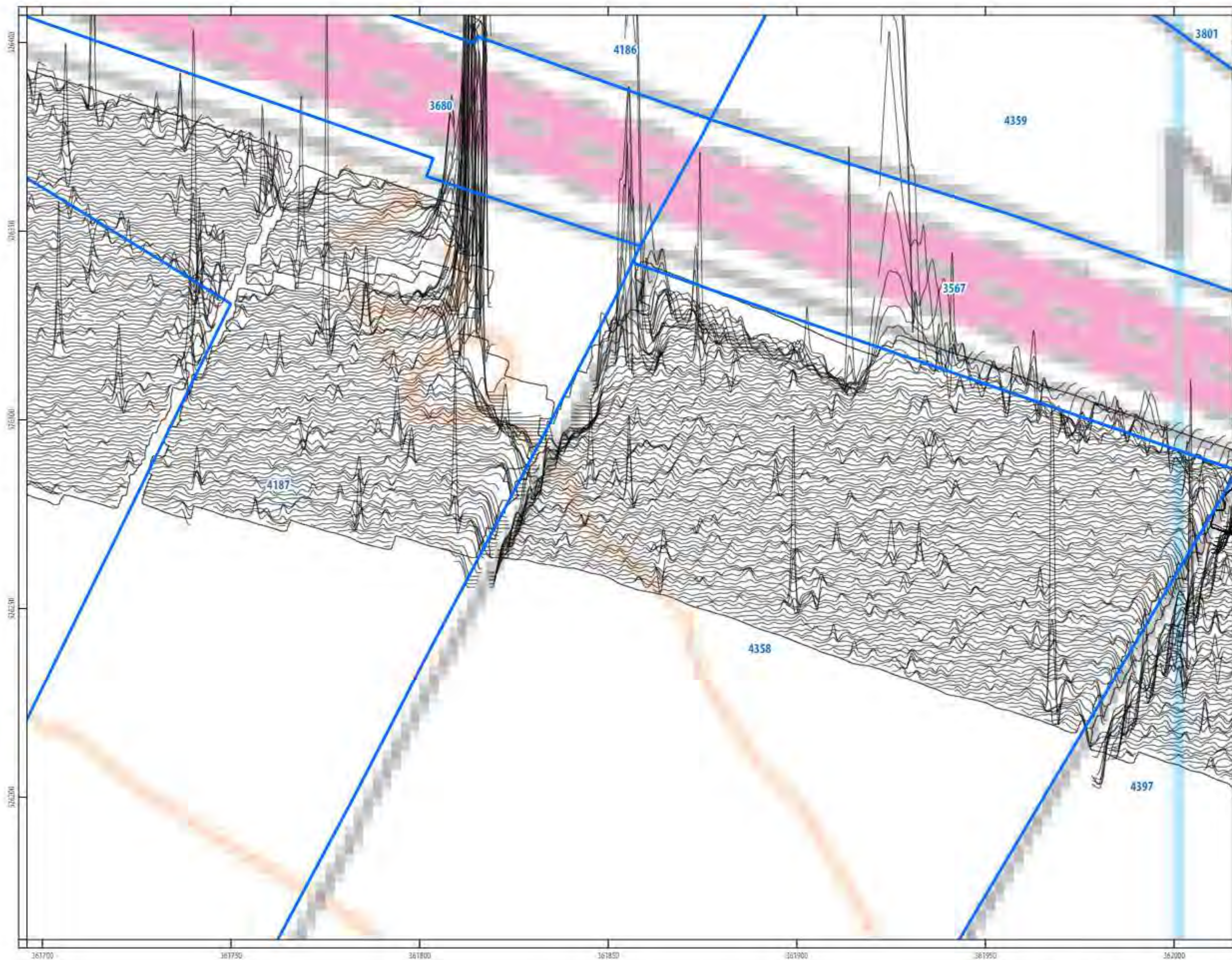
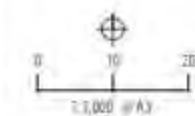
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Xr 100/1cm
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 626 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

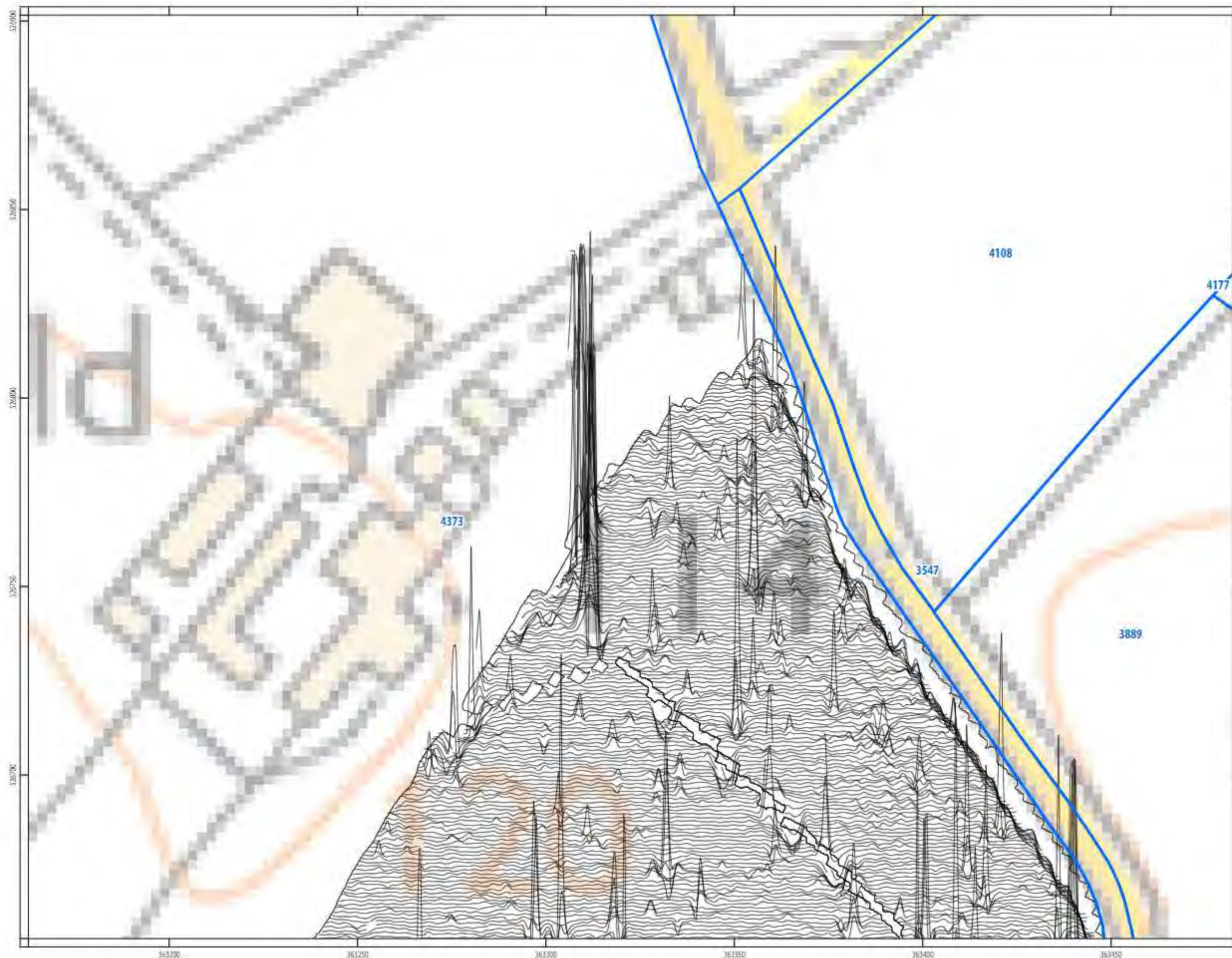
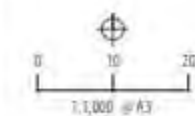
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Ident
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 627 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

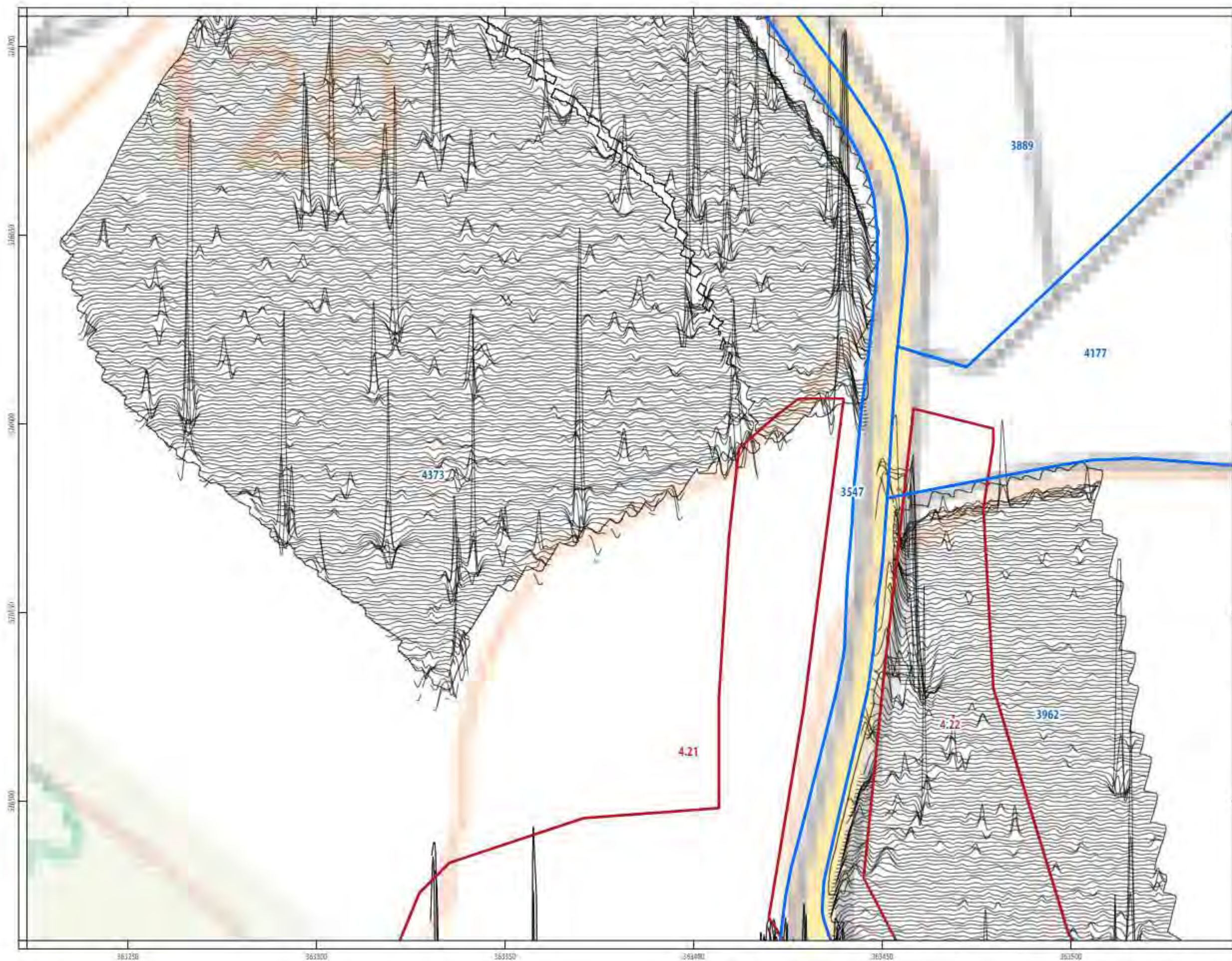
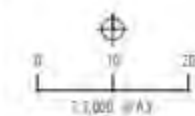
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Point
- XY Location
- Scheduled Monument

**PROJECT**

A7120 - A66 Transpennine Upgrade

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ILLUS 628 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

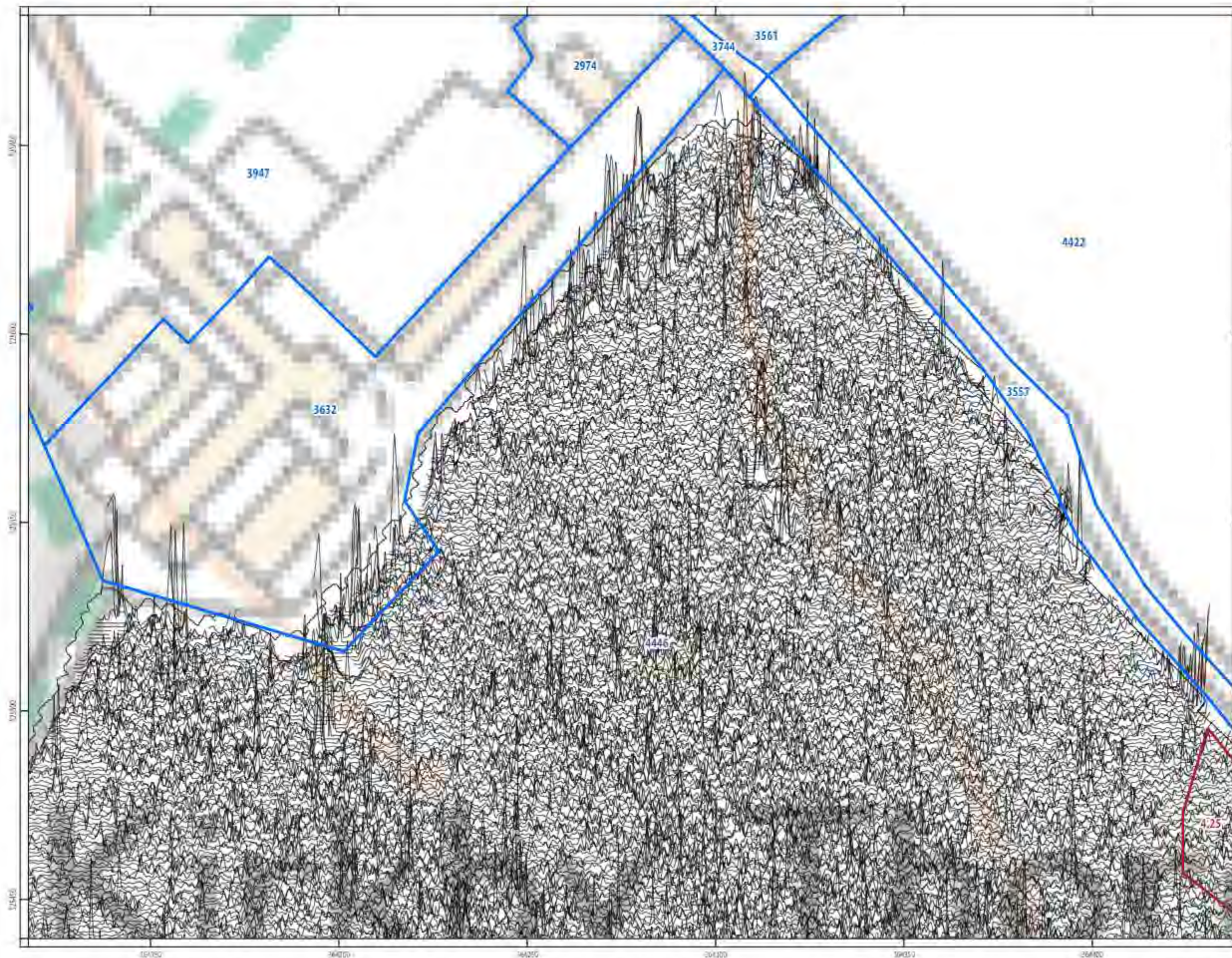
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  10m Grid Lines
-  Geophysical Magnetometer

**PROJECT**

ATTU20 - A66 Transport Upgrade

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ILLUS 629 XY trace plot of minimally processed magnetometer data: Temple Soberby to Appleby



**Phase 2 Survey**

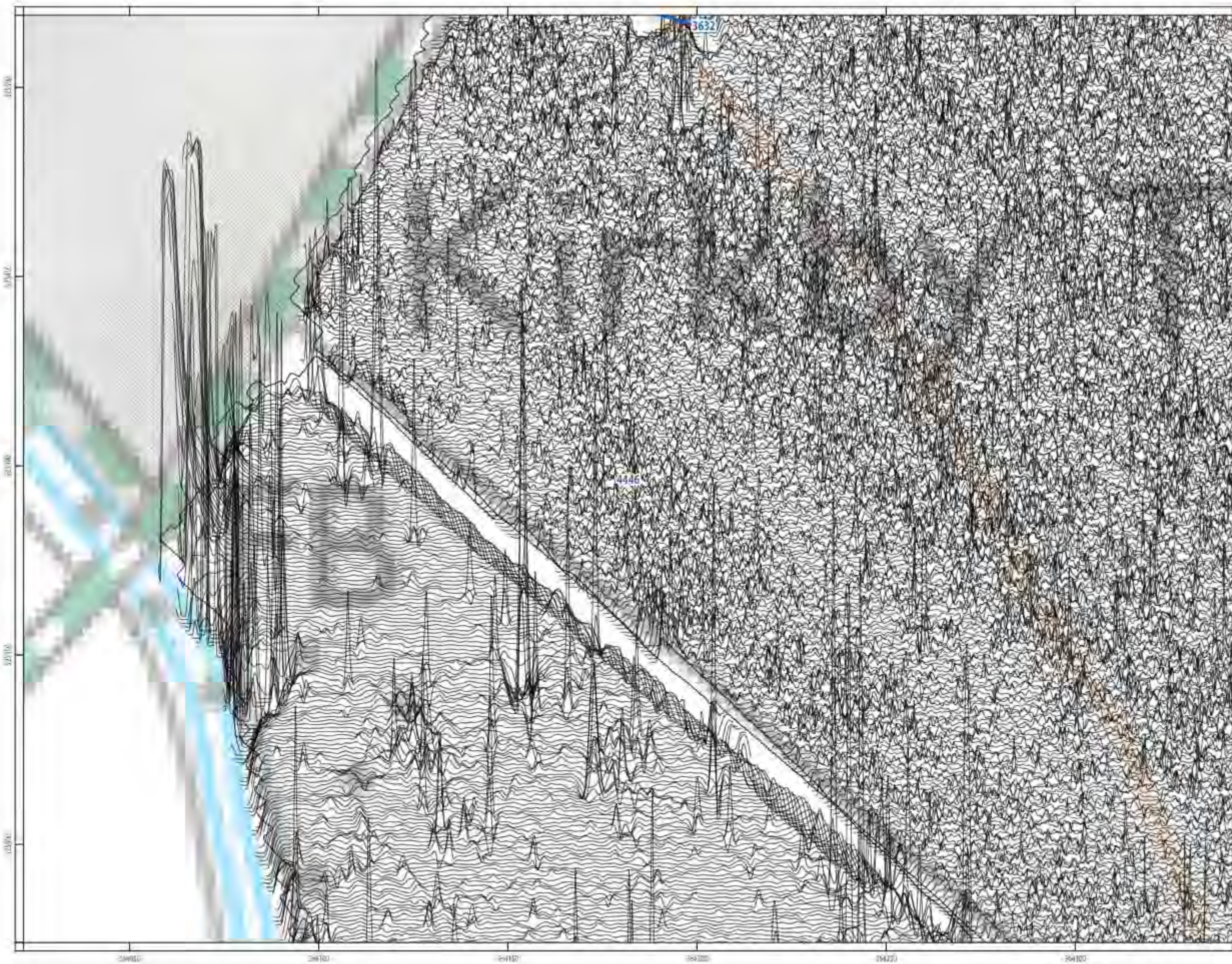
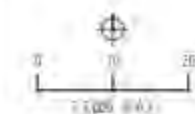
-  Phase 1 Excavation Footprint
-  Phase 2 Excavation Footprint
-  Topographic Survey (1:1000)
-  10m Grid
-  10m Grid

**PROJECT**

AT1120: A50 Transport Improvement

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ILLUS 630 XY trace plot of minimally processed magnetometer data: Temple Sovereby to Appleby



**Phase 2 Survey**

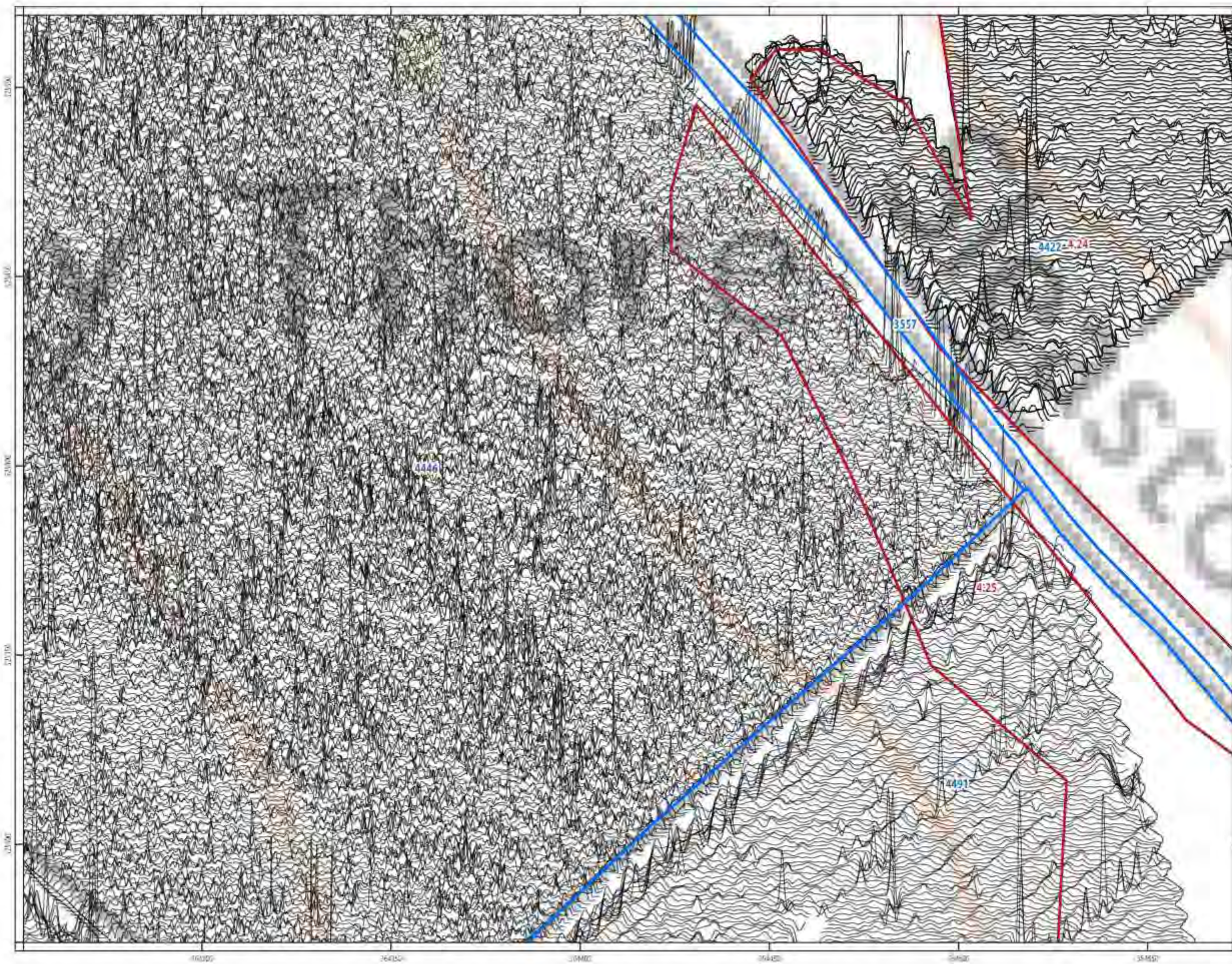
- ▭ Phase 1 Geophysical Magnetometer
- ▭ Phase 2 Geophysical Magnetometer
- ▭ Geophysical Survey 2008
- ▭ 10m Grid
- ▭ Topographic Contours

**PROJECT**

AT1120: A58 Transport Improvement

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ILLUS 031 XY trace plot of minimally processed magnetometer data: Temple Sovereby to Appleby



**Phase 2 Survey**

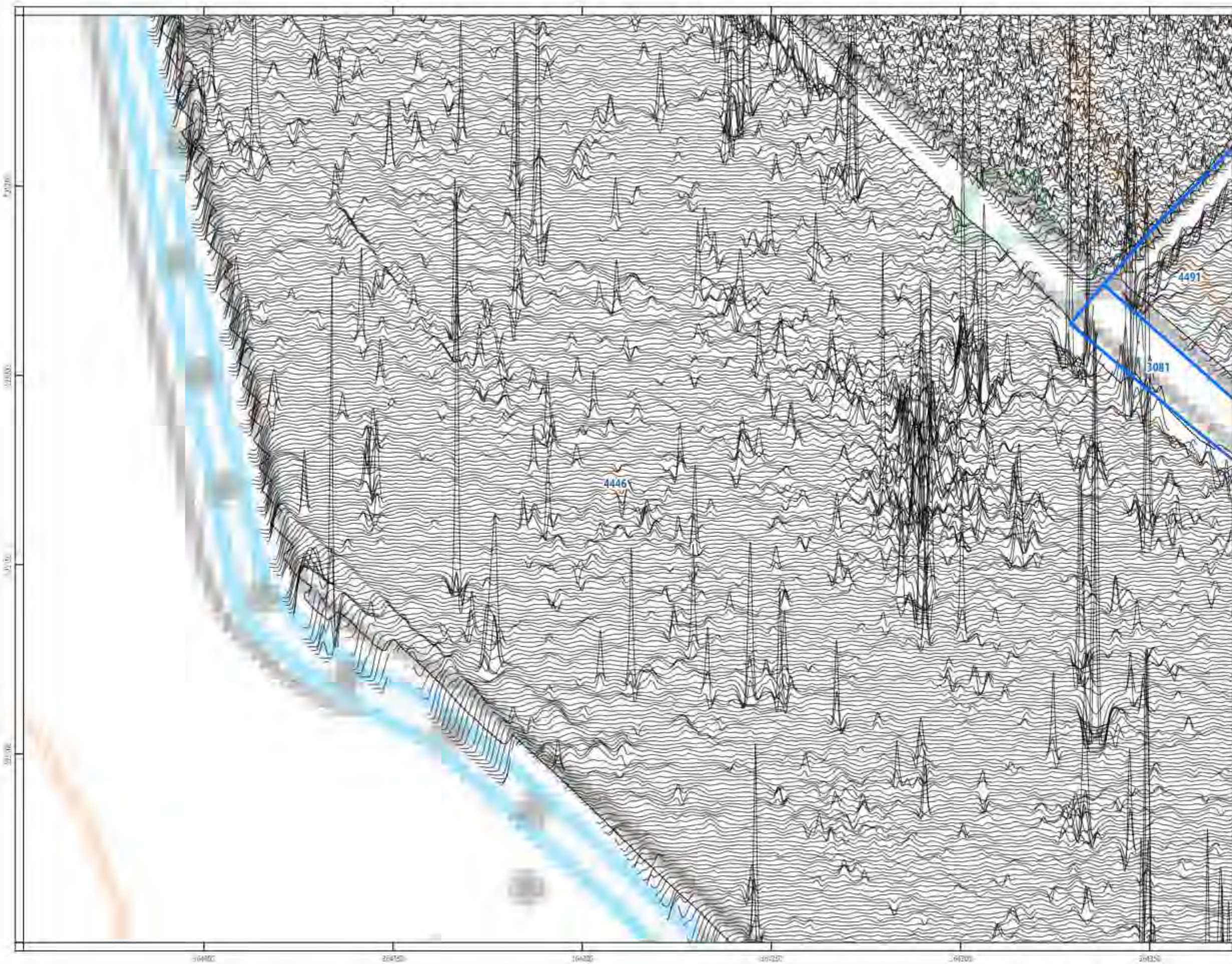
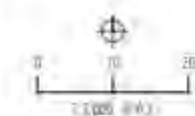
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  Utility Locations
-  Excavation Area

**PROJECT**

A17120 - A66 Transport Upgrade

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ILLUS 632. XY trace plot of minimally processed magnetometer data; Temple Sovereby to Appleby



**Phase 2 Survey**

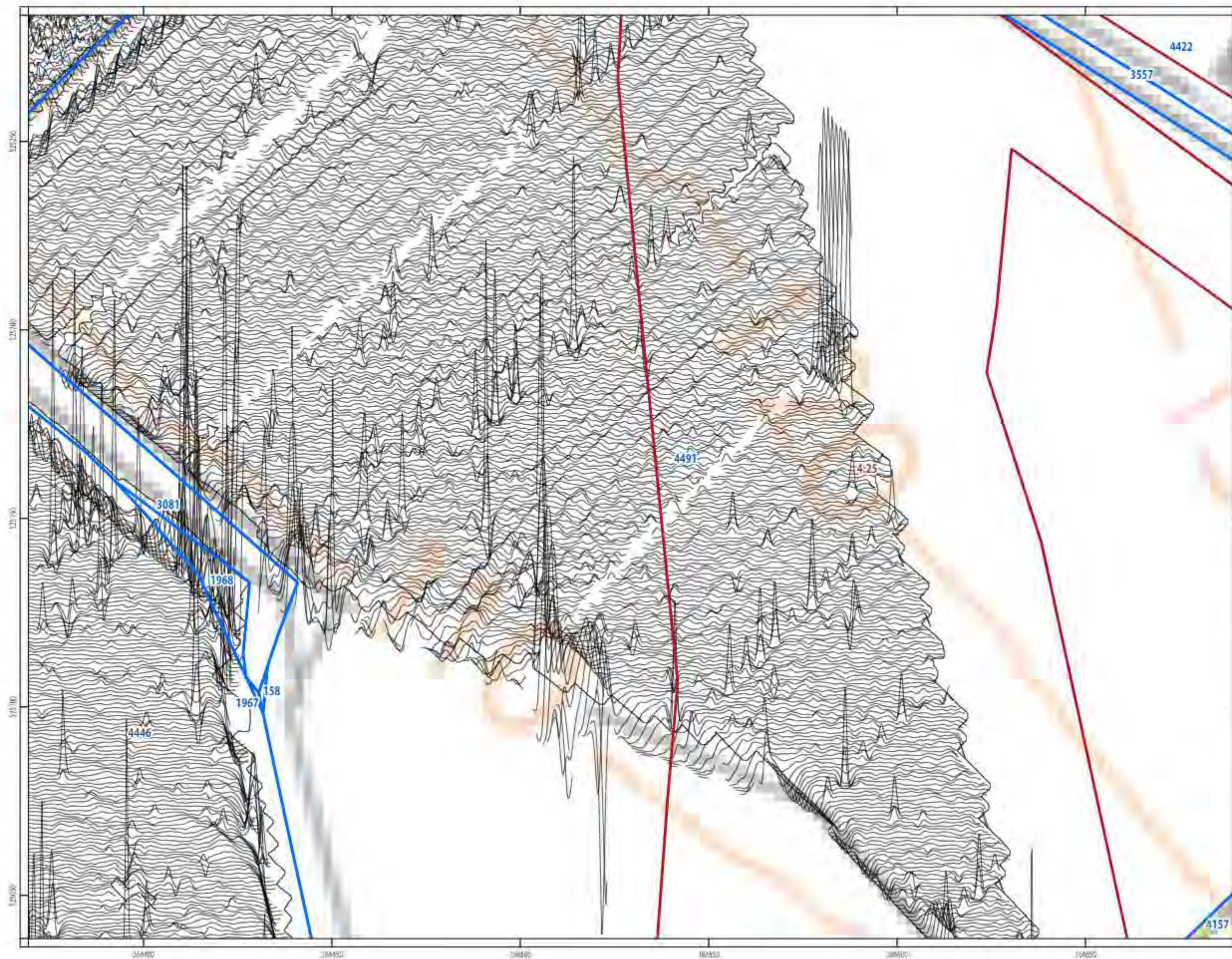
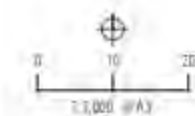
- ▭ Phase 1 Geophysical Magnetometer
- ▭ Phase 2 Geophysical Magnetometer
- Geophysical Survey Lines
- ⊗ XY Locations
- ▨ Scheduled Monuments

**PROJECT**

A1120 - A66 Transpennine Upgrade

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ILLUS 633 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

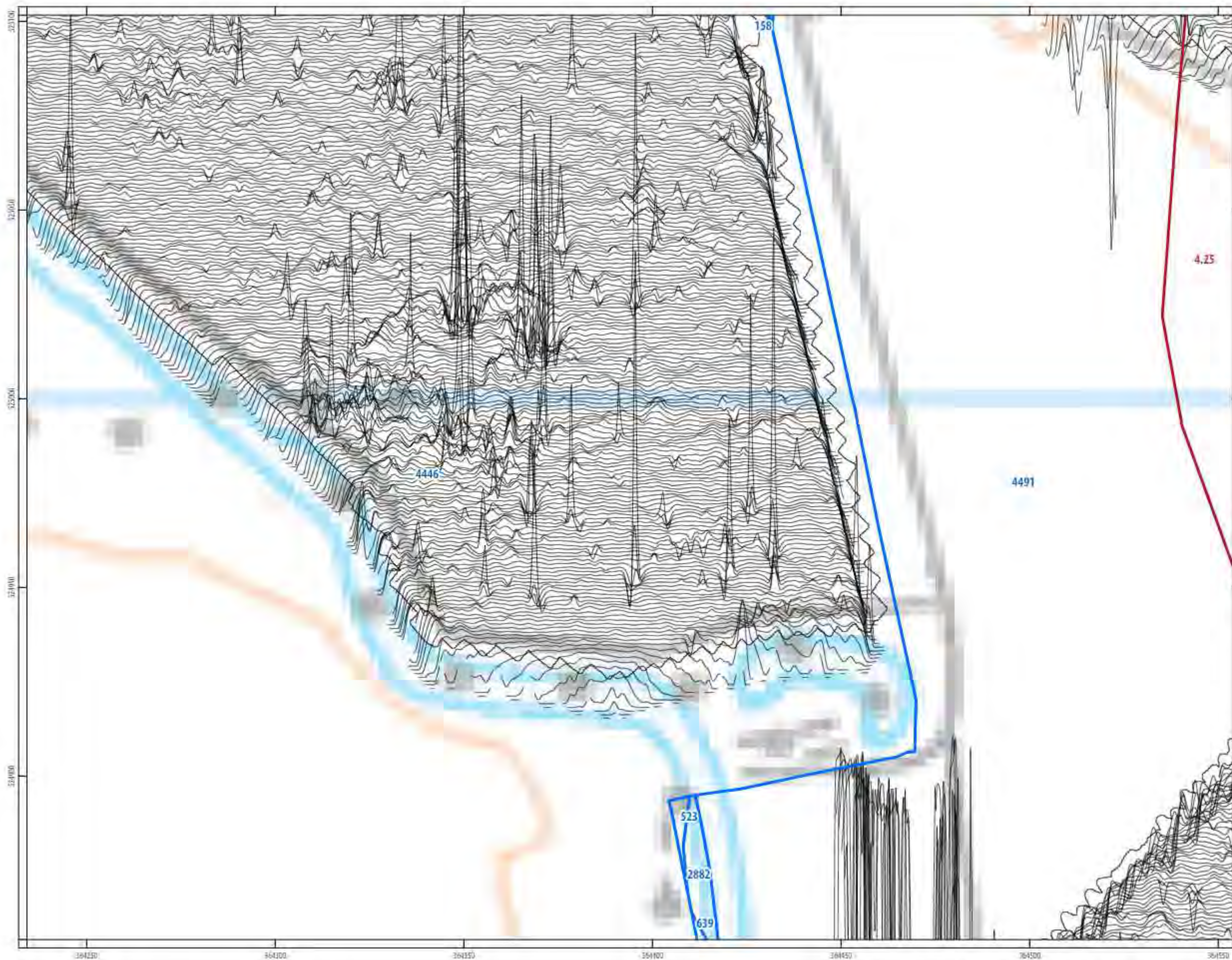
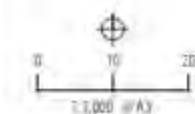
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY Grid Line
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 634 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

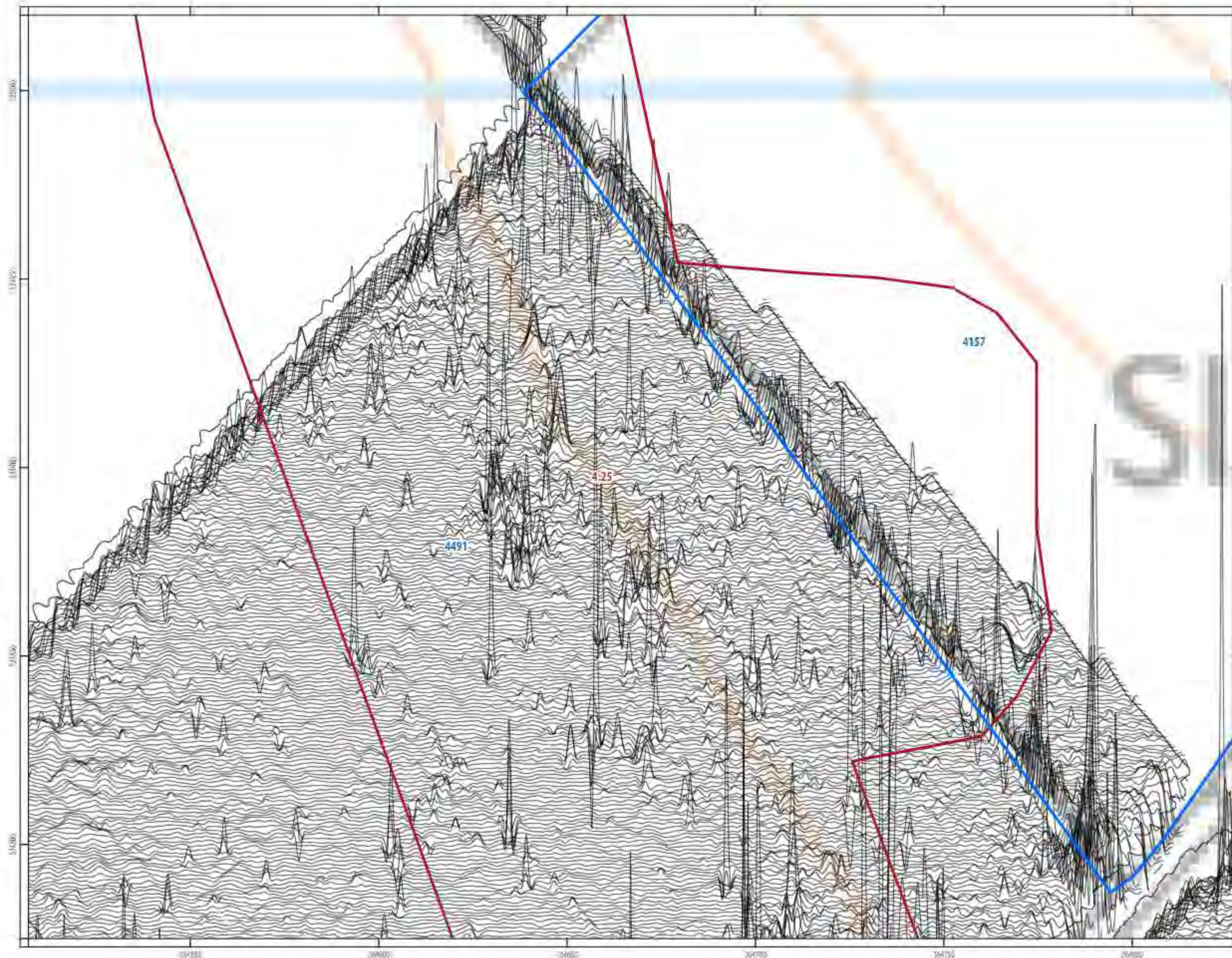
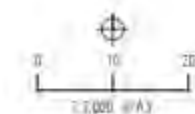
- ▭ Phase 1 Geophysical Magnetometer
- ▭ Phase 2 Geophysical Magnetometer
- Geophysical Survey Lines
- 10m Grid Lines
- Substrate Mosaics

**PROJECT**

A1120 - A66 Transverse Upgrade

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ILLUS 035 XY trace plot of minimally processed magnetometer data: Temple Soveryby to Appleby



**Phase 2 Survey**

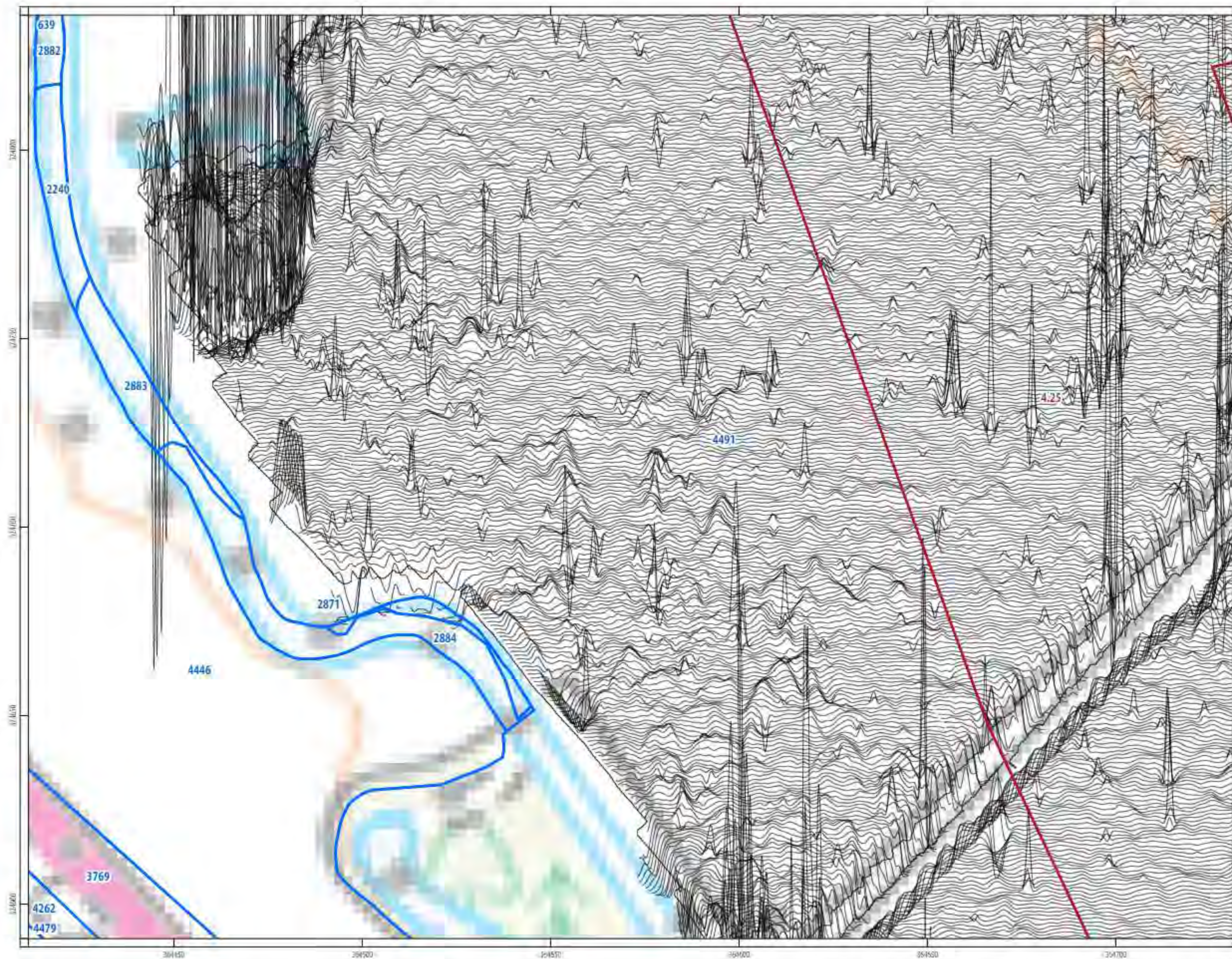
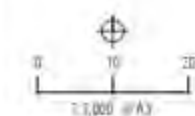
-  Phase 1 Geophysical Monitoring
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Lines
-  XY Locations
-  Scheduled Monuments

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 636 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

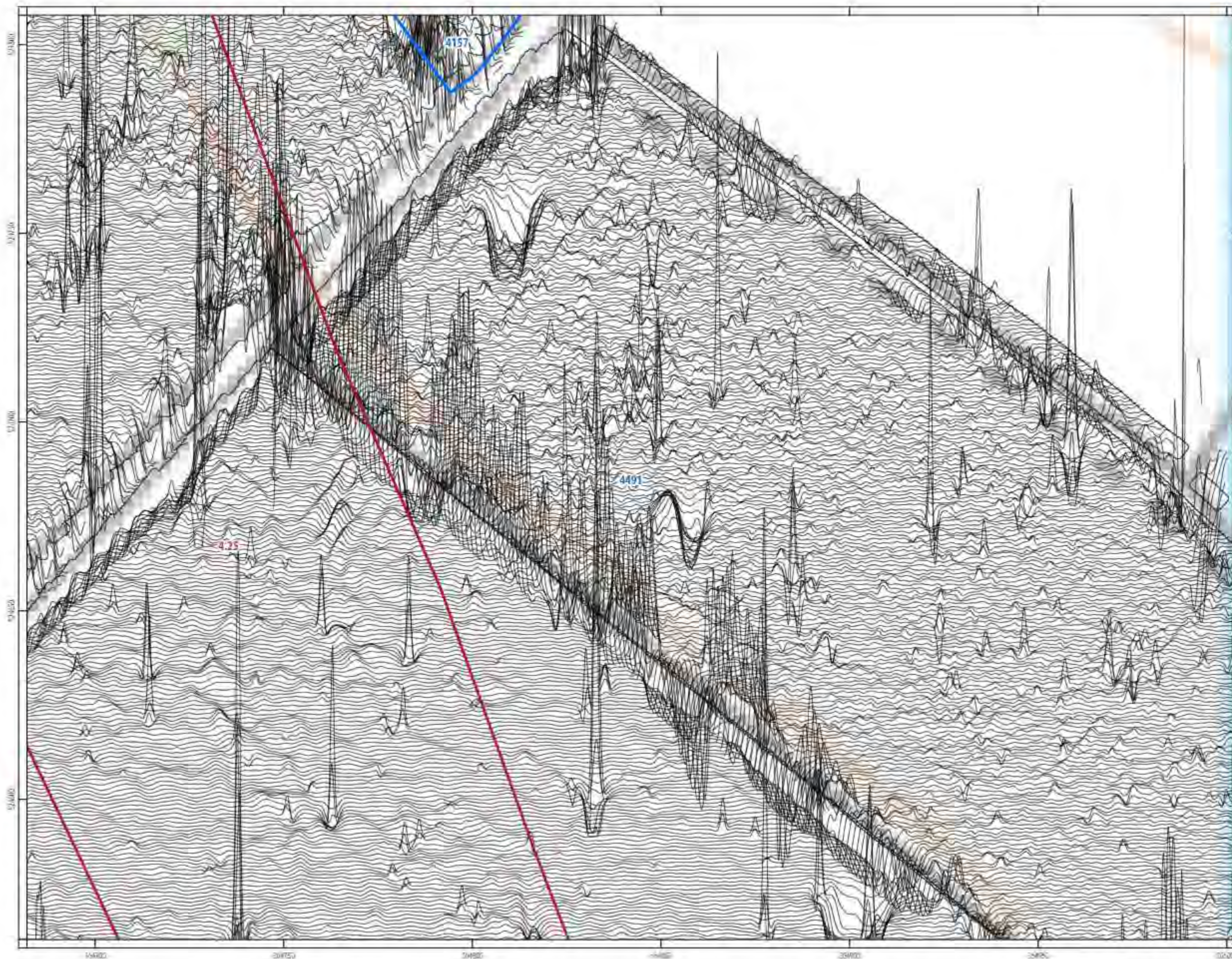
- ▭ Phase 1 Geophysical Magnetometer survey
- ▭ Phase 2 Geophysical Magnetometer survey
- ▭ Geophysical survey 2010/11
- ▭ XY Equivalents
- ▭ Geophysical Magnetometer

**PROJECT**

ATF120 - A66 Transport Improvement

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ILLUS 037 XY trace plot of minimally processed magnetometer data; Temple Sovereby to Appleby



**Phase 2 Survey**

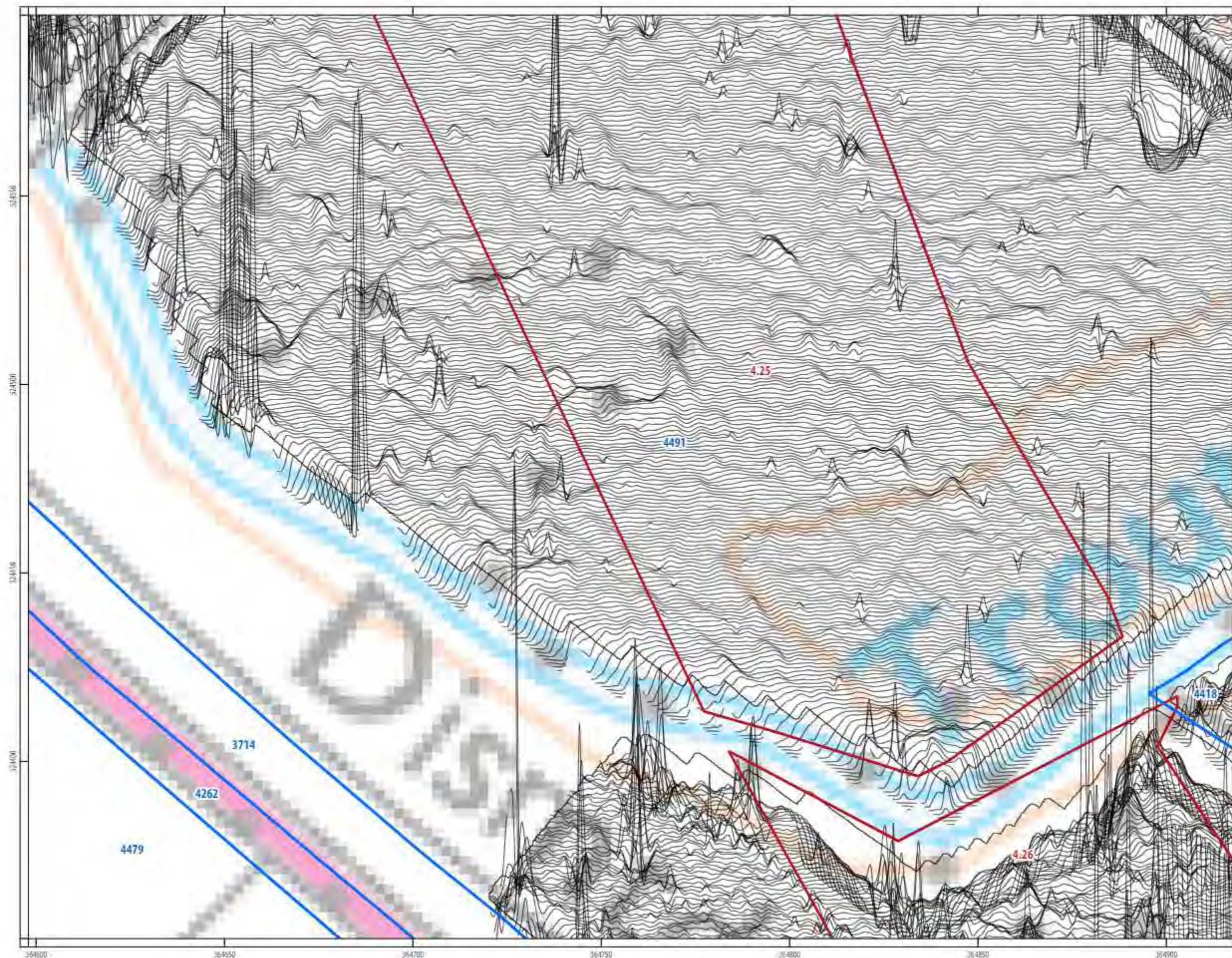
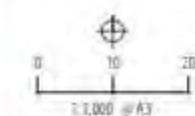
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Xy 10m/cm
- Scheduled Monument

**PROJECT**

A7120 - A66 Transpennine Upgrade

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ILLUS 638 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

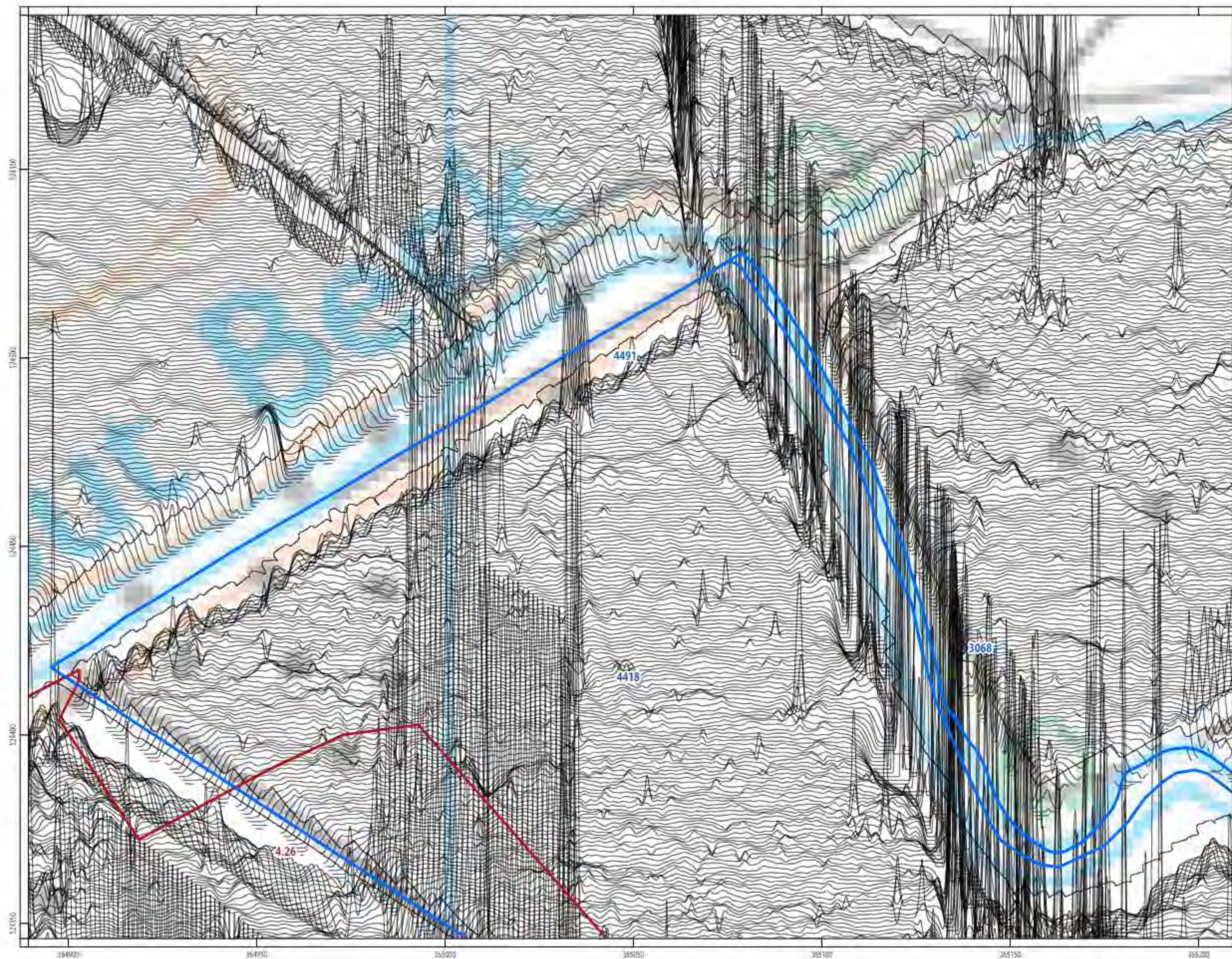
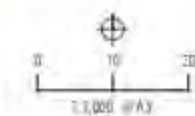
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  XY Grid Line
-  Scheduled Monument

**PROJECT**

A7120 - A66 Transpennine Upgrade

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ILLUS 639 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

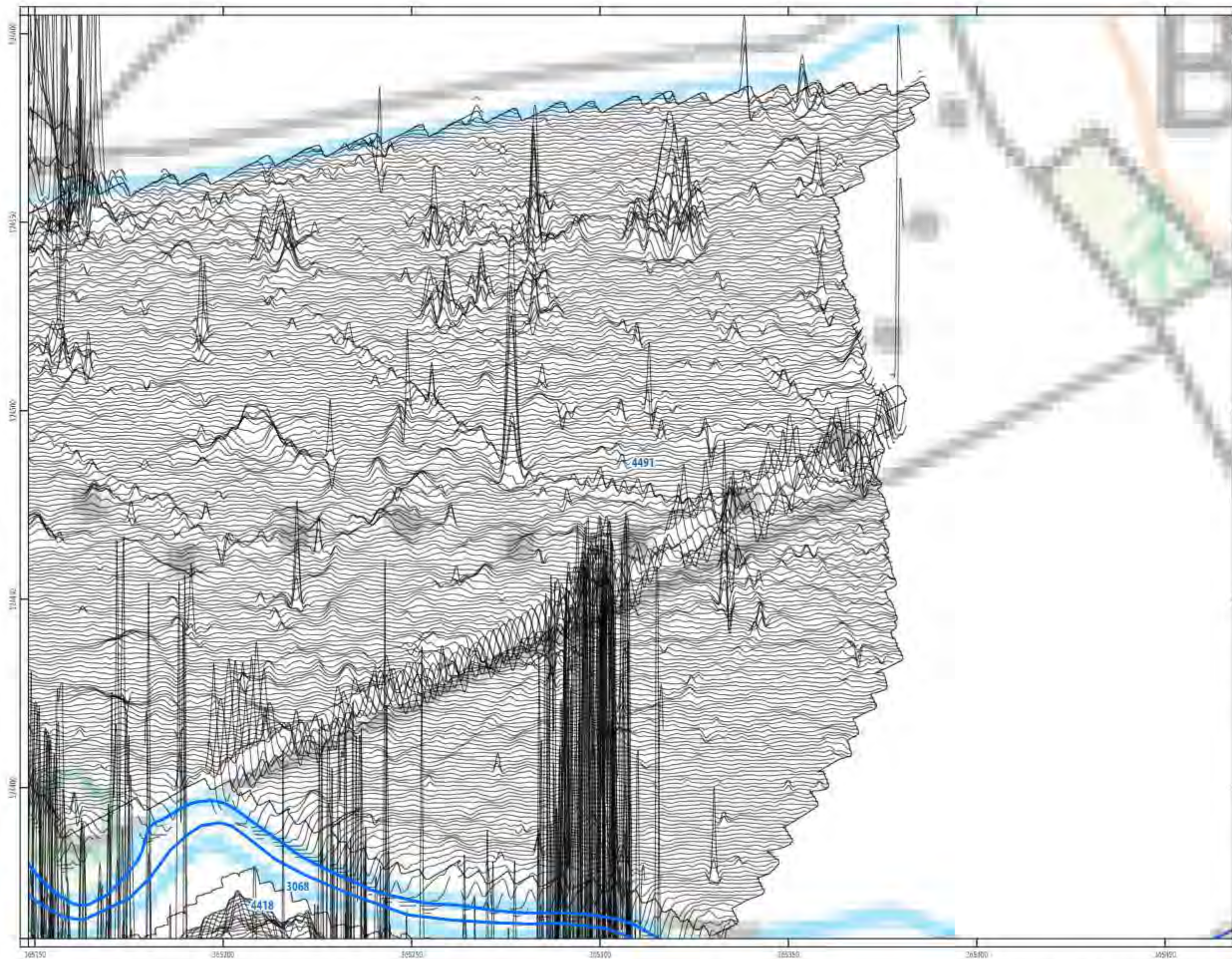
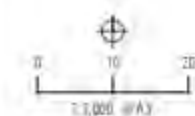
- Phase 1 Geophysical Magnetometry
- Phase 2 Geophysical Magnetometry
- Geophysical Survey Lines
- Site Boundaries
- Scheduled Monuments

**PROJECT**

A1120 - A66 Transpennine Upgrade

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ILLUS 640 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

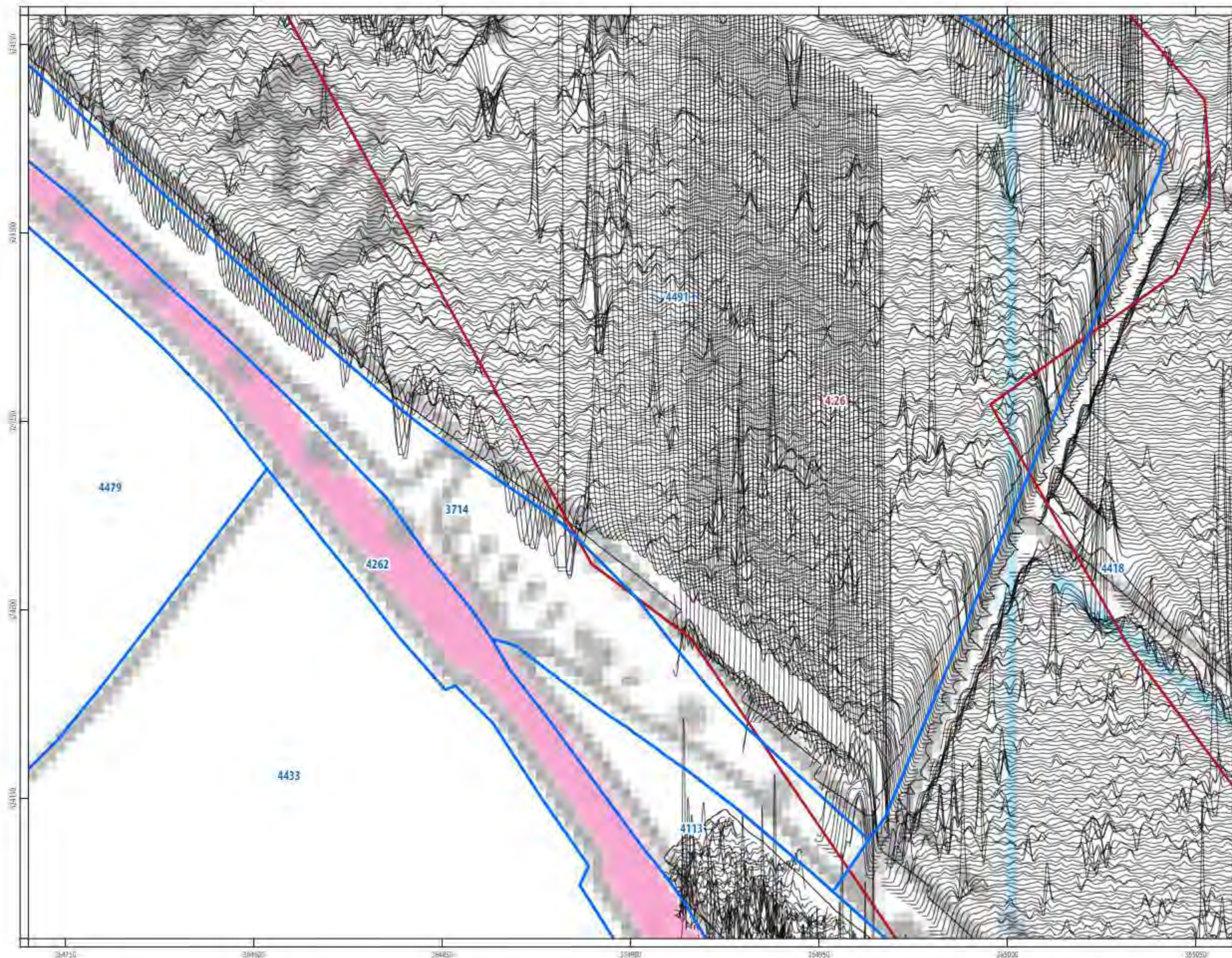
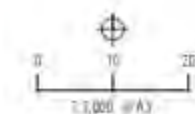
- ▭ Phase 1 Geophysical Monitoring
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- XY Locations
- ▨ Scheduled Monuments

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 641 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

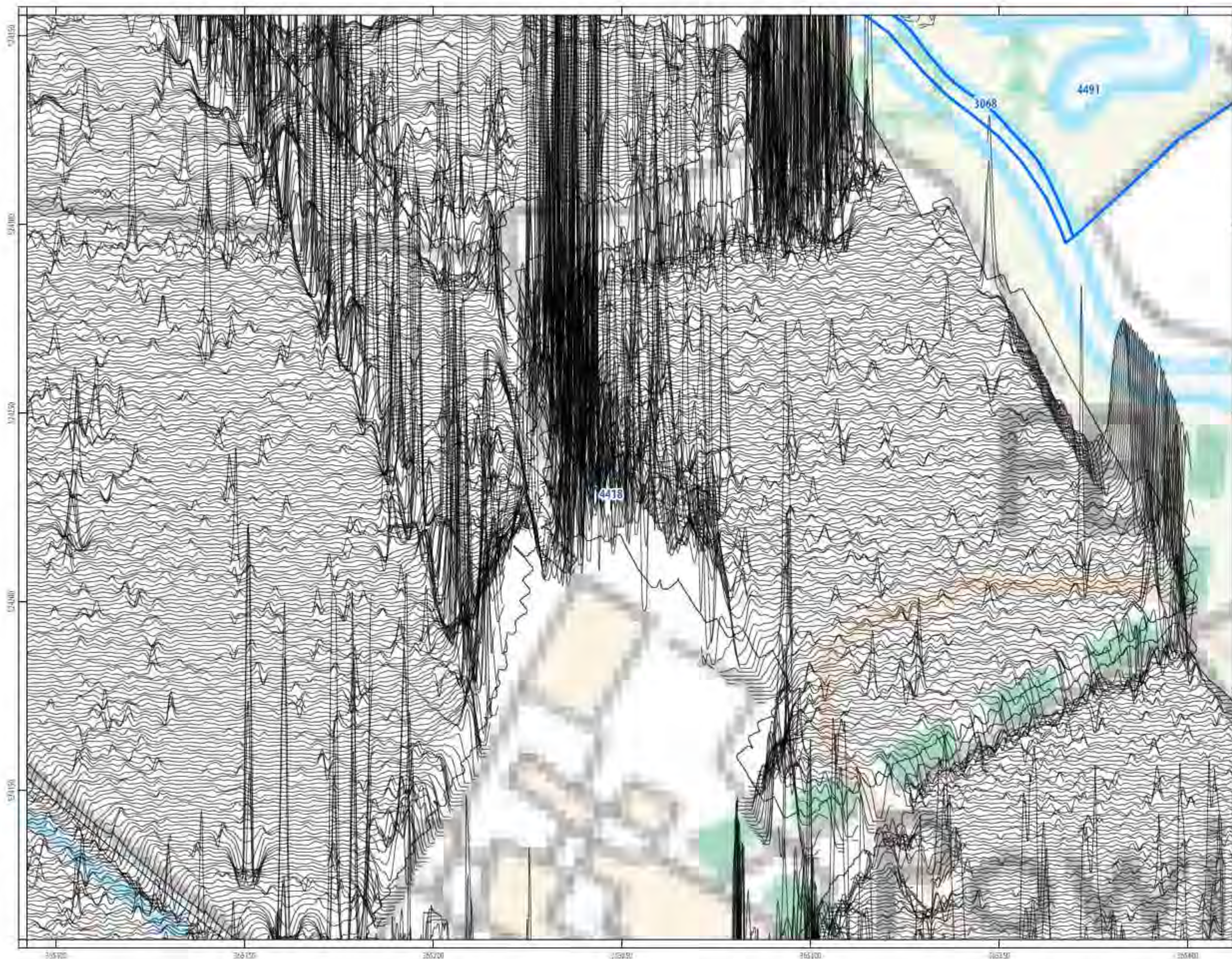
- Phase 1 Geophysical Magnetometer
- Phase 2 Geophysical Magnetometer
- Geophysical Survey 2018
- Site Boundaries
- Geophysical Magnetometer

**PROJECT**

AT1120 - A66 Transport Upgrade

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ILLUS 642 XY trace plot of minimally processed magnetometer data: Temple Sovereby to Appleby



**Phase 2 Survey**

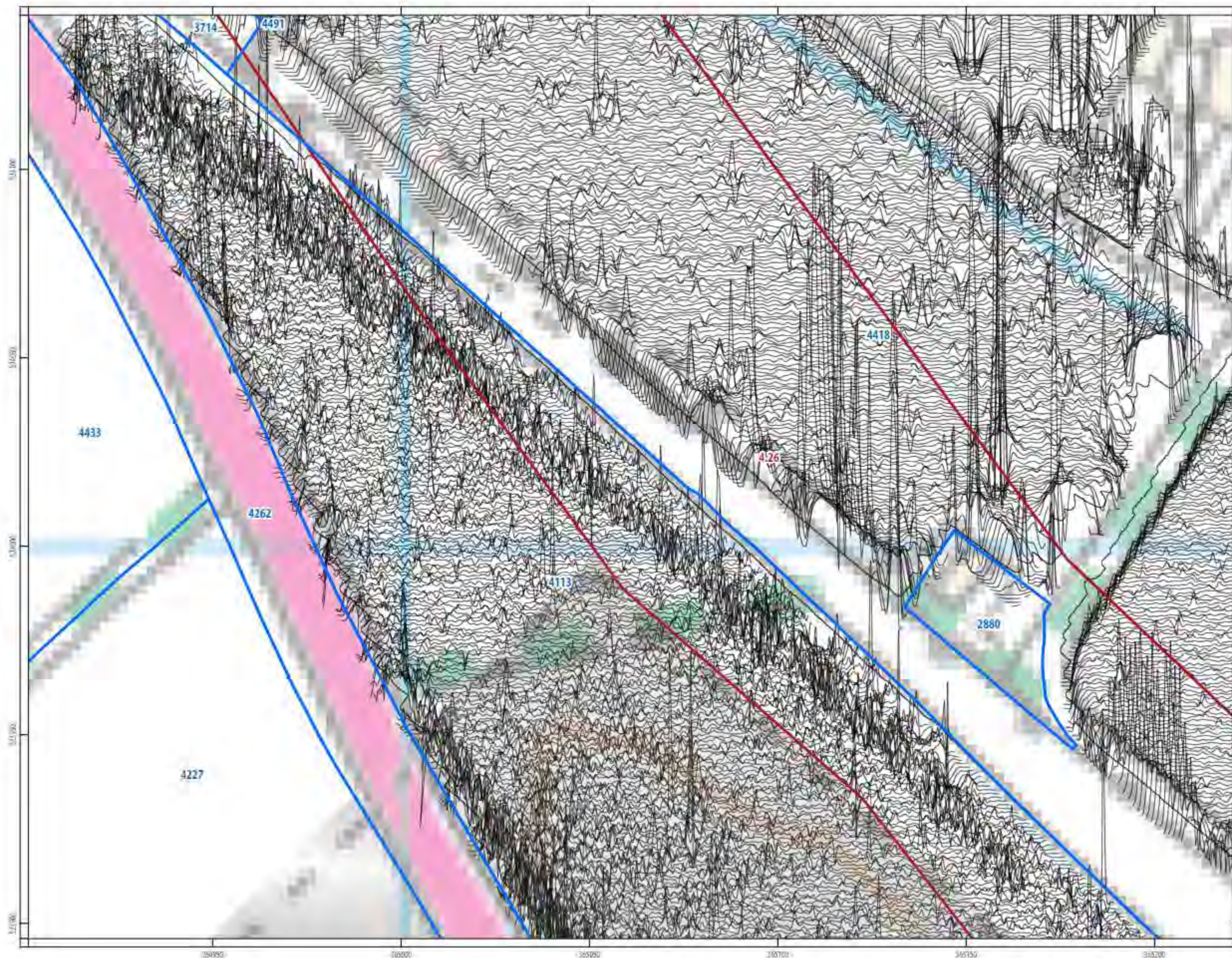
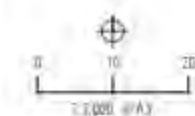
- ▭ Phase 1 Geophysical Magnetometer
- ▭ Phase 2 Geophysical Magnetometer
- Geophysical Survey Lines
- XY Footprint
- ▭ Non-Invasive Magnetometer

**PROJECT**

A1120 - A66 Transpennine Upgrade

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ILLUS 643. XY trace plot of minimally processed magnetometer data: Temple Soverby to Appleby



**Phase 2 Survey**

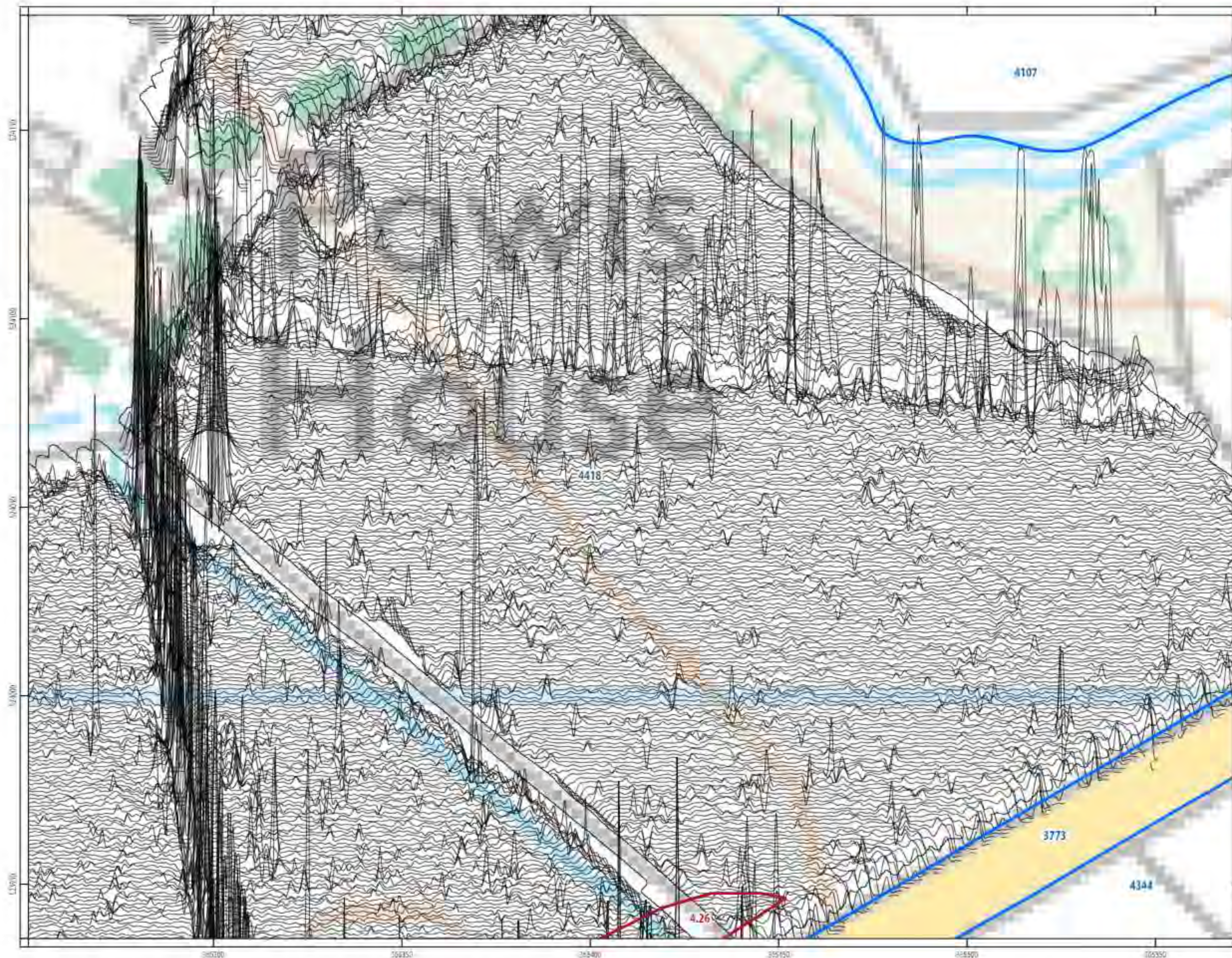
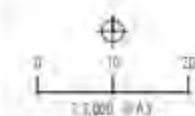
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey Lines
-  Survey Footprint
-  Surveyed Area

**PROJECT**

A17120 - A66 Transpennine Upgrade

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ILLUS 644 XY trace plot of minimally processed magnetometer data: Temple Soveryby to Appleby



**Phase 2 Survey**

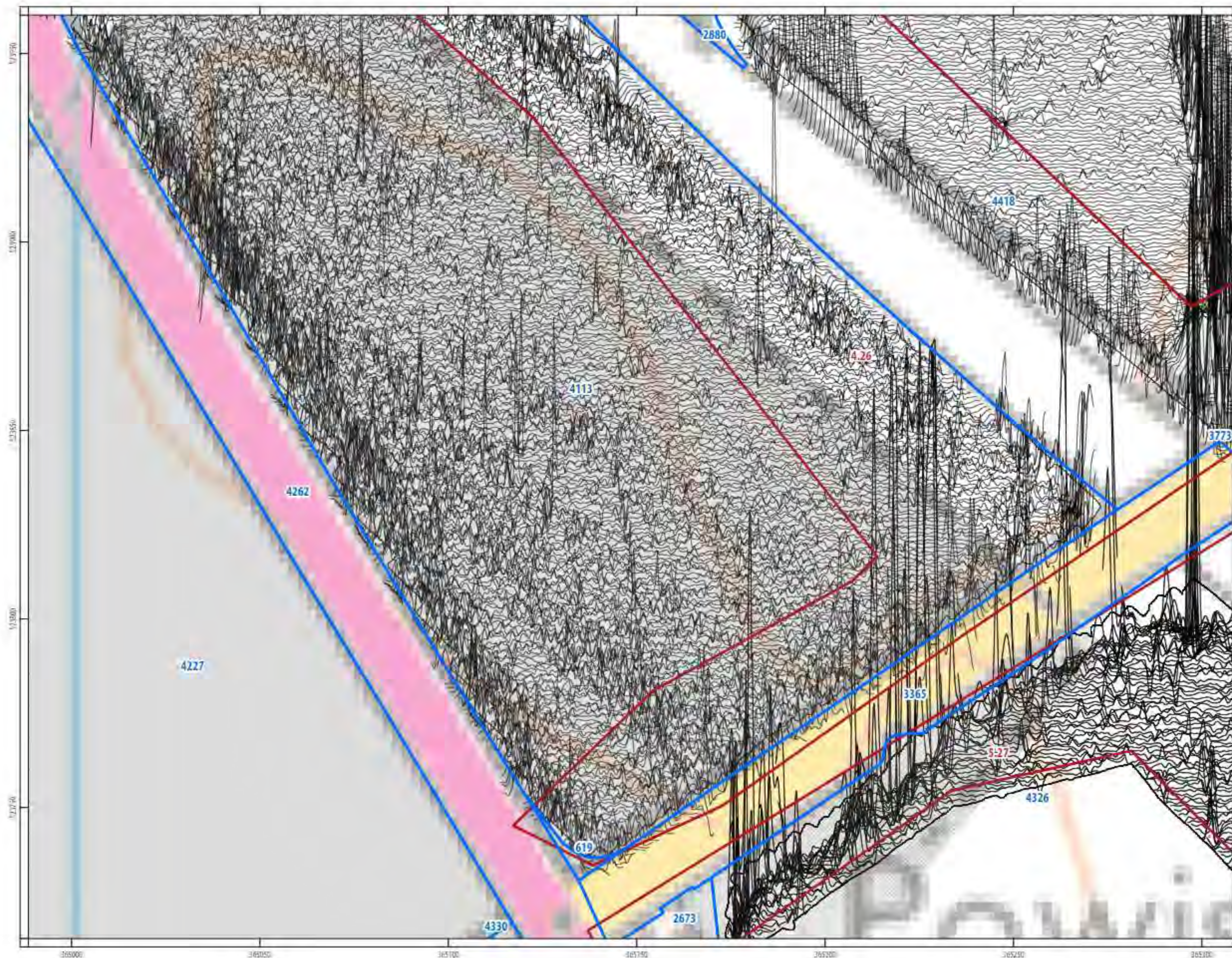
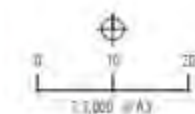
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY 100m Grid
- Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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ILLUS 645 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

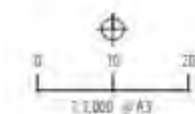
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Line
-  XY 10m/cm
-  Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

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ILLUS 646 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

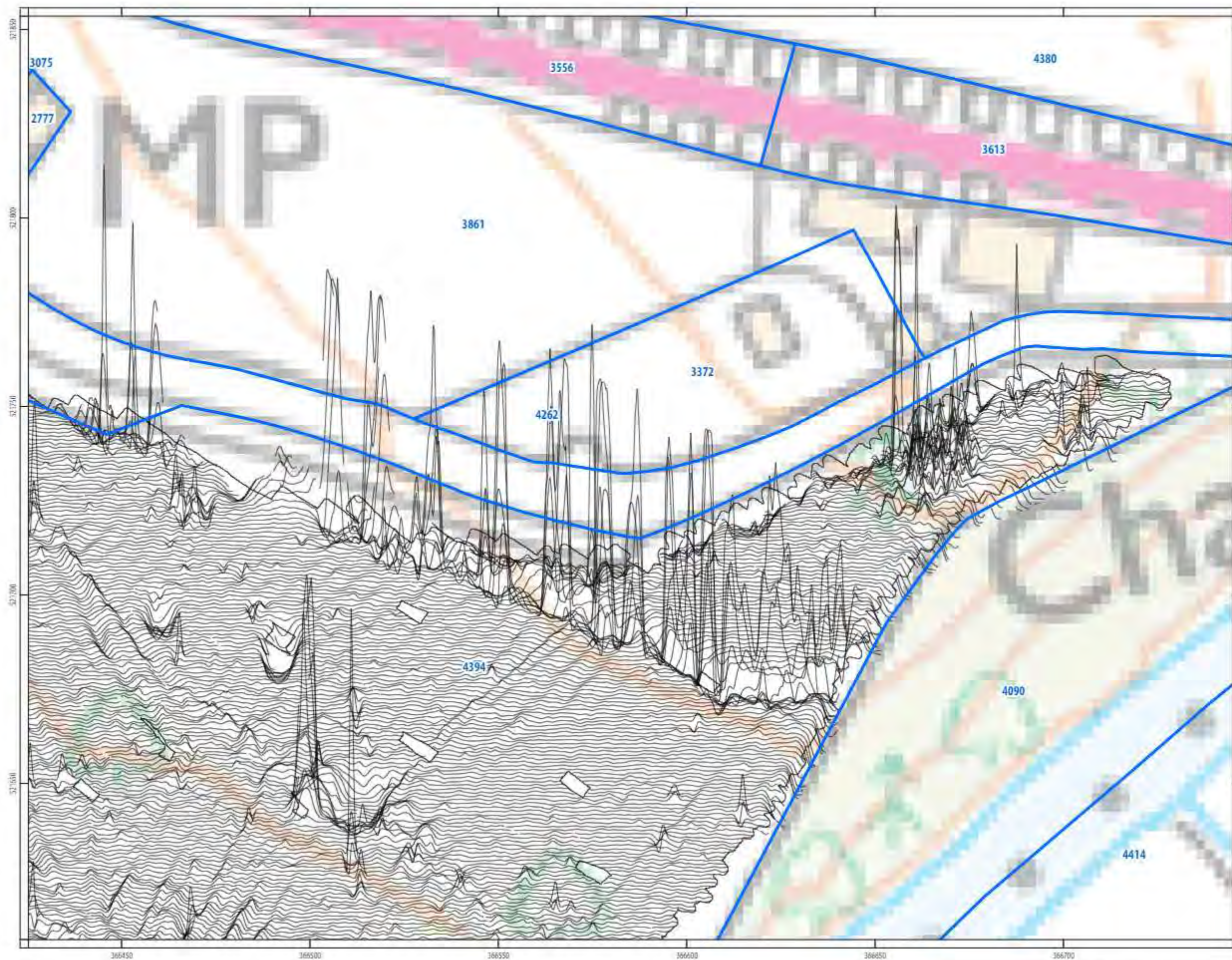
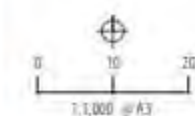
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Ident
- XY - 10m / cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 647. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

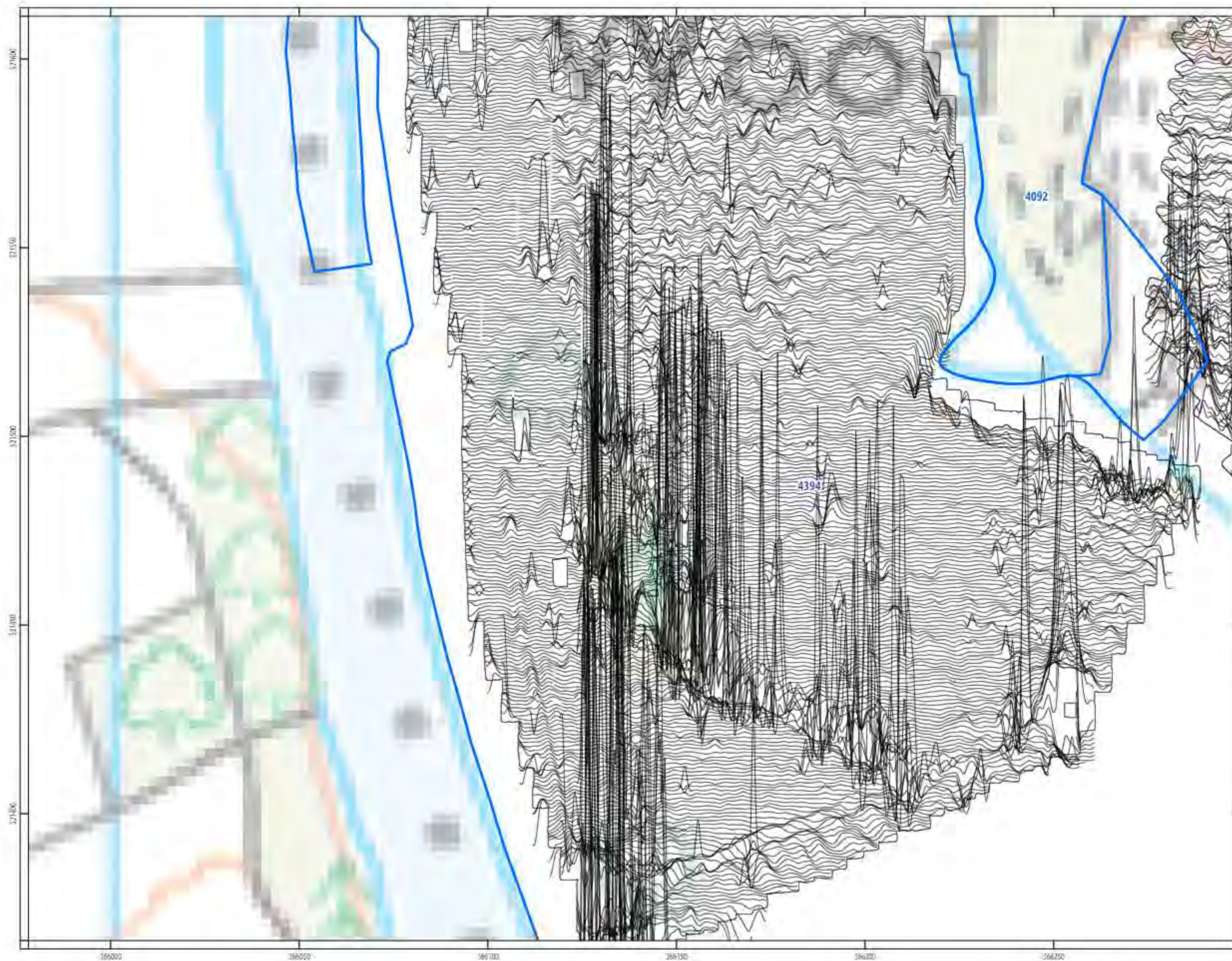
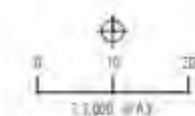
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Line
-  XY 100/10m
-  Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 648. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

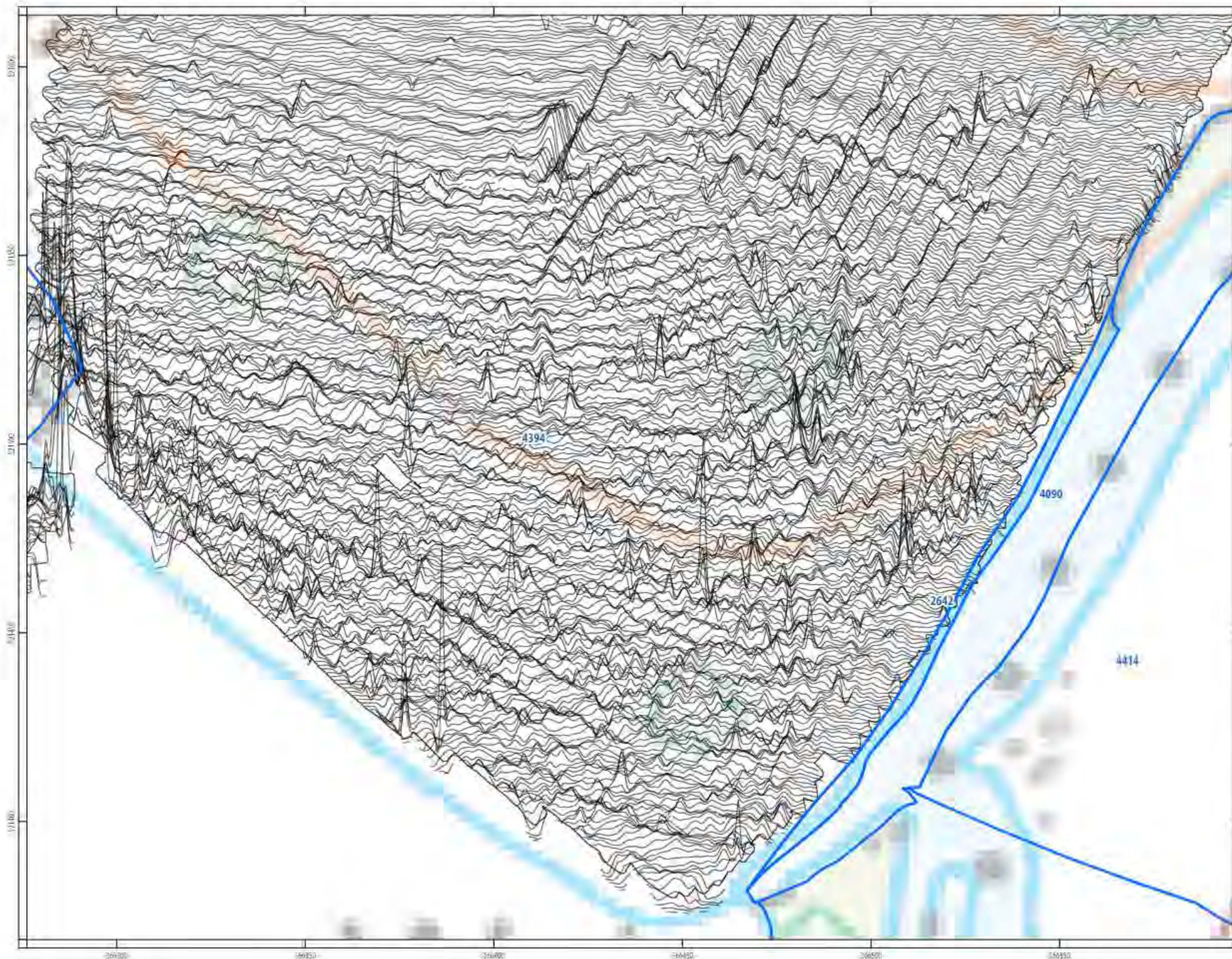
-  Phase 1 Magnetometer Magnetometry
-  Phase 2 Magnetometer Magnetometry
-  Geophysical Survey 2011
-  Utility Locations
-  100m Topographic Contours

**PROJECT**

ATTU20 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 649 XY trace plot of minimally processed magnetometer data: Temple Soverby to Appleby



**Phase 2 Survey**

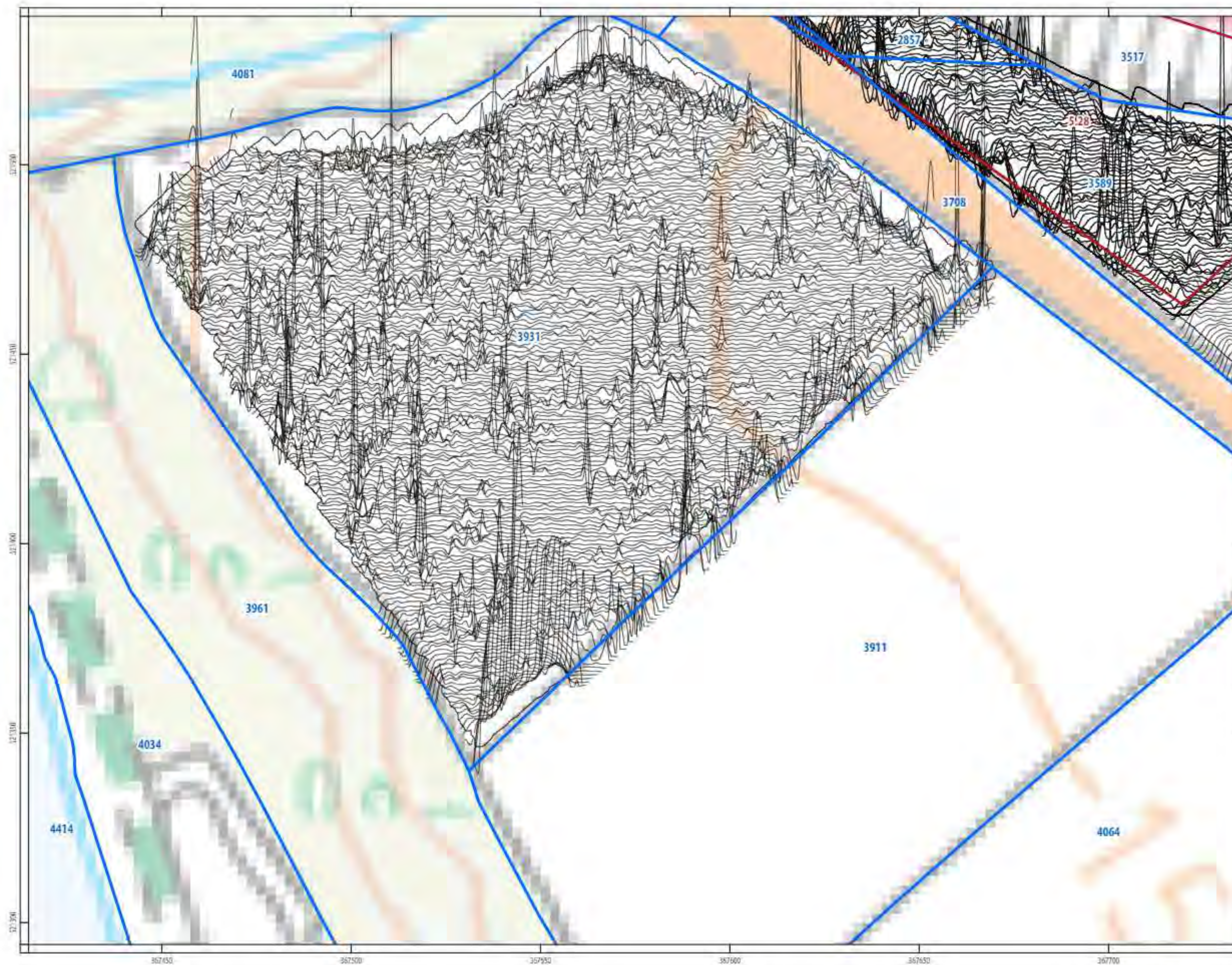
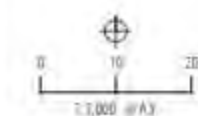
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY 10m/cm
- ▭ Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 650 XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

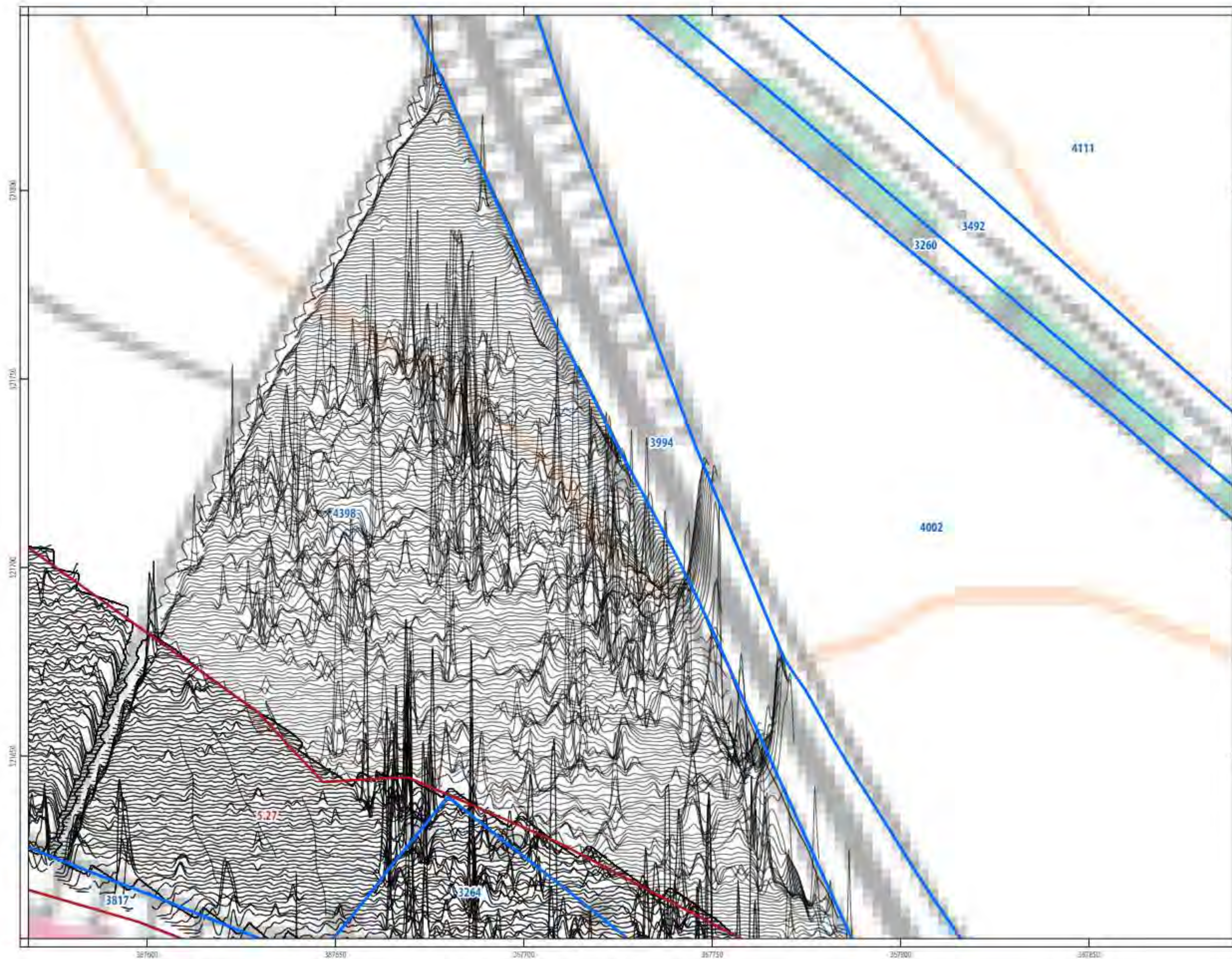
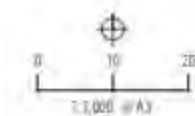
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY Location
- ▭ Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 651. XY trace plot of minimally processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

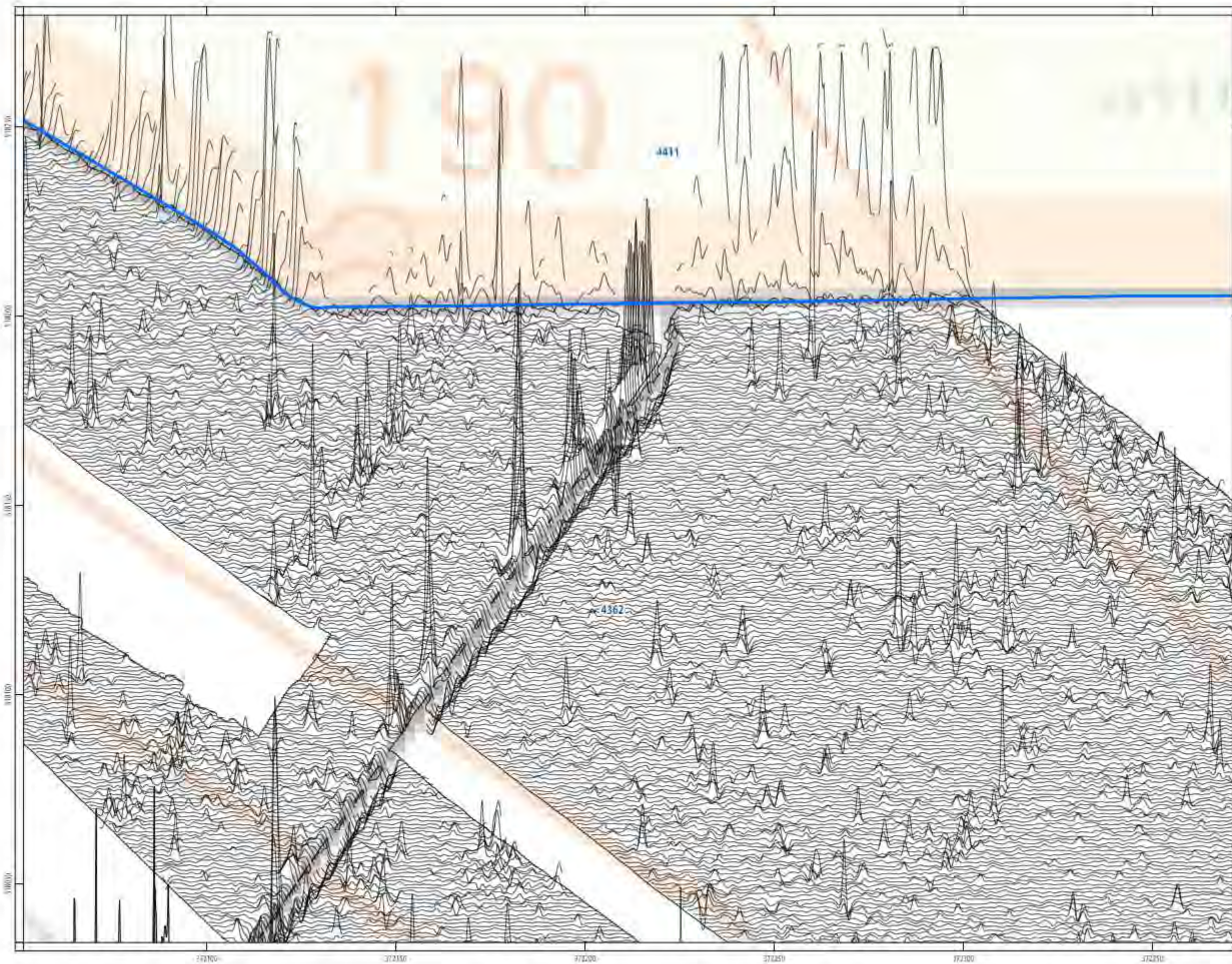
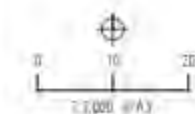
- Phase 1 Geophysical Magnetometer
- Phase 2 Geophysical Magnetometer
- Geophysical Survey Lines
- Site Boundaries
- Schlosser Magnetometer

**PROJECT**

A17120 - A66 Transverse Upgrade

**CLIENT**



Highways England



ILLUS 652 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

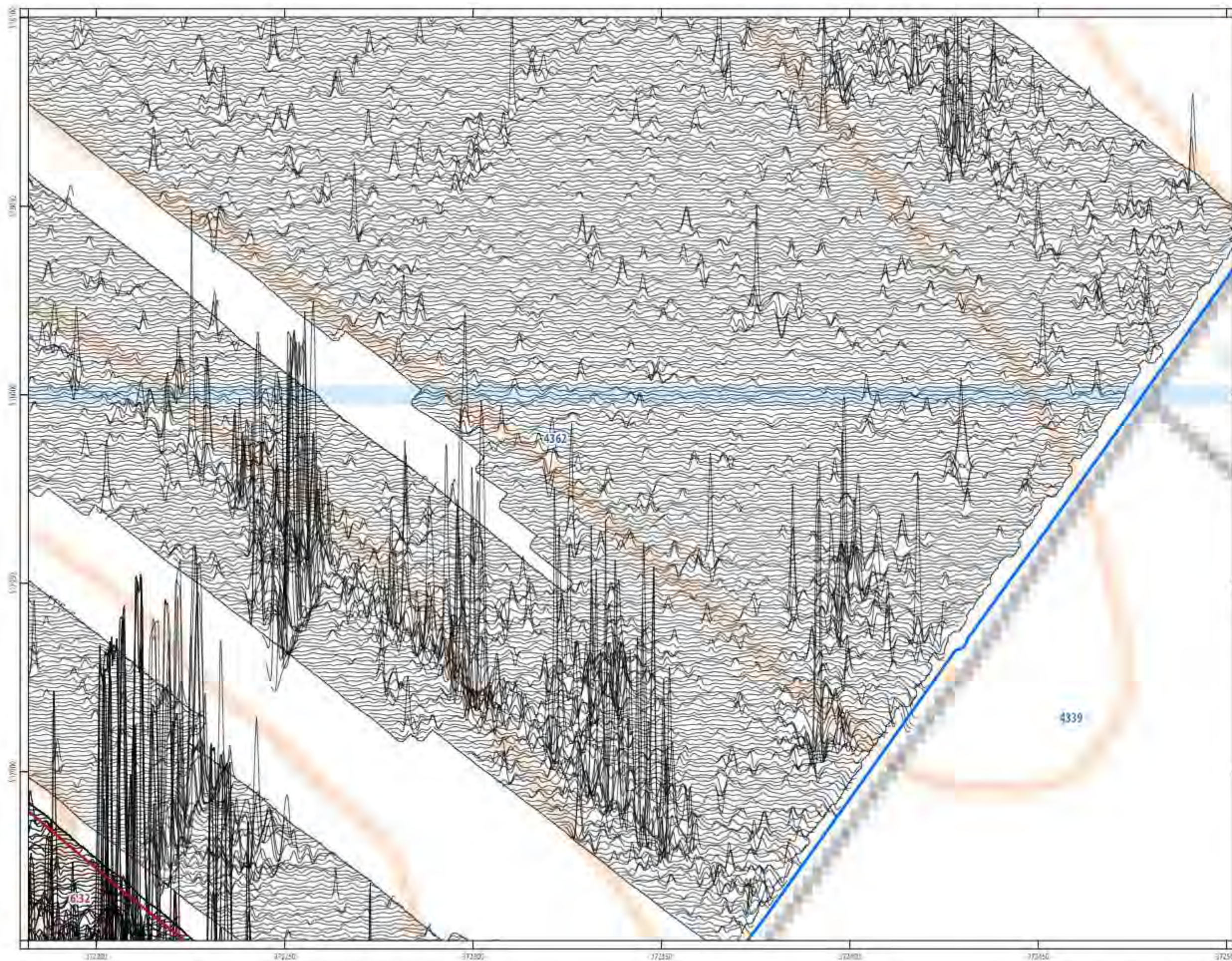
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  8m Grid Lines
-  10m Geophysical Magnetometer

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 653 XY traceplot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

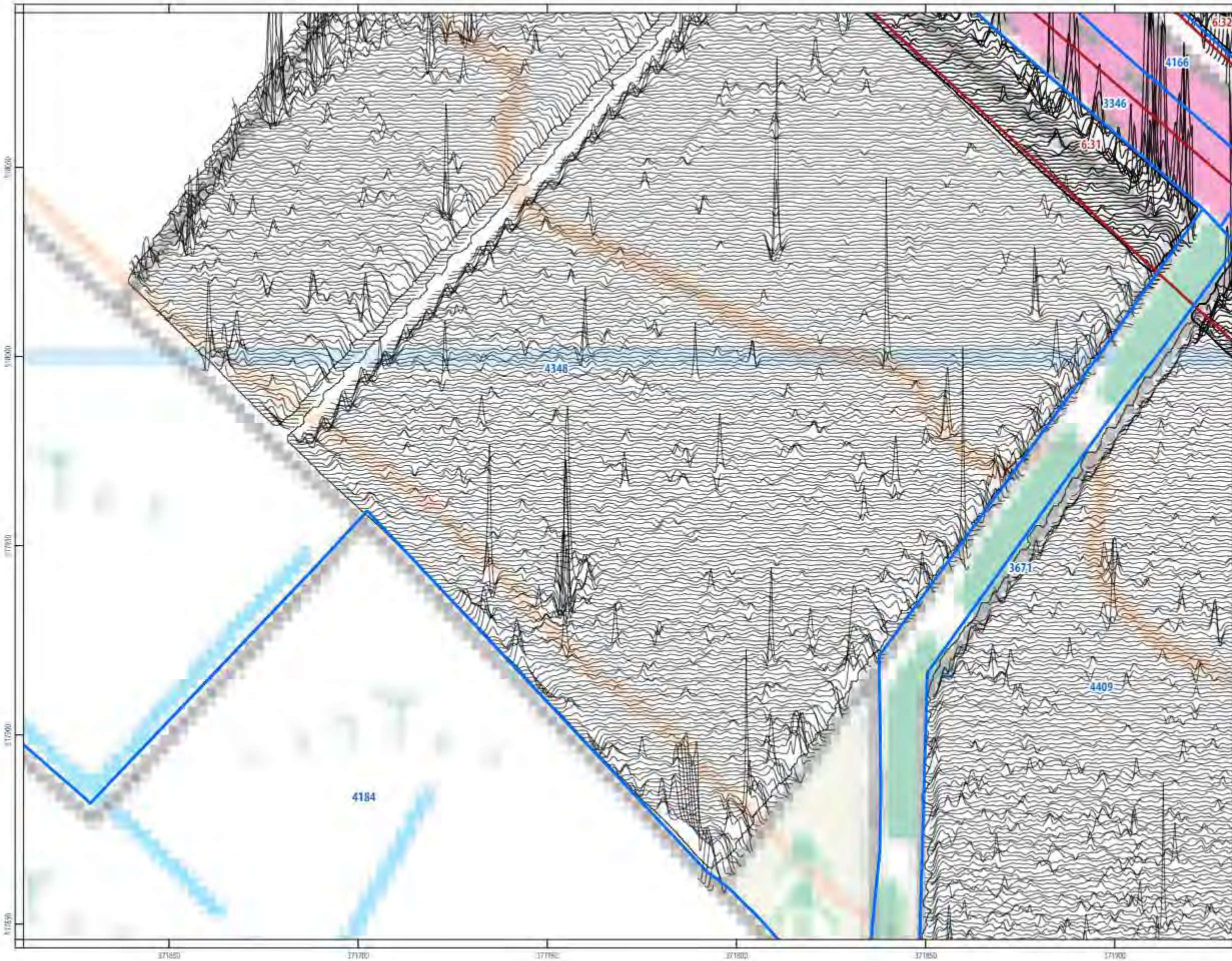
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY 10m Line
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 654 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

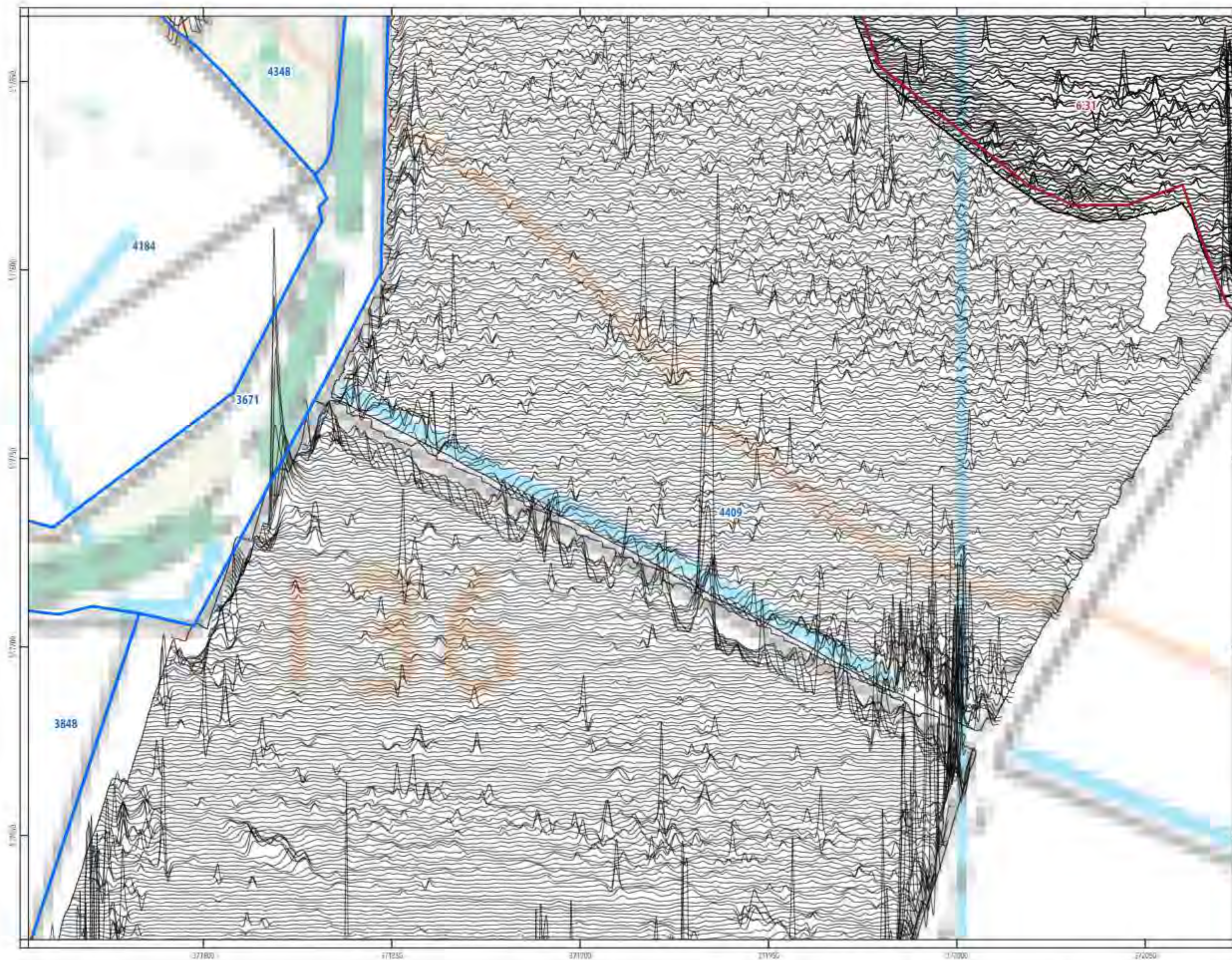
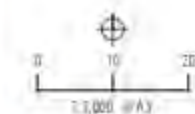
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey Lines
-  XY Locations
-  Scheduled Monuments

**PROJECT**

A1120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 655 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

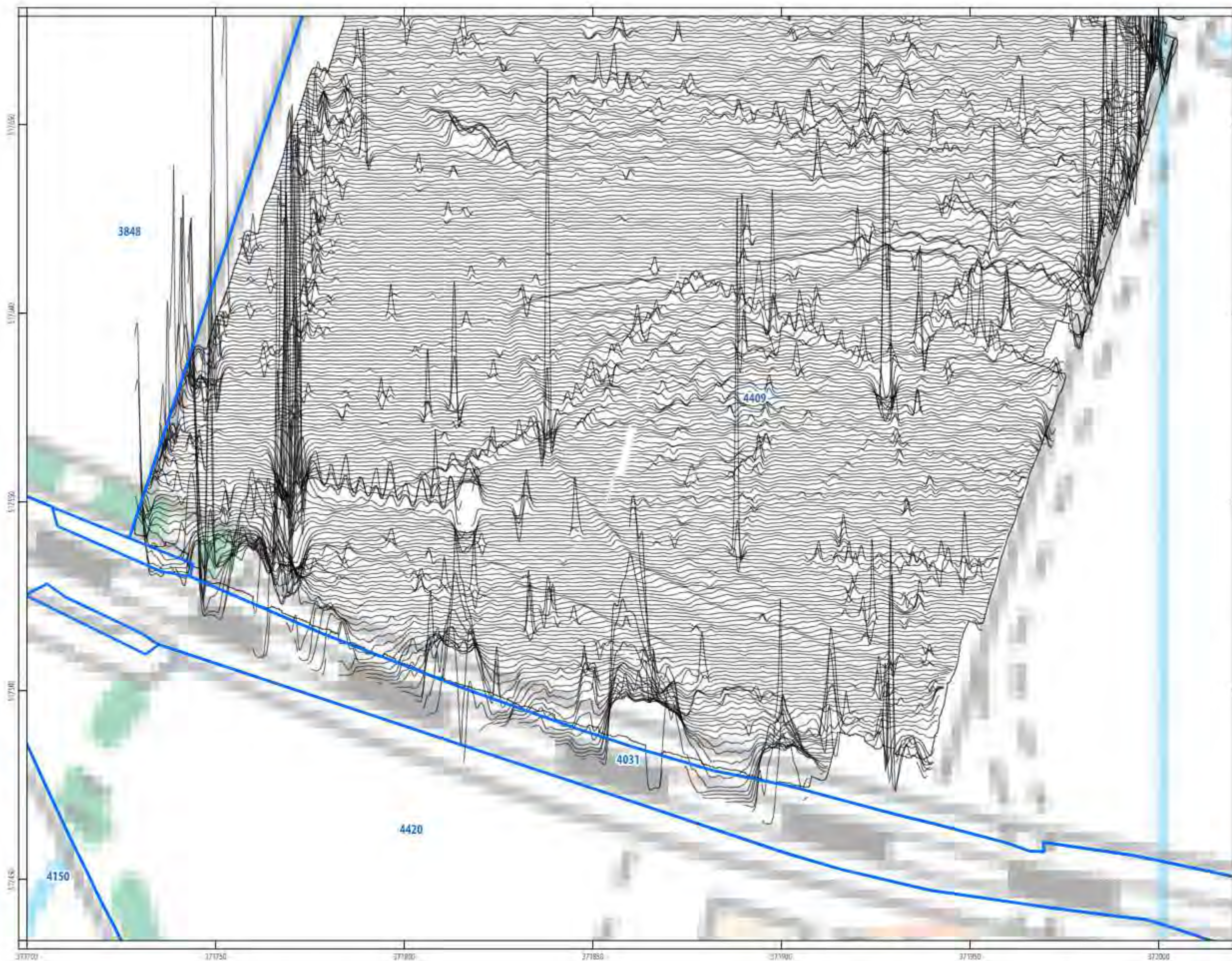
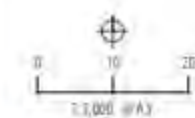
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Line
- XY Grid Line
- Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 656 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

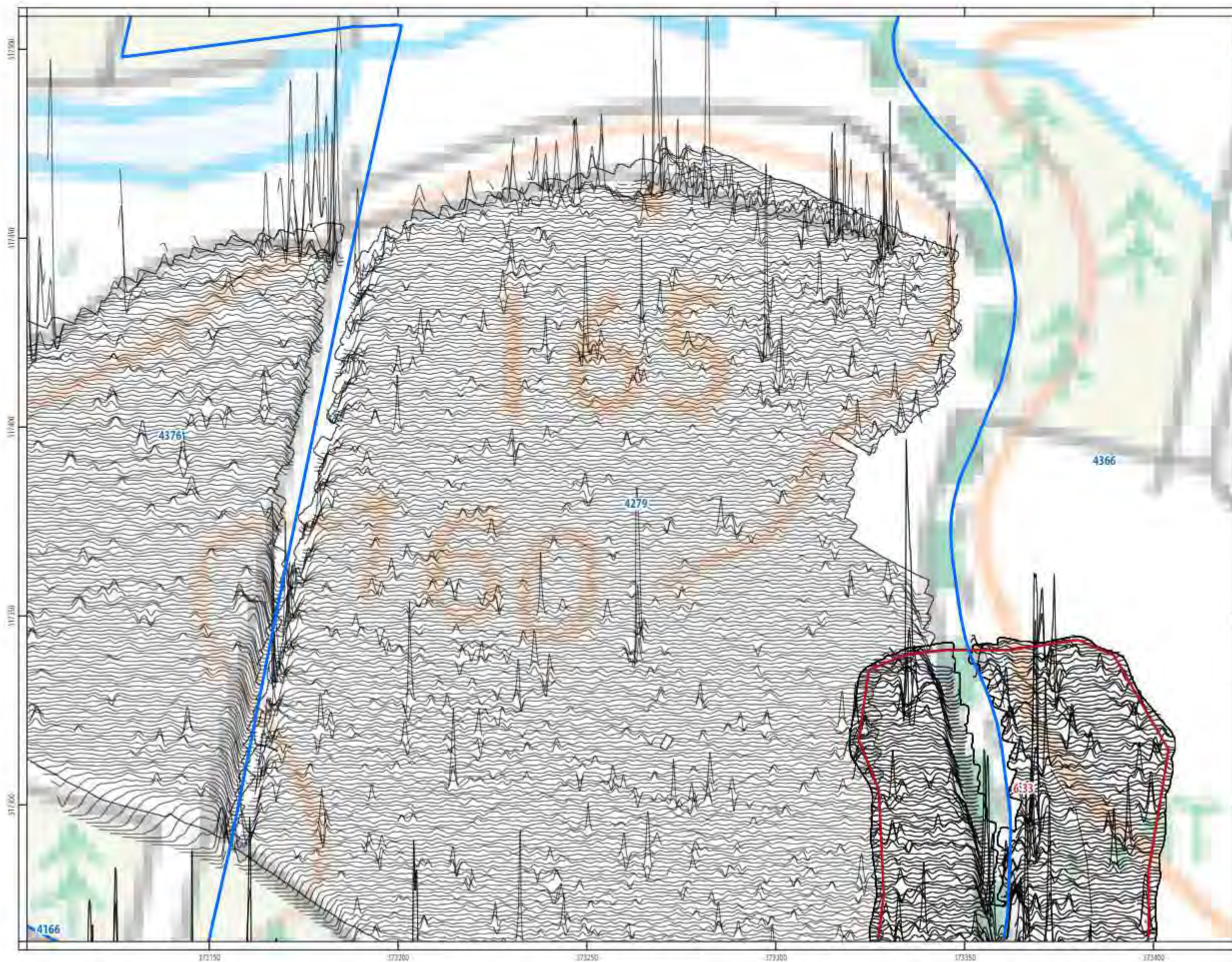
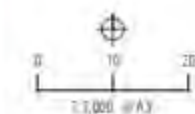
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  X: 100/100m
-  Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 657 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

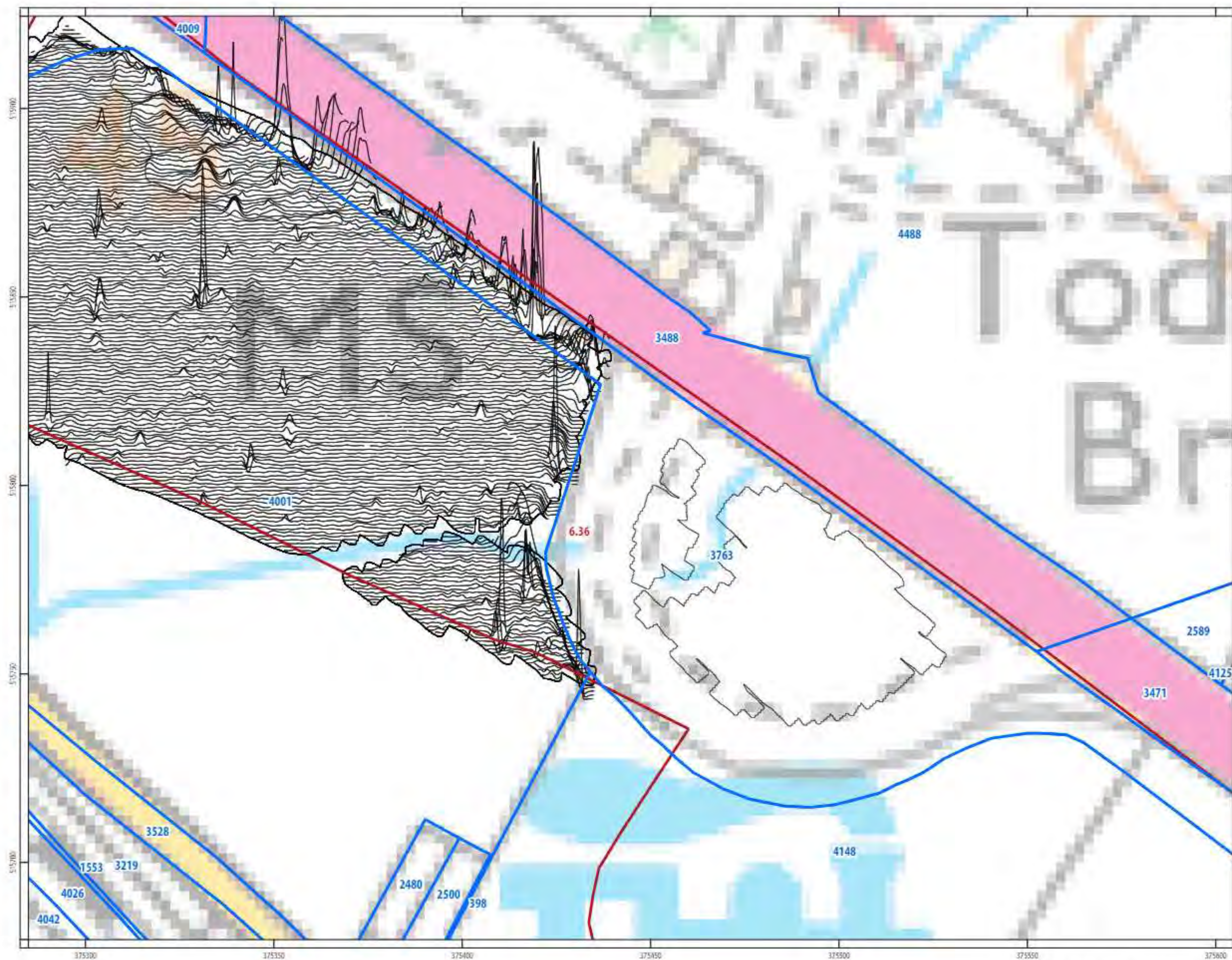
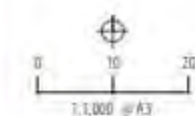
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m/1cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 658 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

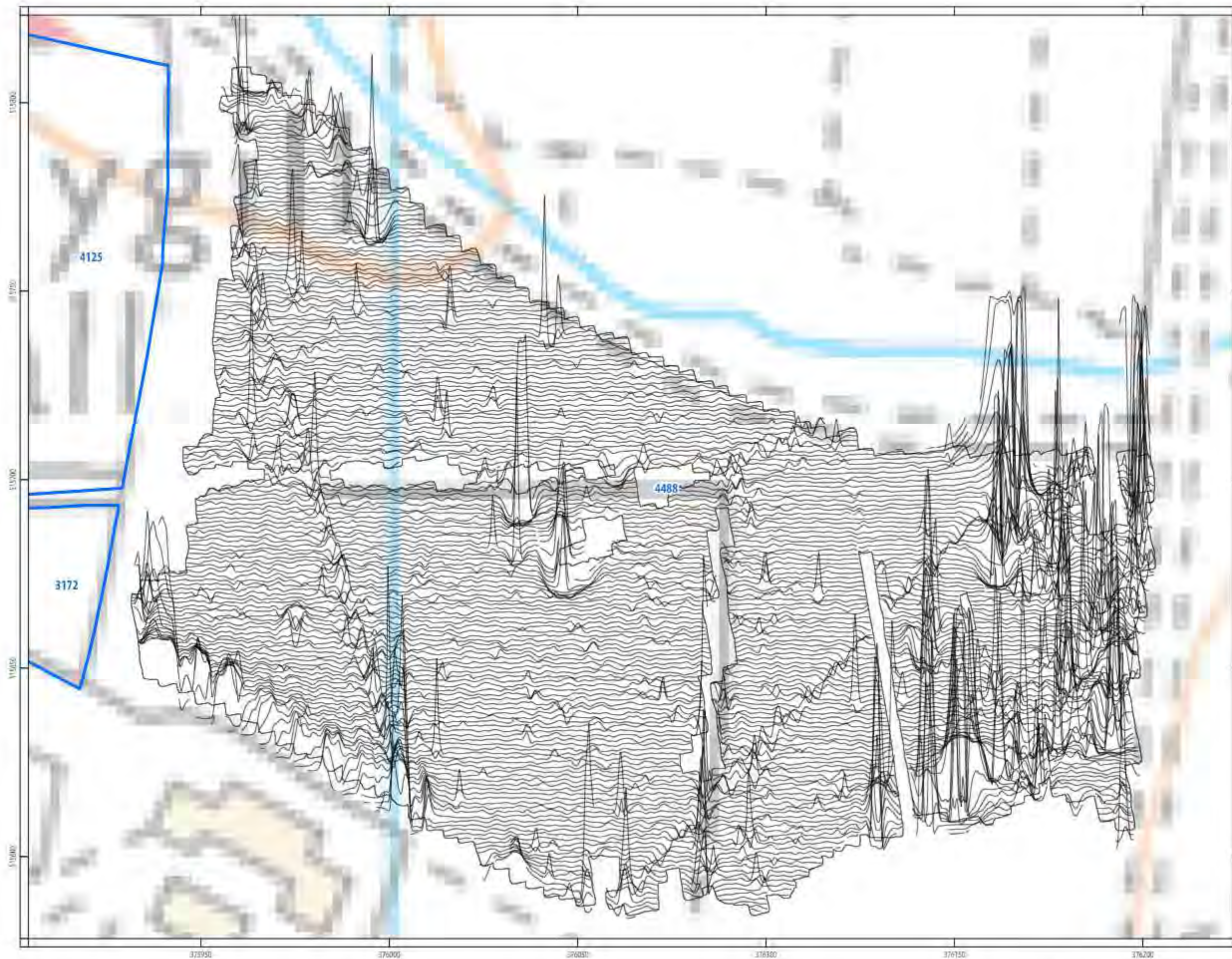
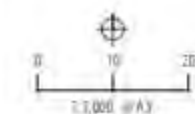
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Point
-  Xr 100/1000
-  Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 659 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

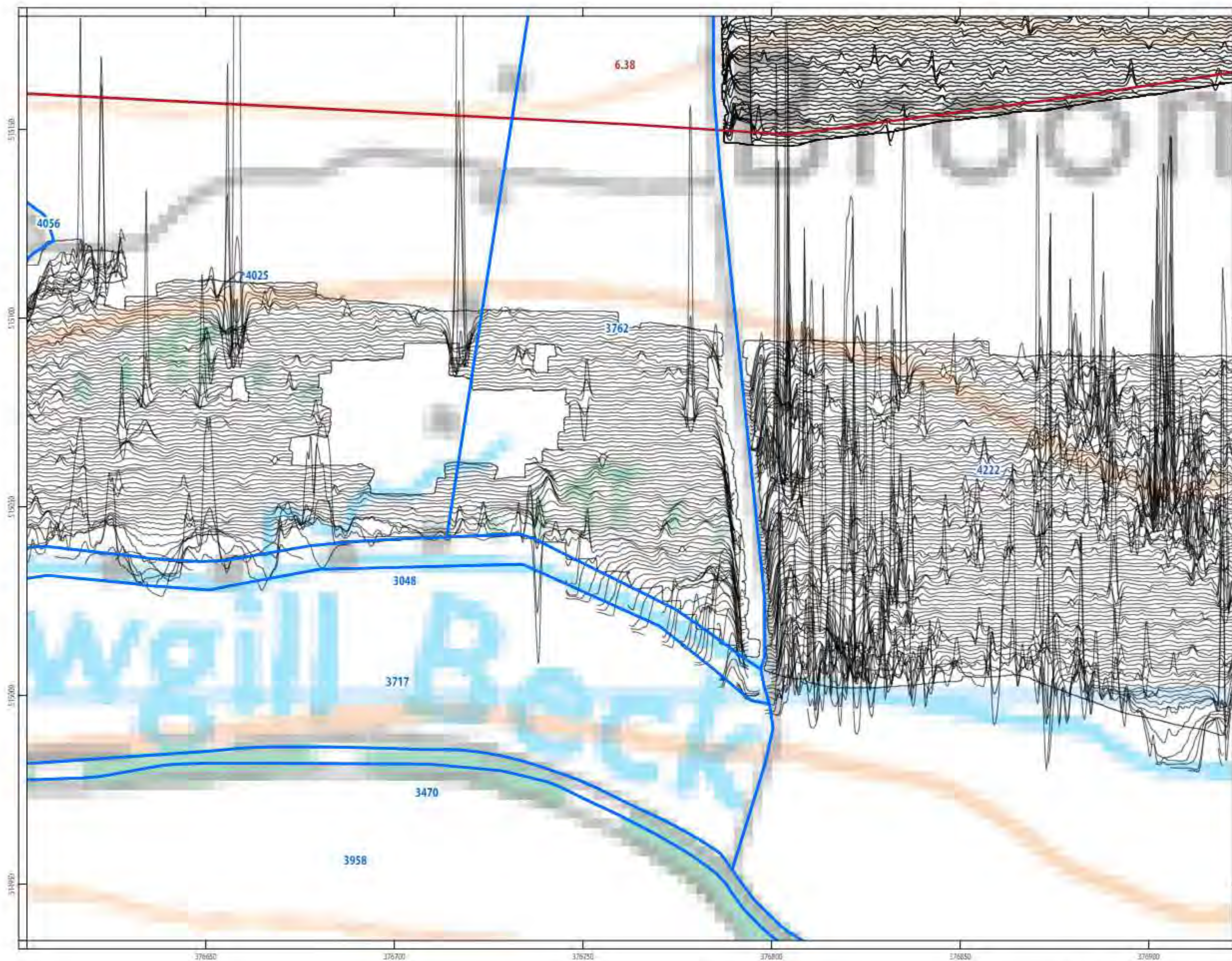
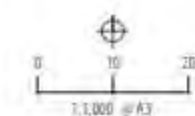
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY = 10m / cm
- ▨ Scheduled Monument

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 660 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

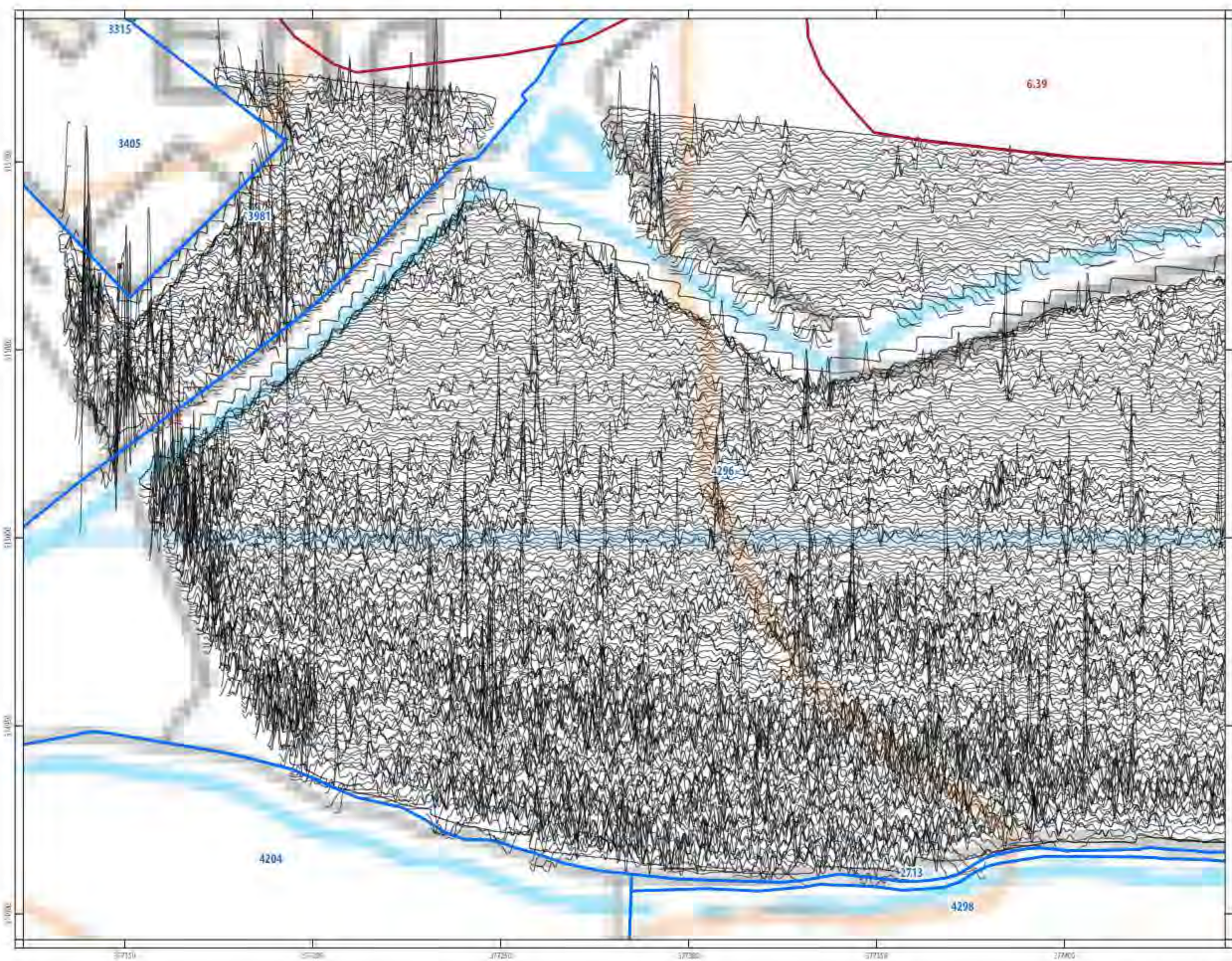
- ▭ Phase 1 Geophysical Magnetometer
- ▭ Phase 2 Geophysical Magnetometer
- ▭ Geophysical Survey 2011
- ▭ Railway
- ▭ Substation

**PROJECT**

A1120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 661 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

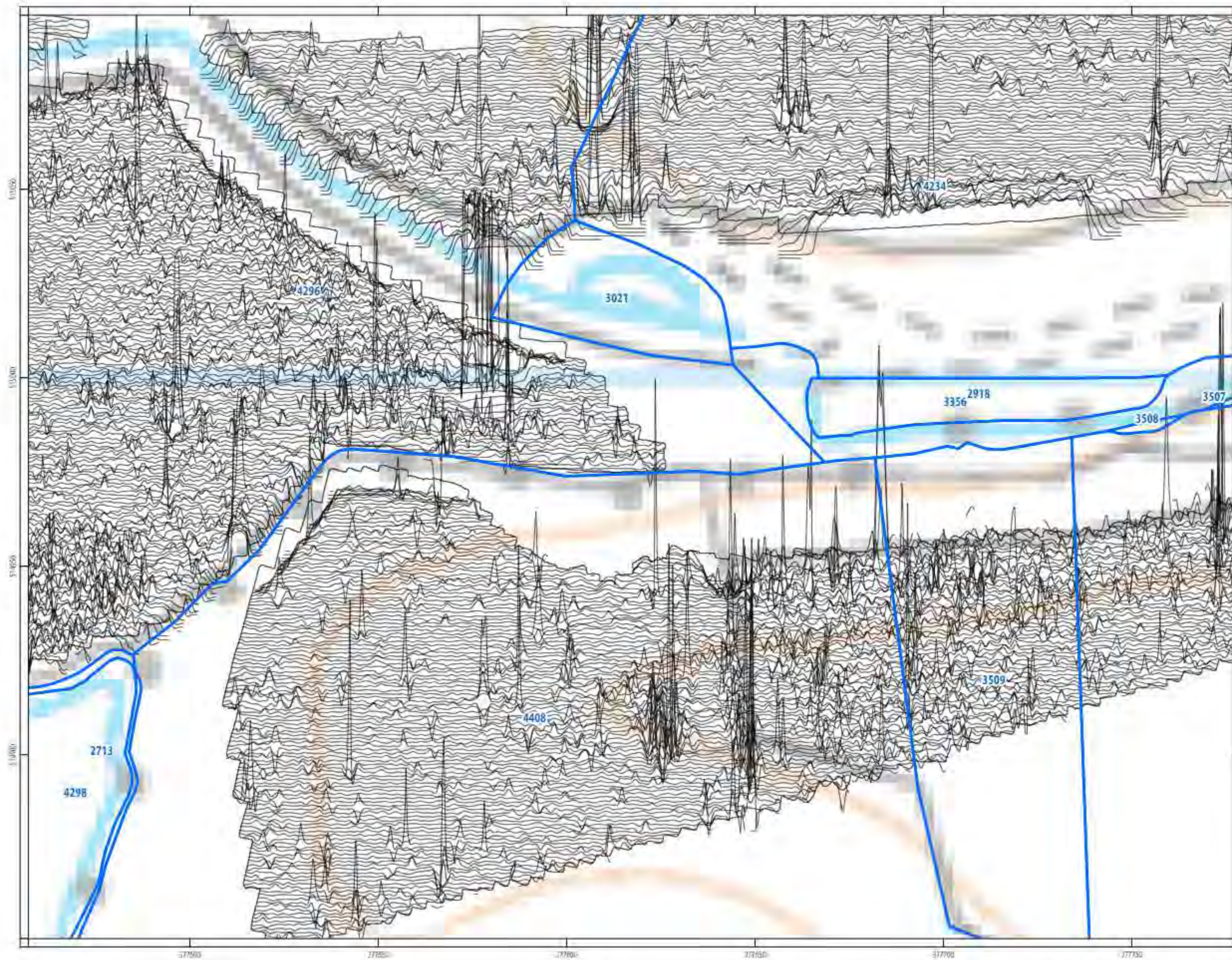
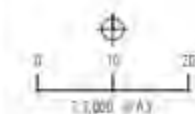
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey Lines
-  Utility Lines
-  Subsoil Management

**PROJECT**

A17120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 662 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

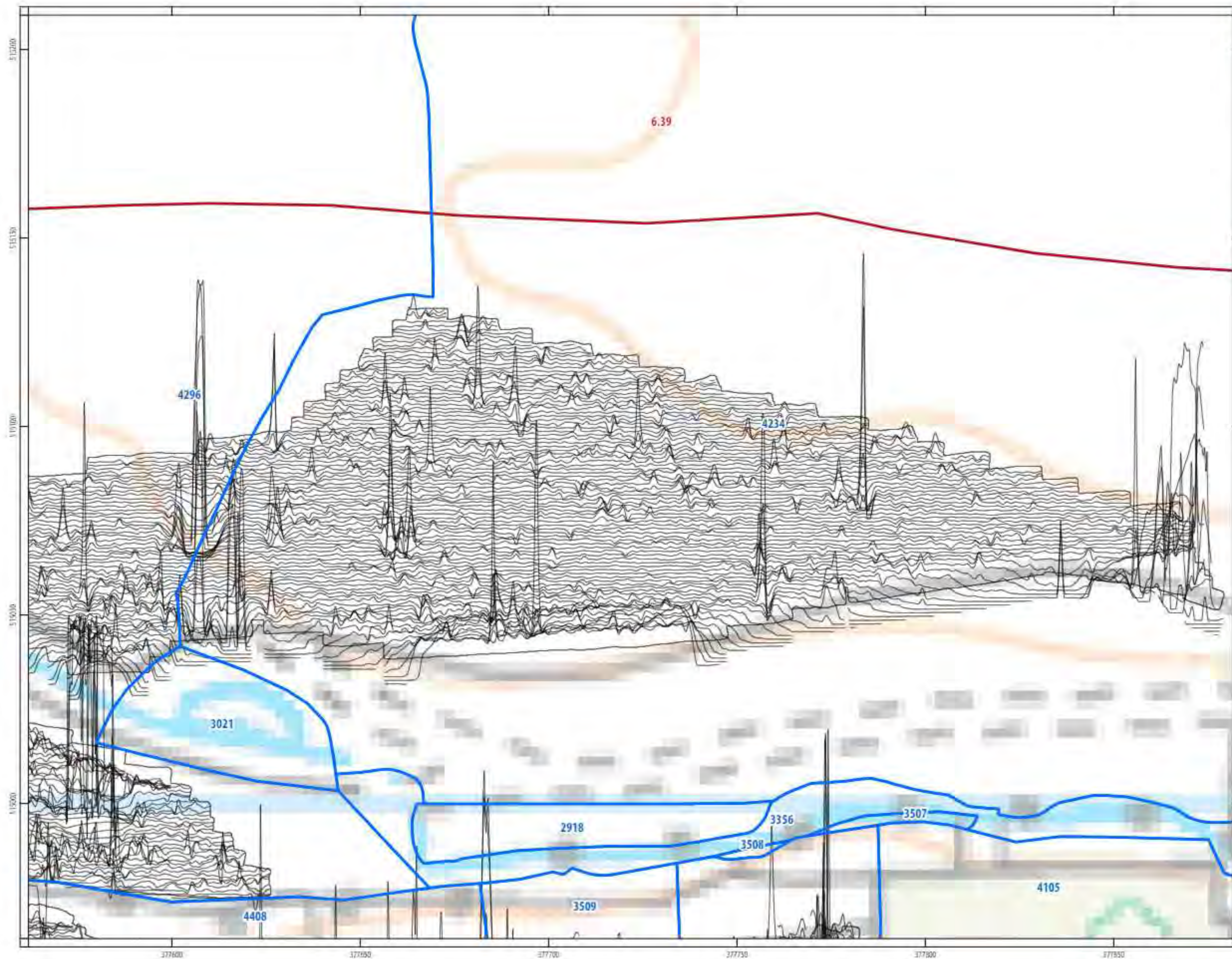
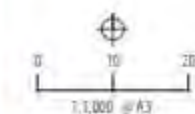
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Xr = 10n/cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 663. XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

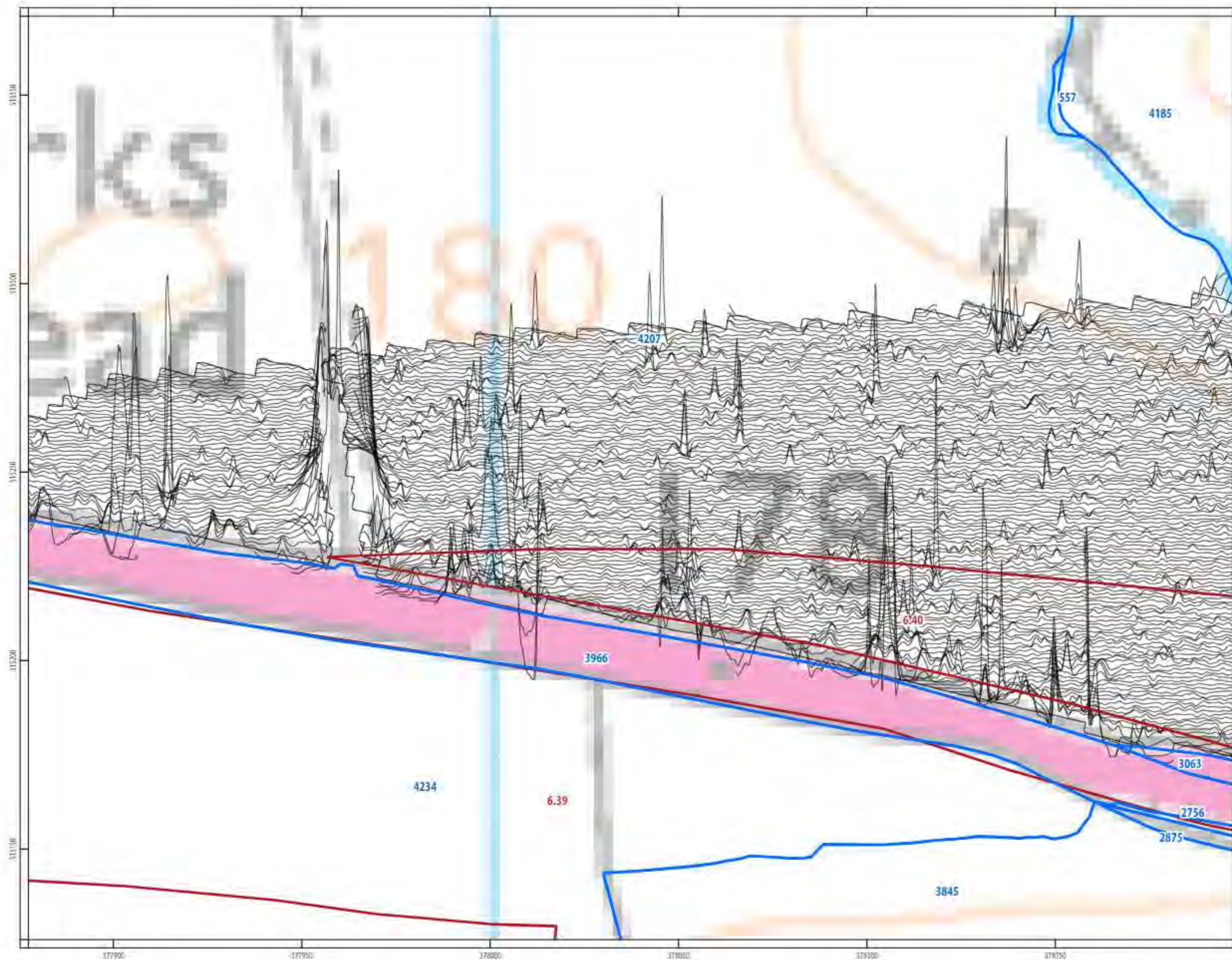
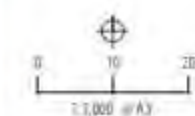
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- Xr 10n/cm
- ▭ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 664 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

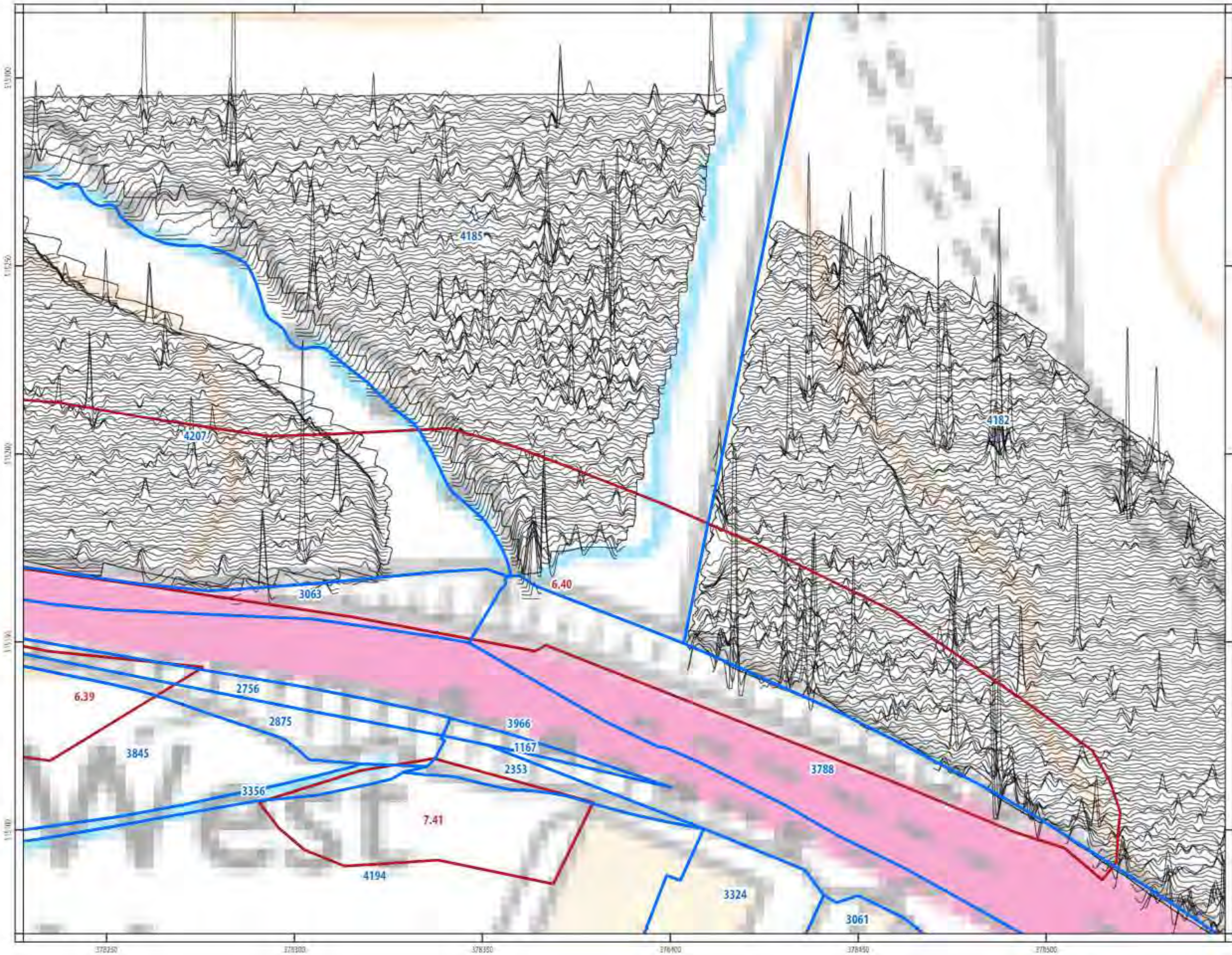
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Point
- X 10n / 10m
- ▭ Scheduled Monument

**PROJECT**

A17U20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 665 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

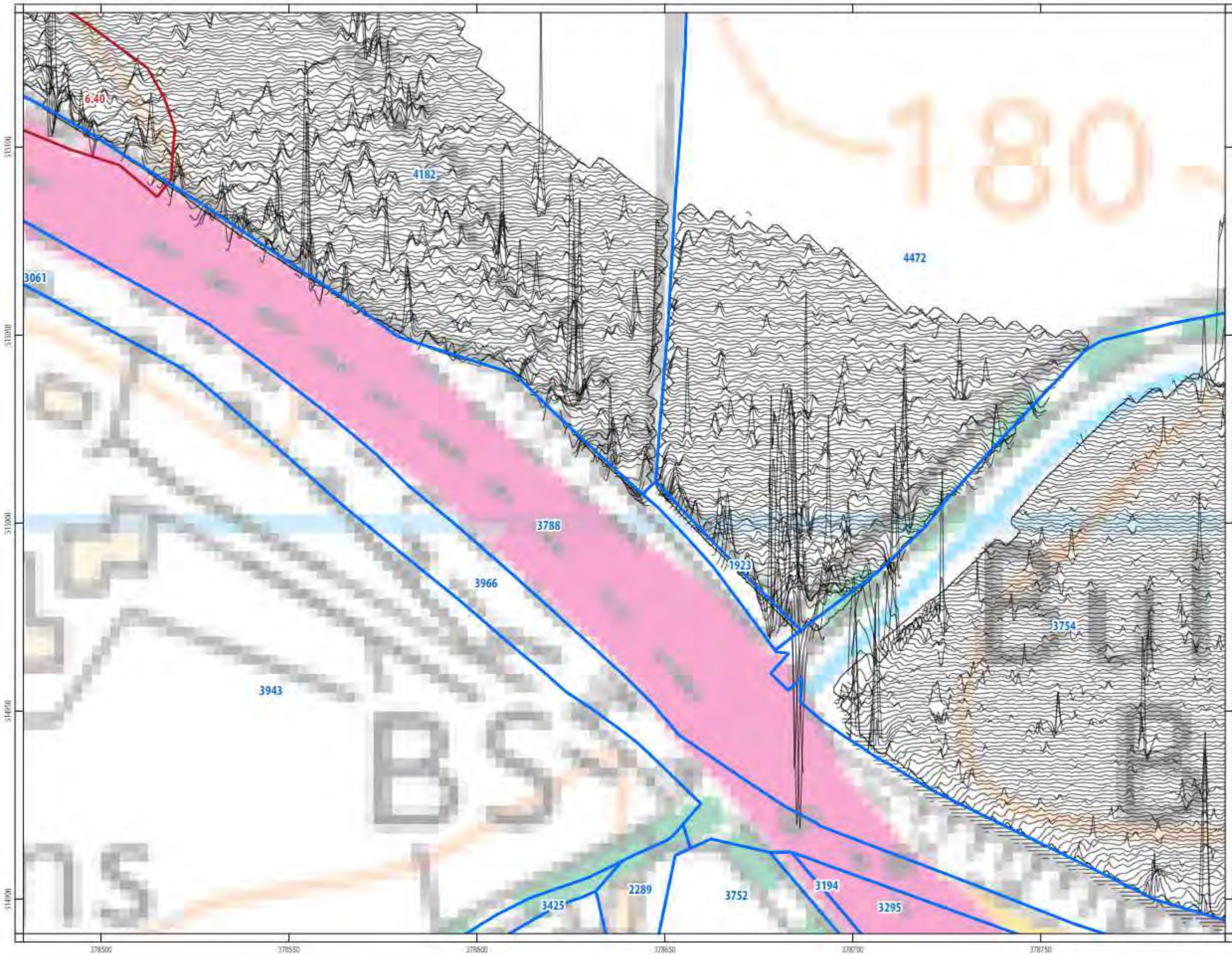
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Ident
- XY - 10n/cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 666 XY trace plot of minimally processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

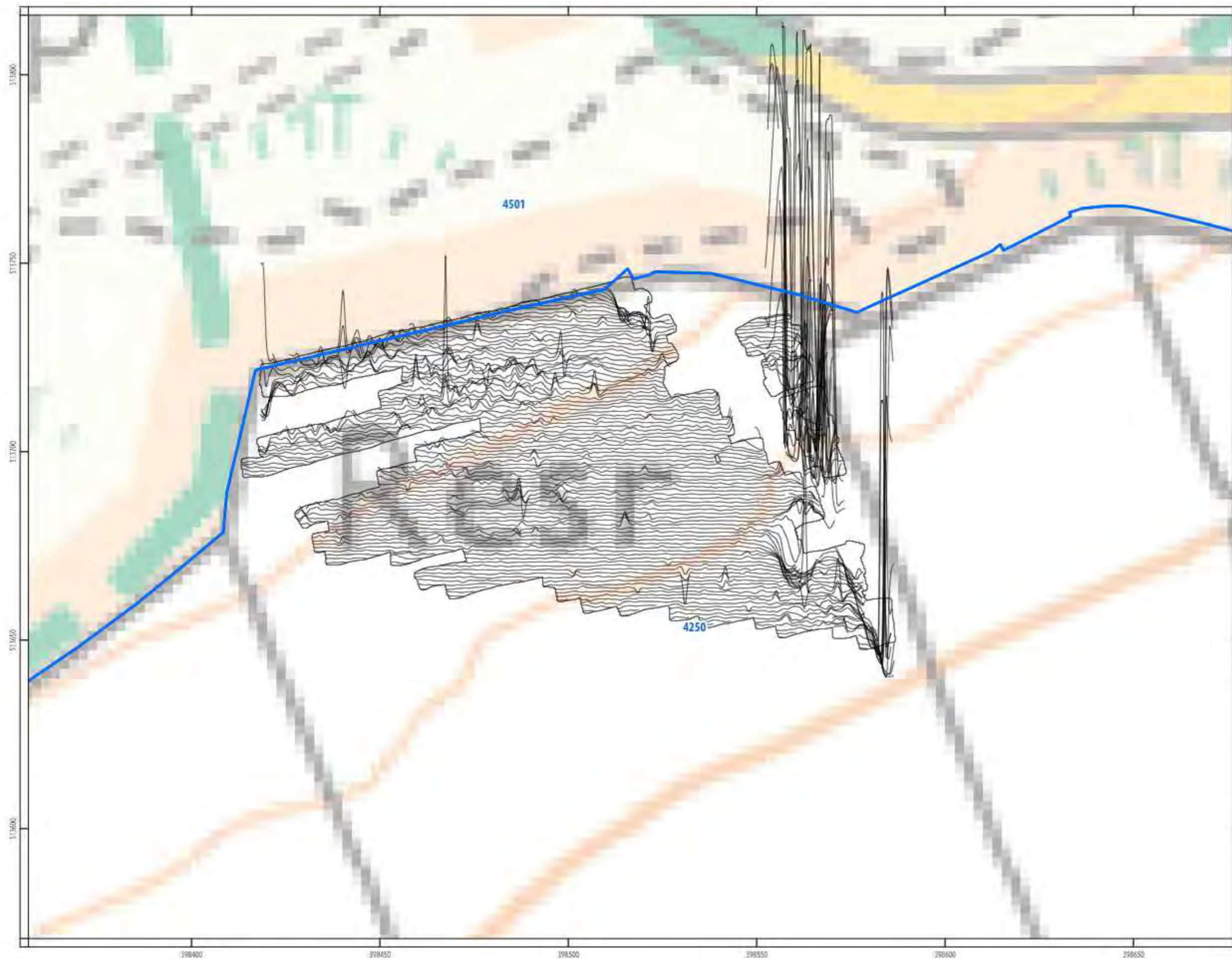
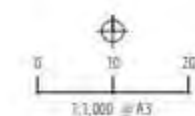
-  Phase 1 Geophysical Survey Area
-  Phase 2 Geophysical Survey Area
-  Geophysical Survey Extent
-  XY - 10m / 1cm
-  Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 667 XY trace plot of minimally processed magnetometer data; Bowes Bypass (A66/A67)



**Phase 2 Survey**

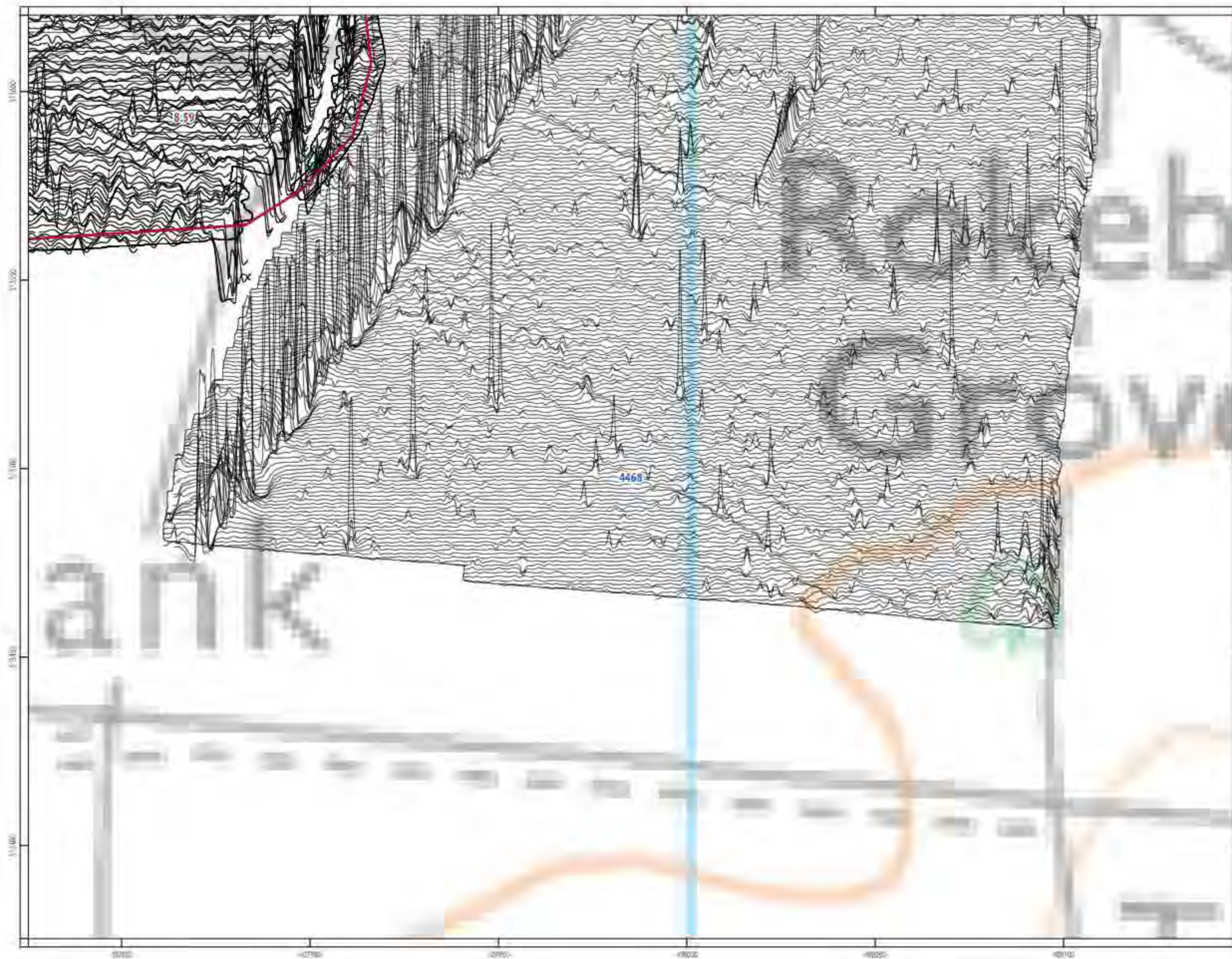
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  Utility Locations
-  Topographical Maximums

**PROJECT**

A1120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 668 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

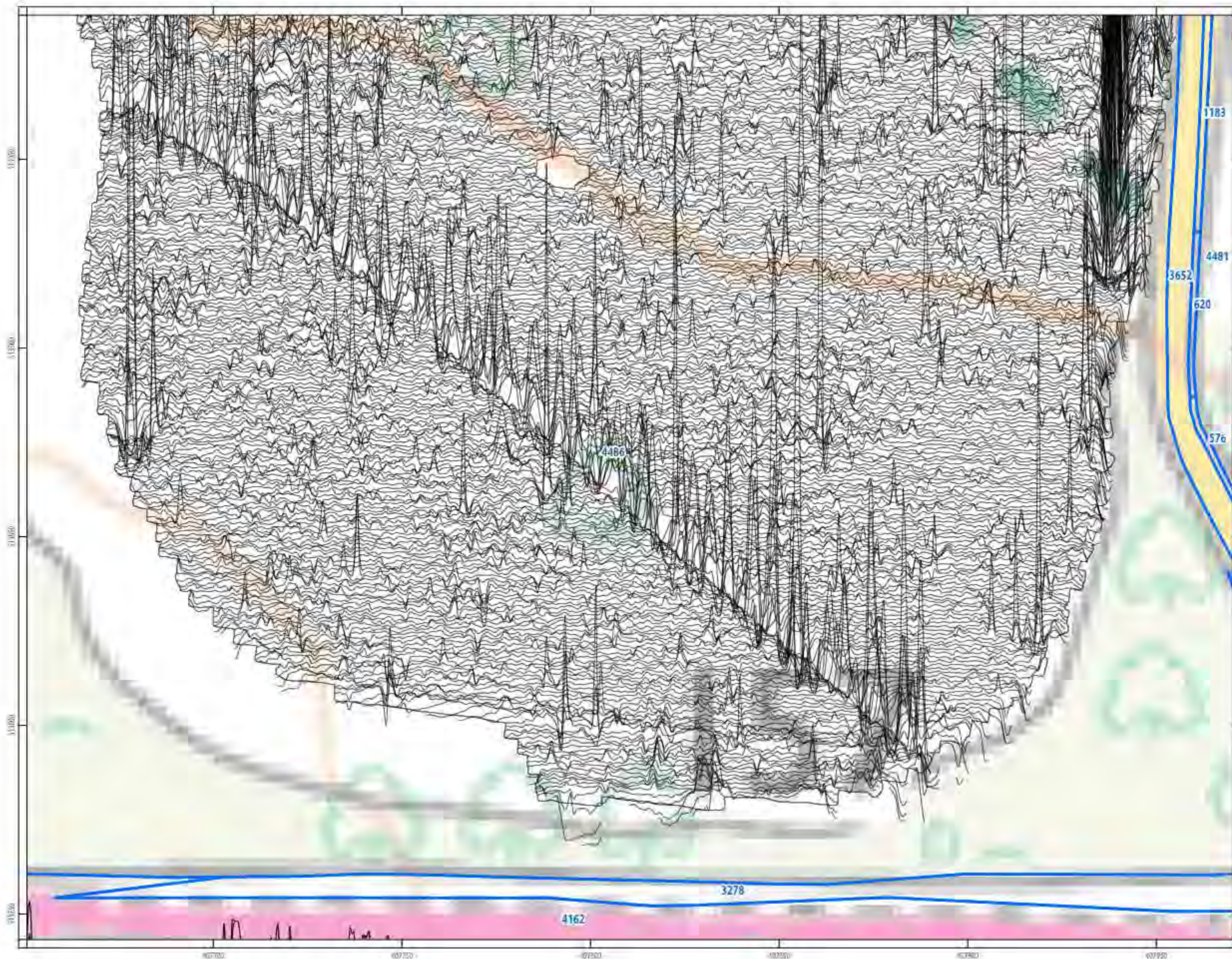
- Phase 1 Magnetometer Survey Area
- Phase 2 Magnetometer Survey Area
- Topographic Survey (1:1000)
- 10m Grid Lines
- 10m North-South Magnetic Lines

**PROJECT**

AT1120 - A66 Transport Upgrade

**CLIENT**






Highways England



ILLUS 669 XY trace plot of minimally processed magnetometer data; Cross Lines to Rokeby



**Phase 2 Survey**

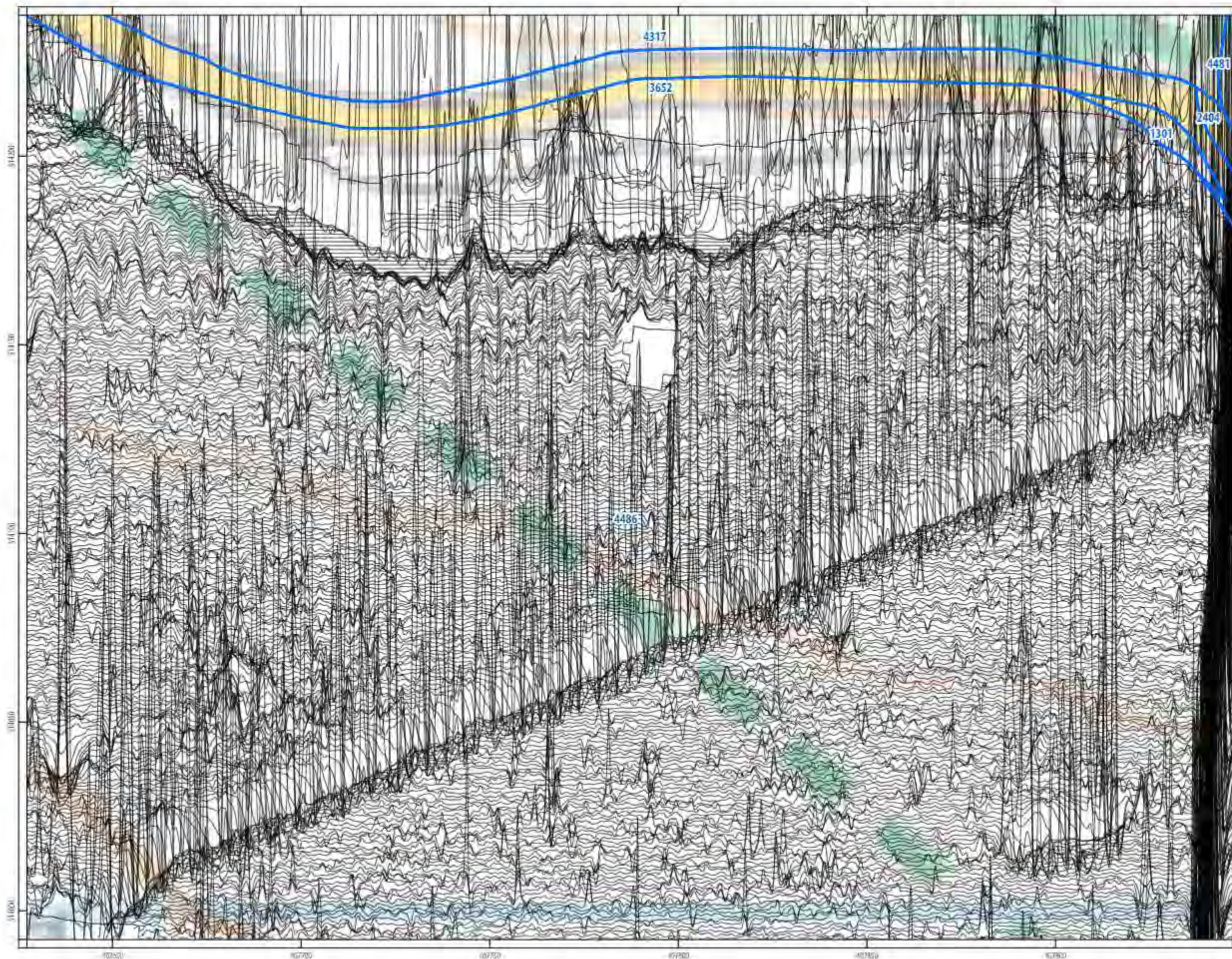
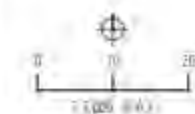
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  Re-Excavation
-  Re-Excavation Magnetometer

**PROJECT**

AT1120 - A66 Transport Upgrade

**CLIENT**

Highways England



ILLUS 670 XY trace plot of minimally processed magnetometer data; Cross Lines to Rokeby



**Phase 2 Survey**

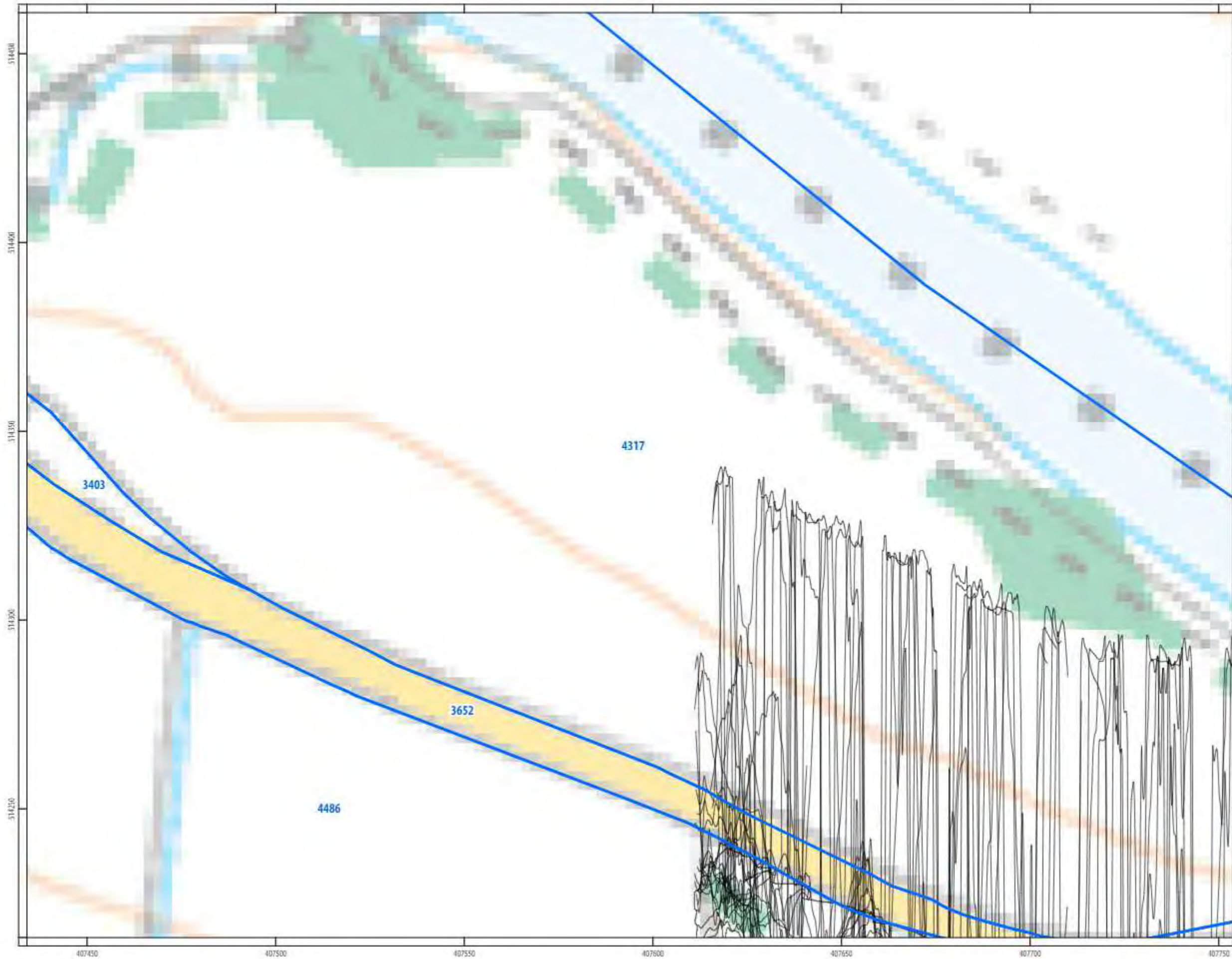
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- Geophysical Survey Extent
- XY - 10m / 1cm
- Scheduled Monument

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**






Highways England



ILLUS 671 XY trace plot of minimally processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

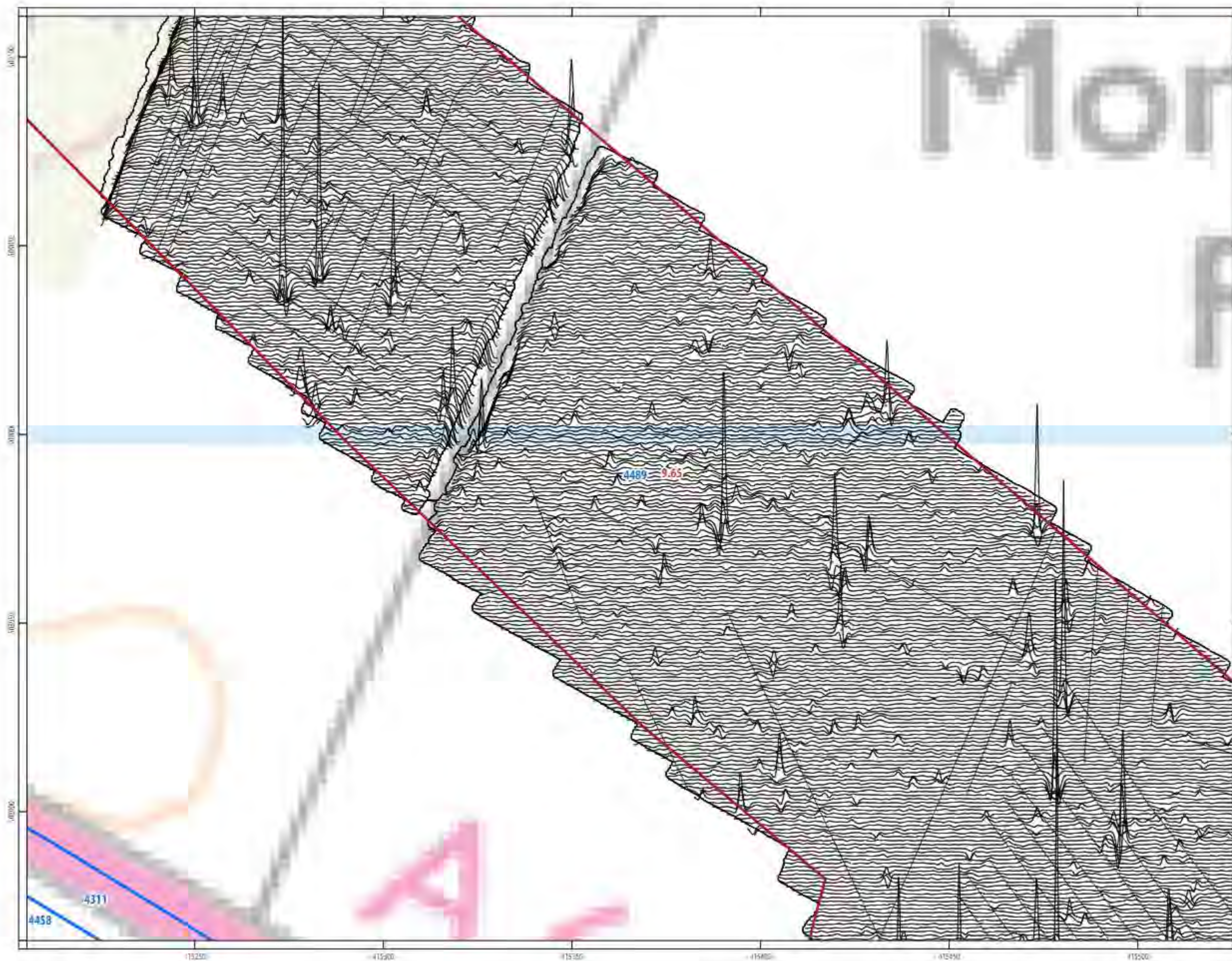
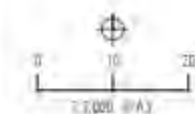
-  Phase 1 Geophysical Magnetometer
-  Phase 2 Geophysical Magnetometer
-  Geophysical Survey 2011
-  10m Grid Lines
-  10m Survey Grid Maximums

**PROJECT**

A1120 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 672. XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor



**Phase 2 Survey**

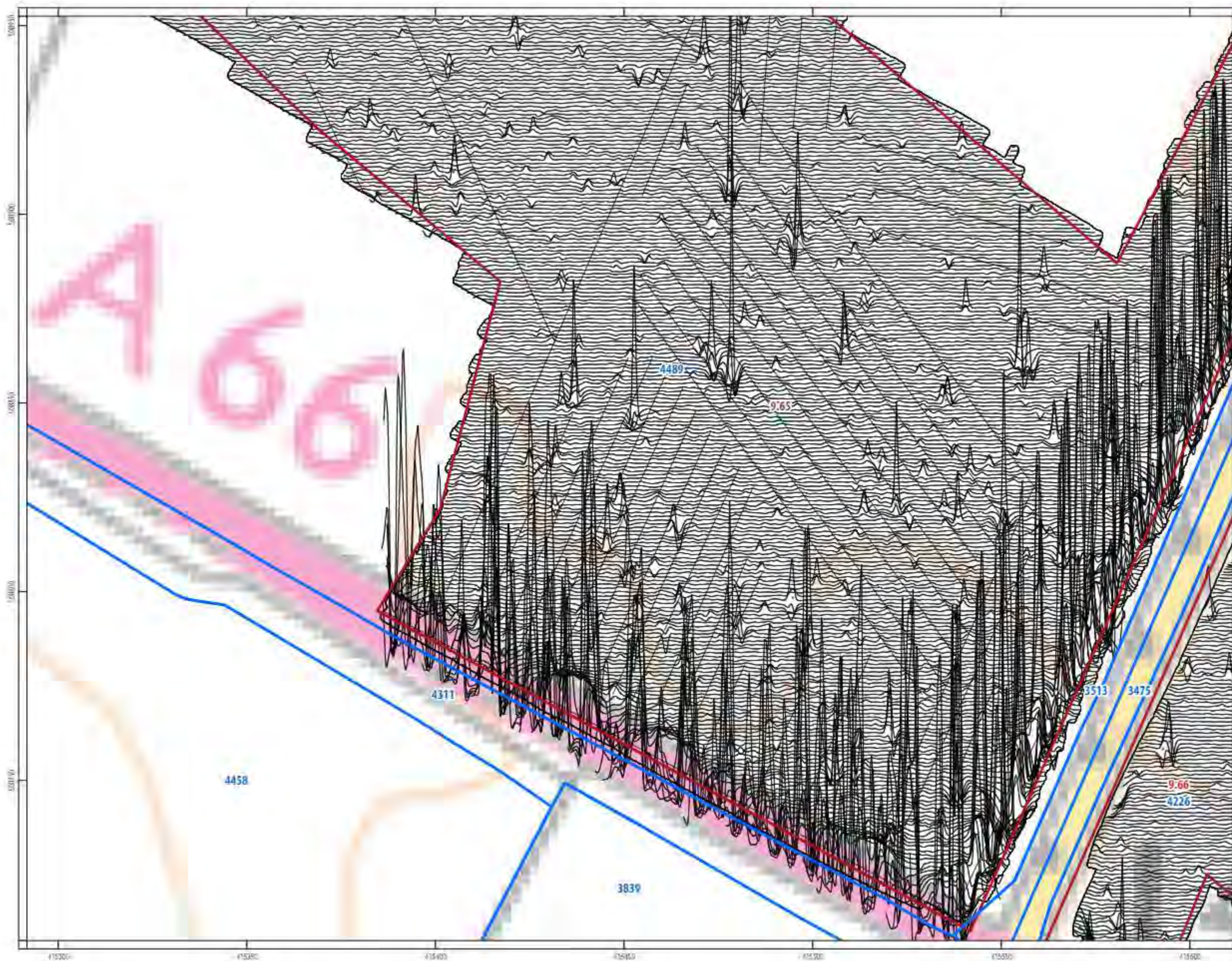
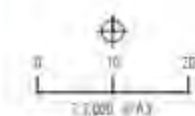
- ▭ Phase 1 Geophysical Monitoring
- ▭ Phase 2 Geophysical Survey Area
- Geophysical Survey Lines
- ⊗ XY Locations
- ▨ Scheduled Monuments

**PROJECT**

A1420 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 673 XY trace plot of minimally processed magnetometer data; Stephen Bank to Carlin Moor

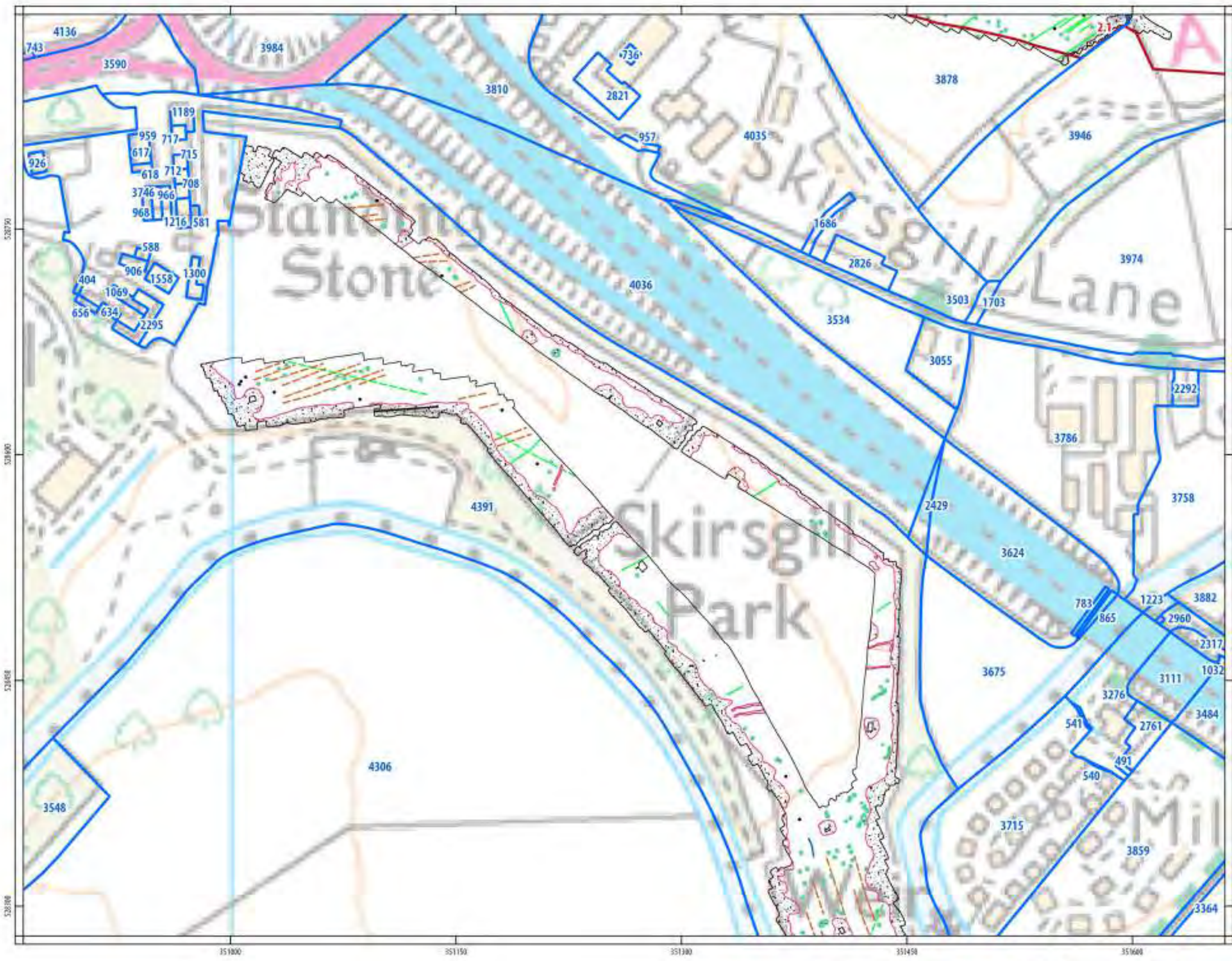


**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/kin burning
- ▭ magnetic enhancement/LPM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
M6/J20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 674 Interpretation of processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

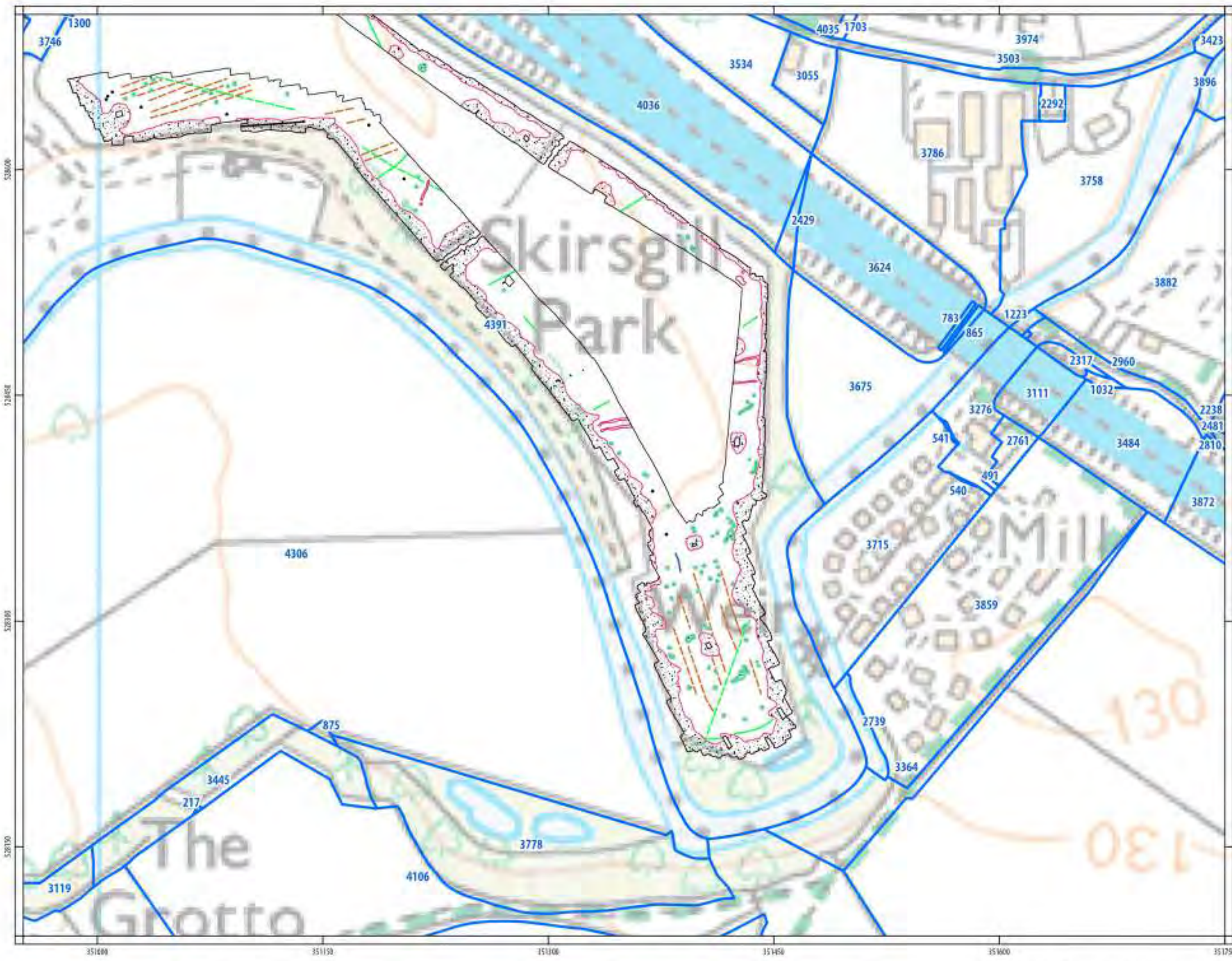
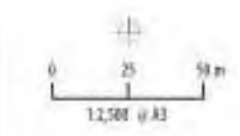
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 675 Interpretation of processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

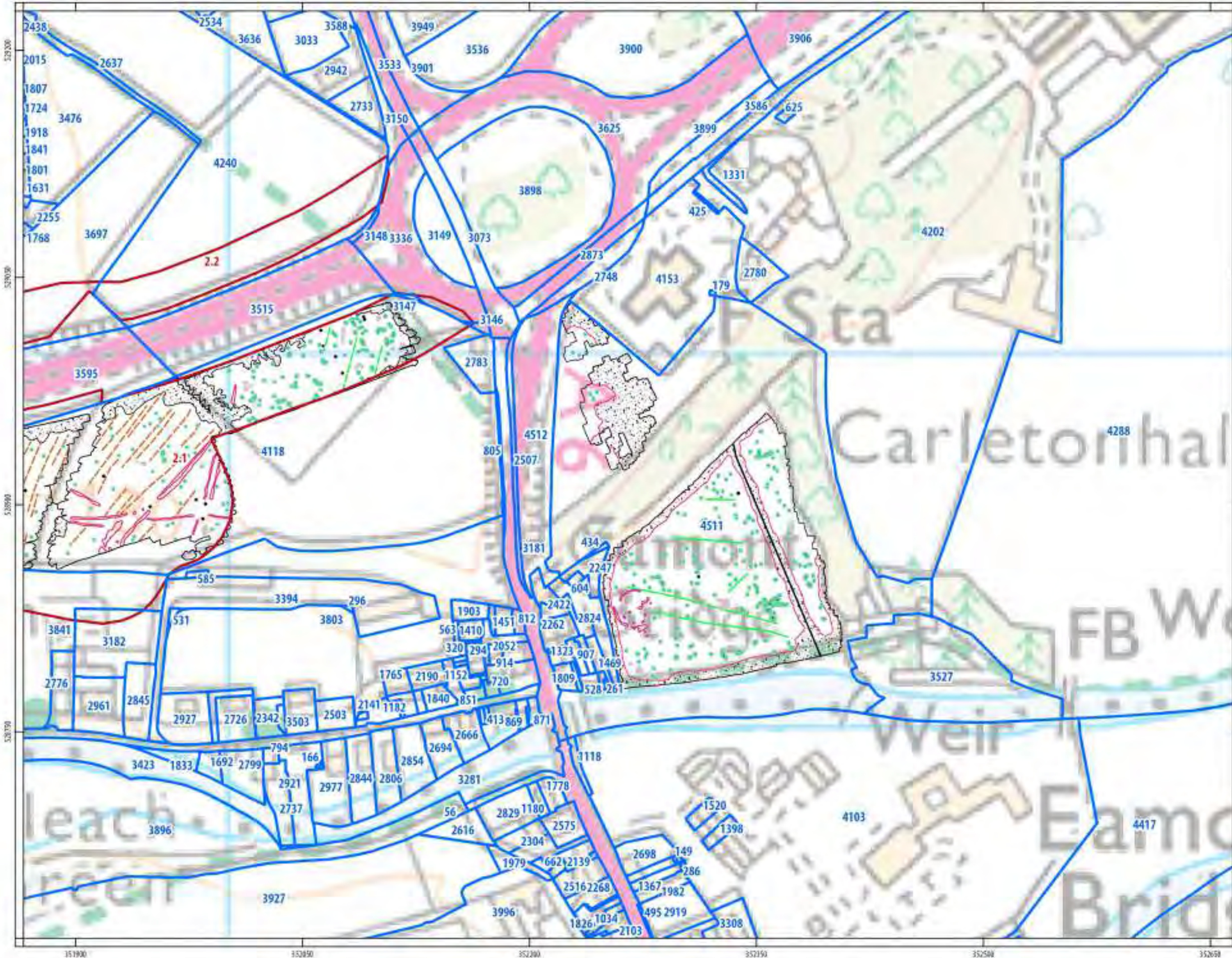
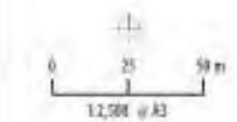
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/fertous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/lin burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/fertous pipe

**PROJECT**

M6J20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

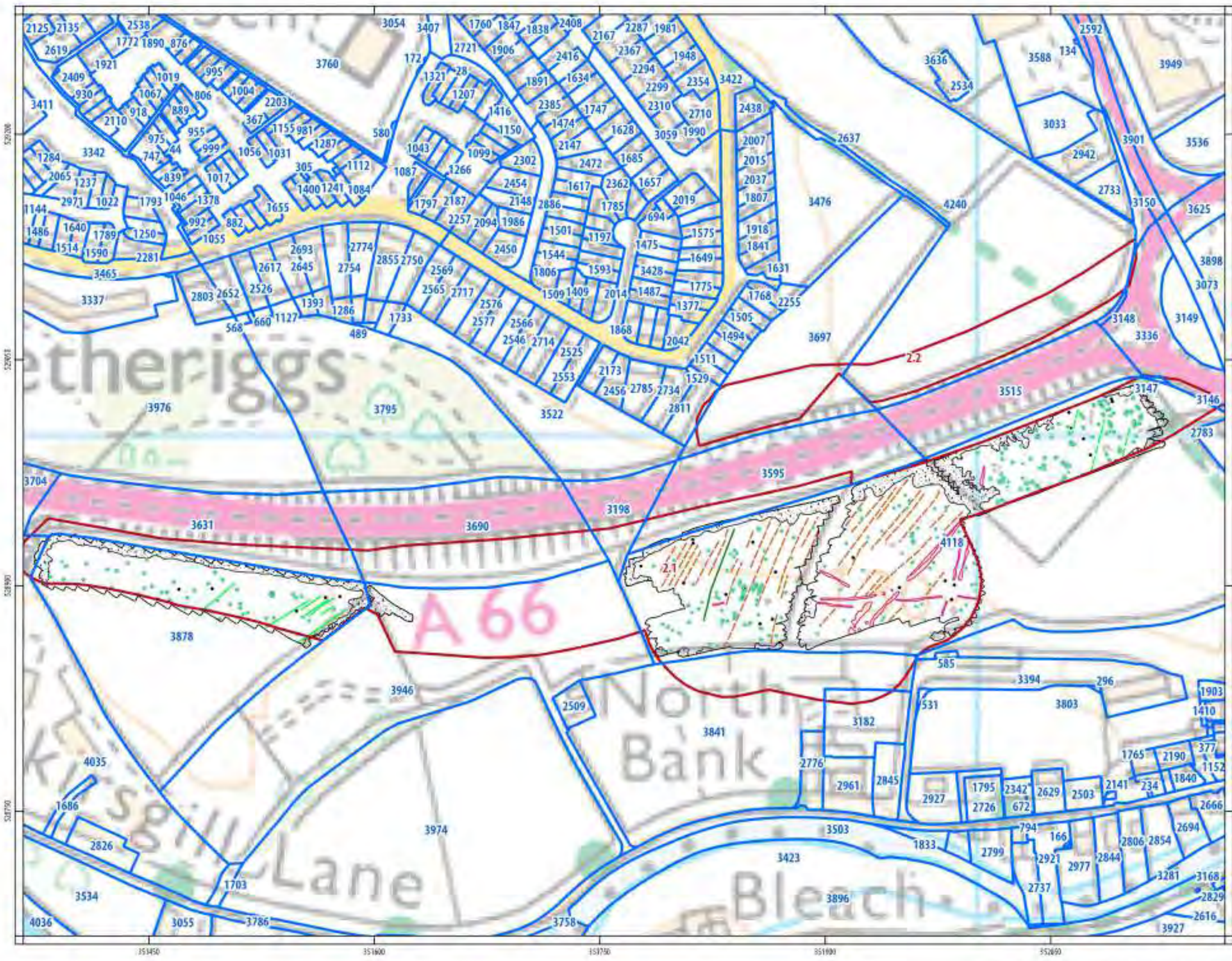
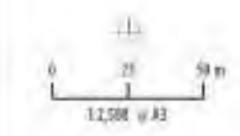
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

MPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

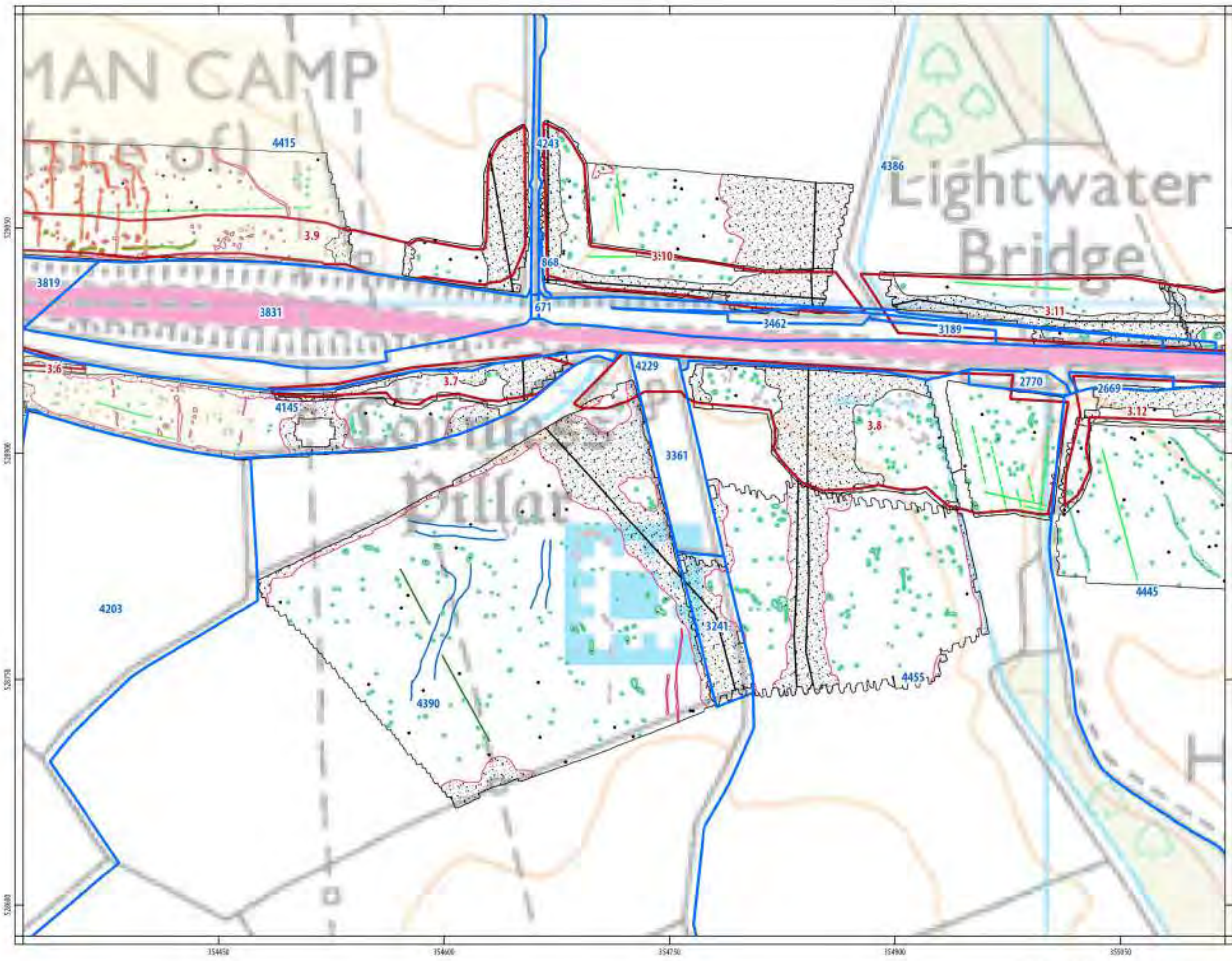
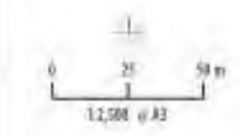
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kin burning
- ▭ magnetic enhancement/LRN
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- ▭ linear trend/agricultural
- ▭ linear trend/field drain
- ▭ linear/former field boundary
- ▭ linear/former field boundary?
- ▭ linear trend/geological variation
- ▭ linear trend/ridge and furrow
- ▭ dipolar linear/ferrous pipe

**PROJECT**

APU20 - A96 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

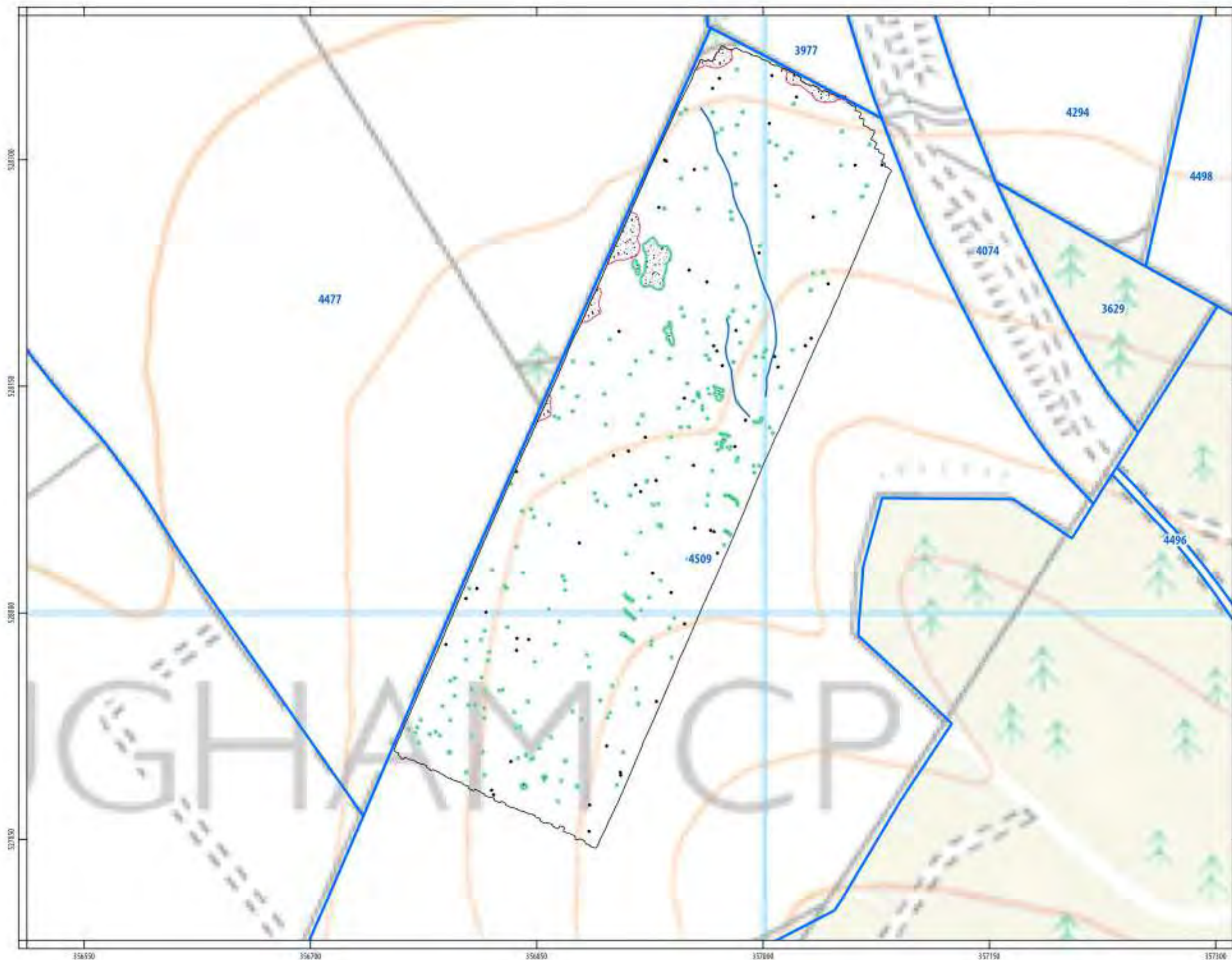
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

A7020-466 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 679 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)







**Phase 2 Survey**

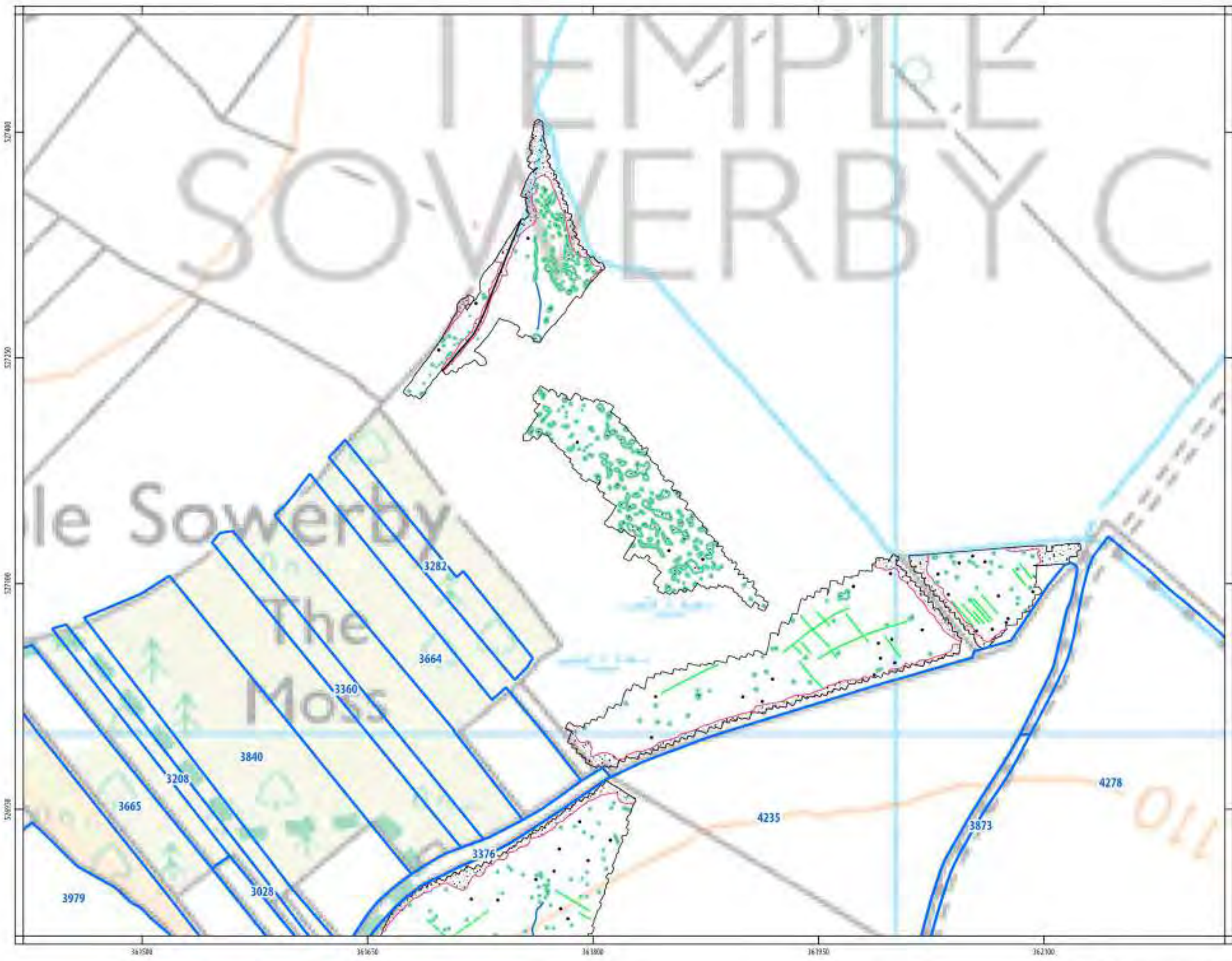
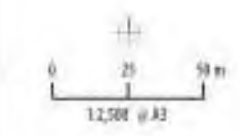
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kin burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 681 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

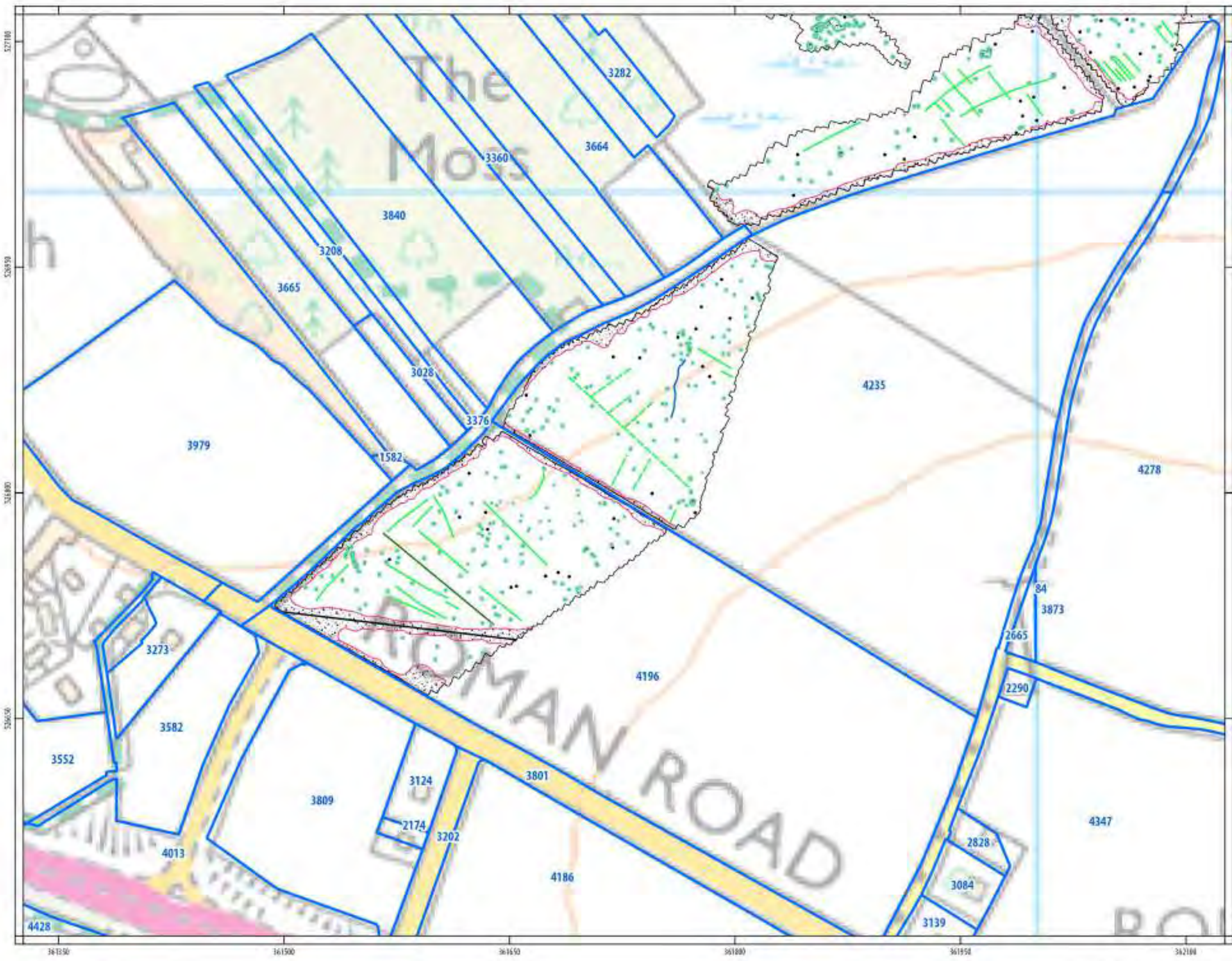
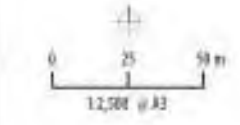
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar lines/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 682 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

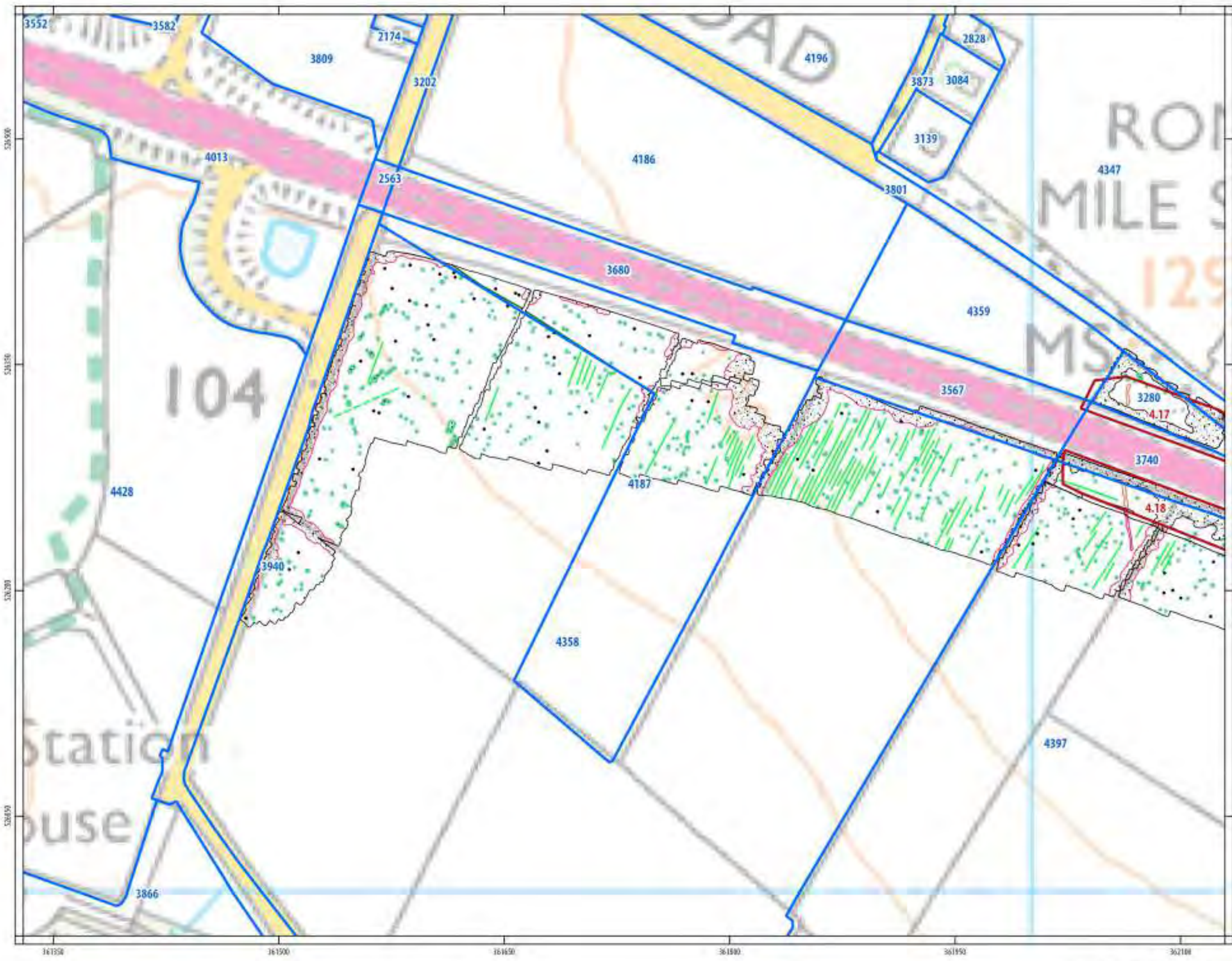
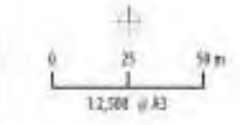
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- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear trend/former field boundary
- linear trend/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

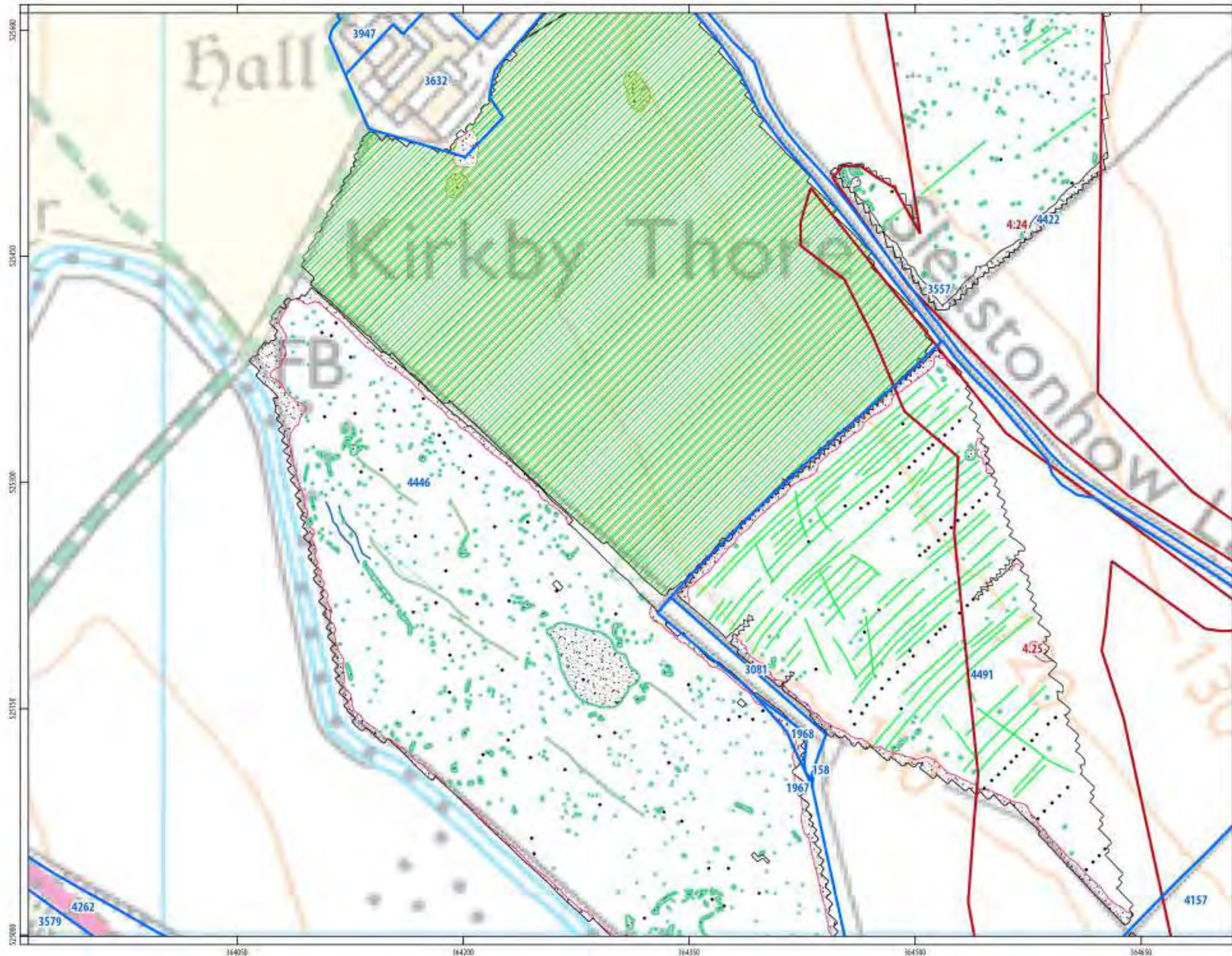
**CLIENT**

Highways England



ILLUS. 683 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



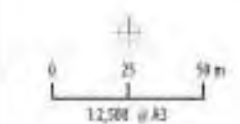


**Phase 2 Survey**

- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LPM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England





**Phase 2 Survey**

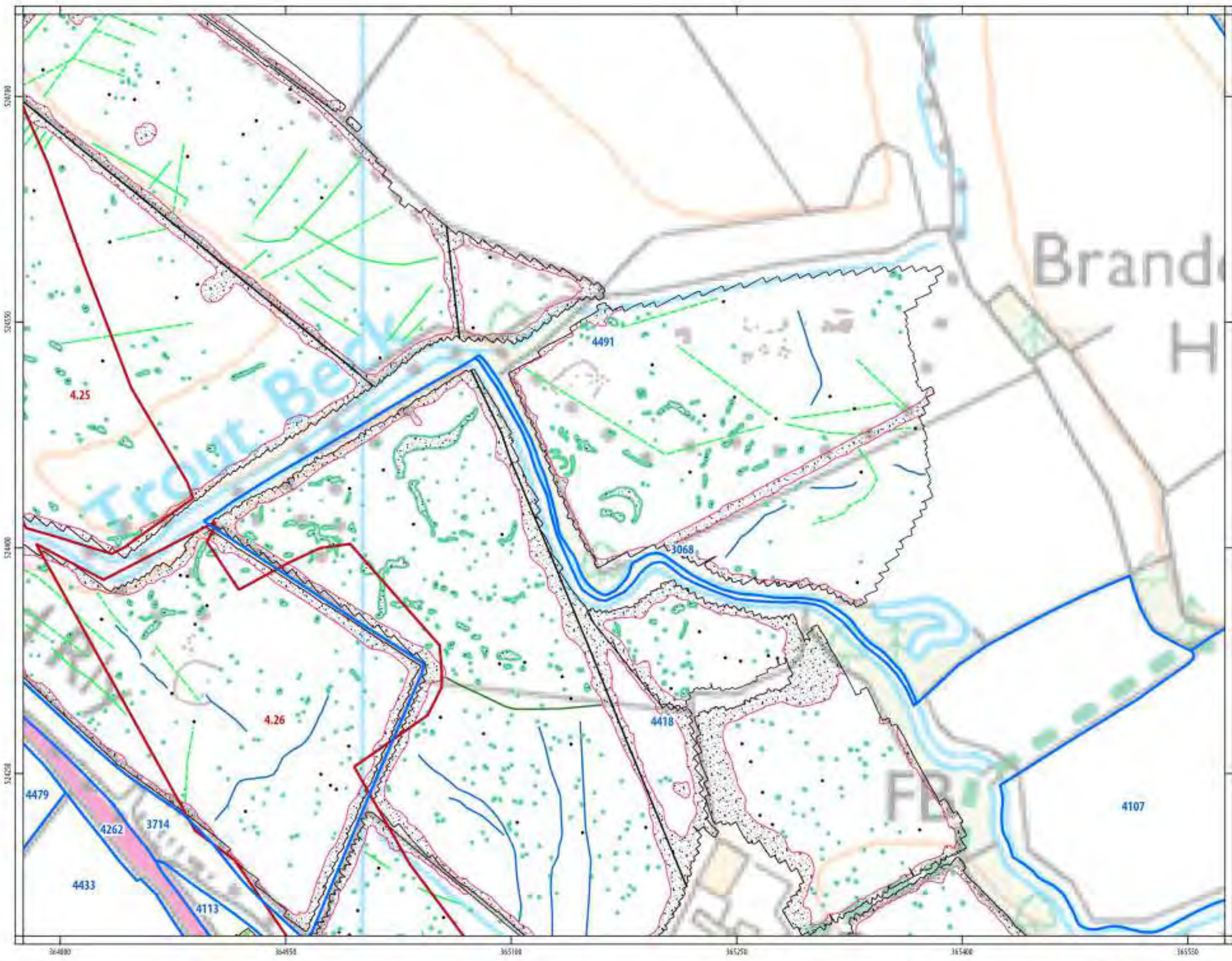
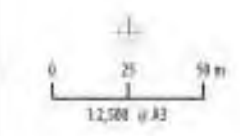
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRN
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

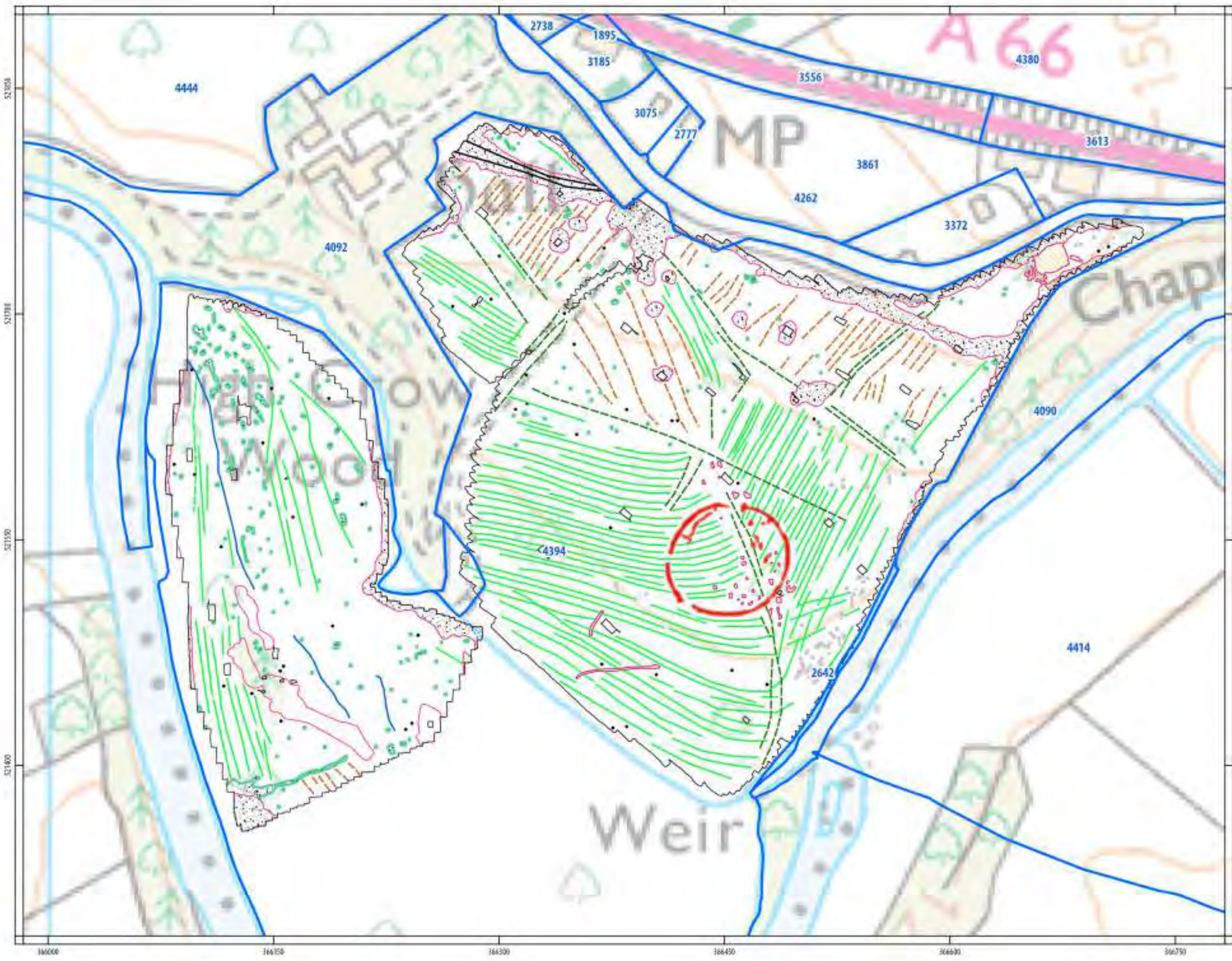
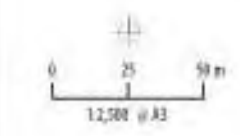
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kin burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

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**Phase 2 Survey**

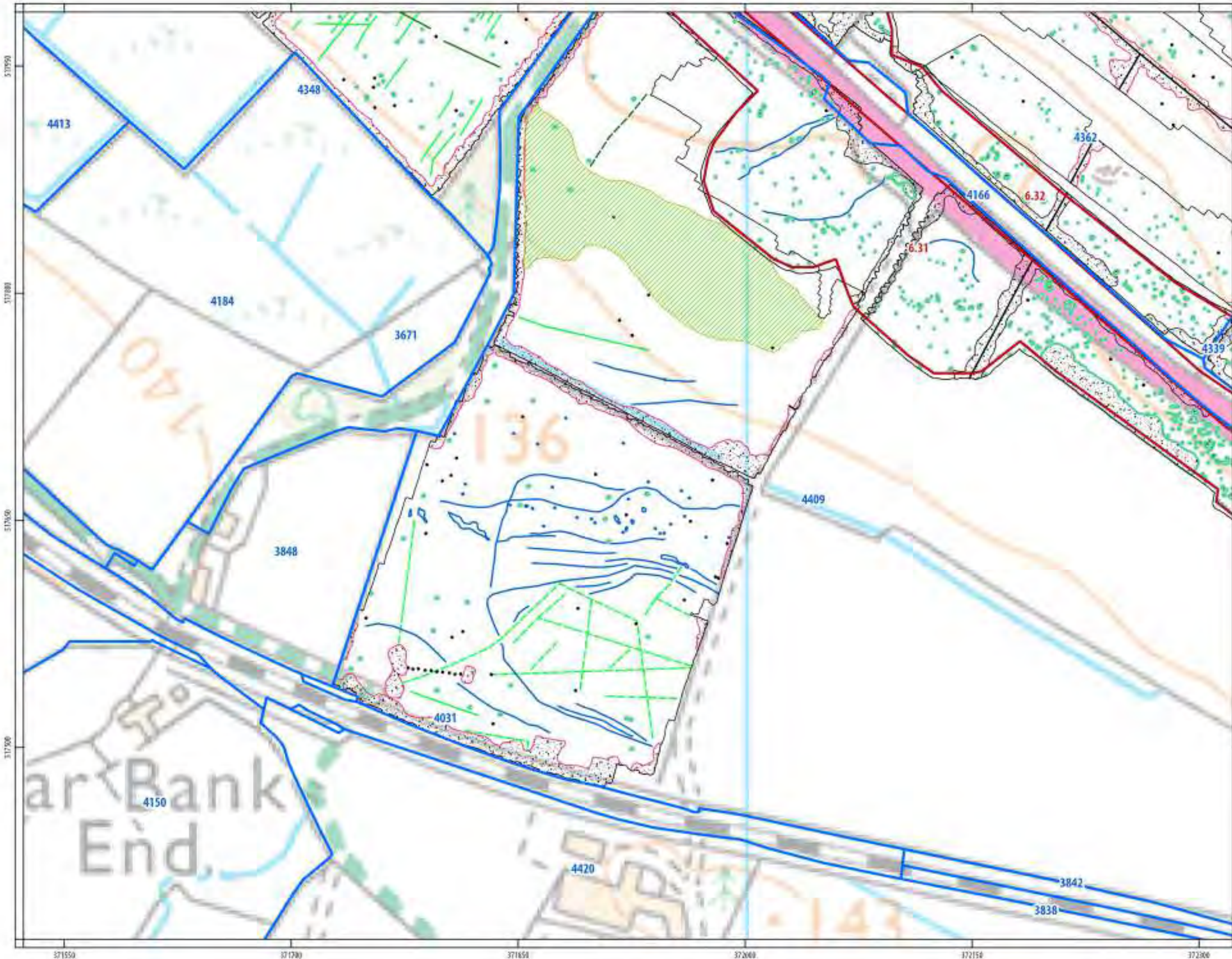
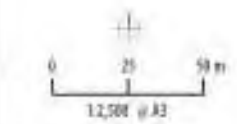
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar lines/ferrous pipe

**PROJECT**

AFPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

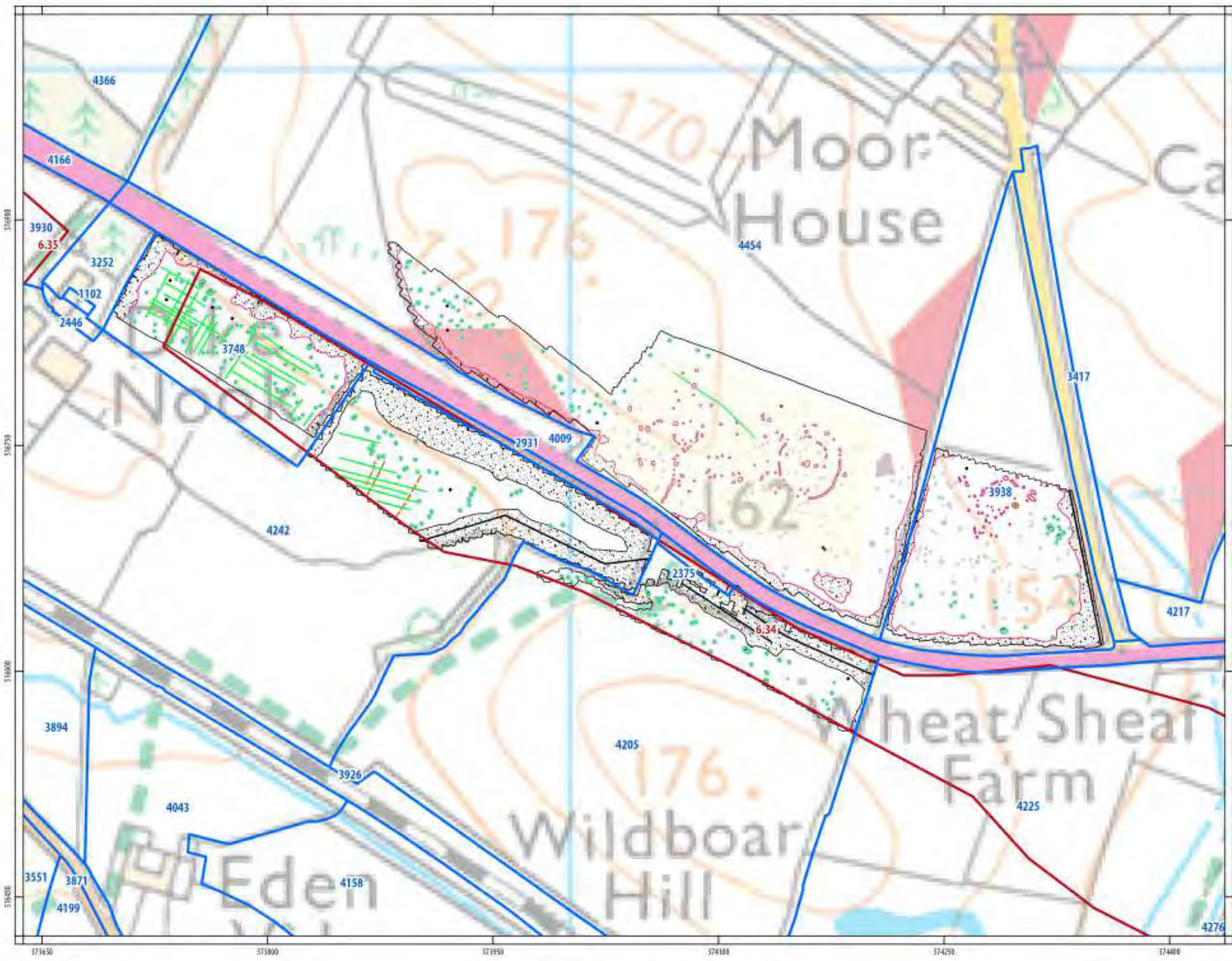
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
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- magnetic enhancement/LPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

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**Phase 2 Survey**

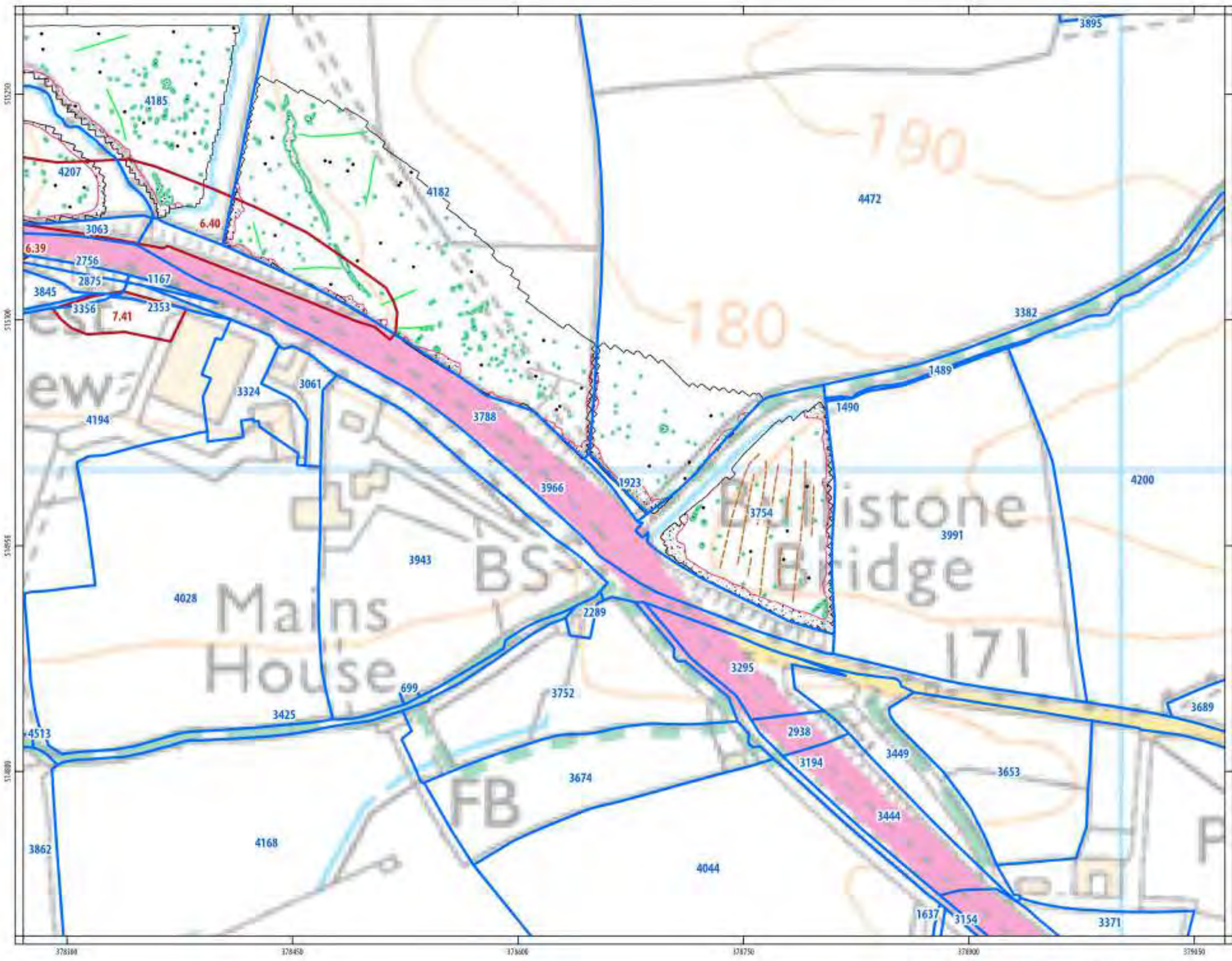
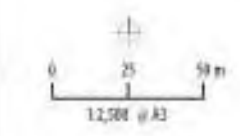
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/kin burning
- magnetic enhancement/LIPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

AFPU20-466 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 689 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

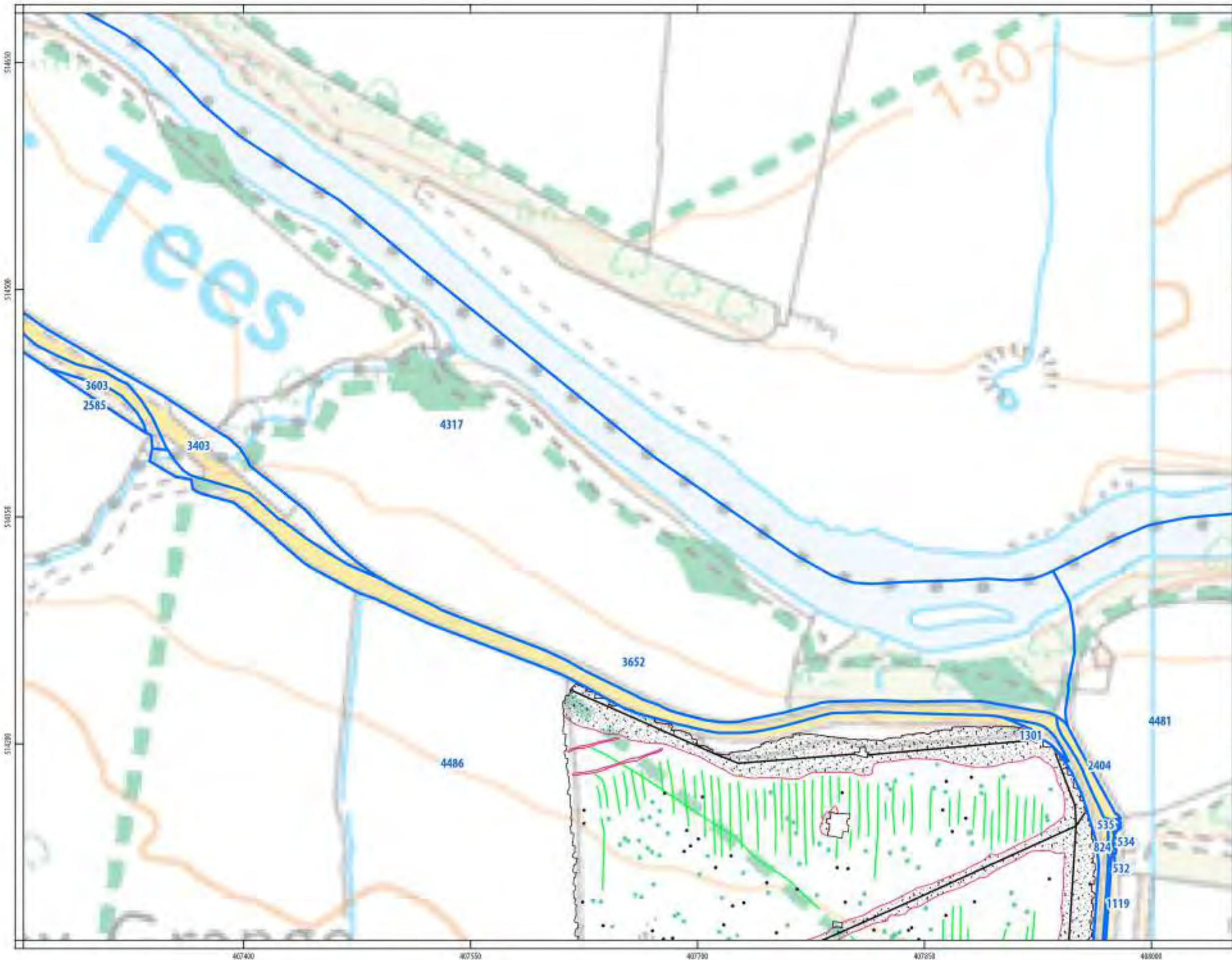
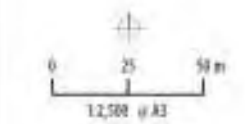
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LIPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

A7020-466 Transpennine Upgrade

**CLIENT**

Highways England



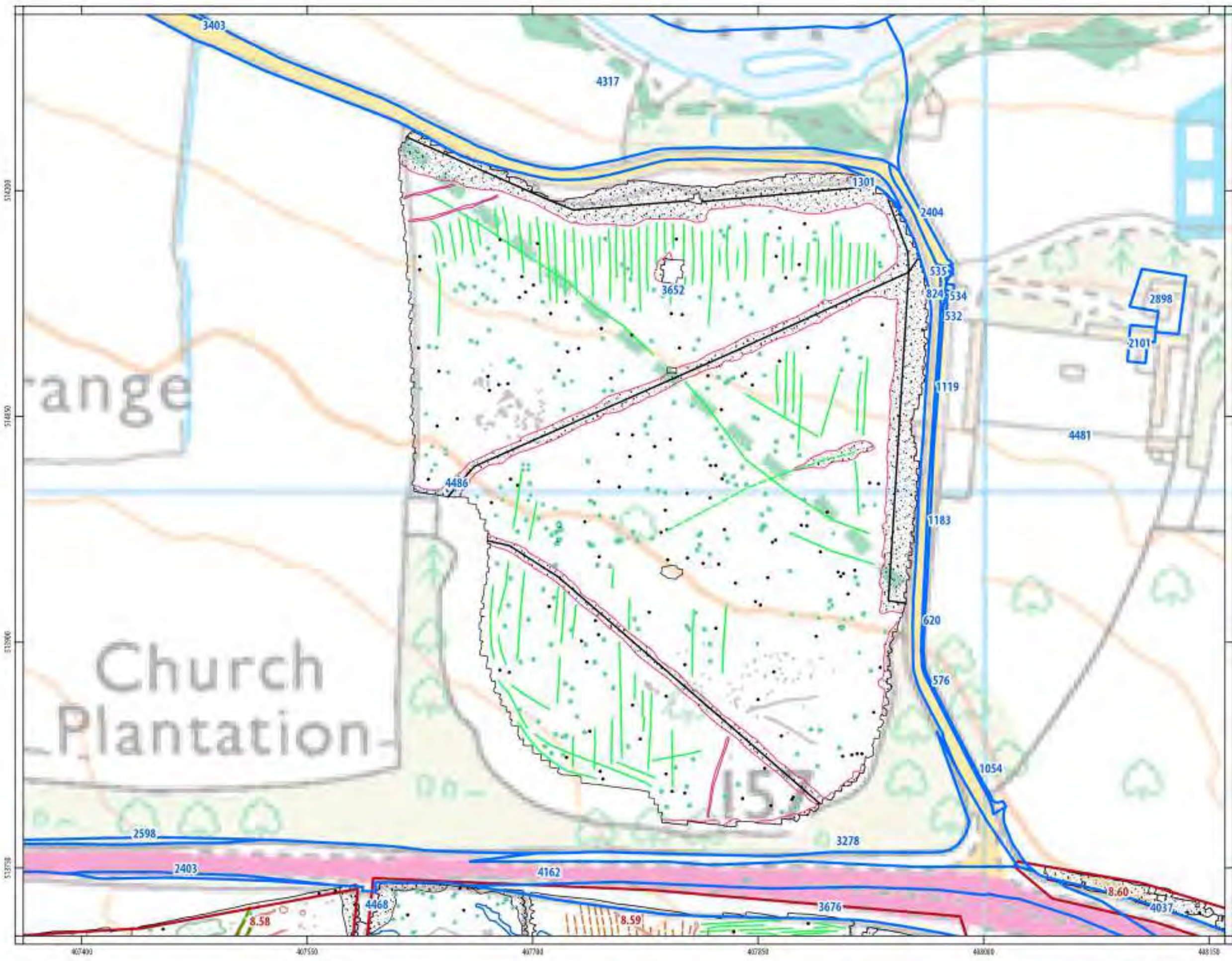
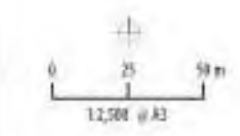


**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kin burning
- magnetic enhancement/LIPM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**  
AFPU20-466 Transpennine Upgrade

**CLIENT**  
Highways England



ILLUS 691 Interpretation of processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

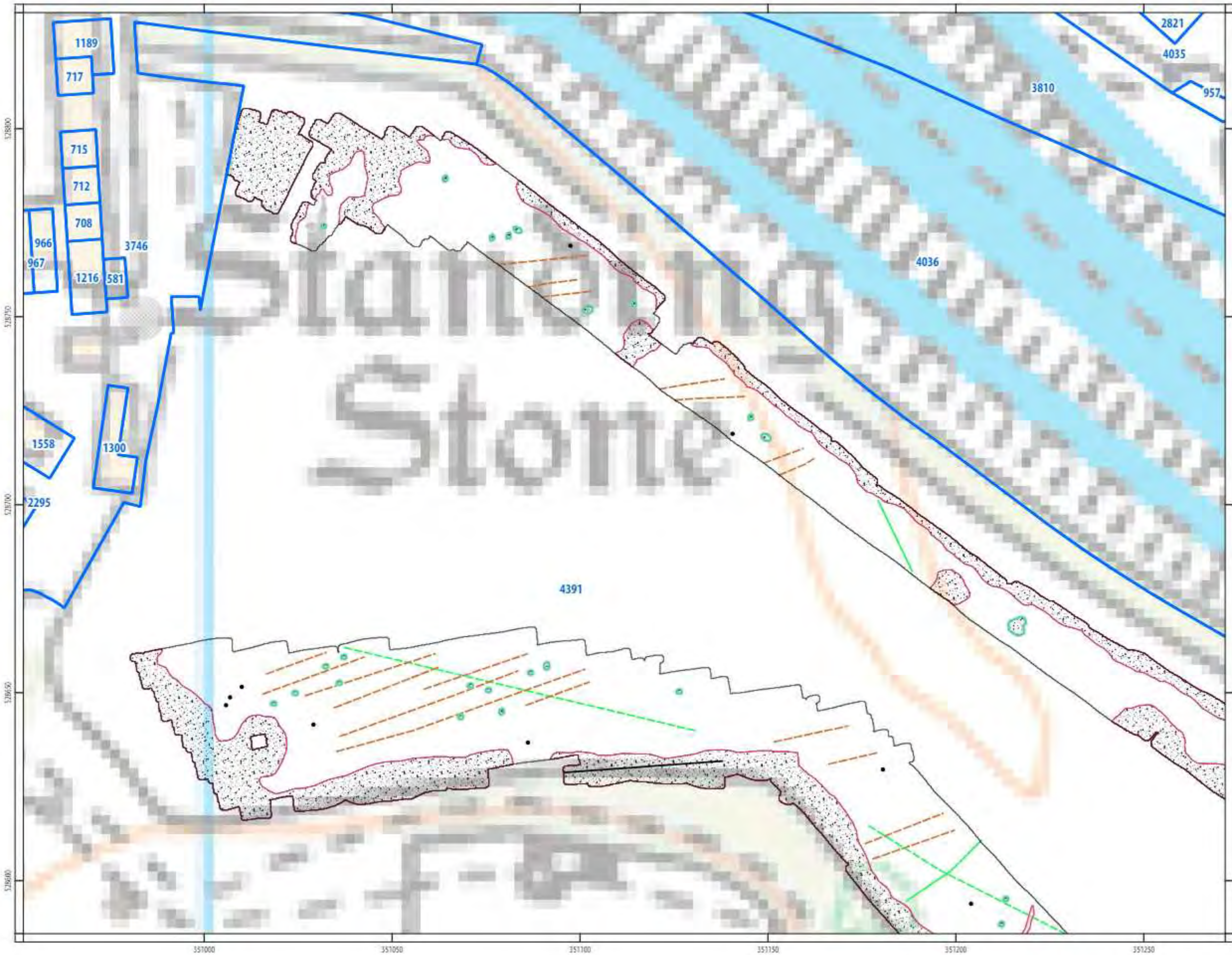
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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Highways England





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

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ILLUS 693 Interpretation of processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout



**Phase 2 Survey**

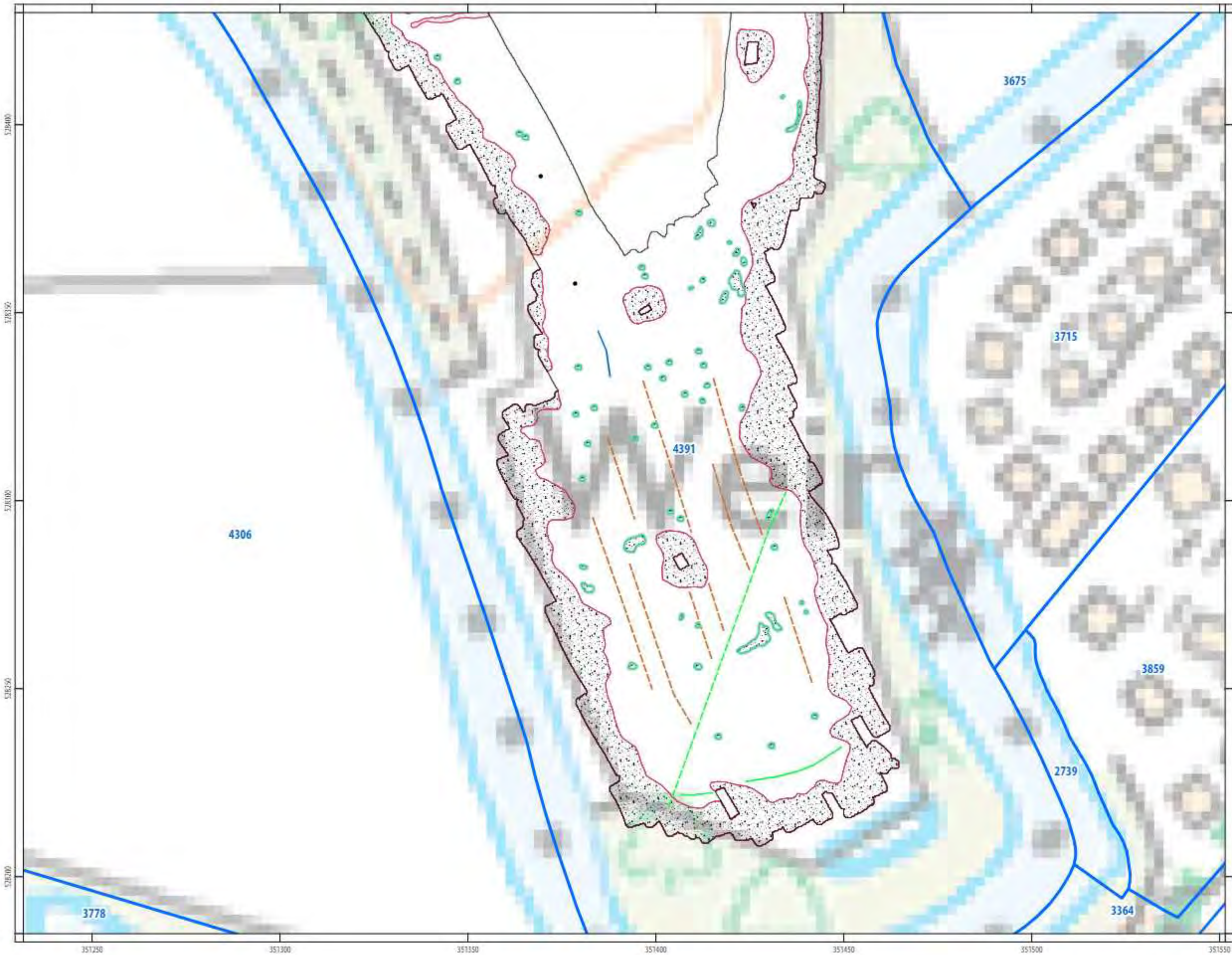
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

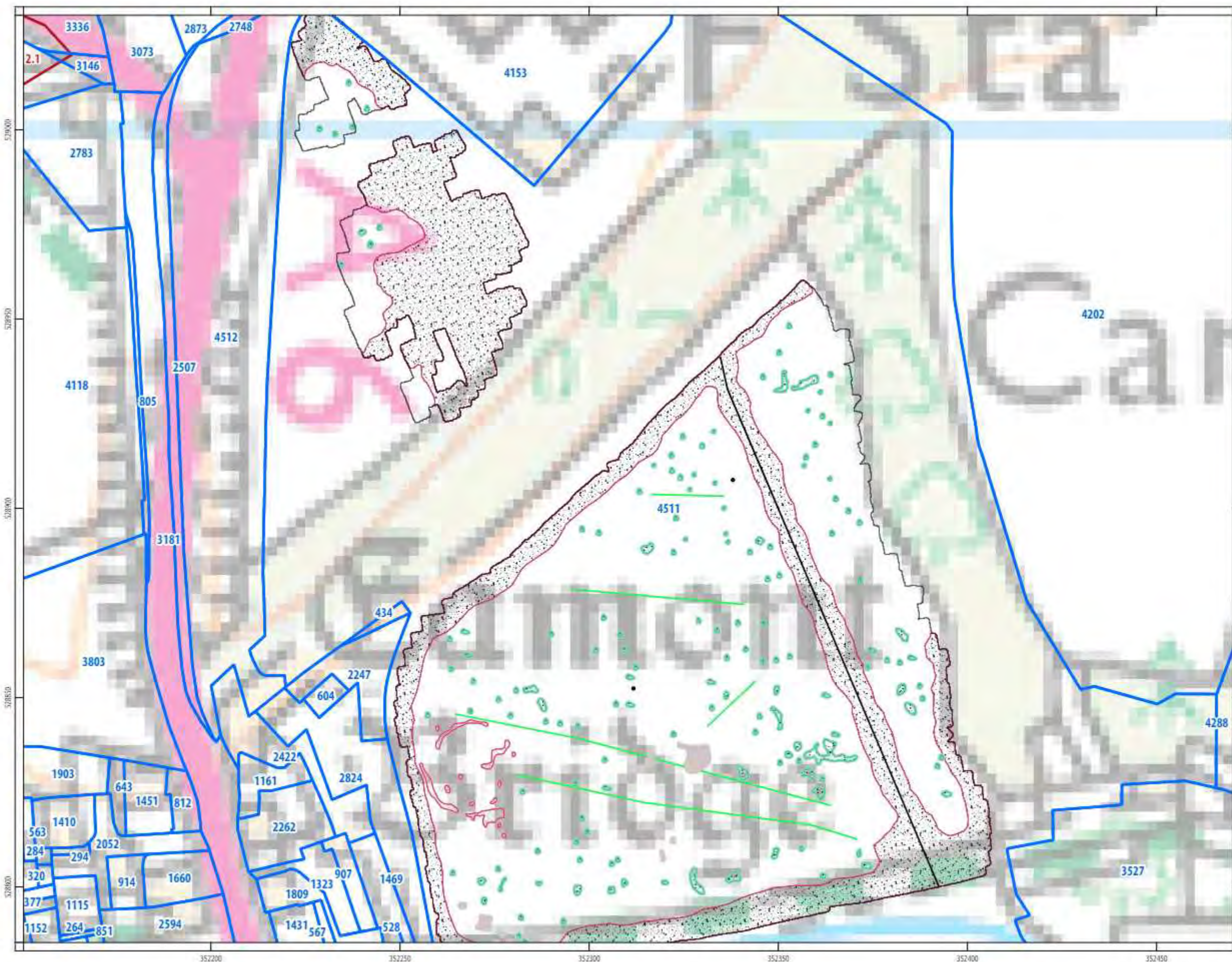
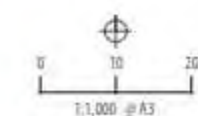
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

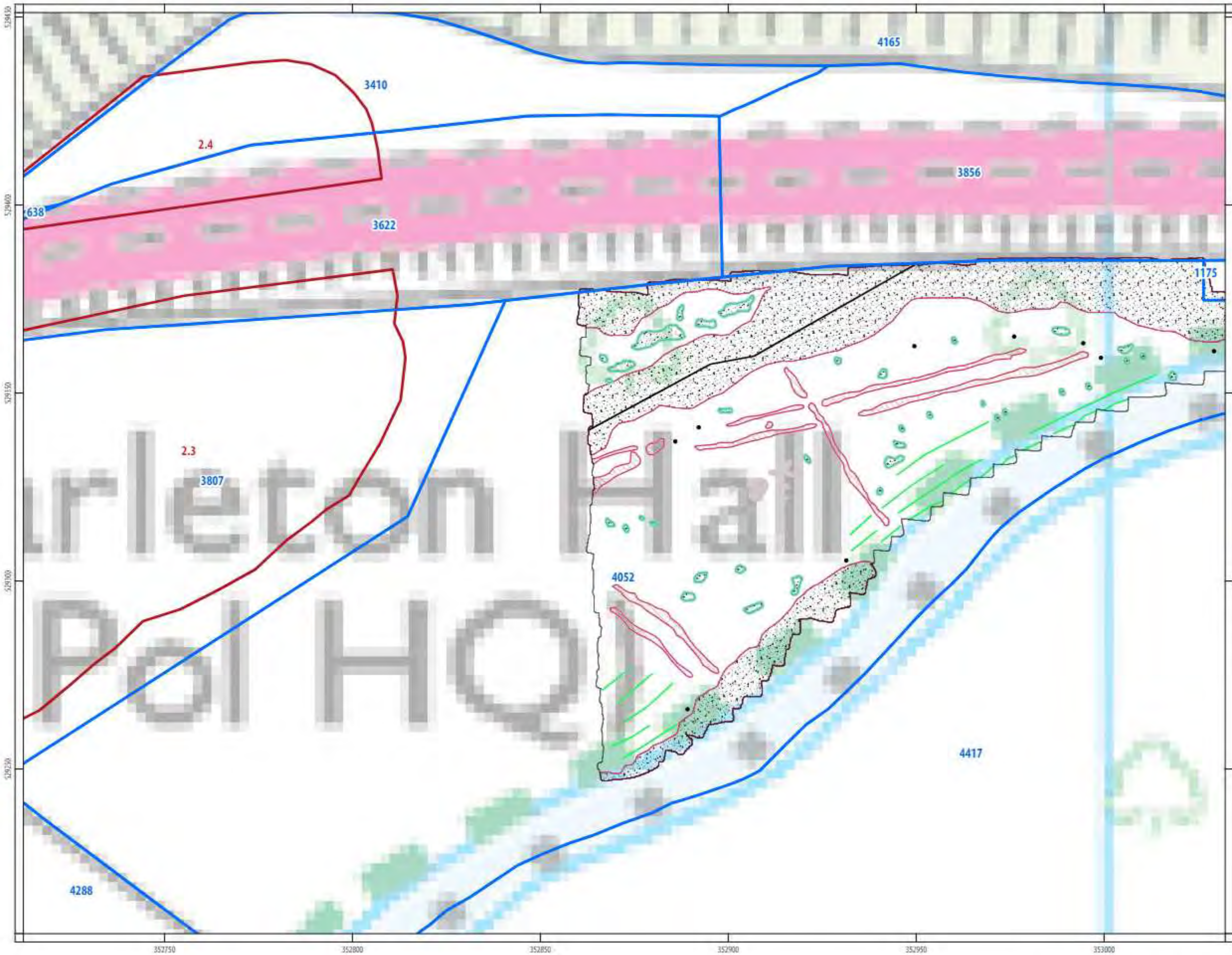
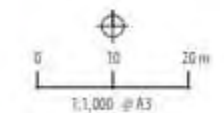
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

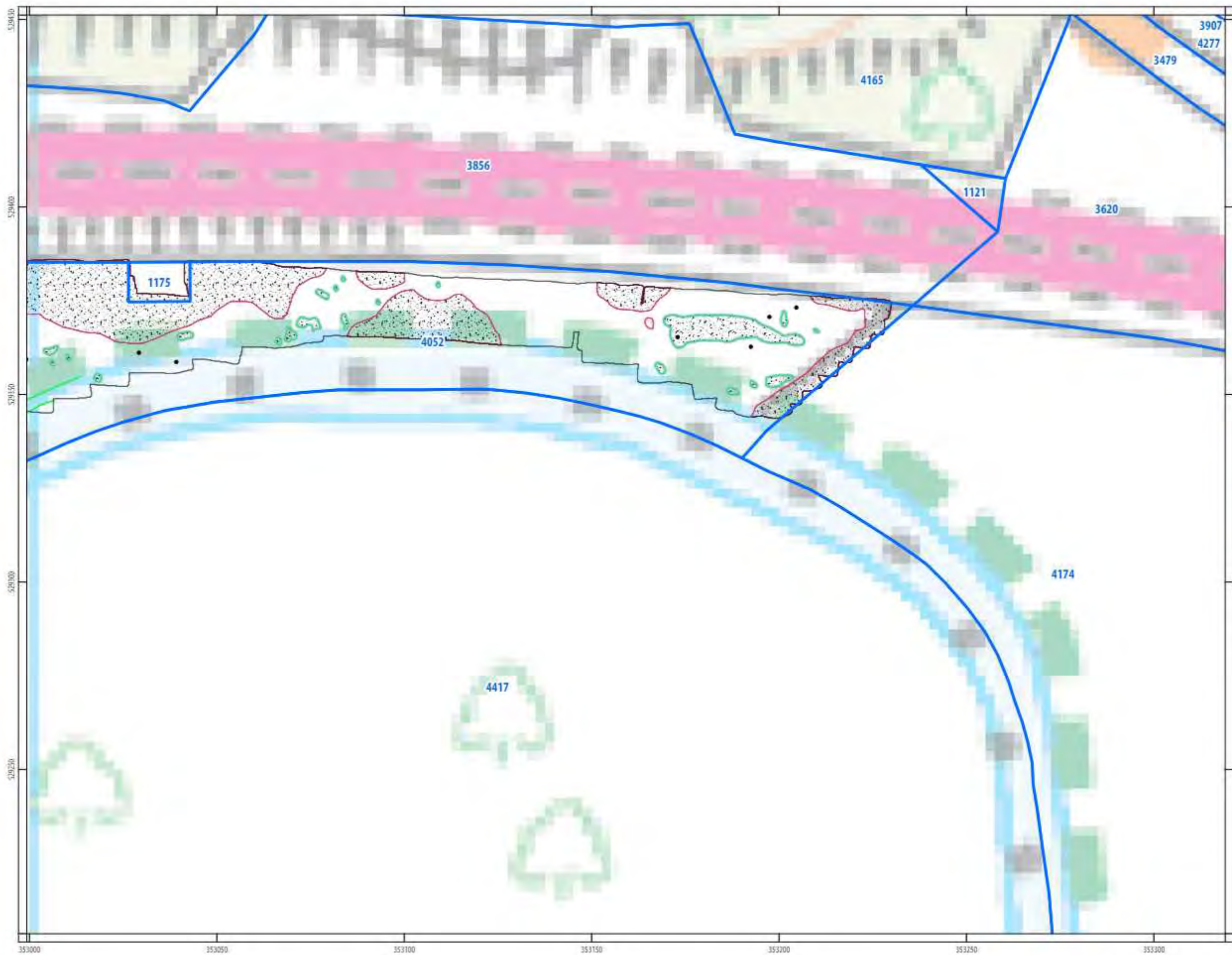
**CLIENT**

Highways England



ILLUS 696 Interpretation of processed magnetometer data; M6 Junction 40 to Kemplay Bank Roundabout





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

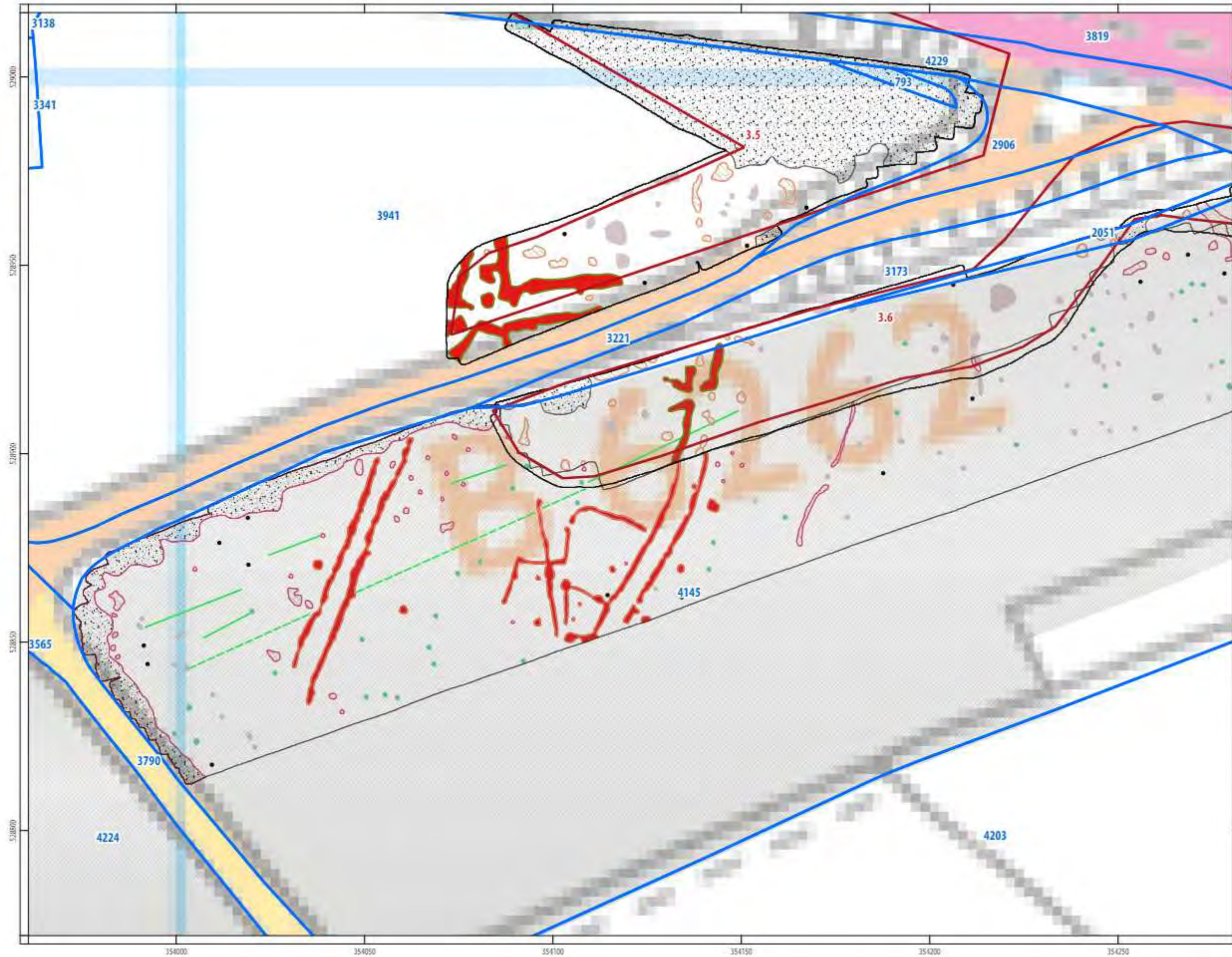
- ▭ Phase 1 Geophysical Survey Area
- ▭ Phase 2 Geophysical Survey Area
- geophysical survey extent
- ▭ scheduled monument
- dipolar isolated/ferrous
- ▭ magnetic enhancement/archaeology
- ▭ magnetic disturbance/geology
- ▭ magnetic enhancement/archaeology?
- ▭ magnetic enhancement/kiln burning
- ▭ magnetic enhancement/LIRM
- ▭ magnetic disturbance/quarrying
- ▭ green waste
- ▭ modern
- ▭ uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

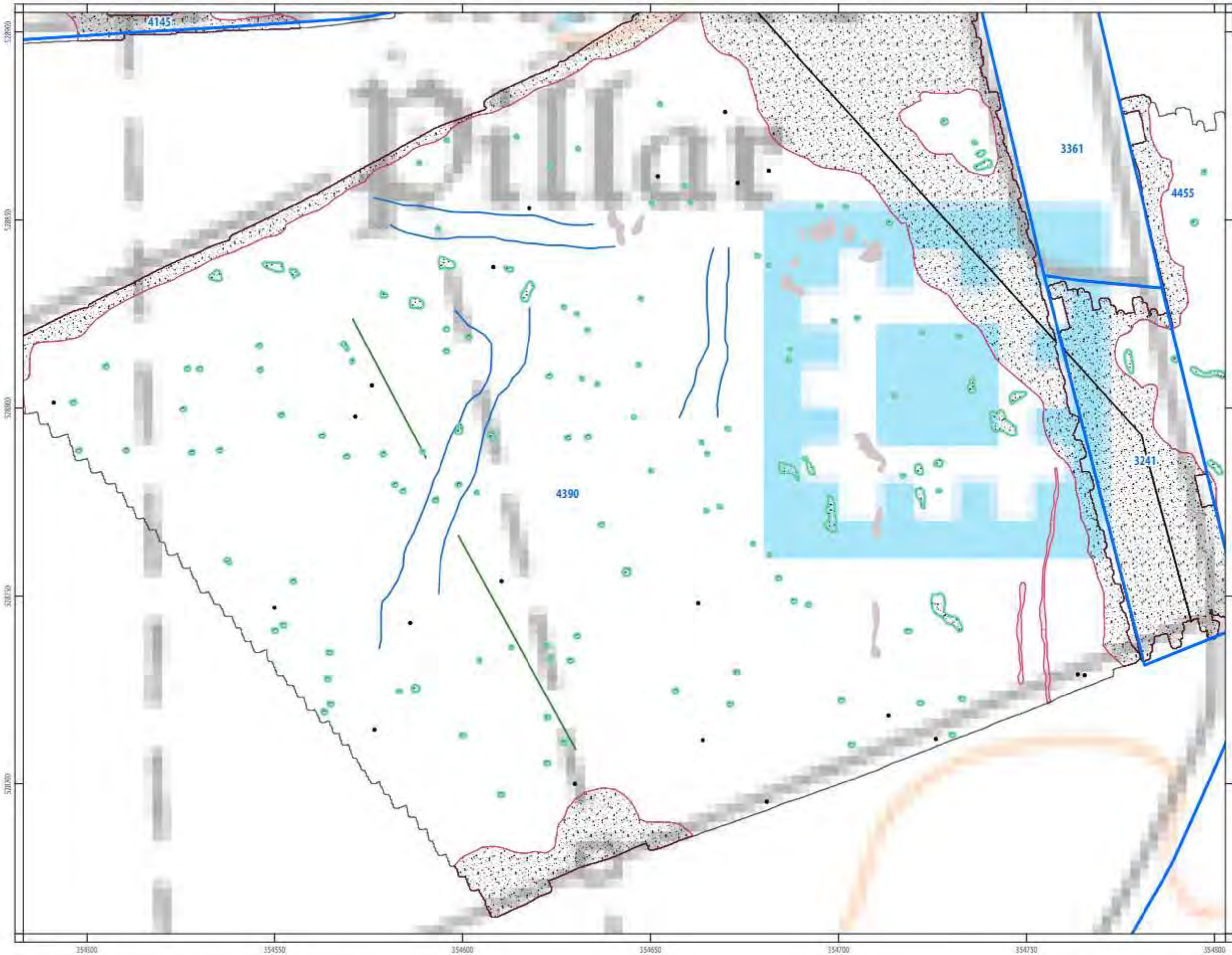
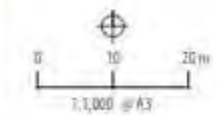
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/hedge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

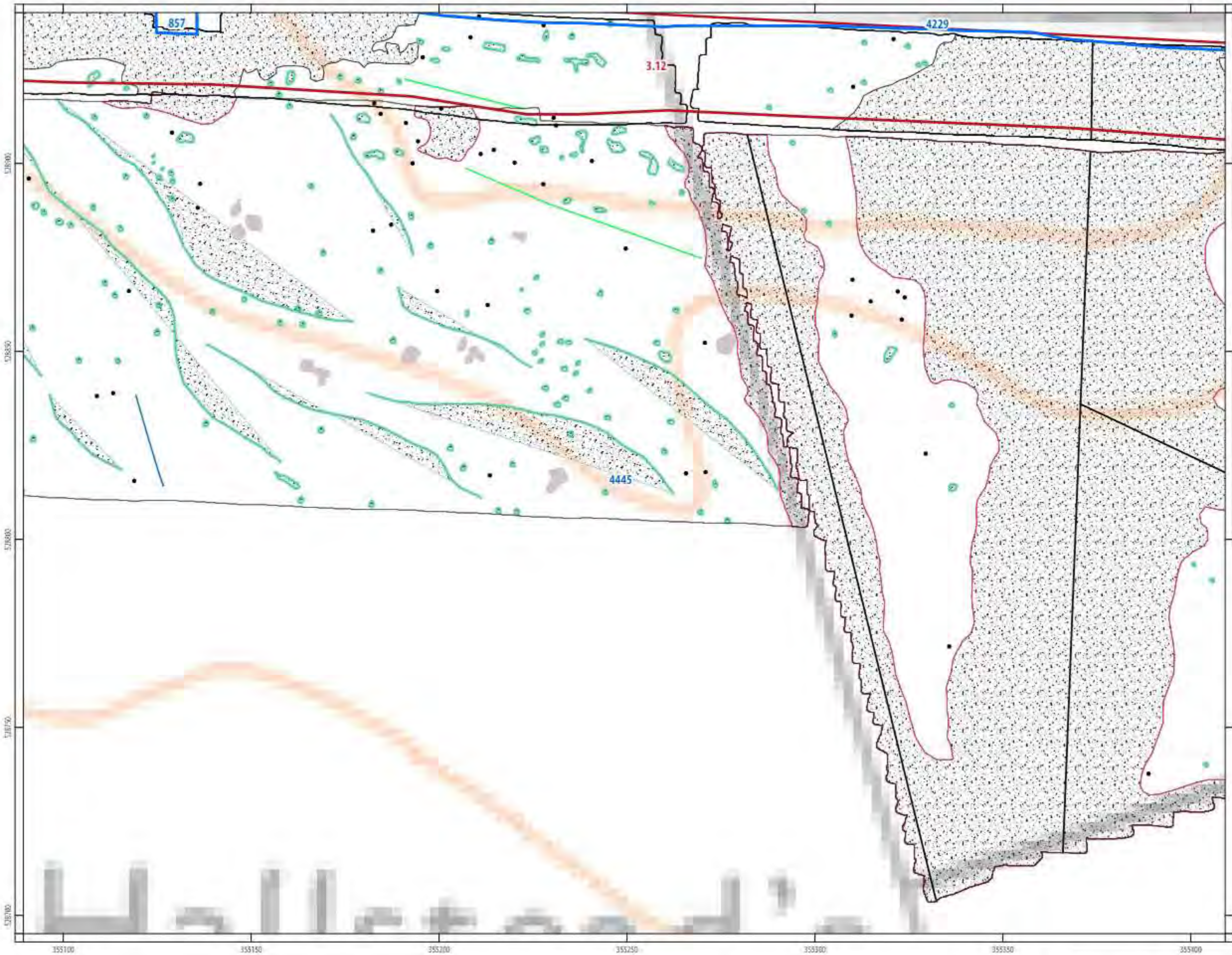
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/URM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/hedge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 700 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

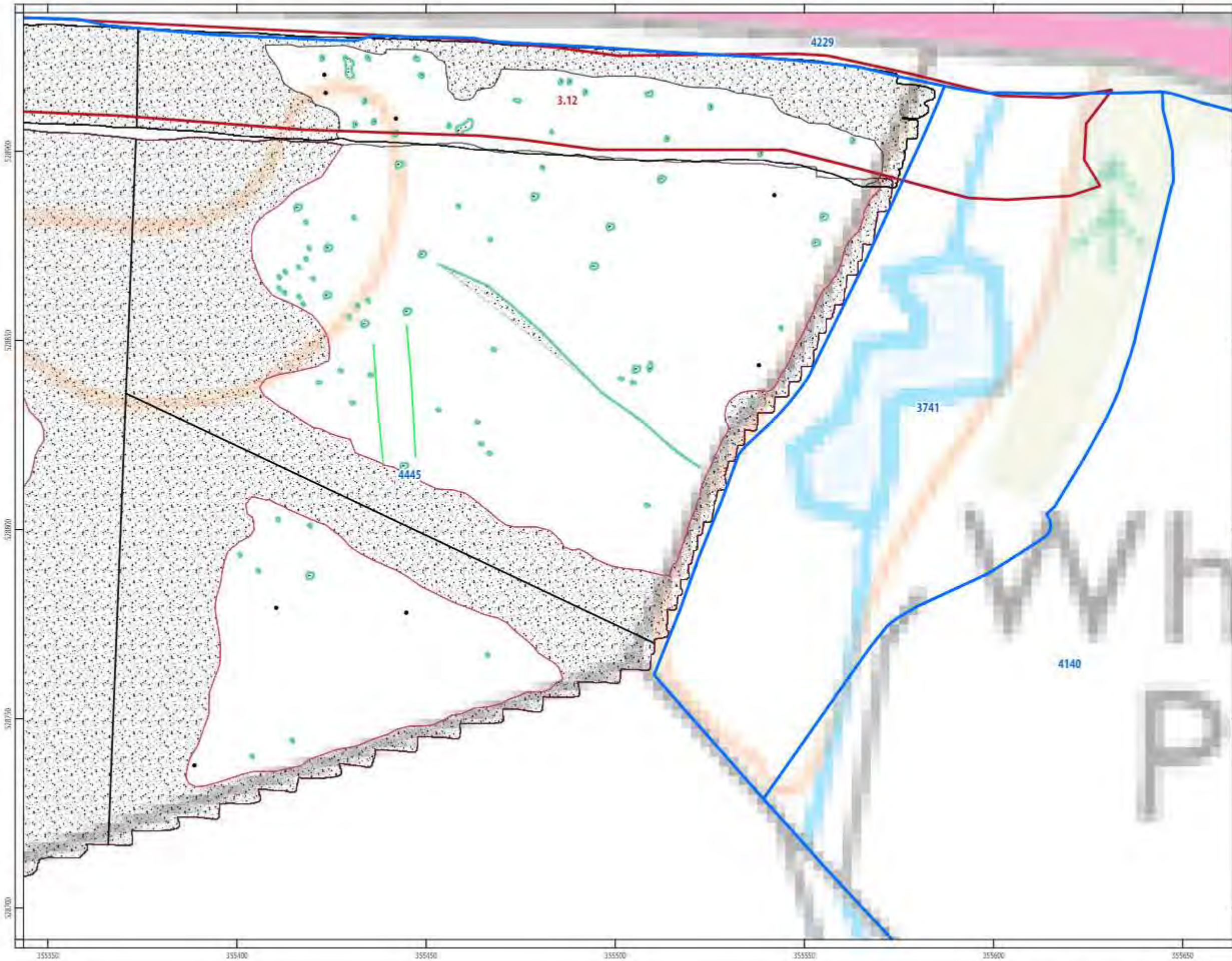
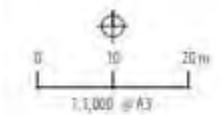
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/and/or archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/hedge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

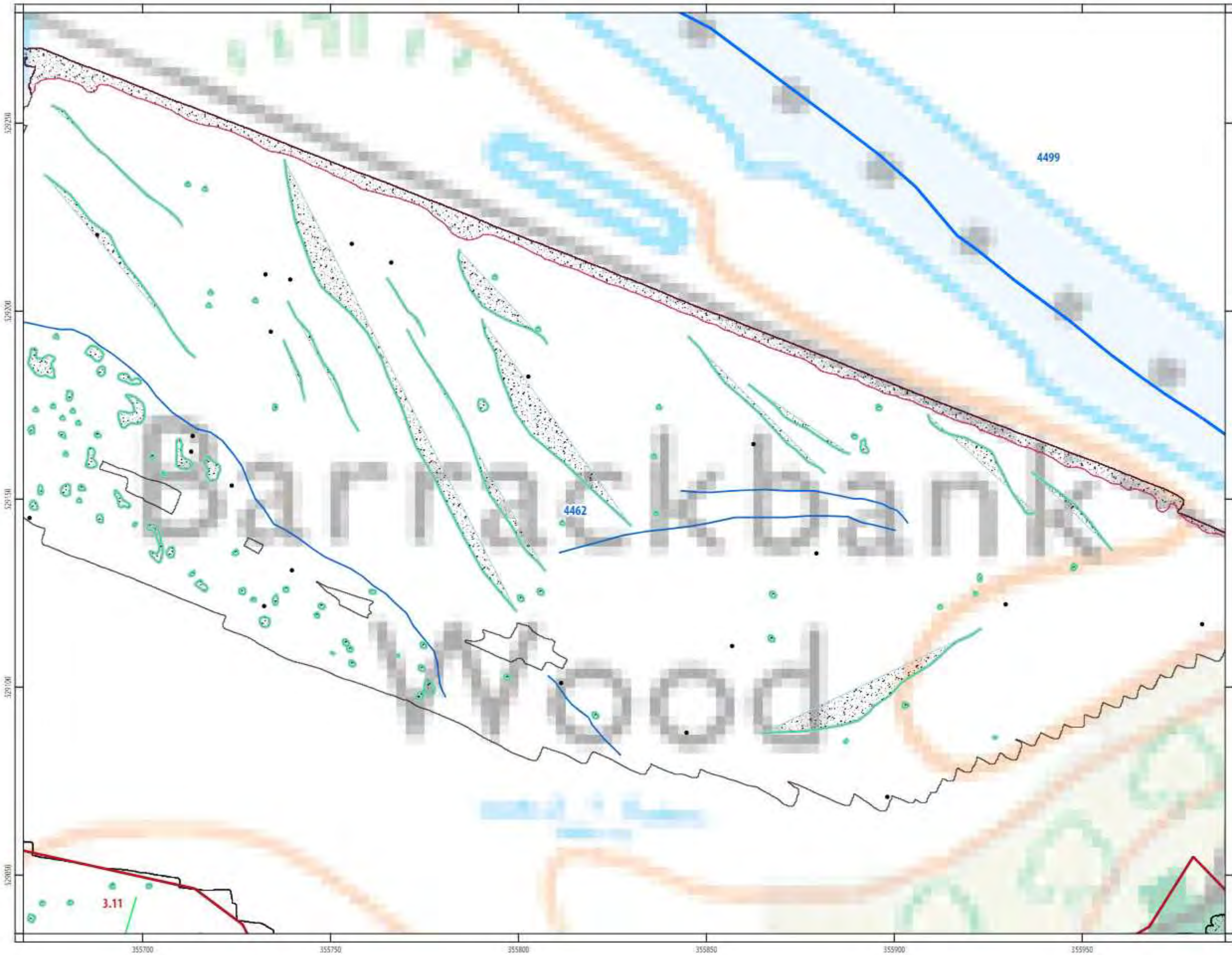
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 702 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

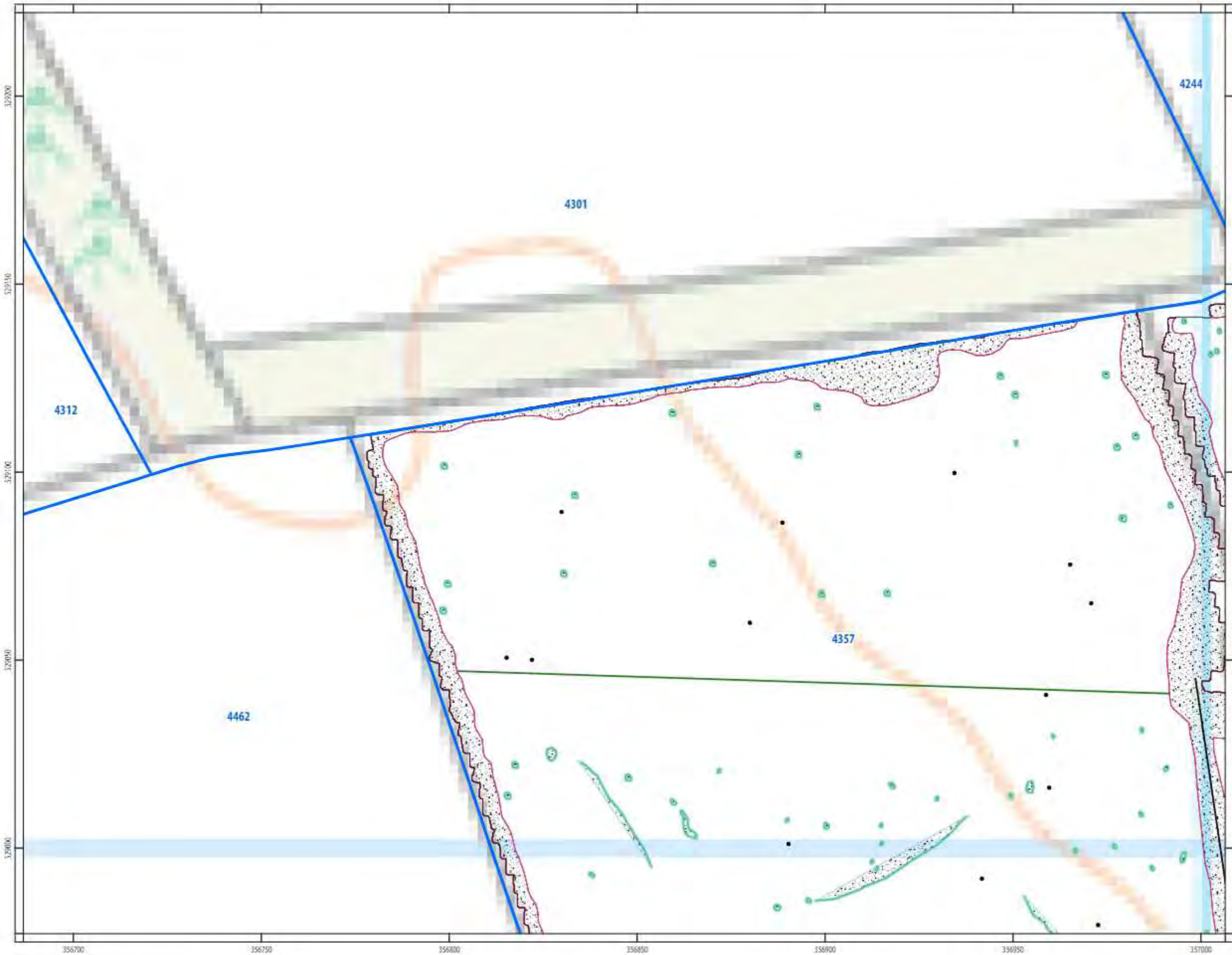
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 703 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/hedge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

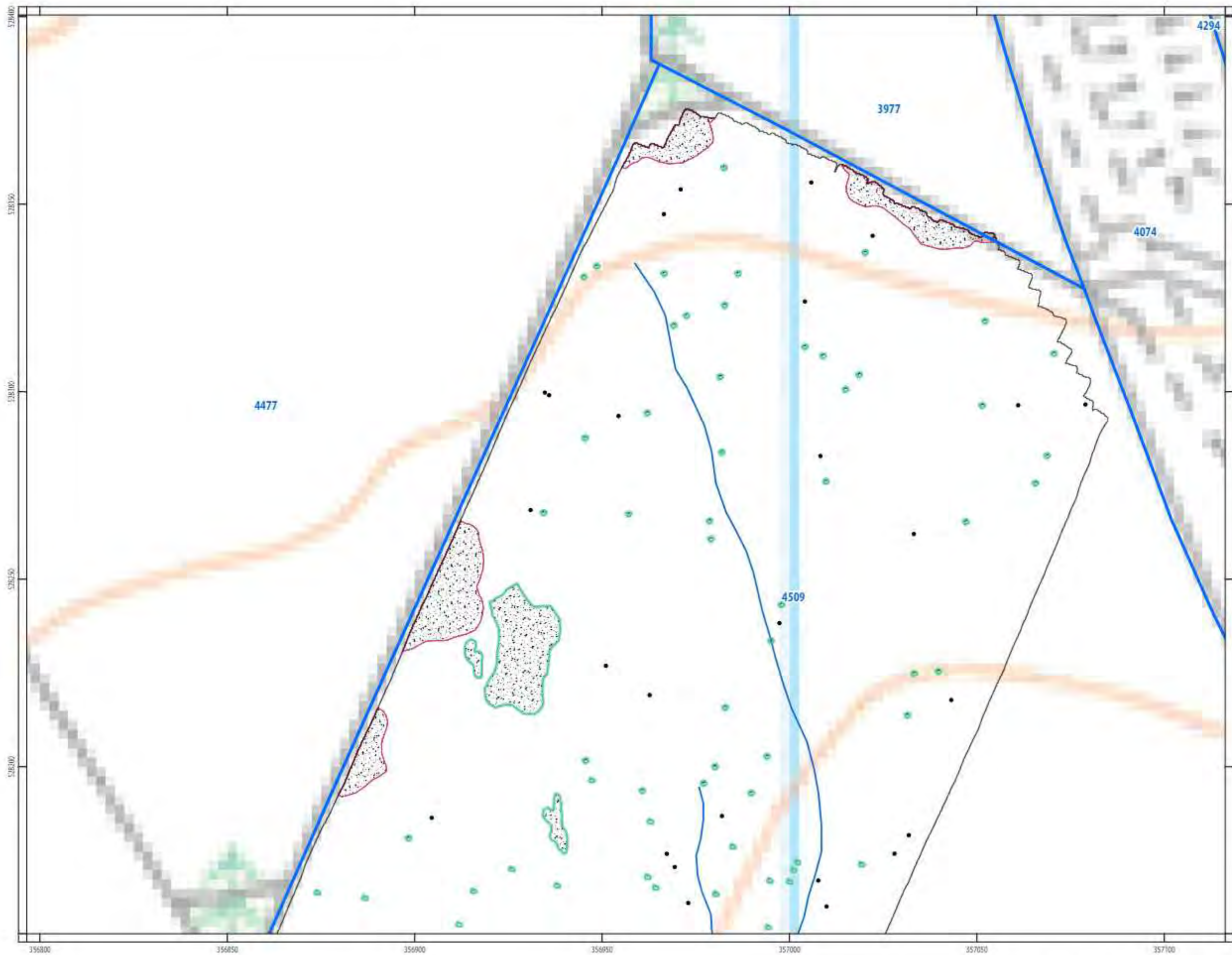
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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

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**Phase 2 Survey**

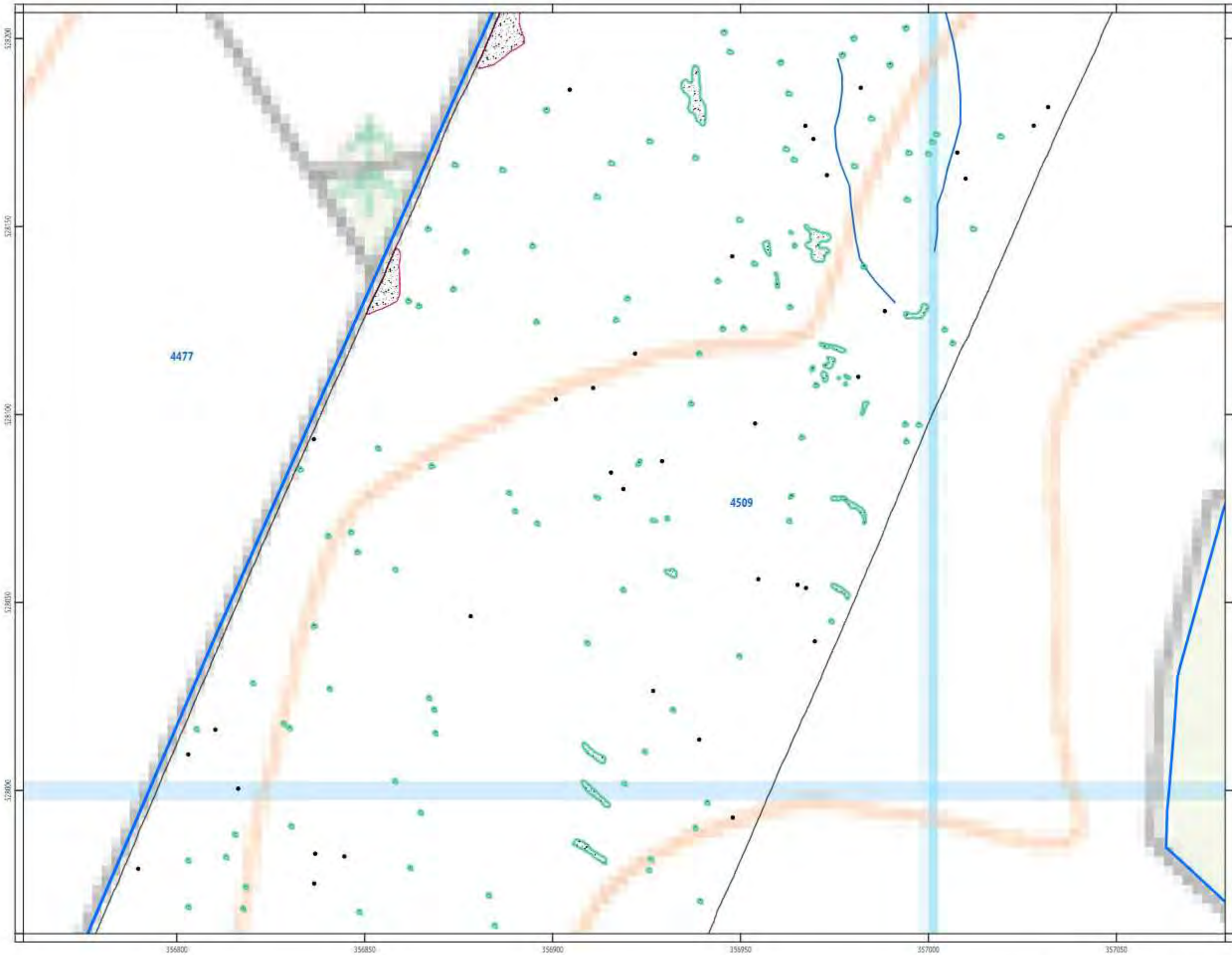
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 706 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

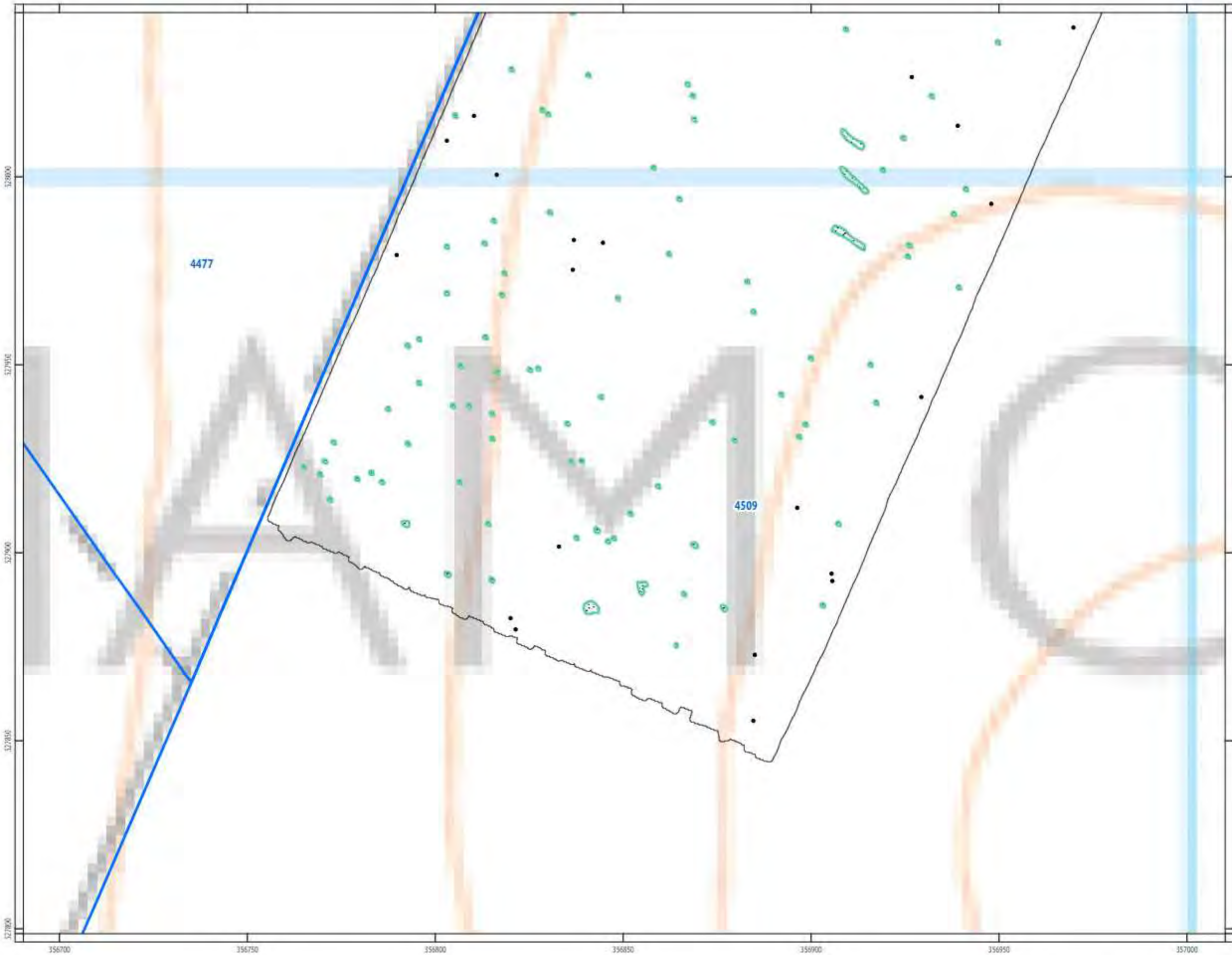
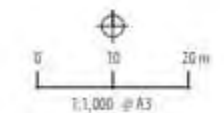
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 707 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

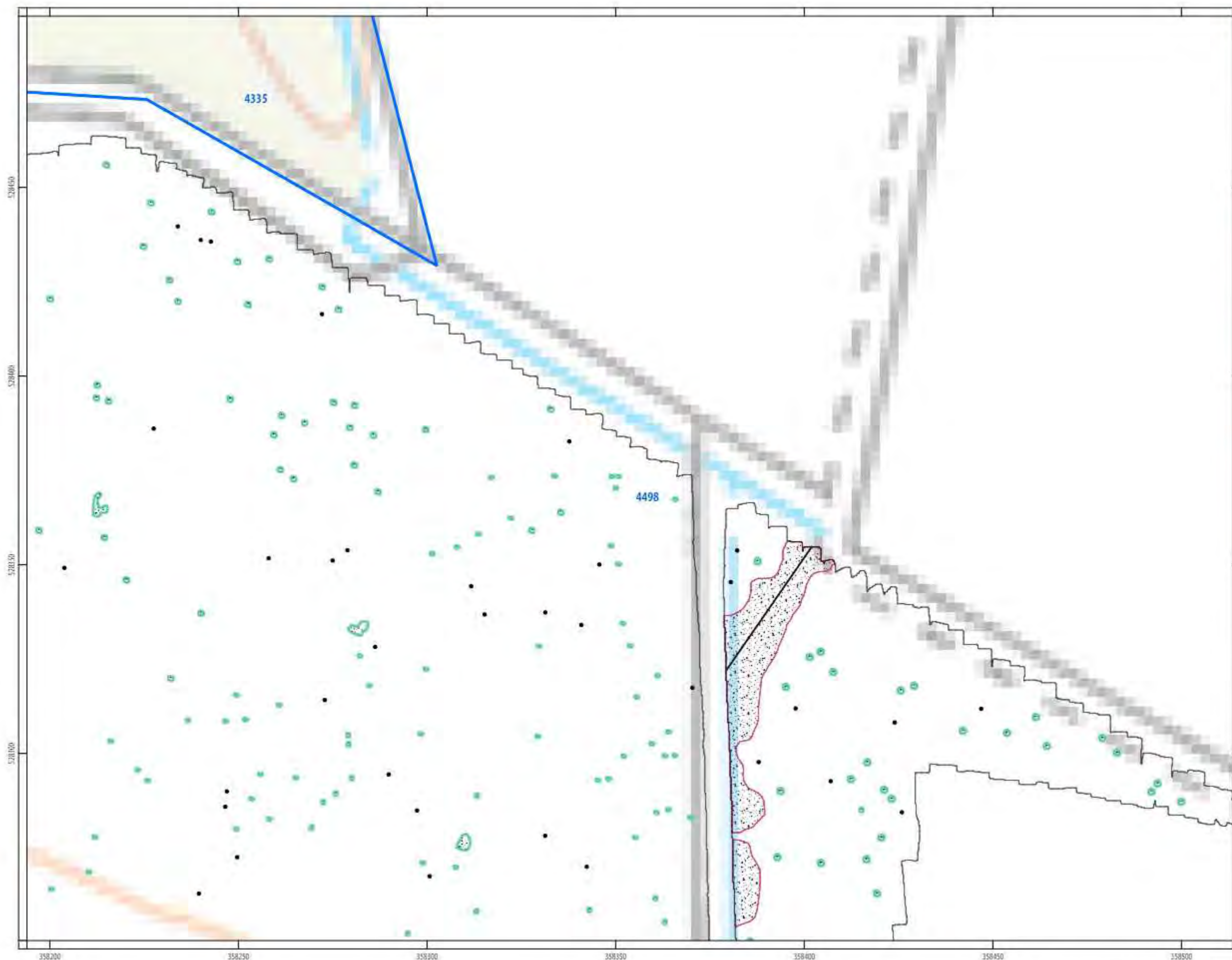
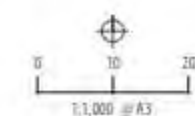
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 708 Interpretation of processed magnetometer data; Penrith to Temple Sowerby (Center Parcs)



**Phase 2 Survey**

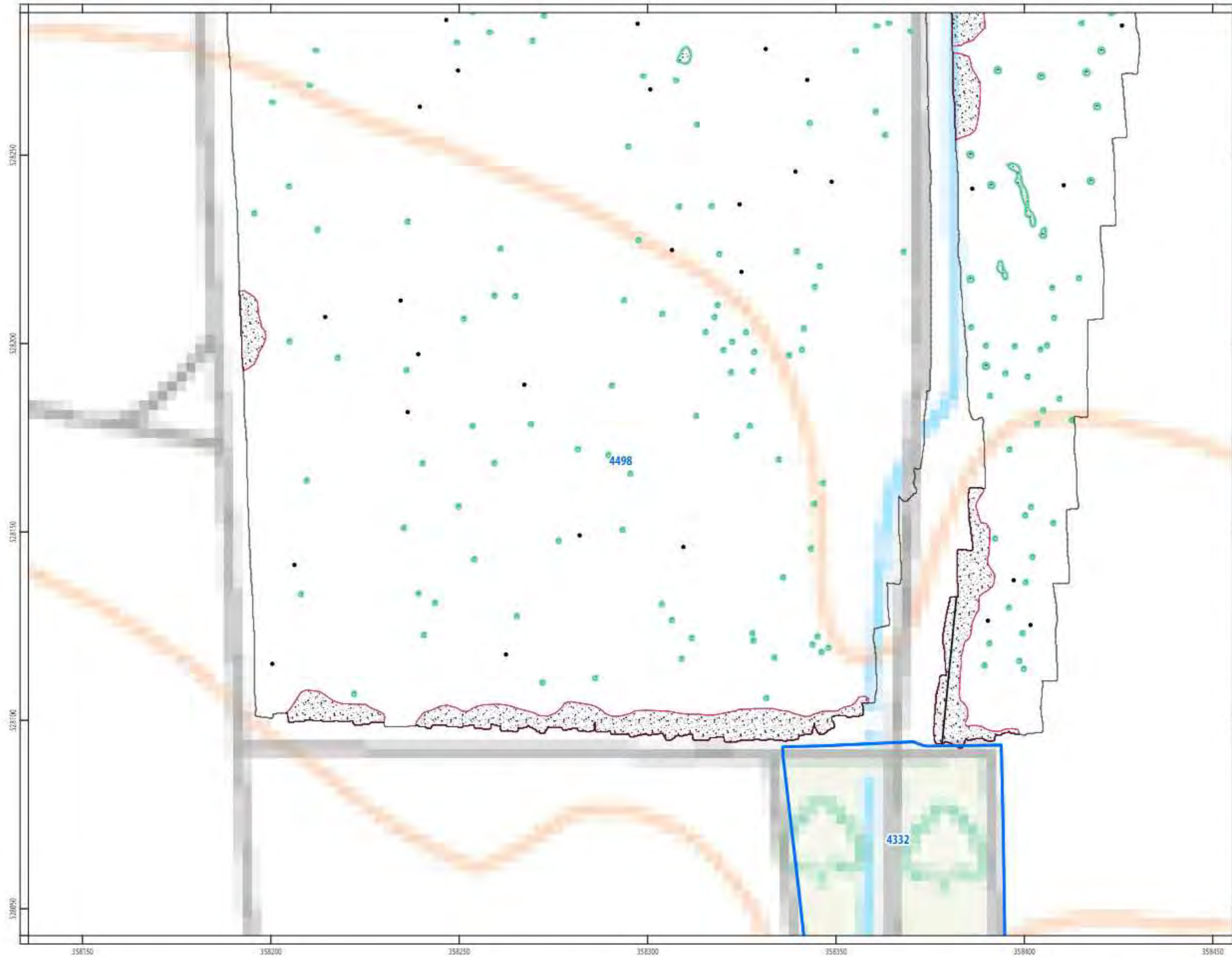
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

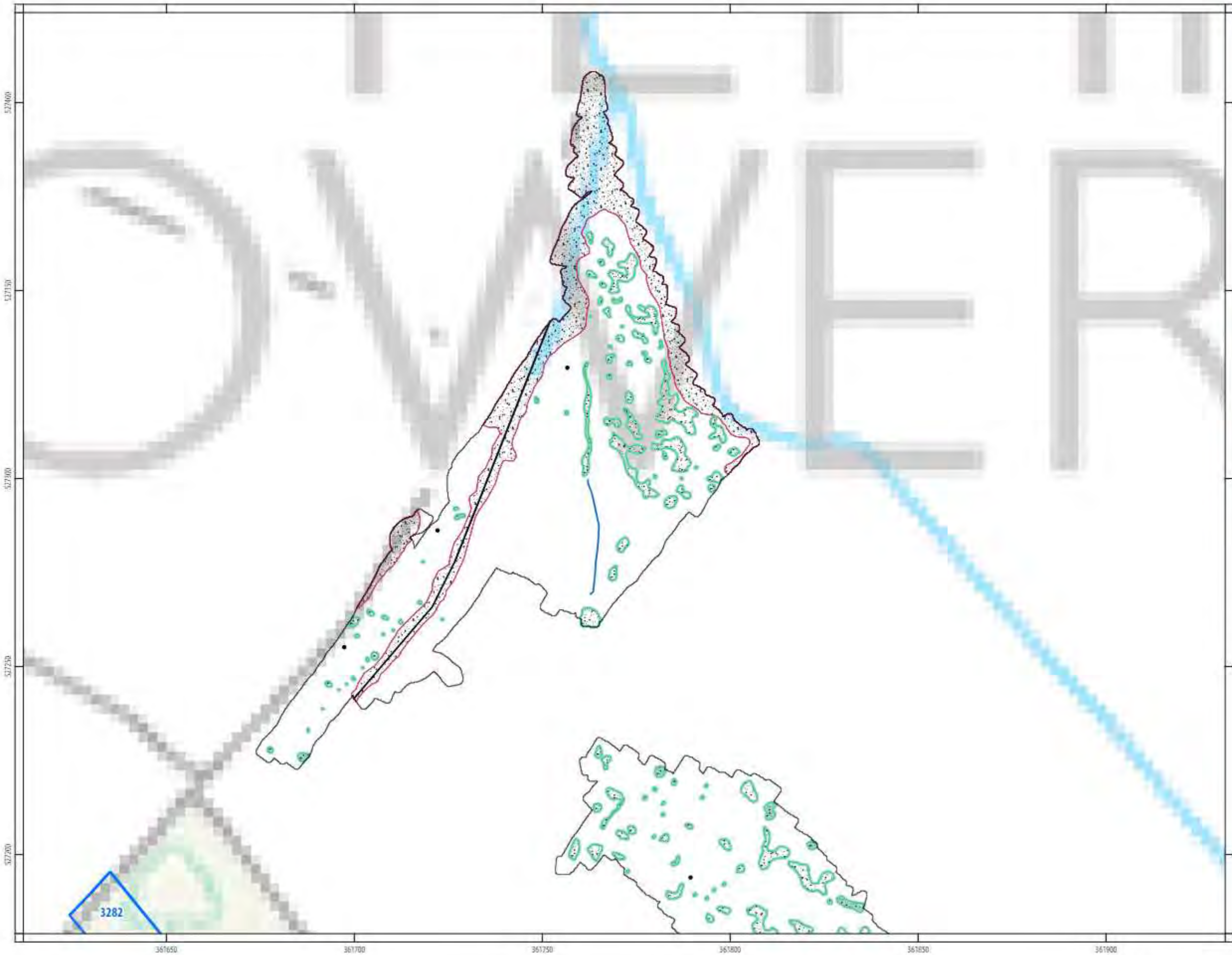
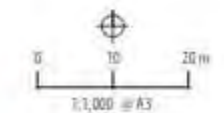
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

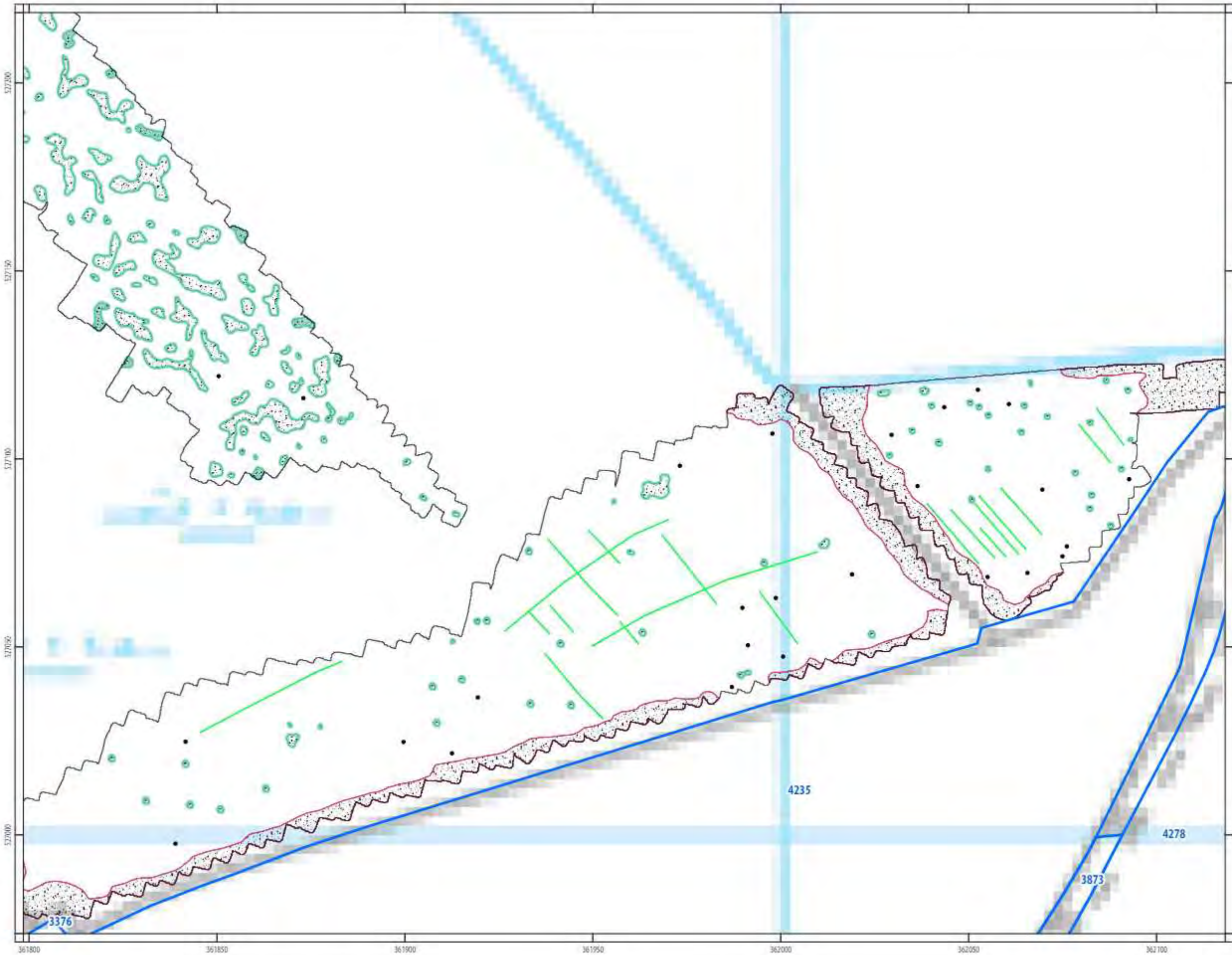
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

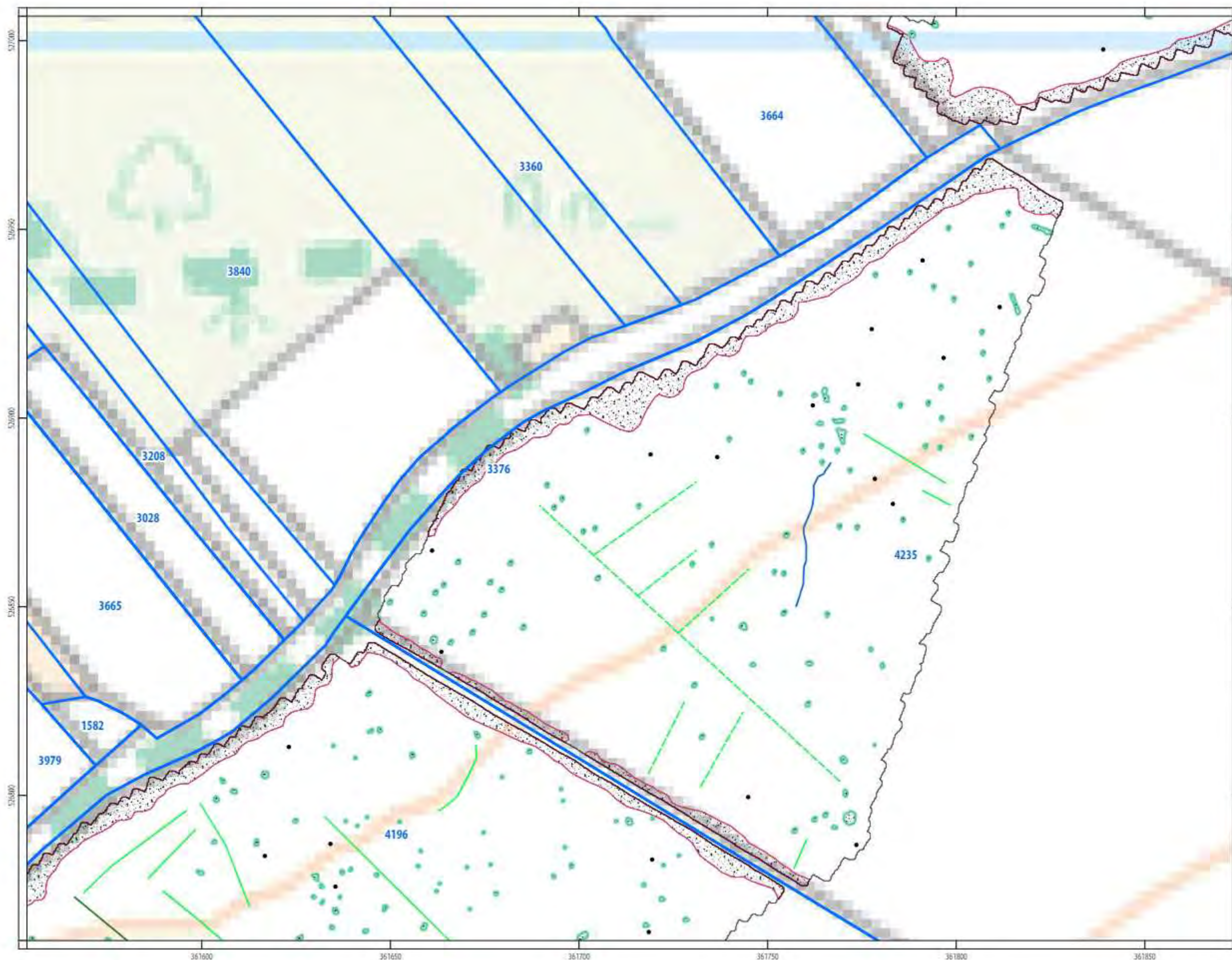
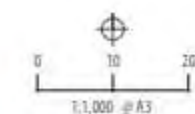
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 712 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

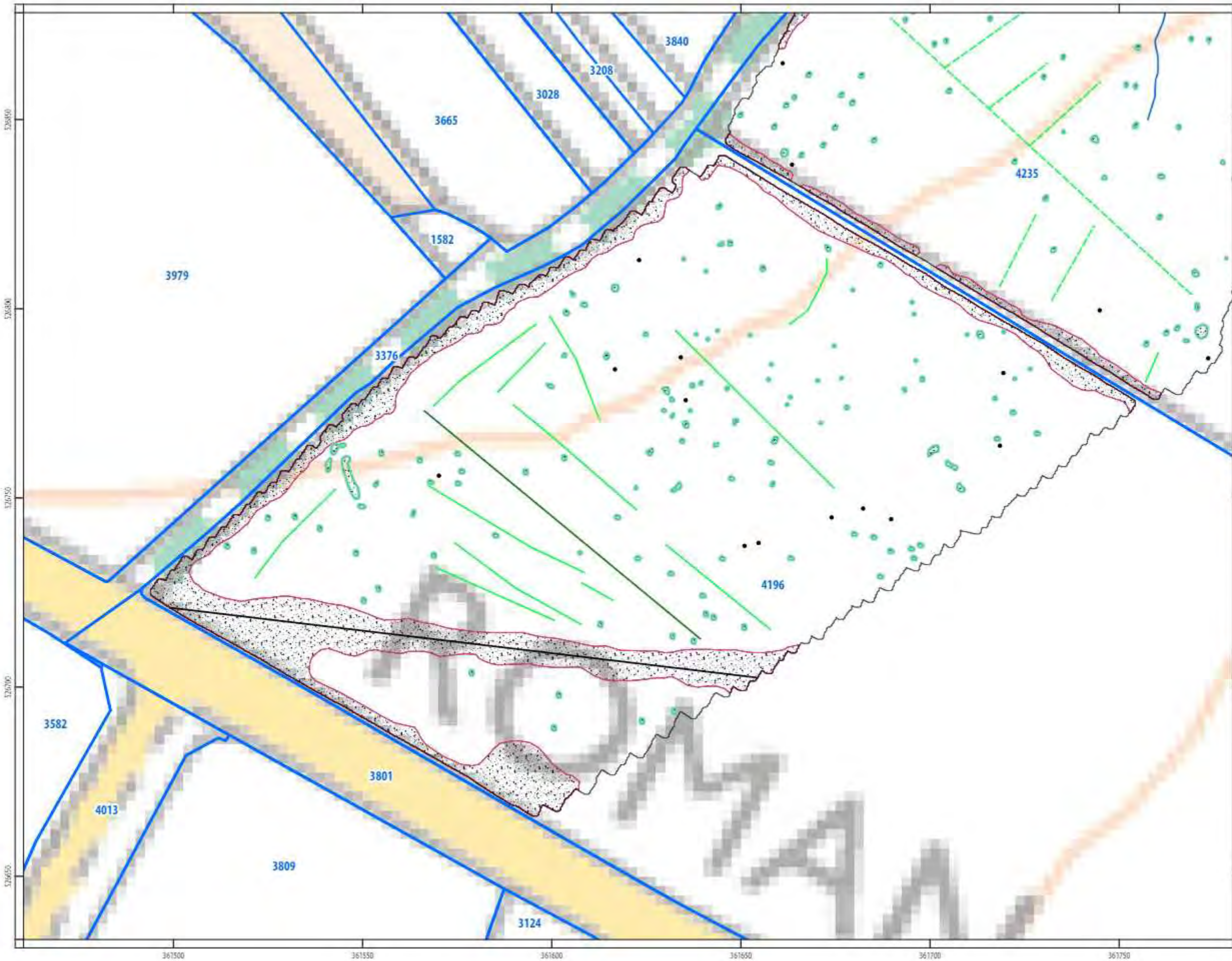
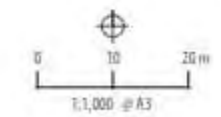
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

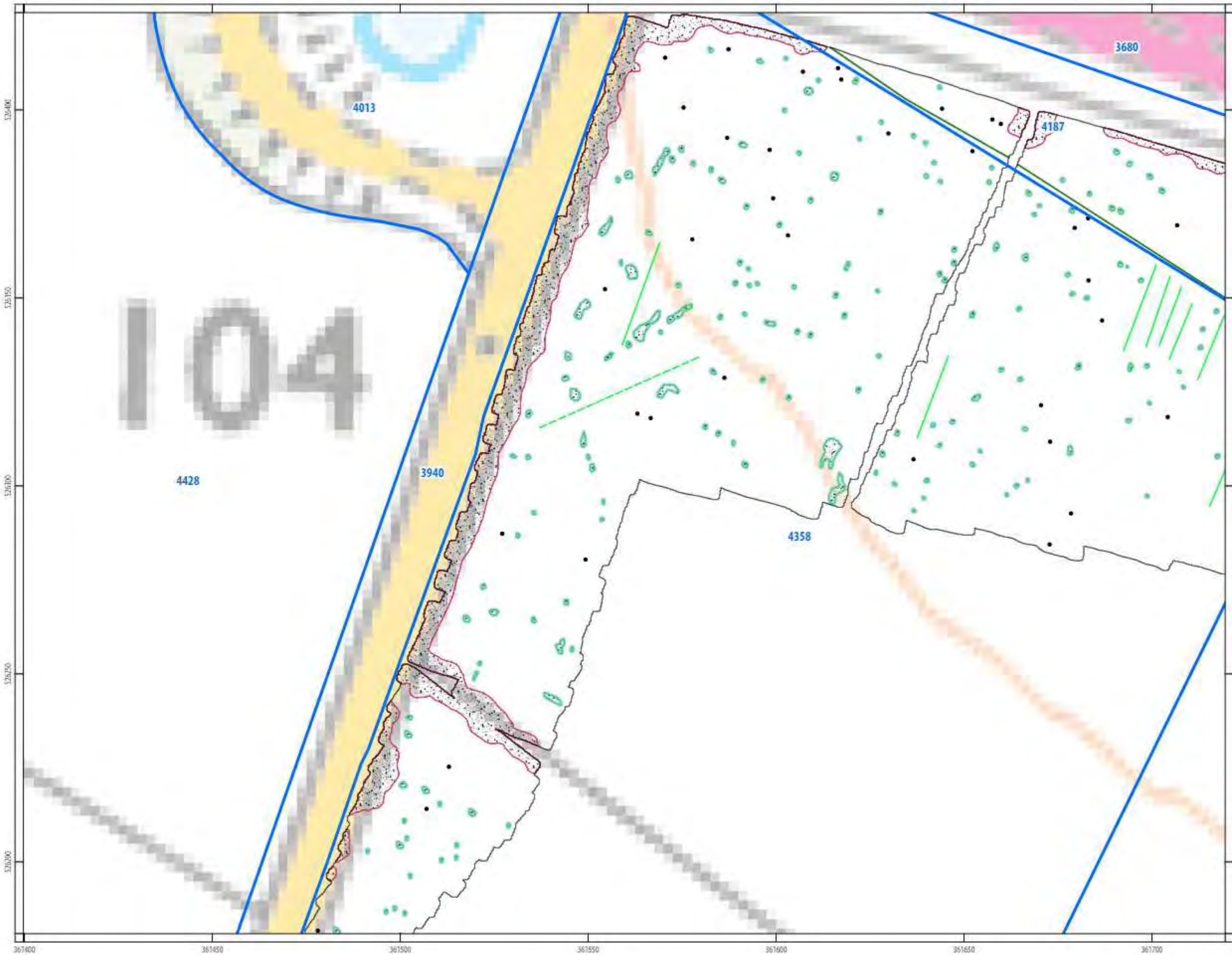
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 714 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

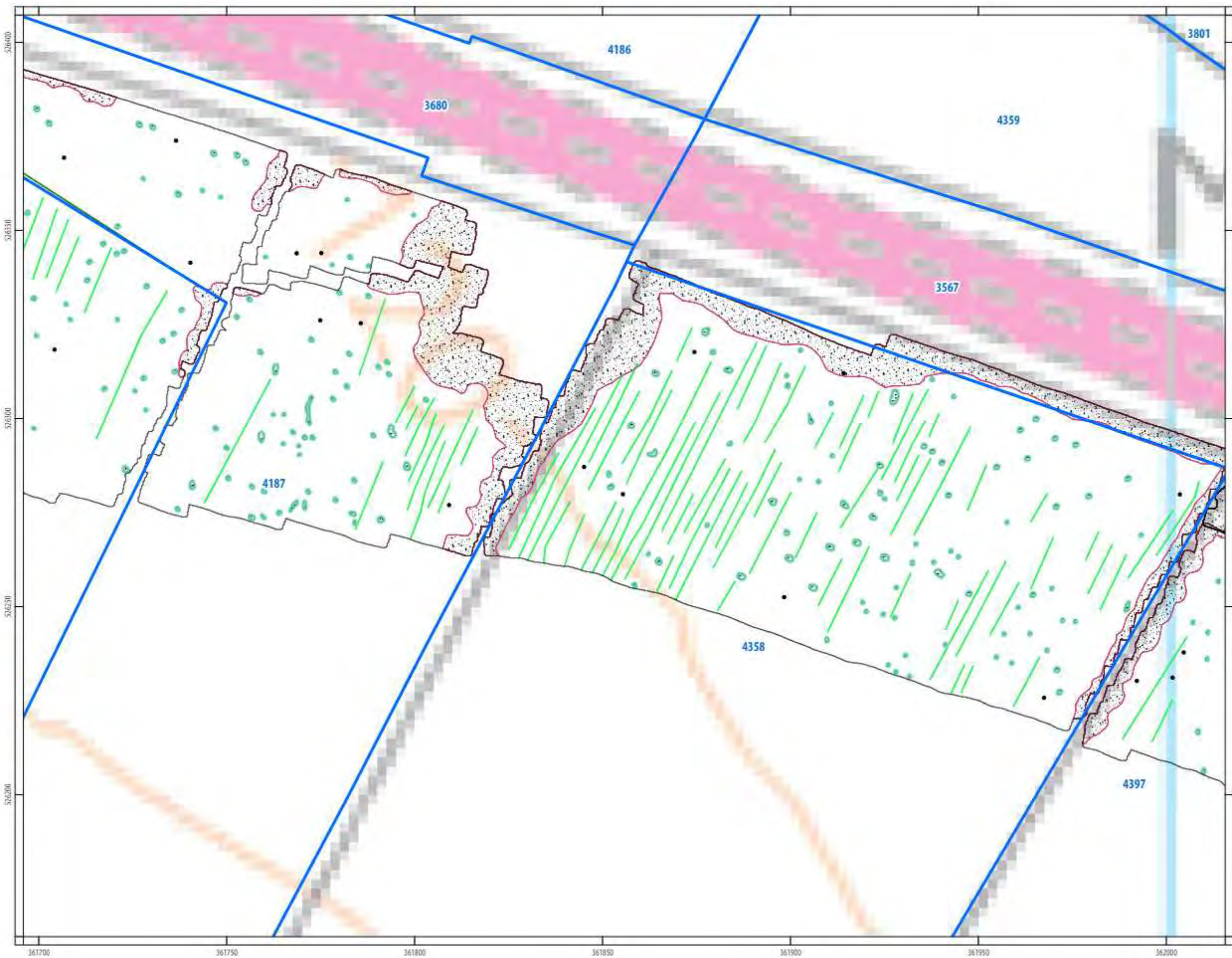
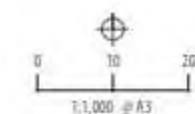
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 715 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

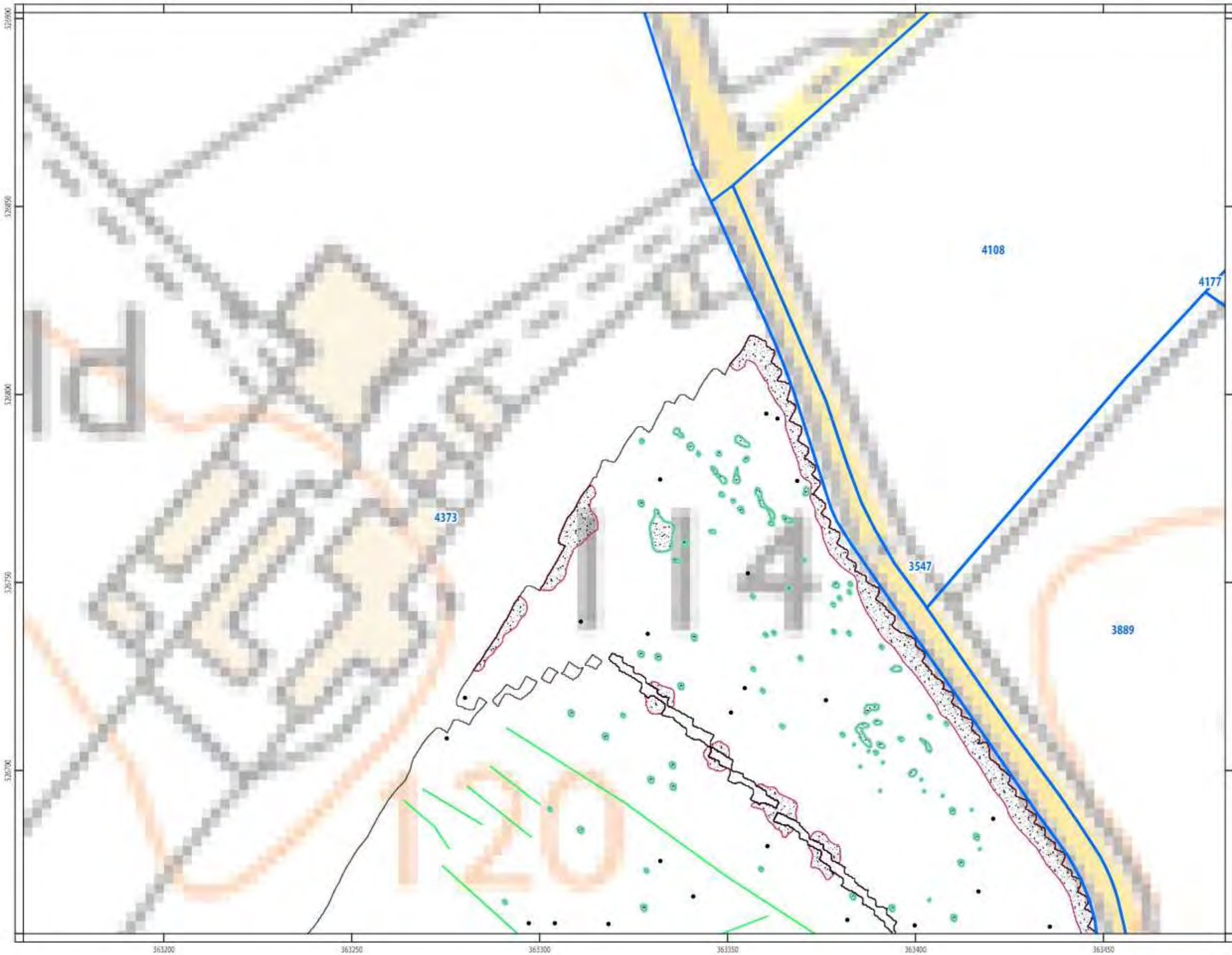
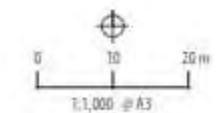
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 716 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

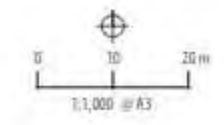
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 717 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

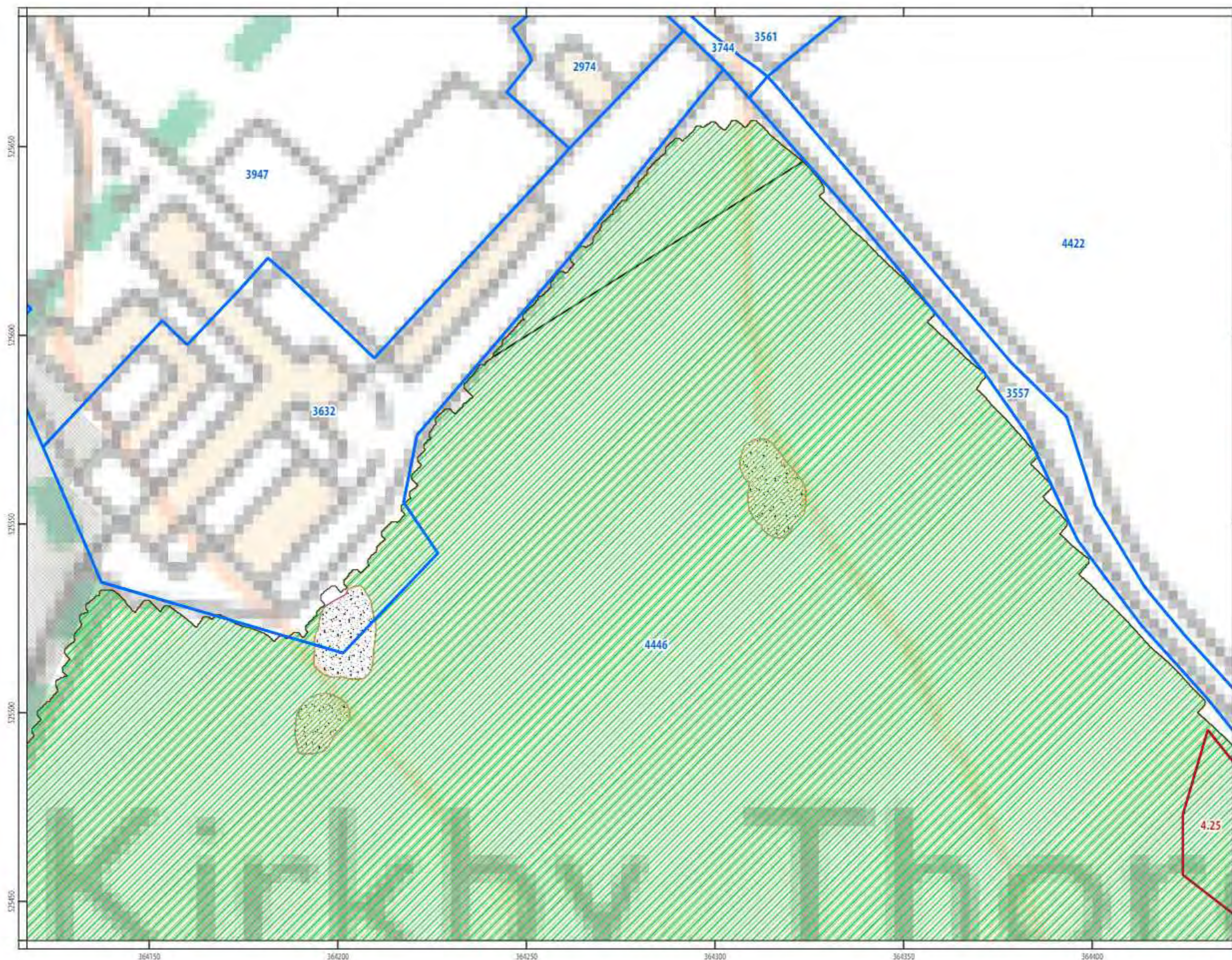
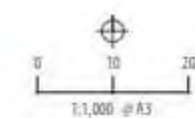
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 718 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

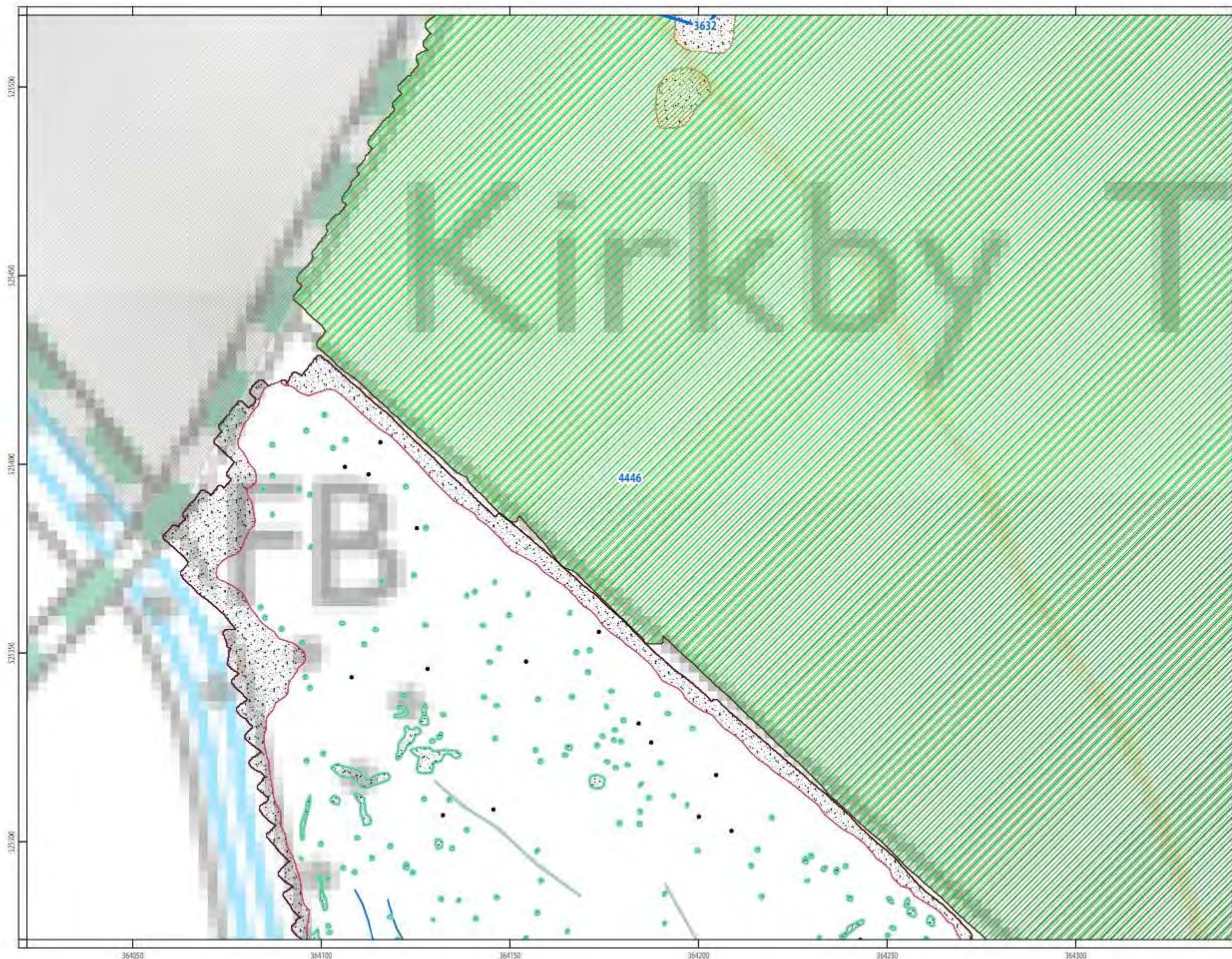
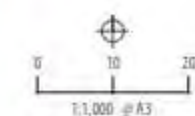
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 720 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

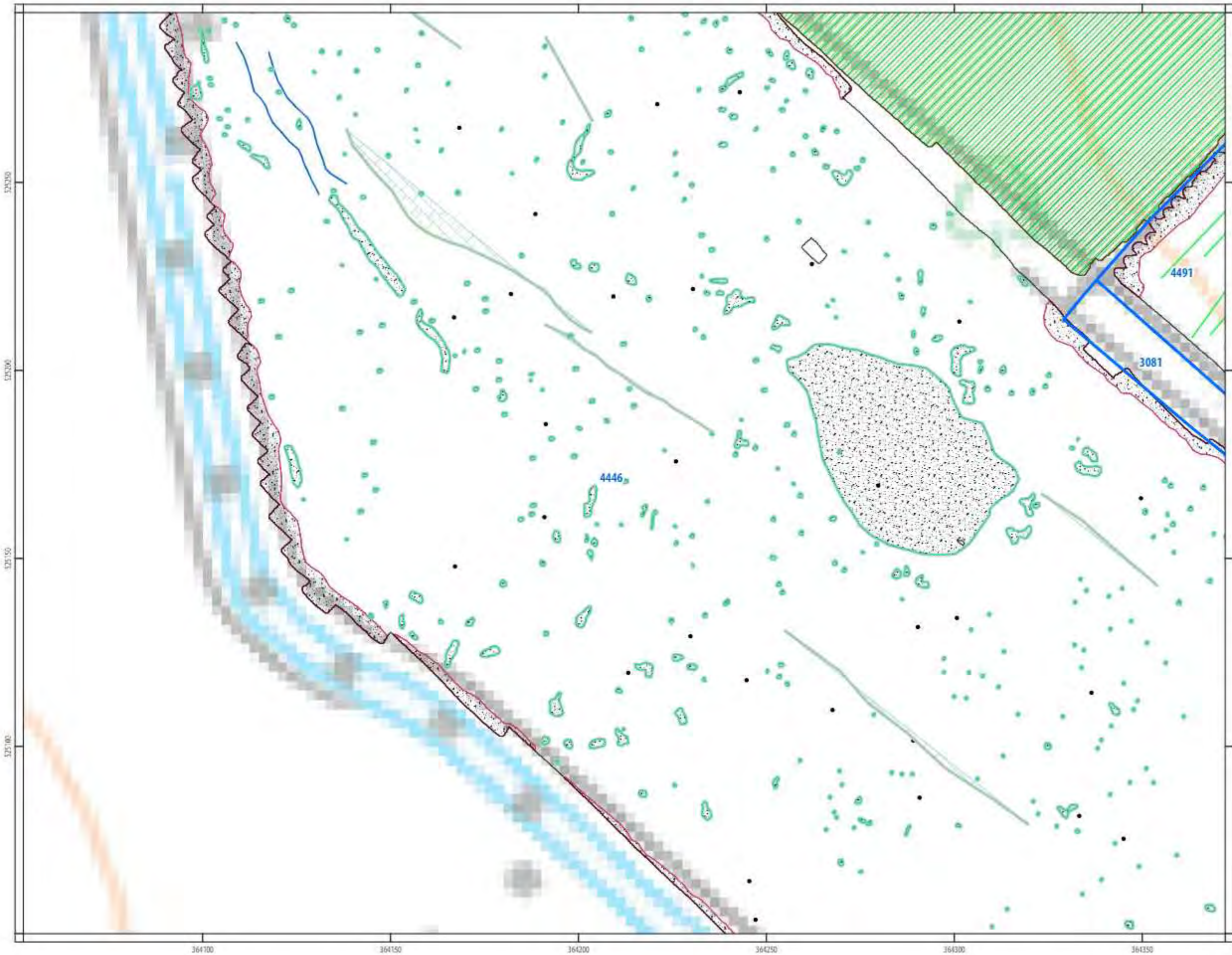
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 721 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

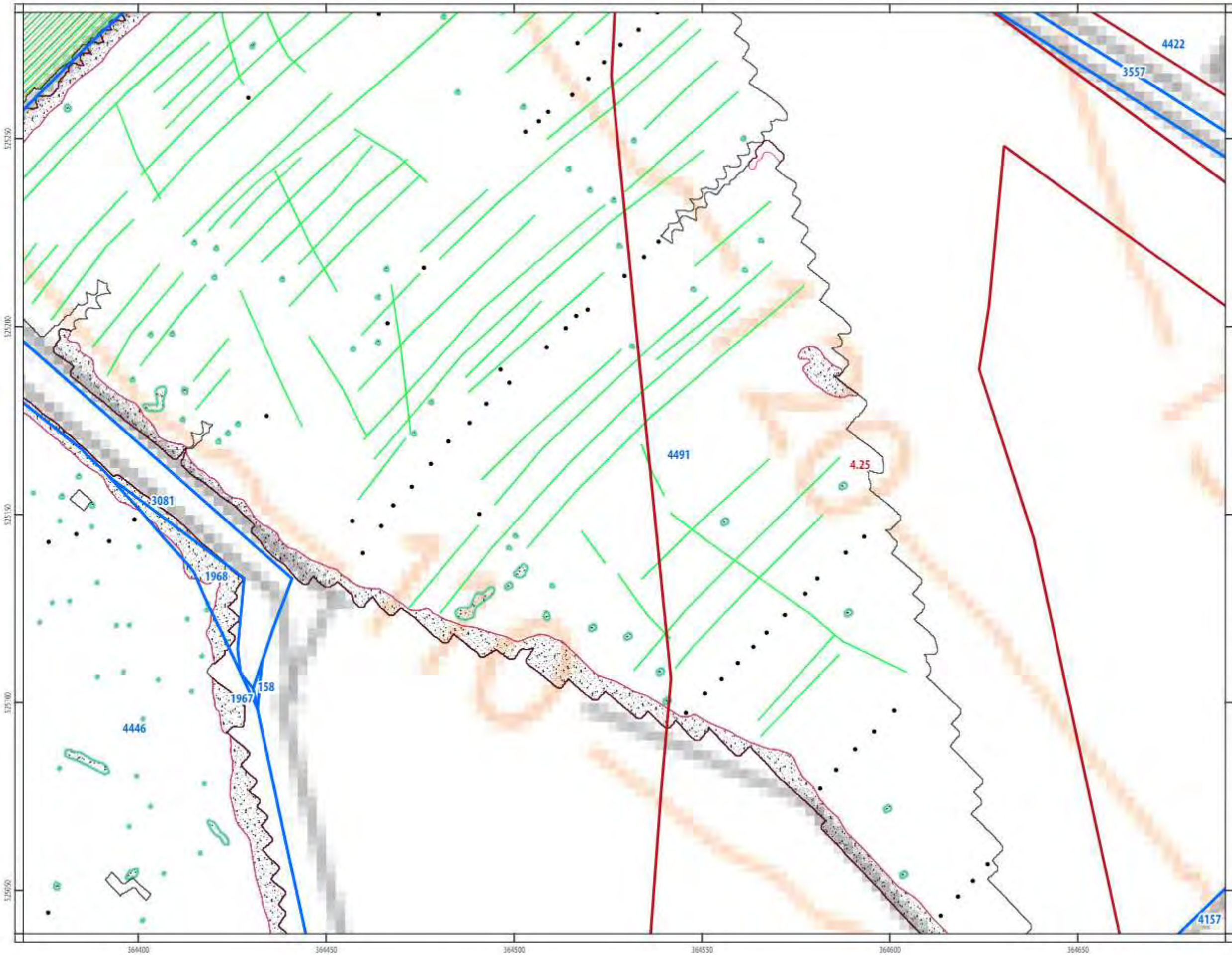
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

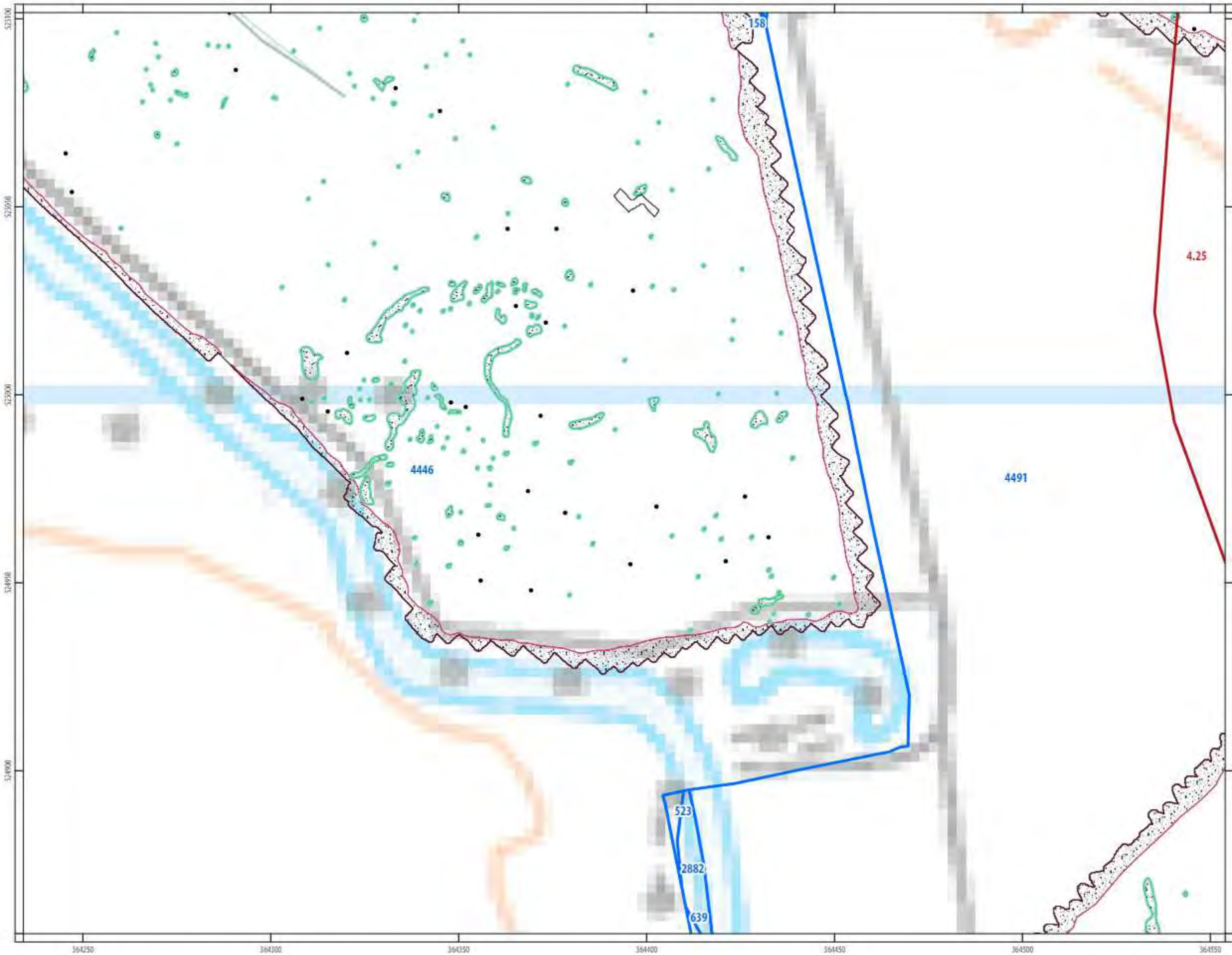
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

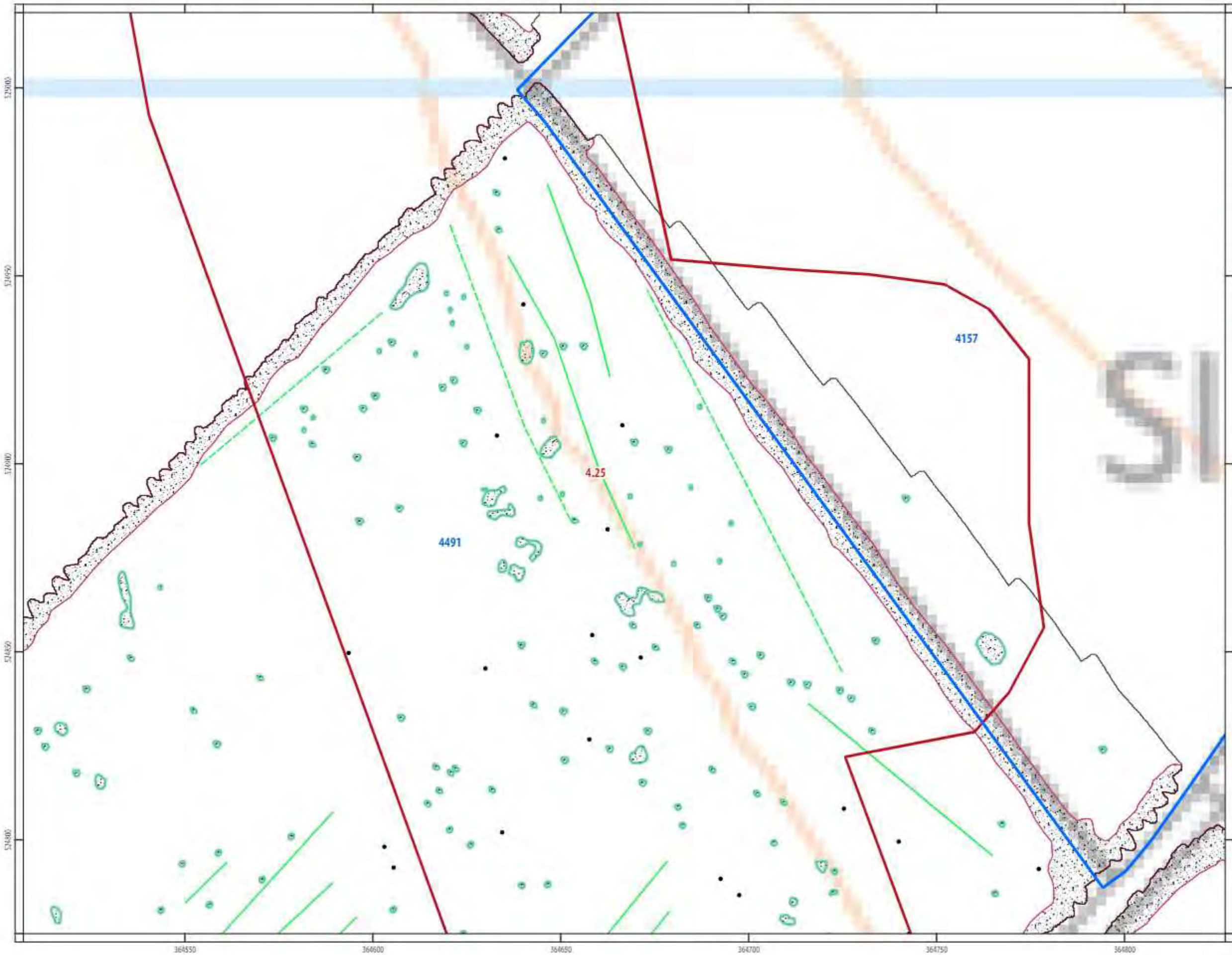
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 724 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

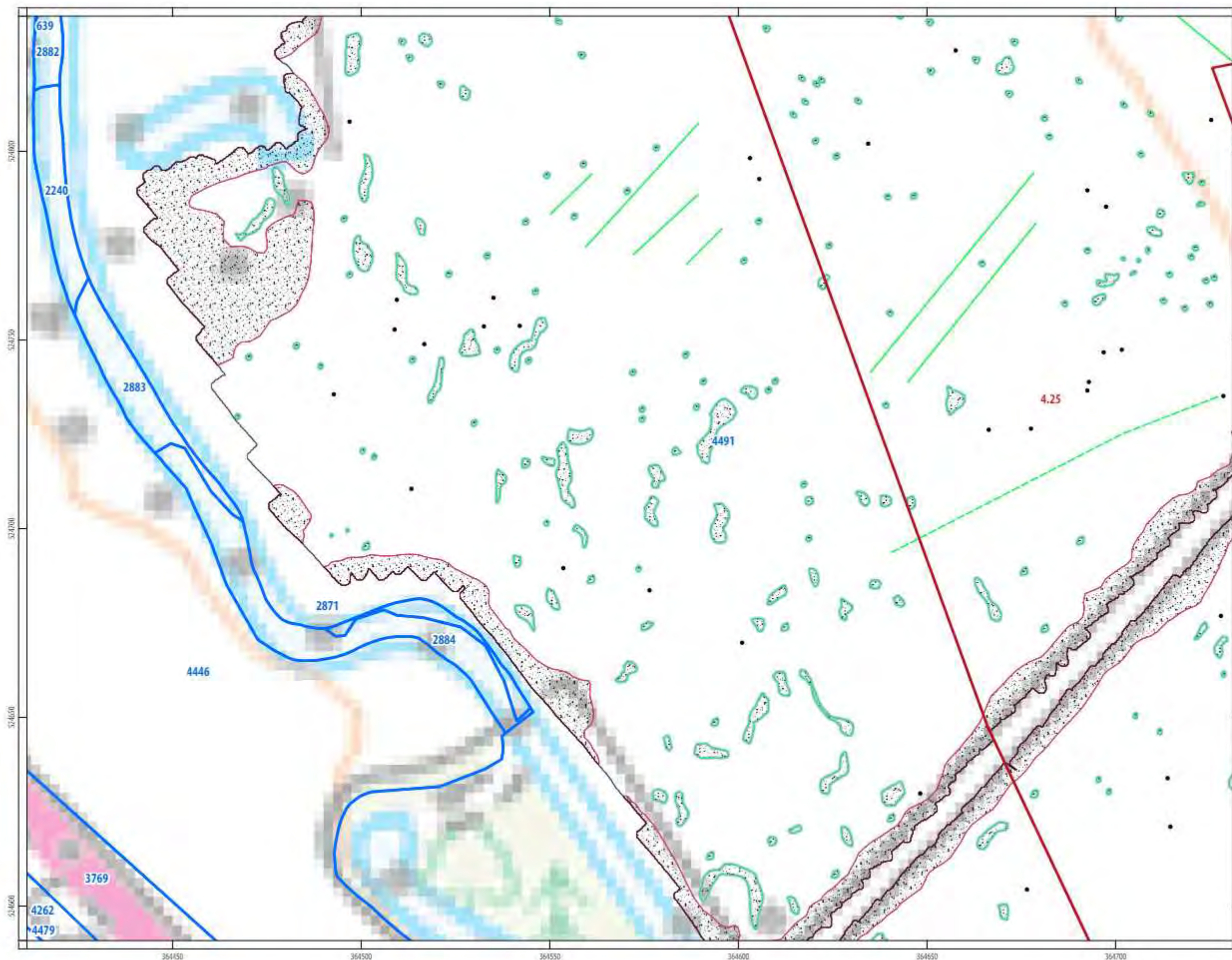
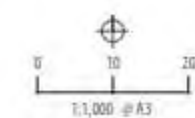
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

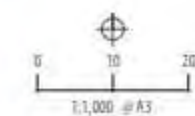
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 726 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

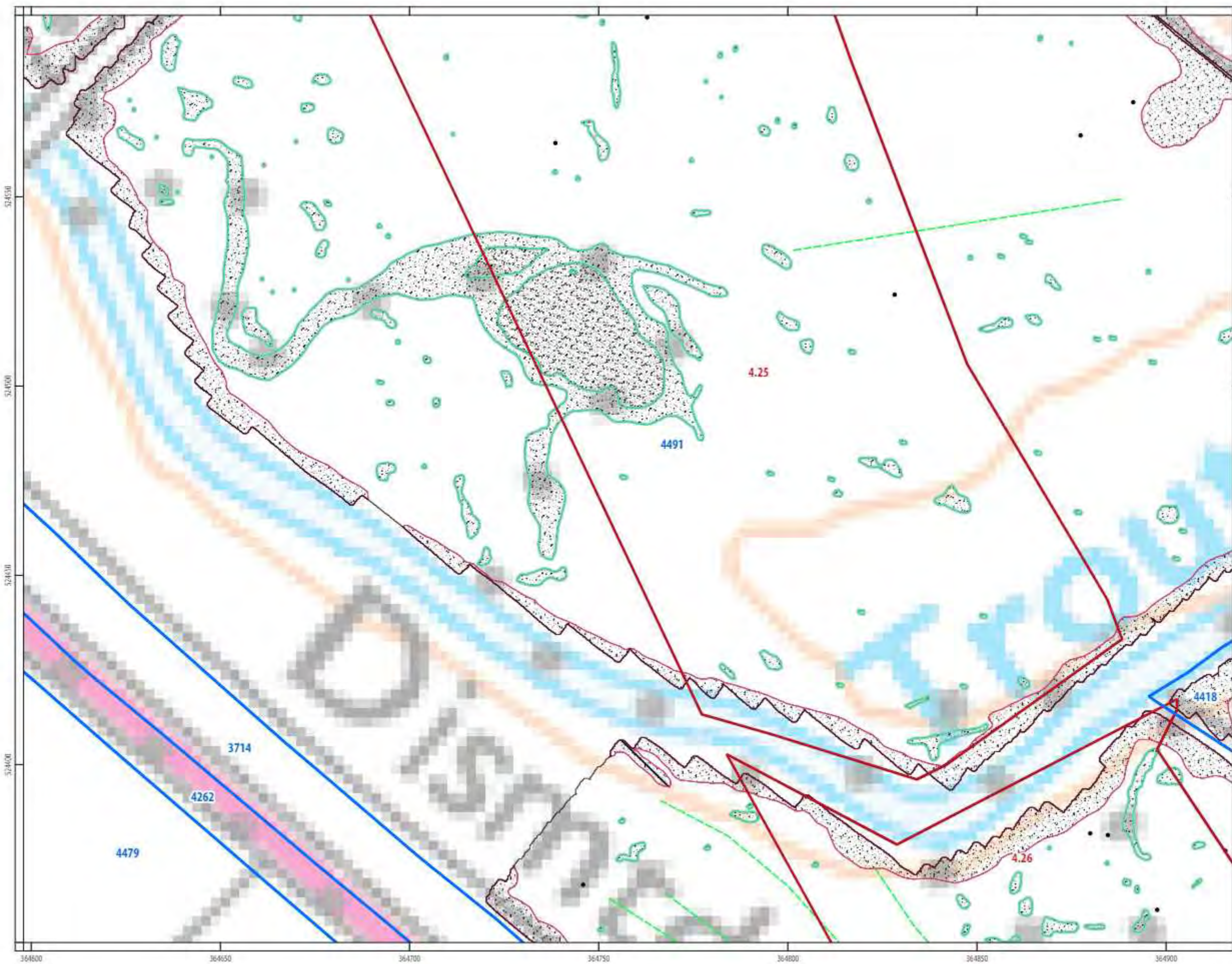
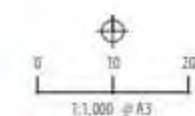
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 727 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

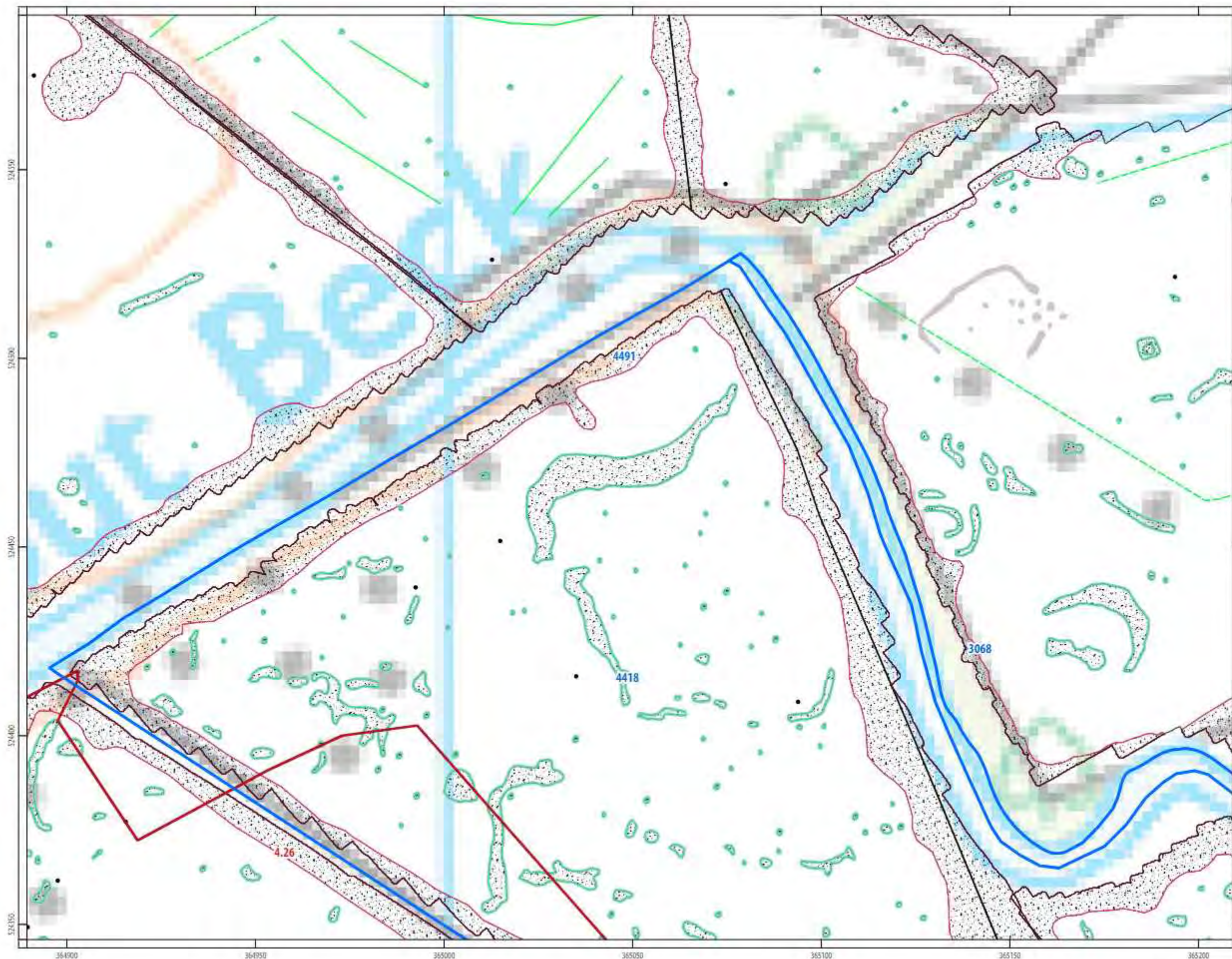
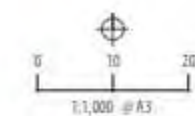
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 728 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 729 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

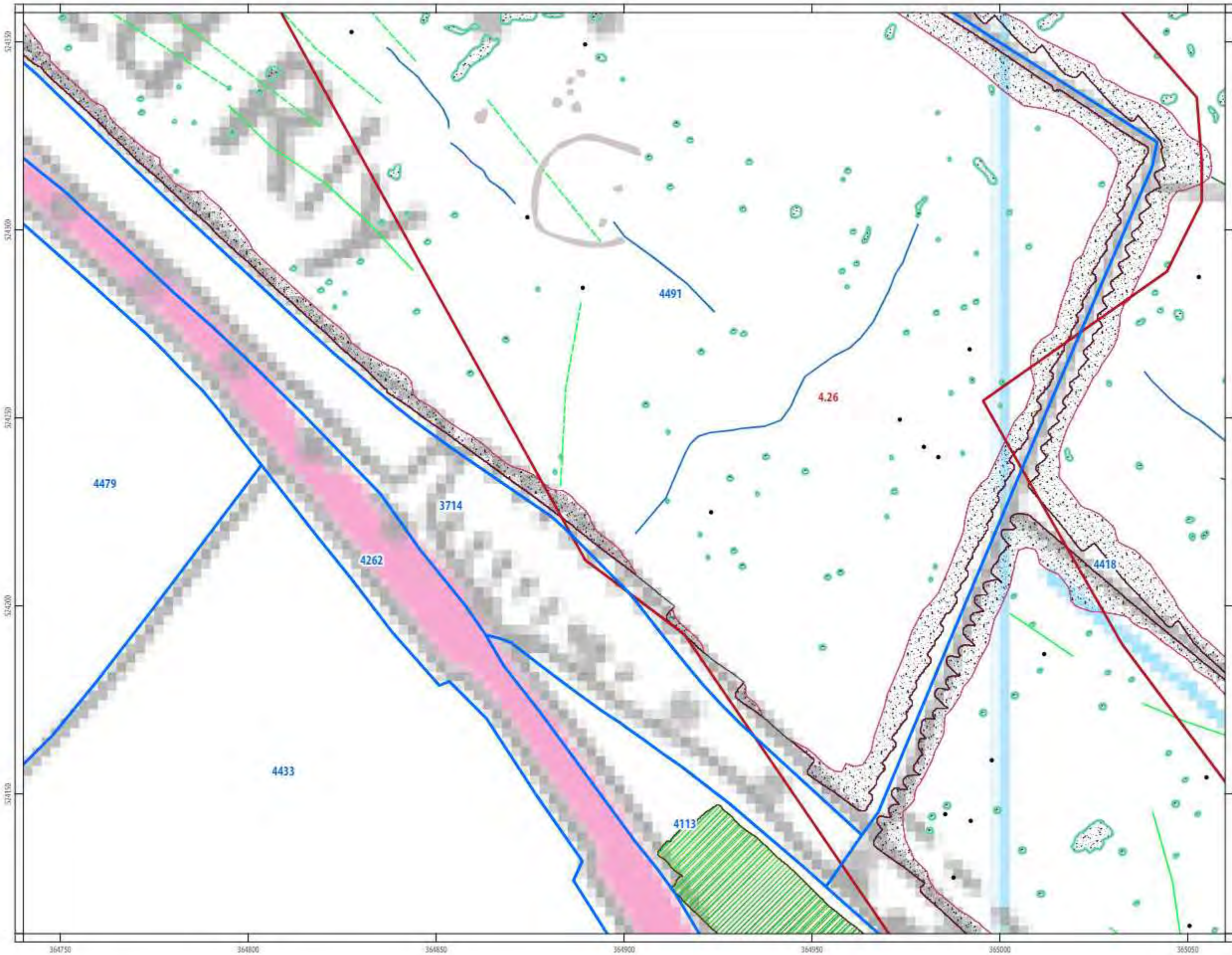
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

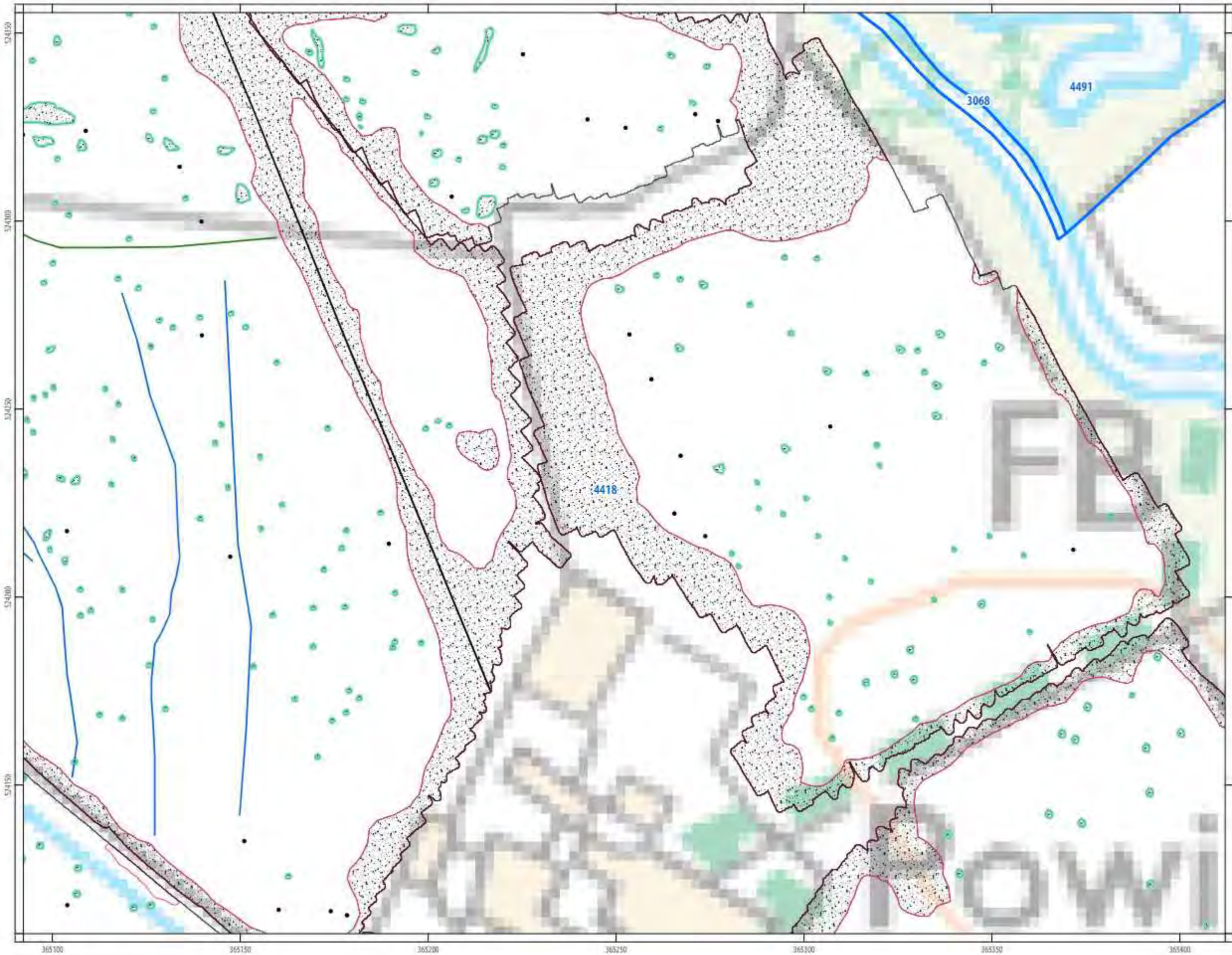
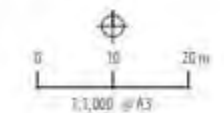
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 731 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

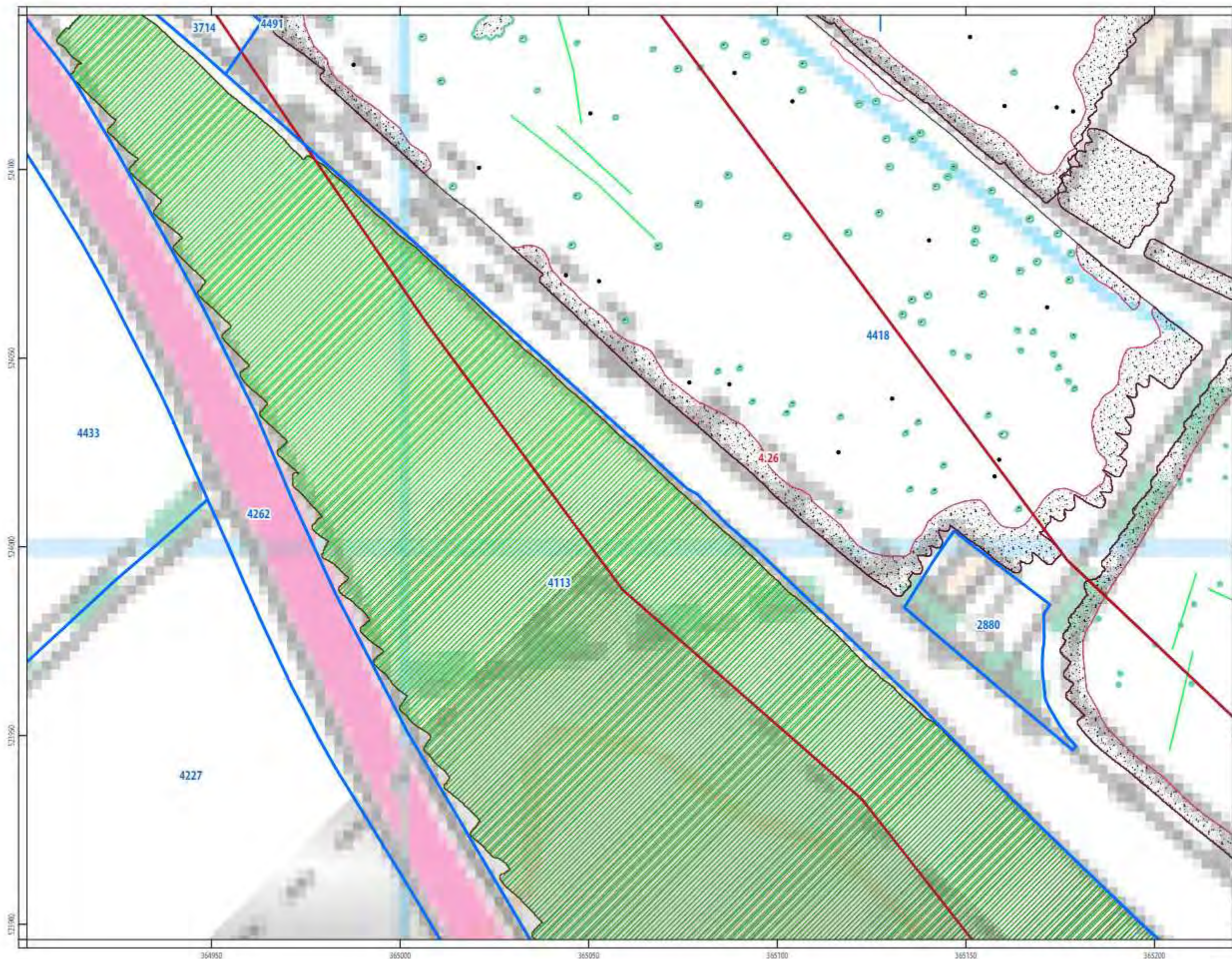
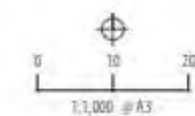
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 732 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

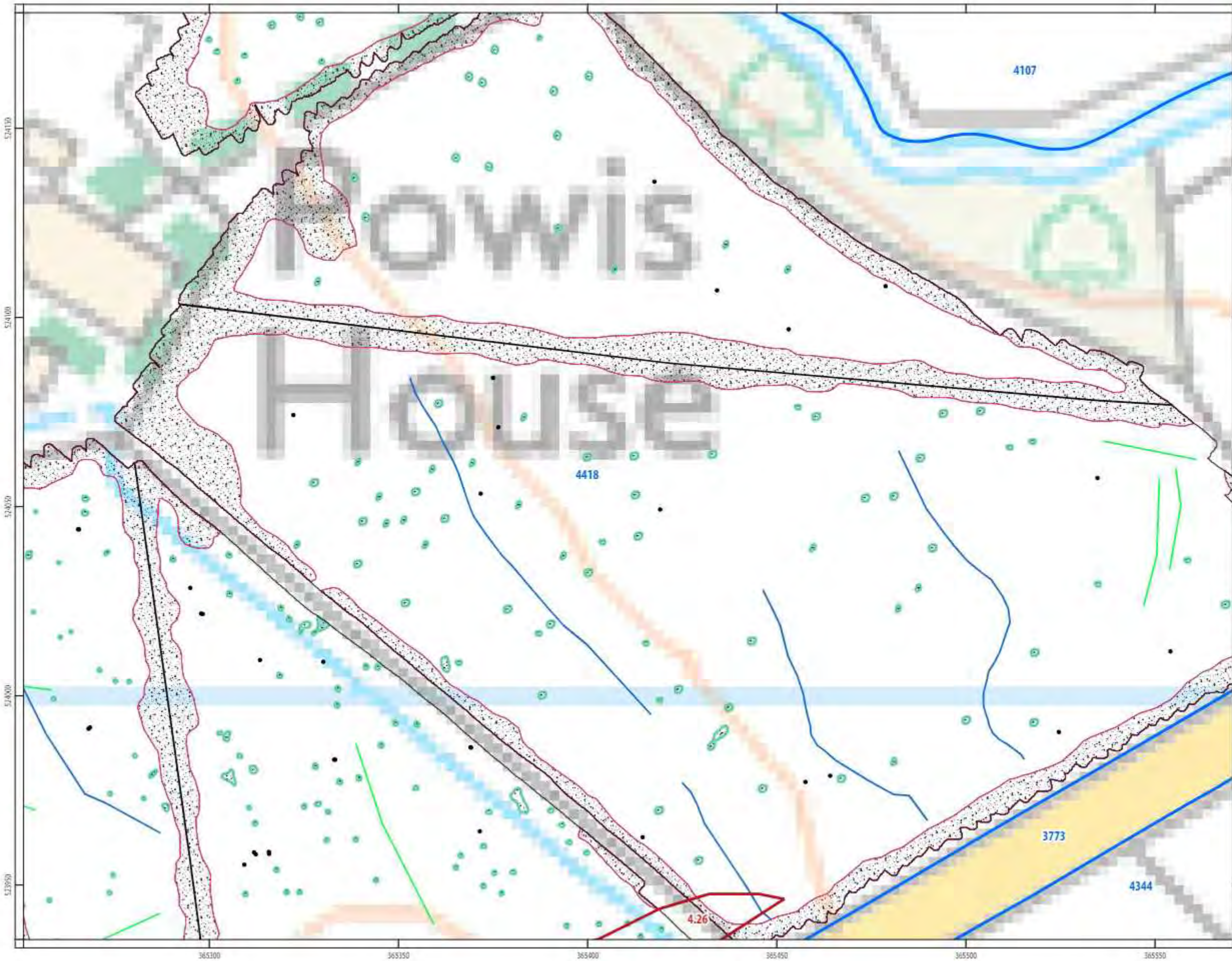
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 734 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

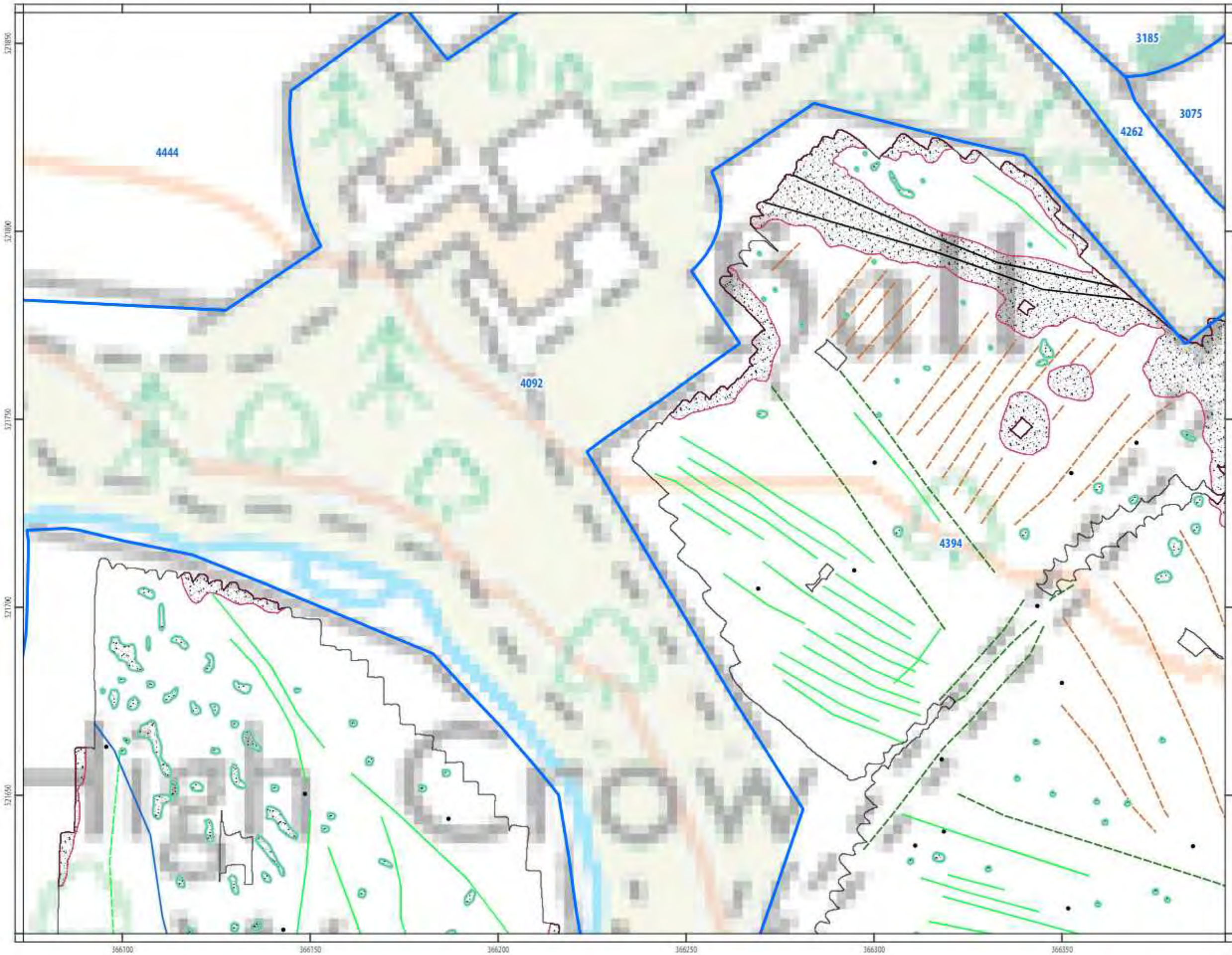
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 735 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

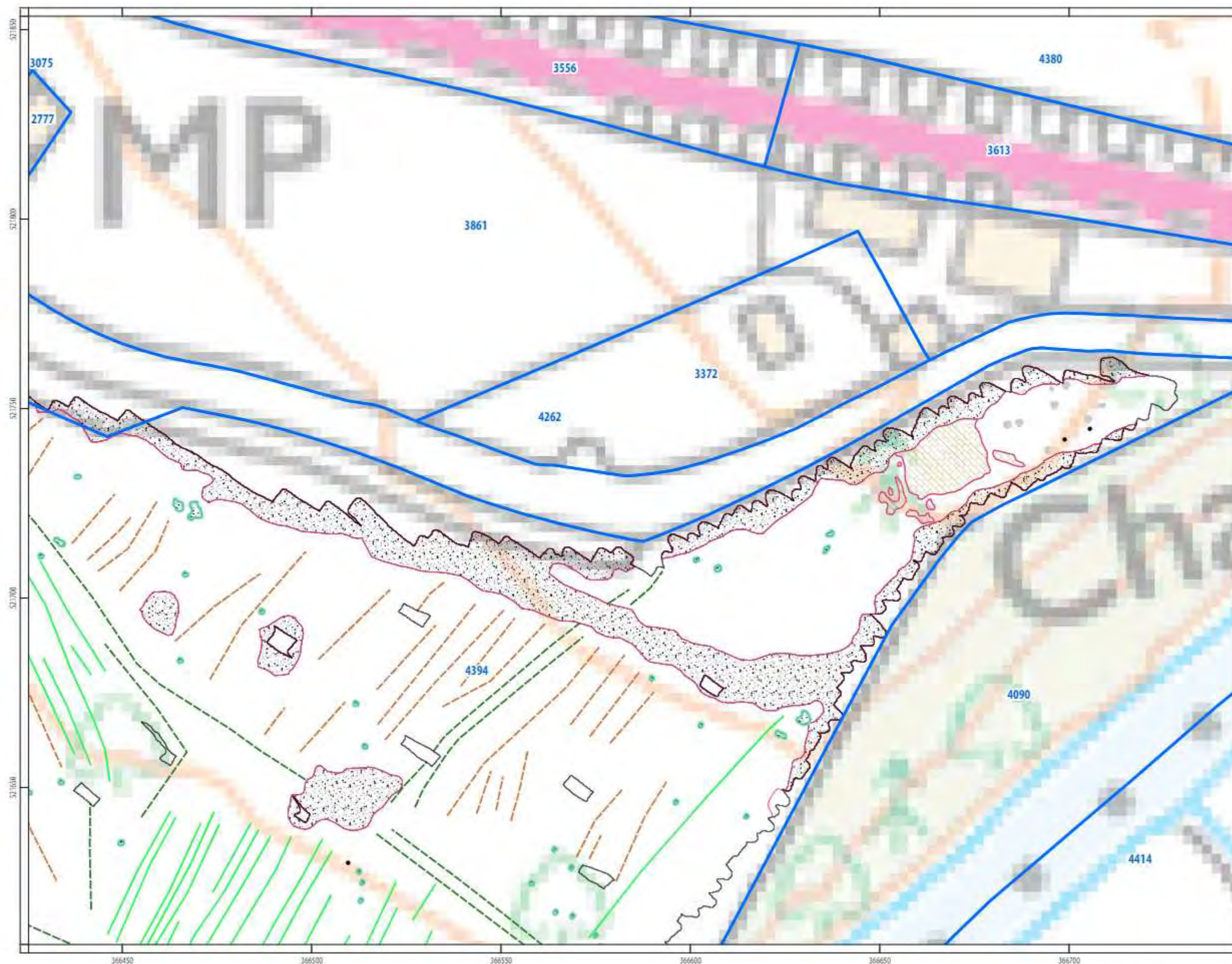
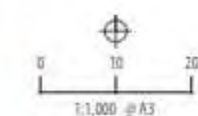
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 736 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

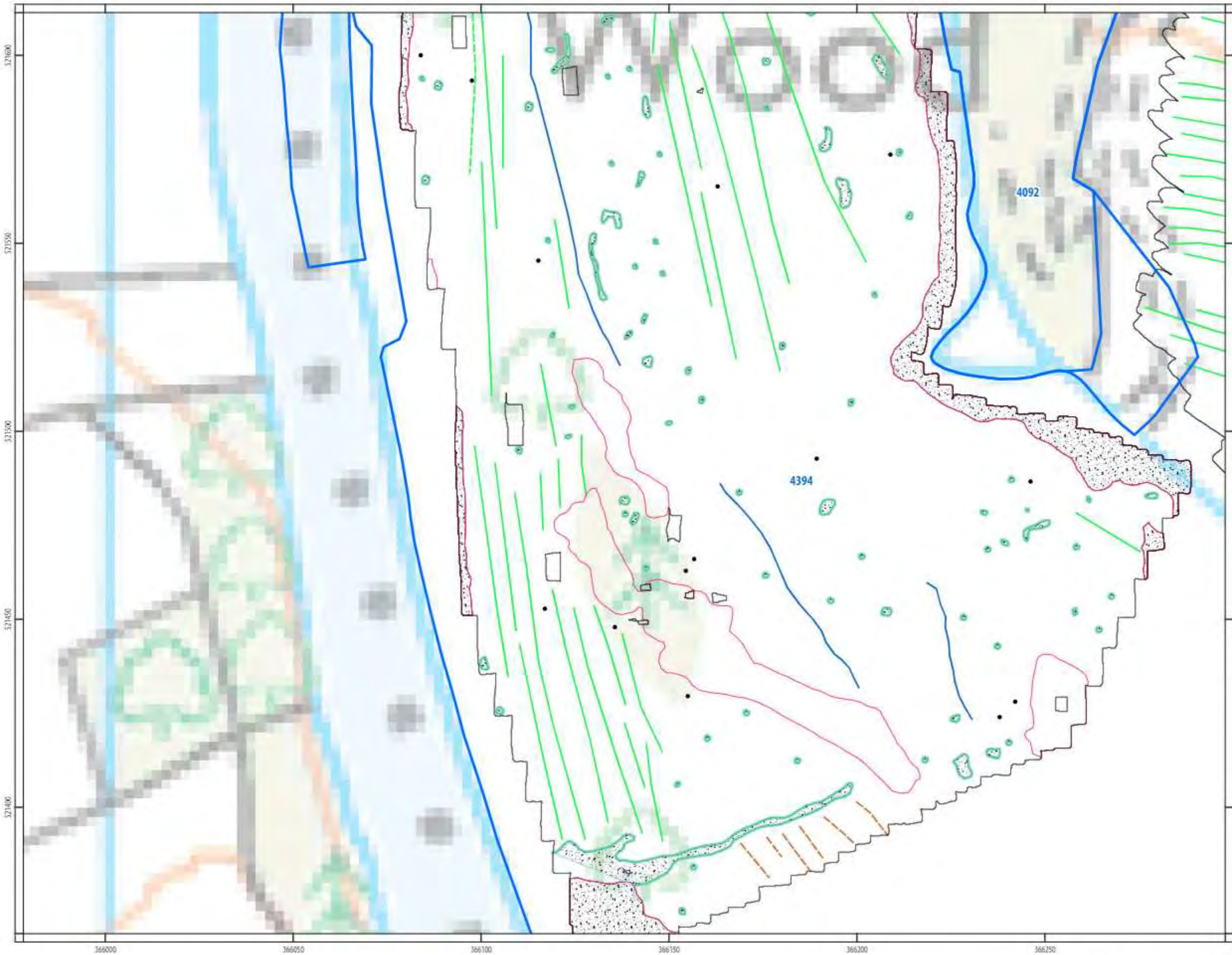
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

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**Phase 2 Survey**

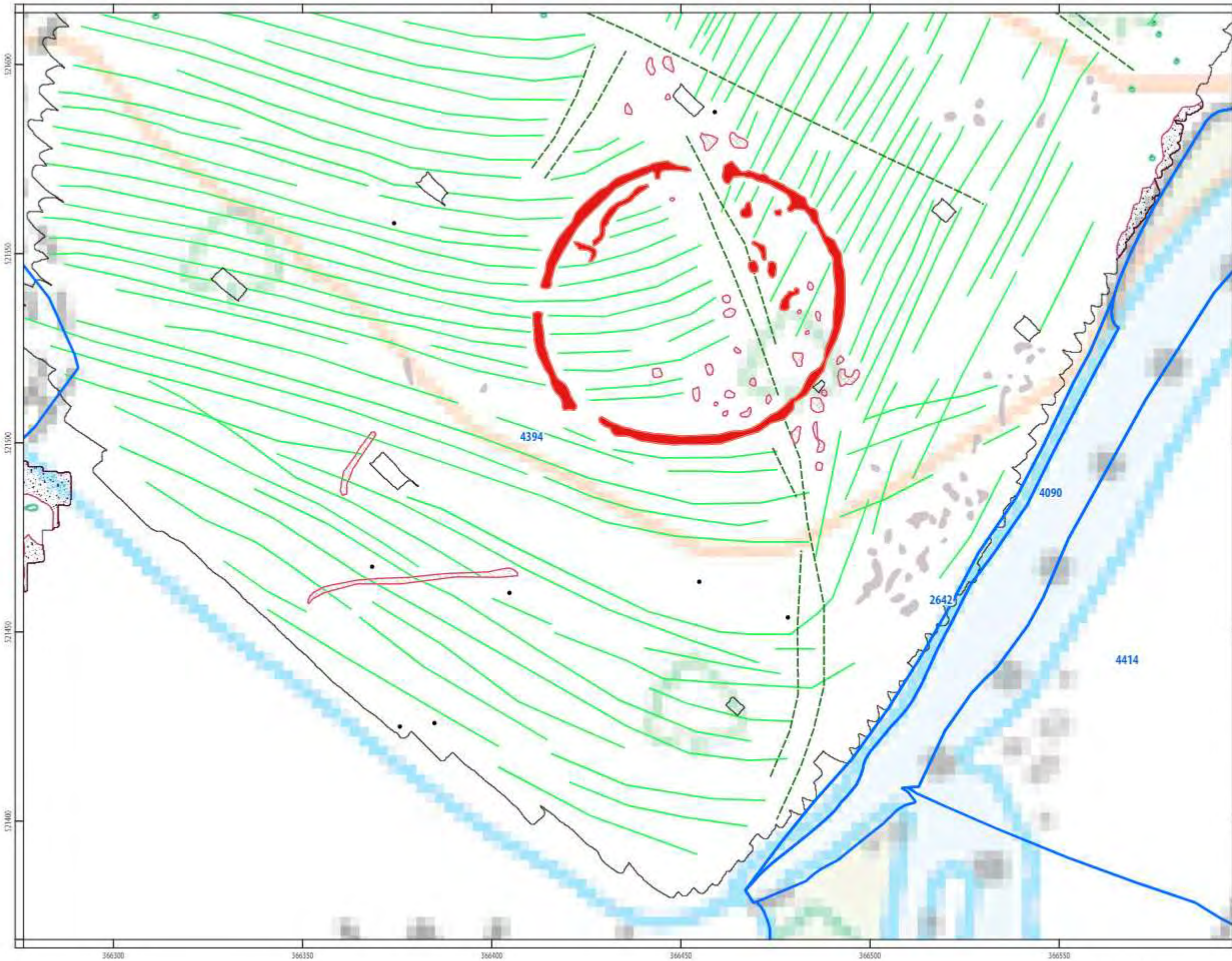
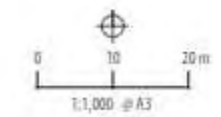
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

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ILLUS 738 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

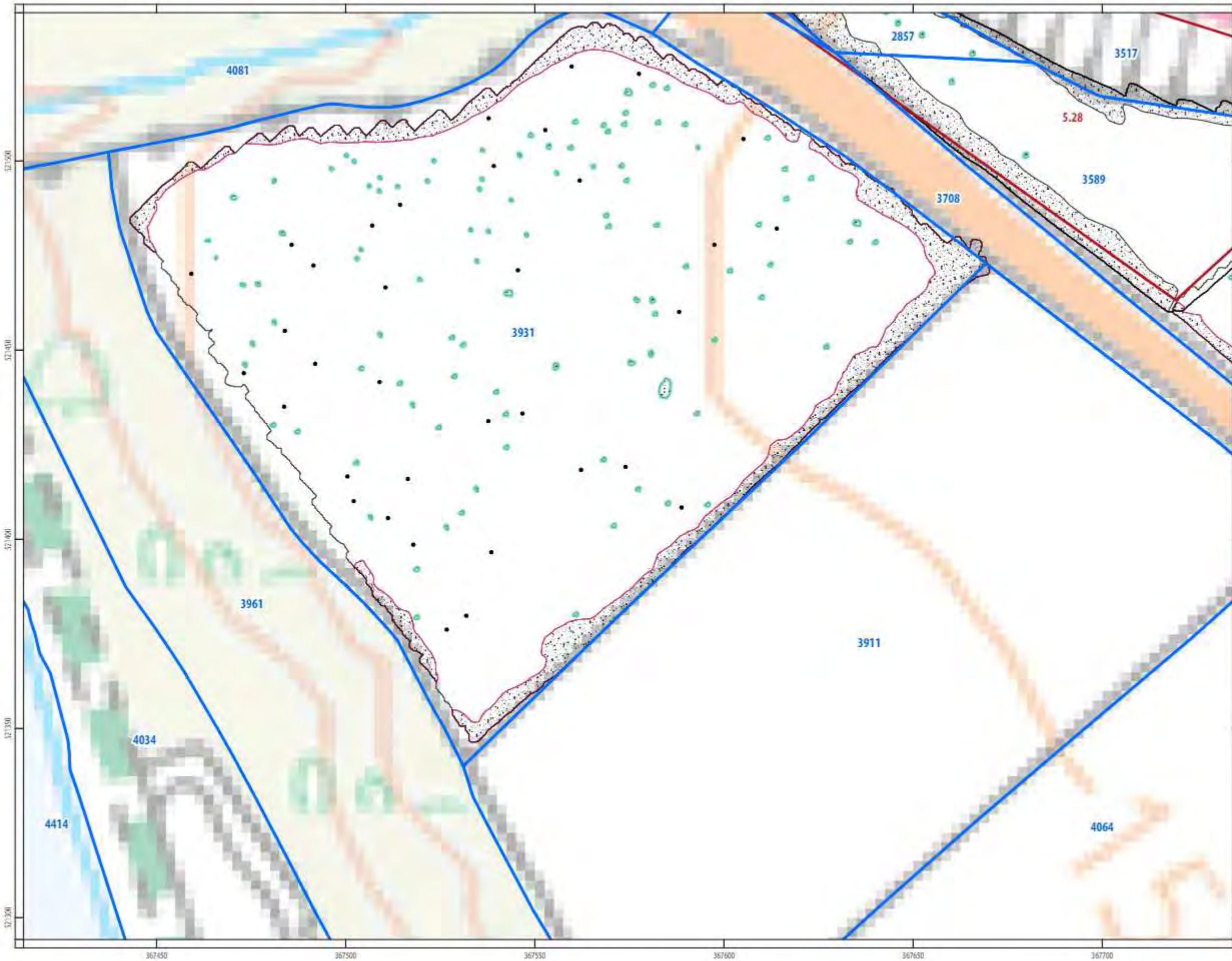
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 739 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

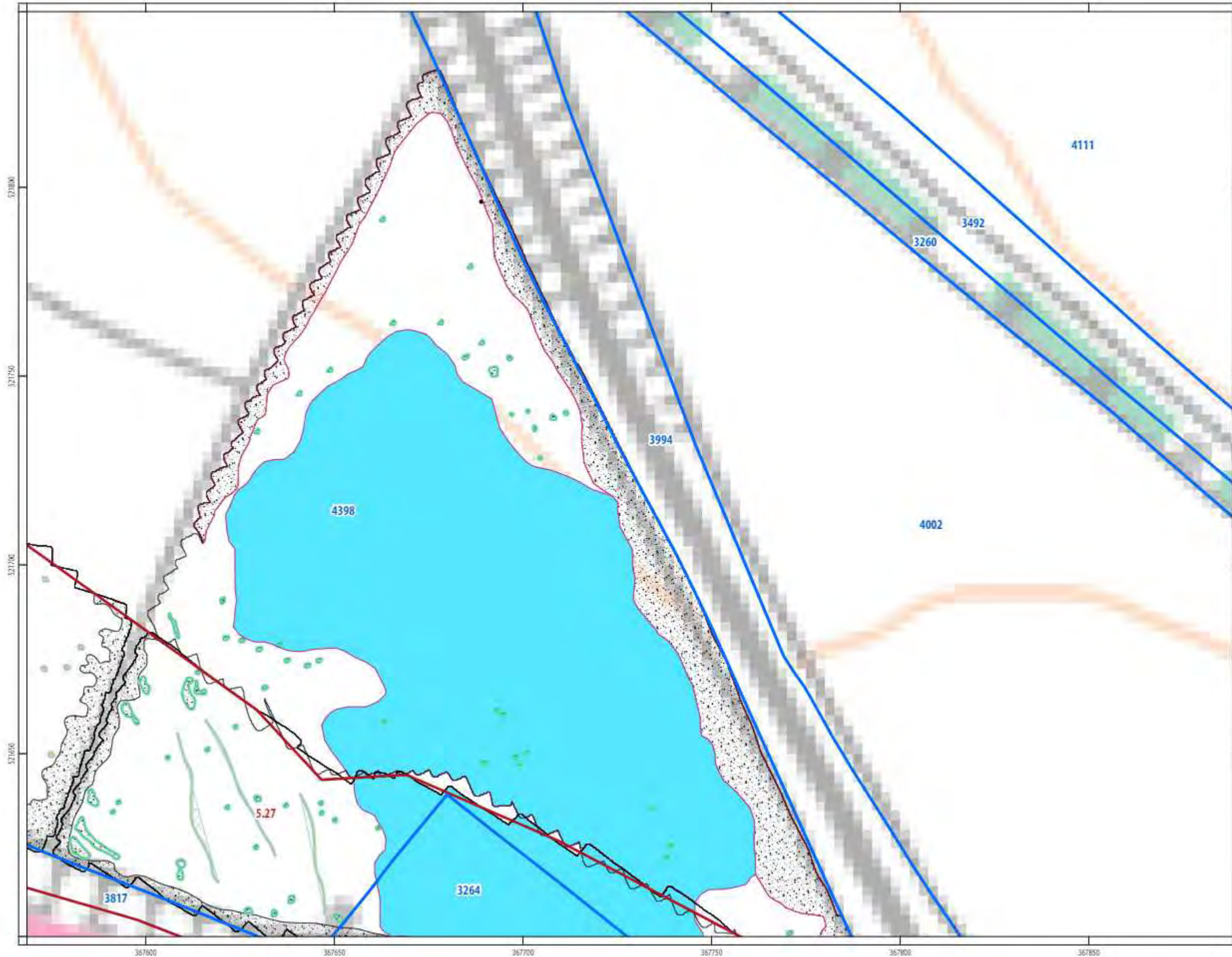
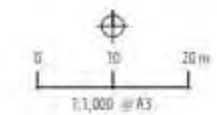
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 740 Interpretation of processed magnetometer data; Temple Sowerby to Appleby



**Phase 2 Survey**

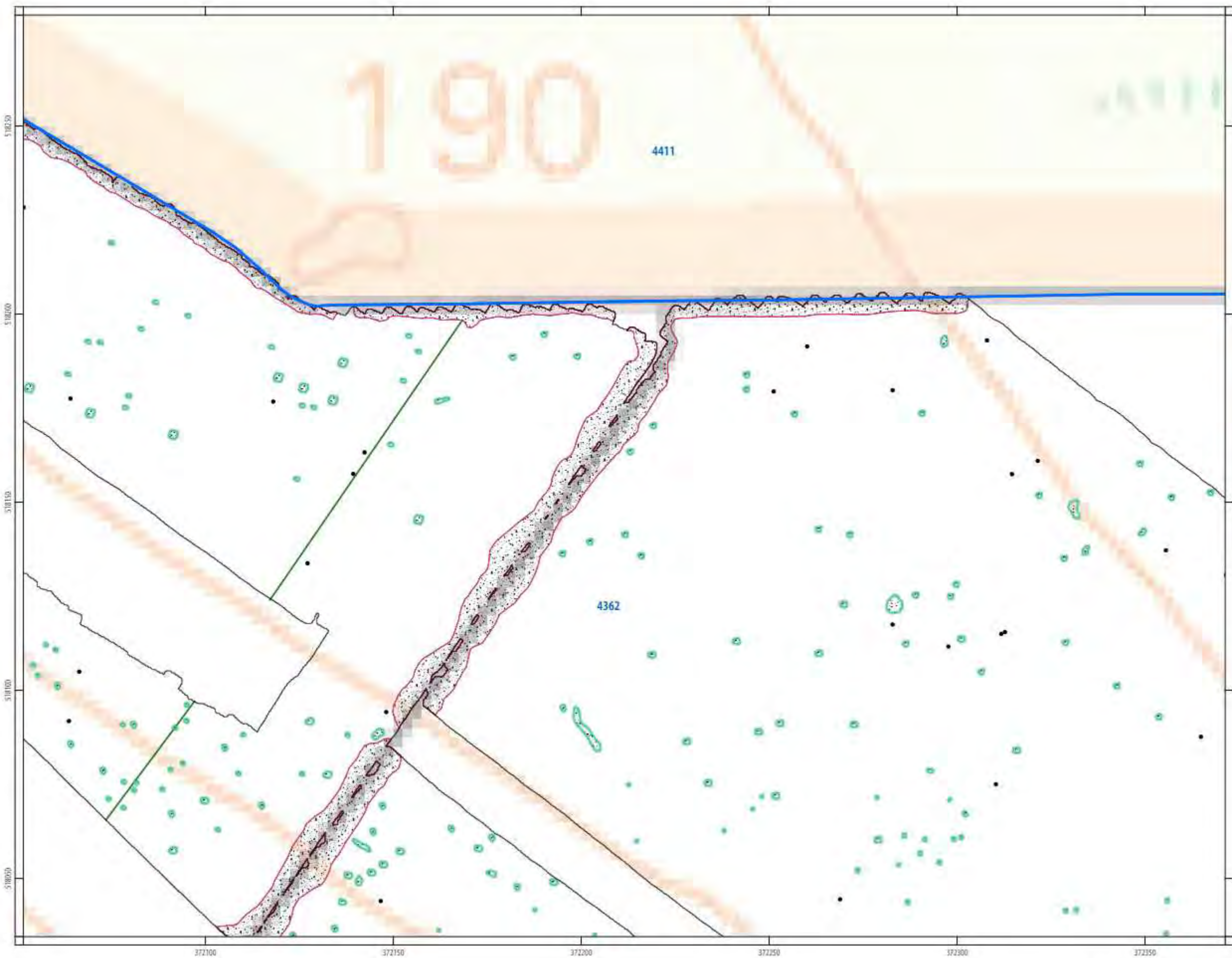
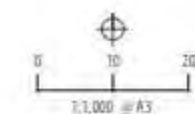
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

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ILLUS 741 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

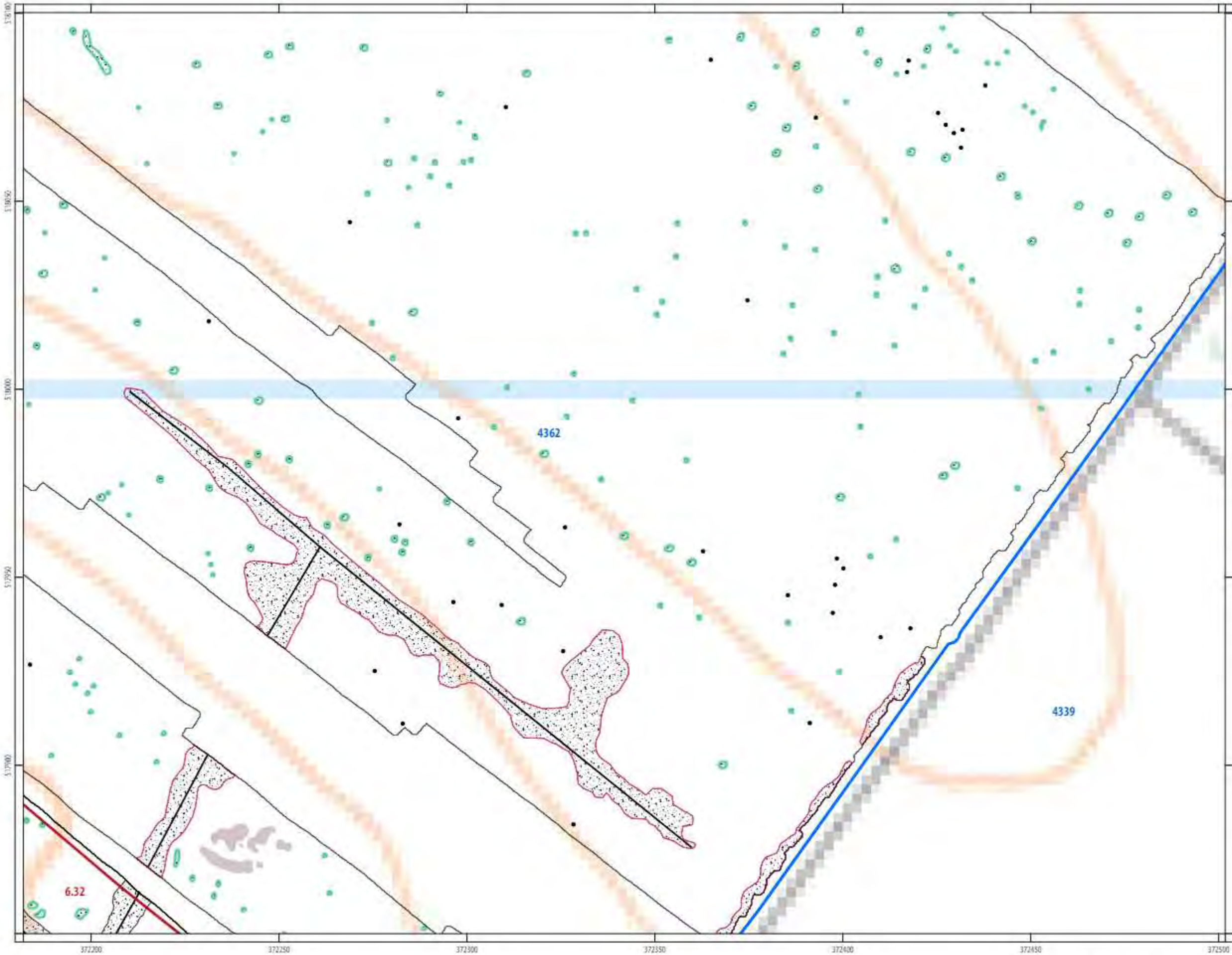
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 742 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

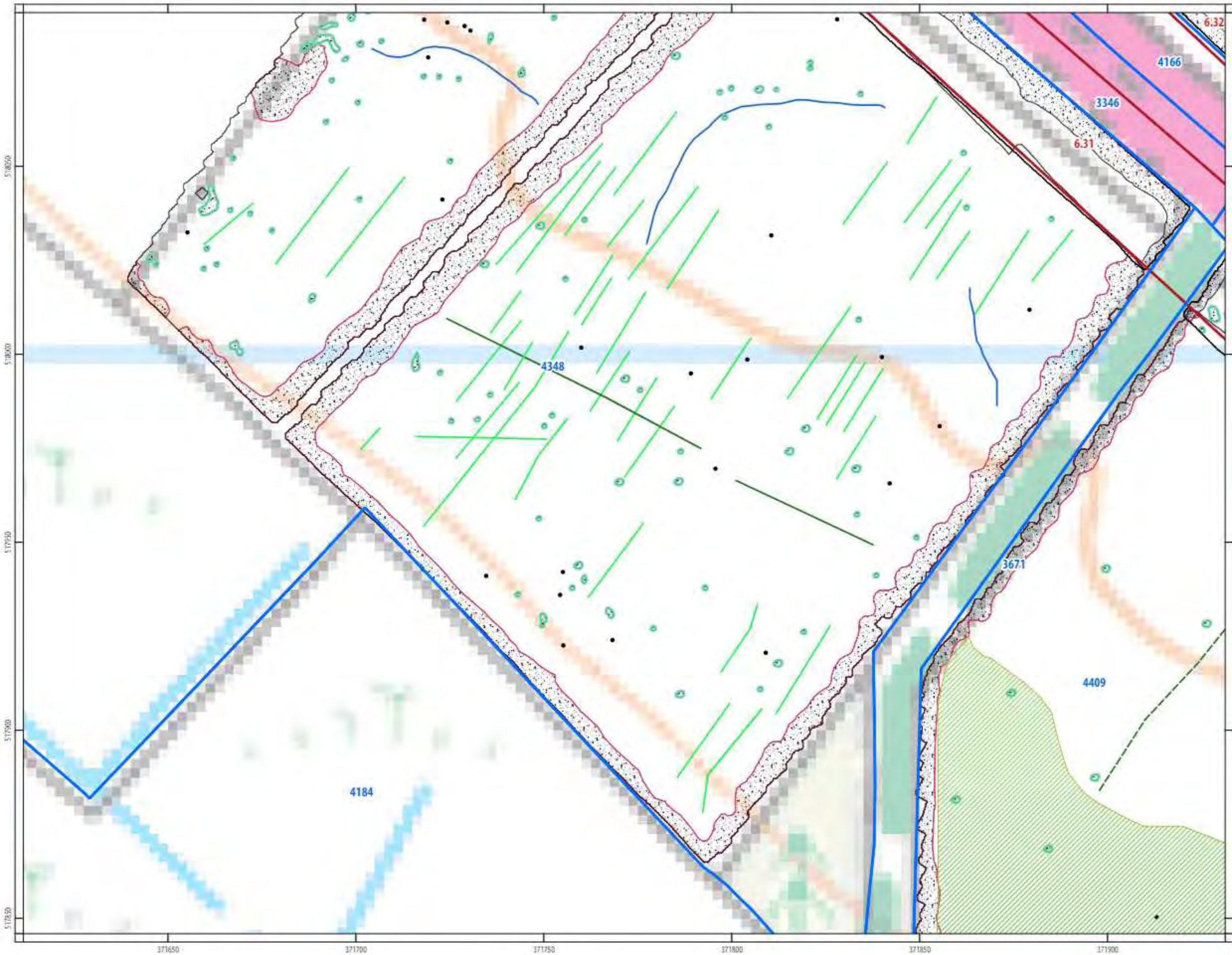
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 743 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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**Phase 2 Survey**

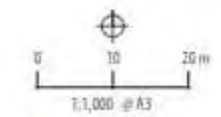
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

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ILLUS 745 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

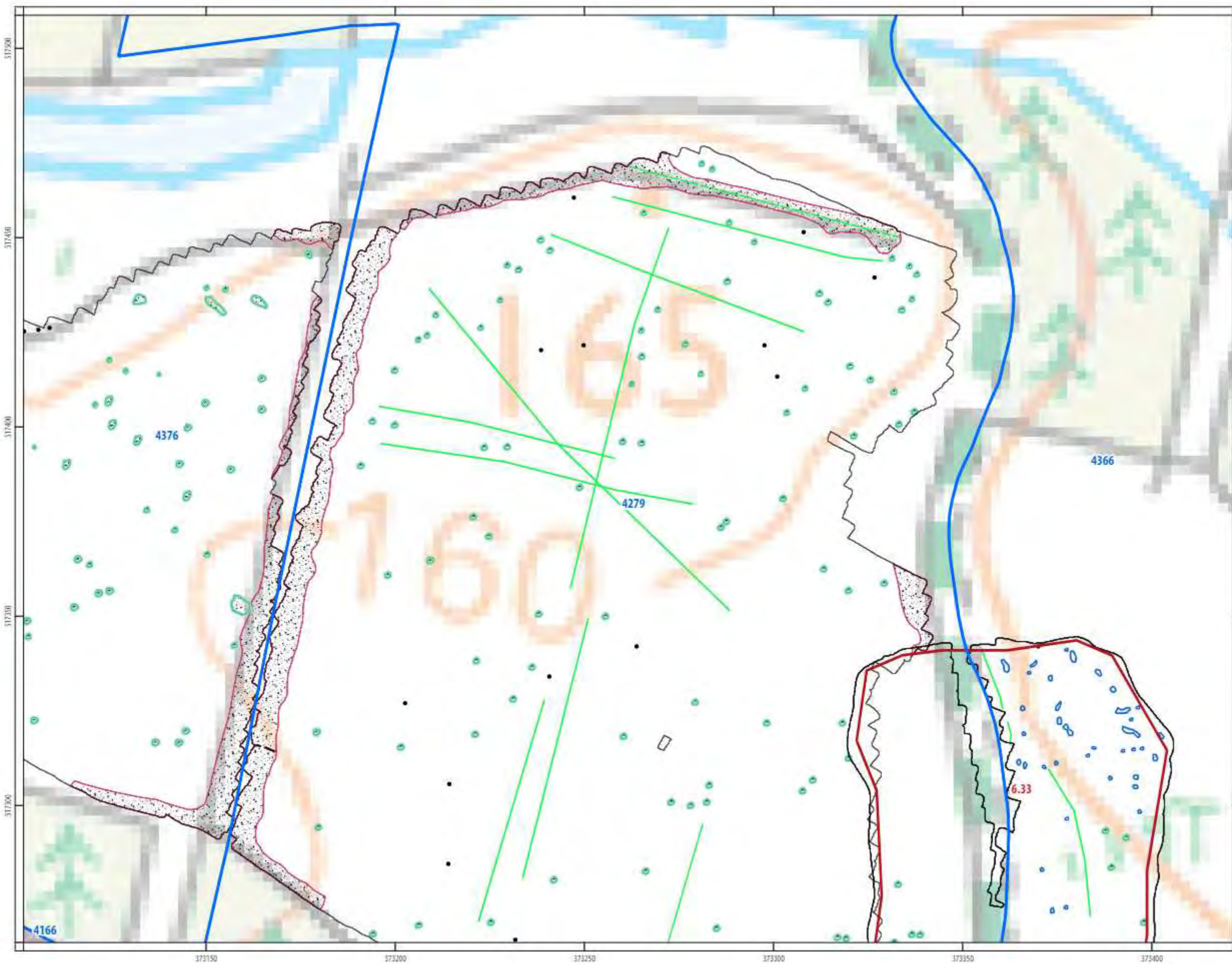
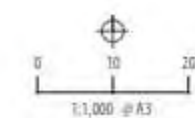
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

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ILLUS 746 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

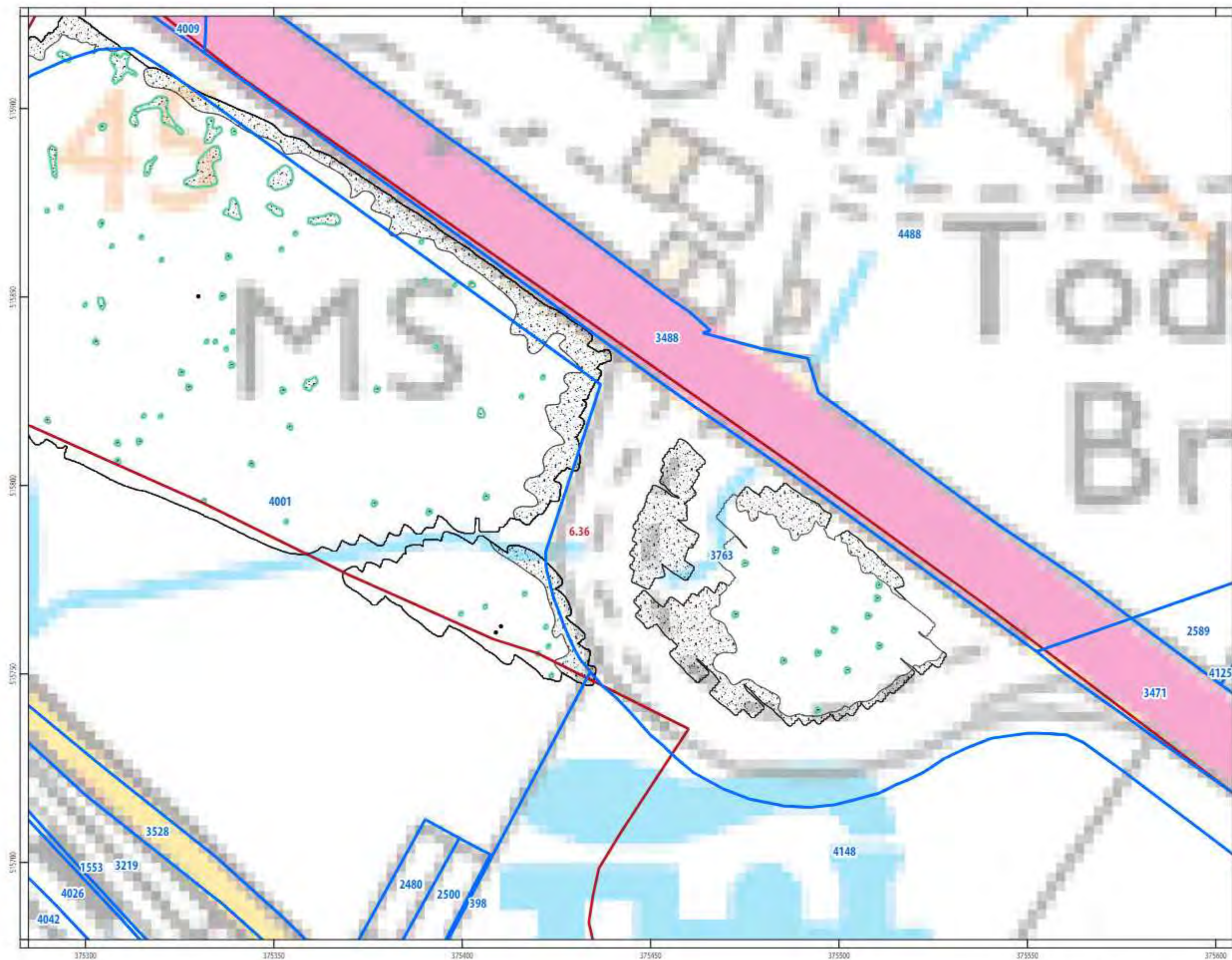
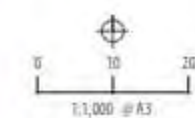
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 747 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

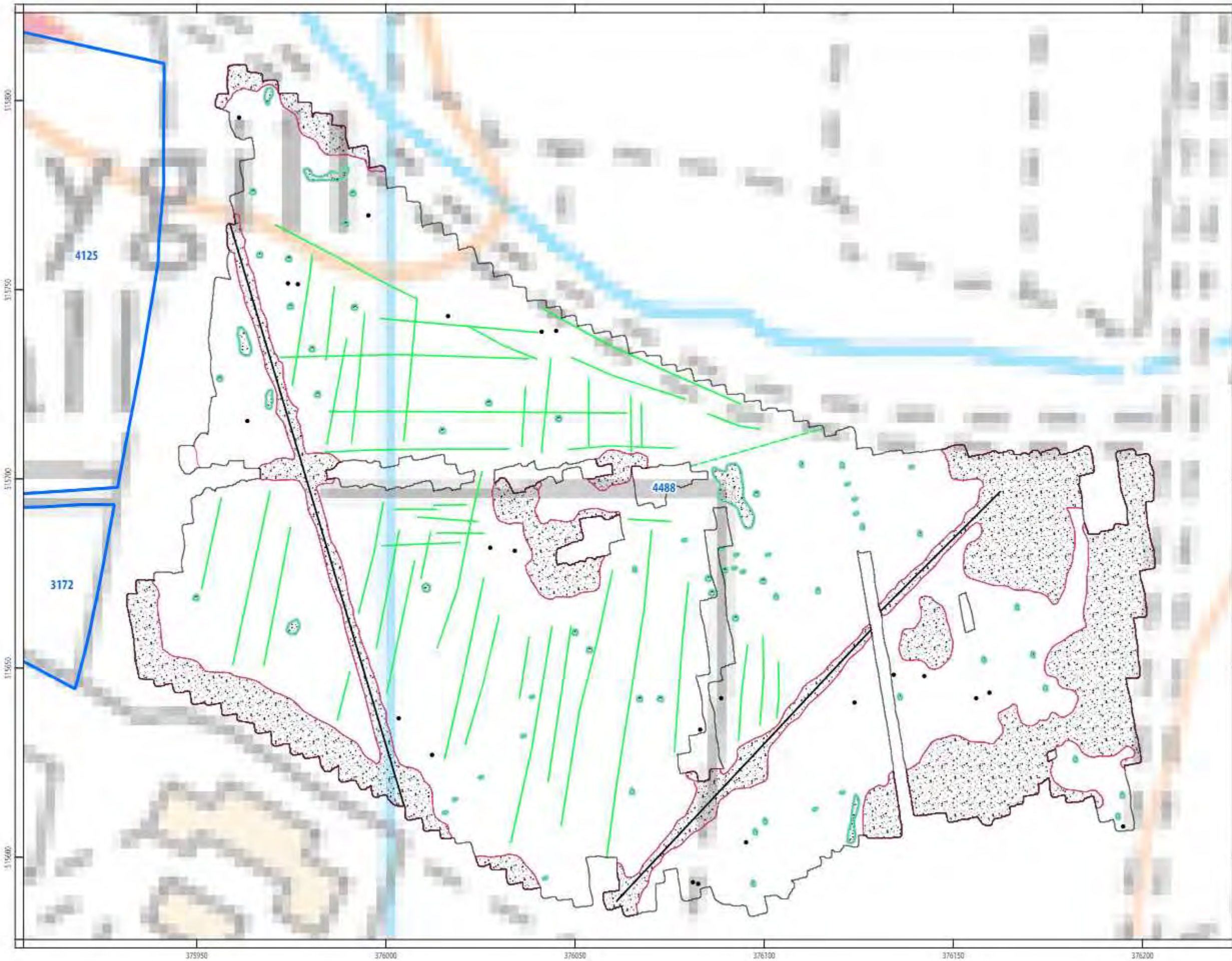
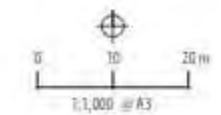
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 748 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

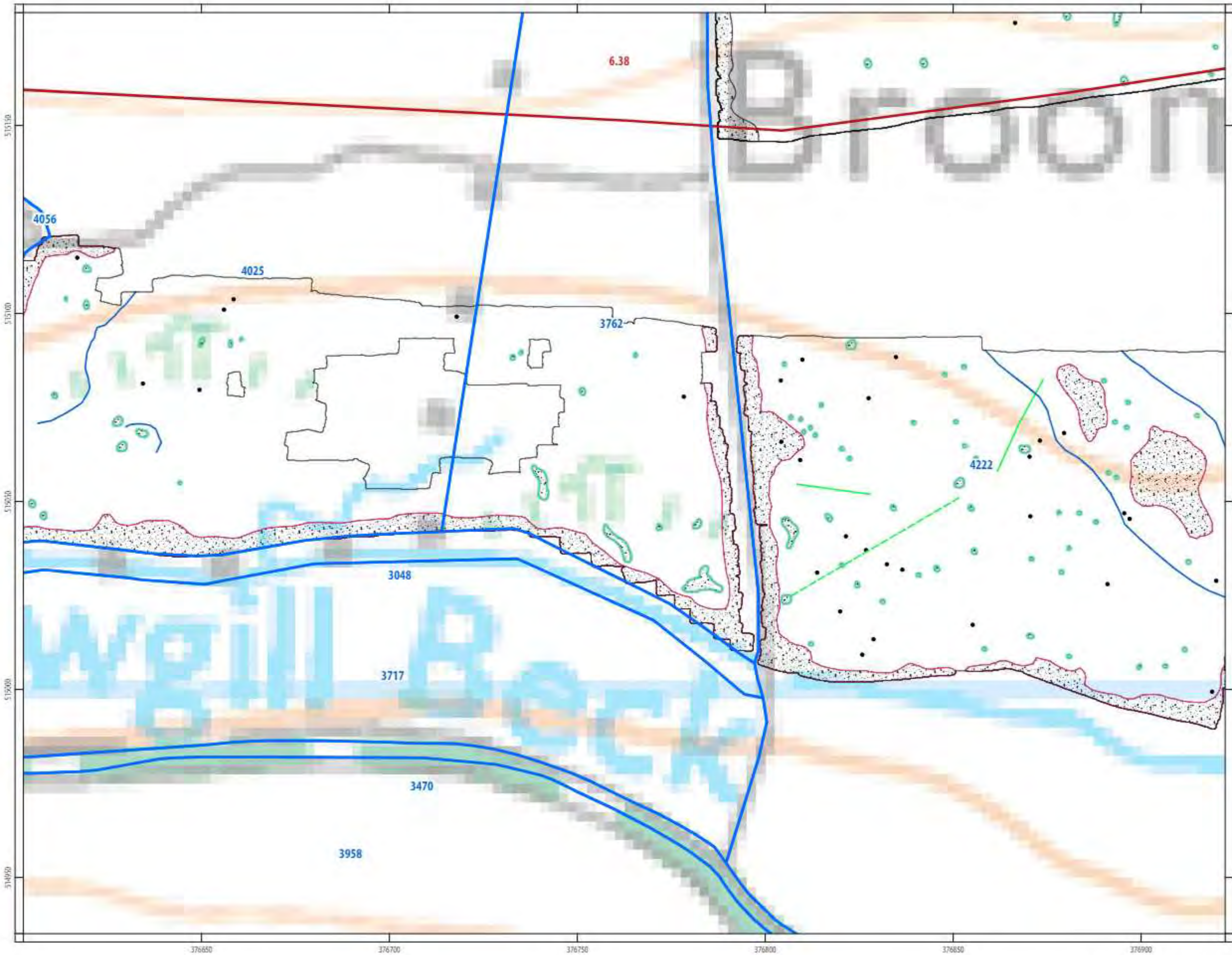
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

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ILLUS 749 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

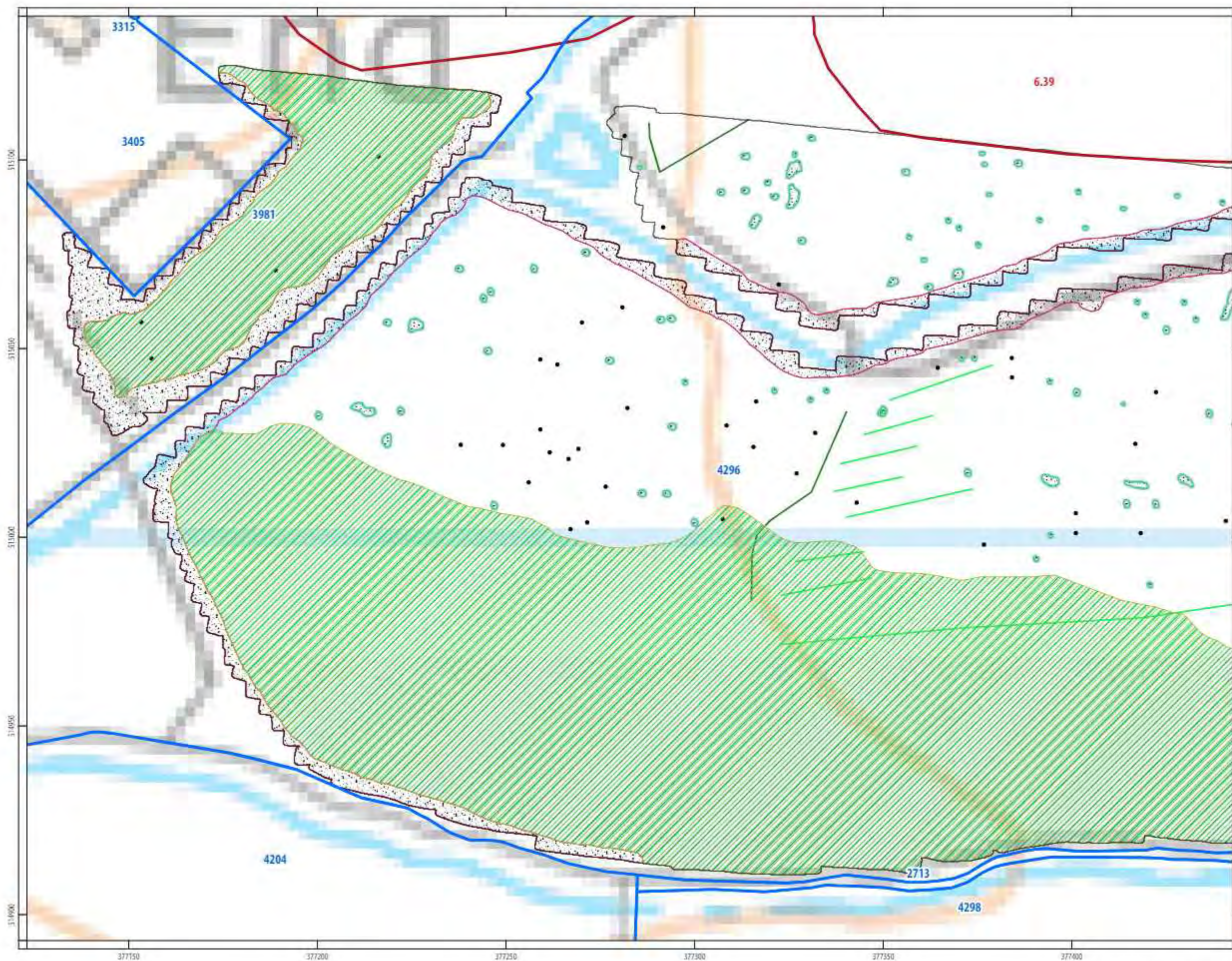
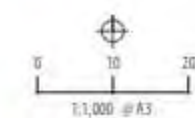
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar/linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 750 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

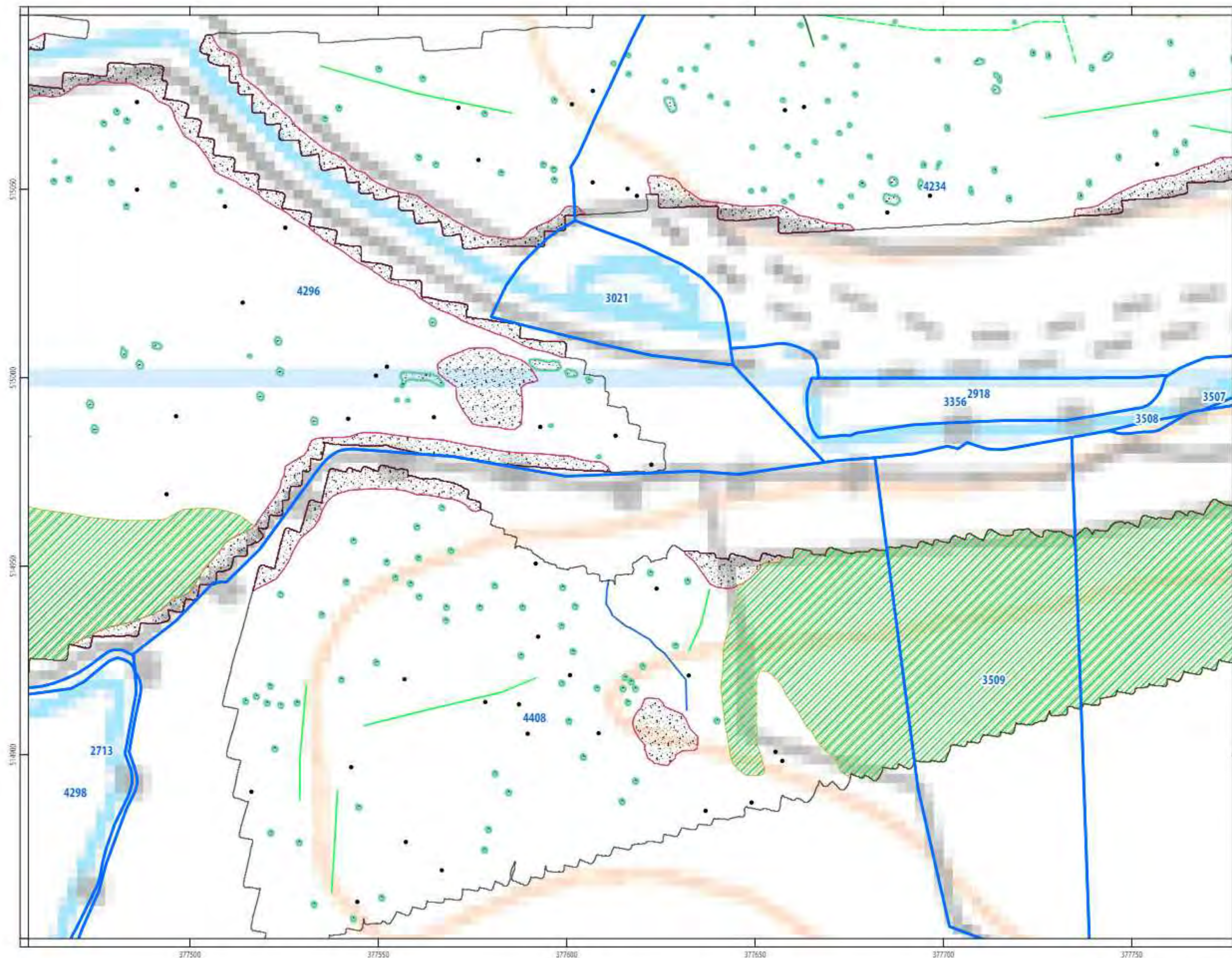
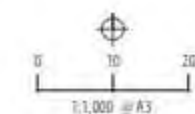
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 751 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

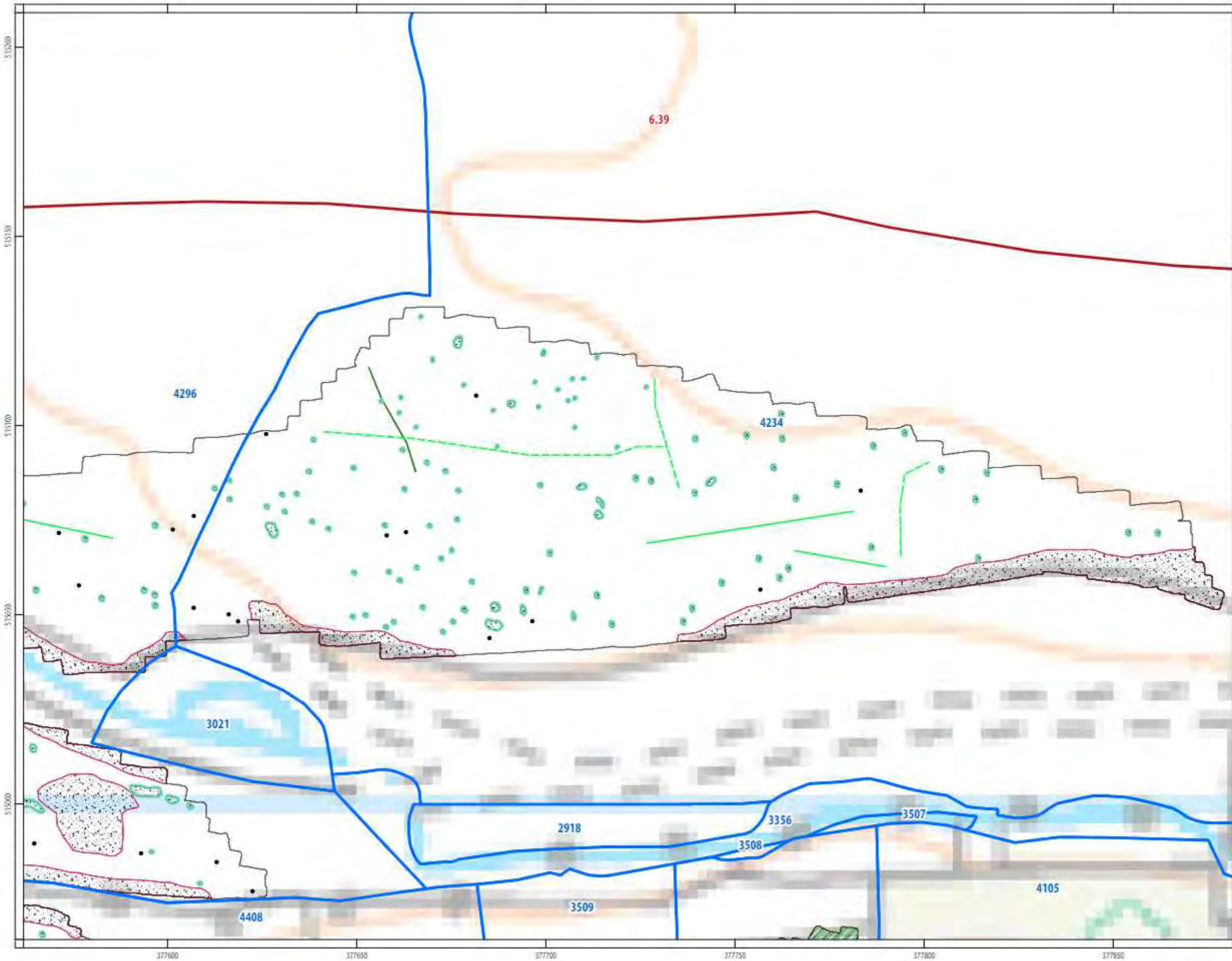
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 752 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

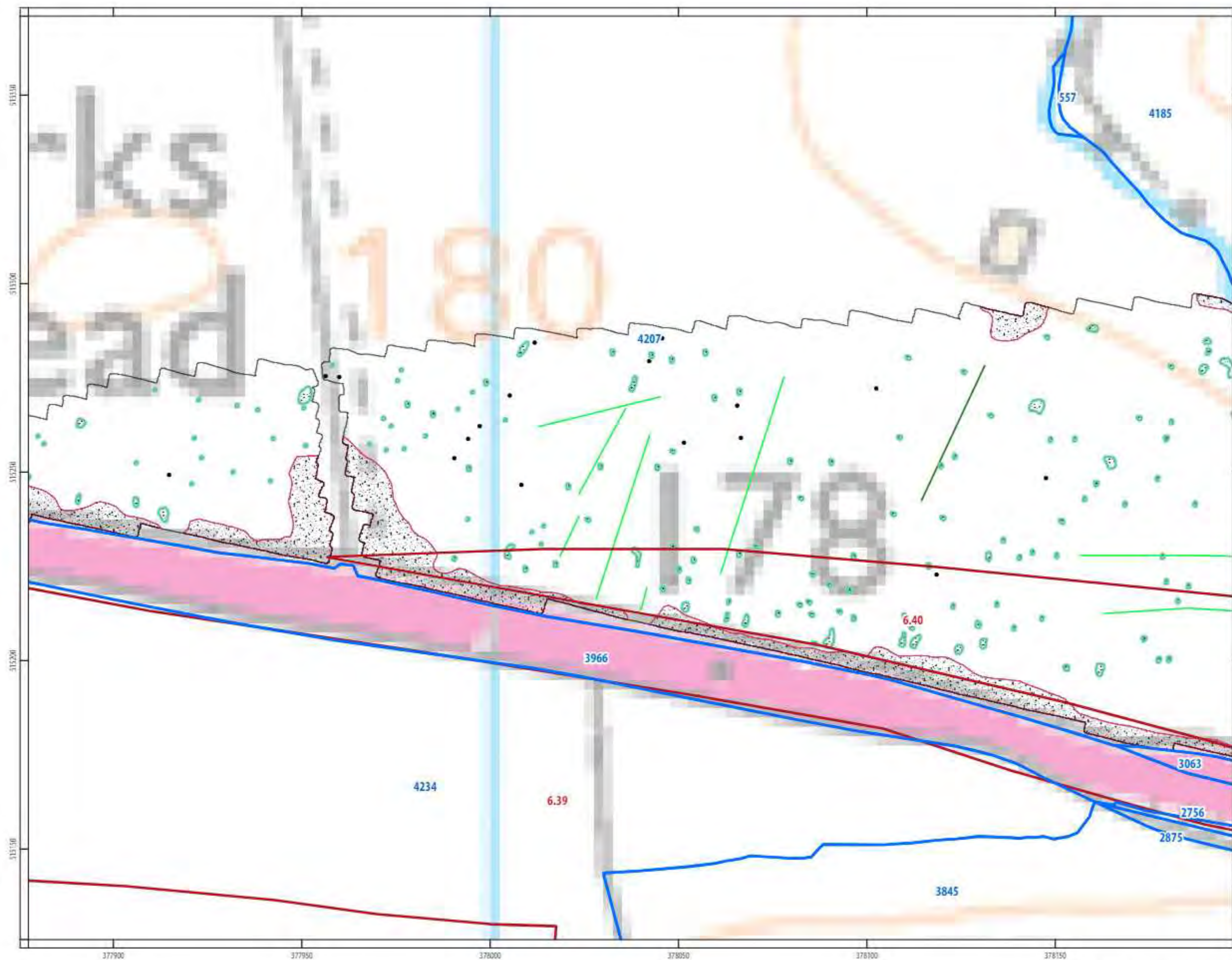
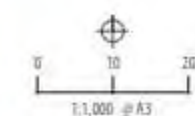
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 753 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

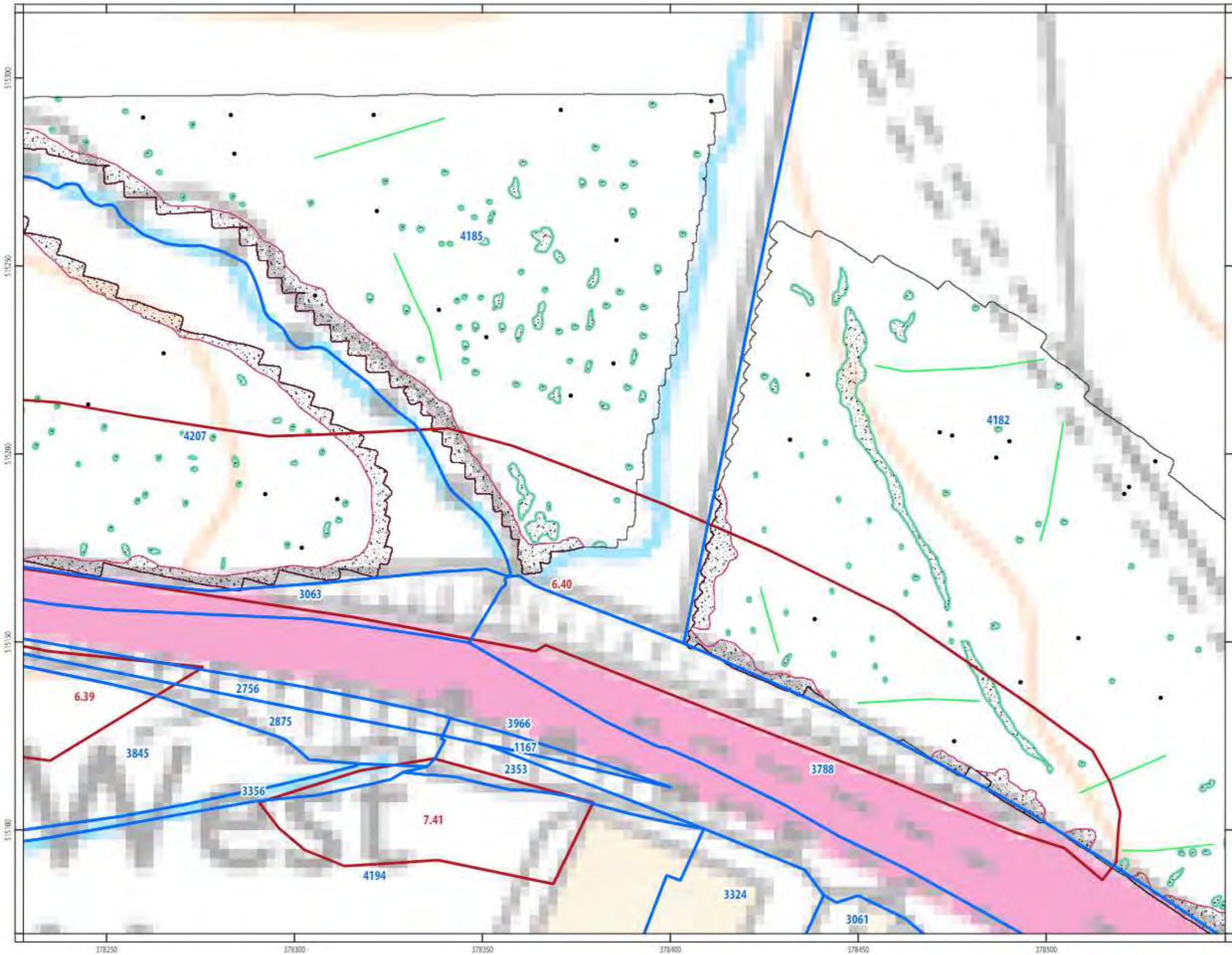
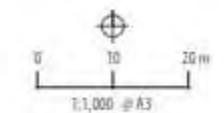
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 754 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

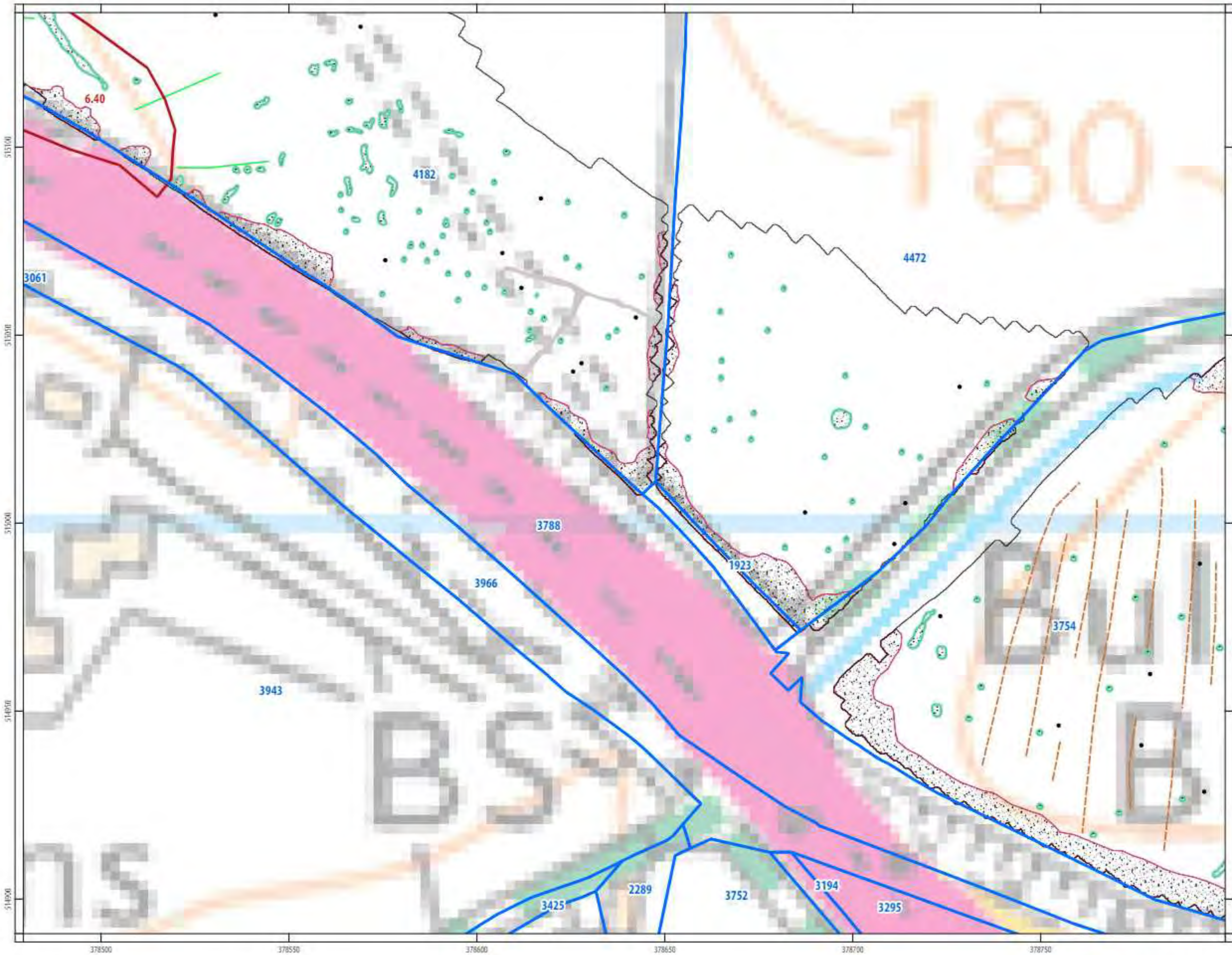
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology/
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 755 Interpretation of processed magnetometer data; Appleby to Brough (Warcop)



**Phase 2 Survey**

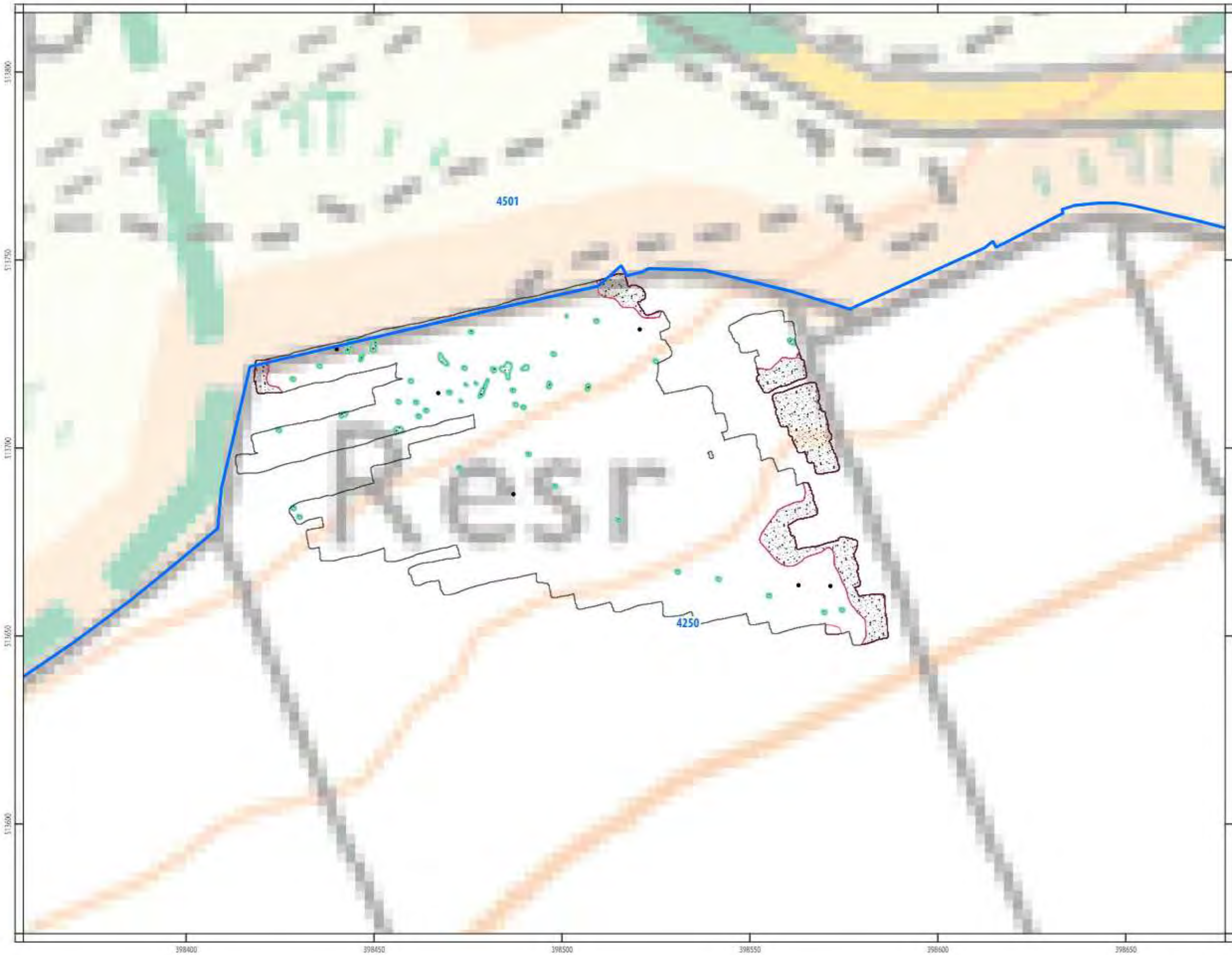
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 756 Interpretation of processed magnetometer data; Bowes Bypass (A66/A67)



**Phase 2 Survey**

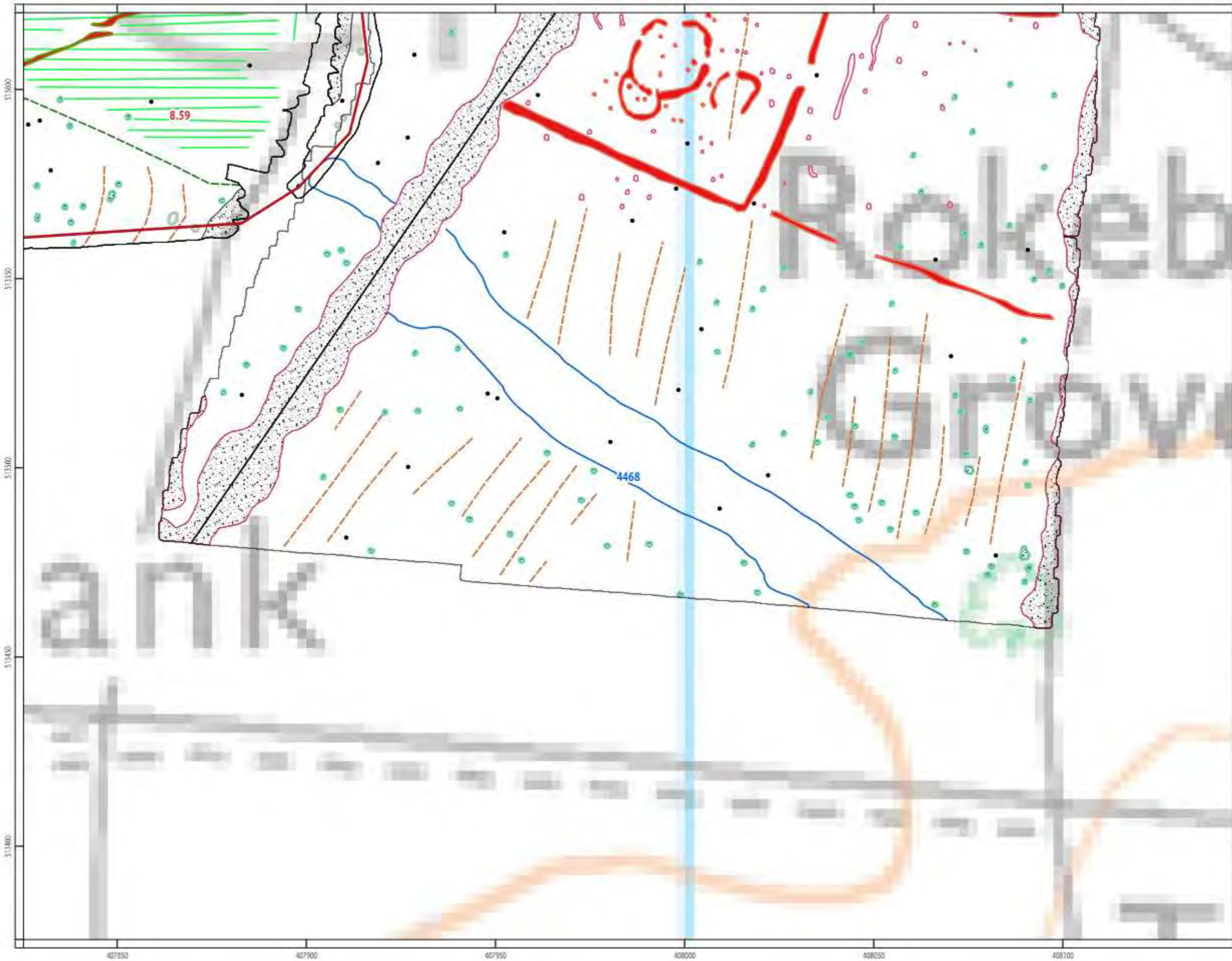
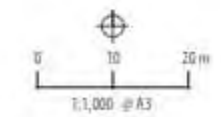
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

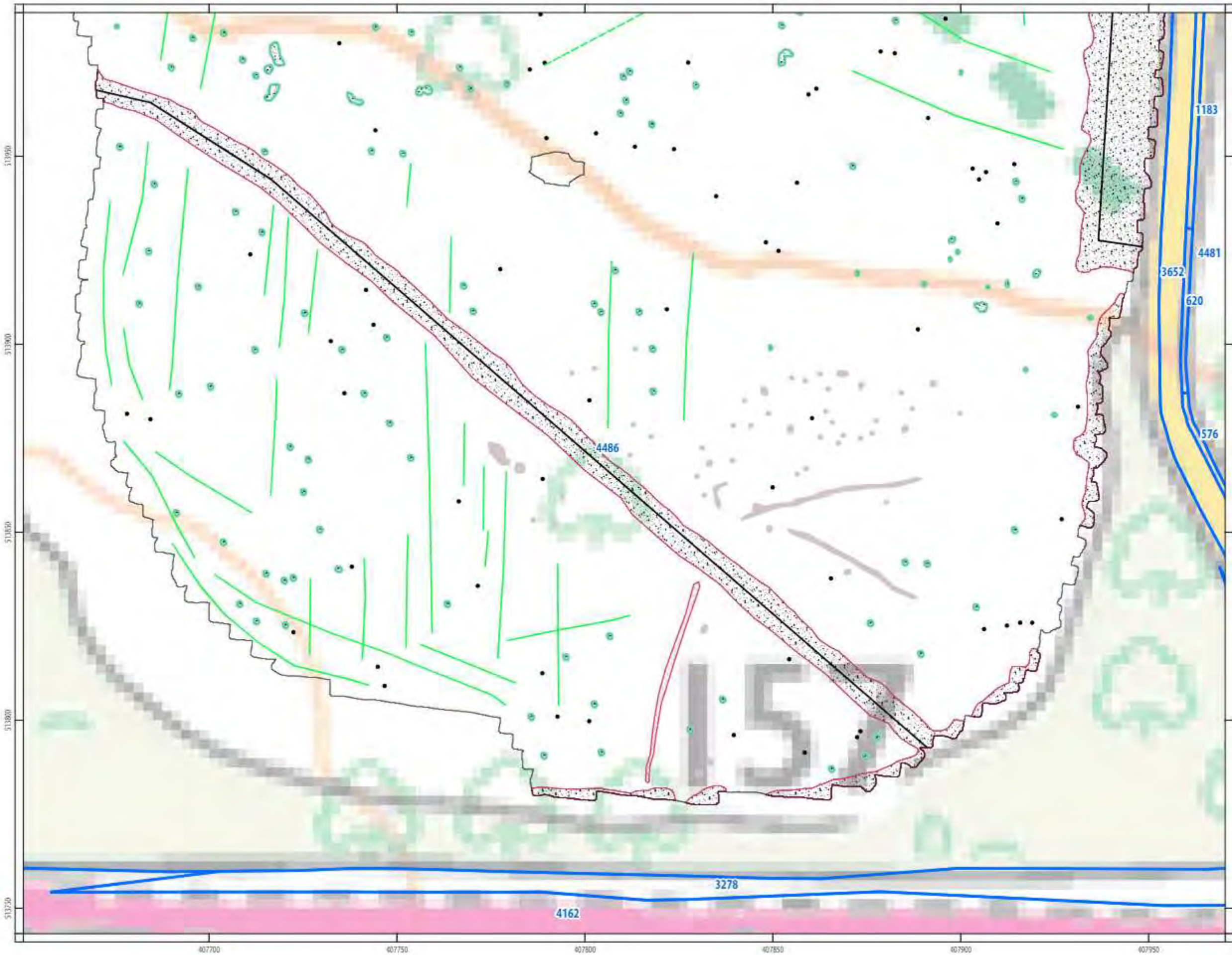
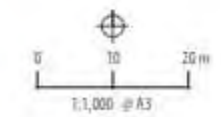
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 758 Interpretation of processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

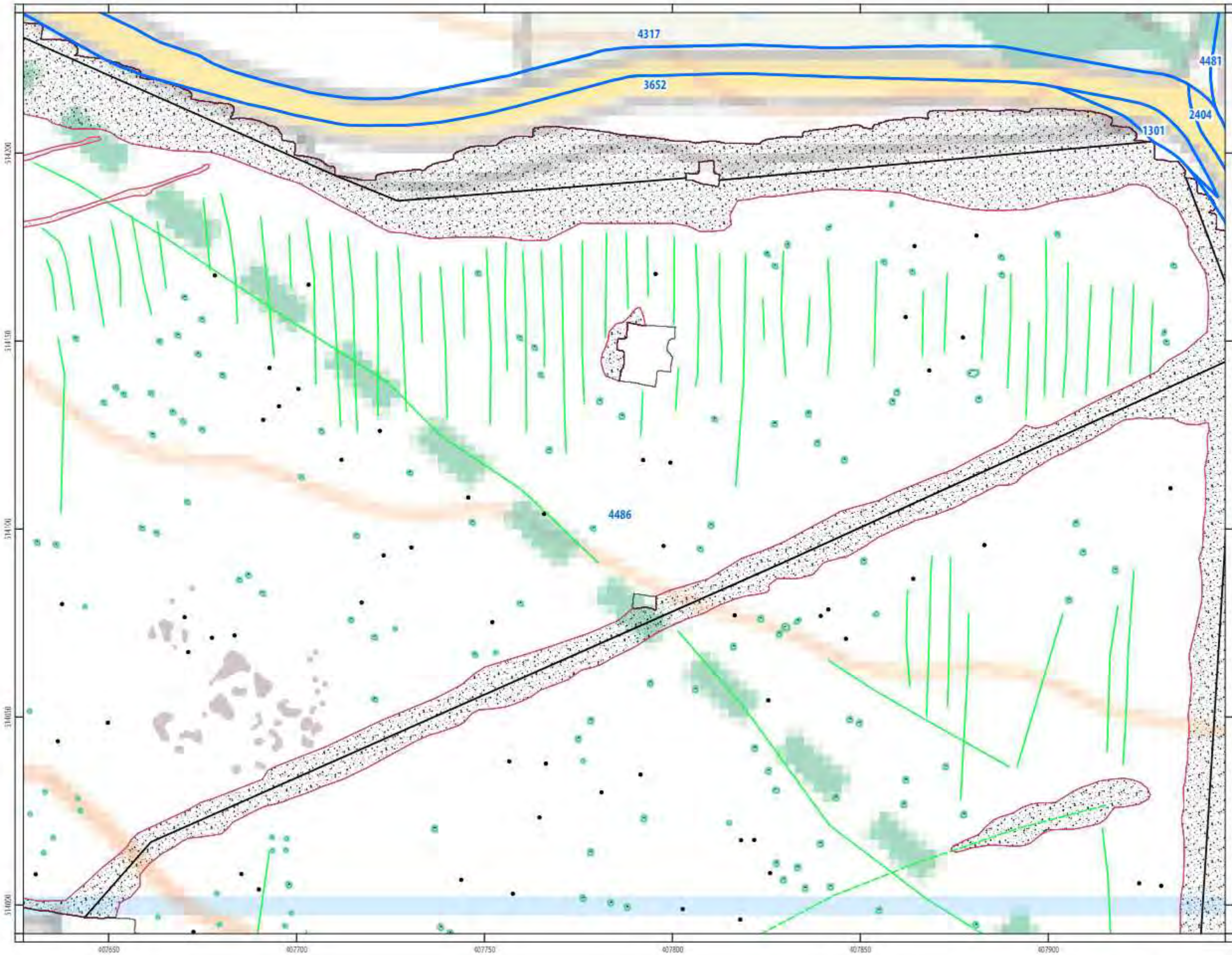
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar/isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/hedge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 759 Interpretation of processed magnetometer data; Cross Lanes to Rokeby



**Phase 2 Survey**

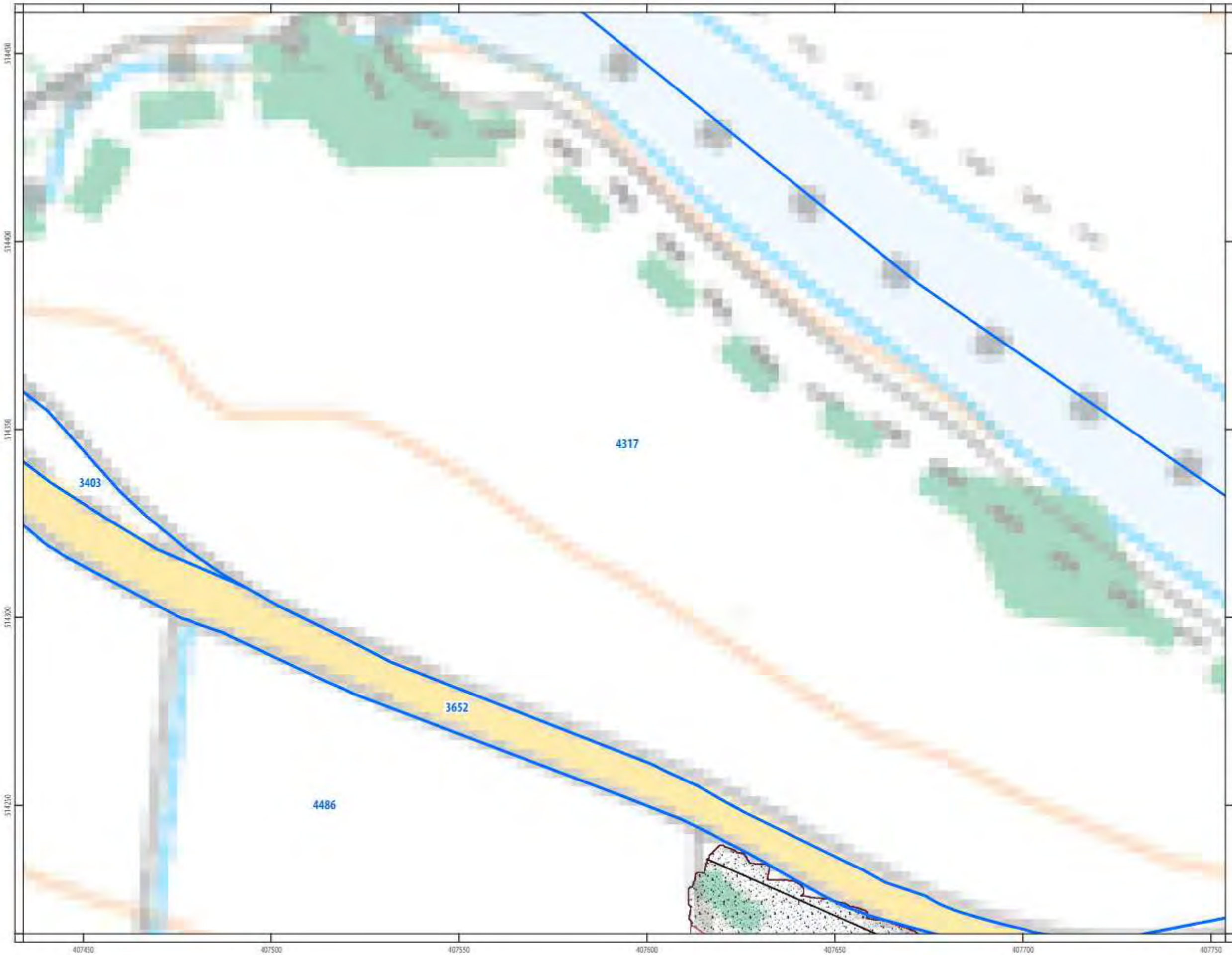
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATPU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England





**Phase 2 Survey**

- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

Highways England



ILLUS 761 Interpretation of processed magnetometer data; Stephen Bank to Carkin Moor



**Phase 2 Survey**

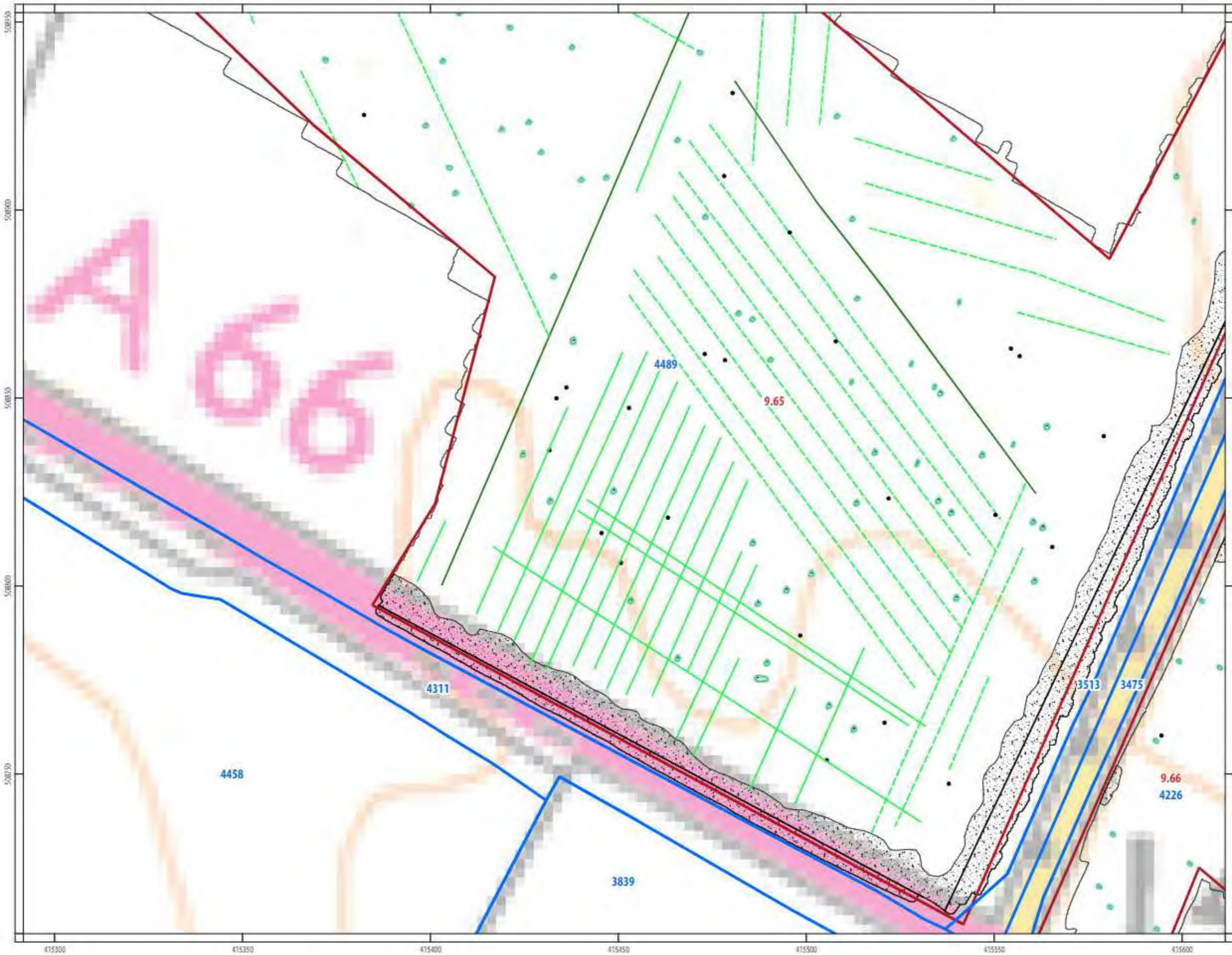
- Phase 1 Geophysical Survey Area
- Phase 2 Geophysical Survey Area
- geophysical survey extent
- scheduled monument
- dipolar isolated/ferrous
- magnetic enhancement/archaeology
- magnetic disturbance/geology
- magnetic enhancement/archaeology?
- magnetic enhancement/kiln burning
- magnetic enhancement/LIRM
- magnetic disturbance/quarrying
- green waste
- modern
- uncertain
- linear trend/agricultural
- linear trend/field drain
- linear/former field boundary
- linear/former field boundary?
- linear trend/geological variation
- linear trend/ridge and furrow
- dipolar linear/ferrous pipe

**PROJECT**

ATFU20 - A66 Transpennine Upgrade

**CLIENT**

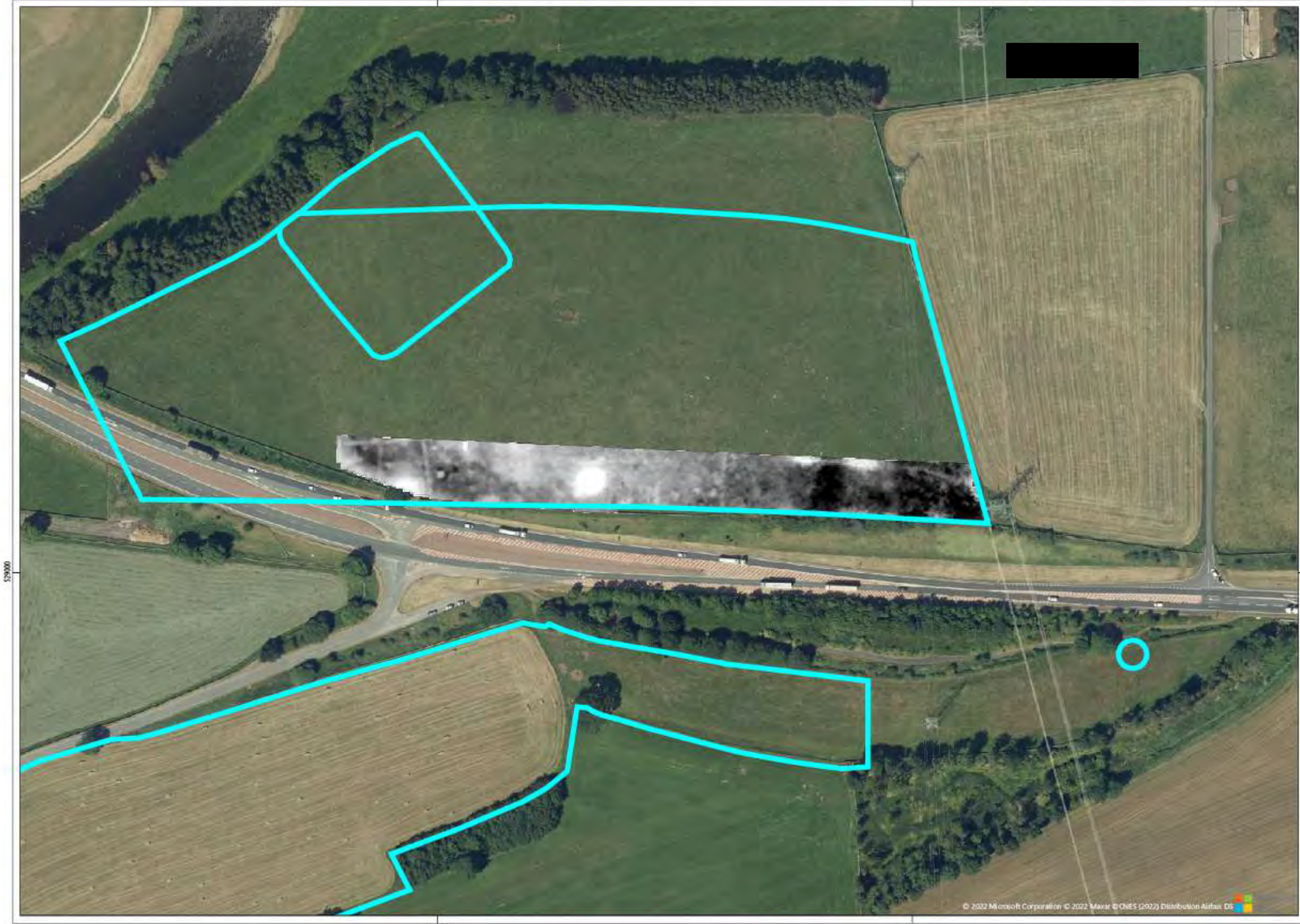
Highways England







Site location



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ATPU20-A66 Transpennine Upgrade

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354250

354500

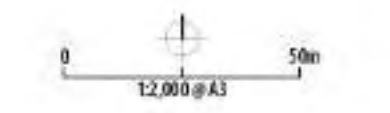
ILLUS 763 Processed greyscale earth resistance data; Brougham Roman marching camp





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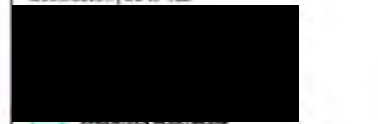
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354250

354500

**ILLUS 764** Unprocessed greyscale earth resistance data; Brougham Roman marching camp





— scheduled monument

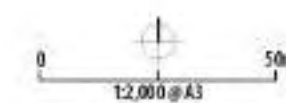
TYPE OF ANOMALY	INTERPRETATION
● high resistance	soil compaction
● low resistance	water accumulation

ABBREVIATIONS  
LRD - low resistance ditch  
LRP - low resistance pit



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ILLUS 765 Interpretation of earth resistance data; Brougham Roman marching camp





 scheduled monument



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ILLUS 766 Processed greyscale earth resistance data; Brougham Roman marching camp





□ scheduled monument



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TYPE OF ANOMALY	INTERPRETATION
■ high resistance	soil compaction
— high resistance trend	agricultural
■ low resistance	water accumulation

PROJECT  
ATPU20-A66 Transpennine Upgrade

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365 000

365 250

Illus 768 Interpretation of earth resistance data; Brougham Roman marching camp



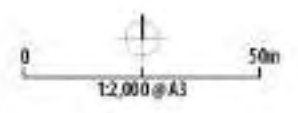


 scheduled monument



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415750

416250

ILLUS 769 Processed greyscale earth resistance data; Carkin Moor Roman Camp



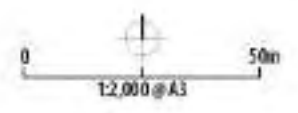


■ scheduled monument



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415750

416250

ILLUS 770 Unprocessed greyscale earth resistance data; Carkin Moor Roman fort





■ scheduled monument

TYPE OF ANOMALY	INTERPRETATION
■ high resistance	soil compaction
— high resistance trend	agricultural
■ low resistance	water accumulation

ABBREVIATIONS  
HRD - high resistance ditch

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ATPU20-A66 Transpennine Upgrade

CLIENT  
Highways England

