XLINKS MOROCCO-UK POWER PROJECT

Preliminary Environmental Information Report

Volume 2, Appendix 2.2: Preliminary Geophysical Survey Report

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Preliminary Geophysical Survey Report

Xlinks Morocco-UK Power Project

UK Onshore Cable Corridor

Client

RPS Consulting Ltd

Survey Report

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2 LIST OF APPENDICES

Appendix A	Technical Information: Magnetometer Survey Methods, Processing and Presentation
Appendix B	Technical Information: Magnetic Theory
Appendix C	OASIS Data Collection Sheet

3 SURVEY TECHNIQUE

3.1 Detailed magnetic survey (magnetometry) was chosen as the most efficient and effective method of locating the type of archaeological anomalies which might be expected at this site. All survey techniques followed the guidance set out by CIFA (2014, updated 2020), Historic England (2008), and the European Archaeology Council (EAC) (2016).

Bartington Grad 601-2	Traverse Interval 1.0 m	Sample Interval 0.25 m
Bartington Cart System	Traverse Interval 1.0 m	Sample Interval 0.125 m

The only processes performed on data are the following unless specifically stated otherwise:

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes instrument striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

4 SUMMARY OF RESULTS

4.1 A magnetometer survey of land for a proposed Development situated in Devon has recorded several magnetic responses that have be interpreted as being of archaeological interest. Numerous ditches, pits, a round barrow, enclosures, a ring-ditch, trackways and settlements have been recorded. Some of the anomalies correspond with heritage assets that are detailed in the Historic Environment Record (HER) while some of the responses appear to be unknown prior to the geophysical survey. Numerous responses of uncertain origin have also been plotted which could be due to combinations of agricultural and natural processes. Corroborated and conjectural former field boundaries are visible along with ploughing, land drains plus ridge and furrow ploughing. The routes of several service pipes have also been recorded throughout the survey.

5 INTRODUCTION

5.1 **SUMO Geophysics Ltd** were commissioned to undertake a geophysical survey of an area outlined for a proposed onshore cable corridor. This survey forms part of an archaeological investigation being undertaken by **RPS Consulting Ltd**.

5.2 Site Details

NGR / Postcode	Western extent: SS 41474 27801 / EX39 5AY Eastern extend: SS 50116 24587 / EX39 4QE
Location	The route of the survey western extend is located 2 km south-west of Westward Ho and 4 km west of Bideford. The route passes through Abbotsham, below Bideford and extends eastwards into Gammaton Moor.

HER	Devon HER
OASIS Ref. No.	sumogeop1-508449
District	Torridge District
Parish	Abbotsham CP / Alwington CP / Littleham CP / Bideford CP / Alverdiscott CP / Huntshaw CP / Weare Giffard CP
Topography	Undulating
Land Use	Arable agricultural / pasture
Geology (BGS 2023)	Bedrock: Bude Formation - Sandstone Bude Formation - Mudstone and siltstone Crackington Formation - Mudstone and siltstone Bideford Formation - Sandstone Superficial: None recorded
Soils (CU 2023)	Soilscape 6: Freely draining slightly acid loamy soils Soilscape 13: Freely draining acid loamy soils over rock Soilscape 17: Slowly permeable seasonally wet acid loamy and clayey soils
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	135 ha

5.3 *Archaeological Background*

5.3.1 A search of the Devon HER has revealed that a number of recorded are located along the proposed onshore cable corridor. A list of the archaeological assets with the survey areas can be seen in the below table.

Field No.	MonUID	Summary
13	MDV102126	The line of several linear field boundaries, some of which are depicted on the 1839 tithe map for the parish of Abbotsham, are visible as earthworks and cropmarks on aerial photographs from the 1940s to the 1990s, to the west of Abbotsham village. The field boundaries fit within the surrounding extant field system, and are a mix of curvilinear boundaries and rectilinear enclosures, probable later medieval or post-medieval in date.
14	MDV102126	The line of several linear field boundaries, some of which are depicted on the 1839 tithe map for the parish of Abbotsham, are visible as earthworks and cropmarks on aerial photographs from the 1940s to the 1990s, to the west of Abbotsham village. The field boundaries fit within the surrounding extant field system, and are a mix of curvilinear boundaries and rectilinear enclosures, probable later medieval or post-medieval in date.
15, 16, 17 & 26	MDV80668	Elongated enclosure, Abbotsham. Visible on Ordnance Survey 1880s-90s First Edition 25 inch map.
16	MDV35563	Artefact scatter in the Parish of Abbotsham, three people walking for 1 1/2 hours found; one scraper, one core, two flakes (meade).
31	MDV106687	Nineteenth century field name. May refer to a windmill.
31	MDV35562	A few pieces of flint and chert including a scraper have been found.
31	MDV106688	Nineteenth century field name. May refer to barn, but no barn marked on Tithe Map.

42	MDV102359	The location of a possible removed field boundary of probable medieval date is visible on aerial photographs as a faint cropmark, to the north of Winscott, Alwington.
46	MDV104621	A large curvilinear ditch, possibly part of a prehistoric enclosure and potentially therefore of national significance. The ditch, which was originally recorded during geophysical survey, is also visible as an earthwork on LiDAR and appears to continue
70	MDV108474	Remnants of a former field system recorded by geophysical survey.
74	MDV105966	Linear boundaries identified in trench evaluation on the west side of the Torridge and interpreted as possibly forming part of a Romano-British rectilinear field system on either side of the river.
74	MDV29732	S of Bideford. Subcircular single ditched enclosure, followed by line of hedge on north side. Recorded as cropmark by f. Griffith in June 1984.
74	MDV108418	A series of banks and ditches recorded by geophysical survey immediately north of a possible Romano-British field system.
74 & 76	MDV80719	Curvilinear enclosure, Hallsannery. Visible on Ordnance Survey 1880s-90s First Edition 25 inch map.
76	MDV131155	Crop marks possibly denoting a rectilinear enclosure associated with Roman settlement or a later farmstead. There is also the possibility that the crops marks are agricultural in origin.
83	MDV63447	Double ditched enclosure and adjacent features; recorded as a cropmark.
83, 86 & 87	MDV105967	Linear boundaries identified in trench evaluation on the east side of the Torridge and interpreted as possibly forming part of a Romano-British rectilinear field system on either side of the river.
89	MDV108424	Area of probable banks and ditches recorded by geophysical survey north-west of Bryberry.
89	MDV108422	Deserted settlement shown on mid 19th century map.
136	MDV131120	Geophysical survey recorded a number of anomalies thought to be associated with field systems dating to the prehistoric or later period.
136	MDV131121	Geophysical survey recorded an anomaly group thought to represent an enclosure, currently of unknown date.
125 & 126	MDV80952	Curvilinear enclosure, Brownscombe. Visible on Ordnance Survey 1880s-90s First Edition 25 inch map.
166	MDV102158	Three narrow parallel linear features are visible as cropmarks on aerial photographs of 1950 to 1992, to the north-west of East Langdon Farm, Abbotsham. The date and function of the features is unknown, and they may be non-archaeological in origin.

5.4 *Aims and Objectives*

5.4.1 To locate and characterise any anomalies of possible archaeological interest within the study area.

6 RESULTS

6.1 The linear survey spans multiple land parcels, and each area has been given a field number; these start at 1 in the western extremity. However, not all fields were investigated, so the first parcel reported upon here is Area 31. Magnetic responses of specific interest have been given numbers [31.1] [31.2] which appear in the text below, as well as on the Interpretation Figure(s).

6.2 Steep terrain in Areas 64, 66 and 81 plus waterlogging in Area 152 rendered these parts of the route unsurveyable.

6.3 *Probable Archaeology*, *Possible Archaeology* and *Uncertain* responses are discussed below for each area, while field boundaries, agricultural responses, natural anomalies, services and ferrous / magnetic disturbance are considered at the end of the results section.

6.4 **Area 13**

Uncertain

A number of ditch-like responses, pit-like anomalies and trends have been detected in Area 13 which have been assigned to the category of *Uncertain*. The HER records several linear field boundaries that probably date to later medieval or post-medieval periods due east of the survey area. Some of these uncertain responses may be former field boundaries. However, archaeological origins cannot be entirely discounted for the anomalies.

6.5 **Area 14**

Possible Archaeology

In Area 15 discrete curving responses and curvilinear trends [14.1] are visible which have been categorised as being of *Possible Archaeology*. They appear to form two sub-rectangular enclosures which measure 12 m x 9 m and 12 m x 16 m.

Uncertain

A number of ditch-like anomalies and linear trends are likely to be due to a combination of agricultural and natural processes. However, archaeological origins may not be entirely discounted due to responses of archaeological interest in the vicinity (see above).

6.6 **Area 15**

Possible Archaeology

A circular response which is made up of discrete responses and trends [15.1] has been detected in Area 15; several pit-like anomalies have also been recorded within it. The anomalies probably mark the location of a sub-circular enclosure which measures some 15 m in diameter at its widest point.

Uncertain

Several discrete anomalies, linear trends and zones of increased responses have been assigned to the category of *Uncertain* which are likely to be due to a combination of agricultural and natural processes.

6.7 **Area 16**

Uncertain

Zones of increased response and linear trends have been detected in the dataset which could be due to agricultural processes or variations un the underlying geology; consequently, they have been categorised as *Uncertain*.

6.8 **Area 17**

Possible Archaeology

A series of rectilinear ditch-like responses and a pit-like anomalies [17.1] are visible in the plot which could mark the locations of enclosures and/or field systems. However, they may also indicate the location of uncorroborated former field boundaries.

Uncertain

Zones of increased response and trends of uncertain origin are likely to have agricultural and natural origins.

6.9 **Area 26**

Uncertain

Weak curvilinear trends and a zone of increased response have been recorded in the magnetic data which are likely to be due to agricultural processes or have been caused by variations in the underlying geology.

6.10 **Area 31**

Possible Archaeology

A series of linear anomalies [31.1] appear to form a small rectilinear feature, some 17 m x 22 m in size, with further associated ditches on the outside [31.2 & 31.3]. Field name evidence suggests that a windmill (MDV106687) could be located in the field; consequently, it is possible that the anomalies could be associated with ditches around such a structure.

Uncertain

A series of ditch-like responses, linear trends and pit-like anomalies have been detected which are difficult to interpret. While some in the vicinity of the enclosure [31.1] could have archaeological origins, they could also mark the routes of uncorroborated former field boundaries (see also 6.48). They may also be a result of agricultural processes or underlying natural variations.

6.11 **Area 41**

Possible Archaeology

In the south of Area 41, a circular response [41.1] has been detected. It measures some 18m in diameter and is composed of curving trends plus discrete ditch-like responses which, at

centre of which is a discrete pit-like anomaly. These anomalies could mark the location of a round barrow.

Uncertain

A number of ditch-like anomalies, linear trends and pit-like responses could be natural or agricultural; however, archaeological origins cannot be discounted due to the possible barrow and the enclosure in the adjacent Area 42 (see 6.6).

6.12 **Area 42**

Probable / Possible Archaeology

A sub-rectangular enclosure [42.1] which measures some 40 m by 48 m, is visible in the plot, and a gap in the eastern ditch probably indicates an entrance. Weak linear trends [42.2] appear to extend beyond the enclosure; they could also mark the routes of ditches or gullies. A cluster of responses [42.3] within the enclosure may indicate a small roundhouse or pits.

Uncertain

Several trends and discrete responses are also visible which have been assigned to the category of *Uncertain*; they are mostly likely to be natural or agricultural in origin.

6.13 **Area 44**

Uncertain

A discrete ditch-like response and linear trend have been detected; the former could be an uncorroborated former field boundary while the trend is likely to be agricultural in origin.

6.14 **Area 46**

Uncertain

Several *Uncertain* discrete ditch-like anomalies and trends are visible some of which are likely to be anthropogenic in origin, but it is difficult to determine if they are of any antiquity. They could be a result of relatively modern agricultural processes while some might be a natural effect.

Area 58

Uncertain

In this area ditch-like responses have been recorded; they could tentatively mark the location of a segmented enclosure, however, they could simply be an agricultural affect.

6.15 ***Area 59***

No responses of archaeological interest or of uncertain origin have been recorded.

6.16 **Area 60**

Uncertain

A series of amorphous ditch-like responses, pit-like anomalies and trends are present in the data. A former woodland once existed in the area and is visible on historic mapping, it is possible

that the removal of the trees and the subsequent landscaping may have causes some of the anomalies.

6.17 ***Area 61***

Possible Archaeology

In the west of Area 61 a series of parallel trends [61.1] could mark the location of a double ditches enclosure; however, they could also be due to a chance line-up of underlying geological responses.

Uncertain

Discrete responses, linear trends and a zone of increased responses have been assigned to the category of uncertain.

6.18 **Area 62**

No responses of archaeological interest or of uncertain origin have been recorded.

6.19 **Area 63**

Uncertain?

No responses of archaeological interest or of uncertain origin have been recorded..

6.20 ***Area 64***

No responses of archaeological interest or of uncertain origin have been recorded.

6.21 **Area 66**

Uncertain

A couple of ditch-like anomalies have been detected which appear to form a rectilinear pattern; they appear anthropogenic in origin, but they could be nothing more than uncorroborated former field divisions.

6.22 **Area 67**

No responses of archaeological interest or of uncertain origin have been recorded.

6.23 **Area 68**

No responses of archaeological interest or of uncertain origin have been recorded.

6.24 **Area 69**

No responses of archaeological interest or of uncertain origin have been recorded.

6.25 ***Area 70***

Possible Archaeology

Two ditch like responses [70.1] which form a rectilinear pattern have been detected in the survey and have been assigned to the category of *Possible Archaeology*, they could form a partial enclosure which extends beyond the limits of the survey. They may be associated with

a former field system that was recorded due east of Area 70 in a previous geological survey (MDV108474). A pit-like response [70.2] has also been recorded which is magnetically strong.

6.26 **Area 73**

No responses of archaeological interest or of uncertain origin have been recorded.

6.27 ***Area 74***

Probable / Possible Archaeology

A large curvilinear ditch-like response [74.1] aligns with the modern field boundaries to form a large enclosure which extends beyond the limits of the survey; a break in the response indicates a southward facing entrance. The results correspond with an enclosure that is recorded in the HER (MDV29732). A number of internal responses [74.2] could indicate a second enclosure and a circular trend [74.3] could mark the location of a ring-ditch.

A series of ditch-like responses [74.4] and linear trends, one of which appears to run north and possibly turn before continuing through the enclosure [74.1] appear to form rectilinear patterns. A possible Romano-British Field System (MDV105966) is recorded in this vicinity, the anomalies could be an extension of this field system. Other linear trends and discrete strong responses [74.5] are also likely to be of interest.

6.28 ***Area 76***

Uncertain

A number of linear trends have been recorded throughout the area which have been assigned to the category of *Uncertain*. They are likely to be due to a combination of agricultural processes, with many of the anomalies marking the locations of land drains. However, some of the responses may have archaeological origins given the proximity of anomalies of interest recorded in Area 74 (see 6.20). The HER records cropmarks possibly denoting a rectilinear enclosure associated with Roman settlement or a later farmstead (MDV131155); however, there is also the possibility that the crops marks are agricultural in origin which is supported by the geophysical survey.

6.29 **Area 82**

No responses of archaeological interest or of uncertain origin have been recorded.

6.30 **Area 83**

Possible Archaeology

In the east of Area 3 four segmented ditch-like responses [83.1] are visible in the magnetic data which have been assigned to the category of *Possible Archaeology*. The HER refers to a double ditched enclosure and adjacent features (MDV63447) plus linear that possibly form part of a Romano-British rectilinear field system (MDV105967). It is possible that the ditch-like responses could be associated with these features; however, they could also be due to a combination of natural and agricultural processes such as ploughing.

6.31 **Area 85**

Uncertain

An unusual, strong anomaly has been recorded whose origin is unclear. It is appears to have a ferrous component, perhaps a result of an infilled modern feature, or it could reflect underlying geological variations.

6.32 **Area 86**

Uncertain

A discrete ditch-like response and very weak curving trends are visible in the data; the linear anomaly is on the same alignment as the ploughing so it could be agricultural, while the trends could be agricultural or geological.

6.33 ***Area 87***

No responses of archaeological interest or of uncertain origin have been recorded.

6.34 ***Areas 88 & 89***

Possible Archaeology

A small circular trend [88.1] has been recorded and assigned to the category of *Possible Archaeology*. The response measures some 7 m in diameter and could mark the location of a ring-ditch. However, it is also possible that it has been caused by natural variations in the local geology.

Uncertain

A few responses of uncertain origin are visible and include discrete ditch-like responses and trends. Due south of the areas are the remains of Bryberry, a deserted settlement (MDV108422) dating to the 17th century or earlier. A number of banks and ditches were recorded in a previous geophysical survey. Some of the uncertain responses could also be associated with peripheral activity. However, in places it has been difficult to interpret the responses with any great confidence due to the underlying geological ‘noise’.

6.35 ***Area 91***

Possible Archaeology

Discrete ditch-like anomalies and linear trends [91.1] are visible which could form a series of fields or paddocks and a possible trackway [91.2], which could indicate an earlier alignment of the current lane that lies immediately to the north. These responses are located due east of Bryberry, a deserted settlement (MDV108422) and the responses could be an extension of the settlement, although it is not recorded in the HER extending this far west.

6.36 **Area 92**

Possible Archaeology

In the north of this area numerous linear and curvilinear ditch-like anomalies [92.1] and trends have been assigned to the category of *Possible Archaeology*. The southern limits of the area of enhanced readings may be marked by the linear responses [92.2] though this might mark the location of an unrecorded old field boundary. The results are tentatively interpretated as

being part of a settlement which appears to extend beyond the limits of the survey. Unfortunately, the narrow survey corridor precludes a more detailed interpretation.

6.37 **Area 93**

Uncertain

A couple of ditch-like responses have been recorded crossing the survey area; these could be of archaeological interest, or they may simply be former field boundaries. Once again the small survey area has made it difficult to interpret the anomalies with great confidence, hence the *Uncertain* interpretation.

6.38 **Area 94**

Possible Archaeology

A semi-circular trend [94.1] has been recorded which has been interpreted as being of *Possible* interest. The anomaly could mark the location of a partial enclosure which has been truncated by the extensive ploughing in the area. However, the anomaly could also be due to underlying geological processes.

6.39 ***Area 99***

No responses of archaeological interest or of uncertain origin have been recorded.

6.40 ***Area 101***

Uncertain

Numerous ditch-like responses and linear trends have been recorded throughout Area 101. Some of the responses could mark the locations of uncorroborated former field boundaries or be due to land drains. However, archaeological origins for some of the responses cannot be entirely discounted. Increased levels background ‘noise’ from the underlying natural geologically has made it difficult to interpret some of the responses with confidence.

6.41 **Area 102**

No responses of archaeological interest or of uncertain origin have been recorded.

6.42 **Area 108**

Possible Archaeology

In the south-east of this area a number of ditch-like responses, pits-like anomalies and trends have been recorded [108.1] which appear to form a partial enclosure with internal responses. However, the anomalies are amorphous and sinuous which casts some doubt of them being archaeological, hence the *Possible* interpretation.

Uncertain

Numerous linear and curvilinear trends have been recorded throughout the area which likely to be due to a result of agricultural or natural processes.

6.43 **Area 109**

No responses of archaeological interest or of uncertain origin have been recorded.

6.44 **Area 110**

Uncertain

A couple of linear trends are visible within the noisy dataset associated with the natural magnetic responses.

6.45 **Area 111**

No responses of archaeological interest or of uncertain origin have been recorded.

6.46 **Areas 114, 115 & 116**

Uncertain

Numerous linear and curvilinear trends have been detected throughout the areas which have been assigned to the category of *Uncertain*. Generally, they are likely to be due to a combination of agricultural and natural processes.

6.47 **Area 125**

No responses of archaeological interest or of uncertain origin have been recorded.

6.48 **Area 126**

No responses of archaeological interest or of uncertain origin have been recorded.

6.49 **Area 136**

Uncertain

The ditch-like responses in the north-east of the area are oriented on a different alignment to the field boundaries that are visible in the results. A previous geophysical survey recorded a number of anomalies thought to be associated with field systems (MDV131120), and it is possible that the magnetic anomalies recorded could be an extension of this field system. However, since there is no direct associated the responses are interpreted as being uncertain in origin.

6.50 **Area 144**

No responses of archaeological interest or of uncertain origin have been recorded.

6.51 **Area 145**

Uncertain

6.52 A discrete linear response and magnetically weak trends are visible in the plot which a likely to have modern or natural origins. The discrete response could mark the location of a former field boundary and the curving trends are likely to be due to underlying geological variations.

6.53 **Area 152**

Uncertain

A cluster of large, very strong anomalies have a ferrous component and could be associated with local groundworks or dumped modern material. and linear trends are visible in Area 152 which have been assigned to the category of Uncertain. They are likely to be due to underlying

geological variations, agricultural processes or areas of dumping associated with groundwork / agriculture.

6.54 **Area 160**

No responses of archaeological interest or of uncertain origin have been recorded.

6.55 **Area 161**

No responses of archaeological interest or of uncertain origin have been recorded.

6.56 **Area 164**

Uncertain

Numerous linear trends and discrete responses have been recorded across the area. While archaeological origins cannot be entirely be discounted, many former field boundaries are present and the responses could be uncorroborated former boundaries. Alternatively, they could be due to other agricultural processes.

6.57 **Area 165**

Uncertain

A couple of discrete ditch-like responses have been detected which have been assigned to *Uncertain*. They appear to be on the same alignment as the ploughing which has been recorded and may have the same origin or they could mark the location of uncorroborated former field boundaries.

6.58 **Area 166**

Uncertain

Amorphous discrete anomalies have been detected within an area of increased response, they have been categorised as Uncertain. while they bare likely to be of natural origin they could have been caused by other modern processes.

6.59 ***Area 180***

Uncertain

Several trends have been assigned to the category of uncertain but they are likely to have been caused by a combination of underlying natural variations and relatively modern ploughing.

6.60 ***Former Field Boundary – Corroborated / Conjectural***

A search of 1880 Ordnance survey Mapping and 1904 Ordnance survey Mapping (KYP 2023) has revealed that a number of former field boundaries are recorded along the route of the survey. Linear responses in Area 14, 17, 31, 41, 44, 46, 58, 60, 61, 62, 64, 67, 68, 69, 73, 83, 88, 89, 94, 101, 102, 108, 110, 111, 114, 115, 116, 125, 126, 136 152, 164, 165 and 180 correspond with the route of these corroborated divisions.

Numerous other linear responses have been detected in Areas 31, 58, 61, 73, 76, 82, 88, 89, 93, 94, 101, 108, 114, 125, 126, 136, 144, 152, 164 and 166. They are magnetically similar to the corroborated field boundaries (see above); consequently, they have been interpreted as conjectural former field boundaries.

6.61 ***Agricultural – Ridge and Furrow / Ploughing / Land Drains***

Broad parrel and widely spaced linear anomalies are visible in Areas 76 and 101 which are due to historic ridge and furrow agricultural regimes.

Closely spaced and ill-defined parallel linear anomalies have been detected in Areas 58, 59, 63, 64, 69, 83, 85, 86, 87, 88, 89, 94, 108, 110, 114, 115, 144, 145, 160 and 165, in some cases the responses are on multiple alignments in the same land parcel. They are due to relatively modern ploughing.

A number of negative linear responses are visible in Areas 41, 76, 94, 108, 114, 155 and 116 which mark the routes of land drains.

6.62 ***Natural / Geological / Pedological / Topographic***

Strong amorphous bands of increased magnetic background noise are visible in most of the survey areas. The alignment of the magnetic responses is generally east-west and this corresponds closely with the strike of the bedrock visible on the geological mapping (BGS 2023). In places, this elevated background noise has made interpretation of other responses of potential interest very difficult; it could also have masked weaker anomalies of interest, if present.

6.63 ***Services***

Strong linear dipolar ferrous responses have been recorded in Areas 31, 61, 82, 83, 85, 91, 92, 93, 101, 114, 115, 116, 136, 144, 145 and 180which mark the routes of service pipes.

6.64 ***Ferrous / Magnetic Disturbance***

Ferrous responses close to boundaries are due to adjacent fences, gates, roads and buildings. While a strong ferrous response on the eastern periphery of Area 136 corresponds with the location of a former building that is recorded on historic mapping. It is likely that the demolition and subsequent spreads of debris have caused the ferrous response. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil; they are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

7 TABLE OF RESULTS

7.1 The magnetometer survey has recorded numerous magnetic responses that have be interpreted as being of archaeological interest and they are summarised in the Table below:

Area	Description
14 & 15	Curving responses which comprise discrete anomalies and trends forming irregularly shaped enclosures.
17	A series of trends indicating a possible archaeological enclosure or perhaps uncorroborated field boundaries.
31	A number of ditches possibly associated with a former windmill.
41	A circular response suggesting the existence of a barrow.
42	A sub-rectangular enclosure with an entrance on the east.
70	A partial enclosure and strong pit-like response may be a continuation of a former field system recorded in a previous geological survey (MDV108474).
74	A large curvilinear enclosure (extending beyond the limits of the survey) with an entrance on the south (MDV29732). A circular trend [74.3] could mark the location of a ring-ditch (MDV29732)
83	Ditch-like responses perhaps associated with a double ditched enclosure (MDV63447)
88	A possible small ring ditch.

91	Linear responses suggest a trackway and field systems.
92	A small complex of responses perhaps associated with a settlement.
94	A semi-circular response of possible archaeological interest.
108	Ditch-like responses, pits-like anomalies and trends may form a partial enclosure.

8 DATA APPRAISAL & CONFIDENCE ASSESSMENT

8.1 Historic England guidelines (EH 2008) Table 4 states that the typical magnetic response on the local soils / geology is variable. The results from this survey indicate the presence of response of archaeological interest; there is no *a priori* reason why archaeological features would not have been detected. However, in places, the increased levels of background 'noise' due to the underlying geologies may have masked weak responses of archaeological interest.

9 CONCLUSION

9.1 The magnetometer survey has recorded numerous magnetic responses that have be interpreted as being of archaeological interest. In Area 14 and 15 a series of curving responses which comprise discrete anomalies and trends appear to mark the locations of irregularly shaped enclosures. A series of trends in Area 17 have been assigned to the category of possible archaeology; they could form rectilinear enclosure or mark the locations of uncorroborated field boundaries. In Area 31 a number of ditches could form a rectilinear enclosure possibly associated with a former windmill thought to have been in the field. In Area 41 a circular response could mark the location of a round barrow, while in Area 42 a sub-rectangular enclosure, with an eastern entrance, has also be recorded. A possible partial enclosure and strong pit-like response in Area 70 could mark be associated with a continuation of a former field system that was recorded in a previous geological survey (MDV108474). In Area 74 numerous linear responses form a large enclosure, which appears to enclose a rectilinear feature, and several ditch-like responses could be part of a field system; the responses correspond with features recorded in the HER. Ditch-like responses in Area 83 could be associated with a double ditched enclosure (MDV63447) noted in the HER. A possible small ring-ditch has been plotted in Area 88. In Areas 91 numerous ditch-like anomalies and linear trends appear to form a trackway and possible fields, while in Area 92 part of a possible settlement may have been identified. A semi-circular trend in Area 94 is of possible archaeological interest. In the south-east of Area 108 a number of ditch-like responses, pits-like anomalies and trends have been recorded which appear to form a partial enclosure with internal responses.

9.2 Numerous responses have been detected throughout the survey which have been assigned to the category of *Uncertain*. They generally lack the defined morphology of anomalies that would ordinarily be interpreted as being of archaeological interest. The majority are likely to be due to combinations of agricultural and natural processes. However, in places, archaeological origins cannot be entirely discounted.

9.3 Corroborated and conjectural former field boundaries are visible throughout the plots, along with ploughing, land drains plus ridge and furrow ploughing. The routes of several service pipes have also been recorded throughout the survey. Elevated magnetic responses throughout the survey are associated with the naturally magnetic bedrock and superficial geology; this has made interpretation of many of the results difficult.

10 REFERENCES

BGS 2023 — British Geological Survey, Geology of Britain viewer [accessed 01/02/2023] *website*: (http://www.bgs.ac.uk/opengeoscience/home.html?Accordion1=1#maps)

CIfA 2014 Amended 2020 — *Standard and Guidance for Archaeological Geophysical Survey.* Amended 2020. CIfA Guidance note. Chartered Institute for Archaeologists, Reading https://www.archaeologists.net/sites/default/files/CIfAS%26GGeophysics_3.pdf

CU 2023 — The Soils Guide. Available: www.landis.org.uk. Cranfield University, UK. [accessed 01/02/2023] *website: http://mapapps2.bgs.ac.uk/ukso/home.html*

EAC 2016 — *EAC Guidelines for the Use of Geophysics in Archaeology,* European Archaeological Council, Guidelines 2.

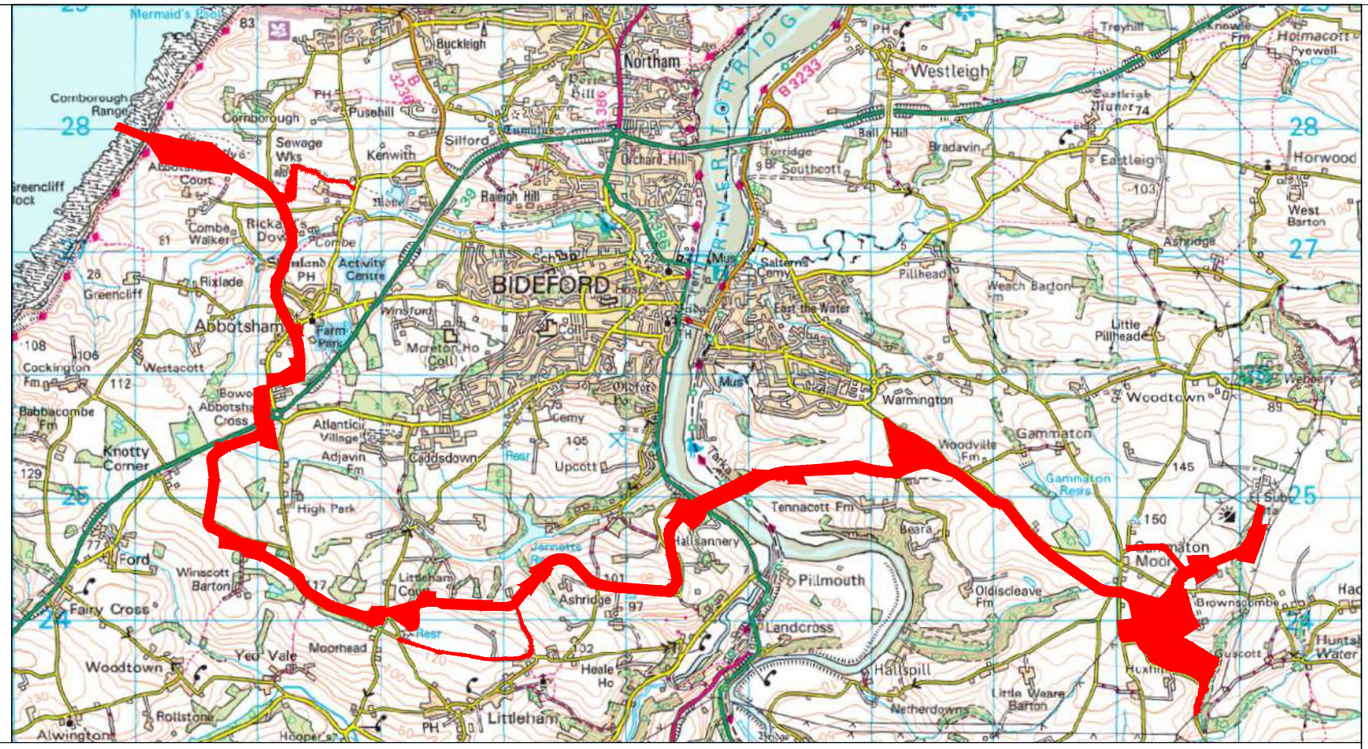
EH 2008 — *Geophysical Survey in Archaeological Field Evaluation.* English Heritage, Swindon (now withdrawn, but used for evaluating suitability of soil types)

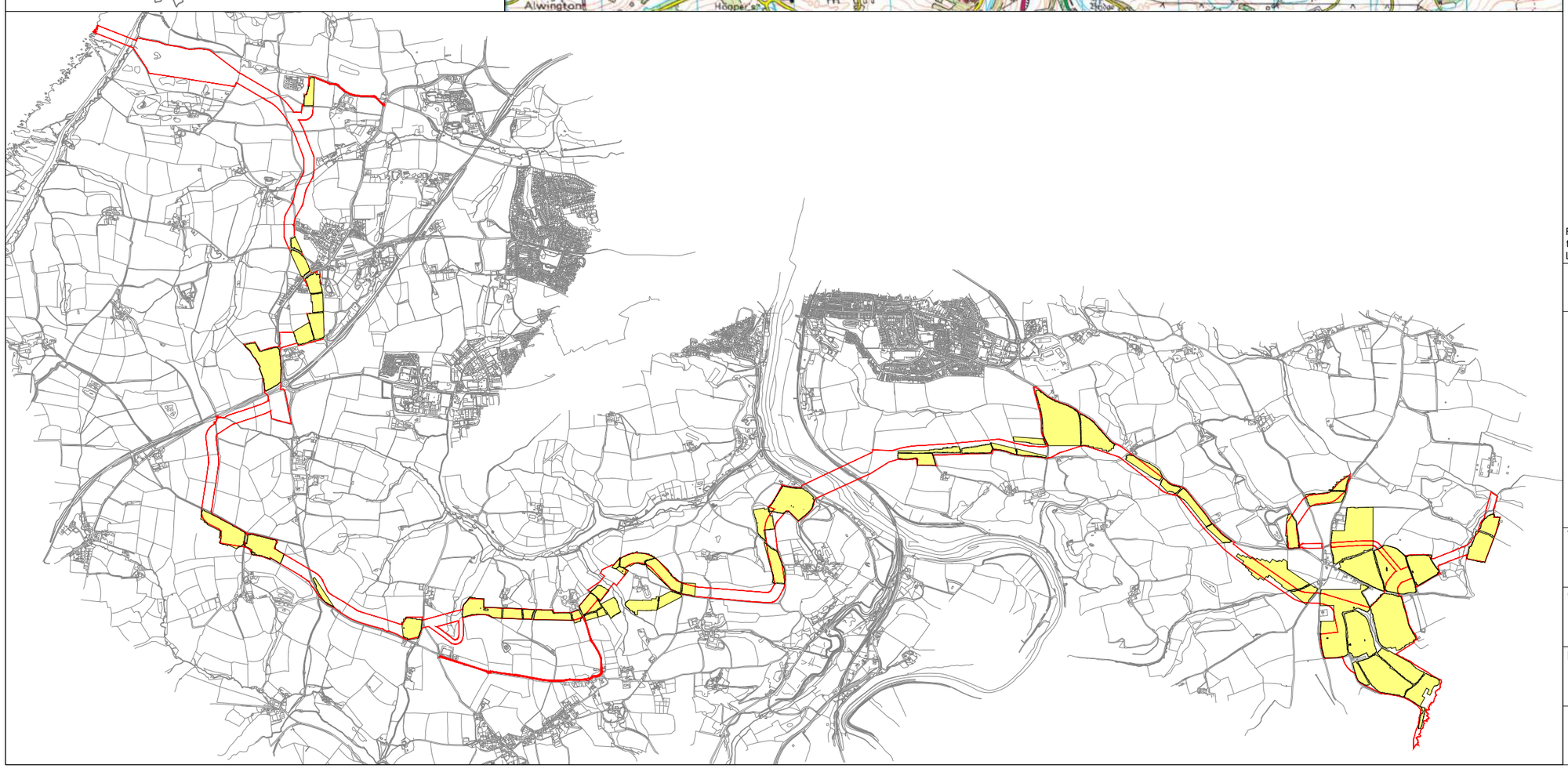
KYP 2023 — *Know Your Place Online Viewer [accessed 01/02/2023] website: https://maps.bristol.gov.uk/kyp/?edition=devon*

11 ARCHIVE

11.1 The minimally processed data, data images, XY traces and a copy of this report are stored in **SUMO Geophysics Ltd.'s** digital archive, on an internal RAID configured NAS drive in the Midlands Office. These data are also backed up to the Cloud for off-site storage**.**

11.2 The Grey Literature will be archived with OASIS and the relevant HER within a period of 12 months.





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Survey Areas

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Site Location

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
NOT TO SCALE

Fig No:
01

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey Areas

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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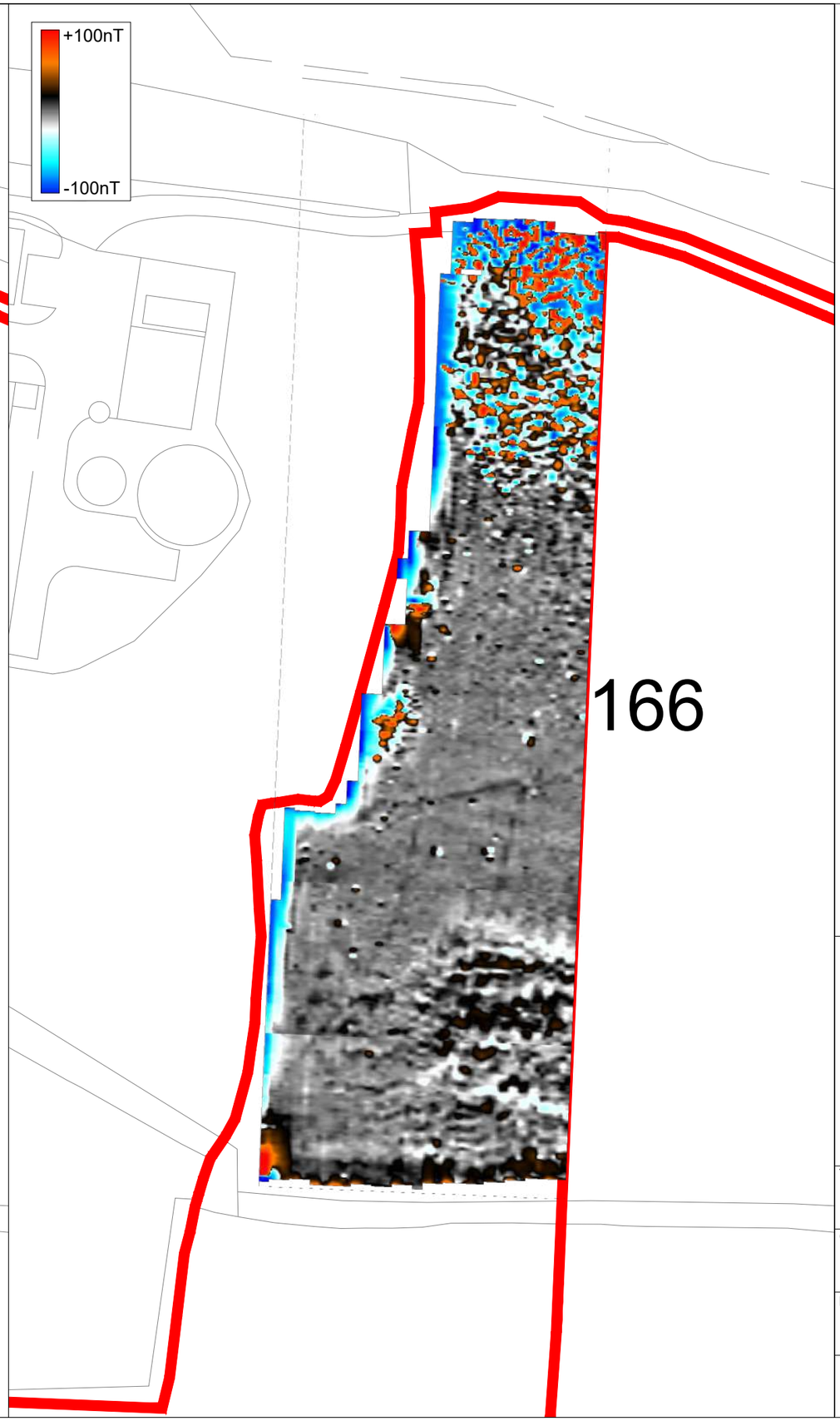

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sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
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Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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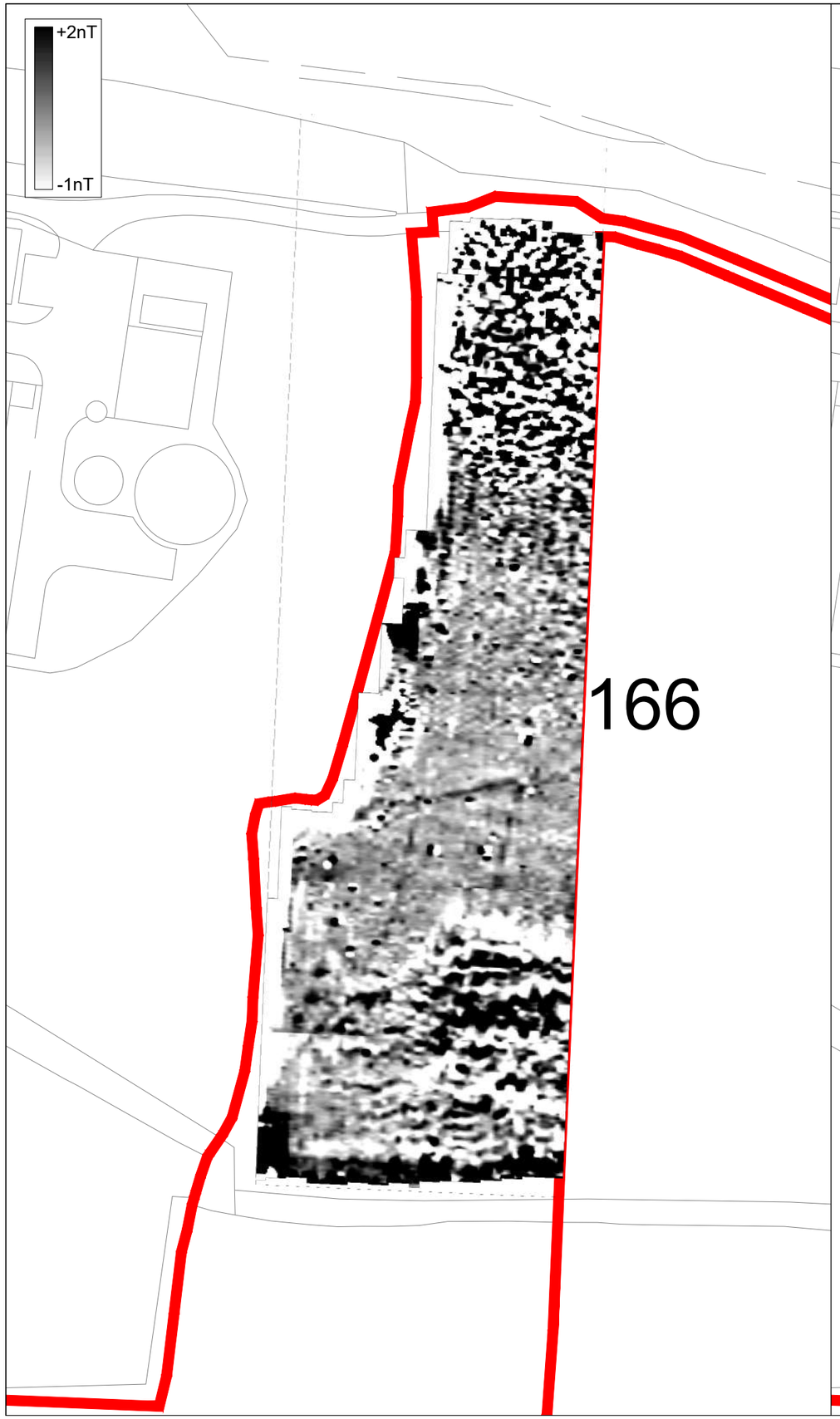

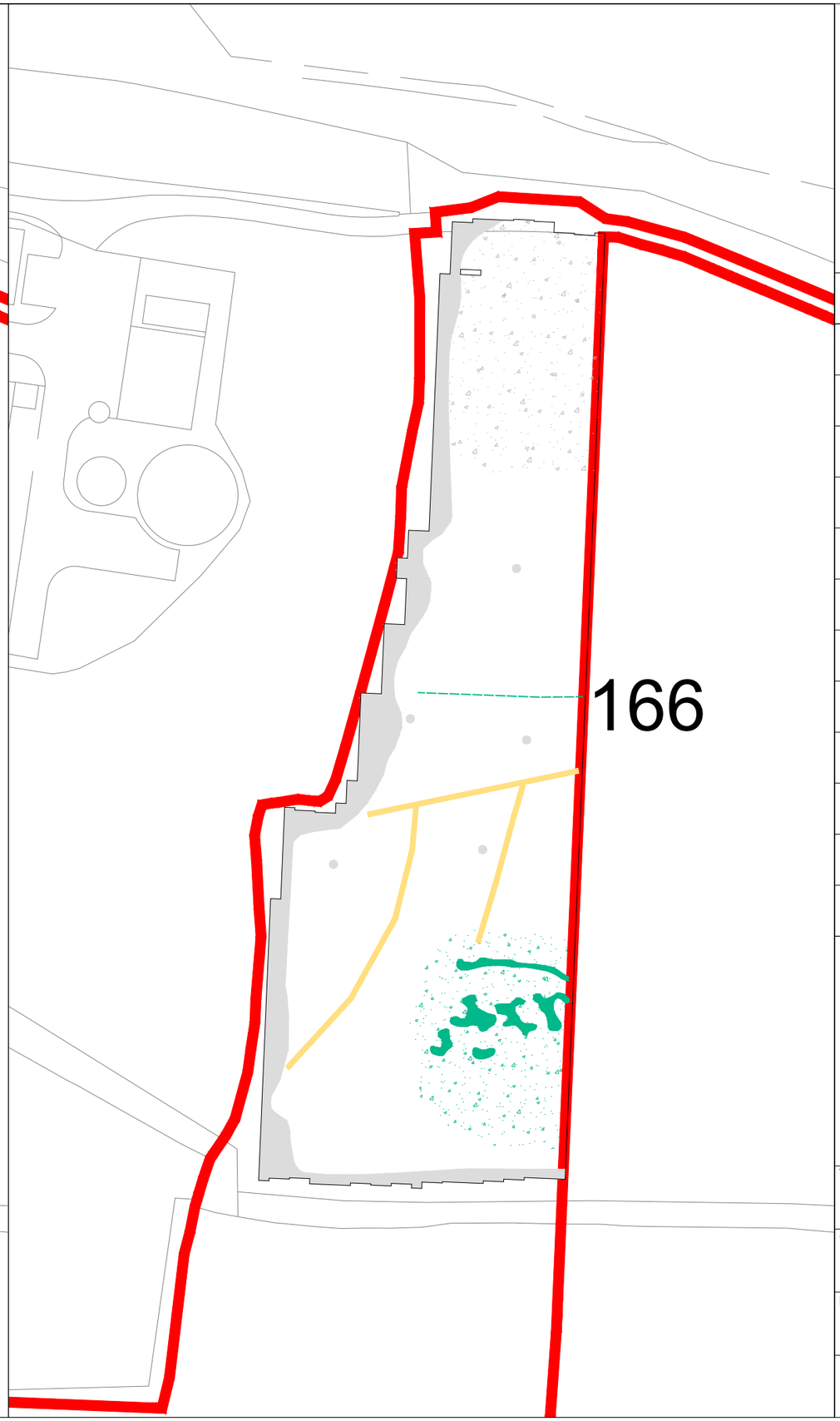

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KEY

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	Uncertain Origin (discrete anomaly / trend / increased response)
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	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plot / Interpretation (Area 166)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
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Fig No:
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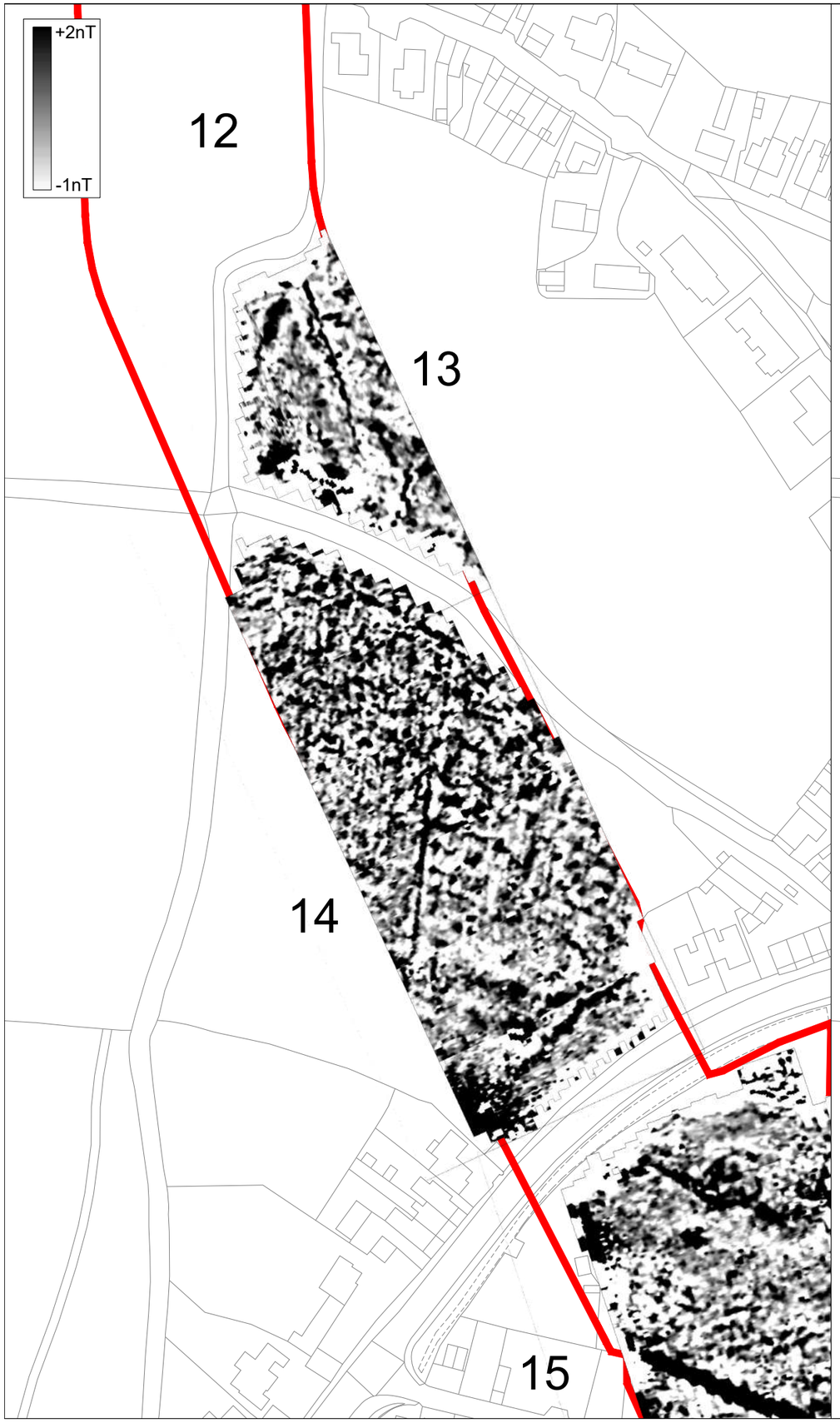

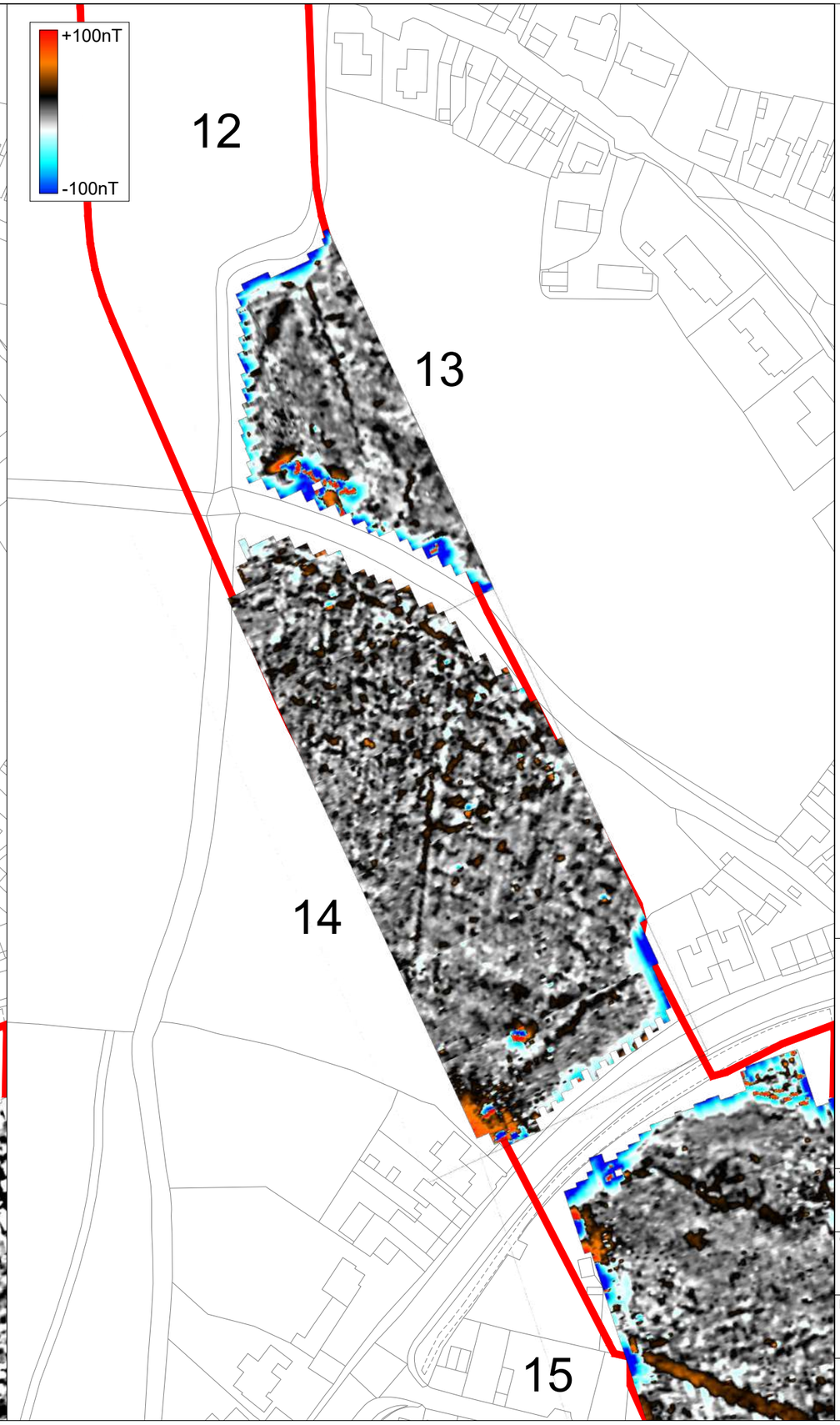

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sumo Survey
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Magnetometer Survey - Greyscale and Colour Plots (Area 13 & 14)

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RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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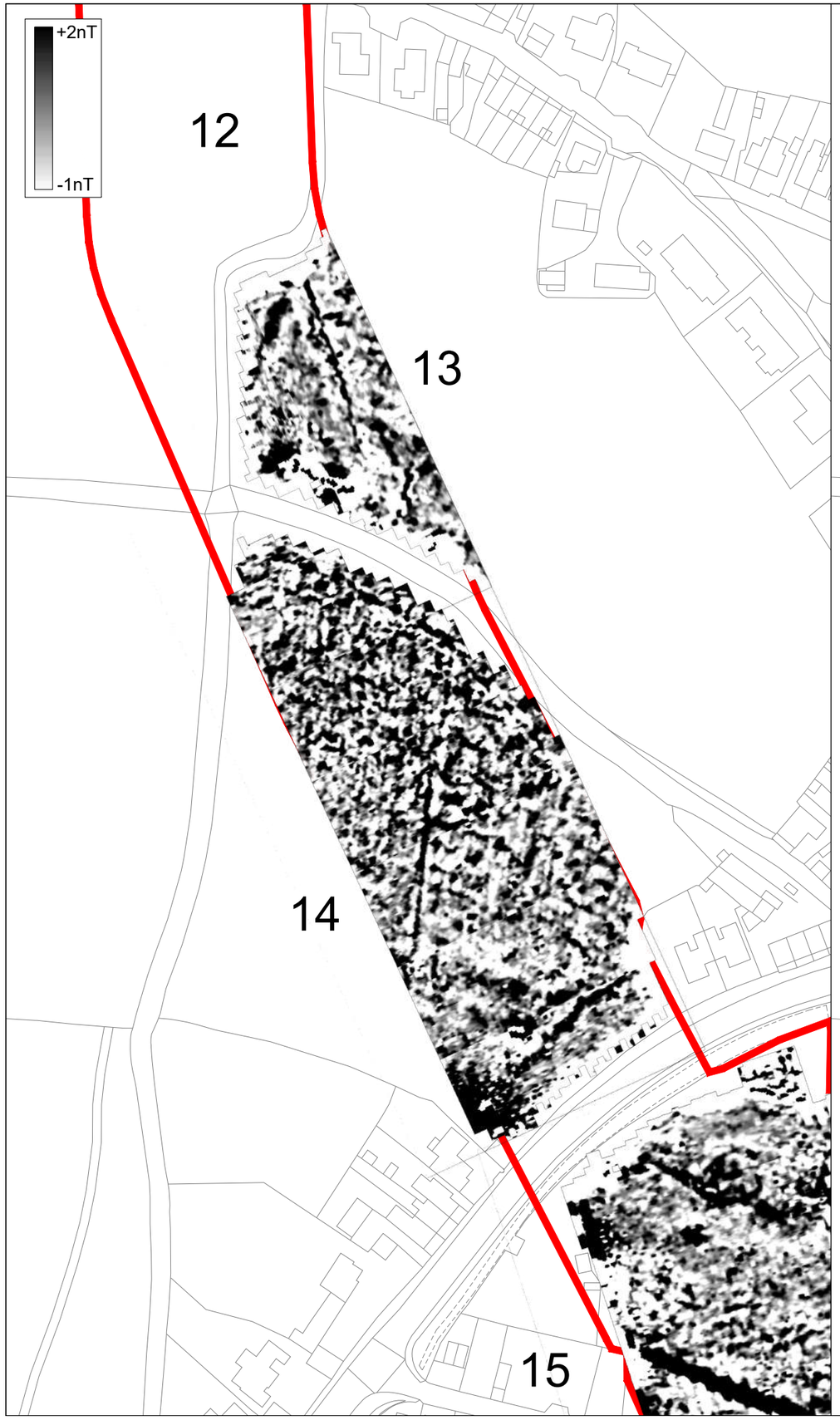

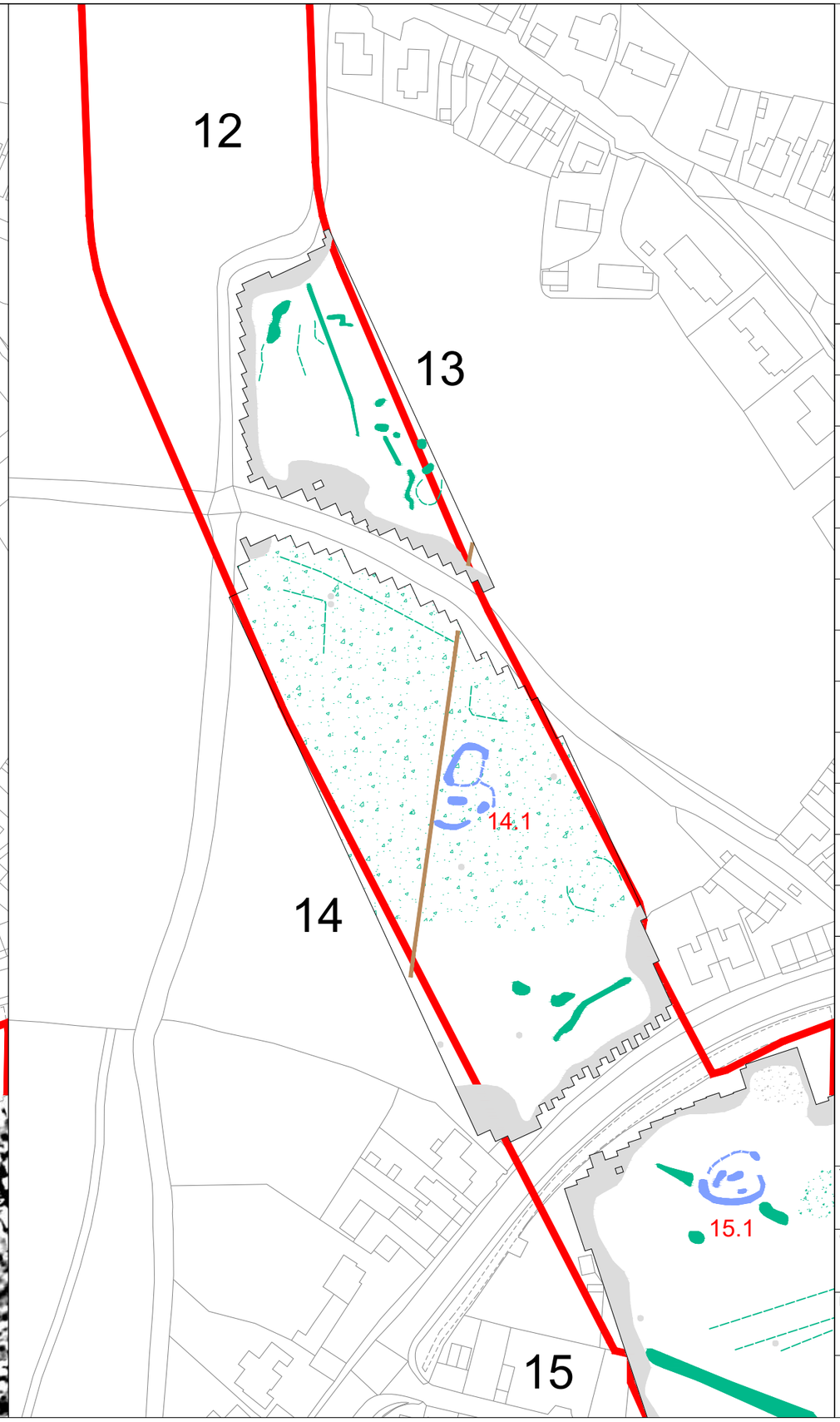

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	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Magnetometer Survey - Greyscale Plots / Interpretation (Area 13 & 14)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

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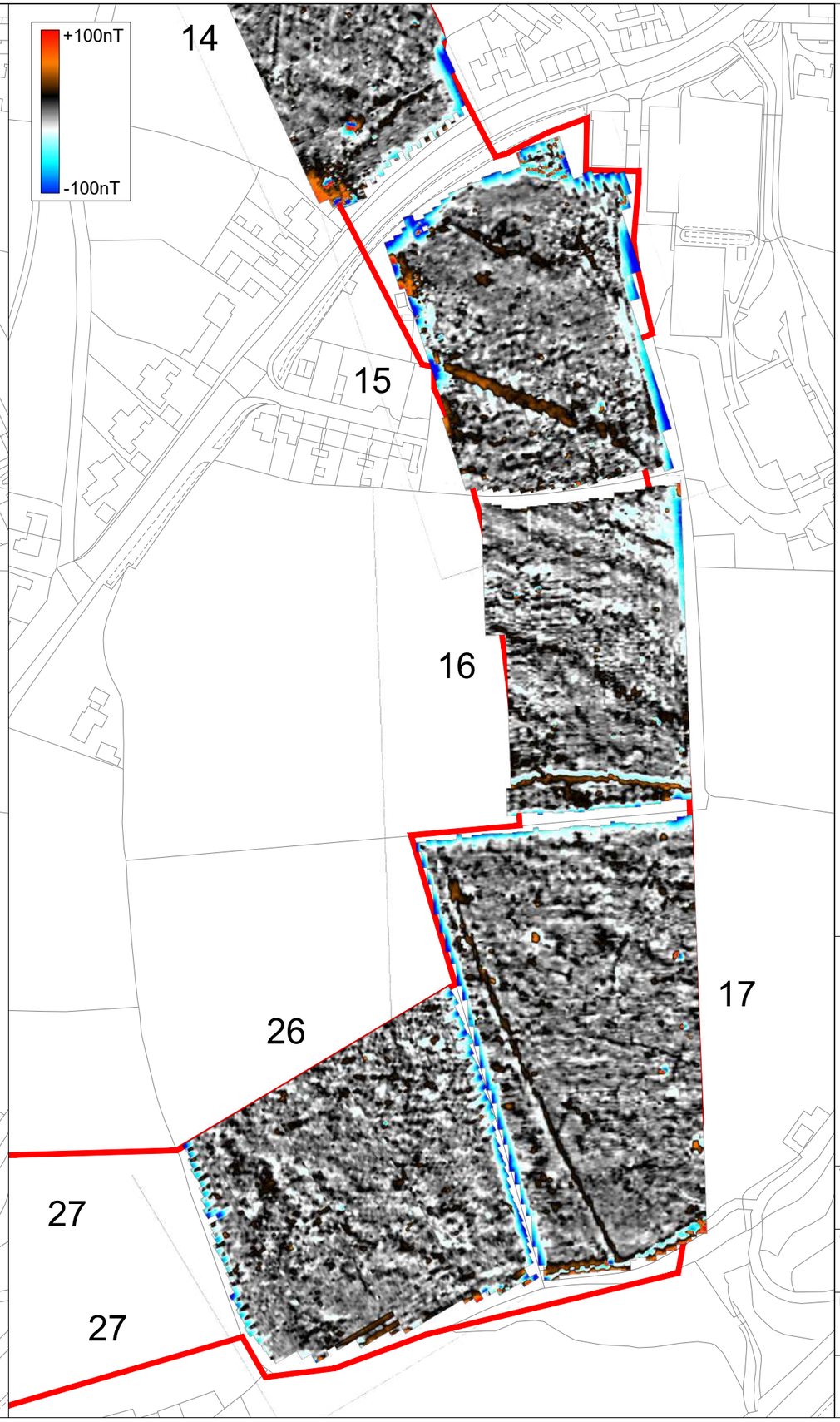

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sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Area 15, 16, 17 & 26)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
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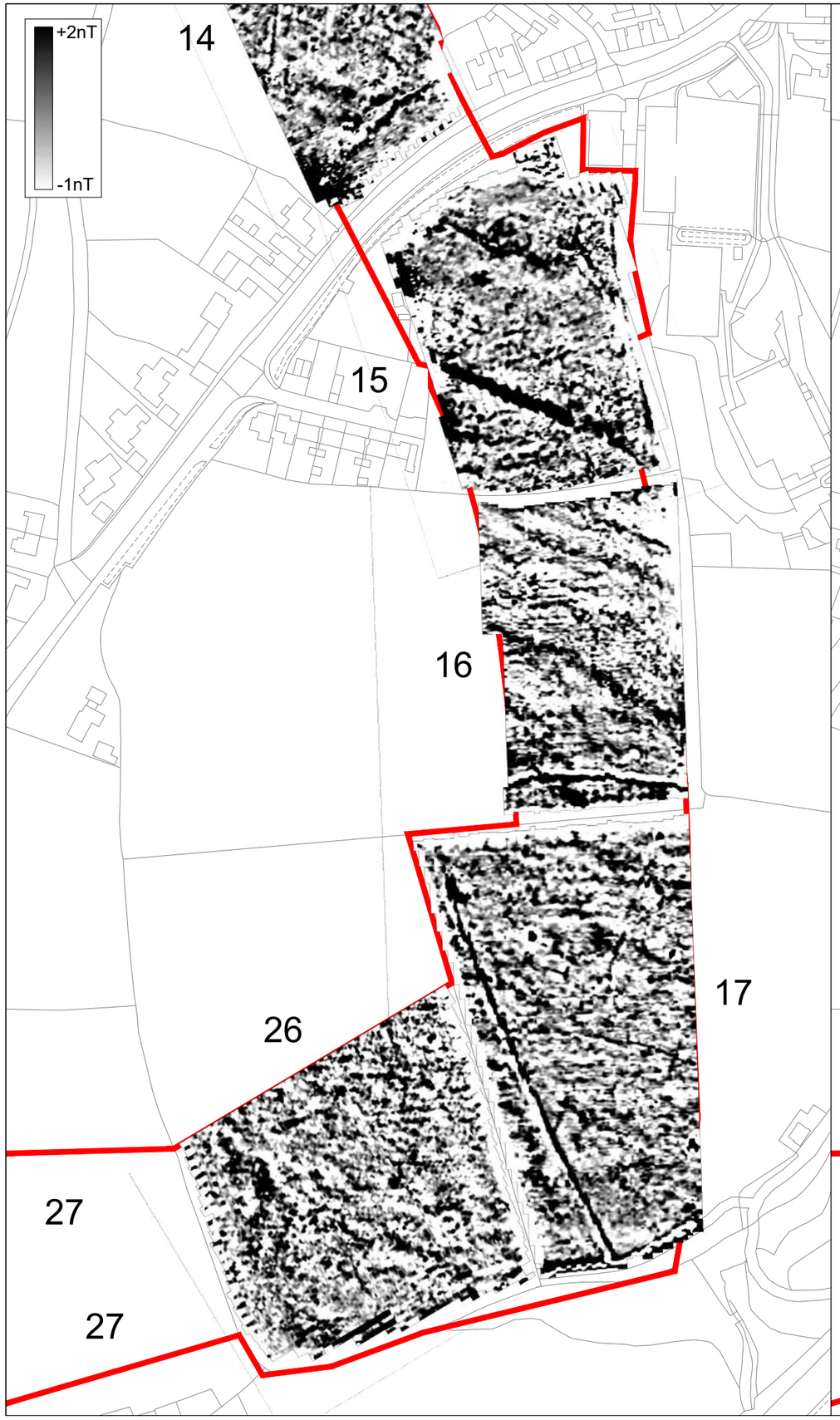

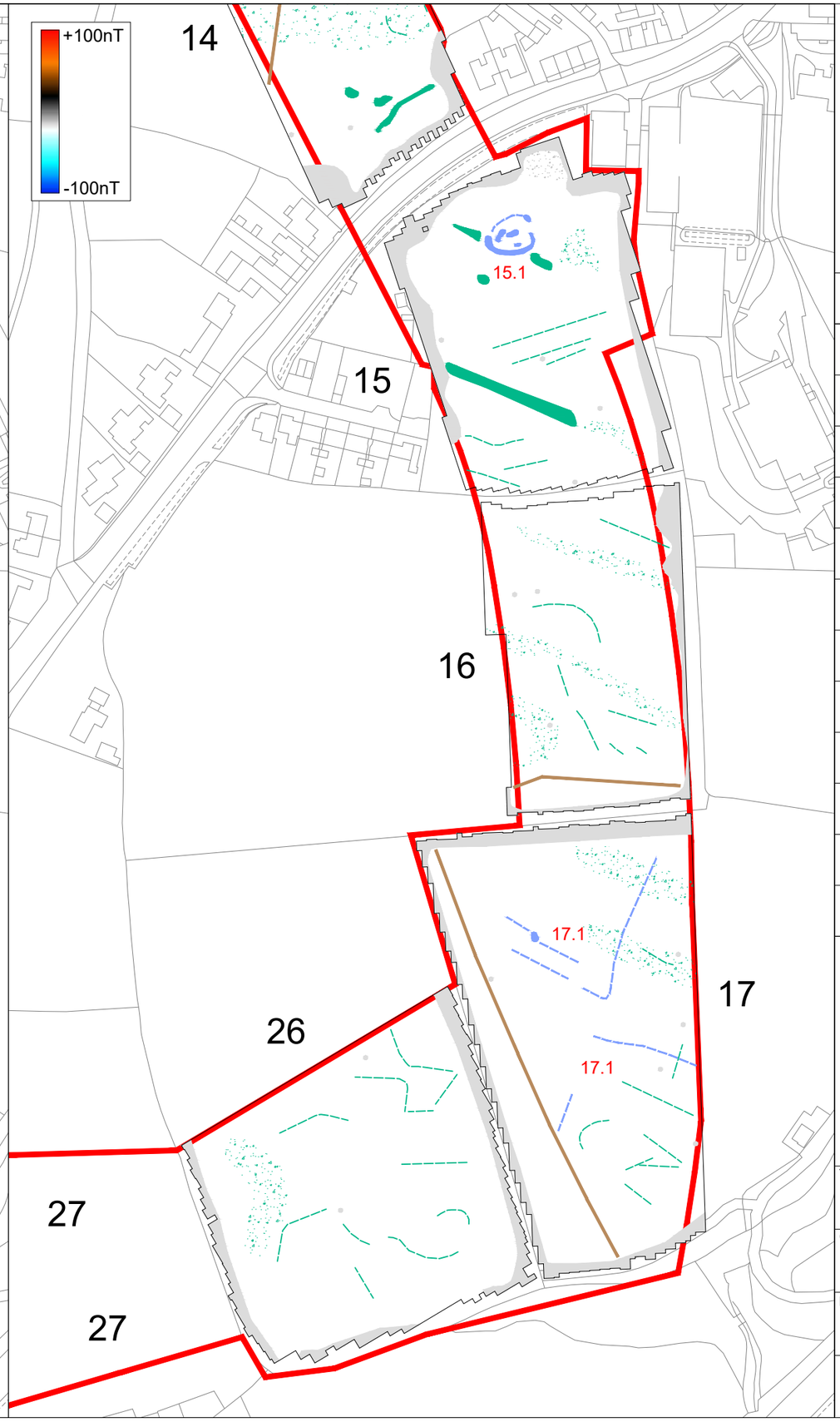

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	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Magnetometer Survey - Greyscale / Interpretation (Area 15, 16, 17 & 26)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

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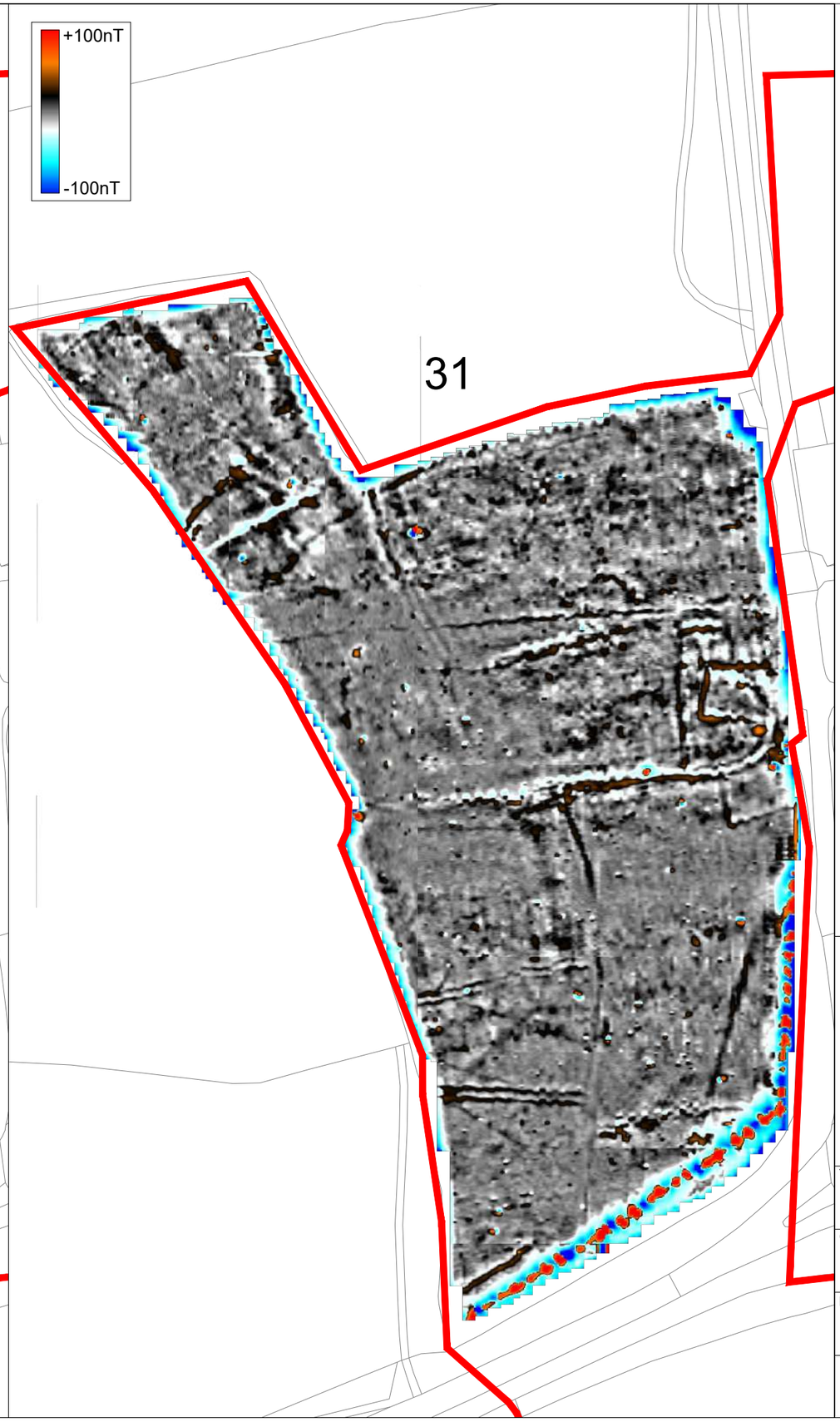

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Magnetometer Survey - Greyscale and Colour Plots (Area 31)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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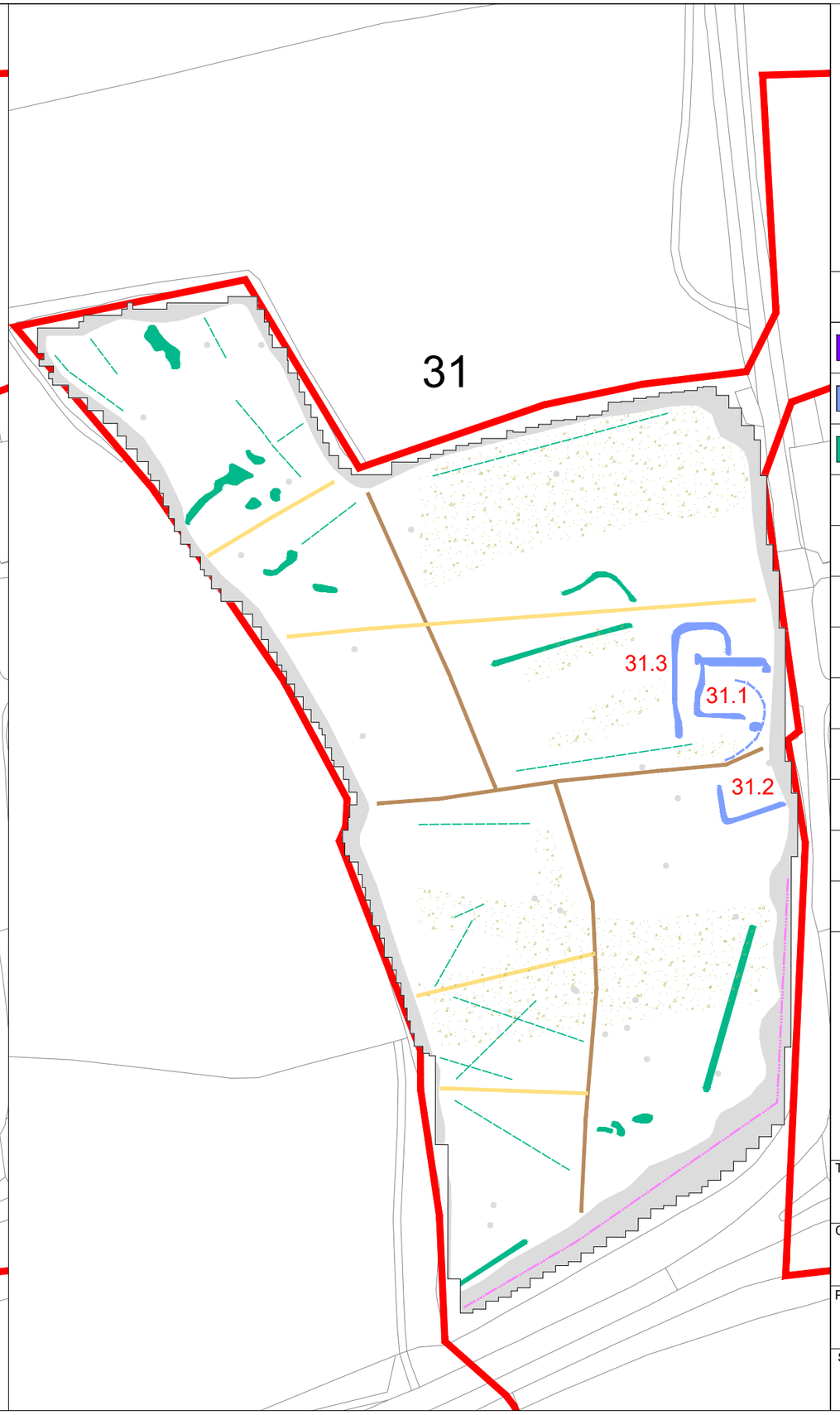

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	Magnetic disturbance
	Service
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GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots / Interpretation (Area 31)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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Fig No:
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+2nT

-1nT

41

42

N

+100nT

-100nT

41

42

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 41 and 42)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 140
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Fig No:
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+2nT

-1nT

41

42

41

41.1

42.3

42.1

42.2

42.2

42.2

42

N

KEY

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	Former field boundary (conjectural)
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	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots / Interpretation (Areas 41 and 42)

Client:
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Project:
08807 - Xlinks Morocco-UK Power Project

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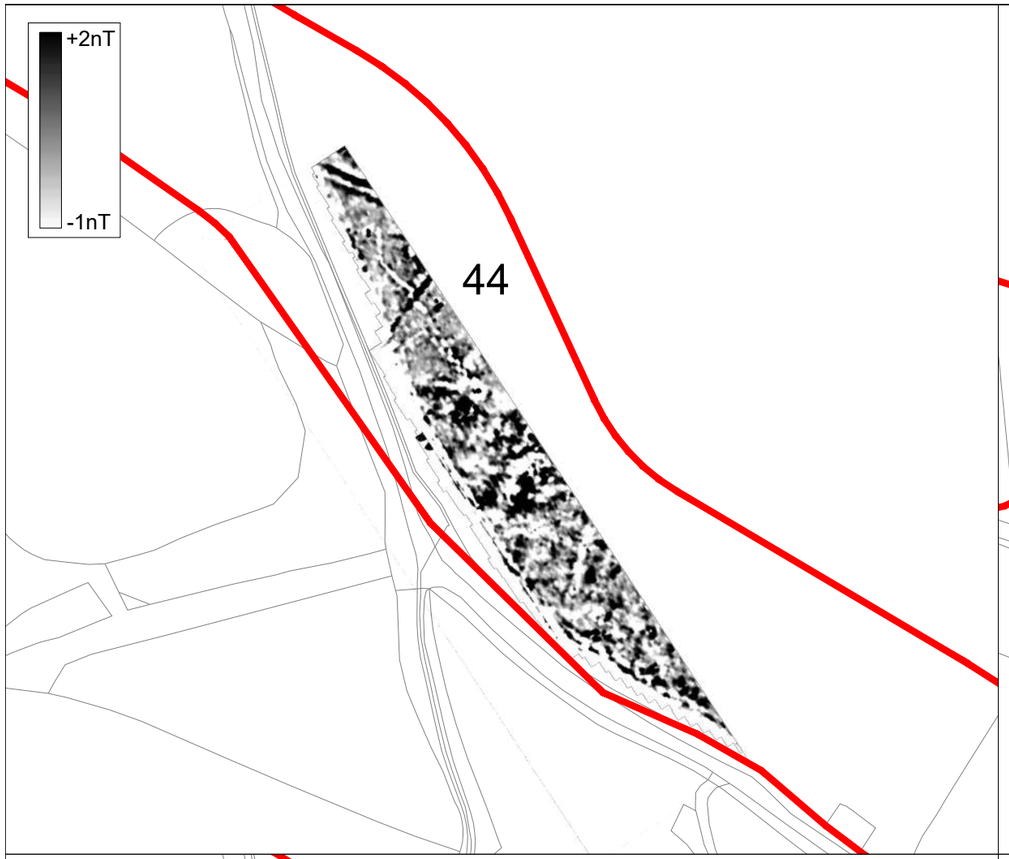

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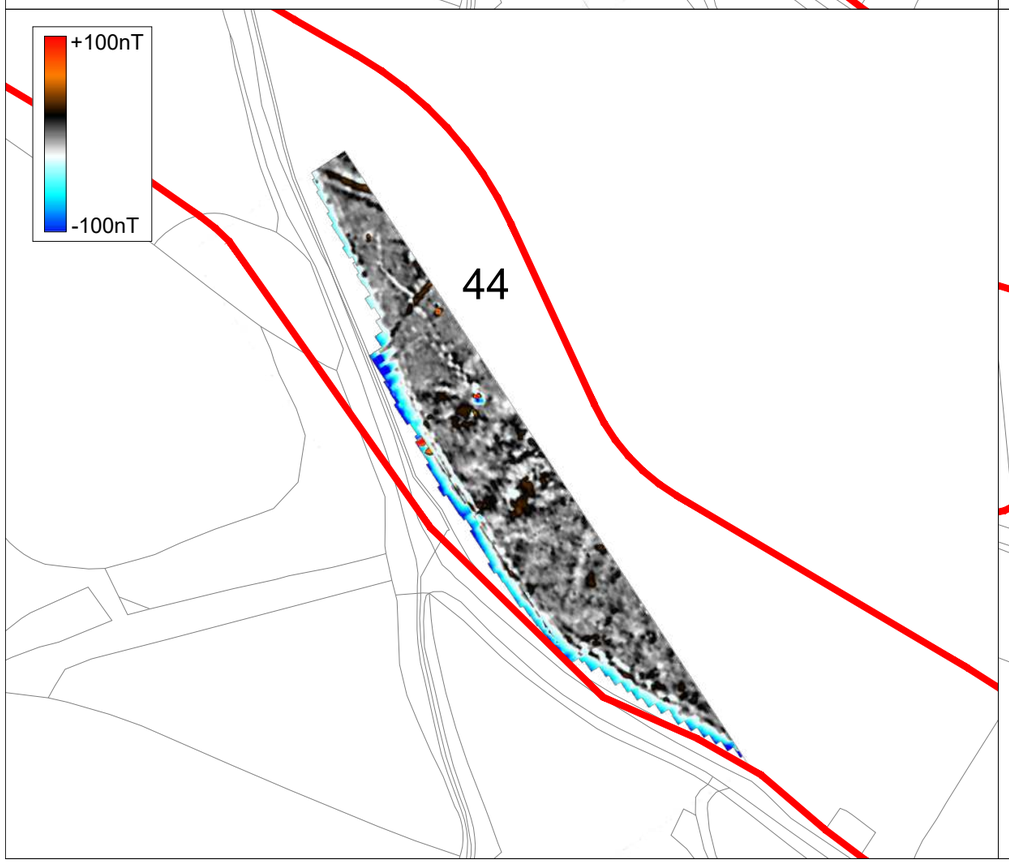

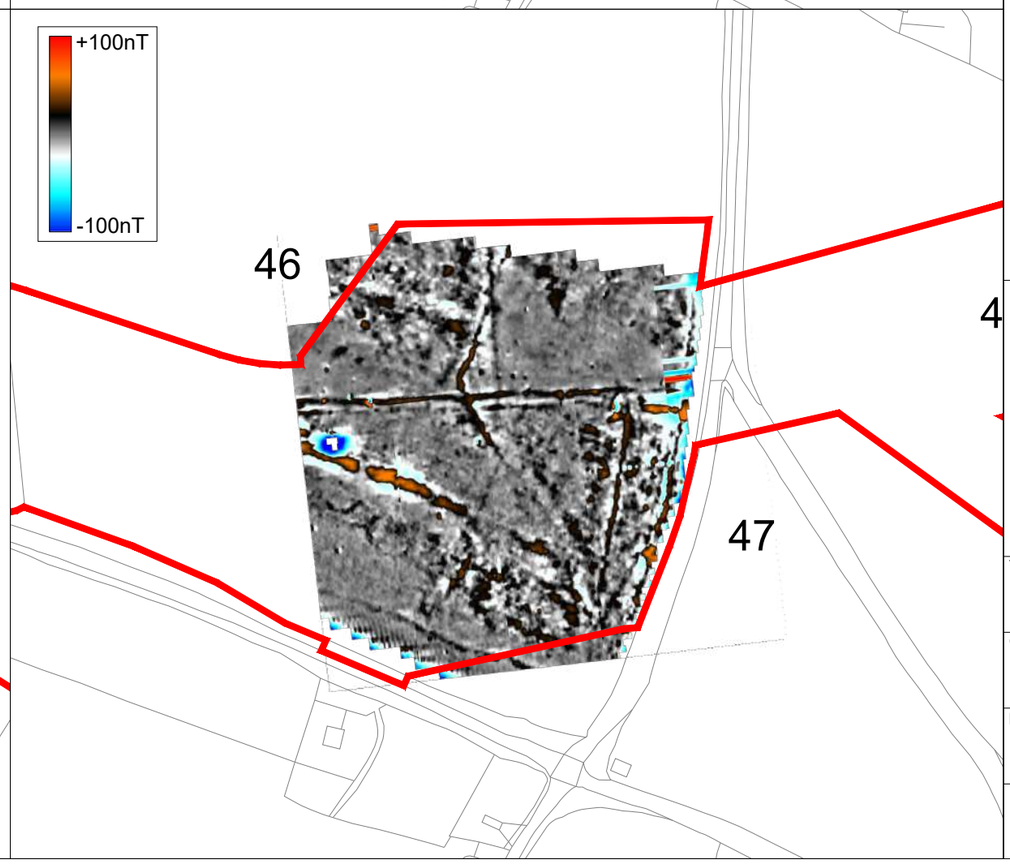

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 44 and 47)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
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Fig No:
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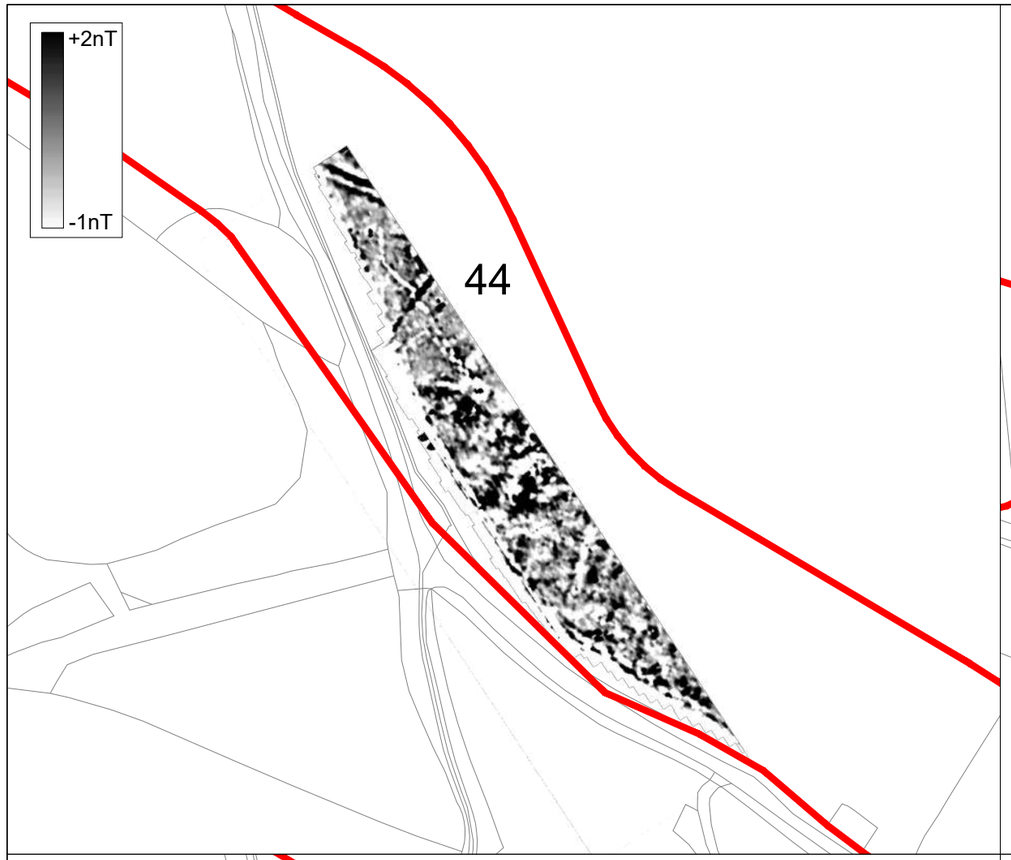

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	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots / Interpretation (Areas 44 and 47)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
14

+2nT

-1nT

57

58

59

60

61

N

+100nT

-100nT

57

58

59

60

61

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 58, 59, 60 and 61)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 120
1:2400 @ A3

Fig No:
15

+2nT
-1nT

57
58
59
60
61

61.1
61.1

N

KEY

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	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots / Interpretation (Areas 58, 59, 60 and 61)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 120
1:2400 @ A3

Fig No:
16

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Magnetometer Survey - Greyscale Plots (Areas 62, 63, 63, 66, 67, 68, 69, 70, 160, 161, 164 and 165)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 130

1:2600 @ A3

Fig No: 17

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Magnetometer Survey - Colour Plots (Areas 62, 63, 63, 66, 67, 68, 69, 70, 160, 161, 164 and 165)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 130

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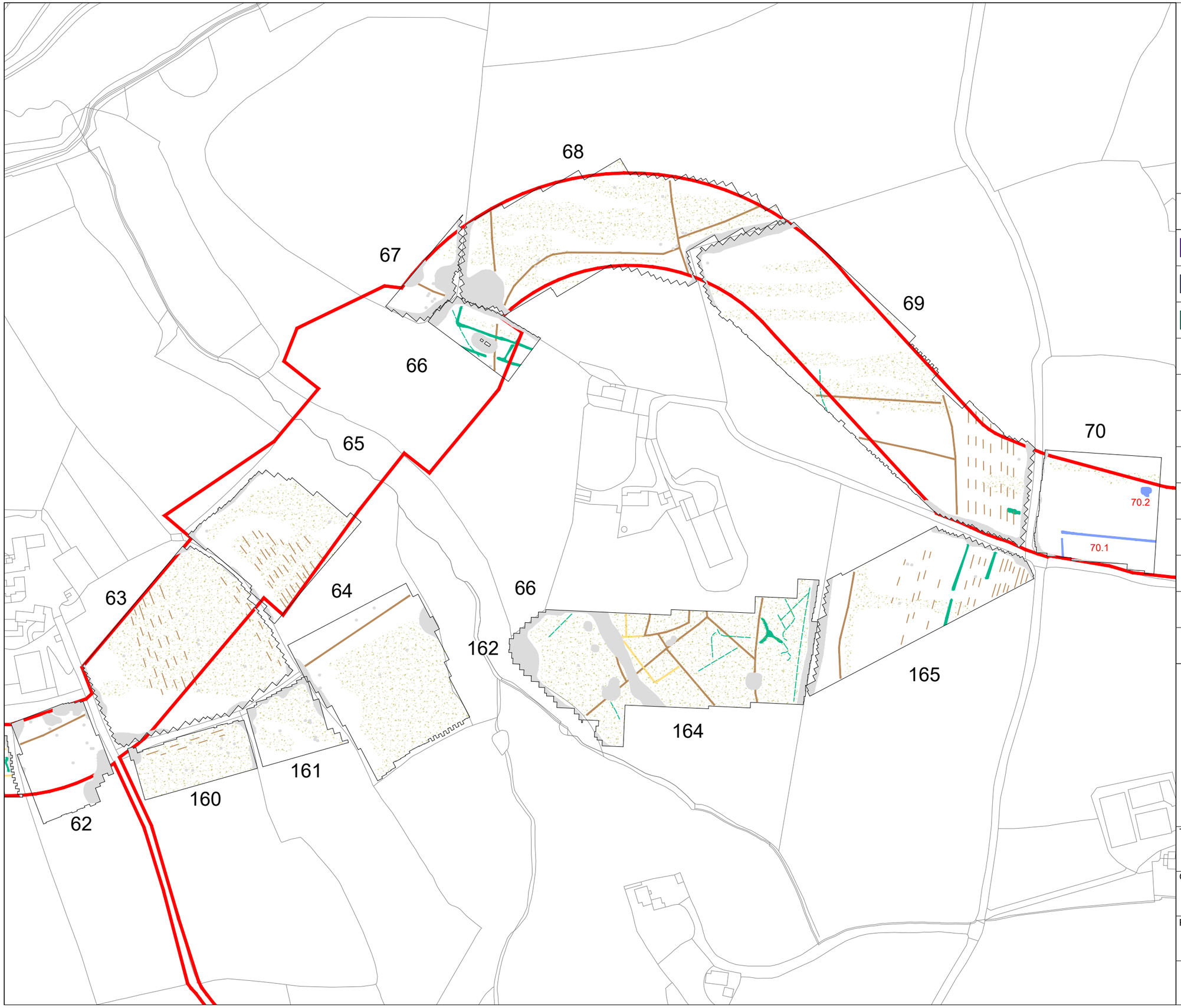
Fig No: 18



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	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Magnetometer Survey - Interpretation (Areas 62, 63, 63, 66, 67, 68, 69, 70, 160, 161, 164 and 165)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

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Fig No: 19

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sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Area 73)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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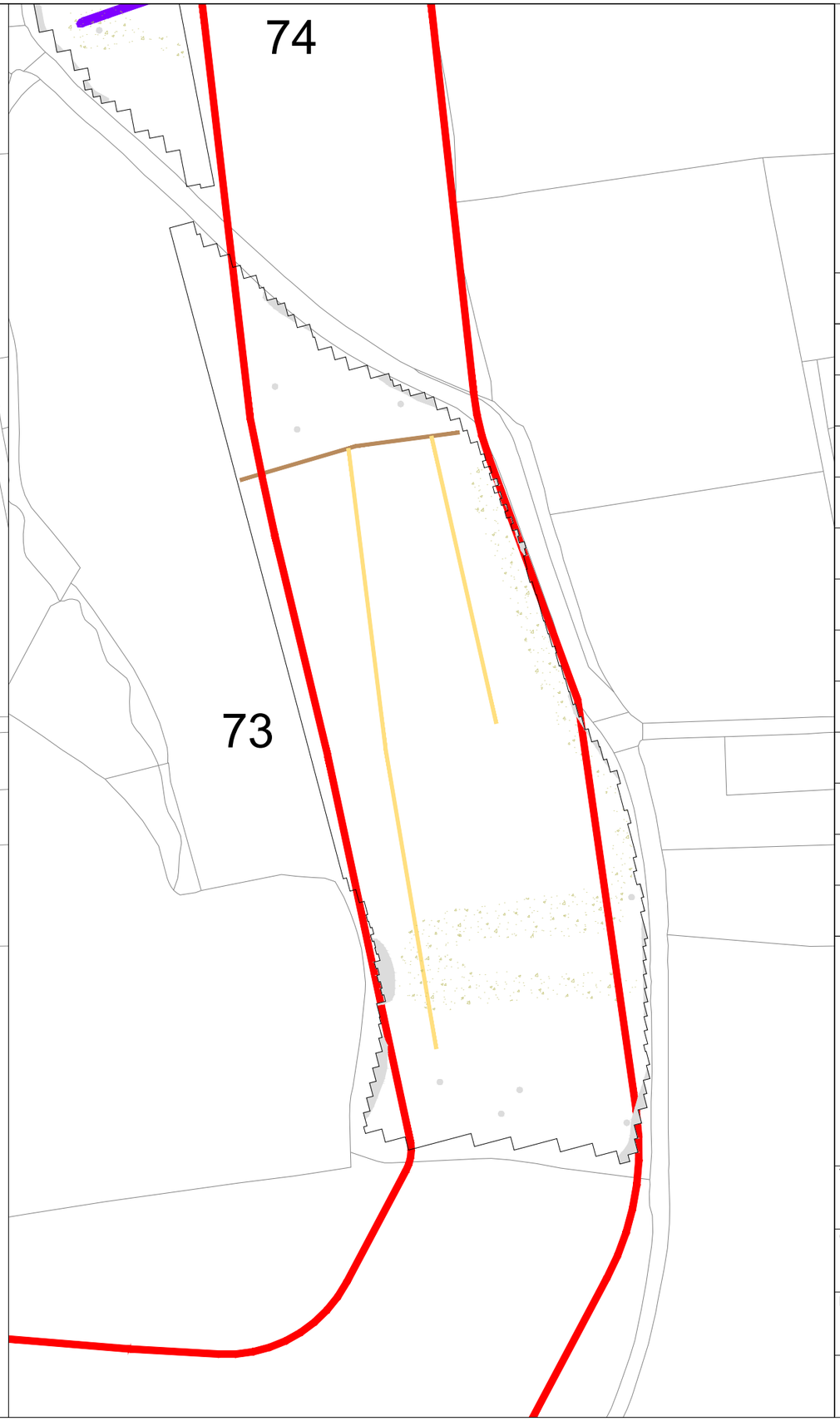

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	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots / Interpretation (Area 73)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
21

N

+2nT

-1nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 74 and 76)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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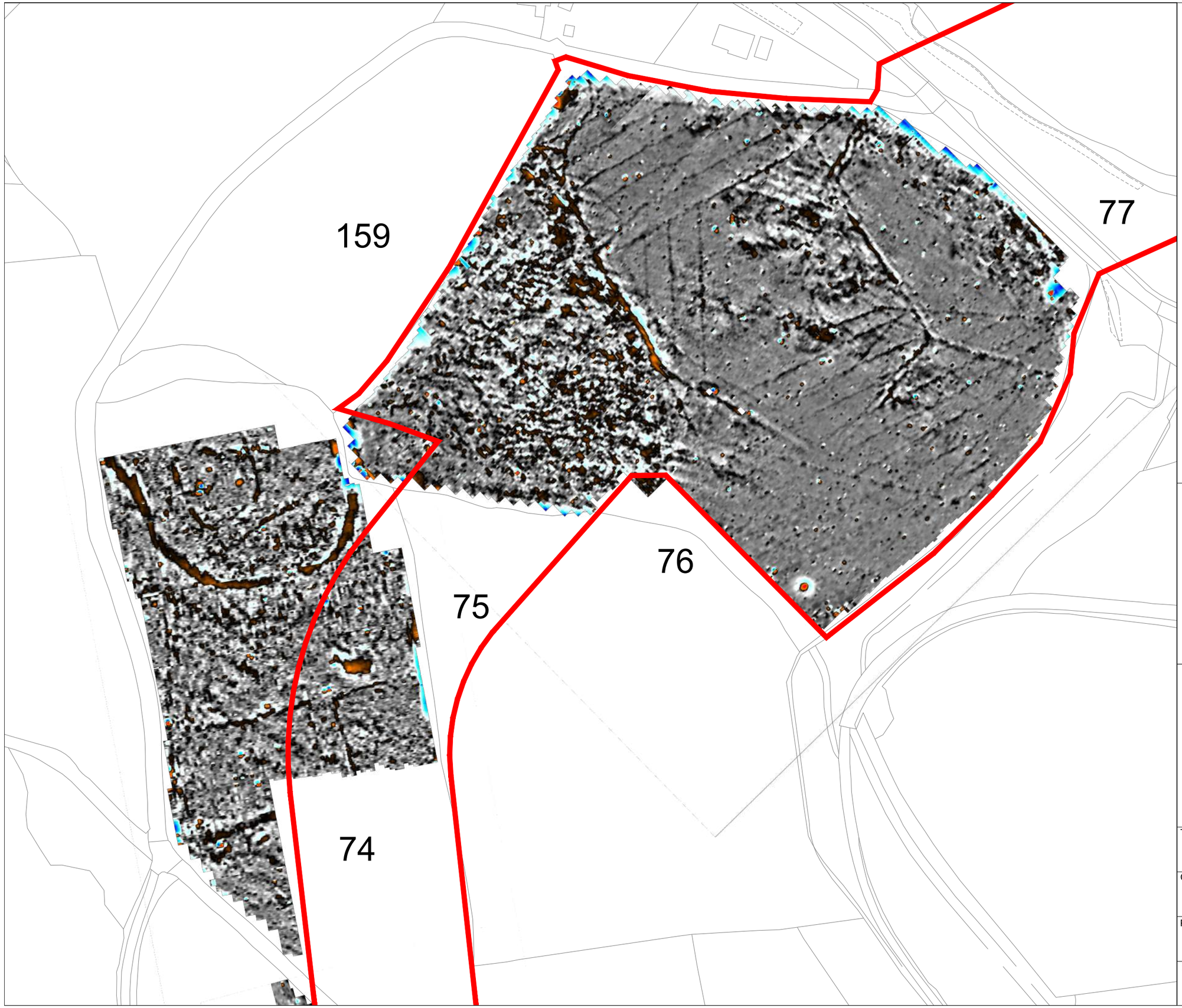

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+100nT

-100nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
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Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
23

159

77

76

75

74

74.1

74.2

74.3

74.4

74.5

N

KEY

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	Former field boundary (conjectural)
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	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation (Areas 74 and 76)

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RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

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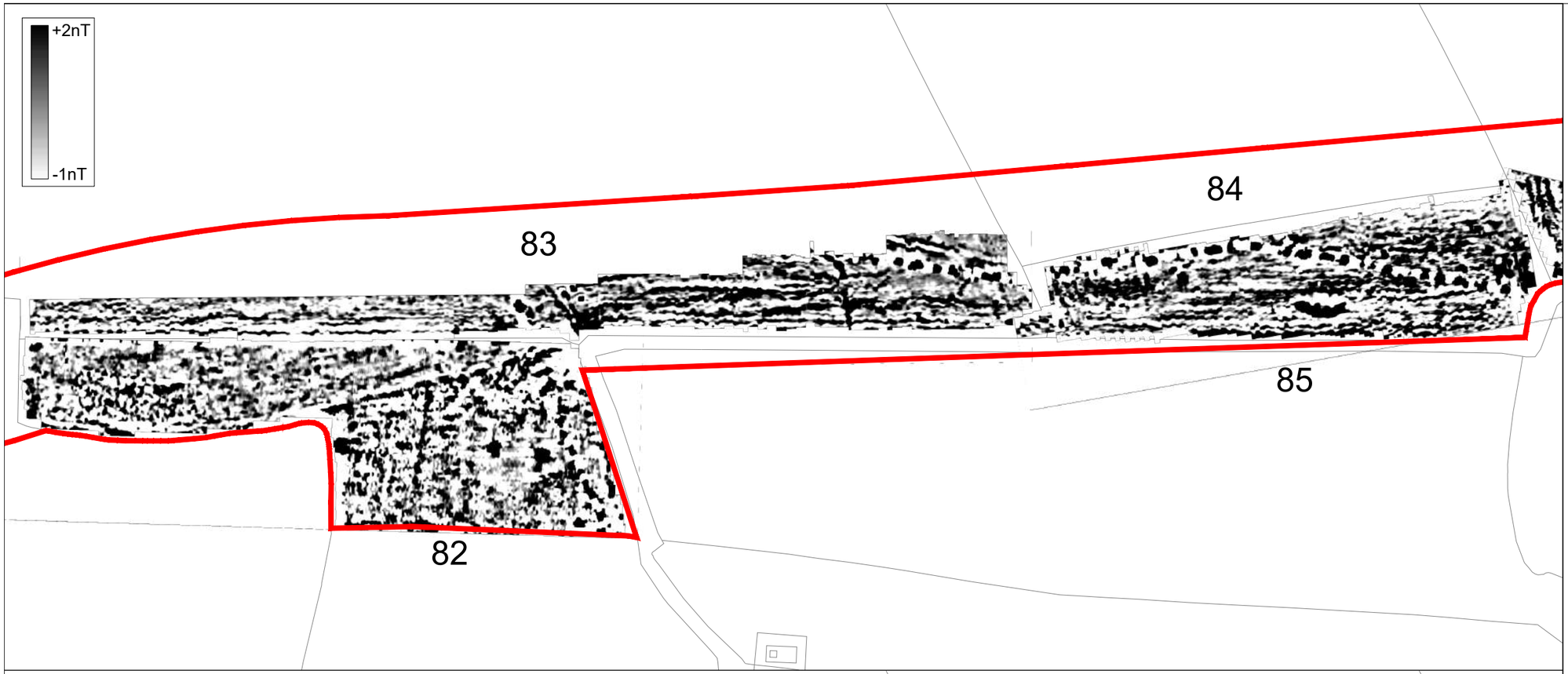
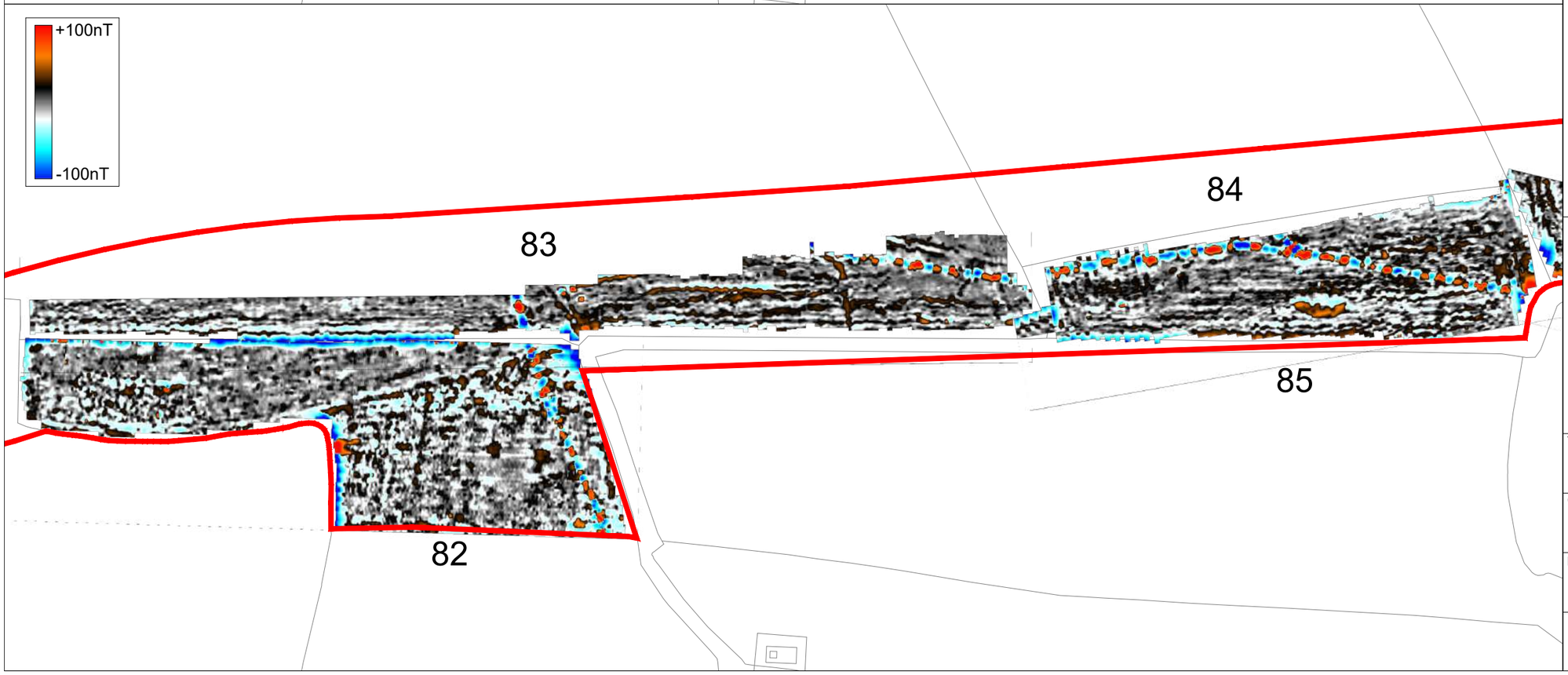




N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 82, 83 and 84)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
25

N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

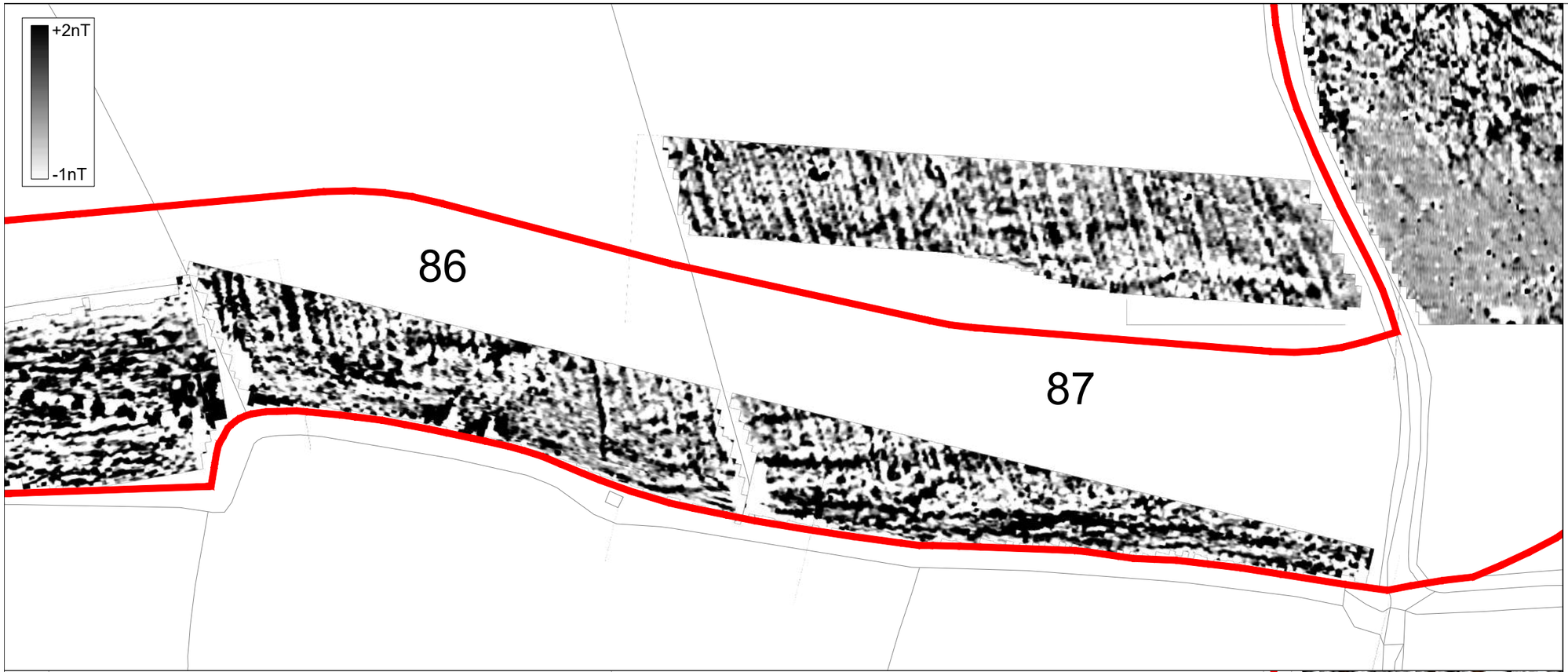
Title:
Magnetometer Survey - Greyscale Plots and Interpretation (Areas 82, 83 and 85)

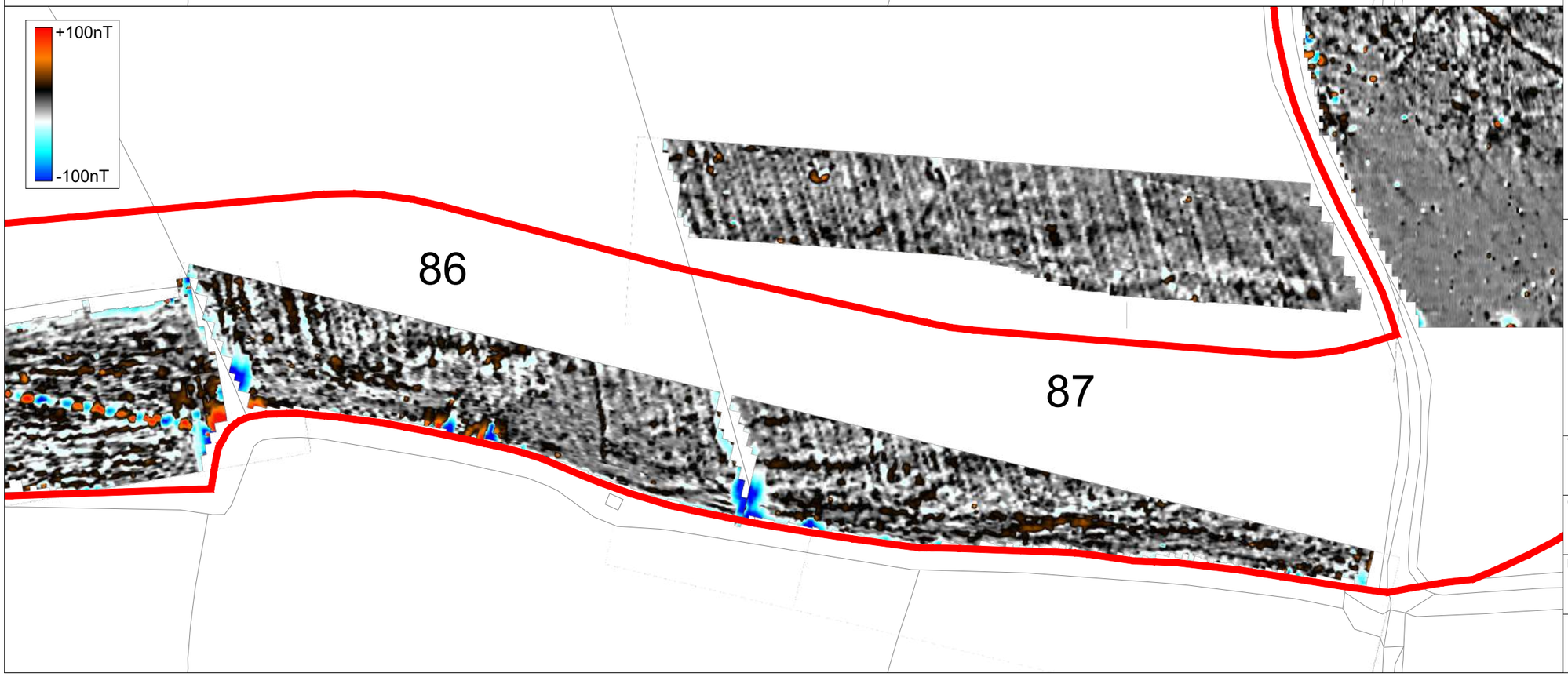
Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
26





N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 86 and 87)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
27

N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 86 and 87)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
28

N

+2nT

-1nT

87

88

89

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 88 and 89)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
29

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

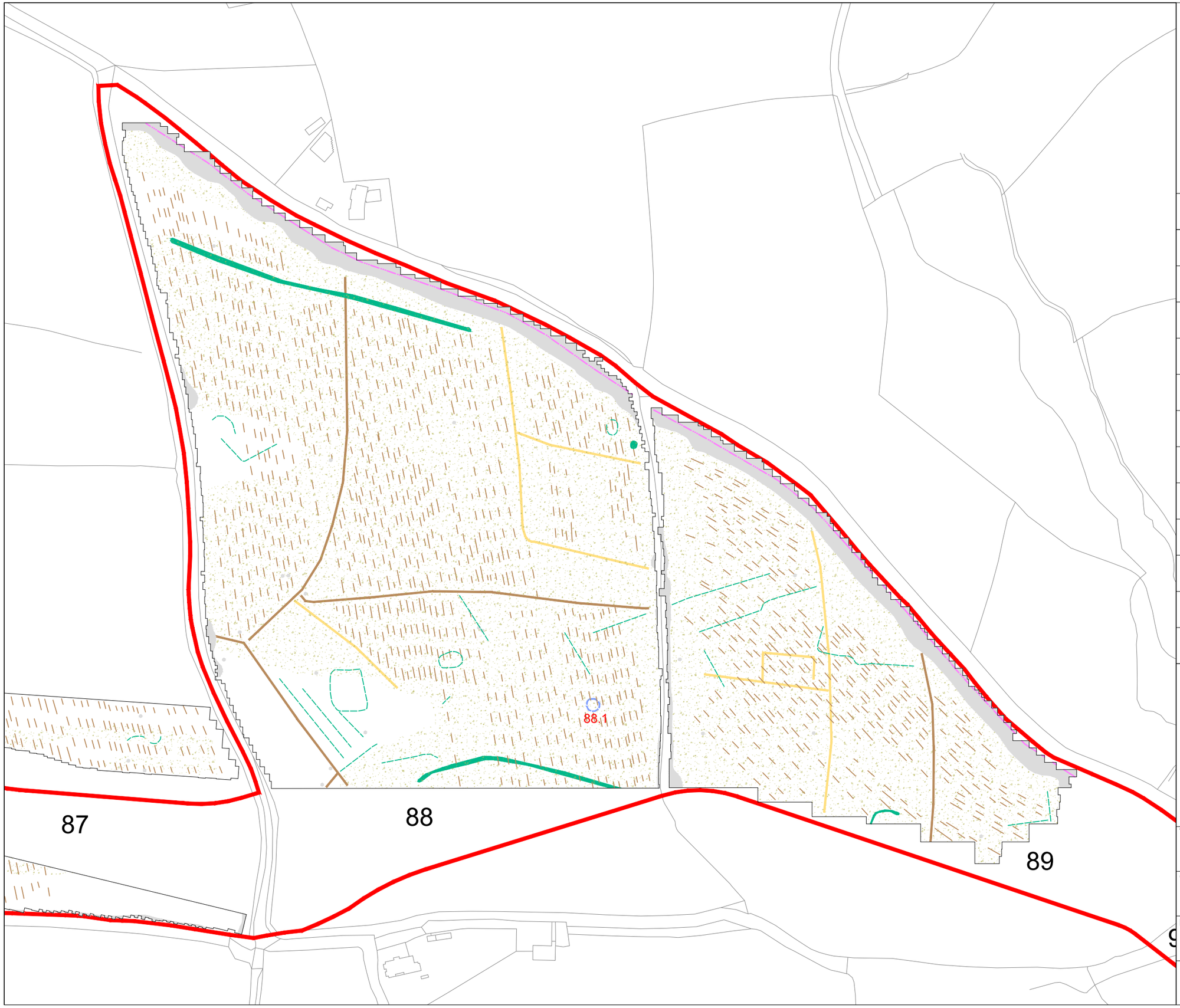
Title:
Magnetometer Survey - Colour Plots
(Areas 88 and 89)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
30



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KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation
(Areas 88 and 89)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
31

90

91

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Area 91)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
32

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

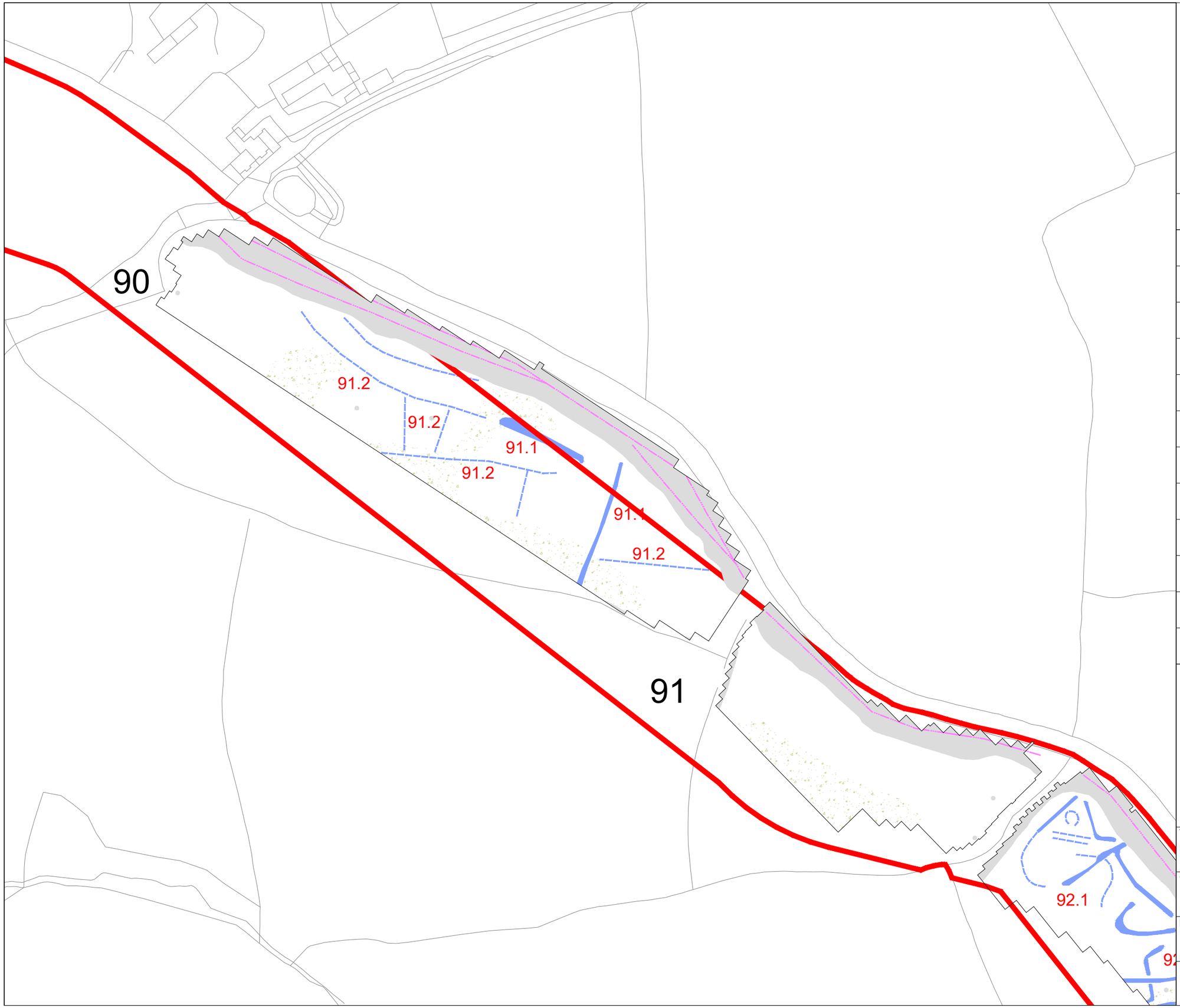
Title:
Magnetometer Survey - Colour Plots
(Area 91)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
33



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation (Area 91)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
34

92

93

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 92 and 93)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
35

92

93

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

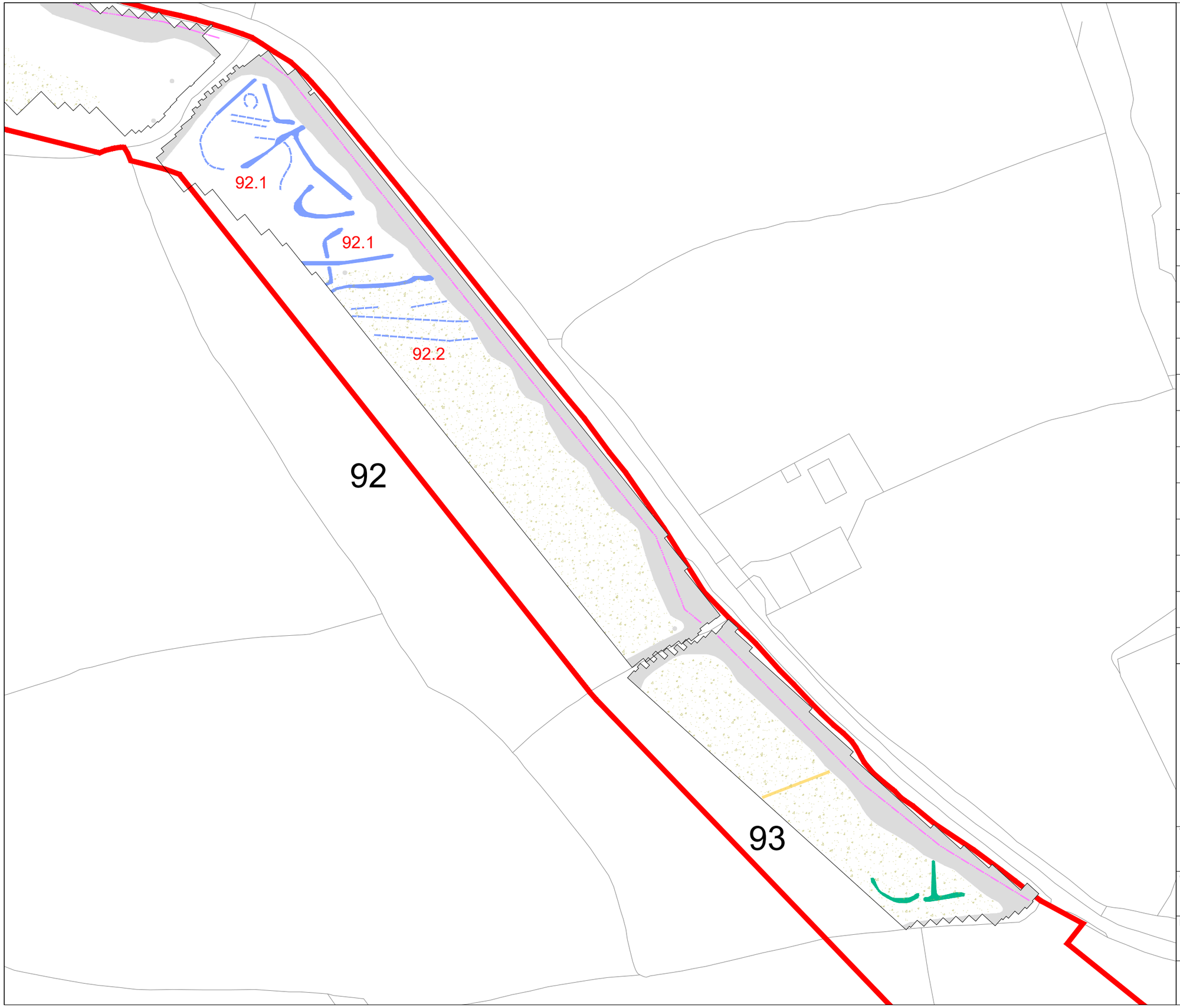
Title:
Magnetometer Survey - Colour Plots (Areas 92 and 93)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
36



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation (Areas 92 and 93)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
37

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

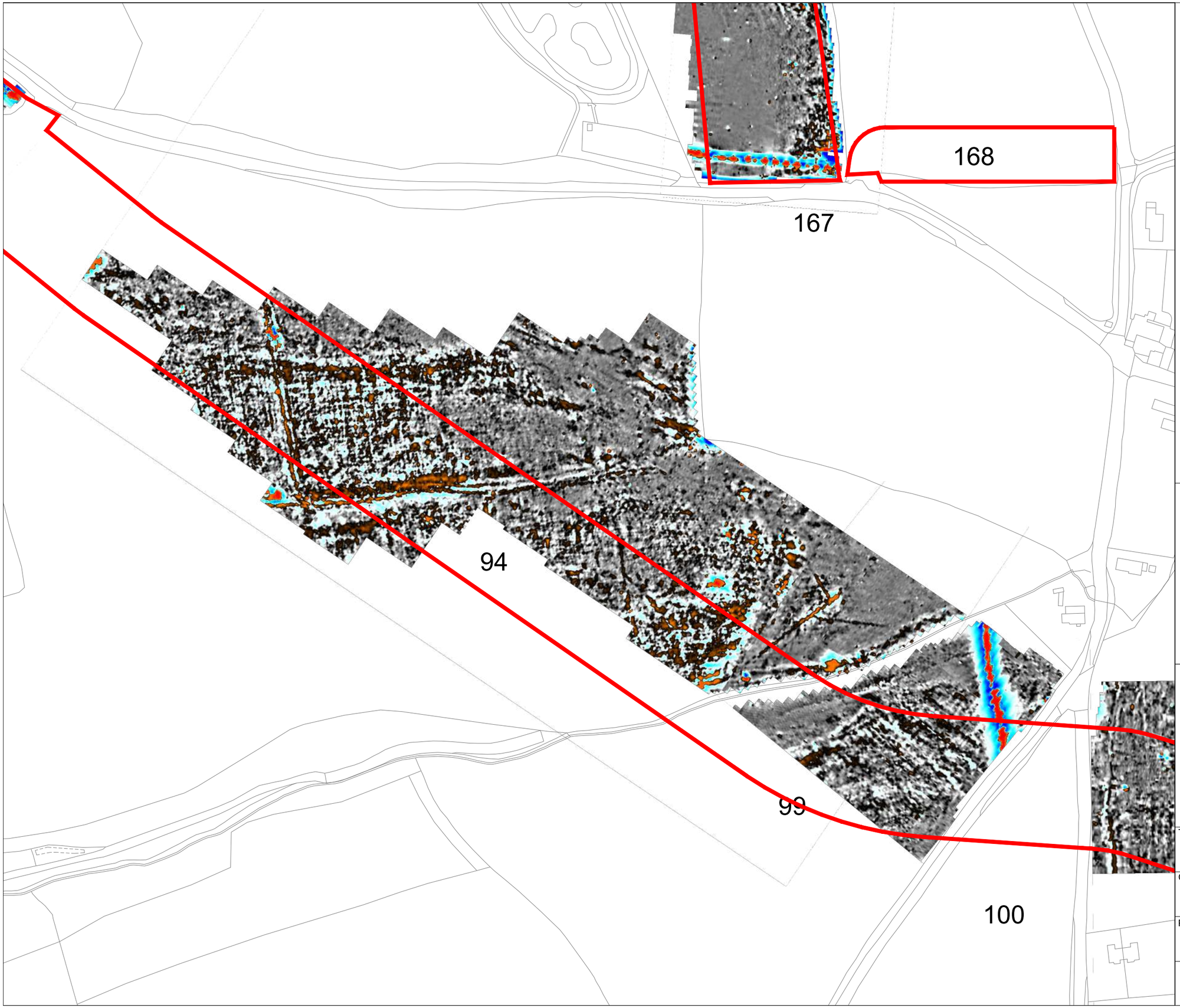
Title:
Magnetometer Survey - Greyscale Plots
(Areas 94 and 99)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
38



N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

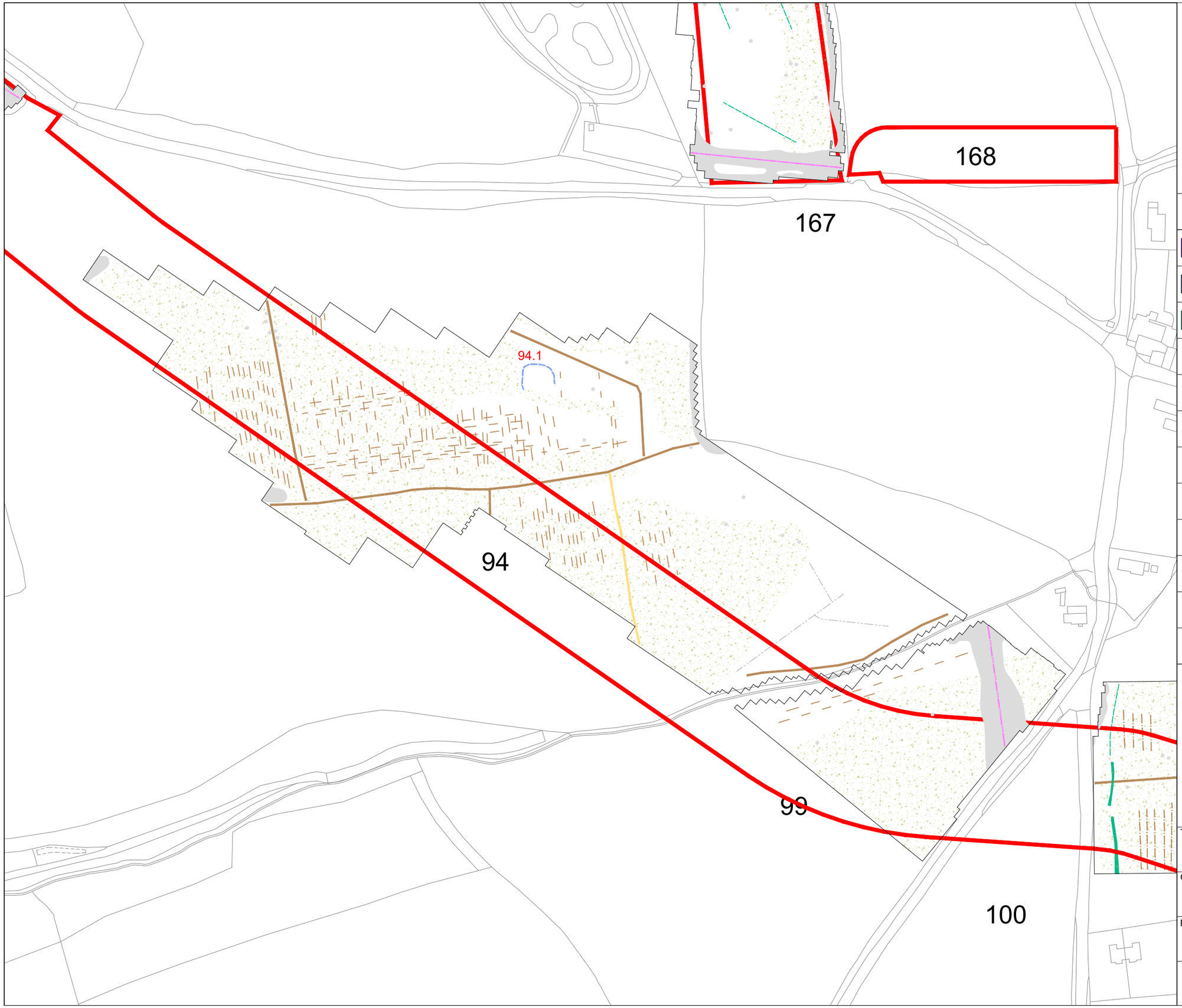
Title:
Magnetometer Survey - Colour Plots
(Areas 94 and 99)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
39



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation
(Areas 94 and 99)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
40

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 101, 102 and 108)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
41

)0

101

102

108

111

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

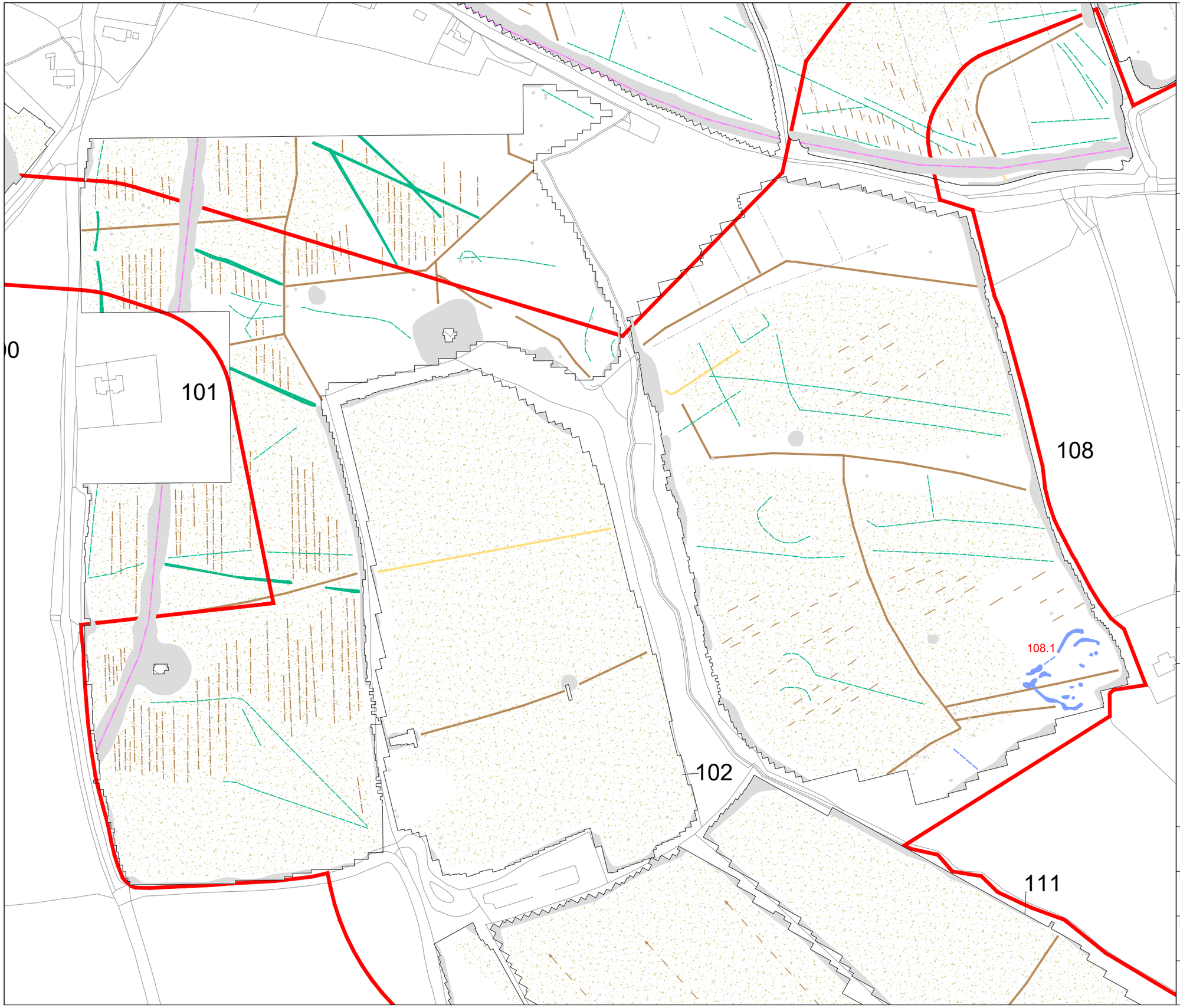
Title:
Magnetometer Survey - Colour Plots (Areas 101, 102 and 108)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
42



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation
(Areas 101, 102 and 108)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
43

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 109, 110, 111 and 152)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
44

N

+100nT

-100nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

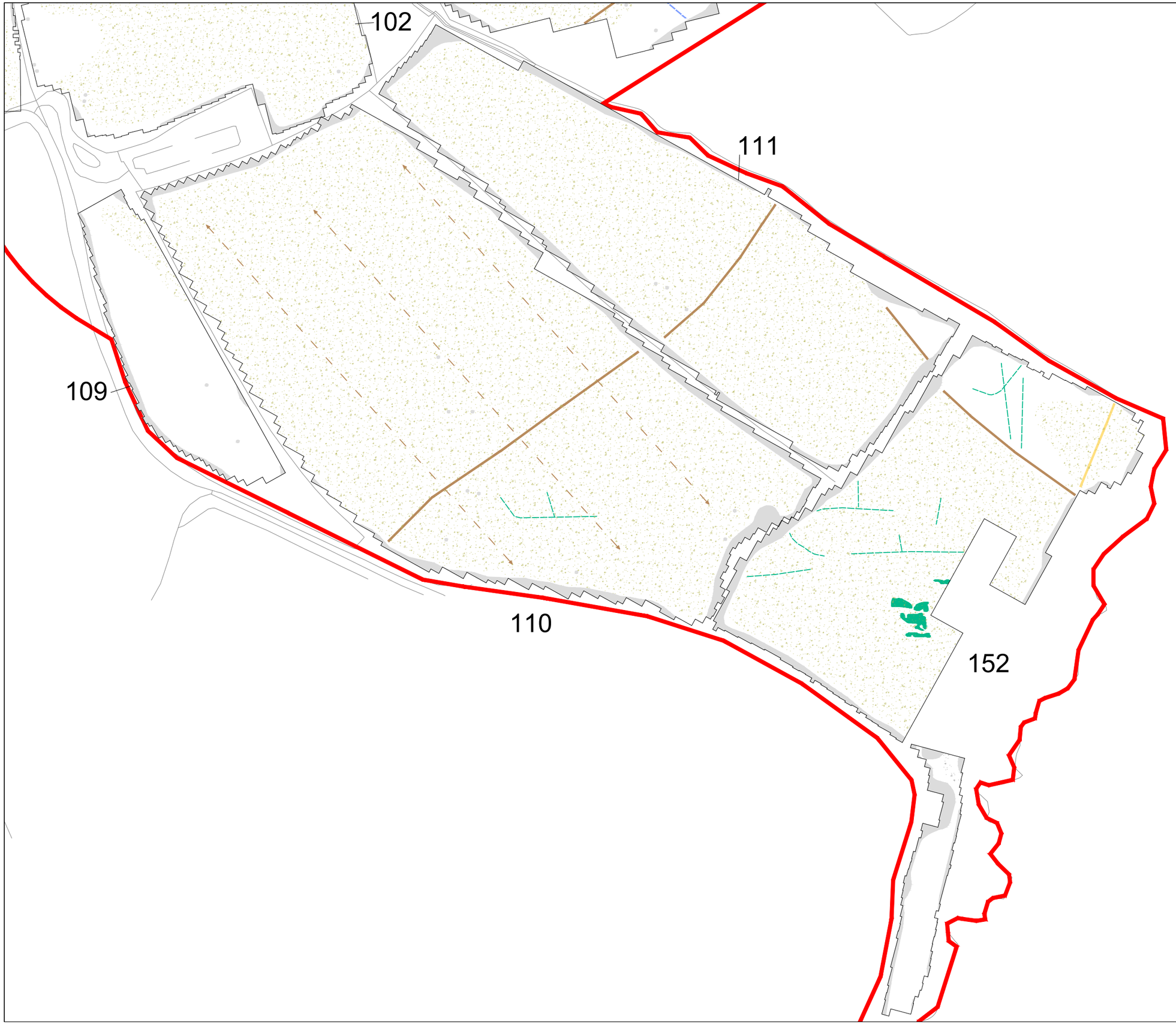
Title:
Magnetometer Survey - Colour Plots (Areas 109, 110, 111 and 152)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
45



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation
(Areas 109, 110, 111 and 152)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
46

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots
(Areas 114, 115 and 116)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
47

136

115

116

114

N

+100nT

-100nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

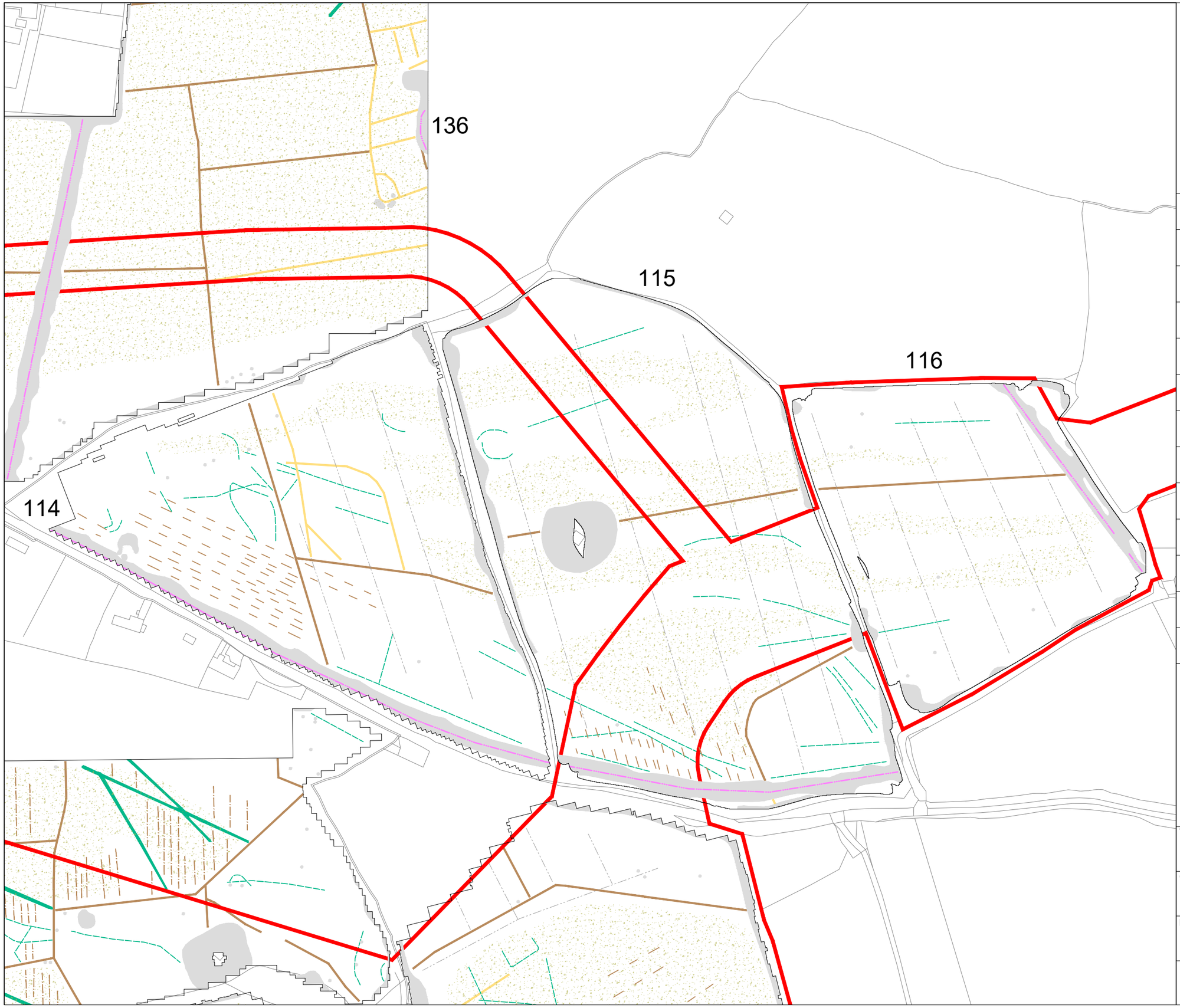
Title:
Magnetometer Survey - Colour Plots (Areas 114, 115 and 116)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
48



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

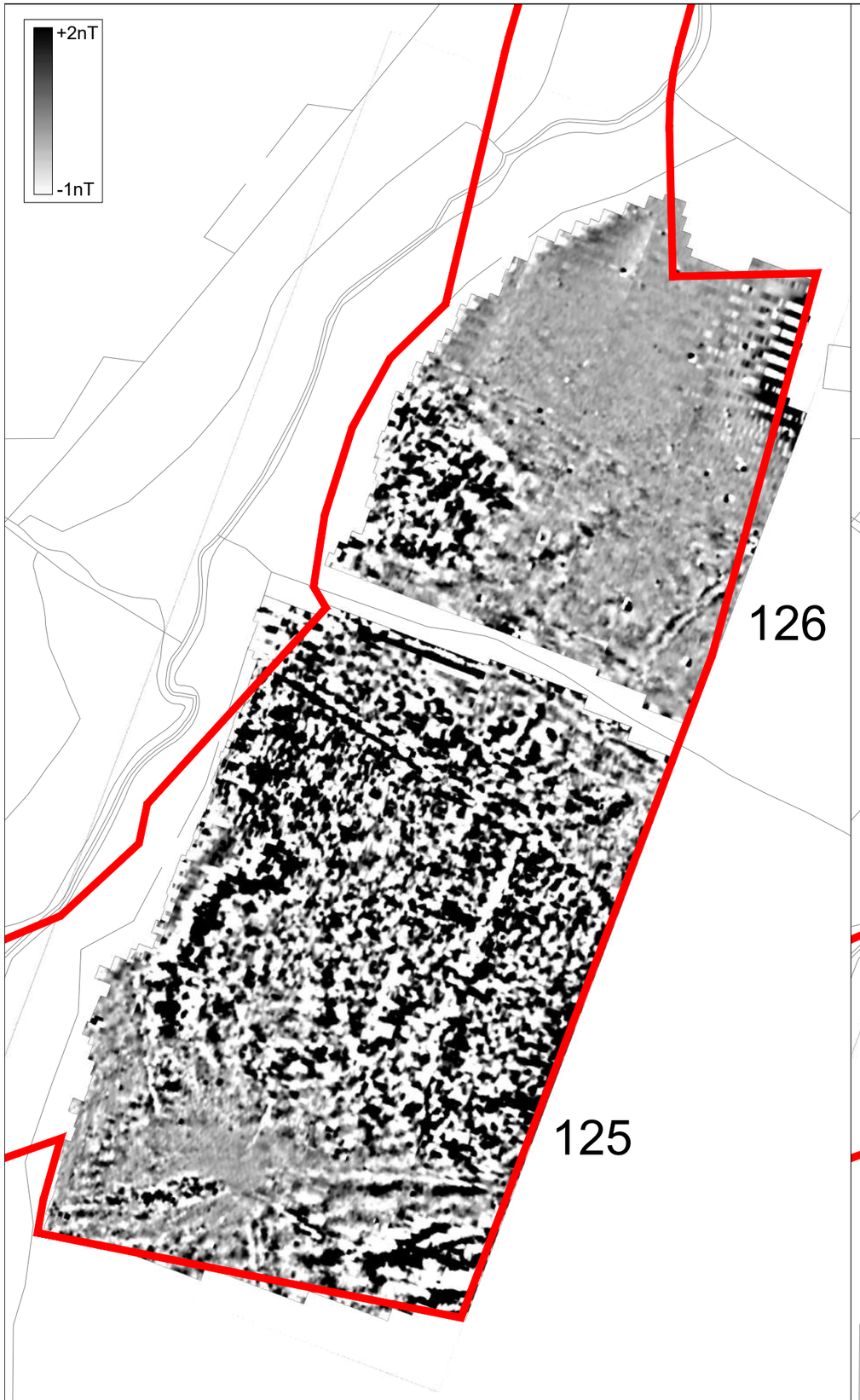
Title:
Magnetometer Survey - Interpretation
(Areas 114, 115 and 116)

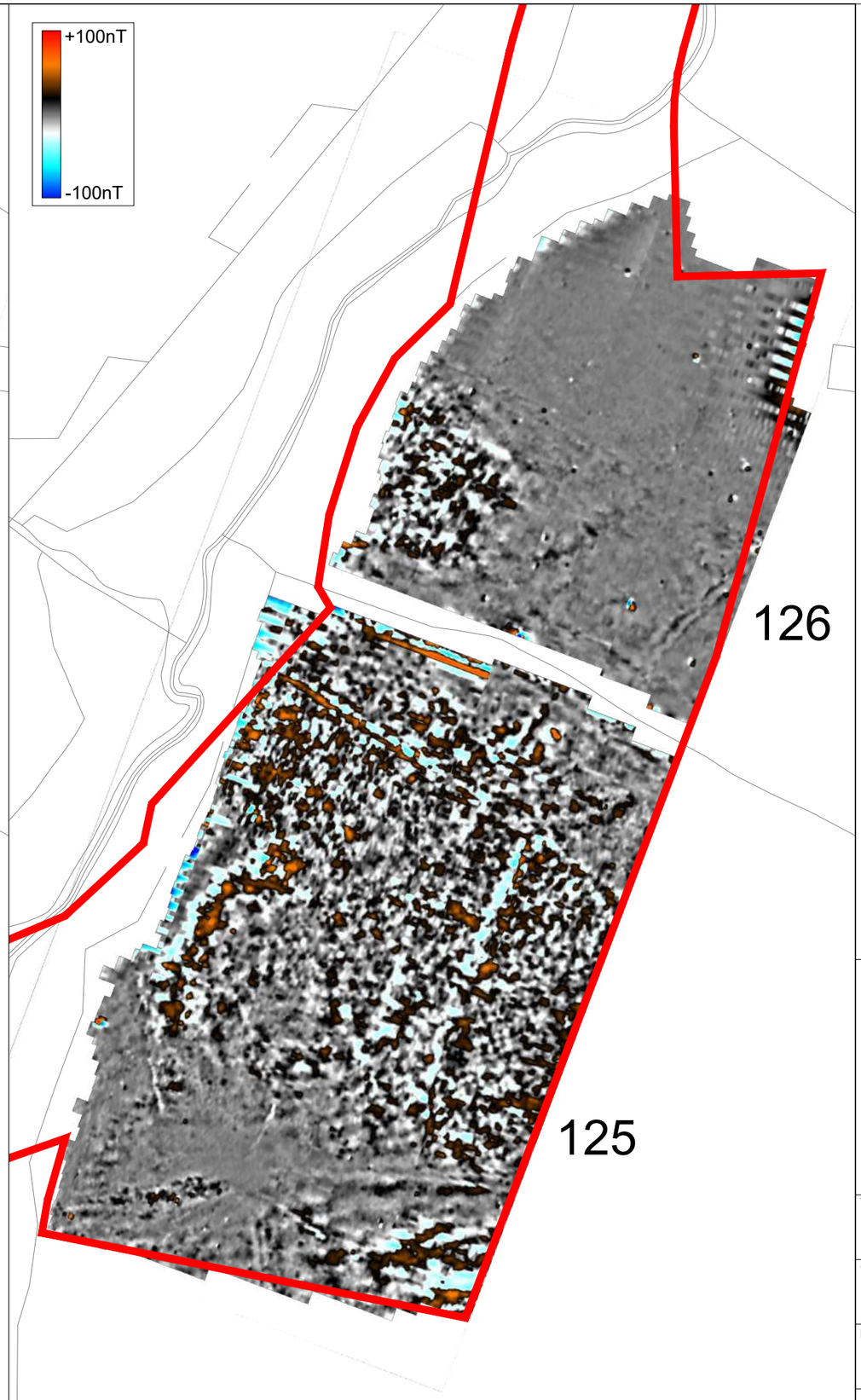
Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
49





N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

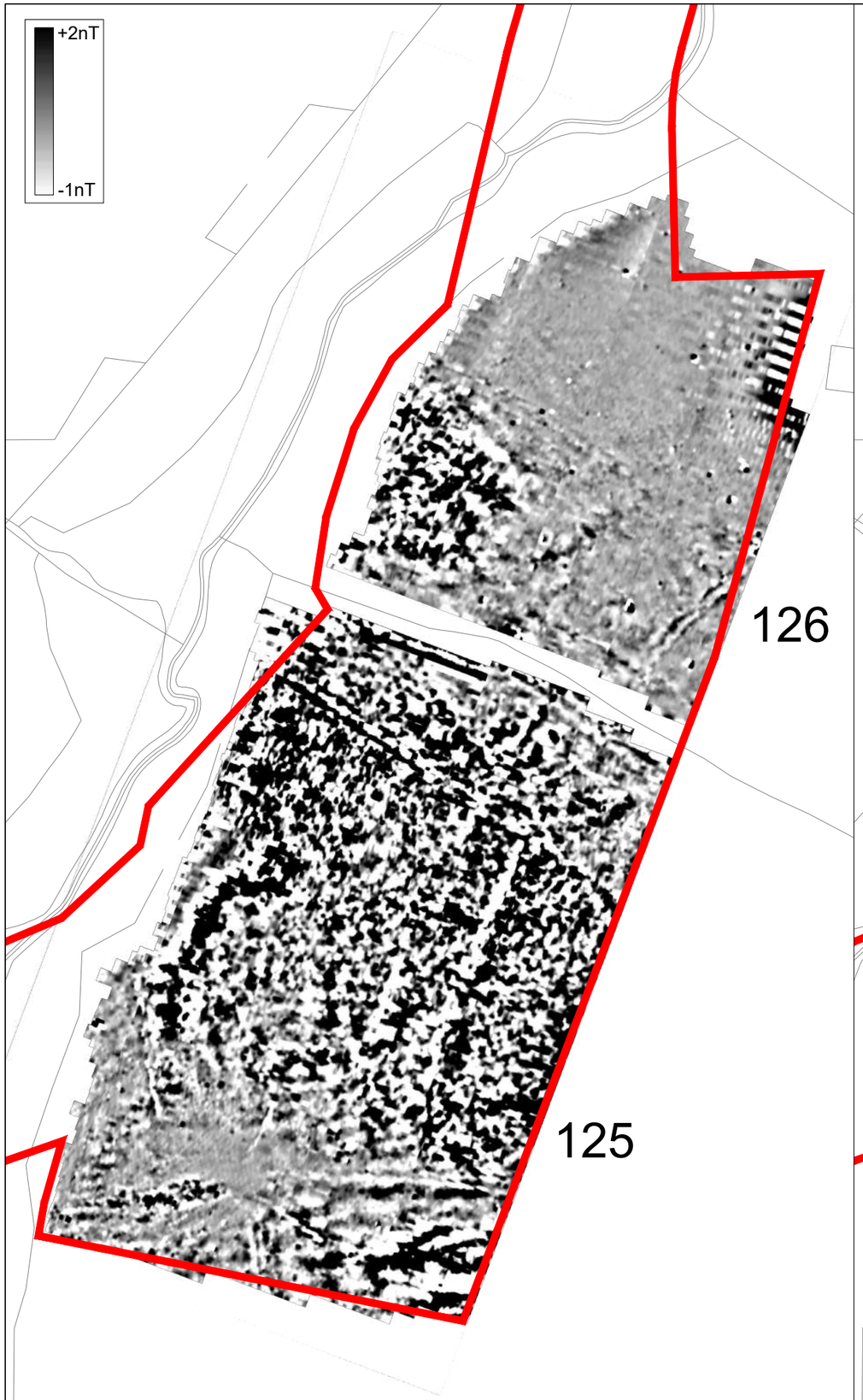
Title:
Magnetometer Survey - Greyscale and Colour Plots (Areas 125 and 126)

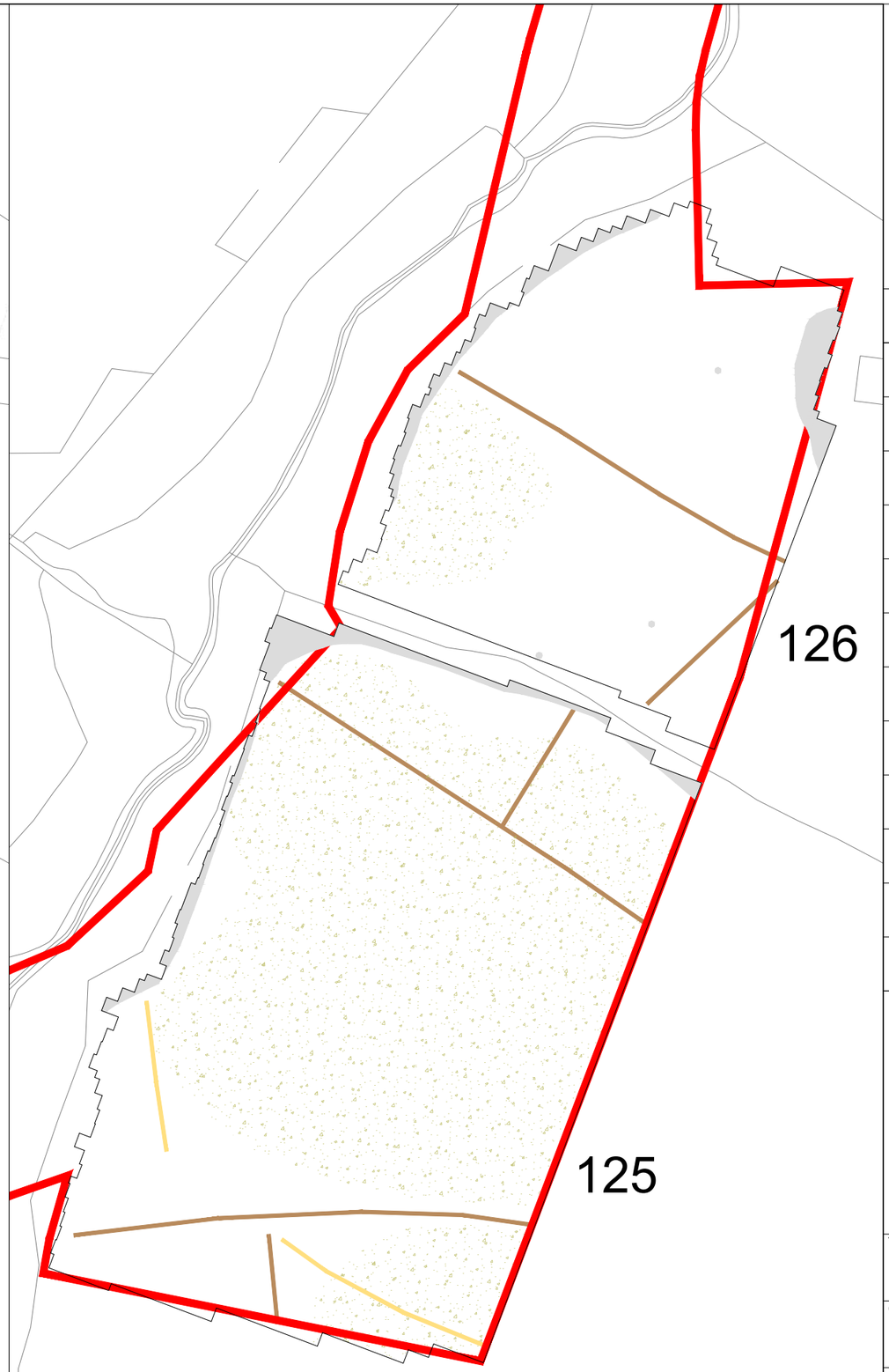
Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
50





N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plots and Interpretation (Areas 125 and 126)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
51

144

136

114

N

+2nT

-1nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Greyscale Plot
(Areas 136)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
52

144

136

114

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Colour Plot (Areas 136)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
53

144

136

114

N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Magnetometer Survey - Interpretation
(Areas 136)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
54

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

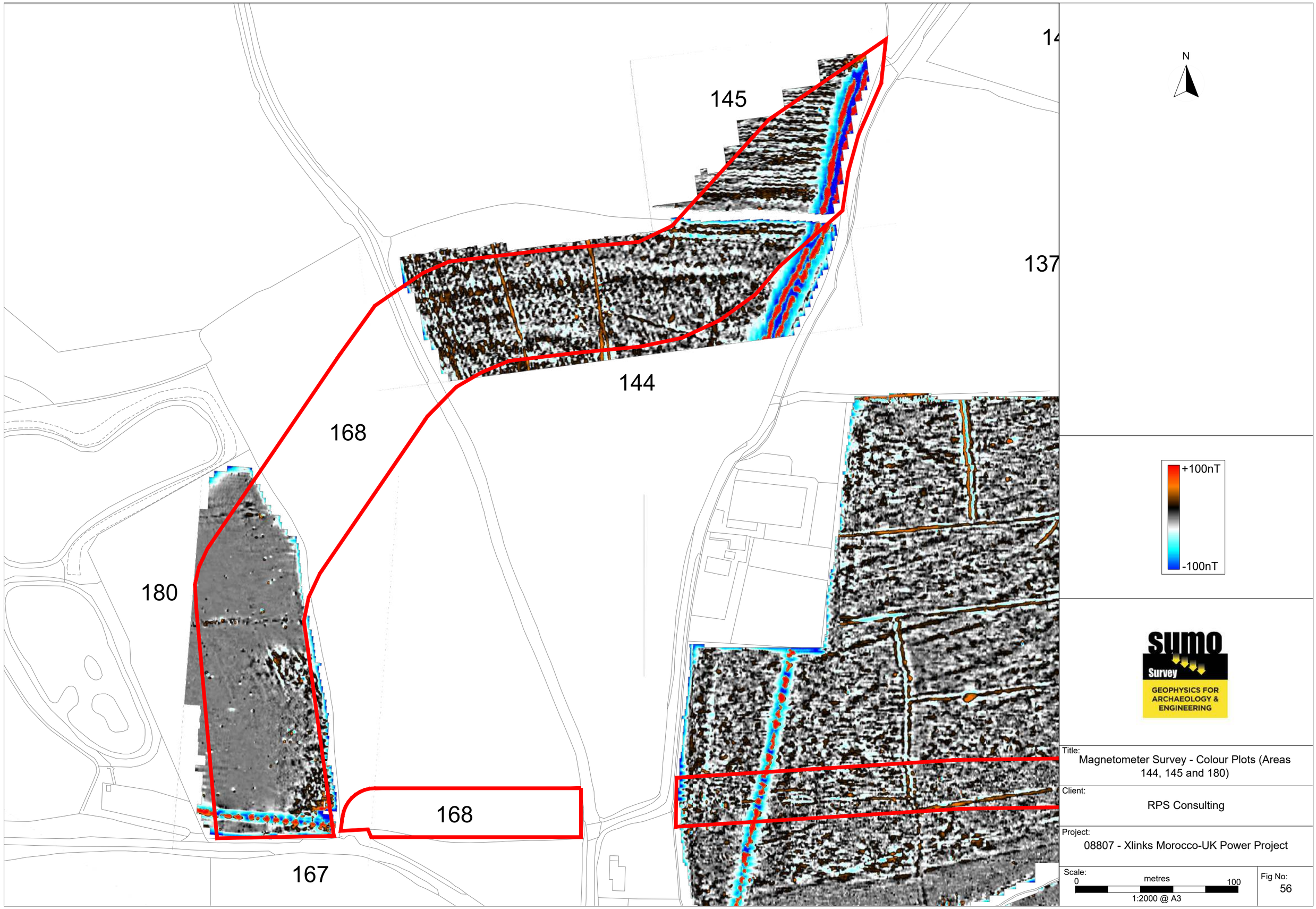
Title:
Magnetometer Survey - Greyscale Plots
(Areas 144, 145 and 180)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
55



sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

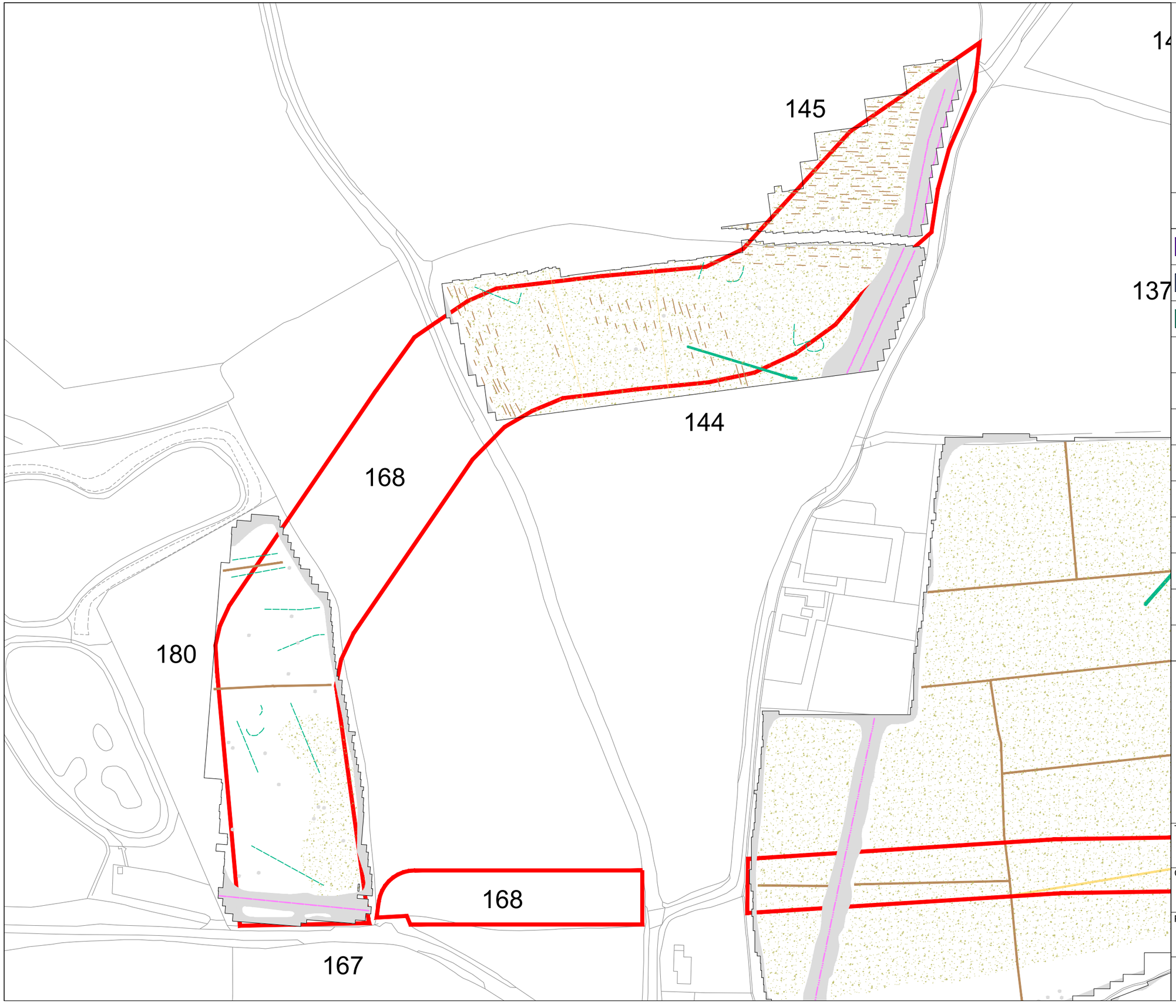
Title:
Magnetometer Survey - Colour Plots (Areas 144, 145 and 180)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
56



N

KEY

	Probable archaeology (discrete anomaly / trend / increased response)
	Possible archaeology (discrete anomaly / trend / increased response)
	Uncertain Origin (discrete anomaly / trend / increased response)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Land drain
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Service
	Ferrous

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

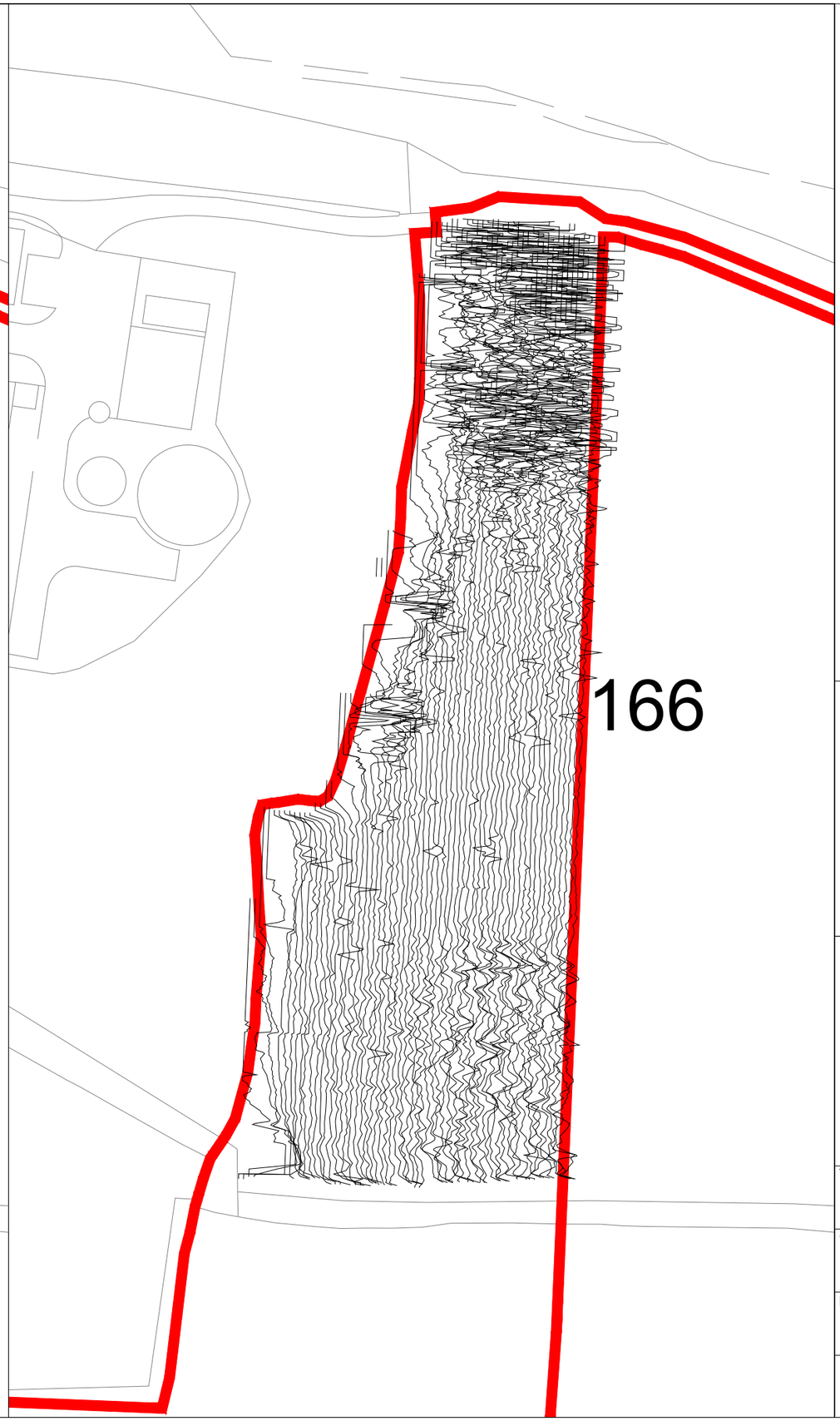
Title:
Magnetometer Survey - Interpretation (Areas 144, 145 and 180)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
57



N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Area 166)

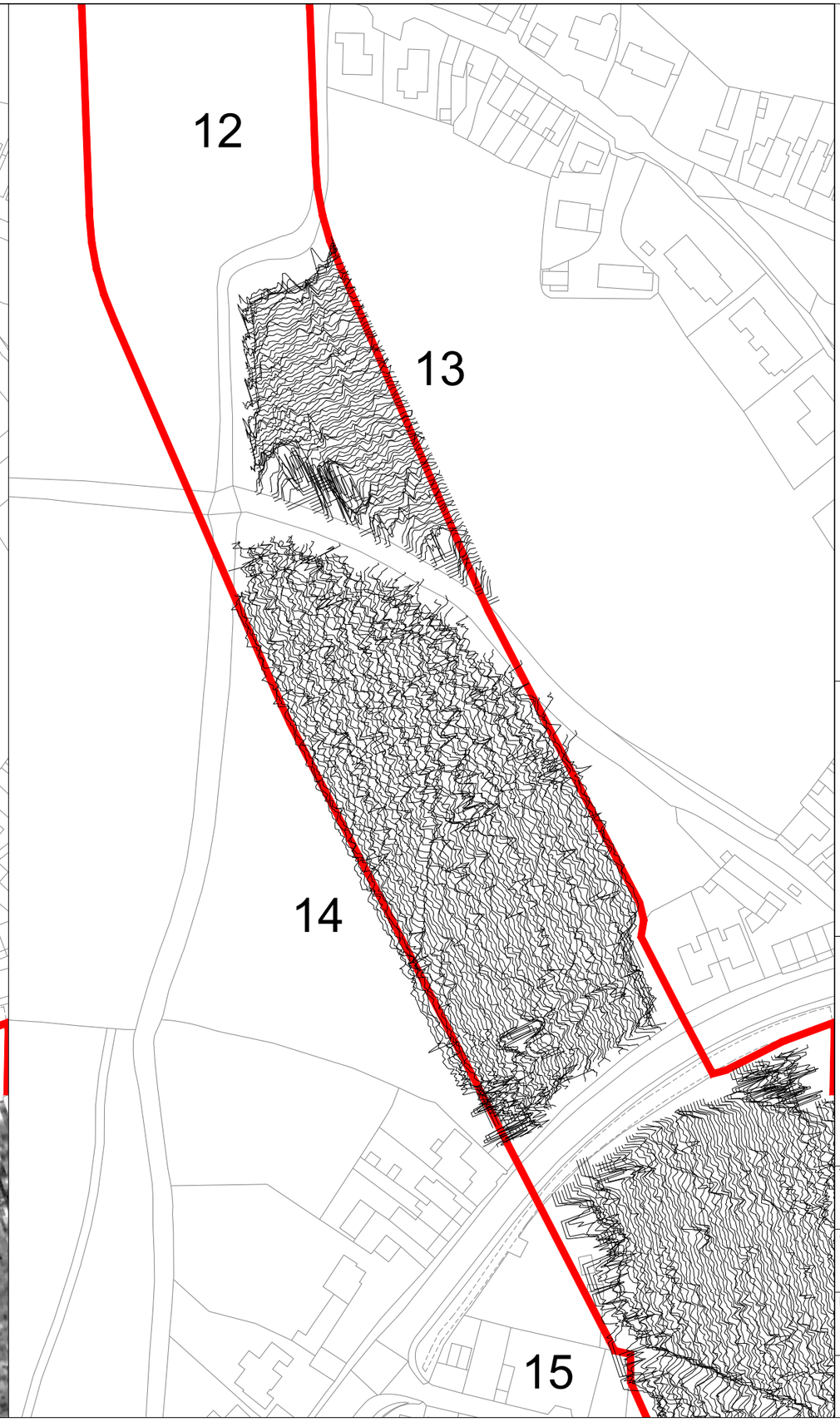
Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 50

1:1000 @ A3

Fig No: 58



N

+10nT

-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

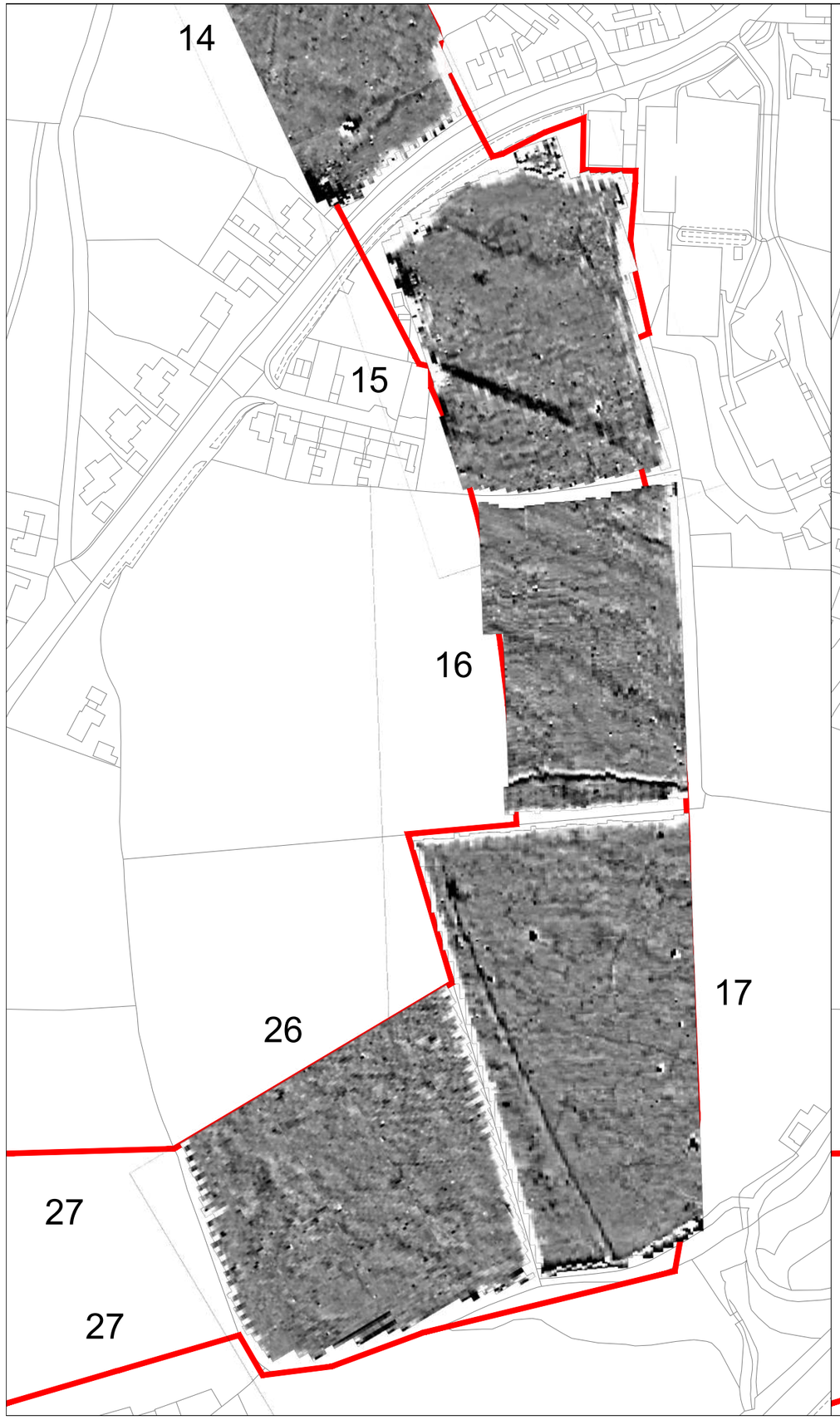
Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Areas 13 & 14)

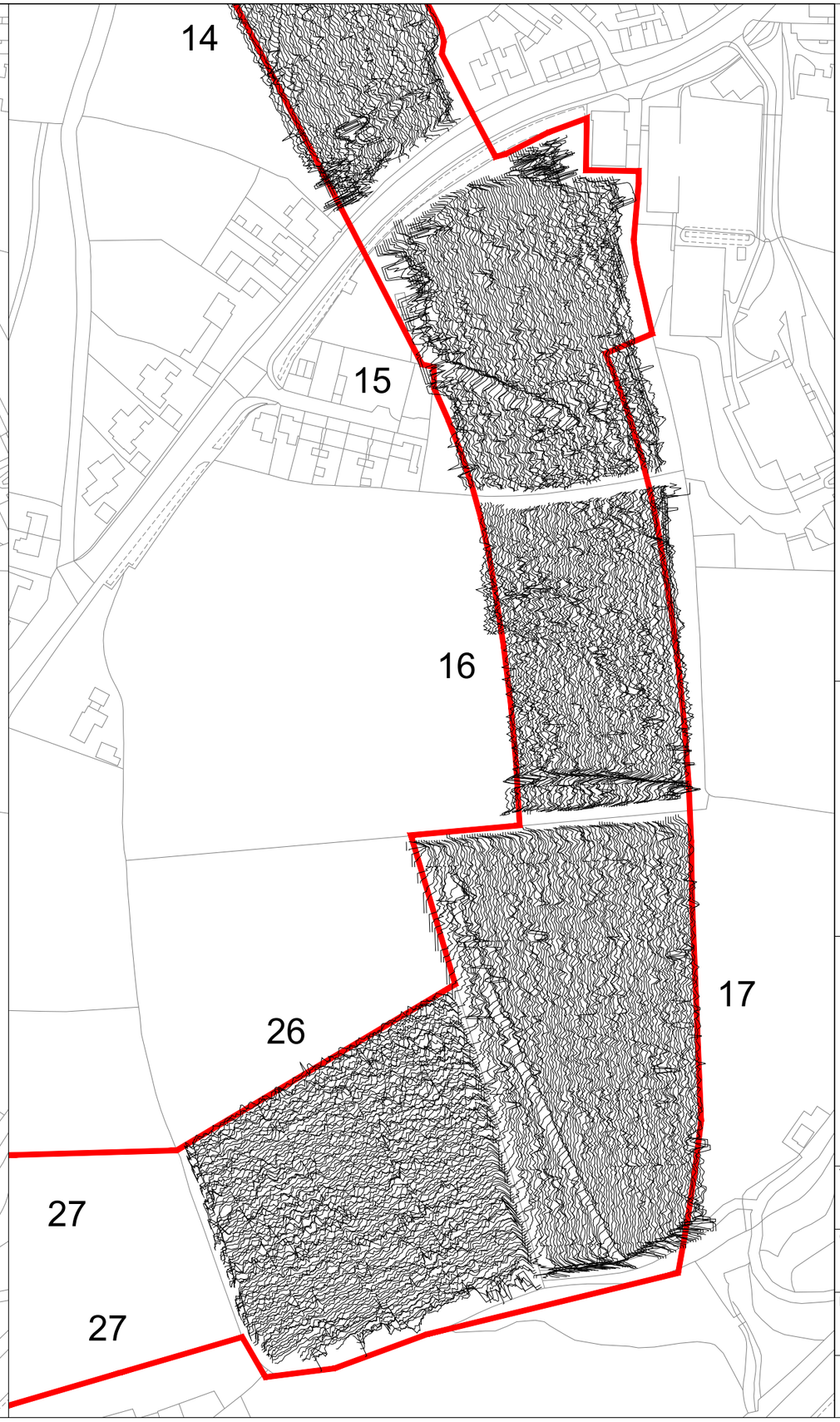
Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 75
1:1500 @ A3

Fig No: 59





N

+10nT

-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Areas 15, 16, 17 & 26)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 100
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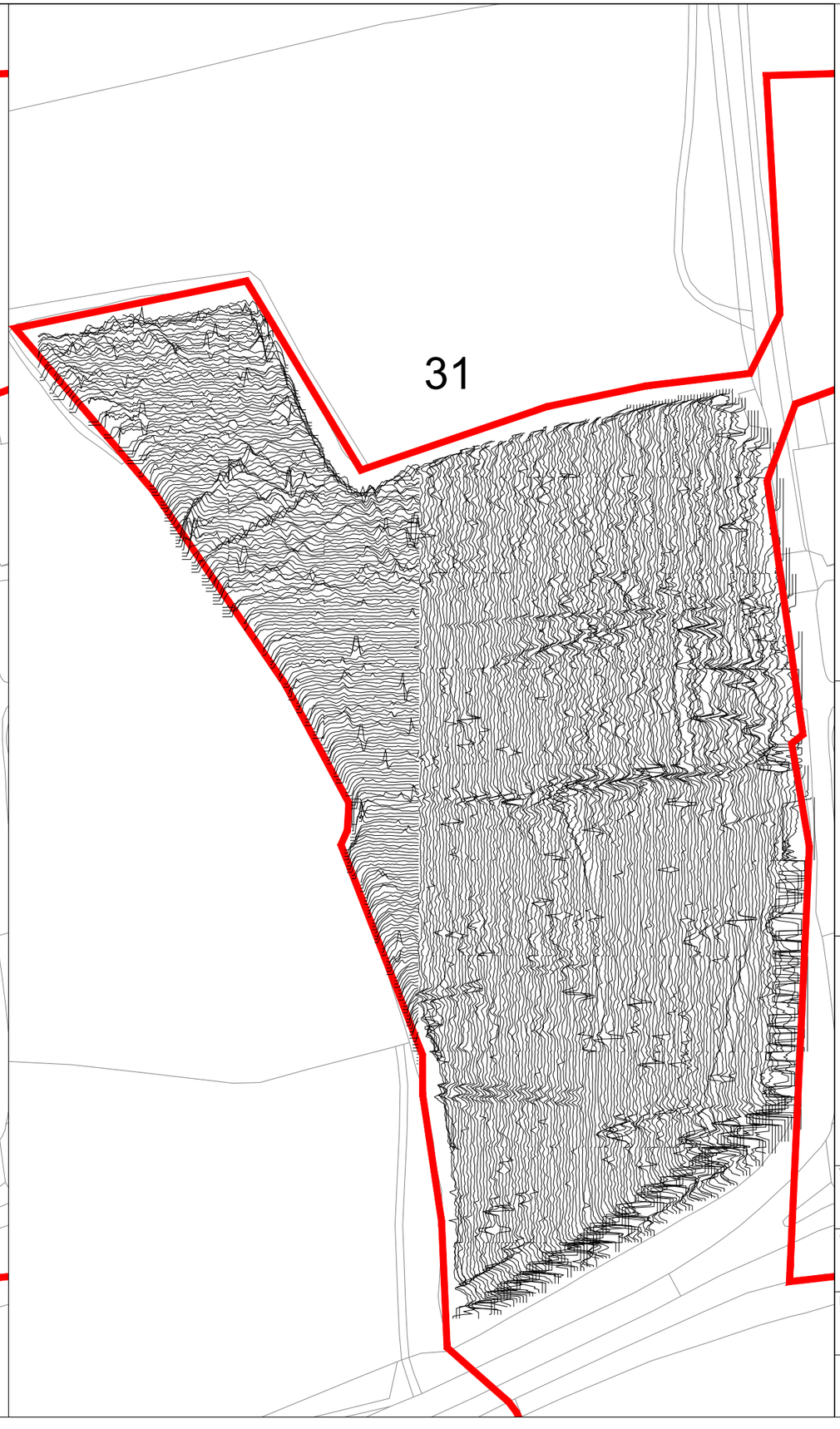
Fig No: 60



N

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-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Area 31)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 80
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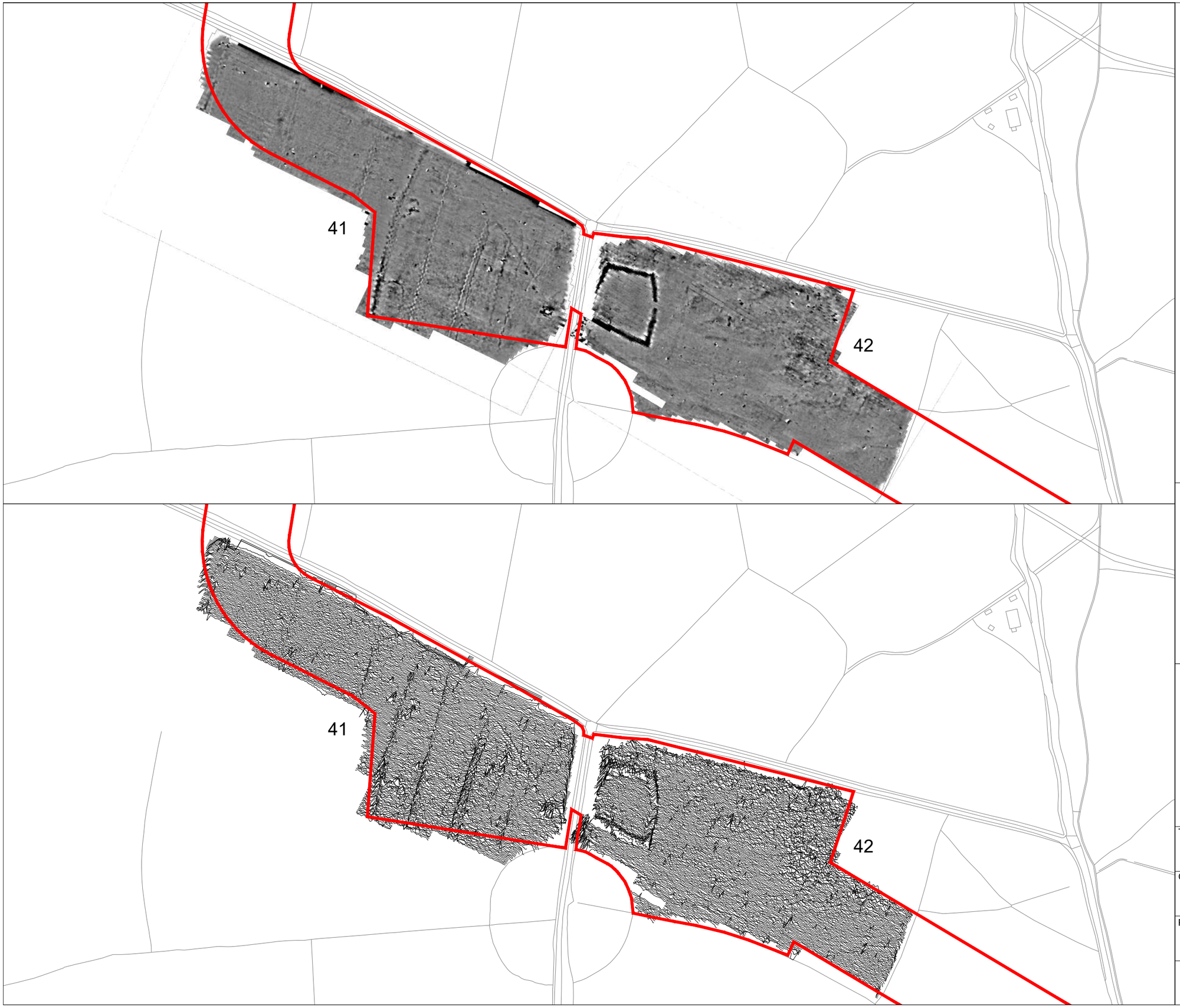
Fig No: 61



N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT)
(Area 41 and 42)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
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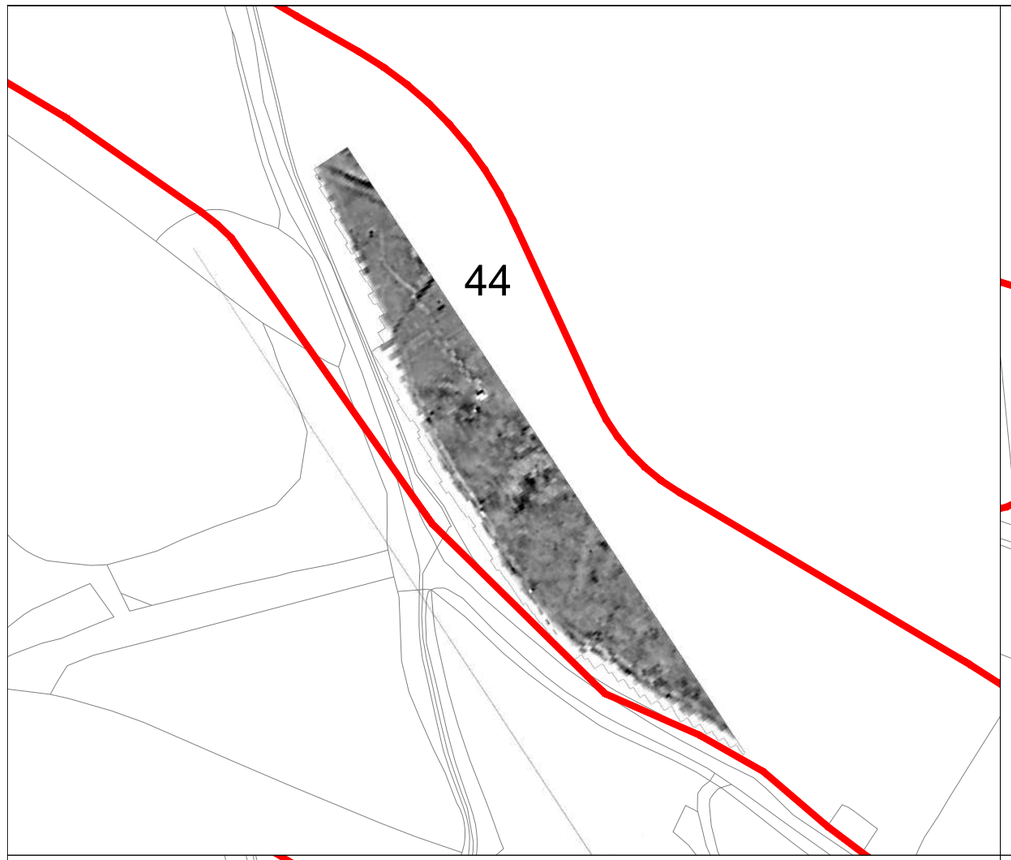
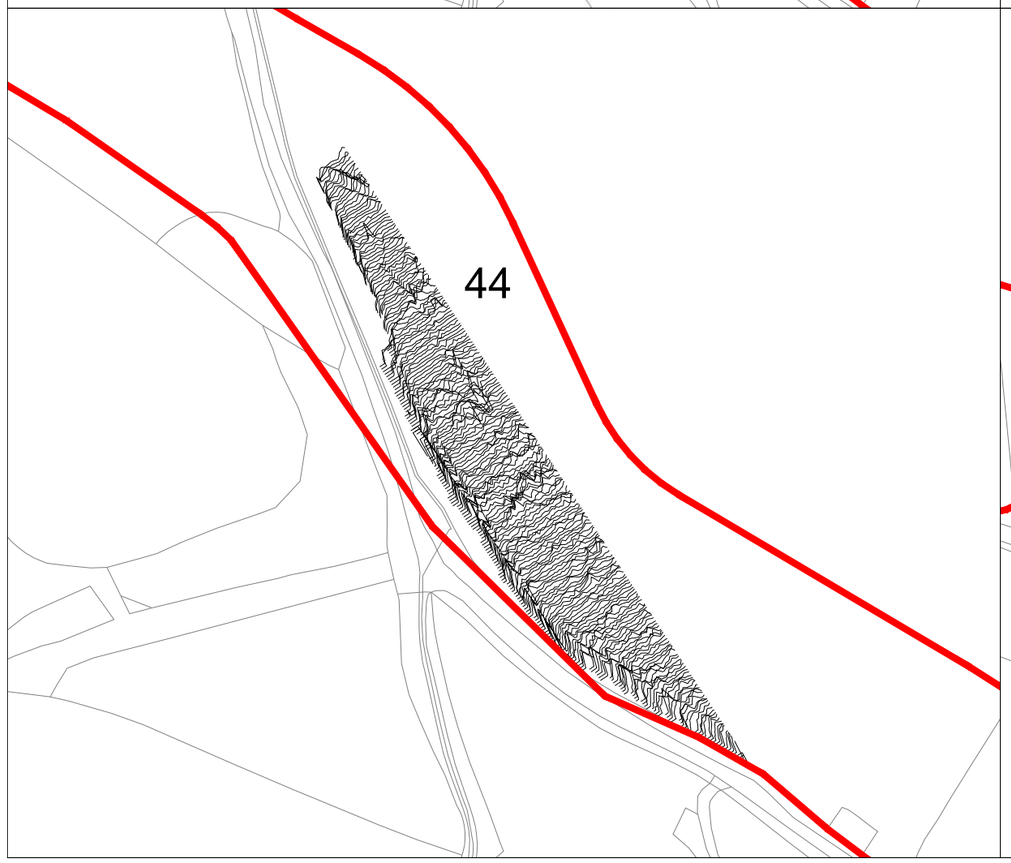
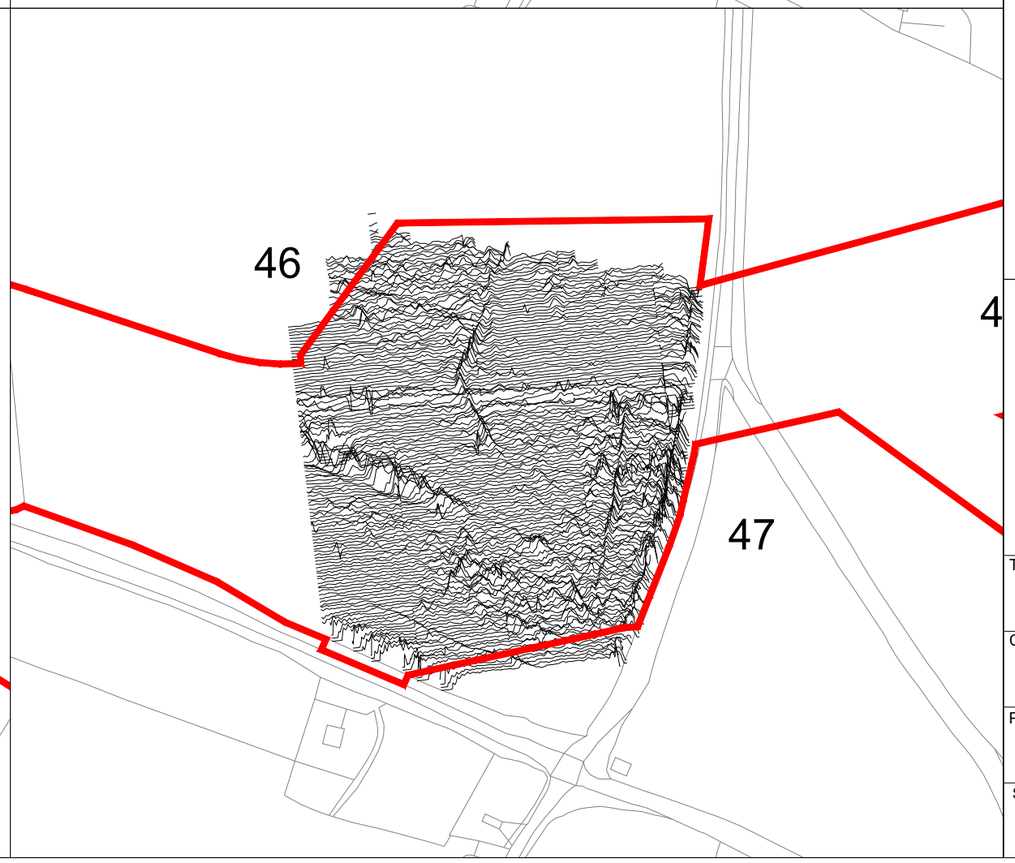
1:2800 @ A3

Fig No:
62







N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Area 44 and 47)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 100

1:2000 @ A3

Fig No: 63

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Area 58, 59, 60, and 61)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 120
1:2400 @ A3

Fig No: 64

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot (Areas 62, 63, 63, 66, 67, 68, 69, 70, 160, 161, 164 and 165)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 130

1:2600 @ A3

Fig No: 65

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: XY Trace Plots (clipped at +/-15nT)
(Areas 62, 63, 63, 66, 67, 68, 69, 70, 160, 161, 164 and 165)

Client: RPS Consulting

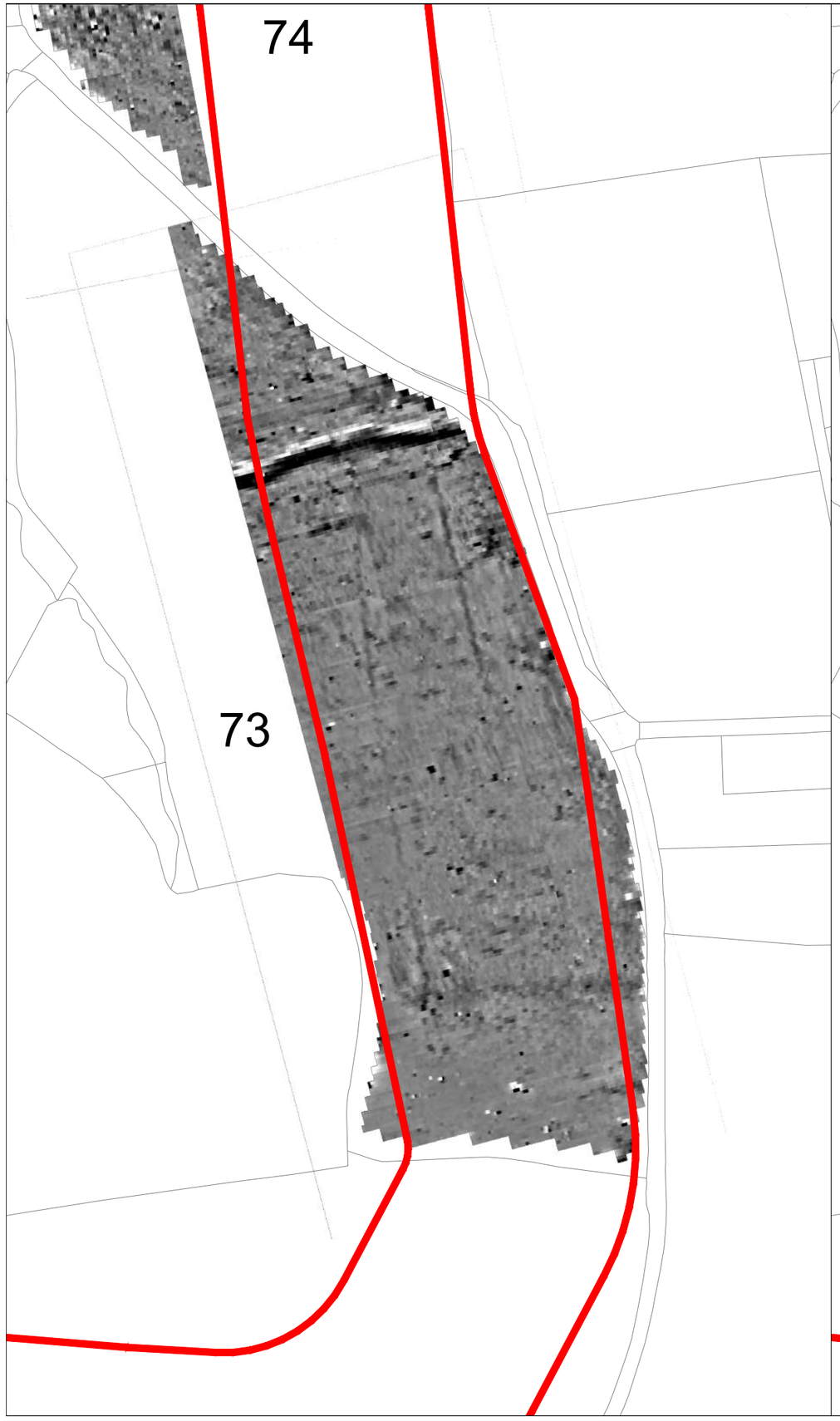
Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 130
1:2400 @ A3

Fig No: 66

74

73



74

73

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Area 73)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 75

1:1500 @ A3

Fig No: 67

159

77

76

75

74

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plot
(Areas 74 and 76)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
68

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

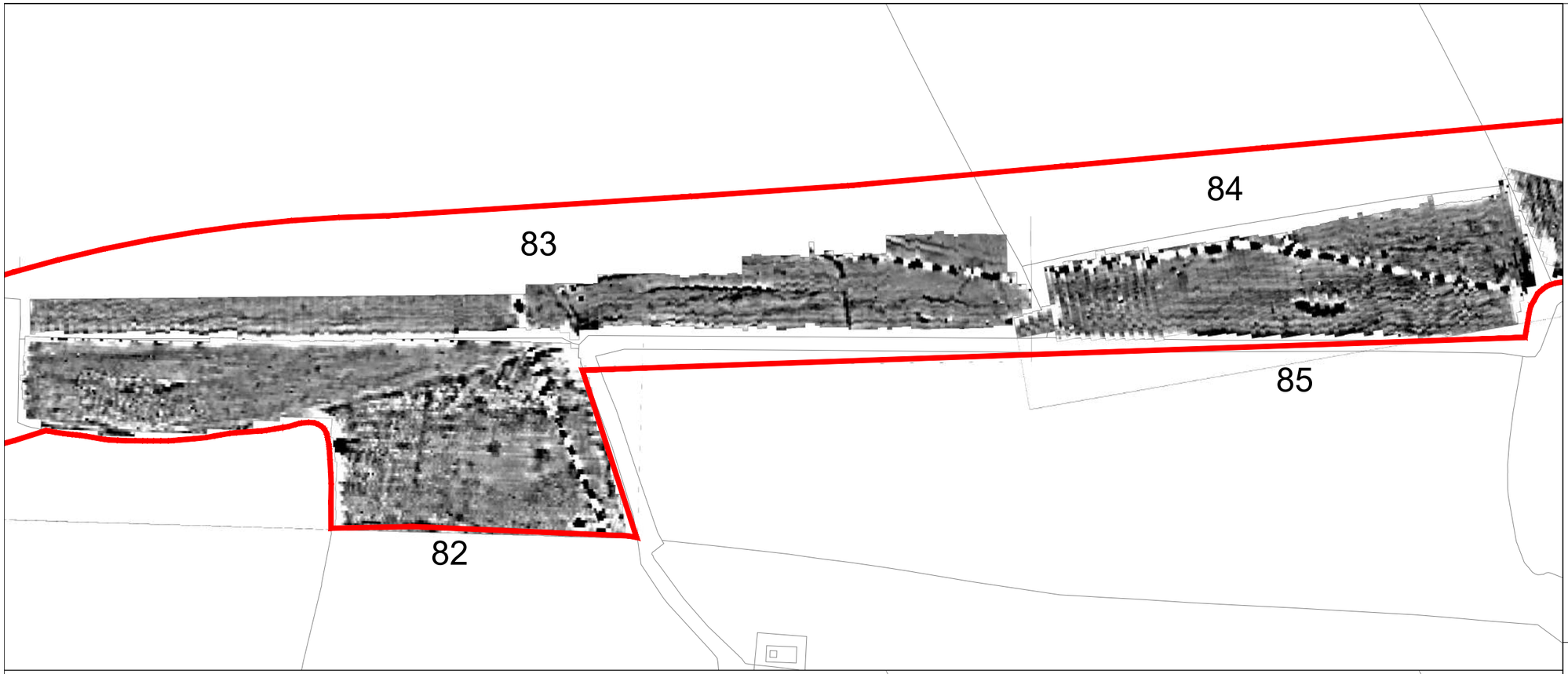
Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 74 and 76)

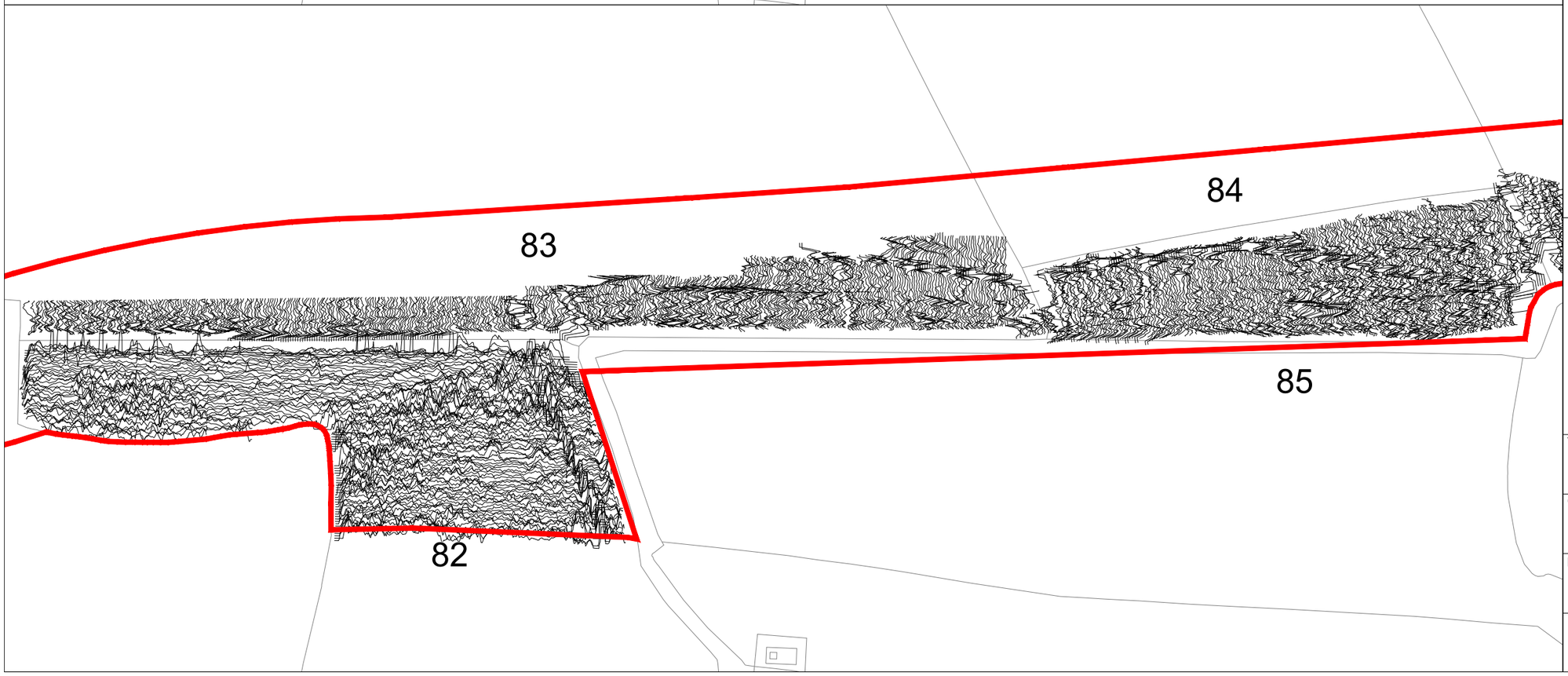
Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
69





N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Areas 82, 83 and 84)

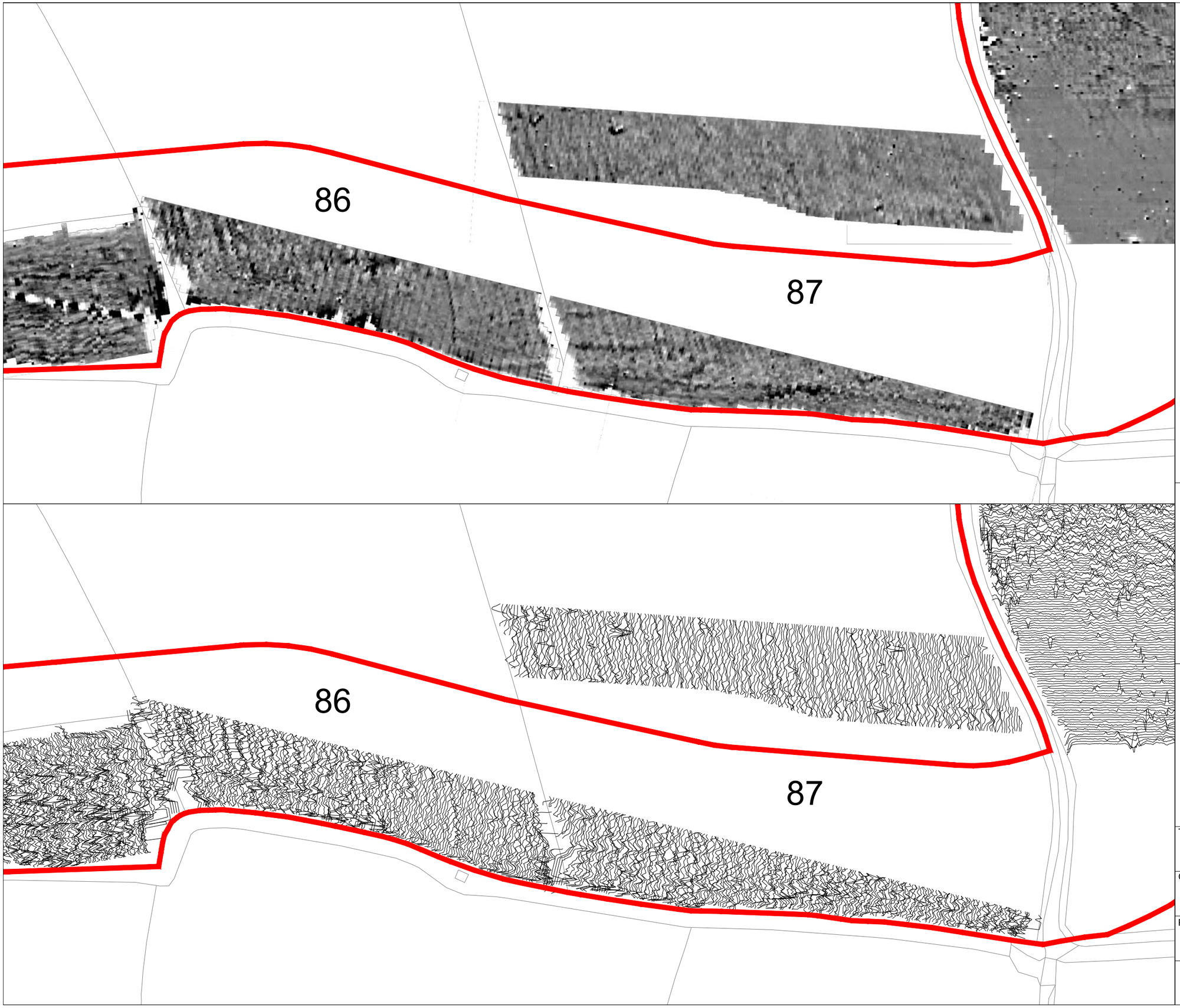
Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 100

1:2000 @ A3

Fig No: 70



N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Areas 86 and 87)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 75

1:1500 @ A3

Fig No: 71

N

+10nT

-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 88 and 89)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
72

N

87

88

89

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 88 and 89)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
73

90

91

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

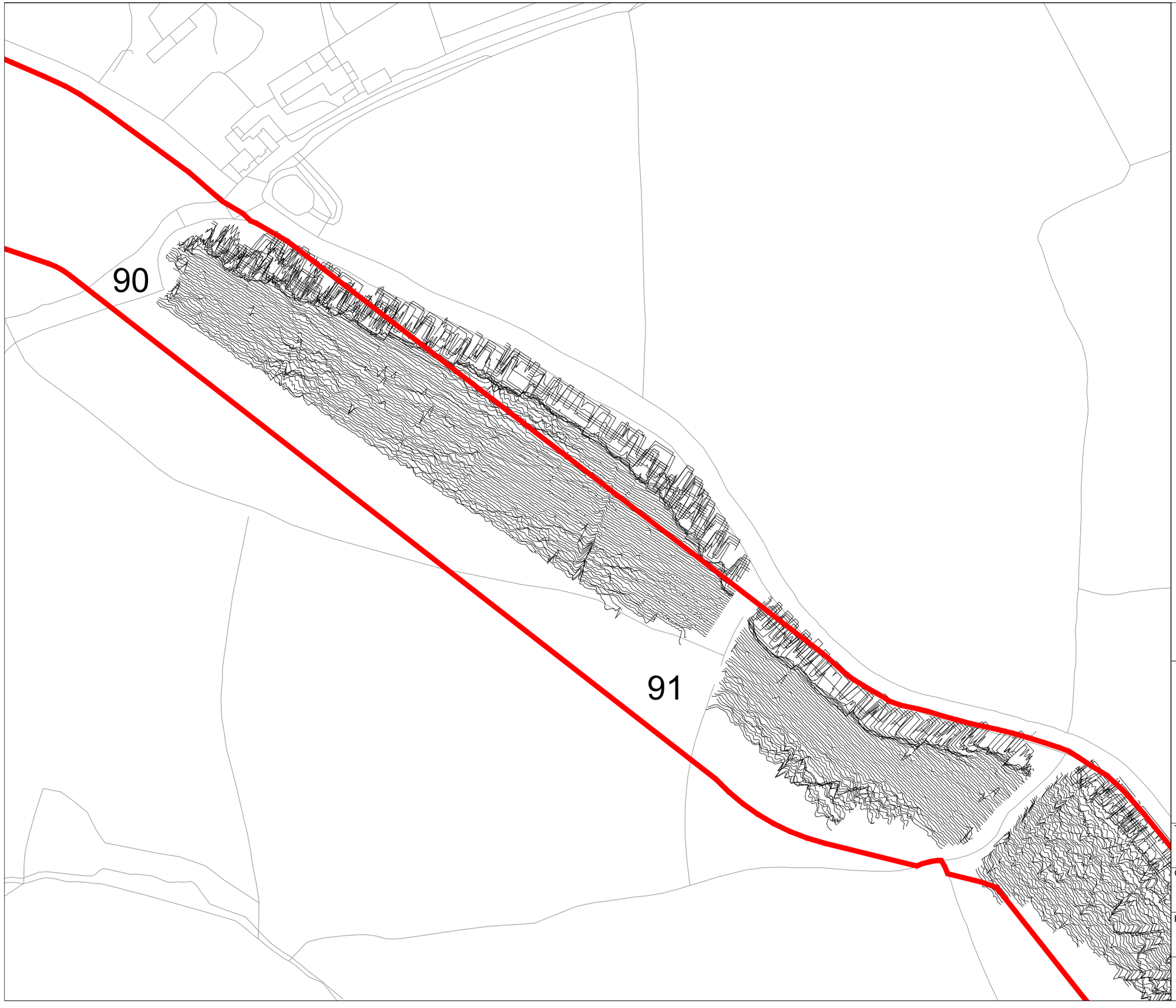
Title:
Minimally Processed Data - Greyscale Plots (Area 91)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
74



N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Area 91)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
75

92

93

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 92 and 93)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
76

92

93

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 92 and 93)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
77

N

+10nT

-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 94 and 99)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
78

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 94 and 99)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
79

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 101, 102 and 108)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
80

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 101, 102 and 108)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
81

N

+10nT

-10nT

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 109, 110, 111 and 152)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
82

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 109, 110, 111 and 152)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
83

136

115

116

114

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots
(Areas 114, 115 and 116)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
84

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

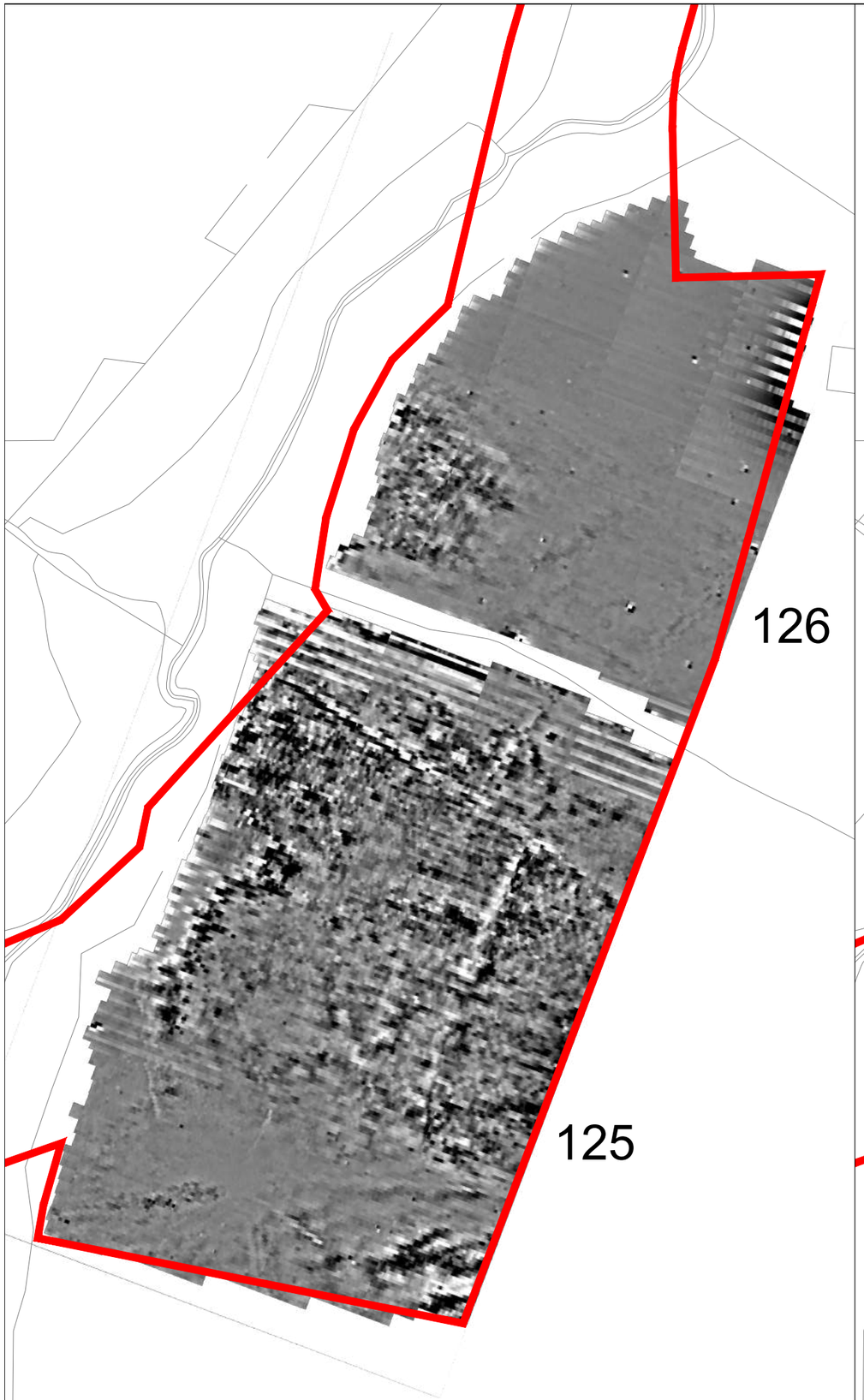
Title:
XY Trace Plots (clipped at +/-15nT)
(Areas 114, 115 and 116)

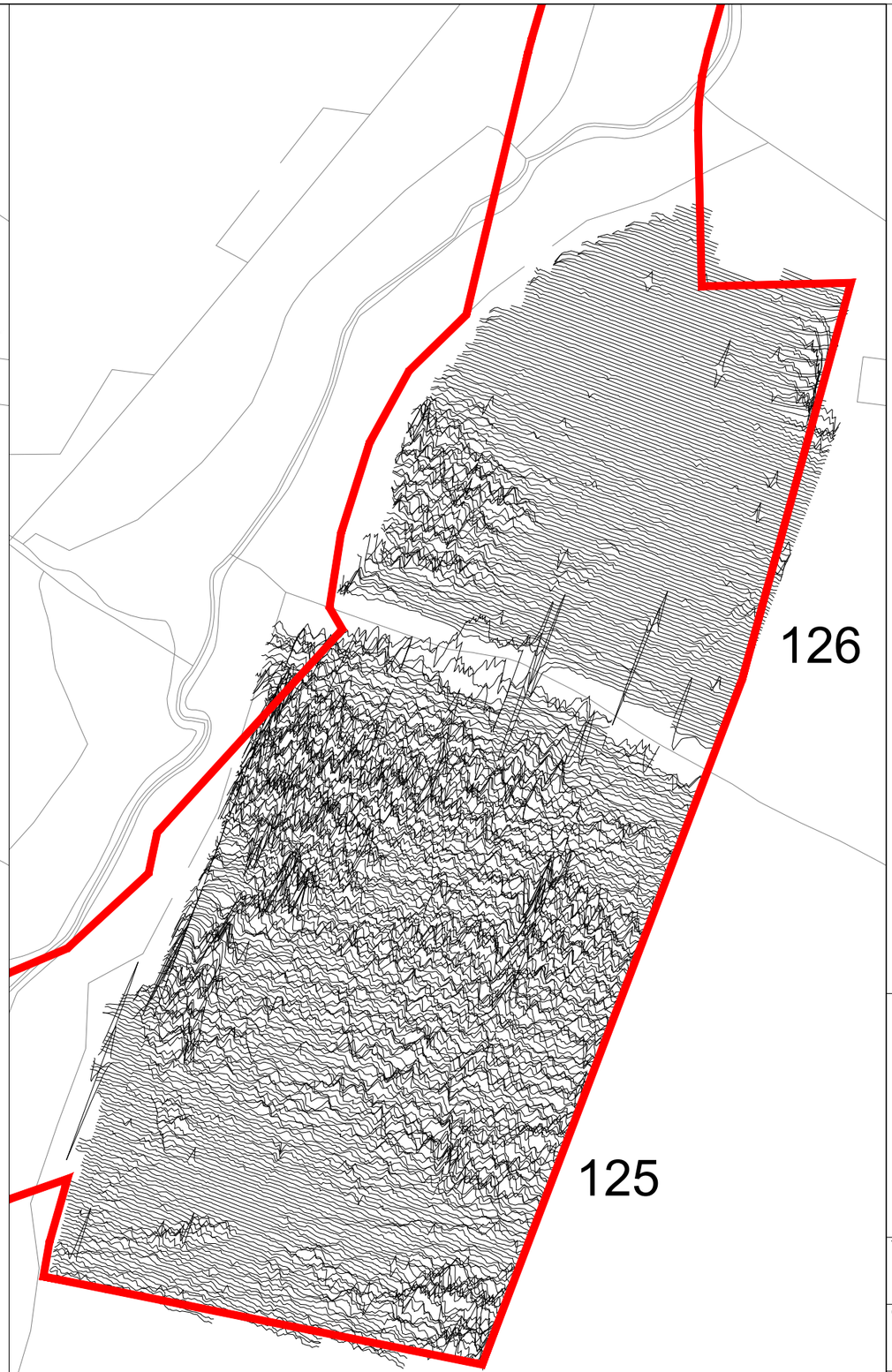
Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 110
1:2200 @ A3

Fig No:
85





N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title: Minimally Processed Data - Greyscale Plot / XY Trace Plots (clipped at +/-15nT) (Areas 125 and 126)

Client: RPS Consulting

Project: 08807 - Xlinks Morocco-UK Power Project

Scale: 0 metres 75
1:1500 @ A3

Fig No: 86

144

136

114

N

+10nT

-10nT

sumo Survey

GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
Minimally Processed Data - Greyscale Plots (Area 136)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
87

144

136

114

N

sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

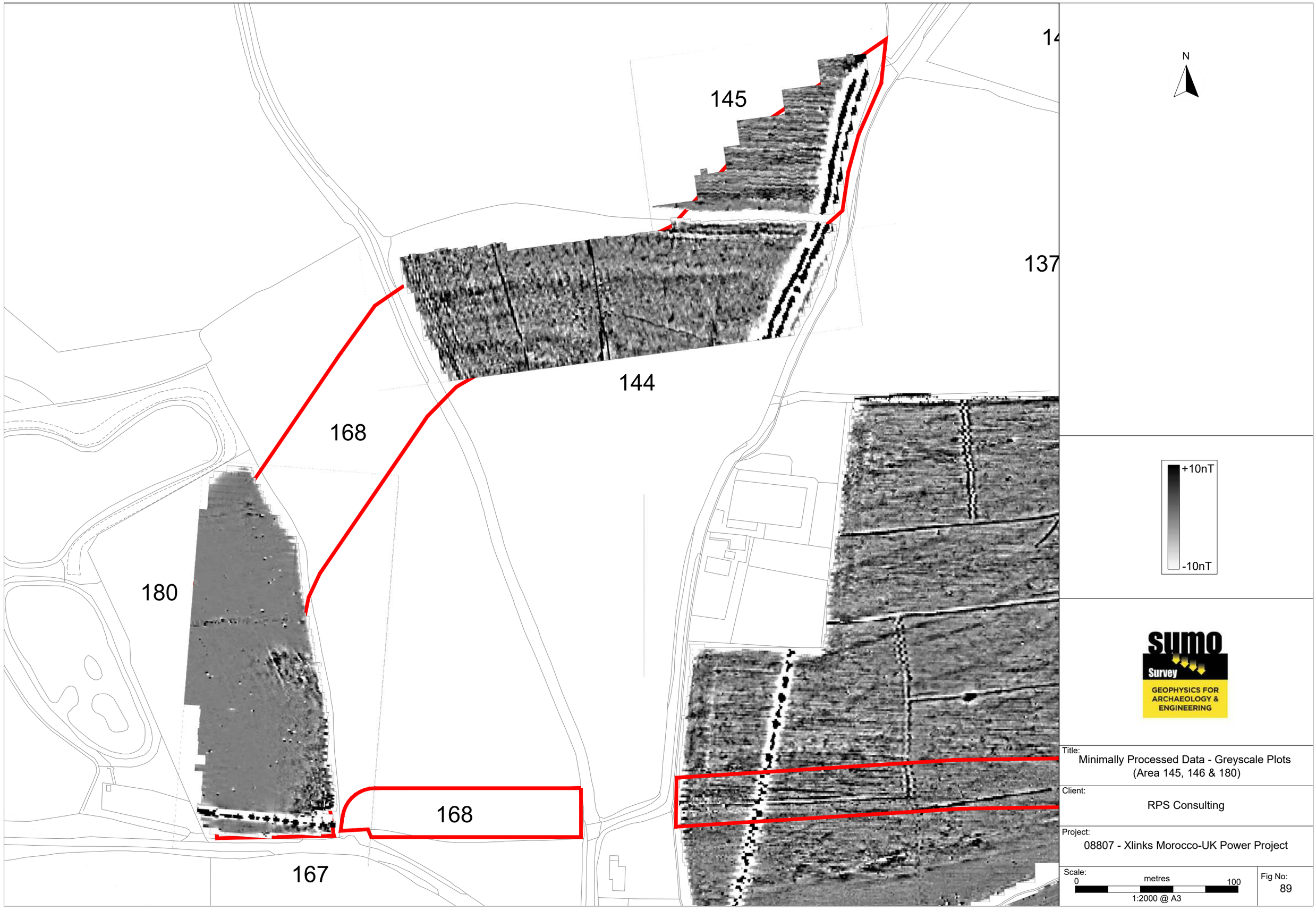
Title:
XY Trace Plots (clipped at +/-15nT)
(Area 136)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 75
1:1500 @ A3

Fig No:
88



sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

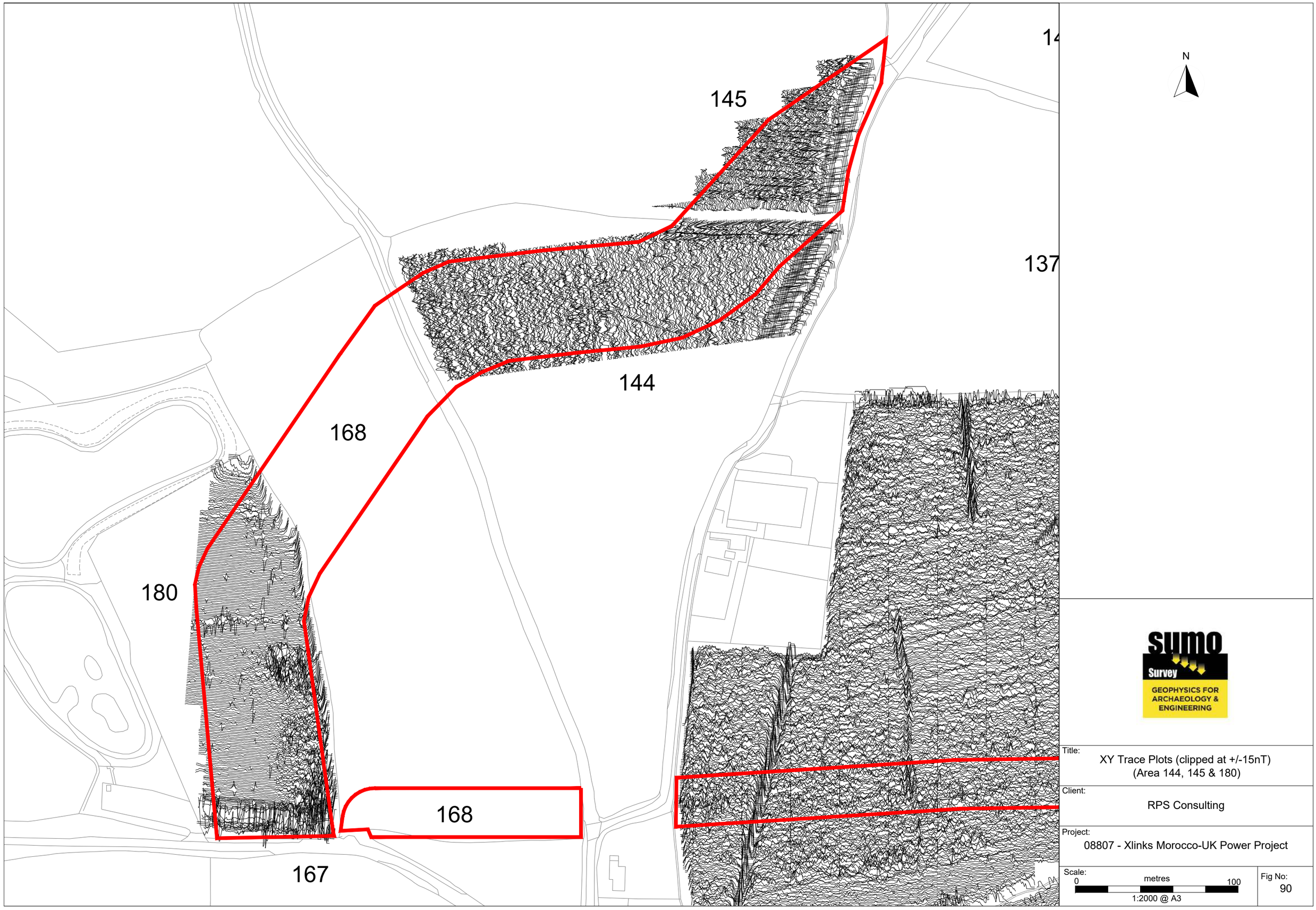
Title:
Minimally Processed Data - Greyscale Plots
(Area 145, 146 & 180)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
89



sumo Survey
GEOPHYSICS FOR ARCHAEOLOGY & ENGINEERING

Title:
XY Trace Plots (clipped at +/-15nT)
(Area 144, 145 & 180)

Client:
RPS Consulting

Project:
08807 - Xlinks Morocco-UK Power Project

Scale:
0 metres 100
1:2000 @ A3

Fig No:
90

Appendix A - Technical Information: Magnetometer Survey Method

Grid Positioning

For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1.0m	0.25m
Magnetometer	Bartington Cart System	1.0m	0.125m

Instrumentation:

Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted horizontally, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths.

Bartington Grad 601-2

Hand-Held: Data will be collected using a Bartington Grad 601-2. The instrument consists of two paired sensors and readings are logged at 0.25m centres along traverses 1.0m apart across 30m grids. The collection of data at 0.25m centres provides an appropriate methodology balancing cost and time with resolution as per Historic England guidelines

Bartington Cart System

Data will be collected using a cart carrying four paired Bartington magnetic sensors. Each data point is geographically referenced using an on-board Trimble RTK survey grade GPS system. Readings will be taken at 0.125m centres along traverses 1.0m apart.

Data Processing

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.

Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall,* etc.) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

Archaeology / Probable Archaeology	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
Possible Archaeology	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
Industrial / Burnt-Fired	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
Former Field Boundary (probable & possible)	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
Ridge & Furrow	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
Agriculture (ploughing)	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
Land Drain	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
Natural	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
Magnetic Disturbance	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present.
Service	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
Ferrous	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
Uncertain Origin	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of *Possible Archaeology* / *Natural* or (in the case of linear responses) *Possible Archaeology* / *Agriculture*; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.

OASIS Summary for sumogeop1-508449

OASIS ID (UID)	sumogeop1-508449
Project Name	Geophysical Survey Xlinks Morocco-UK Power Project
Sitename	Xlinks Alverdiscott Cable Route, Devon
Sitecode	08807
Project Identifier(s)	SUMO-08807 Xlinks Cable Route
Activity type	Geophysical Survey, Magnetometry Survey, MAGNETOMETRY SURVEY
Planning Id	
Reason For Investigation	Planning requirement
Organisation Responsible for work	SUMO Geophysics Ltd.
Project Dates	07-Sep-2022 - 09-Mar-2023

Location	Xlinks Alverdiscott Cable Route, Devon NGR : SS 44354 24460 LL : 50.99842418749454, -4.219484986594045 12 Fig : 244354,124460 NGR : SS 47099 25281 LL : 51.00653406621364, -4.180740913661086 12 Fig : 247099,125281 NGR : SS 44176 24185 LL : 50.99590130672633, -4.221909334229051 12 Fig : 244176,124185 NGR : SS 44390 24418 LL : 50.998055308858184, -4.218961947068694 12 Fig : 244390,124418 NGR : SS 48356 24660 LL : 51.00128797063644, -4.162587576073976 12 Fig : 248356,124660 NGR : SS 48930 24266 LL : 50.99789992567164, -4.154245081397288 12 Fig : 248930,124266 NGR : SS 42214 26582 LL : 51.01690854352179, -4.25088148671951 12 Fig : 242214,126582 NGR : SS 42206 26565 LL : 51.0167504949726, -4.250990990090838 12 Fig : 242206,126565 NGR : SS 42069 25753 LL : 51.00941614159789, -4.25259545595492 12 Fig : 242069,125753 NGR : SS 42394 24264 LL : 50.99613349829201, -4.247310556743876 12 Fig : 242394,124264 NGR : SS 42991 24033 LL : 50.994221106265016, -4.238718311692497 12 Fig : 242991,124033 NGR : SS 44087 24111 LL : 50.995214011902966, -4.223142067449743 12 Fig : 244087,124111 NGR : SS 44483 24489 LL : 50.99871863336794, -4.217662606229006 12 Fig : 244483,124489 NGR : SS 44671 24383 LL : 50.99781534632861, -4.214936978488674 12 Fig : 244671,124383 NGR : SS 44831 24291 LL : 50.99703437748634, -4.212620193492653

12 Fig : 244831,124291
NGR : SS 46354 25164
LL : 51.00528449298851, -4.191308867941288
12 Fig : 246354,125164
NGR : SS 46443 25211
LL : 51.00573533709126, -4.190065100947252
12 Fig : 246443,125211
NGR : SS 47864 25107
LL : 51.005178564166485, -4.169780919026086
12 Fig : 247864,125107
NGR : SS 48036 24974
LL : 51.00402375572207, -4.167272349943533
12 Fig : 248036,124974
NGR : SS 49571 23782
LL : 50.99372299317534, -4.144920472354026
12 Fig : 249571,123782
NGR : SS 44179 24112
LL : 50.9952516524008, -4.221825057106551
12 Fig : 244179,124112
NGR : SS 44522 24184
LL : 50.995993390400585, -4.216983394213575
12 Fig : 244522,124184
NGR : SS 44254 24137
LL : 50.99549204187951, -4.220775239191951
12 Fig : 244254,124137
NGR : SS 44692 24224
LL : 50.99639658986525, -4.21456939201695
12 Fig : 244692,124224
NGR : SS 44238 24271
LL : 50.99669335533726, -4.221056244614487
12 Fig : 244238,124271
NGR : SS 44321 24167
LL : 50.99578117726525, -4.219839753566297
12 Fig : 244321,124167
NGR : SS 46745 25220
LL : 51.0058949996283, -4.185760631300216
12 Fig : 246745,125220
NGR : SS 49711 23441
LL : 50.99069718507165, -4.142785113145615
12 Fig : 249711,123441
NGR : SS 47287 25423
LL : 51.007863458030315, -4.178128676991162
12 Fig : 247287,125423
NGR : SS 43765 24126
LL : 50.99526501554878, -4.227726346401742

12 Fig : 243765,124126
NGR : SS 47538 25315
LL : 51.00695748069207, -4.174513976145894
12 Fig : 247538,125315
NGR : SS 49460 23710
LL : 50.99304709550021, -4.146466769125248
12 Fig : 249460,123710
NGR : SS 49181 24111
LL : 50.99657319134237, -4.150602613800216
12 Fig : 249181,124111
NGR : SS 43664 24128
LL : 50.99525520488483, -4.229176995623066
12 Fig : 243664,124128
NGR : SS 49295 23982
LL : 50.99544716913604, -4.148927329002848
12 Fig : 249295,123982
NGR : SS 49232 23923
LL : 50.994895274021374, -4.149809048160177
12 Fig : 249232,123923
NGR : SS 49300 23724
LL : 50.993125644798376, -4.148753712439171
12 Fig : 249300,123724
NGR : SS 49717 23625
LL : 50.99234768210638, -4.14277471752392
12 Fig : 249717,123625
NGR : SS 43448 24158
LL : 50.99546697352316, -4.232262190307905
12 Fig : 243448,124158
NGR : SS 43381 24235
LL : 50.99613549495571, -4.233253490087717
12 Fig : 243381,124235
NGR : SS 43393 24234
LL : 50.9961344949557, -4.233078990087597
12 Fig : 243393,124234
NGR : SS 43930 24114
LL : 50.995197708747746, -4.225380286666629
12 Fig : 243930,124114
NGR : SS 45331 24730
LL : 51.00111703334991, -4.205690672135713
12 Fig : 245331,124730
NGR : SS 46929 25228
LL : 51.006013846626324, -4.183148370255371
12 Fig : 246929,125228
NGR : SS 45516 24870
LL : 51.00242197550184, -4.203112086949284

12 Fig : 245516,124870
NGR : SS 48718 24408
LL : 50.9991205988047, -4.157329387587134
12 Fig : 248718,124408
NGR : SS 45408 24454
LL : 50.99865929382268, -4.20448157475782
12 Fig : 245408,124454
NGR : SS 47107 25190
LL : 51.00572544147864, -4.180599352101108
12 Fig : 247107,125190
NGR : SS 48194 24842
LL : 51.002879991220226, -4.164965711032648
12 Fig : 248194,124842
NGR : SS 49322 24415
LL : 50.999342911666055, -4.148727548314364
12 Fig : 249322,124415
NGR : SS 49186 24473
LL : 50.99982749495922, -4.150688990029605
12 Fig : 249186,124473
NGR : SS 49715 24431
LL : 50.999591208701524, -4.143140570788526
12 Fig : 249715,124431
NGR : SS 49533 24415
LL : 50.99939518637114, -4.145714964261317
12 Fig : 249533,124415
NGR : SS 49241 24642
LL : 51.001360128331115, -4.149974116432431
12 Fig : 249241,124642
NGR : SS 49239 24498
LL : 51.00006379785506, -4.149941818287132
12 Fig : 249239,124498
NGR : SS 41731 24687
LL : 50.99974867445439, -4.256936087429155
12 Fig : 241731,124687
NGR : SS 50166 24722
LL : 51.00231871822171, -4.136832124782739
12 Fig : 250166,124722
NGR : SS 42004 24567
LL : 50.9987443958871, -4.252995244066777
12 Fig : 242004,124567
NGR : SS 49509 24071
LL : 50.996300481308275, -4.145925837350028
12 Fig : 249509,124071
NGR : SS 50094 24570
LL : 51.00094161439056, -4.137791375331571

	12 Fig : 250094,124570 NGR : SS 42248 26462 LL : 51.015838393304065, -4.250341966981726 12 Fig : 242248,126462 NGR : SS 42339 26327 LL : 51.01465474392884, -4.248996896664811 12 Fig : 242339,126327 NGR : SS 42295 26363 LL : 51.01496549497114, -4.249642490090696 12 Fig : 242295,126363 NGR : SS 42358 26199 LL : 51.013509063343065, -4.248665403191462 12 Fig : 242358,126199 NGR : SS 42353 26052 LL : 51.01218246544991, -4.248672751414007 12 Fig : 242353,126052 NGR : SS 42272 25985 LL : 51.01155583053115, -4.249800801360412 12 Fig : 242272,125985 NGR : SS 41943 25851 LL : 51.01026933422828, -4.254427964308238 12 Fig : 241943,125851 NGR : SS 49071 24900 LL : 51.00363765892475, -4.152498880652861 12 Fig : 249071,124900 NGR : SS 49165 24983 LL : 51.00440907660818, -4.151190797847433 12 Fig : 249165,124983 NGR : SS 42310 27595 LL : 51.026039925540736, -4.249964723050096 12 Fig : 242310,127595 NGR : SS 48849 24663 LL : 51.00145185079117, -4.155557865724465 12 Fig : 248849,124663
Administrative Areas	Country : England County/Local Authority : Devon Local Authority District : Torridge Parish : Bideford Parish : Littleham Parish : Weare Giffard Parish : Abbotsham Parish : Alverdiscott Parish : Huntshaw Parish : Alwington

Project Methodology	A temporary grid system was established over the site and marked out using canes. The location of the grid will was set out using an RTK GPS system theoretically accurate to some 0.01m and referenced to OS co-ordinates. Hand Held: Data was collected using a Bartington Grad 601-2. The instrument consists of two paired sensors (see below) and readings are logged at 0.25m centres along traverses 1.0m apart across 30m grids. Two sensors mounted 1m horizontally apart and very accurately aligned to nullify the effects of the earth's magnetic field. Cart: Data was also collected using a cart carrying four paired Bartington magnetic sensors. Four sensors mounted 1m horizontally apart and very accurately aligned to nullify the effects of the earth's magnetic field. Each data point is geographically referenced using an on-board Trimble RTK survey grade GPS system. Readings will be taken at 0.125m centres along traverses 1.0m apart. The collection of data provides an appropriate methodology balancing cost and time with resolution as per Historic England guidelines. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background.
Project Results	The magnetometer survey has recorded numerous magnetic responses that have be interpreted as being of archaeological interest. In Area 14 and 15 a series of curving responses which comprise discrete anomalies and trends appear to mark the locations of irregularly shaped enclosures. A series of trends in Area 17 have been assigned to the category of possible archaeology; they could form rectilinear enclosure or mark the locations of uncorroborated field boundaries. In Area 31 a number of ditches could form a rectilinear enclosure possibly associated with a former windmill thought to have been in the field. In Area 41 a circular response could mark the location of a round barrow, while in Area 42 a sub-rectangular enclosure, with an eastern entrance, has also be recorded. A possible partial enclosure and strong pit-like response in Area 70 could mark be associated with a continuation of a former field system that was recorded in a previous geological survey (MDV108474). In Area 74 numerous linear responses form a large enclosure, which appears to enclose a rectilinear feature, and several ditch-like responses could be part of a field system; the responses correspond with features recorded in the HER. Ditch-like responses in Area 83 could be associated with a double ditched enclosure (MDV63447) noted in the HER. A possible small ring-ditch has been plotted in Area 88. In Areas 91 numerous ditch-like anomalies and linear trends appear to form a trackway and possible fields, while in Area 92 part of a possible settlement may have been identified. A semi-circular trend in Area 94 is of possible archaeological interest. In the south-east of Area 108 a number of ditch-like responses, pits-like anomalies and trends have been recorded which appear to form a partial enclosure with internal responses. Numerous responses have been detected throughout the survey which have been assigned to the category of Uncertain. They generally lack the defined morphology of anomalies that would ordinarily be interpreted as being of archaeological interest. The majority are likely to be due to combinations of agricultural and natural processes. However, in places, archaeological origins cannot be entirely discounted. Corroborated and conjectural former field boundaries are visible throughout the plots, along with ploughing, land drains plus ridge and furrow ploughing. The routes of several service pipes have also been recorded throughout the survey. Elevated magnetic responses throughout the survey are associated with the naturally magnetic bedrock and superficial geology; this has made interpretation of many of the results difficult.

Keywords	Enclosure - UNCERTAIN - FISH Thesaurus of Monument Types Rectilinear Enclosure - UNCERTAIN - FISH Thesaurus of Monument Types Ditch - UNCERTAIN - FISH Thesaurus of Monument Types Barrow - UNCERTAIN - FISH Thesaurus of Monument Types Rectangular Enclosure - UNCERTAIN - FISH Thesaurus of Monument Types Pit - UNCERTAIN - FISH Thesaurus of Monument Types Coaxial Field System - UNCERTAIN - FISH Thesaurus of Monument Types Ring Ditch - UNCERTAIN - FISH Thesaurus of Monument Types Trackway - UNCERTAIN - FISH Thesaurus of Monument Types Ridge And Furrow - MEDIEVAL - FISH Thesaurus of Monument Types Plough Marks - POST MEDIEVAL - FISH Thesaurus of Monument Types Drain - POST MEDIEVAL - FISH Thesaurus of Monument Types Field Boundary - POST MEDIEVAL - FISH Thesaurus of Monument Types Pipeline - 20TH CENTURY - FISH Thesaurus of Monument Types
Funder	Private or public corporation 08807
HER	Devon Historic Environment Record - rev - STANDARD
Person Responsible for work	Simon Haddrell
HER Identifiers	
Archives	

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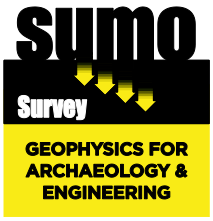

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