

STATION APPROACH VICTORIA ROCHE CORNWALL

Results of a Geophysical Survey



South West Archaeology Ltd. report no 161011.

Station Approach, Victoria, Roche, Cornwall Results of a Geophysical Survey

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Work undertaken by SWARCH for George Allen Construction Consultancy Ltd
on behalf of
Forest Crest Developments Ltd (the Client)

SUMMARY

South West Archaeology Ltd. was commissioned by George Allen of Allen Construction Consultancy Ltd. (the Project Manager) on behalf of Forest Crest Developments Ltd (the Client). to undertake a geophysical survey on land at Station Approach, Victoria, Roche, Cornwall. The work was carried out to inform potential future development, and for related off-site analysis and reporting.

The site is located at the south-eastern end of the hamlet of Victoria to the south of the A30, in the parish of Roche. The site is situated on agricultural land associated with medieval farmsteads. The north and east sides of the site were waterlogged.

The results of the geophysical survey would suggest that there are relatively few features of archaeological origin present within the area of the proposed development. The survey identified a known service pipeline and probable drainage ditches. The lower slope of the site was clearly subject to water-logging and showed no evidence of modification. The upper slope appeared to have been ploughed, which will have truncated any early potential features and probably the drainage ditches.

The proposed development of the site would disturb an undated ditch associated with drainage. The development would be unlikely to disturb significant archaeological deposits.



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CONTENTS

| | |
|---------------------------------------------|-----------|
| <i>SUMMARY</i> | 2 |
| <i>CONTENTS</i> | 3 |
| <i>LIST OF FIGURES</i> | 3 |
| <i>LIST OF TABLES</i> | 3 |
| <i>LIST OF APPENDICES</i> | 4 |
| <i>ACKNOWLEDGEMENTS</i> | 4 |
| <i>PROJECT CREDITS</i> | 4 |
| 1.0 INTRODUCTION | 5 |
| 1.1 PROJECT BACKGROUND | 5 |
| 1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND | 5 |
| 1.3 HISTORICAL BACKGROUND | 5 |
| 1.4 ARCHAEOLOGICAL BACKGROUND | 5 |
| 1.5 METHODOLOGY | 6 |
| 2.0 GRADIOMETER SURVEY | 8 |
| 2.1 INTRODUCTION | 8 |
| 2.2 SITE INSPECTION | 8 |
| 2.3 METHODOLOGY | 8 |
| 2.4 RESULTS | 9 |
| 2.5 DISCUSSION | 12 |
| 3.0 CONCLUSION | 13 |
| 4.0 BIBLIOGRAPHY | 14 |

LIST OF FIGURES

COVER PLATE: THE SITE FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-SOUTH-EAST (NO SCALE)..

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| FIGURE 1: SITE LOCATION (THE SITE IS INDICATED). | 7 |
| FIGURE 2: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING. | 10 |
| FIGURE 3: INTERPRETATION OF GRADIOMETER SURVEY DATA. | 11 |
| FIGURE 4: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH (NO SCALE). | 15 |
| FIGURE 5: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-EAST (NO SCALE). | 15 |
| FIGURE 6: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-WEST (NO SCALE). | 16 |
| FIGURE 7: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-SOUTH-EAST (NO SCALE). | 16 |
| FIGURE 8: SITE GRID LOCATION AND NUMBERING (ABOVE); RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA, BAND WEIGHT EQUALISED, GRADIATED SHADING (BELOW). | 17 |
| FIGURE 9: RED-BLUE-GREEN(2) SHADE PLOT OF GRADIOMETER SURVEY DATA (ABOVE); RED-BLUE-GREEN(2) SHADE PLOT OF GRADIOMETER SURVEY DATA, BAND WEIGHT EQUALISED, GRADIATED SHADING (BELOW). | 18 |
| FIGURE 10: ORDNANCE SURVEY SURVEYOR'S DRAFT MAP FOR PADSTOW, 1808 (BL). | 19 |
| FIGURE 11: ORDNANCE SURVEY 1ST EDITION, 25 INCH SERIES, SURVEYED 1879, PUBLISHED 1881 (CRO). | 19 |
| FIGURE 12: ORDNANCE SURVEY 2ND EDITION, 25 INCH SERIES, SURVEYED 1905, PUBLISHED 1907 (CRO). | 19 |

LIST OF TABLES

| | |
|-----------------------------------------------------|---|
| TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA. | 9 |
|-----------------------------------------------------|---|

LIST OF APPENDICES

| | |
|-------------------------------------------------------------------|----|
| APPENDIX 1: SUPPORTING PHOTOGRAPHS: SITE INSPECTION | 15 |
| APPENDIX 2: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY | 17 |
| APPENDIX 3: CARTOGRAPHIC SOURCES | 17 |

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1.0 INTRODUCTION

Location: Station Approach, Victoria
Parish: Roche
County: Cornwall
NGR: Centred on SW 99455 61373
SWARCH ref: VSA16

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by George Allen of Allen Construction Consultancy Ltd. (the Project Manager) on behalf of Forest Crest Developments Ltd (the Client) to undertake a geophysical survey on land at Station Approach, Victoria, Roche, Cornwall to inform potential future development, and for related off-site analysis and reporting. This work was carried out in accordance with ClfA guidelines.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

Station Approach is located at the south eastern end of the hamlet of Victoria, south of the A30, c.10km north of St Austell, in the parish of Roche. The site is situated on agricultural land approximately 300m east of Roche station at a height of c.155m AOD.

The soils of this area are the well-drained fine loamy or fine silty soils over rock of the Manod association (SSEW 1983), overlying the partly metamorphosed slates and sandstones of the Meadfoot Group (BGS 2014).

1.3 HISTORICAL BACKGROUND

The settlement and parish of Roche lies in the Deanery and East division of the Hundred of Powder (Lysons 1814). The site is located east of Roche train station and on the south-east of Victoria. The site is located to the east end of Penstraze Lane in an area of known medieval activity and settlements. Penstraze was a settlement first recorded in 1290 as 'Penstras' and located immediately north-west of the site. The name Penstraze is derived from the Cornish elements *pen* meaning 'head' and *stras* meaning 'shallow valley' (HER No.21565), which is apt for its location and the location of the site, which is in the valley. Penstraze has since been subsumed by the Victoria business park. East of the drain that bounds the north and east of the site is the medieval settlement of Trenower, first recorded in 1270. Its place name is derived from the Cornish elements *tre* meaning 'farmstead, estate' and *noweth*, meaning 'new' (Her No.21569). Victoria itself grew through the 20th century and took its name from the Victoria Inn as depicted on the 1881 and 1907 Ordnance survey mapping (Watts 2002).

1.4 ARCHAEOLOGICAL BACKGROUND

The site lies within land recorded on the Cornwall and Scilly Historic Environment Record as 'Farmland: Medieval' - *The agricultural heartland, with farming settlements documented before the 17th century AD and whose field patterns are morphologically distinct from the generally straight-sided fields of later enclosure. Either medieval or prehistoric origins*, by the Cornwall Council Historic Landscape Characterisation (HLC). Furthermore, this is included as 'Anciently Enclosed Land' (AEL).

AEL is land which is likely to have been enclosed and in intensive cultivation since the medieval period or earlier with the potential for the survival of archaeological remains of prehistoric and early historic periods.

The Cornwall Historic Environment Record (HER) records several heritage assets in close proximity to the proposed development site, relating to: Medieval settlement and field systems (MCO42451); Early Medieval and Post-Medieval quarrying and extractive activities (MCO42459; MCO42453) and a Post-Medieval Lime Kiln (MCO7296). To the north east of the site is a possible prehistoric enclosure/'round' of Iron Age/Romano-British date identified from aerial photography by the National Mapping Programme (MCO41123).

Archaeological geophysical survey and excavations at *Cornwall Services*, approximately 850m north-east of the site, off of the A30, revealed a Bronze Age structure, a probable Romano-British enclosure with associated industrial activity and a probable Medieval stock enclosure. Of these the Bronze Age features were not identified in geophysical survey due to the discrete and small nature of the features (Taylor 2014).

1.5 METHODOLOGY

The gradiometer survey follows the guidance outlined in *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008) and *Standard and Guidance for Archaeological Geophysical Survey* (ClfA 2014b).

'Archaeological geophysical survey uses non-intrusive and non-destructive techniques to determine the presence or absence of anomalies likely to be caused by archaeological features, structures or deposits, as far as reasonably possible, within a specified area or site on land, in the inter-tidal zone or underwater. Geophysical survey determines the presence of anomalies of archaeological potential through measurement of one or more physical properties of the subsurface.' (Standard and Guidance for Archaeological Geophysical Survey 2014).

The results of the survey will as far as possible inform on the presence or absence, character, extent and in some cases, apparent relative phasing of buried archaeology to inform a strategy to mitigate any threat to the archaeological resource.

Station Approach, Victoria, Roche, Cornwall



Figure 1: Site location (the site is indicated).

2.0 GRADIOMETER SURVEY

2.1 INTRODUCTION

The purpose of this survey was to identify and record magnetic anomalies within the proposed site. While the anomalies may relate to archaeological deposits and structures, the dimensions of recorded anomalies may not directly correspond with any associated archaeological features. The following discussion attempts to clarify and characterise identified anomalies. The survey was undertaken on the 9th and 10th of November 2016 by J. Bampton in showery conditions. The survey data was processed by J. Bampton. An area of approximately 2.36ha was surveyed.

The survey identified three groups of anomalies. These were linear anomalies associated with drainage ditches, ploughing and a modern service. Group 1 represents two probable small ditches, probably associated with drainage. Group 2 probably represents alternate positive and negative responses indicative of ploughing; although the denoted example appears to be more distinctive than other probable ploughing activity, it is within the parameters of natural variation on the site. Group 3 represents a metallic service: a high pressure gas mains pipe that is marked in the western boundary of the site.

2.2 SITE INSPECTION

The site was a single large field bounded by Cornish hedgebanks and barbed wire fencing. Substantial drainage ditches ran along its north, east and west boundaries. Along these boundaries oak and alder trees were prevalent with hawthorn and gorse scrub. The southern boundary contained cut-back hazel and was predominantly coated in brambles and bracken with hawthorn and gorse scrub. The south-west boundary was lined by a railway line that cut into the slope and a southern access to the site was granted via a bridge over this railway line. The site sloped gently down to the north-north-east and the ground below c.150m AOD, at the approximate foot of the slope, was water logged and contained reeds, which were particularly thick in the north-east of the site. The site was under pasture with short rough grass and areas of water-logging containing reeds. A compliment of supporting photographs of the site can be seen in Appendix 1.

2.3 METHODOLOGY

The gradiometer survey follows the general guidance as outlined in: *Geophysical Survey in Archaeological Field Evaluation* (English Heritage 2008) and *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2014).

The survey was carried out using a twin-sensor fluxgate gradiometer (Bartington Grad601). These machines are sensitive to depths of up to 1.50m. The survey parameters were: sample intervals of 0.25m, traverse intervals of 1m, a zigzag traverse pattern, traverse orientation was circumstantial, grid squares of 30×30m. The gradiometer was adjusted ('zeroed') every 0.5-1ha. The survey grid was tied into the Ordnance Survey National Grid. The data was downloaded onto *Grad601 Version 3.16* and processed using *TerraSurveyor Version 3.0.25.0*. The primary data plots and analytical tools used in this analysis were *Shade* and *Metadata*. The details of the data processing are as follows:

Processes: Clip +/- 3SD; DeStripe all traverses, median; DeStagger, offset in- and outbound by -2 intervals (all grids).

Details: 2.3591ha surveyed; Max. 142.35nT, Min. -142.80nT; Standard Deviation 24.40nT, mean - 2.16nT, median -0.03nT.

2.4 RESULTS

Table 1 with the accompanying Figures 2 and 3 show the analyses and interpretation of the geophysical survey data. Additional graphic images of the survey data and numbered grid locations can be found in Appendix 2.

| Anomaly group | Class and Certainty | Form | Archaeological Characterisation | Comments |
|---------------|------------------------------------------------|--------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Weak-moderate positive, probable | Linear | Drainage ditches | Drainage ditch that may possibly define the historic limits of the drier upper slopes and water-logged lower slopes of the field. Responses vary between +3nT and +12nT. |
| 2 | Weak –moderate positive and negative, possible | Linear | Ploughing activity | Parallel alternating positive and negative linear anomalies running approximately perpendicular to the slope of the site indicative of ploughing across most of the site. One clearer response is depicted and appears to resemble a relict boundary, however it is within the parameters of geological variation. Responses of between +15nT and -7nT. |
| 3 | Strong Bipolar, probable | Linear | Modern service - high pressure gas mains pipeline | String alternating positive and negative responses of above +/-140nT. Indicative of a metal service pipe. A gas main is known to transect the site and is marked at a point in the western boundary of the site. |

TABLE 1: INTERPRETATION OF GRADIOMETER SURVEY DATA.

Station Approach, Victoria, Roche, Cornwall

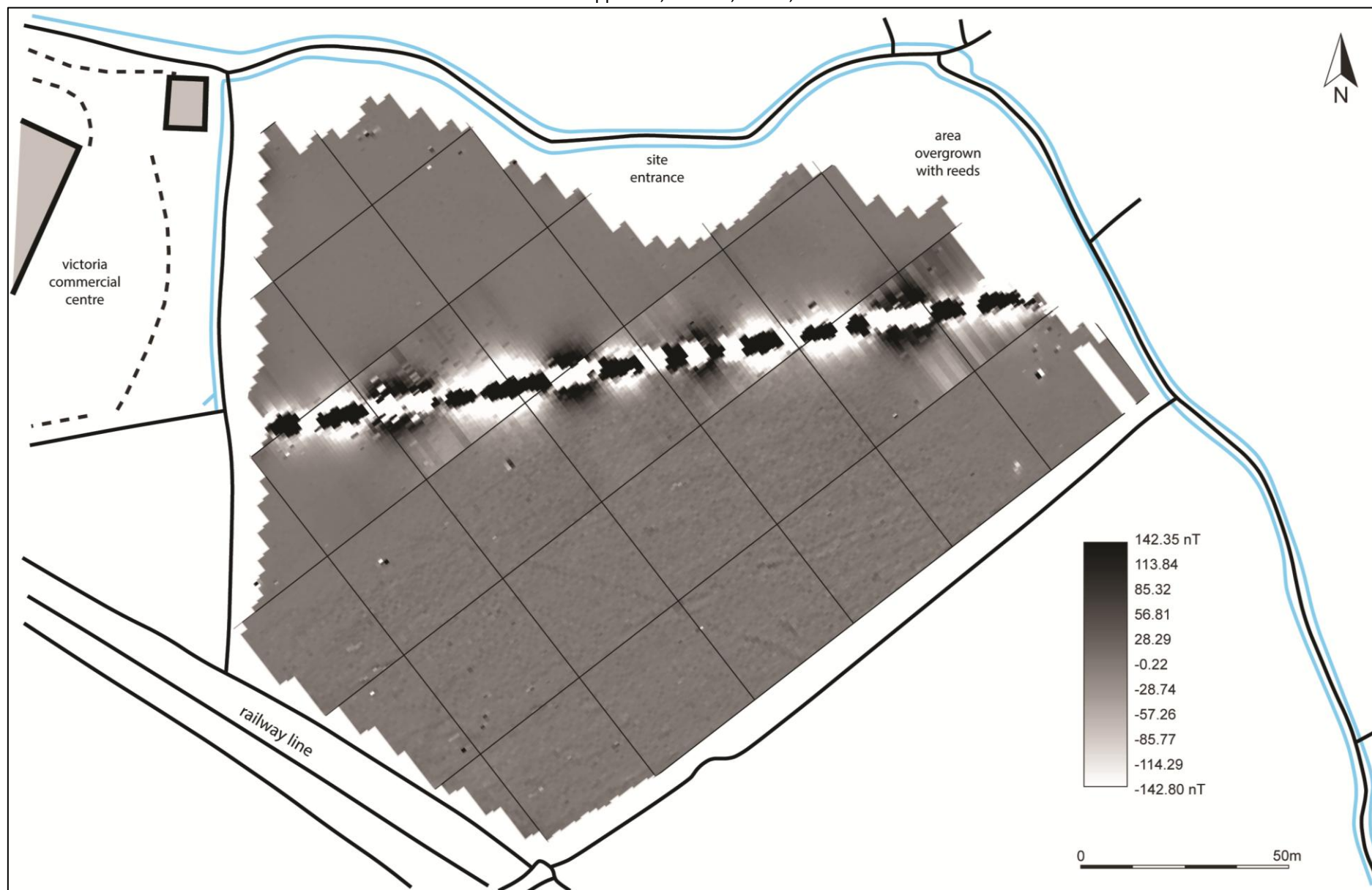


FIGURE 2: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

Station Approach, Victoria, Roche, Cornwall

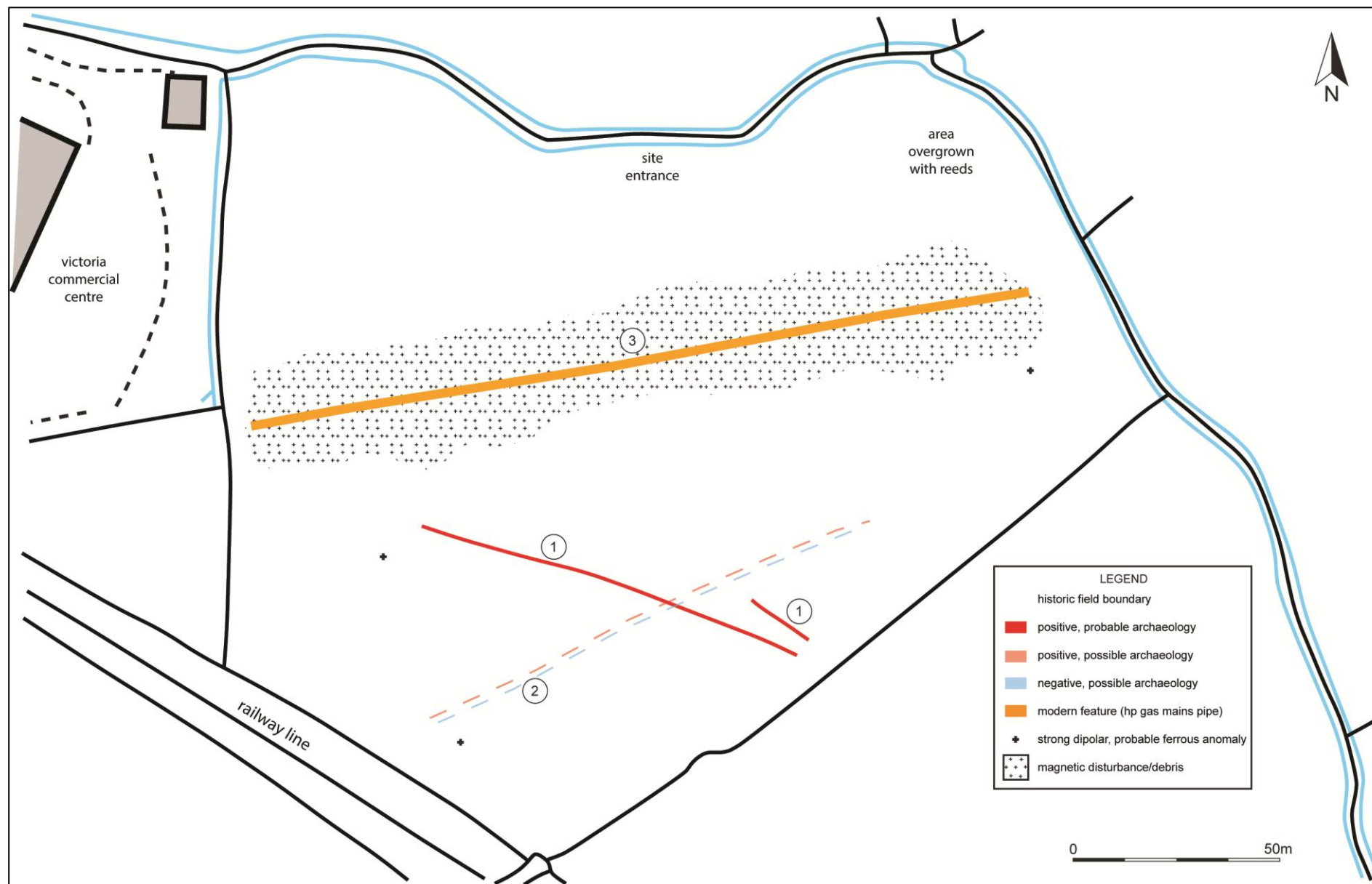


FIGURE 3: INTERPRETATION OF GRADIOMETER SURVEY DATA.

2.5 DISCUSSION

The survey identified three groups of anomalies: Group 1 represents a pair of probable drainage ditches. Group 2 represent a strongly defined example of ploughing activity. Group 3 represents a modern metallic service (a gas pipeline). The water-logged lower slopes of the site are identifiable on the northern side of Group 3 and in the eastern corner of the site and these areas, including the area obscured by the metallic service were invariably covered in reeds. The slope to the south of Group 3 shows signs of having been ploughed with striations trending approximately east-west. Occasional instances of ferrous debris/objects (not significant) were also identified along with areas of magnetic and geological variation.

Group 1 are weak to moderate positive anomalies indicative of ditches. Given the ground conditions, drainage is a probable issue for the site and this accounts for the large drains along the north and east boundaries of the site. The longer example (+5nT to +12nT) may once have defined the drier upper slope from the water-logged lower slope of the site. It dissipates when it meets the ground comparable to the water-logged ground on the geophysics shade plot (Figure 2). The shorter example may have been truncated by ploughing and both examples appear to survive less well at their northern ends. Drainage on the site may be associated with the original enclosure of the land, which may be medieval or earlier according to the HLC; or later developments to the enclosure of the land. A large amount of post-medieval, straight-sided, enclosure is evident across the landscape: in this case probably associated with the agricultural revolution and later changes from the mid 18th century onward.

Group 2 constitutes a pair of weak to moderate parallel linear anomalies indicative of ploughing activity. This activity is evident across the site on the south side of Group 3/the gas pipeline, although in the instance depicted as Group 2 the response is particularly clear. However, its strength is within the parameters of natural geological variation. It seems probable that the depth of plough soil is not substantial and that the field may not have been ploughed too heavily.

Group 3 is represents a strong (between +/-145nT) bipolar anomaly. This represents a high pressure gas pipeline that is known to cross the site and is marked in the boundaries. This anomaly has obscured geophysical responses c.15m either side of the pipeline. It is unlikely that the anomaly is masking significant anomalies as no potentially significant anomalies appear to exist across what can be seen of the site.

The water-logged areas had a generally low magnetic response of between +/-1nT, while the plough disturbed ground of the upper slope had responses that were generally between +/-5nT although included areas of geological variation of between +15nT and -7nT. Ordnance Survey mapping denotes the northern half of the site as marsh-type land into the late 20th century and it was unlikely to be suitable for arable cultivation. The available cartographic sources show no field boundaries have crossed the site- or structures on the site since c.1808. Some cartographic sources can be seen in Appendix 3.

3.0 CONCLUSION

The results of the geophysical survey would suggest that there are relatively few features of archaeological origin present within the area of the proposed development. Of the two geophysical anomalies identified, one linear feature represents a known high pressure gas main, and the other represents probable drainage ditches. The lower part of the site is clearly subject to water-logging and showed no evidence of modification. The upper slope has been subject to ploughing, and contains one relict field boundary/ditch.

The proposed development of the site would disturb a single undated ditch associated with drainage. The development would be unlikely to disturb significant archaeological deposits.

Validation of the geophysical survey and investigation of the undated probable ditch may be achieved through archaeological evaluation trenching. However, the significance of a probable drainage ditch makes further archaeological works difficult to justify. No further archaeological works are recommended in this instance.

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APPENDIX 1: SUPPORTING PHOTOGRAPHS: SITE INSPECTION



FIGURE 4: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH (NO SCALE).



FIGURE 5: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-EAST (NO SCALE).



FIGURE 6: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-WEST (NO SCALE).



FIGURE 7: SITE SHOT FROM THE RECENTLY CREATED ENTRANCE IN THE NORTH OF THE SITE; LOOKING SOUTH-SOUTH-EAST (NO SCALE).

APPENDIX 2: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

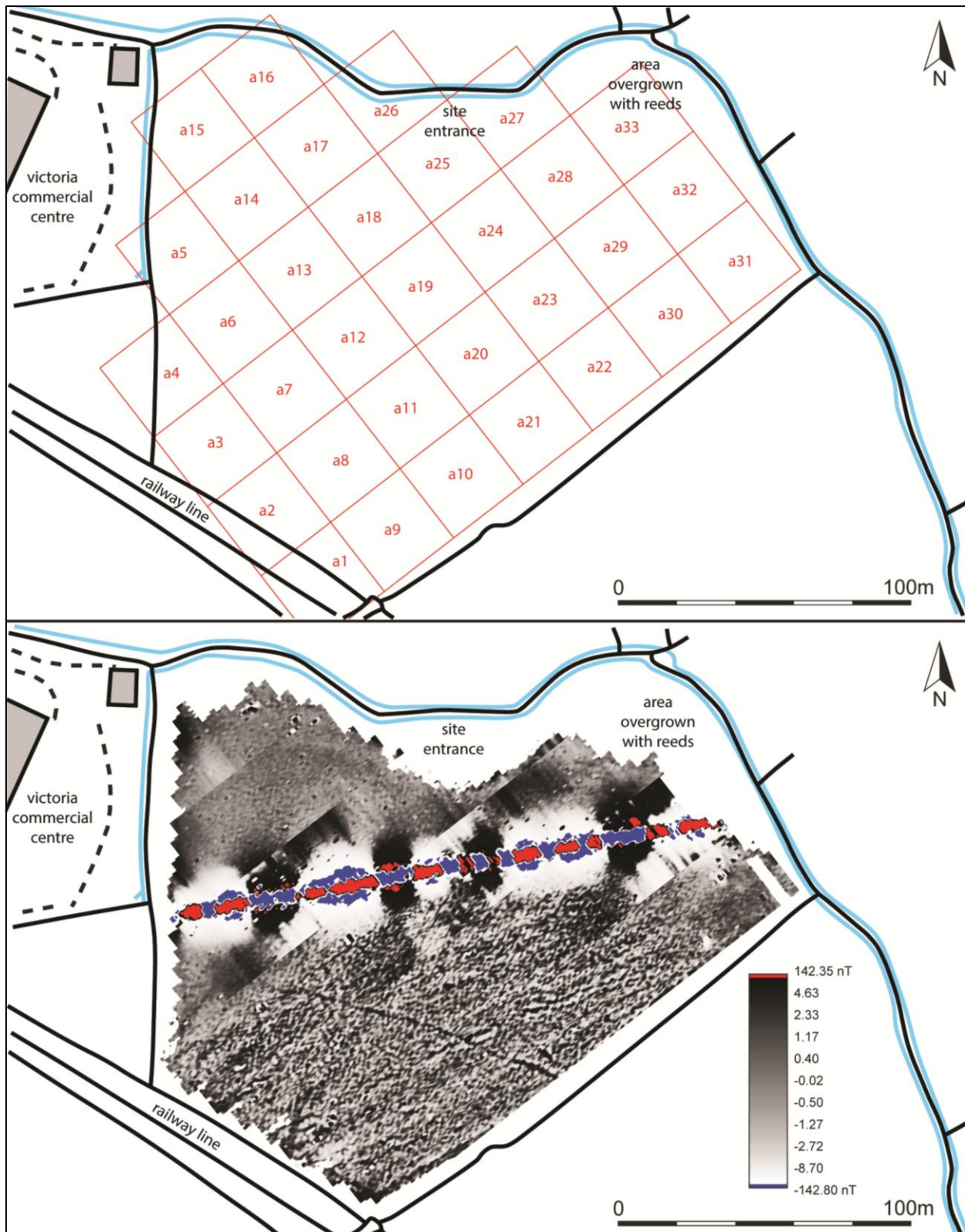


FIGURE 8: SITE GRID LOCATION AND NUMBERING (ABOVE); RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA, BAND WEIGHT EQUALISED, GRADIATED SHADING (BELOW).

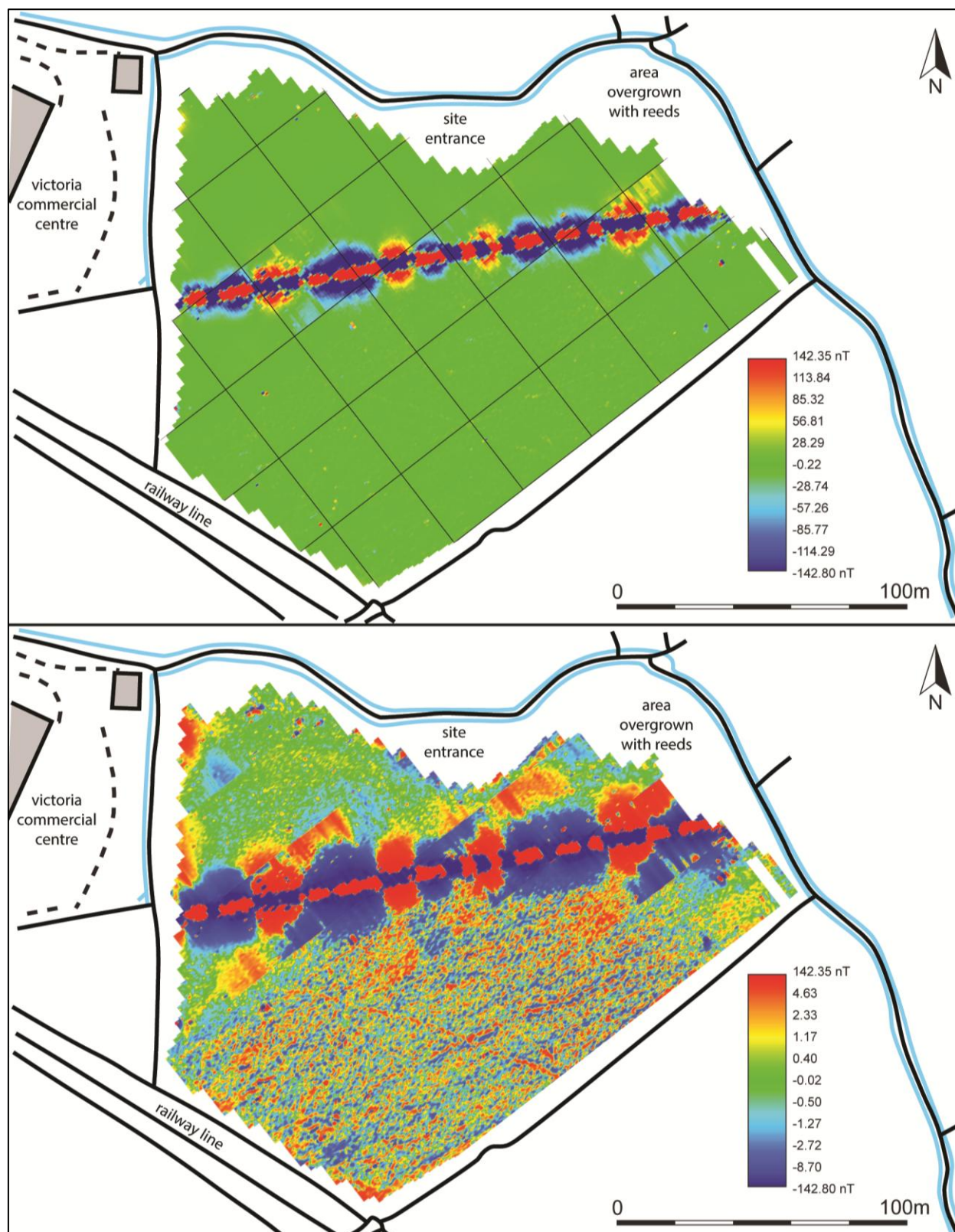


FIGURE 9: RED-BLUE-GREEN(2) SHADE PLOT OF GRADIOMETER SURVEY DATA (ABOVE); RED-BLUE-GREEN(2) SHADE PLOT OF GRADIOMETER SURVEY DATA, BAND WEIGHT EQUALISED, GRADIATED SHADING (BELOW).

APPENDIX 3: CARTOGRAPHIC SOURCES



FIGURE 10: ORDNANCE SURVEY SURVEYOR'S DRAFT MAP FOR PADSTOW, 1808 (BL).



FIGURE 11: ORDNANCE SURVEY 1ST EDITION, 25 INCH SERIES, SURVEYED 1879, PUBLISHED 1881 (CRO).

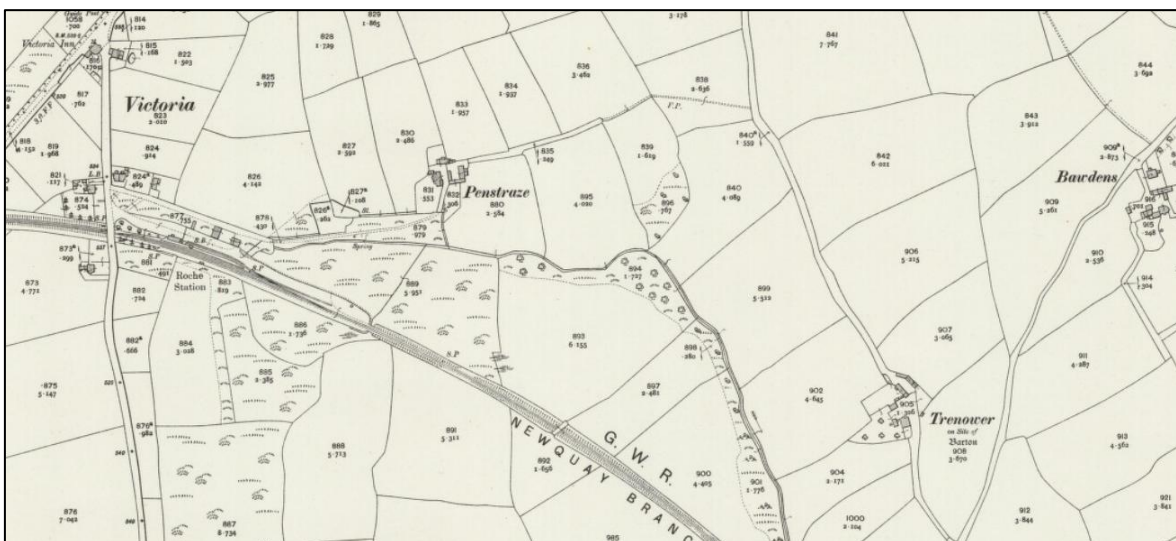


FIGURE 12: ORDNANCE SURVEY 2ND EDITION, 25 INCH SERIES, SURVEYED 1905, PUBLISHED 1907 (CRO).



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