

**LAND AT PENSIPPLE FARM,
TREWIDLAND,
CORNWALL.**

NGR: SX 259 592

ARCHAEOLOGICAL EVALUATION

Quality Assurance

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CONTENTS

Summary

Glossary of Archaeological Terms and Abbreviations

- 1 INTRODUCTION
- 2 PROJECT BACKGROUND
- 3 AIMS
- 4 METHODOLOGY
- 5 RESULTS AND DISCUSSION
- 6 BIBLIOGRAPHY
- 7 ACKNOWLEDGEMENTS

APPENDICES

Appendix 1: Stratigraphic Data

Appendix 2: Trenches 14 and 15 Harris Matrix

Appendix 3: The Pottery

Appendix 4: The Geophysical Survey Report

FIGURE LIST

- Figure 1: Site Location
- Figure 2: Trench Locations
- Figure 3: Trenches 1 and 2 Plans
- Figure 4: Trenches 3, 4, 8 and 10 Plans
- Figure 5: Trenches 11 and 12 Plans
- Figure 6: Trench 13 Plans
- Figure 7: Trench 14 Plans
- Figure 8: Trench 15 Plans
- Figure 9: Trenches 14 and 15 Combined Plan
- Figure 10: Trenches 1, 2 and 3 Sections
- Figure 11: Trenches 4, 8, 10, 11 and 12 Sections
- Figure 12: Trenches 13 and 14 Sections
- Figure 13: Trenches 14 and 15 Sections
- Figure 14: Trench 15 Sections
- Figure 15: Trench 14, Schematic Trench Section Showing Profile Across Round
- Figure 16: Trenches 1 to 6, Features in Relation to Geophysical Survey Results
- Figure 17: Trenches 7 to 15, Features in Relation to Geophysical Survey Results

SUMMARY

In December 2012, Foundations Archaeology undertook a programme of archaeological evaluation on land at Pensipple Farm, Trewidland, Cornwall (NGR: SX 259 592).

The project comprised the excavation and recording of fifteen trenches across a proposed development area, in order to test and refine the results of a previous geophysical survey.

The evaluation, in conjunction with the geophysical survey, has identified multiple phases of fields and enclosures; the earliest of which is likely to date to the Prehistoric period. Two small Prehistoric pits were present at the east of the site and an Iron Age/Romano-British Round was located at the northeast. Features associated with the Round included postholes, pits, gullies and a possible industrial feature. A Medieval/Post-medieval agricultural enclosure was situated at the west of the site.

GLOSSARY OF ARCHAEOLOGICAL TERMS AND ABBREVIATIONS

Archaeology

For the purpose of this project, archaeology is taken to mean the study of past human societies through their material remains from prehistoric times to the modern era. No rigid upper date limit has been set, but AD 1900 is used as a general cut-off point.

CBM

Ceramic Building Material.

Magnetic Survey

Geophysical survey technique used to define areas of past human activity by mapping spatial variations and contrast in the magnetic properties of soil, subsoil and bedrock.

Medieval

The period between the Norman Conquest (AD 1066) and *circa* AD 1500.

Natural

In archaeological terms this refers to the undisturbed natural geology of a site, in this case *Staddon Formation* - sandstone, siltstone and mudstone (shillet).

NGR

National Grid Reference from the Ordnance Survey Grid.

OD

Ordnance Datum; used to express a given height above sea-level. (AOD Above Ordnance Datum).

OS

Ordnance Survey.

Post-medieval

The period between *circa* AD 1500 and AD 1900.

Prehistoric

The period prior to the Roman invasion of AD 43. Traditionally sub divided into; Palaeolithic – c. 500,000 BC to c. 12,000 BC; Mesolithic – c. 12,000 BC to c. 4,500 BC; Neolithic – c. 4,500 BC to c. 2,000 BC; Bronze Age – c. 2,000 BC to c. 800 BC; Iron Age – c. 800 BC to AD 43.

Roman

The period between AD 43 and AD 410.

Round

An enclosed settlement typically dated to the late Iron Age and Roman periods.

Samian

A type of plain and decorated fine tableware Roman pottery.

1 INTRODUCTION

- 1.1 This report presents the findings of an archaeological evaluation undertaken by Foundations Archaeology in December 2012 on land at Pensipple Farm, Trewidland, Cornwall (NGR: SX 259 592). The project was commissioned by Elgin Energy Ltd.
- 1.2 The project was undertaken in accordance with the general principles of the National Planning Policy Framework (NPPF, 2012) and complied with an approved Written Scheme of Investigation (Foundations Archaeology, 2012b) and the Institute for Archaeologists' *Standard and Guidance for Archaeological Field Evaluation* (2008).
- 1.3 The site comprises an area of agricultural land to the west of Pensipple Farm, Trewidland, as shown in Figures 1 and 2. The study area is located on land which forms an undulating slope downwards towards the south-southwest. The underlying geology consists of *Staddon Formation* - sandstone, siltstone and mudstone - shillet (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>). At the time of the fieldwork the land comprised recently ploughed fields.

2 PROJECT BACKGROUND

- 2.1 Screening option **PA12/04228** relates to a new 5kw solar farm at Pensipple Farm. An archaeological assessment of the site was required by Cornwall Council, in accordance with the NPPF.
 - 2.2.1 An archaeological desk-based assessment (Foundations Archaeology, 2012a) with an associated geophysical survey (ArchaeoPhysica Ltd., 2012), highlighted that the site was generally of moderate potential for the recovery of significant archaeological finds and features of all periods, except the Iron Age/Roman and Medieval periods, where the potential was considered moderate-high. The assessment also indicated that the site potentially contained a *Round*, as well as a possible undated sub-rectangular enclosure or structure.
 - 2.2.2 Any finds or features relating to Prehistoric-Roman date were considered *de facto* to be of moderate-high significance and the Round itself was considered to be of high significance, while agricultural remains dating to the Early Medieval to Post-medieval period were deemed to be of generally low, or low-moderate significance; the undated enclosure and possible associated features were likely to be of moderate significance. The report noted that there has been no previous archaeological works in the vicinity. Much of the assumed potential may, therefore, be due more to this lack of investigation, than to an actual absence of activity.
- 2.3 The development area therefore contained the potential for the preservation of archaeological features and deposits.

- 2.4 In light of the potential for the presence of archaeological features within the proposed development area, the Cornwall Council HEPAO required that an archaeological evaluation was undertaken in order to inform any future planning application.

3 AIMS

- 3.1 The aim of the archaeological evaluation was to gather high quality data from the direct observation of archaeological deposits, in order to allow the characterisation of the on-site archaeological resource.

- 3.2 This aim was achieved through pursuit of the following specific objectives:

i) to identify and define the nature of archaeological deposits on site and date these, where possible;

ii) to attempt to characterize the nature of the archaeological sequence and recover information about the spatial patterning of features present on the site;

iii) where possible, to define a well dated stratigraphic sequence and recover coherent artefactual and environmental evidence;

iv) a specific objective of this project was to establish the depths of archaeologically non-significant overburden within the site; in order to facilitate potential future mitigation of archaeological deposits, with a view to preservation *in-situ*. The archaeological evaluation, therefore, sought to minimize its impact upon archaeological deposits, whilst still achieving a coherent resource characterization.

4 METHODOLOGY

- 4.1 A total of fifteen trenches were excavated across the survey area, as shown in Figure 2. The trenches were located in order to test previously identified geophysical anomalies (ArchaeoPhysica Ltd., 2012).

- 4.2 Topsoil and non-significant overburden was removed to the top of the archaeological deposits or natural, whichever was encountered first. This was achieved by use of a 360° mechanical excavator, equipped with a toothless grading bucket. All mechanical excavation was conducted under the direction of a suitably experienced archaeologist. Thereafter, all additional excavation was conducted by hand.

- 4.3 Where necessary, trenches were trowel cleaned in order to adequately define possible deposits. Where potentially complex deposits or feature inter-relationships were identified, these were recorded in plan only, in order that any further investigation may be conducted under conditions pertaining to archaeological excavation.

- 4.4 All excavation and recording work was undertaken in accordance with the Written Scheme of Investigation and the Foundations Archaeology Technical Manual 3: Excavation Manual.

5 RESULTS AND DISCUSSION

- 5.1 A full stratigraphic description of all contexts identified in the course of the project is detailed in Appendix 1, a Harris Matrix is given in Appendix 2 and a pottery report in Appendix 3, along with a copy of the geophysical report in Appendix 4. A summary discussion is given below.
- 5.2 The geology predominately comprised mudstone shillet with occasional patches of clay, and visibility conditions were generally good. The overburden varied across the site; with some trenches containing natural deposits overlaid by subsoil and subsequently ploughsoil, whilst others contained natural directly overlaid by the ploughsoil. Relatively thick subsoil/colluvial deposits (1402), (1410) and (1502) were noted in parts of Trenches 14 and 15.
- 5.3 Evidence for plough damage, in the form of fragmented/shattered shillet deposits, was noted in Trenches 5 and 8 and in the northern part of Trench 14. Preservation conditions were generally good where trenches contained subsoil/colluvium.
- 5.4 The correlation between the geophysical survey results and the features present within the evaluation trenches generally varied between moderate to good, as shown in Figures 16 and 17. Some features predicted by the survey were not present, whilst a number of trenches contained features which were not predicted by the survey. The ditches within Trenches 13, 14 and 15 were remarkably well mapped; however, some shallow/discrete features within Trenches 14 and 15, which were present beneath subsoil/colluvial layers, were not identified.
- 5.5 The evaluation revealed the presence of 32 ditches, three pits, three postholes, one possible industrial feature, two gullies and seven other features.
- 5.6 Ditches [104], [205], [207], [307], [403], [802], [1004], [1103], [1203], [1205], [1212], [1303], [1308], [1310], [1312], [1314], [1426], [1411] and [1512] all correlated well with the geophysical survey and were predominately the remains of agricultural land boundaries. The evaluation trenching, in conjunction with the geophysical survey, has indicated that these ditches have variable alignments and are likely to represent multiple phases of landscape activity.
- 5.7 Ditches [1212], [1303] and [1426] corresponded well with a north-south/east-west co-axial boundary indicated by the geophysical survey (Labels 6, 7 and 29). The boundary was not associated with any dating evidence, although it was stratigraphically earlier than ditch [1413], which was associated with the Round (para. 5.10.3) and, as such, was almost certainly datable to the Prehistoric period. It is possible that this feature represents part of the earliest

linear land division in this landscape and, it is noteworthy that the Round perimeter ditches did not respected it.

- 5.8 Pits [1207] and [1209] were sealed beneath the subsoil and were associated with a struck flint. It is, therefore, likely that these features dated to the Prehistoric period. Due to the limited nature of the investigation, they were difficult to interpret; however, their relative proximity to and similar alignment with Prehistoric ditch [1212] may suggest an association.
- 5.9 Features [102], [305], [1105] and possibly [1418] are likely to have represented linear land boundaries; however, their wide shallow profile suggested that they were the remains of shallow ‘scoops’, possibly related to hedgerow/bank construction, rather than the bases of boundary ditches. Although none of these features were associated with dating evidence, feature [102] was stratigraphically later than ditch [104]. Feature [303] was recorded in plan only, although it formed a near right angle with, and may therefore have been related to feature [305].
- 5.10 **The Round and related features:**
- 5.10.1 Trenches 14 and 15 were targeted on the possible Round identified by the geophysical survey (Labels 4 and 5).
- 5.10.2 Ditches [1403], [1423] and [1503] all had steep, ‘V’ shaped profiles and corresponded with the Round inner perimeter ditch (Label 5).
- 5.10.3 Ditches [1420] and [1434] represented the primary cuts of the Round outer perimeter ditch (Label 4), both of which had evidence for re-cuts ([1413] and [1435]).
- 5.10.4 In accordance with the geophysical survey, there was no evidence for a ditch to the east of perimeter ditch [1503], which suggested that the Round had an east facing entrance. The geophysical survey indicated that ditch [1503] was possibly separated from the rest of the inner perimeter ditch by causeways and, as such, formed part of the entrance layout; although this remained untested.
- 5.10.5 The Round was located on a south facing slope, to the south of the crest of a hill, as shown in Figure 15. The inner and outer perimeter ditches were separated by a berm of up to 3.5m wide. There was no evidence for the remains of *in-situ* banks, although the relatively uniform shillet fill (1424) of ditch [1423] probably represented back-filled bank material. The ditches enclosed a roughly circular area, approximately 37m in diameter.
- 5.10.6 A total of twelve features were present within the Round; of which, nine were demonstrably sealed by subsoil or colluvium and were likely to be associated with the Round. These comprised three postholes ([1509], [1517], [1522]), two gullies ([1507], [1515]), three pits ([1428], [1429], [1520]) and one cut feature ([1408]).

- 5.10.7 There was a general paucity of finds from the Round; however, the recovery of a sherd of early Roman *Samian* ware pottery from cut [1408]/(1409) and a sherd of Iron Age/early Roman pottery from posthole [1517]/(1518) was entirely consistent with an Iron Age/Roman date for the Round.
- 5.10.8 Pits [1428] and [1429] appeared to be related and were both associated with charcoal flecks and lumps, as well as deposits of brightly coloured, plastic clay; (1431) and (1432). A single possible crucible fragment was recovered from fill (1433), which comprised the fill of pit [1429]. As feature [1428]/[1429] was only partially present within the trench it was difficult to interpret, but it is possible that it represents evidence for industrial activity within the Round.
- 5.10.9 The occurrence of relatively deep postholes within the Round suggested that preservation conditions were very good, especially where subsoil/colluvium was present.
- 5.11 **Sub-rectangular enclosure:**
- 5.11.1 Trenches 2 and 3 were targeted to investigate the possible sub-rectangular enclosure/structure (Label 20) and possibly related features (Labels 18 and 19), which had been identified by the geophysical survey.
- 5.11.2 Ditches [205], [207] and [307]/[309] appeared to confirm the existence of a rectangular enclosure and ditches [203] and [311]/[315] indicated that parts of the enclosure were possibly defined by a double ditch. There was no evidence for features relating to Labels 18 and 19, although the geophysical survey indicated that these may only partially survive.
- 5.11.3 There was no evidence for structural remains within either Trench 2 or 3 and this, along with a general paucity of artefactual evidence, suggested that the enclosure probably represented agricultural activity, such as a livestock pen. A single sherd of Medieval/Post-medieval pottery from ditch fill (206), along with Medieval and Post-medieval pottery from the ploughsoil in Trenches 2 and 3 indicated that this activity probably dated to the later Medieval/Post-medieval periods.
- 5.12 Feature [106] was only partially present within Trench 1 and was therefore difficult to interpret.
- 5.13 The evaluation, in conjunction with the geophysical survey, has identified multiple phases of fields and enclosures; the earliest of which is likely to date to the Prehistoric period. Two small Prehistoric pits were present at the east of the site and an Iron Age/Romano-British Round was located at the northeast. Features associated with the Round included postholes, pits, gullies and a possible industrial feature. A Medieval/Post-medieval agricultural enclosure was situated at the west of the site.
- 5.14 The archive is currently located at Foundations Archaeology but will be deposited with the Royal Cornwall Museum in due course.

6 BIBLIOGRAPHY

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7 ACKNOWLEDGEMENTS

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Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

APPENDIX 1: Stratigraphic Data

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
				Trench 1: 27m by 1.8m; natural (at average 49.57m OD) = beige shillet.		
101	na	na	0.39	Ploughsoil; dark brown silt clay.	nat.	na
[102]	10.2	2.7	0.27	Northwest - southeast aligned linear feature with a wide, shallow profile. Contained fill 103.	105*	103
				*relationship visible in plan; not tested by excavation.		
103	10.2	2.7	0.27	Fill of feature [102]; dark grey brown clay silt, which contained occasional shillet.	[102]	101
[104]	1.63	1.1	0.24	Northeast - southwest aligned ditch with a rounded profile. Contained fill 105.	nat.	105
105	1.63	1.1	0.24	Fill of ditch [104]; red brown clay silt, which contained occasional shillet and occasional charcoal flecks. Indistinguishable from fill 107.	[104]	[102]
[106]	1.2	0.9	0.2	Cut feature with a rounded profile. Interacted with ditch [104]; not possible to discern stratigraphic relationship. Contained fill 107.	nat.	107
107	1.2	0.9	0.2	Fill of feature [106]; red brown clay silt, which contained occasional shillet.	[106]	101
				Trench 2: 50m by 1.8m; natural (at average 46.54m OD) = beige shillet with patches of light orange clay silt.		
201	na	na	0.49	Ploughsoil; dark brown silt clay. Contained one sherd of Post-medieval pottery.	202	na
202	na	na	0.24	Subsoil; mid brown clay silt.	nat.	201
[203]	1.9	1.6	0.36	North - south aligned ditch with a rounded profile. Contained fill 204.	202	204
204	1.9	1.6	0.36	Fill of ditch [203]; brown clay silt, which contained occasional shillet.	[203]	201
[205]	1.9	1.3	0.49	North - south aligned ditch with a steep, rounded profile. Contained fill 206.	202	206
206	1.9	1.3	0.49	Fill of ditch [205]; dark brown clay silt, which contained occasional shillet. Contained one sherd of Medieval/Post-medieval pottery.	[205]	201
[207]	2.3	2.2	0.53	North - south aligned ditch with a rounded profile. Contained fill 208.	202	208
208	2.3	2.2	0.53	Fill of ditch [207]; mid brown silt clay, which contained occasional shillet and occasional charcoal flecks.	[207]	201
				Trench 3: 30m by 1.8m; natural (at average 48.49m OD) = beige shillet with patches of light orange clay silt.		
301	na	na	0.45	Ploughsoil; dark brown silt clay. Contained one sherd of possible Medieval pottery.	302	na
302	na	na	0.22	Subsoil; mid brown clay silt. Occurred intermittently within the trench.	nat.	301

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
[303]	1.6	1.42	?	Probable northeast - southwest aligned cut feature. Not excavated. Contained fill 304. Possibly associated with feature [305].	nat.	304
304	1.6	1.42	?	Fill of feature [303]; mid brown clay silt, which contained frequent shillet.	[303]	301
[305]	1.9	>1.5	0.12	Northwest - southeast aligned cut feature with a wide, shallow profile. Contained fill 306.	nat.	306
306	1.9	>1.5	0.12	Fill of feature [305]; mid brown clay silt, which contained occasional shillet. Uncertain stratigraphic relationship with features [307]/308 and [309]/310.	[305]	301
[307]	1.85	1.37	0.4	East - west aligned ditch with a rounded profile. Contained fill 308.	302	308
308	1.85	1.37	0.4	Fill of ditch [307]; mid orange brown clay silt, which contained frequent shillet. Indistinguishable from fill 310.	[307]	301
[309]	1.85	>1.9	0.65	East - west aligned cut feature, possibly a ditch, with a rounded profile. Contained fill 310.	nat.	310
310	1.85	>1.9	0.65	Fill of feature [309]; mid orange brown clay silt, which contained frequent shillet.	[309]	301
[311]	>0.80	0.6	0.27	East - west aligned ditch with a steep, rounded profile. Contained fill 312.	nat.	312
312	>0.80	0.6	0.27	Fill of ditch [311]; dark grey clay silt, which contained frequent shillet and occasional charcoal flecks.	[311]	[315]
313	?	0.9	0.18	Primary fill of ditch [315]; orange brown clay silt, which contained occasional shillet and occasional charcoal flecks.	[315]	314
314	1.85	1.38	0.31	Secondary fill of ditch [315]; mid brown clay silt, which contained occasional shillet and occasional charcoal flecks.	313	301
[315]	1.85	1.38	0.47	East - west aligned ditch with a steep, rounded profile. Re-cut of ditch [311]. Contained fills 313 and 314.	302	313
				Trench 4: 26m by 1.8m; natural (at average 45.87m OD) = beige orange shillet.		
401	na	na	0.31	Ploughsoil; dark brown silt clay.	402	na
402	na	na	0.11	Subsoil; mid brown clay silt. Occurred intermittently within the trench.	nat.	401
[403]	2.65	1.4	0.41	Northwest - southeast aligned ditch with sloping sides and a rounded base. Contained fill 404.	nat.	404
404	2.65	1.4	0.41	Fill of ditch [403]; dark brown silt clay.	[403]	401
				Trench 5: 66m by 1.8m; natural (at average 59.37m OD) = fragmented/shattered beige orange shillet.		
501	na	na	0.3	Ploughsoil; dark brown silt clay.	nat.	na
				No archaeological features within the trench.		
				Trench 6: 20m by 1.8m; natural (at average 69.68m OD) = fragmented beige orange shillet.		
601	na	na	0.33	Ploughsoil; dark brown silt clay.	nat.	na
				No archaeological features within the trench.		

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
				Trench 7: 15m by 1.8m; natural (at average 74.24m OD) = fragmented beige orange shillet.		
701	na	na	0.35	Ploughsoil; dark brown silt clay.	nat.	na
				No archaeological features within the trench.		
				Trench 8: 33m by 1.8m; natural (at average 76.19m OD) = fragmented/shattered beige orange shillet.		
801	na	na	0.4	Ploughsoil; dark brown silt clay.	nat.	na
[802]	1.85	1.22	0.38	East - west aligned ditch with a rounded profile. Contained fill 803.	nat.	803
803	1.85	1.22	0.38	Fill of ditch [802]; dark brown clay silt, which contained frequent shillet.	[802]	801
				Trench 9: 30m by 1.8m; natural (at average 68.76m OD) = beige shillet.		
901	na	na	0.38	Ploughsoil; dark brown silt clay.	nat.	na
				No archaeological features within the trench.		
				Trench 10: 30m by 1.8m; natural (at average 69.31m OD) = beige shillet.		
1001	na	na	0.4	Ploughsoil; dark brown silt clay.	nat.	na
[1002]	2.5	1.5	0.13	North - south aligned ditch with a shallow, flat profile. Contained fill 1003.	nat.	1003
1003	2.5	1.5	0.13	Fill of ditch [1002]; mid brown clay silt, which contained occasional shillet.	[1002]	1001
[1004]	2.05	1.82	0.24	Northwest - southeast aligned ditch with shallow, sloping sides and a flat base. Contained fill 1005.	nat.	1005
1005	2.05	1.82	0.24	Fill of ditch [1004]; dark brown silt clay.	[1004]	1001
				Trench 11: 30m by 1.8m; natural (at average 58.20m OD) = orange beige shillet.		
1101	na	na	0.4	Ploughsoil; dark brown silt clay. Contained one sherd of Post-medieval pottery.	1102	na
1102	na	na	0.2	Subsoil; mid brown clay silt. Occurred intermittently within the trench.	nat.	1101
[1103]	1.8	1.83	0.26	Northwest - southeast aligned ditch with sloping sides and a flat base. Contained fill 1104.	1102	1104
1104	1.8	1.83	0.26	Fill of ditch [1103]; mid brown clay silt, which contained occasional shillet.	[1103]	1101
[1105]	5.4	3	0.19	East - west aligned linear feature with a wide, shallow profile. Contained fill 1106.	nat.	1106
1106	5.4	3	0.19	Fill of feature [1105]; dark brown silt clay, which contained occasional shillet.	[1105]	1101
				Trench 12: 46m by 1.8m; natural (at average 61.84m OD) = beige orange clay shillet.		
1201	na	na	0.42	Ploughsoil; dark brown silt clay.	1202	na
1202	na	na	0.23	Subsoil; mid brown clay silt. Occurred intermittently within the trench.	nat.	1201

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
[1203]	1.95	1.38	0.23	Northwest - southeast aligned ditch with a shallow, rounded profile. Contained fill 1204.	1202	1204
1204	1.95	1.38	0.23	Fill of ditch [1203]; mid brown clay silt, which contained occasional shillet.	[1203]	1201
[1205]	2	1.5	0.22	Northwest - southeast aligned ditch with a shallow, rounded profile. Contained fill 1206.	1202	1206
1206	2	1.5	0.22	Fill of ditch [1205]; mid brown clay silt, which contained occasional shillet.	[1205]	1201
[1207]	0.79	0.78	0.23	Sub-circular pit with a shallow, rounded profile. Contained fill 1208. Equivalent to pit [1209].	nat.	1208
1208	0.79	0.78	0.23	Fill of pit [1207]; mid brown clay silt, which contained frequent charcoal lumps and flecks, frequent fragments of	[1207]	1202
				burnt quartz and occasional shillet. Equivalent to fill 1210. Contained a struck flint.		
[1209]	0.7	0.68	0.19	Sub-circular pit with a shallow, rounded profile. Contained fill 1210.	nat.	1210
1210	0.7	0.68	0.19	Fill of pit [1209]; mid brown clay silt, which contained frequent charcoal lumps and flecks, occasional fragments of	[1209]	1202
				burnt quartz and occasional shillet.		
1211				Void.		
[1212]	1.8	1.83	0.64	North - south aligned ditch with steep sides and a flat base. Contained fills 1213 and 1214.	nat.	1213
1213	?	0.88	0.27	Primary fill of ditch [1212]; dark brown grey silt clay, which contained occasional shillet.	[1212]	1214
1214	1.8	1.83	0.4	Secondary fill of ditch [1212]; dark orange brown silt clay, which contained occasional shillet.	1213	1202
				Trench 13: 64m by 1.8m; natural (at average 69.44m OD) = beige orange clay shillet.		
1301	na	na	0.3	Ploughsoil; mid brown clay silt.	1302	na
1302	na	na	0.2	Subsoil; light brown clay silt. Occurred intermittently within the trench.	nat.	1301
[1303]	2.07	2.1	1.95	North - south aligned ditch with steep sides and a rounded base. Contained fills 1304, 1305, 1306 and 1307.	nat.	1304
1304	?	0.64	0.14	Primary fill of ditch [1303]; beige brown clay shillet.	[1303]	1305
1305	?	1.03	0.26	Secondary fill of ditch [1303]; grey brown clay silt, which contained frequent shillet.	1304	1306
1306	?	1.28	0.21	Fill of ditch [1303]; red brown clay silt, which contained occasional shillet.	1305	1307
1307	2.07	2.1	0.37	Fill of ditch [1303]; mid brown clay silt, which contained occasional shillet.	1306	1301
[1308]	2.5	1.4	0.2	Northwest - southeast aligned ditch with a shallow, rounded profile. Contained fill 1309.	nat.	1309
				Uncertain stratigraphic relationship with subsoil 1302.		
1309	2.5	1.4	0.2	Fill of ditch [1308]; mid brown clay silt, which contained occasional shillet.	[1308]	1301

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
[1310]	2.6	1.1	0.25	Northeast - southwest aligned ditch with a rounded profile. Contained fill 1311.	nat.	1311
				Uncertain stratigraphic relationship with subsoil 1302.		
1311	2.6	1.1	0.25	Fill of ditch [1310]; mid brown clay silt, which contained occasional shillet.	[1310]	1301
[1312]	2.6	2.1	?	Probable cut feature with a northwest - southeast aligned western edge and a near right-angled eastern edge. Not excavated. Probably an intersection of two ditches. Contained fill 1313. Uncertain stratigraphic relationship with subsoil 1302.	nat.	1313
1313	2.6	2.1	?	Fill of feature [1312]; mid brown clay silt, which contained occasional shillet.	[1312]	1301
[1314]	4.03	0.94	0.3	Northwest - southeast aligned ditch with steep sides and an uneven base. Contained fill 1315.	nat.	1315
				Uncertain stratigraphic relationship with subsoil 1302.		
1315	4.03	0.94	0.3	Fill of ditch [1314]; dark brown silt clay, which contained occasional shillet.	[1314]	1301
				Trench 14: 75m by 1.8m; natural (at average 74.95m OD) = variable beige to dark brown clay and shillet.		
				Fragmented/shattered shillet deposits present for a distance of approximately 22m from the north end of the trench.		
1401	na	na	0.41	Ploughsoil; mid brown clay silt.	nat., 1402, 1410	na
1402	na	20	0.37	Subsoil/colluvium; brown clay silt, which contained frequent shillet. Occurred at the centre of the trench, to the south of feature [1408].	nat., 1410, 1433	1401
[1403]	1.85	2.15	1.65	East - west aligned ditch with a steep 'V' shaped profile. Contained fills 1404, 1405, 1406 and 1407. Equivalent to ditches [1423] and [1503].	nat.	1404
1404	?	0.81	0.65	Primary fill of ditch [1403]; grey brown beige silt clay, which contained occasional shillet and occasional charcoal flecks.	[1403]	1405
1405	?	1.52	0.55	Secondary fill of ditch [1403]; grey brown silt clay, which contained occasional shillet and occasional charcoal flecks.	1404	1406
1406	?	1.82	0.29	Fill of ditch [1403]; grey plastic silt clay, which contained occasional shillet and frequent charcoal flecks.	1405	1407
1407	1.85	2.15	0.22	Fill of ditch [1403]; beige brown plastic silt clay, which contained frequent shillet.	1406	1401
[1408]	3.68	1.4	0.47	Cut feature with a sloping north edge, which descended to a flat base at the south. Contained fill 1409.	nat.	1409
1409	3.68	1.4	0.47	Fill of feature [1408]; orange brown clay silt, which contained frequent shillet and occasional charcoal flecks. Contained one sherd of early Roman pottery.	[1408]	1410
1410	na	8.5	0.4	Subsoil/colluvium; dark brown clay silt, which contained frequent shillet. Occurred towards the centre of the trench, to the south of ditch [1411]. Indistinguishable from fill 1412.	nat., 1409	1402

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
[1411]	1.9	1.08	0.42	Northeast - southwest aligned ditch with sloping sides and a flat base. Contained fill 1412.	nat.	1412
1412	1.9	1.08	0.42	Fill of ditch [1411]; dark brown clay silt, which contained occasional shillet.	[1411]	1401
[1413]	1.85	1.8	0.62	East - west aligned ditch with steep sloping sides and a flat base. Contained fills 1416, 1417 and 1425. Re-cut of ditch [1434]. Equivalent to ditch [1435].	1415, 1427	1416, 1425
1414	?	0.47	0.1	Primary fill of ditch [1434]; beige plastic silt clay, which contained frequent shillet.	[1434]	1415
1415	?	0.66	0.18	Secondary fill of ditch [1434]; grey brown plastic silt clay, which contained occasional small stones.	1414	[1413]
1416	?	1.2	0.35	Primary fill of ditch [1413]; beige brown grey plastic silt clay, which contained occasional shillet.	[1413]	1417
1417	1.85	1.8	0.31	Secondary fill of ditch [1413]; beige brown plastic silt clay, which contained occasional shillet.	1416	1401
[1418]	2.3	2.26	0.18	Northwest - southeast aligned linear cut feature with a wide, shallow rounded profile. Contained fill 1419. Uncertain stratigraphic relationship with subsoil 1402.	nat.	1419
1419	2.3	2.26	0.18	Fill of feature [1418]; brown clay silt, which contained occasional shillet. Indistinguishable from subsoil 1402. Similar to deposit 1523.	[1418]	1401
[1420]	>0.65	0.55	0.19	Northeast - southwest aligned ditch with sloping sides and a flat base. Contained fill 1421. Equivalent to ditch [1434].	nat.	1421
1421	?	0.55	0.19	Fill of ditch [1420]; beige brown plastic silt clay, which contained occasional shillet.	[1420]	[1435]
1422	1.85	1.48	0.52	Fill of ditch [1435]; light brown plastic silt clay.	[1435]	1401
[1423]	1.88	2.34	1.35	Northeast - southwest aligned ditch with a steep 'V' shaped profile. Contained fill 1424.	nat.	1424
1424	1.88	2.34	1.35	Fill of ditch [1423]; light brown, loose silt clay and shillet, which contained occasional charcoal flecks.	[1423]	1401
1425	<0.60	0.97	0.55	Fill of ditch [1413]; dark brown grey silt clay, which contained occasional shillet and occasional charcoal flecks.	[1413]	1401
[1426]	12	1.7	<0.58	North - south aligned ditch with a sloping western edge. Contained fill 1427.	nat.	1427
1427	<1.2	<0.65	<0.58	Fill of ditch [1426]; beige brown plastic silt clay, which contained occasional charcoal flecks and occasional shillet.	[1426]	[1413]
[1428]	0.35	0.33	0.14	Sub-circular feature, possibly a small pit or posthole, with a shallow, rounded profile. Occurred at the northern edge of pit [1429]. Contained fills 1430 and 1431.	nat.	1430
[1429]	1.85	1.5	0.29	Cut feature, possibly a pit, with a shallow, uneven profile. Contained fill 1433. Associated with features [1428] and 1432.	nat.	1433
1430	?	0.35	0.03	Basal fill of feature [1428]; layer of grey clay silt and small stones.	[1428]	1431
1431	0.35	0.33	0.1	Fill of feature [1428]; bright grey beige sticky, plastic clay, which contained occasional charcoal lumps.	1430	1433
1432	0.18	0.18	?	Sub-circular deposit of bright grey beige sticky, plastic clay. Equivalent to fill 1431.	nat.	1433

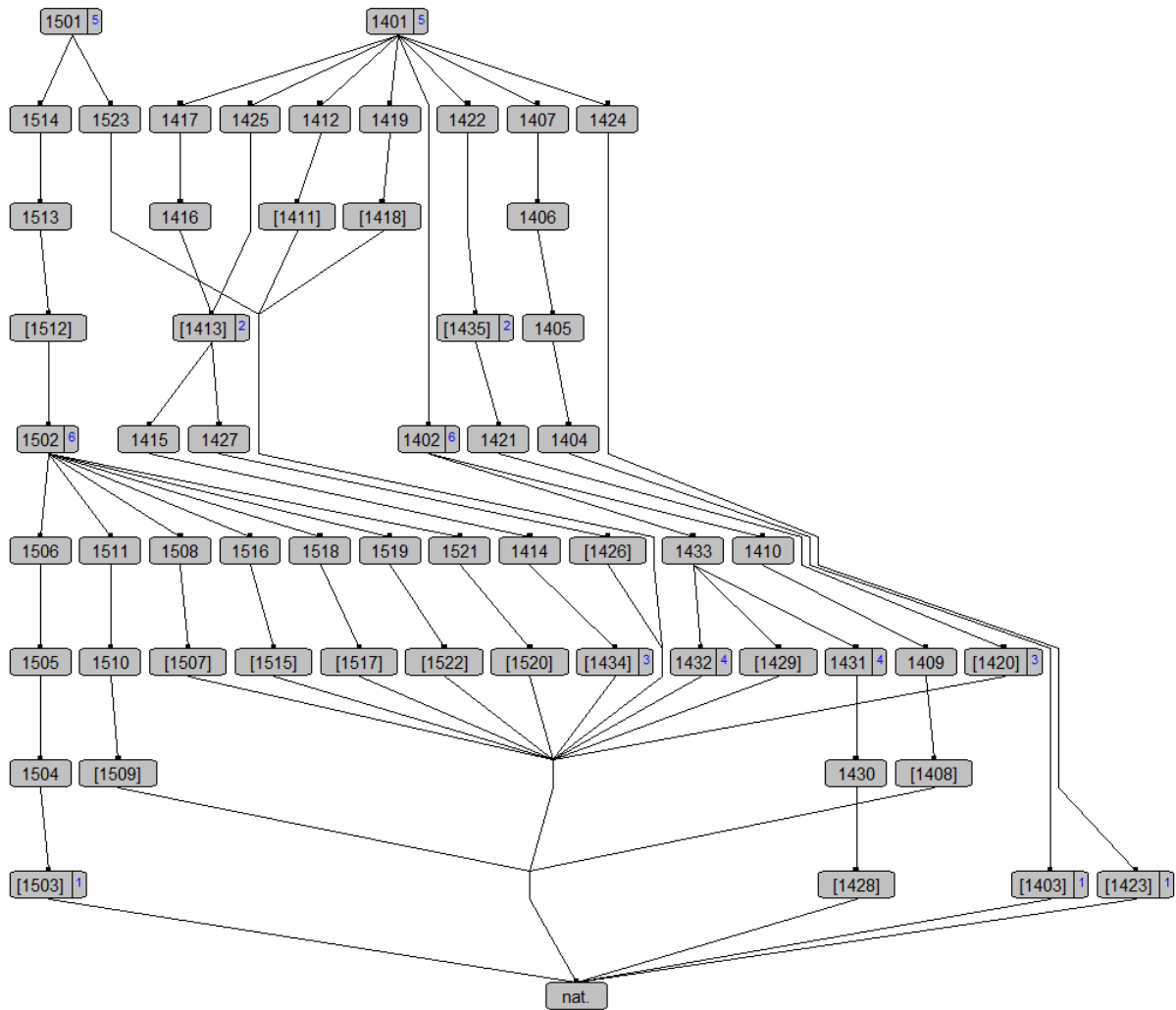
Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
1433	1.85	1.5	0.29	Fill of pit [1429]; pink grey clay silt, which contained frequent shillet, frequent charcoal lumps and flecks and occasional patches of bright grey beige sticky plastic clay, which were similar to fills 1431 and 1432. Deposit of probable burnt material; however, no evidence for <i>in-situ</i> burning. Contained one possible crucible fragment.	[1429], 1431, 1432	1402
[1434]	>0.55	0.67	0.28	East - west aligned ditch with sloping sides and a flat base. Contained fills 1414 and 1415.	nat.	1414
[1435]	1.85	1.48	0.52	Northeast - southwest aligned ditch with steep, uneven sides and a flat base. Contained fill 1422. Re-cut of ditch [1420].	1421	1422
				Trench 15: 33m by 1.8m; natural (at average 74.53.m OD) = variable beige to dark brown clay and shillet.		
1501	na	na	0.4	Ploughsoil; mid brown clay silt. Equivalent to 1401.	1502	na
1502	na	na	0.27	Subsoil/colluvium; brown clay silt, which contained frequent shillet. Occurred across entire length of the trench. Equivalent to 1402.	nat.	1501
[1503]	1.83	2.35	1.39	North - south aligned ditch with a steep, uneven, 'V' shaped profile. Contained fills 1504, 1505 and 1506.	nat.	1504
1504	?	0.52	0.34	Primary fill of ditch [1503]; dark brown grey plastic silt clay, which contained frequent shillet.	[1503]	1505
1505	?	1.45	0.79	Secondary fill of ditch [1503]; dark brown soft silt clay, which contained frequent large shillet stones.	1504	1506
1506	1.83	2.35	1.39	Fill of ditch [1503]; dark orange brown silt clay, which contained occasional shillet.	1505	1502
[1507]	2.15	0.9	0.19	Northwest - southeast aligned curvilinear gully with a rounded, uneven profile. Contained fill 1508. The feature interacted with deposit 1523 at the northwest; relationship not investigated.	nat.	1508
1508	2.15	0.9	0.19	Fill of gully [1507]; dark grey brown clay silt, which contained frequent shillet.	[1507]	1502
[1509]	0.55	0.53	0.42	Sub-circular posthole with near vertical sides and a flat base. Contained fills 1510 and 1511.	nat.	1510
1510	?	0.16	0.41	Fill of posthole [1509]; beige brown clay silt and shillet. Abutted deposit 1511. Probable post-packing material.	[1509]	1511
1511	?	0.4	0.42	Fill of posthole [1509]; dark brown soft clay silt, which contained occasional shillet.	1510	1502
[1512]	1.83	1.45	0.55	Northwest - southeast aligned ditch with a steep, rounded profile. Contained fills 1513 and 1514.	1502	1513
1513	?	1.24	0.23	Primary fill of ditch [1512]; mixed brown orange clay silt, which contained occasional shillet.	[1512]	1514
1514	1.83	1.45	0.33	Secondary fill of ditch [1512]; dark brown clay silt, which contained frequent shillet.	1513	1501
[1515]	1.35	1.02	0.19	North - south aligned gully with a shallow, rounded profile. Contained fill 1516. The feature interacted with deposit 1523 at the north; relationship not investigated. Possibly related to gully [1507].	nat.	1516
1516	1.35	1.02	0.19	Fill of gully [1515]; dark brown clay silt, which contained frequent shillet. Similar to fill 1508.	[1515]	1502
[1517]	0.42	0.42	0.34	Sub-circular posthole with near vertical sides and a flat base. Contained fill 1518.	nat.	1518

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

CXT	L(m)	W(m)	D(m)	DESCRIPTION	CUTS/LATER THAN	CUT BY/EARLIER THAN
1518	0.42	0.42	0.34	Fill of posthole [1517]; mid brown clay silt, which contained occasional shillet. Contained one sherd of Iron Age or early Roman pottery.	[1517]	1502
1519	0.41	0.41	0.25	Fill of posthole [1522]; dark brown clay silt, which contained occasional shillet.	[1522]	1502
[1520]	1.05	0.5	0.14	Sub-oval pit with steep sides and a flat base. Contained fill 1521.	nat.	1521
1521	1.05	0.5	0.14	Fill of pit [1520]; dark brown clay silt, which contained occasional shillet.	[1520]	1502
[1522]	0.41	0.41	0.25	Sub-circular posthole with steep sides and a flat base. Contained fill 1519.	nat.	1519
1523	1.7	1.8	?	Deposit of brown clay silt, which contained occasional shillet. Indistinguishable from subsoil 1502. Possibly related to/ continuation of feature [1418]/1419.	nat.	1501

APPENDIX 2: Trenches 14 and 15 Harris Matrix



Key to Groups (annotated in blue):

- 1= Round inner perimeter ditches
- 2= Re-cuts of Round outer perimeter ditches
- 3= Primary cuts of Round outer perimeter ditches
- 4= Clay patches associated with features [1428] and [1429]
- 5= Trenches 14 and 15 ploughsoil
- 6= Trenches 14 and 15 subsoil/colluvium

APPENDIX 3: The Pottery

By Henrietta Quinnell

Context	Details	Comment on ceramics
201	Tr 2 ploughsoil	17 th cent AD North Devon glazed gravel tempered ware
206	Ditch fill, associated rectangular enclosure	15 th -17 th cents, part of large flagon with traces of possible white external slip
301	Tr 3 ploughsoil	(fabric not recognised) probably from large Medieval cooking pot
1101	Tr 11 ploughsoil	Rim of 16 th /17 th dish, glazed, granite derived, possibly St Germans type, fabric
1409	Fill of feature within/associated with Round	Complete footring with stamp on interior, Samian ware, probable Dr 27 and therefore made later 1 st to early 2 nd centuries
1433	Fill of feature within/associated with Round	Fabric not recognised but very hard. Coating on interior suggests possible use as crucible although the sherd is thin for this
1518	Fill of posthole within/associated with Round	Gabbroic base angle, largely reduced; probably of the well-made variety likely to have been made before later 2 nd century AD
u/s	Tr 2	Granitic derived fabric, possible St Germans, late Medieval to 17 th cent AD

Comment

The sherd from 206 suggests that this ditch fill is later Medieval to early Post-medieval. The ploughsoil finds are all of this broad date band.

Of the three sherds from Trench 14, from features associated with the Round, that from (1433) cannot be dated but may indicate that some form of metallurgy was taking place: small scale iron working and other metallurgy occurs frequently in Rounds or enclosures of the Roman period in Cornwall (Quinnell 2004, Chapter 3; Lawson-Jones & Kirkham 2009/10). Samian (1409) occurs sparsely throughout the county and cannot be relied on for dating because of evidence for long term curation (Quinnell 2004, 98-9). The base angle from (1518) is of the well-made variety of gabbroic fabric and is likely to belong to the Middle/Late Iron Age or to the Roman period up to around the middle of the 2nd century AD; it probably comes from a cooking pot of Trethurgy Type 1 (Quinnell 2004, 111) made late 1st to early 2nd century AD. The date of this gabbroic sherd is broadly consistent with that of the Samian.

Land at Pensipple Farm, Trewidland, Cornwall: Archaeological Evaluation

Currently no site in the Liskeard area of the Roman period is known to the author, and no site in east Cornwall, apart from the Roman fort at Calstock (Smart forthcoming). Generally gabbroic pottery, made from Lizard clays, was in fairly frequent use on Roman period sites, and up to the 10% of ceramics tend to be imports. But almost all our data comes from sites west of Bodmin, or to the north of Bodmin Moor. Gabbroic pottery was in regular use at Mount Batten in Plymouth harbour. But beyond this the picture in Devon is different from that in west Cornwall, showing generally a sparser use of ceramics with a reliance on different fabrics and only occasional gabbroic imports. The few finds from Pensipple may indicate that the sparse use of ceramics spread into east Cornwall or may simply be due to factors local to the site.

The Pensipple site is of considerable importance for its ability to provide information about the Roman period in southeast Cornwall.

References

Lawson-Jones, A & Kirkham, G, 2008/9 Smithing in the round; excavations at Little Quoit Farm, St Columb Major, *Cornish Archaeology* **48/9**, 173-226

Quinnell, H, 2004 *Trethurgy; Excavations at Trethurgy Round, St Austell: Community and Status in Roman and Post-Roman Cornwall*. Cornwall County Council

Smart, C, (forthcoming) A Roman military complex and medieval settlement on Church Hill, Calstock, Cornwall: survey and excavation 2007 – 2010, *Archaeological Journal*

APPENDIX 4: The Geophysical Survey Report

Pensipple Farm, Trewidland, Cornwall

Geophysical Survey Report

Produced for Foundations Archaeology

PKC121

5th November 2012

MJ Roseveare



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Mapping Our Heritage



Non-Technical Summary

A magnetic survey was commissioned to prospect an area of land for buried structures of archaeological interest in advance of construction of a photovoltaic power plant. A number of buried structures of interest were found, including a prehistoric round towards the top of the ridge and evidence for former field systems. A further set of enclosures in the southwest part of the site may represent either a complex former agricultural use of the land, or perhaps be related to an industrial or domestic focus. A further possible indication of industrial activity might be a very strongly magnetic structure passing up the hillside into the round.

Digital Data

Data	Included?	Format
Survey outlines	Available	Vector: AutoCAD R12 DXF
Interpretation	Available	Vector: AutoCAD R12 DXF
XY Traces	No	Vector: AutoCAD R12 DXF
Contours	Partial	Vector: AutoCAD R12 DXF
Images	Available	Georeferenced raster: GeoTIFF
Catalogue	Available	Database: MS Access 2003

Media	Sent to	Date
Email	Roy King	06.11.2012

Audit

Version	Author	Checked	Date
Draft Final	MJR	ACKR	6 th November



Table of Contents

1	Introduction.....	1
	Objective.....	1
	Location.....	1
	Constraints and variations.....	1
2	Context	1
	Archaeology	1
	Environment.....	1
3	Methodology	2
	Survey	2
	Hardware	2
	Monitoring and quality assurance	2
	Processing.....	2
	Procedure.....	2
	Interpretive framework.....	2
	Resources	2
	Magnetic survey.....	3
	Standards & guidance.....	3
4	Catalogue.....	4
5	Discussion	7
	Introduction	7
	Principles	7
	Instrumentation	7
	Character & principal results.....	7
	Geology	7
	Land use.....	8
	Archaeology	8
	Conclusions	8
	Caveats.....	9
	Appendices	10
	Survey metadata.....	10
	Project information.....	10
	Qualifications & experience	10
	Safety	10
	Archiving.....	10



1 Introduction

Objective

1.1 A photovoltaic power plant is proposed for fields west of Pensipple Farm near Trewidland and a magnetic survey has been commissioned to prospect for buried structures of archaeological interest.

Location

Country	England
County	Cornwall
Nearest Town	Trewidland (Liskeard)
Central Co-ordinates	225930, 59230

1.2 Survey covered an area of 13.1 hectares across five fields.

Constraints and variations

1.3 None were encountered and no variations were necessary.

2 Context

Archaeology

2.1 Little is known about the area, although the farms nearly all have documented medieval origins and are surrounded in many cases by the remains of medieval field systems. Prehistoric sites are rare but a polished greenstone mace head has been found nearby (private collection) and there is circumstantial evidence for rounds or similar enclosures marked by field names.

2.2 Many of the minor tributaries of the East Looe valley have supported small mills in the past, very few of which have survived into the modern period. Some were probably farm mills, however, there is documentary evidence for some being used for fulling. One example is thought to have existed immediately west of the survey area.

Environment

Superficial 1:50000 BGS	None recorded, however, alluvium is present in the lowest parts of the site
Bedrock 1:50000 BGS	Staddon Formation – Sandstone, Siltstone and Mudstone (STG)
Topography	Northern fields occupy a low ridge. The western field slopes down to the west and south, the southern ones down to the south
Hydrology	Free draining, though possibly with some artificial drainage
Current Land Use	Pasture and arable
Historic Land Use	Mixed agricultural
Vegetation Cover	Harvested maize and grassland
Sources of Interference	Normal wire fences, animal feeders, etc

2.3 The Staddon Formation is a Lower Devonian unit and typically supports soils with strongly elevated magnetic susceptibility. Where the soil is shallow strong lateral magnetic variations due to changes in the bedrock surface and the primary erosion product will be evident, less so over deeper soils although a significant natural texture is likely.

2.4 Present and former cultivation features are likely to have created strong magnetic anomalies of similar amplitude to those from features of archaeological interest. Where the latter are cut into the bedrock or the material close above it very strong magnetic anomalies are likely to exist.



3 Methodology

Survey

Hardware

Measured Variable	Magnetic flux density / nT
Instrument	Array of Geometrics G858 Magmapper caesium magnetometers
Configuration	Non-gradiometric transverse array (4 sensors, ATV towed)
Sensitivity	0.03 nT @ 10 Hz (manufacturer's specification)
QA Procedure	Continuous observation
Resolution	1.0m between lines, 0.3m mean along line interval

Monitoring and quality assurance

3.1 The system continuously displays all incoming data as well as line speed and spatial data resolution per acquisition channel during survey. Rest mode system noise is therefore easy to inspect simply by pausing during survey and the continuous display makes monitoring for quality intrinsic to the process of undertaking a survey. Rest mode test results (static test) are available from the system.

3.2 A suitably qualified Project Geophysicist was in the field at all times and fieldwork and technical considerations were guided by the Senior Geophysicist.

Processing

Procedure

3.3 All data processing is minimised and limited to what is essential for the class of data being collected, e.g. reduction of orientation effects from magnetic sensors, suppression of single point defects (drop-outs or spikes), etc. The process stream for this data is as follows:

Process	Software	Parameters
Measurement and GNSS receiver data alignment	Proprietary	
Temporal reduction and regional field suppression	Proprietary	10s highpass median filter
Gridding	Surfer	Kriging, 0.25m x 0.25m
Imaging and presentation	Manifold GIS	

3.4 The initial processing uses proprietary software developed in conjunction with the multisensor acquisition system. Surfer is used for gridding and initial study before the data is ported as data surfaces (not images) into Manifold GIS for final imaging and detailed analysis. Specialist analysis is undertaken using proprietary software.

3.5 General information on processes commonly applied to data can be found in standard text books and also in the 2008 English Heritage Guidelines "*Geophysical Survey in Archaeological Field Evaluation*" at http://www.helm.org.uk/upload/pdf/Geophysical_LoRes.pdf.

3.6 ArchaeoPhysica uses more advanced processing for magnetic data using potential field techniques standard to near-surface geophysics. Details of these can be found in Blakely, 1996, "*Potential Theory in Gravity and Magnetic Applications*", Cambridge University Press.

3.7 All archived data includes process metadata.

Interpretive framework

Resources

3.8 Numerous sources are used in the interpretive process which takes into account shallow geological conditions, past and present land use, drainage, weather before and during survey,



topography and any previous knowledge about the site and the surrounding area. Old Ordnance Survey mapping is consulted and also older sources if available.

Magnetic survey

3.9 Interpretative logic is based on structural class and examples are given below. For example a linear field or gradient enhancement defining an enclosed or semi-enclosed shape is likely to be a ditch fill, if there is no evidence for accumulation of susceptible material against a non-magnetic structure. Weakly dipolar discrete anomalies of small size are likely to have shallow non-ferrous sources and are therefore likely to be pits. Larger ones of the same class could also be pits or locally-deeper topsoil but if strongly magnetic could also be hearths. Strongly dipolar discrete anomalies are in all cases likely to be ferrous or similarly magnetic debris, although small repeatedly heated and *in-situ* hearths can produce similar anomalies. Reduced field strength (or gradient) linear anomalies without pronounced dipolar form are likely to be caused by relatively low susceptibility materials, e.g. masonry walls, stony banks or stony or sandy ditch fills.

Standards & guidance

3.10 All work was conducted in accordance with the following standards and guidance:

- David et al, "Geophysical Survey in Archaeological Field Evaluation", English Heritage 2008
- "Standard and Guidance for Archaeological Field Evaluation", Institute for Archaeologists 2008.

3.11 In addition, all work is undertaken in accordance with the high professional standards and technical competence expected by the Geological Society of London and the European Association of Geoscientists and Engineers.

3.12 All personnel are experienced surveyors trained to use the equipment in accordance with the manufacturer's expectations. All aspects of the work are monitored and directed by fully qualified professional geophysicists.

4 Catalogue

4.1 The numbers in square brackets in this report refer to the catalogue below and DWG 07 onwards.

Label	Anomaly Type	Feature Type	Description	Easting	Northing
1	Area enhanced (group)	Fills - Natural?	Overlaid by a strong EW striation from modern cultivation, two diffuse linear bands of enhanced magnetic field may have a natural origin but could also be strip field boundaries. These and examples towards the centre of the site at [15] do not align with extant boundaries and it is tempting to suggest a geological origin	226103.9	59392.1
2	Linear enhanced (group)	Fills - Cultivation	A series of parallel linear enhanced field anomalies at approximately 7m spacing would be typical of ridge and furrow cultivation. The different alignment of these and [1] is a factor in the identification of the latter as natural structures	226112.6	59339.3
3	Variable and strong (group)	Debris	A scatter of strong dipolar anomalies close to the present farm is likely to mark debris from this, however, it could mark or indeed mask the sites of former structures	226148.8	59338.9
4	Linear dipolar enhanced	Fill - Ditch	The outer ditch circuit of a double ditched enclosure of up to 50m diameter. The magnetic component of the fill is at least 2m across but the structure itself is probably wider. This circuit lies approximately 5.5m outside the inner example [5]	226005.9	59368.7
5	Linear dipolar enhanced	Fill - Ditch	The inner circuit of the same structure as [4] and up to 38m in diameter. An east-facing entrance is co-aligned through both. There is no sign of internal structure although this is likely hidden by the anomalies from cultivation furrows	226003.1	59359.2
6	Very strong dipolar	Fill - Ditch / Structure	A very strongly magnetic fill-type structure, apparently connected with [7] and perhaps also a further though less magnetic linear anomaly [8]. Together they seem to be elements of a former field system that pre-dates the present layout (itself presumed to be of medieval origin). It also passes into the prehistoric enclosure defined by ditches [4] and [5]. It is exceptionally magnetic, as if there is a material within the fill that possesses a high magnetic susceptibility (field strength exceeds 50 nT), e.g. heated soil or ceramic. If it is a ditch fill a gap seems to exist between [6] and [7], however, it might not be a ditch and some sort of underground structure is possible	225994.0	59317.5
7	Very strong dipolar	Fill - Ditch / Structure	See [6]	226013.4	59283.8
8	Linear enhanced	Fill - Ditch?	One of several diffuse anomalies sharing a similar alignment and crossing NS examples [15] that seem most likely to have a natural origin although cultivation predating the present field system cannot be entirely discounted. [8], with [10] and [13] etc might be elements of an earlier field system	225955.1	59298.4
9	Linear enhanced (group)	Fill - Ditches	Against the east side of a former Cornish hedge is a small enclosure, no more than 10m wide and itself apparently defined by a Cornish hedge. It may be a stock management structure, however, it could also have sheltered other structures	226039.2	59284.6



Label	Anomaly Type	Feature Type	Description	Easting	Northing
10	Linear enhanced	Fill - Ditch	Former field boundary? If so, it does not appear to connect with the existing example and may, with for example [8], be part of an earlier layout	225917.8	59432.2
11	Linear enhanced	Fill - Ditch	Narrow (c1m) ditch fill, uncertain purpose although it appears to intersect a corner of the existing field system so is perhaps a former field boundary	225850.7	59408.4
12	Area enhanced	Fill? - Ditch?	Uncertain, may not be real	225887.6	59367.9
13	Linear enhanced	Fill - Ditch	Weakly magnetic linear structure, probably not related to modern cultivation, however, the situation is unclear	225804.7	59351.6
14	Linear enhanced	Fill - Ditch	Narrow ditch fill, uncertain function but perhaps a former field boundary?	225686.4	59320.3
15	Area (variable)	Fills - Ditches and Natural	The central region of the site is dominated by a large number of fairly strong linear anomalies, mostly orientated roughly NS and thought to have a geological origin (though caveated). Within this others (e.g. [8]) pass perpendicular to these linear anomalies giving the impression of a more ordered pattern than perhaps really exists. However, given the proximity of these structures to the prehistoric enclosure [4] and [5] some modification of the soil may have occurred in this region for contemporary cultivation	225895.9	59327.4
16	Linear enhanced	Fill - Ditch?	Uncertain as unclear against the strong variation within area [15]	225870.5	59298.0
17	Linear enhanced (group)	Fills - Cultivation?	A pair of narrow (< 1m) wide parallel linear anomalies approximately 6m apart would be typical of ridge and furrow cultivation but few, if any, further examples are apparent in this field	225663.8	59157.7
18	Linear enhanced	Fill - Ditch	A probable ditch fill seems to be part of a rectilinear complex of enclosure ditches with [20], although it has not been possible to determine the full circuit of [18] if so. However, weak traces may exist of the northwest corner	225704.1	59162.7
19	Linear enhanced (group)	Fill - Ditches?	Similar to [17], this pair are shorter and less clear and appear to be associated with [18] and [20] in which case perhaps they are not cultivation furrows	225716.2	59162.7
20	Linear enhanced	Fill - Ditch	A probable ditch fill defines a rectangular enclosure measuring approximately 30m x 15m against the west flank of ditch [22]. It may be defined by a Cornish hedge along the northern edge, however, the second parallel fill in this location seems more likely to be a continuation of [18], i.e. form part of an outer enclosure. There is no sign of internal features or an entrance	225735.2	59172.5
21	Linear enhanced	Fill - Ditch	Possible fill, crosses the line of a former field boundary which was part of the existing system	225779.8	59189.3
22	Linear enhanced	Fill - Ditch	An enclosure ditch, also an integral part of [20]. It may have been a former field boundary but this is not certain	225755.0	59127.9
23	Linear enhanced	Fill - Ditch?	Possible drain or ditch fill	225797.8	59132.6
24	Linear enhanced	Fill - Ditch?	Probable ditch fill, unknown function	225818.4	59095.1



Label	Anomaly Type	Feature Type	Description	Easting	Northing
25	Area variably enhanced	Natural	Edge of bedrock geology	225662.1	59129.1
26	Area of low variation	Natural	Alluvial and / or colluvial deposits along southern margin	225661.6	59112.4
27	Linear enhanced	Fill - Ditch	Former field boundary? Perhaps associated with [29] and [7]?	225916.4	59208.9
28	Area enhanced (sample)	Fill - Natural?	Probable natural fill, e.g. a pocket of deeper soil, in this case one of a linear group within an irregularity of the bedrock	226005.3	59175.0
29	Very strong dipolar	Fill - Ditch / Structure	See [7]	226042.6	59231.3
30	Linear enhanced (group)	Fill - Ditches	These, the two ditches of a Cornish hedge, are strongly magnetic like [29] and [7] which may imply some exposure to the same fill material during their lifetime	226028.4	59206.6
31	Area enhanced	Structure?	An area measuring approximately 14m x 8m is associated with elevated magnetic field strength and has a marked geometrical shape. This might be the site of a building?	225689.5	59200.9

5 Discussion

Introduction

5.1 The sections below first discuss the geophysical context within which the results need to be considered and then specific features or anomalies of particular interest. Not all will be discussed here and the reader is advised to consult the catalogue (*ibid*) in conjunction with the graphical elements of this report.

Principles

5.2 In general, topsoil is more magnetic than subsoil which can be slightly more magnetic than parent geology, whether sands, gravels or clays, however, there are exceptions to this. The reasons for this are natural and are due to biological processes in the topsoil that change iron between various oxidation states, each differently magnetic. Where there is an accumulation of topsoil or where topsoil has been incorporated into other features, a greater magnetic susceptibility will result.

5.3 Within landscapes soil tends to accumulate in negative features like pits and ditches and will include soil particles with thermo-remanent magnetization (TRM) through exposure to heat if there is settlement or industry nearby. In addition, particles slowly settling out of stationary water will attempt to align with the ambient magnetic field at the time, creating a deposit with depositional remanent magnetization (DRM).

5.4 As a consequence, magnetic survey is nearly always more a case of mapping accumulated magnetic soils than structures which would not be detected unless magnetic in their own right, *e.g.* built of brick or tile. As a prospecting tool it is thus indirect. Fortunately, the mechanisms outlined above are commonplace and favoured by human activity and it is nearly always the case that cut features will alter in some way the local magnetic field.

Instrumentation

5.5 The use of the magnetic sensors in non-gradiometric (vertical) configuration avoids measurement sensitisation to the shallowest region of the soil, allowing deeper structures, whether natural or otherwise to be imaged within the sensitivity of the instrumentation. However, this does remove suppression of ambient noise and temporal trends which have to be suppressed later during processing. When compared to vertical gradiometers in archaeological use, there is no significant reduction in lateral resolution when using non-gradiometric sensor arrays and the inability of gradiometers to detect laminar structures is completely avoided.

5.6 Caesium instrumentation has a greater sensitivity than fluxgate instruments, however, at the 10 Hz sampling rate used here this increase in sensitivity is limited to about one order of magnitude.

5.7 The array system is designed to be non-magnetic and to contribute virtually nothing to the magnetic measurement, whether through direct interference or through motion noise. There is, however, some limited contribution from the towing ATV.

Character & principal results

Geology

5.8 There are strong magnetic anomalies from natural variations of the soil, as expected over this geology and relatively thin soil. There are strong WNW – SSE trends with a notable low c15m wide passing across the western fields and parallel variations in the northernmost field. Overall the soils appear to be fairly thin, especially towards the top of the ridge and in some places it is difficult to distinguish between anomalies from sources of archaeological and geological interest. This is especially the case in the area around [15] in the central field where anomalies of natural and artificial origin are confused.

5.9 Along the southern margin of the site there is a band [26] of alluvial or colluvial deposits filling ground to the south of a lateral discontinuity [25] in the bedrock.



Land use

5.10 There are extensive signs of former cultivation, including what appears to be ridge and furrow and especially in the eastern and southern fields. There is also striation from modern cultivation, including within the eastern field which at the time of survey was pasture.

5.11 The sites of a former layout of field boundaries are apparent in the eastern and western fields and in both cases these seem to have belonged to the present system. Most are the typical double-ditched 'Cornish hedge' form. In the eastern and central fields there are possible signs of an earlier layout defined by strongly magnetic structures [6] and [7] and more normally magnetic structure [8]. Further ditch fills [8], [10], [11], [27] and perhaps structure [29] imply the existence of an earlier layout.

5.12 In the southern part of the western field there is a complex [18] – [20] of rectangular enclosures of less obviously agricultural origin. There is the possibility of a fulling mill close by to the southwest and it is possible that these enclosures relate in some way to a rack or tenter yard associated with this. Within the enclosures [31] might be the site of a building.

5.13 The relative low background variation of the easternmost field reflects its current status as pasture; all the other fields have been cultivated recently and, as expected, show stronger magnetic variations.

Archaeology

5.14 The dominant buried structure is the double ditched Roman-era round [4] with an internal diameter of approximately 38m and a single east-facing entrance. There is no sign of internal features, however, these are likely to be subtle and may not produce detectable magnetic anomalies against the variable magnetic background. There are no signs of associated structures, e.g. a field system, however, this is thought to be fairly typical of these small defended farmsteads. However, it is possible that the complicated magnetic texture [15] immediately to the west of the round might reflect former enclosures and / or soil perhaps modified by cultivation but whether this has anything to do with the round remains conjecture.

5.15 At least one former field system cuts across the round, one clearly relating to the present system of enclosure and defined primarily by Cornish hedges, the other perhaps marked by strongly magnetic linear structure [6]. It is possible though that the latter is not a field boundary but some other buried structure. Associated with the lost elements of the existing field system is a small enclosure [9] built against the east flank of a Cornish hedge and itself apparently defined by a further example of the same. There is no known purpose and it could have facilitated stock management or alternatively sheltered a structure within it.

5.16 An enigmatic structure is the very strongly magnetic linear defined by [6], passing into the round and [7], at right angles to the south. The strong magnetic field is much higher than anything else on the site and unlikely to have been achieved entirely naturally through buried topsoil (i.e. the likely primary mechanism of enhancement for former field boundaries). This being the case, the structure is either filled with or constructed from something manufactured, e.g. brick, tile or some sort of furnace waste. It could be a fill, in which case perhaps this was originally a former field boundary within a different system from the existing one (with 27 perhaps); alternatively it could be something like a flue or large structure (up to 2m across) intentionally buried beneath the present field system. It appears to zigzag southwards across the site, disappearing within the southern field (as [29]) as abruptly as it appears within the round.

5.17 The enclosures [18 *et al*] in the western field clearly represent some sort of focus beyond any simple agricultural function, however, whether domestic or industrial is not certain.

Conclusions

5.18 The round is clearly a significant prehistoric monument, most likely of Roman-era date and the possibility of a contemporary field system and associated features is high, although not obvious from the survey data.



5.19 The impression of the present field system representing a fossilization of a medieval layout is supported by the character of further boundaries visible in the data. There are several hints of an earlier field system on a slightly different alignment.

5.20 There is significant evidence for use of the land beyond simple arable or pastoral enclosure, especially within the southwest part of the site where the complex of enclosures [18] – [20] might represent a domestic or industrial function (especially if the possible mill to the west was engaged in fulling).

5.21 It is also possible that [6] and [7] might also hint at an industrial presence within the landscape although different interpretations are possible.

Caveats

5.22 Geophysical survey is a systematic measurement of some physical property related to the earth. There are numerous sources of disturbance of this property, some due to archaeological features, some due to the measuring method, and others that relate to the environment in which the measurement is made. No disturbance, or 'anomaly', is capable of providing an unambiguous and comprehensive description of a feature, in particular in archaeological contexts where there are a myriad of factors involved.

5.23 The measured anomaly is generated by the presence or absence of certain materials within a feature, not by the feature itself. Not all archaeological features produce disturbances that can be detected by a particular instrument or methodology. For this reason, the absence of an anomaly must never be taken to mean the absence of an archaeological feature. The best surveys are those which use a variety of techniques over the same ground at resolutions adequate for the detection of a range of different features.

5.24 Where the specification is by a third party ArchaeoPhysica will always endeavour to produce the best possible result within any imposed constraints and any perceived failure of the specification remains the responsibility of that third party.

5.25 Where third party sources are used in interpretation or analysis ArchaeoPhysica will endeavour to verify their accuracy within reasonable limits but responsibility for any errors or omissions remains with the originator.

5.26 Any recommendations are made based upon the skills and experience of staff at ArchaeoPhysica and the information available to them at the time. ArchaeoPhysica is not responsible for the manner in which these may or may not be carried out, nor for any matters arising from the same.



Appendices

Survey metadata

Project information

Project Name	Pensipple Farm, Trewidland, Cornwall
Project Code	PKC121
Client	Foundations Archaeology
Fieldwork Dates	18 th – 19 th October 2012
Field Personnel	ACK Roseveare, D Rouse
Processing Personnel	ACK Roseveare
Reporting Personnel	MJ Roseveare
Draft Report Date	5 th November 2012
Final Report Date	

Qualifications & experience

5.27 All work is undertaken by qualified and experienced geophysicists who have specialised in the detection and mapping of near surface structures in archaeology and other disciplines using a wide variety of techniques. There is always a geophysicist qualified to post-graduate level on site during fieldwork and all processing and interpretation is undertaken under the direct influence of either the same individual or someone of similar qualifications and experience.

5.28 ArchaeoPhysica meets with ease the requirements of English Heritage in their 2008 Guidance "Geophysical Survey in Archaeological Field Evaluation" section 2.8 entitled "Competence of survey personnel". The company is one of the most experienced in European archaeological prospection and is a key professional player. It only employs people with recognised geoscience qualifications and capable of becoming Fellows of the Geological Society of London, the Chartered UK body for geophysicists and geologists.

Safety

5.29 Safety procedures follow the recommendations of the International Association of Geophysical Contractors (IAGC).

5.30 Principal personnel have passed the Rescue Emergency Care – Emergency First Aid course and CSCS cards are being sought for those members of staff currently without them.

5.31 All personnel are issued with appropriate PPE and receive training in its use. On all sites health and safety management is performed by the Project Geophysicist under supervision by the Operations Manager.

5.32 Health and safety policy documentation is reviewed every 12 months, or sooner if there is a change in UK legislation, a reported breach of such legislation, a reported Incident or Near Miss, or changes to ArchaeoPhysica's activities. Anne Roseveare, Operations Manager, has overall responsibility for conducting this review and ensuring documentation is maintained.

5.33 We are happy to confirm that ArchaeoPhysica has suffered no reportable accidents since its inception in 1998.

Archiving

5.34 ArchaeoPhysica maintains an archive for all its projects, access to which is permitted for research purposes. Copyright and intellectual property rights are retained by ArchaeoPhysica on all material it has produced, the client having full licence to use such material as benefits their project.

5.35 Archive formation is in the spirit of Schmidt, A., 2001, "Geophysical Data in Archaeology: A Guide to Good Practice", ADS.



5.36 Access is by appointment only. Some content is restricted and not available to third parties. There is no automatic right of access to this archive by members of the public. Some material retains commercial value and a charge may be made for its use. An administrative charge may be made for some enquiries, depending upon the exact nature of the request.

5.37 The archive contains all survey and project data, communications, field notes, reports and other related material including copies of third party data (e.g. CAD mapping, etc) in digital form. Many are in proprietary formats while report components are available in PDF format.

5.38 In addition, there are paper elements to some project archives, usually provided by the client. Nearly all elements of the archive that are generated by ArchaeoPhysica are digital.

5.39 It is the client's responsibility to ensure that reports are distributed to all parties with a necessary interest in the project, e.g. local government offices, including the HER where present. ArchaeoPhysica reserves the right to display data from projects on its website and in other marketing or research publications, usually with the consent of the client. Information that might locate the project is normally removed unless otherwise authorised by the client.

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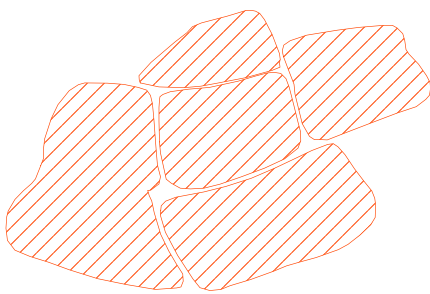
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Magnetic Survey
Extent

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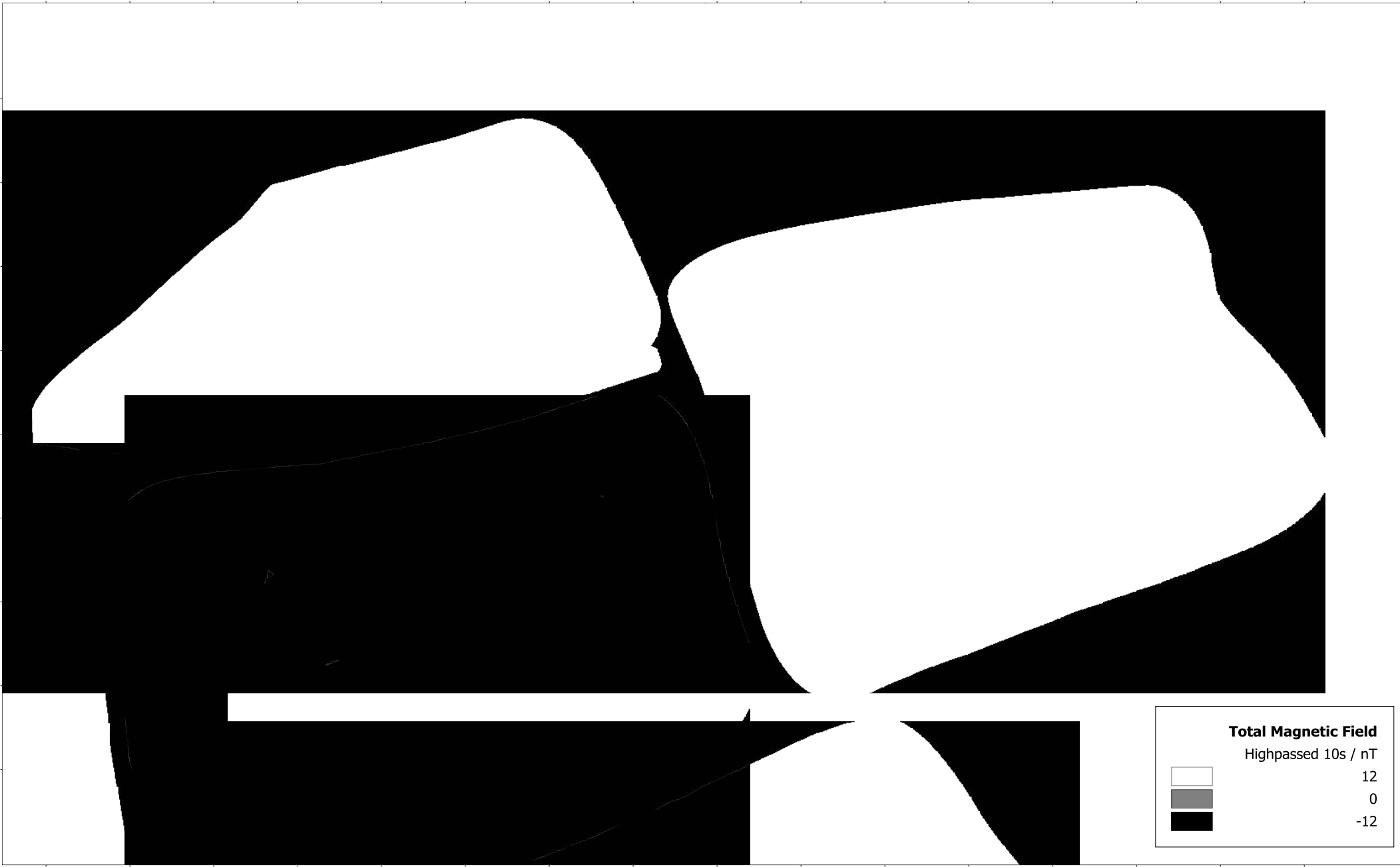
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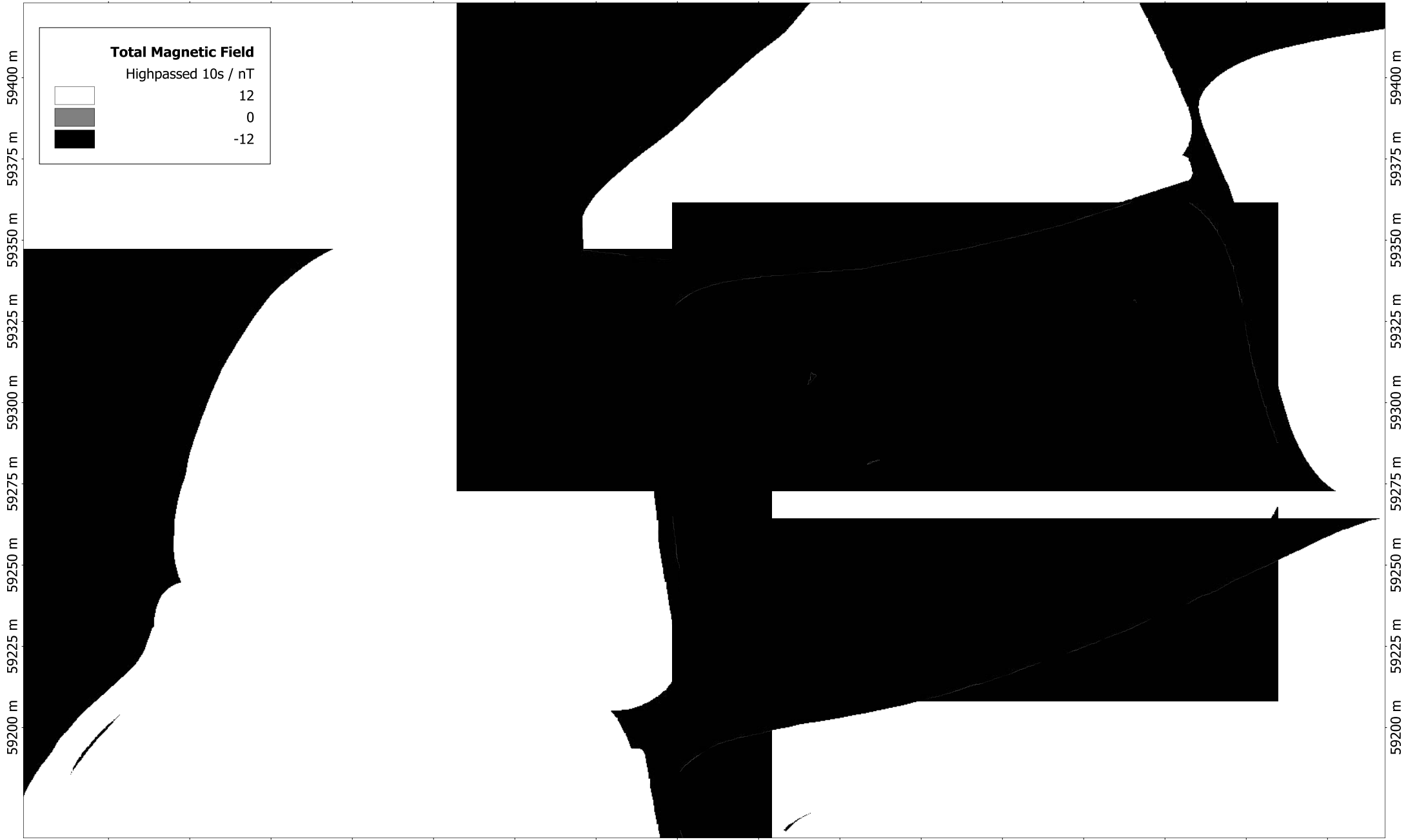


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PKC121 Pensipple Farm, Cornwall
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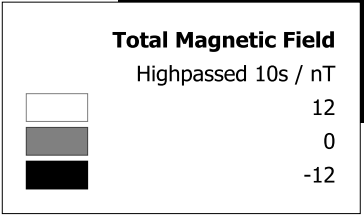
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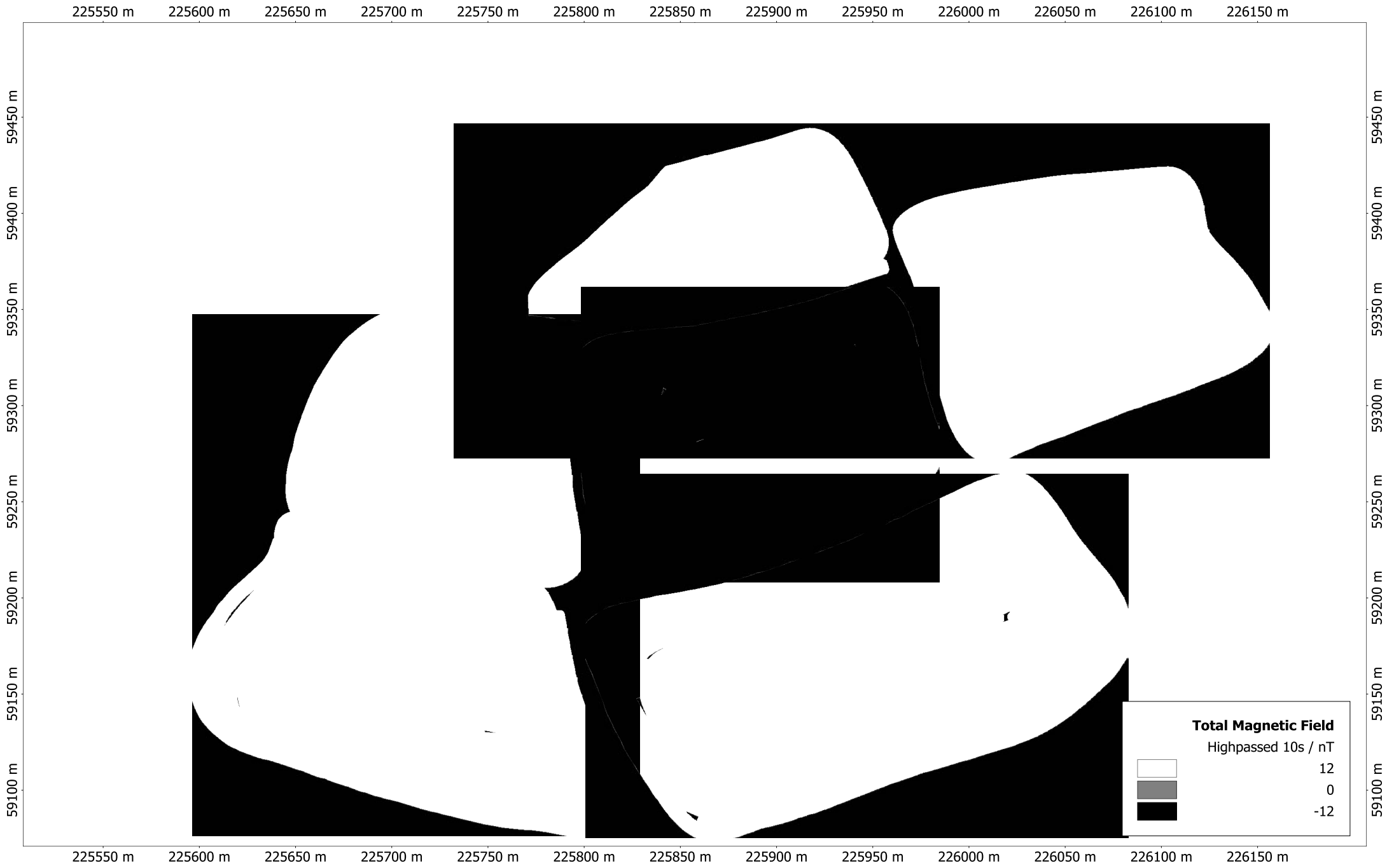
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PKC121 Pensipple Farm, Cornwall
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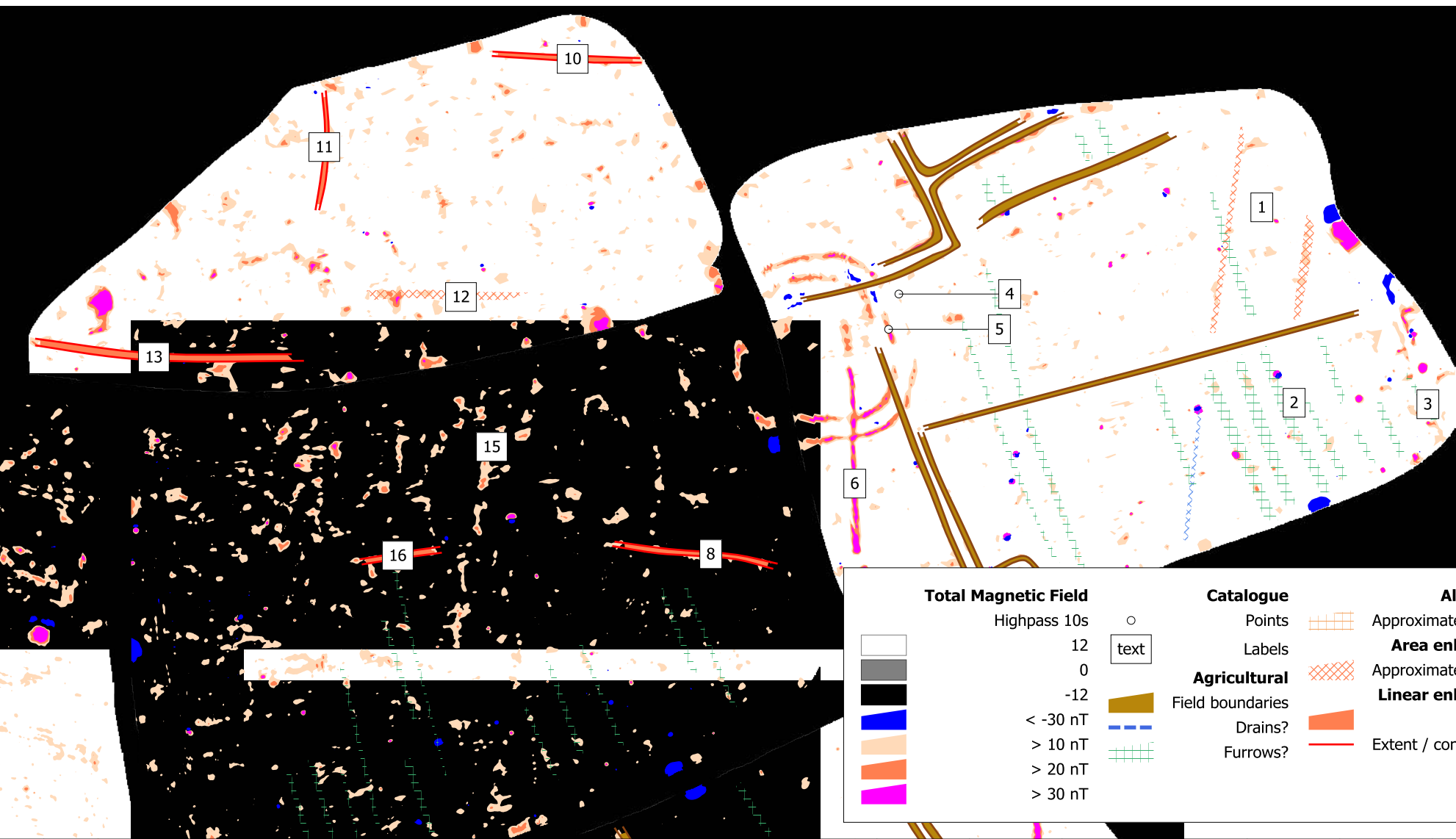
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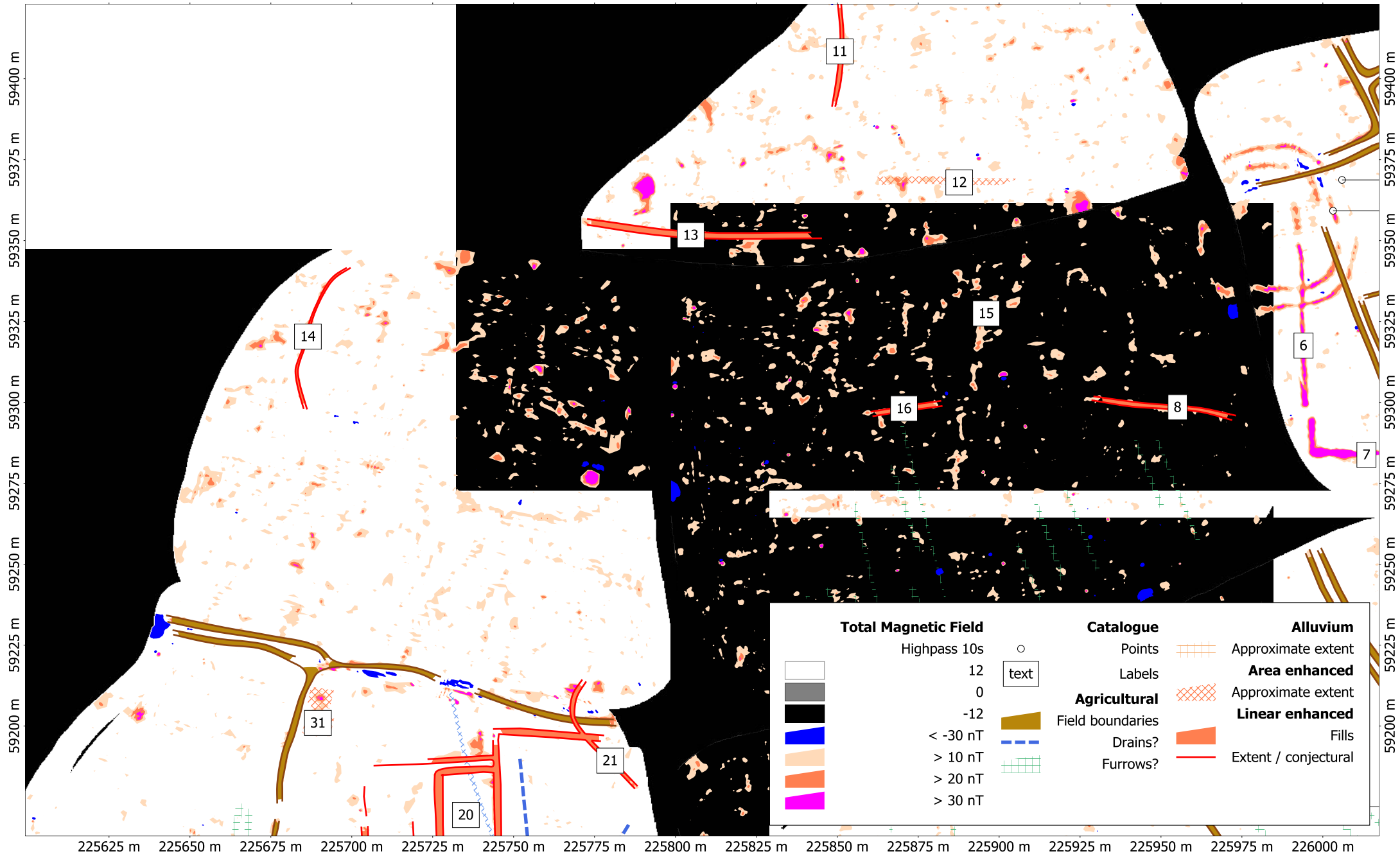
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PKC121 Pensipple Farm, Cornwall
DWG 07 Catalogue - NE

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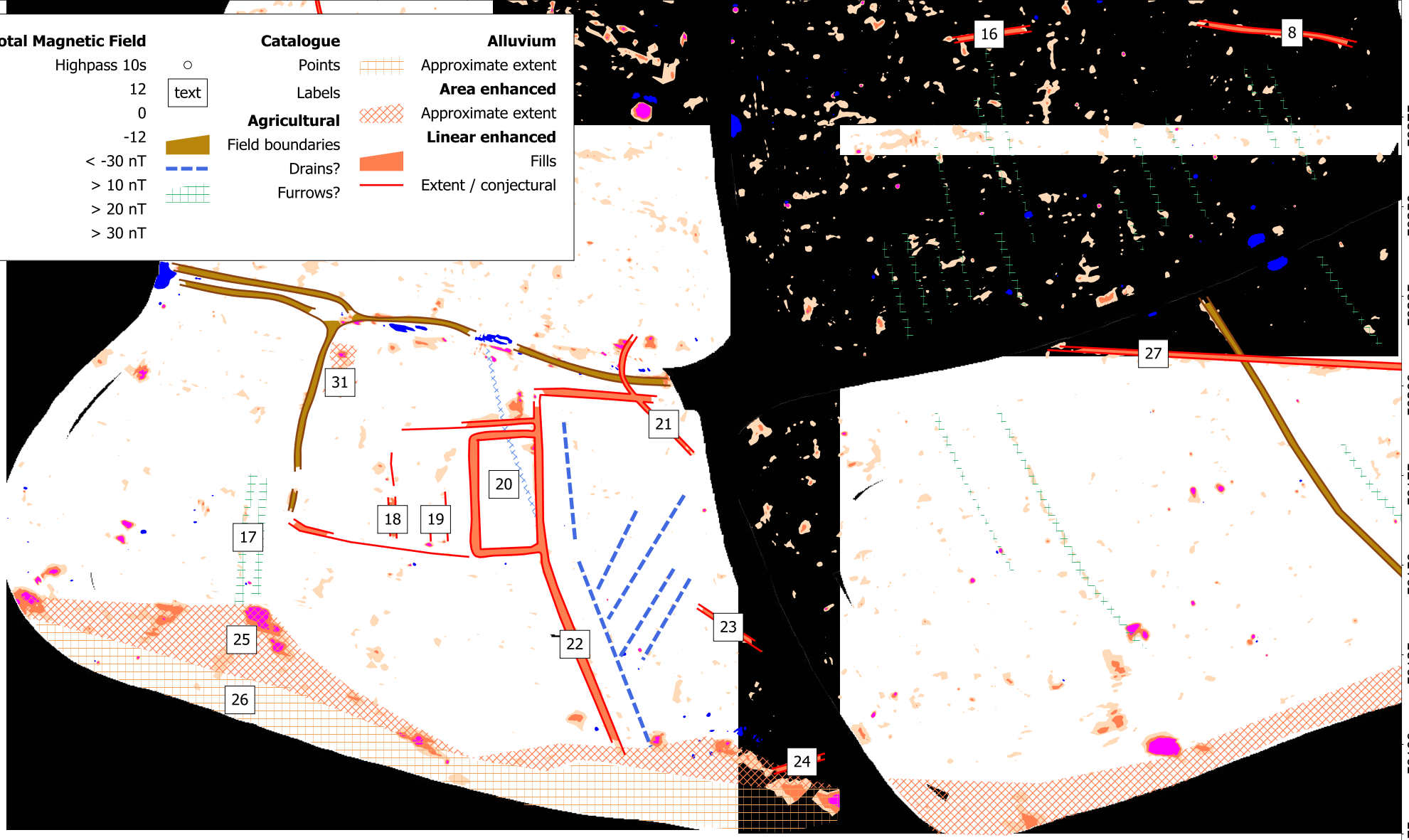
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Highpass 10s		Points	Approximate extent	Area enhanced	
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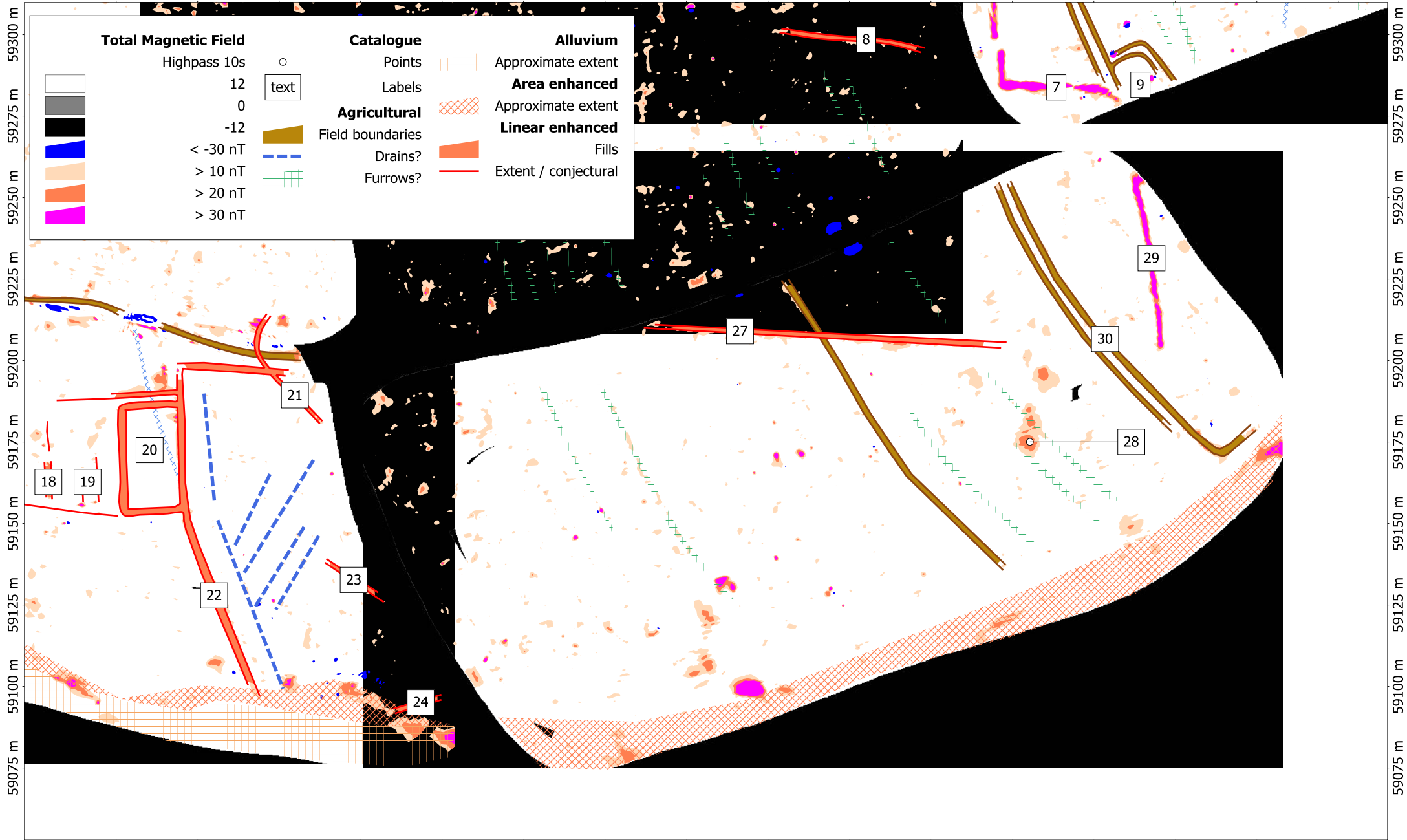
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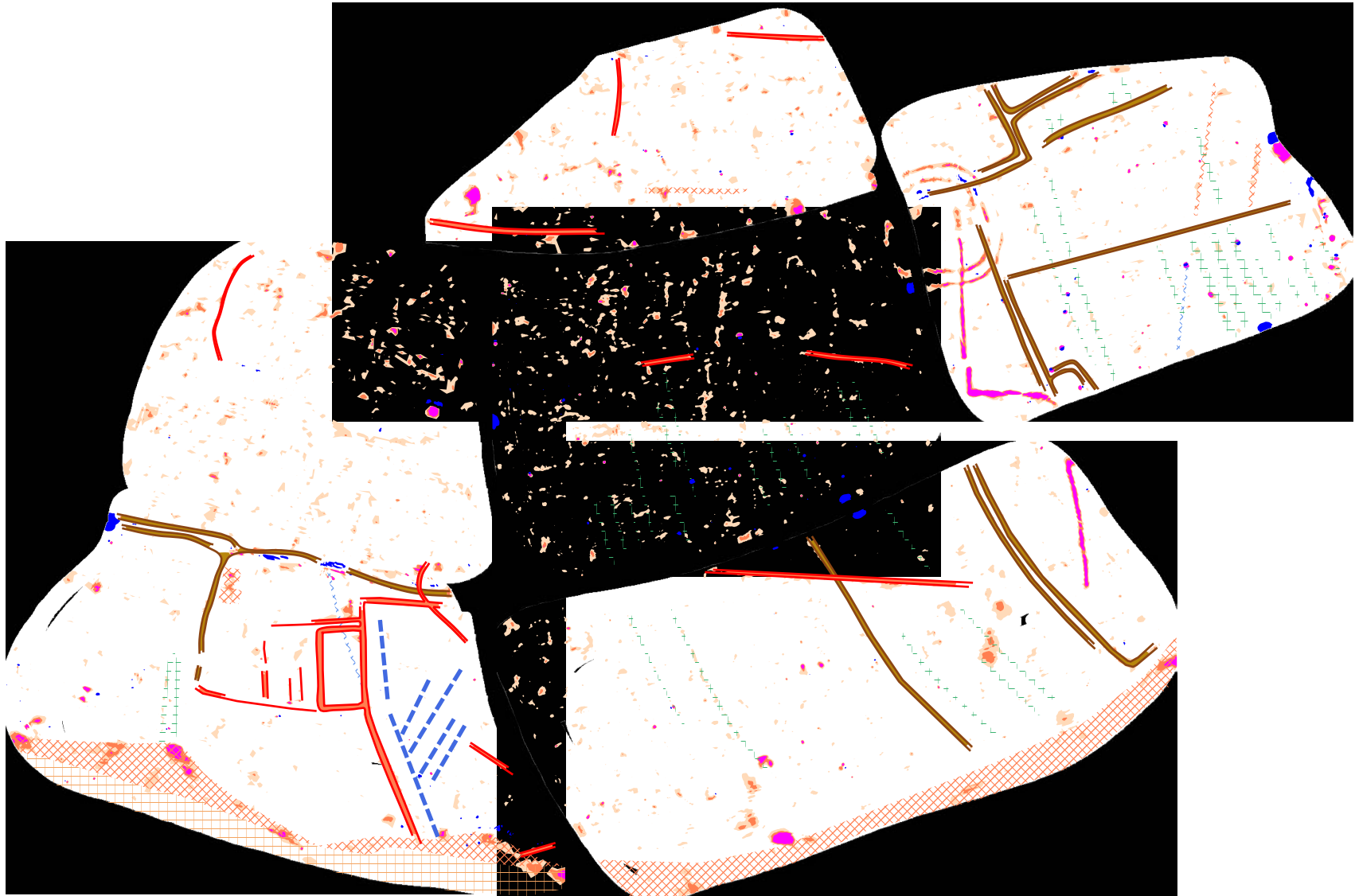


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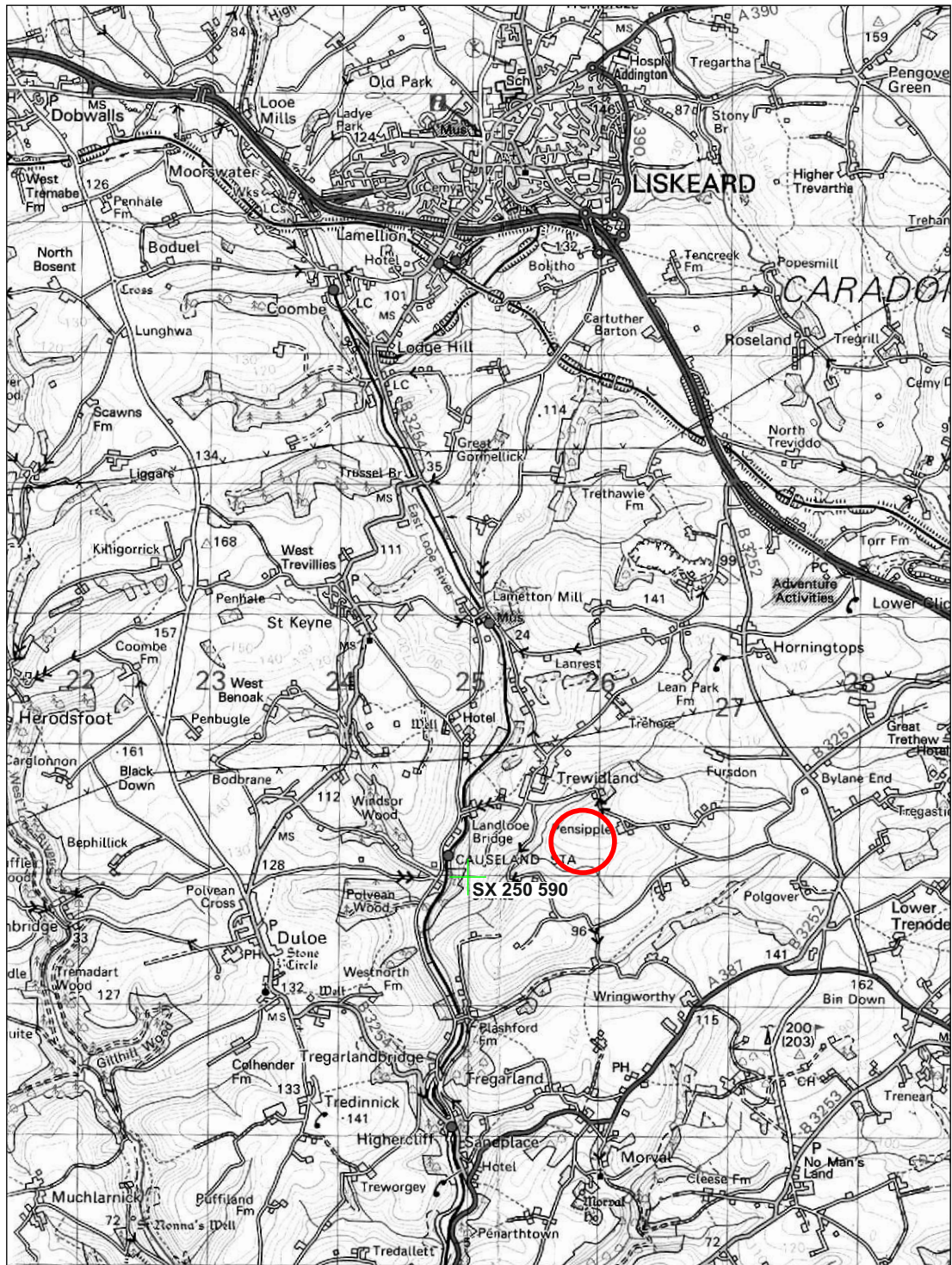


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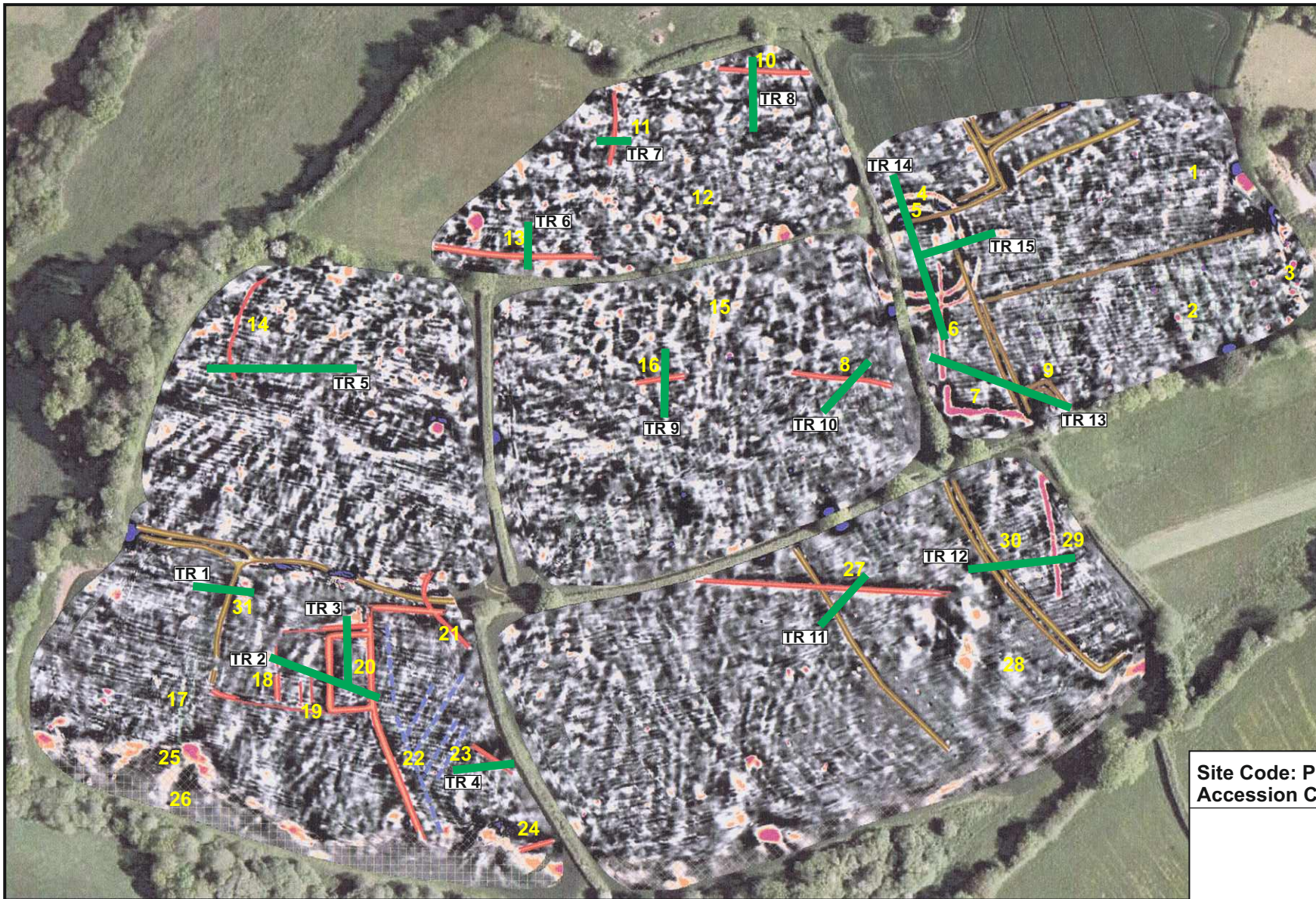
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FIGURE 1: Site Location



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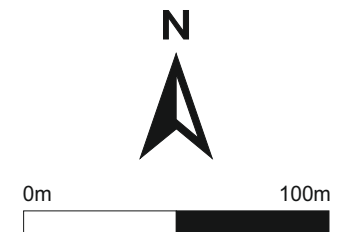
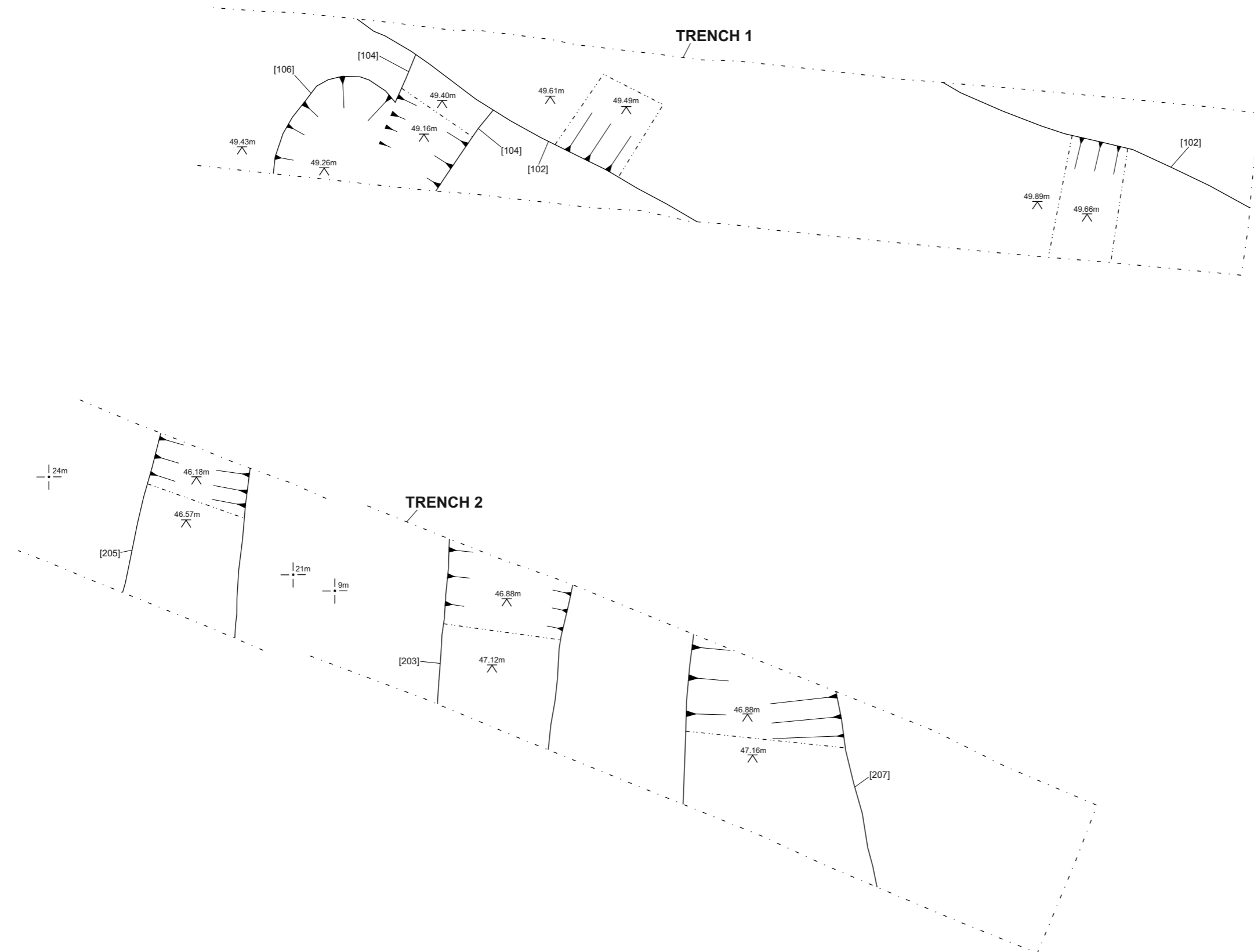


FIGURE 2: Trench Locations

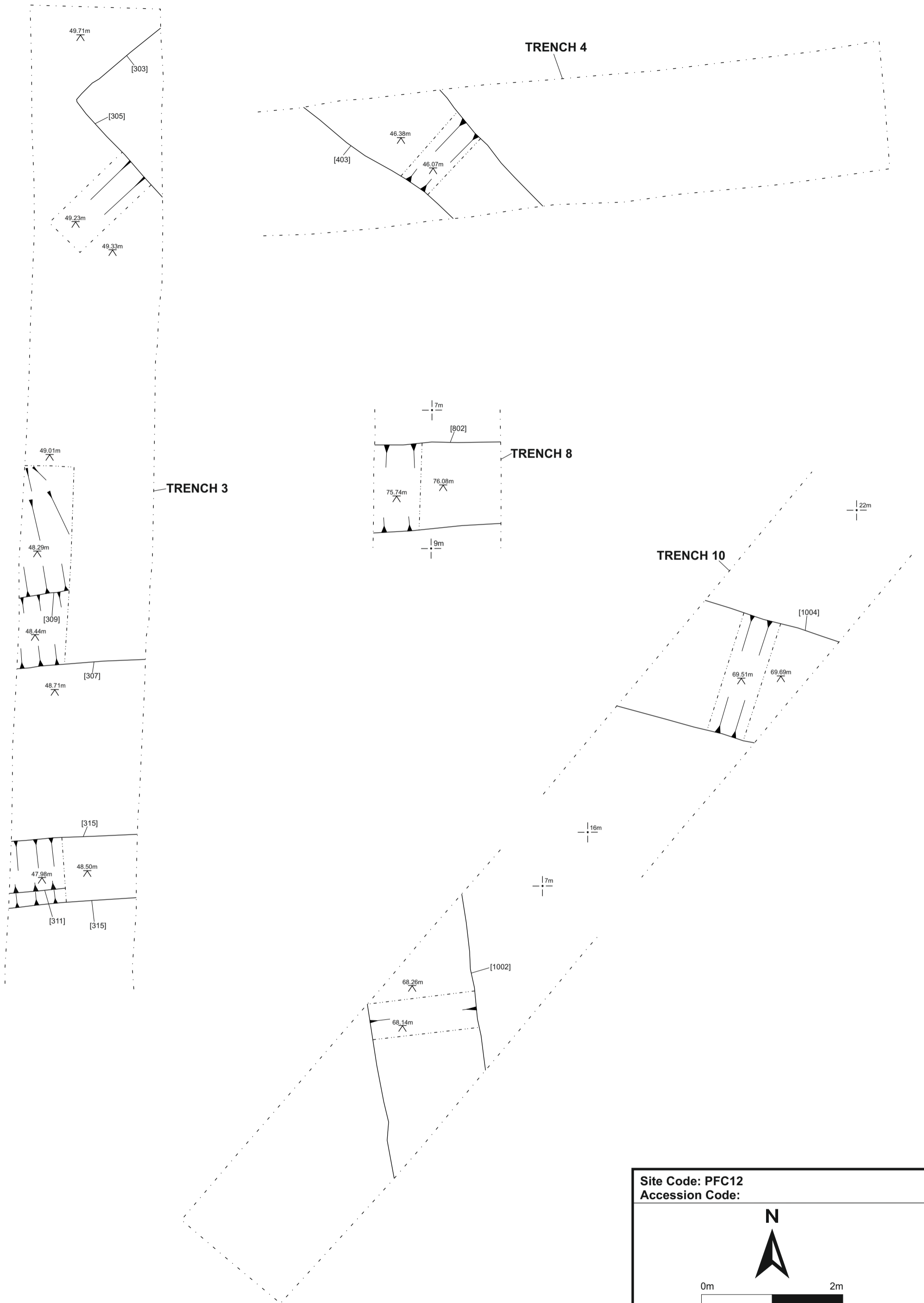


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FIGURE 3: Trenches 1 and 2 Plans

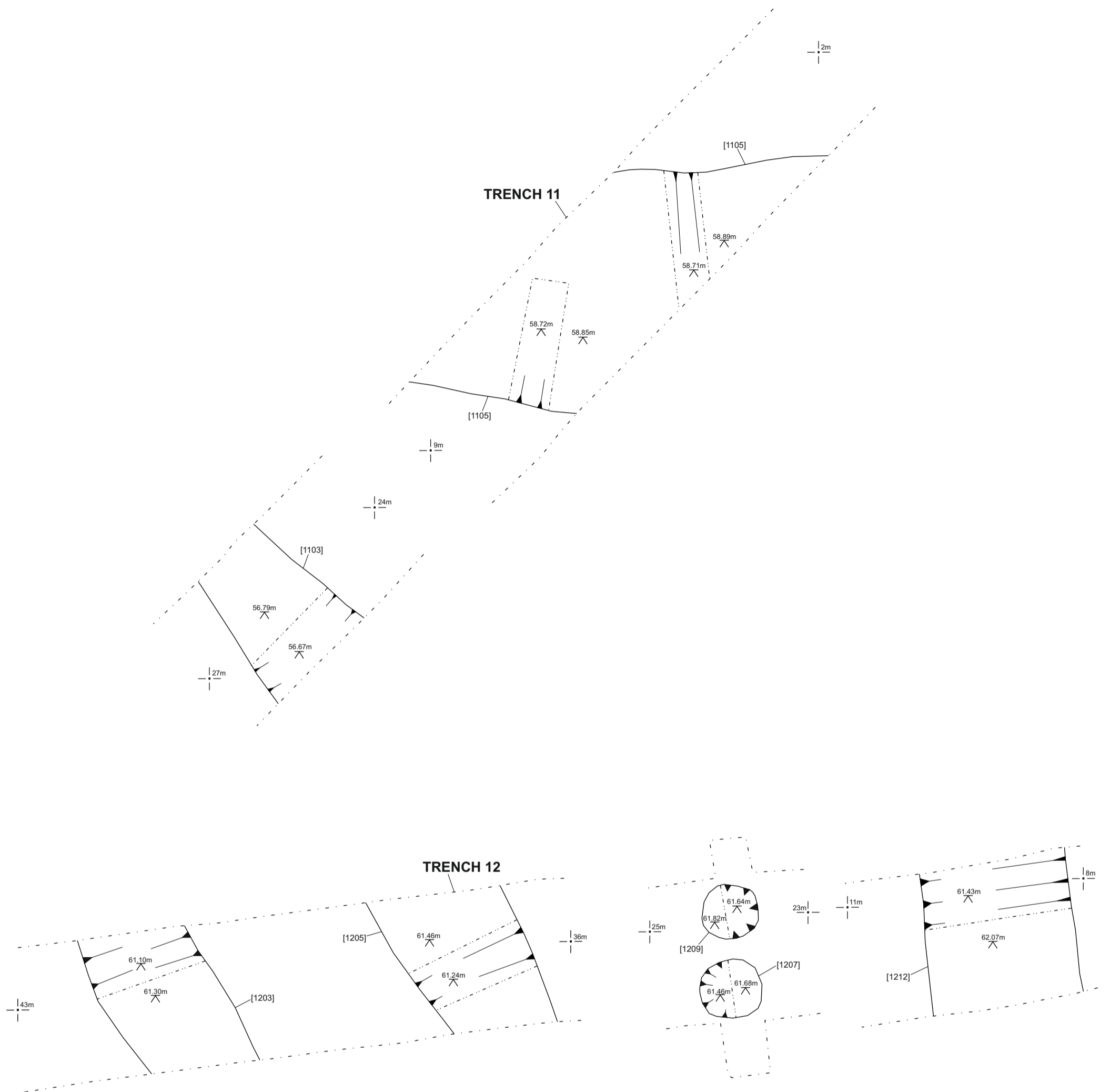


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FIGURE 4: Trenches 3, 4, 8 and 10 Plans

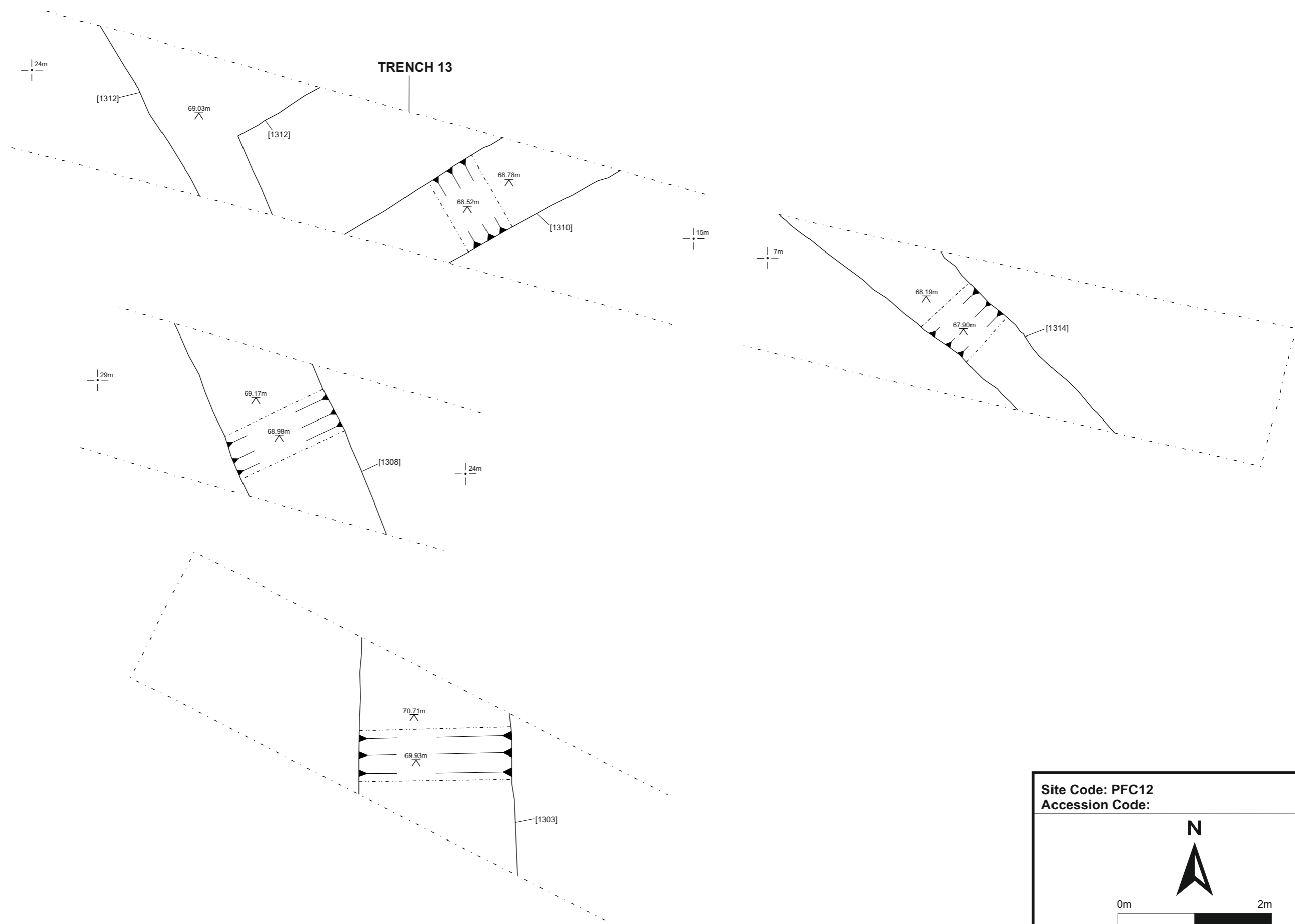


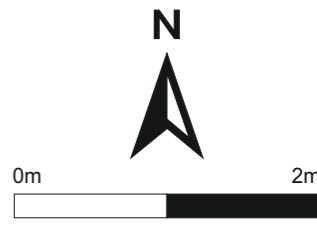
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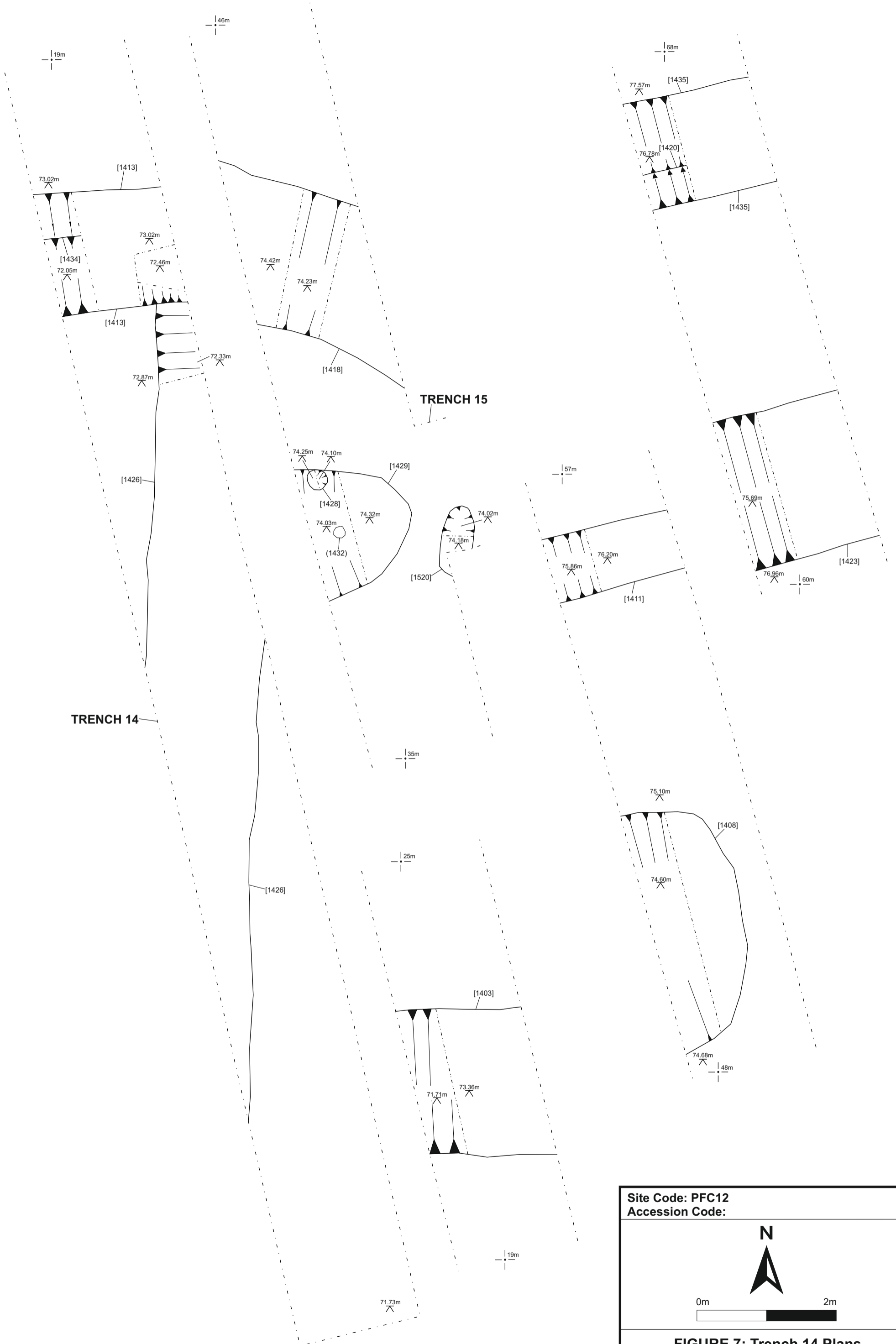
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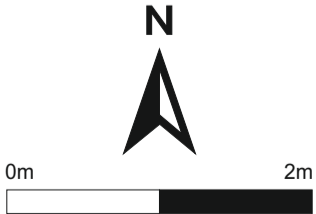
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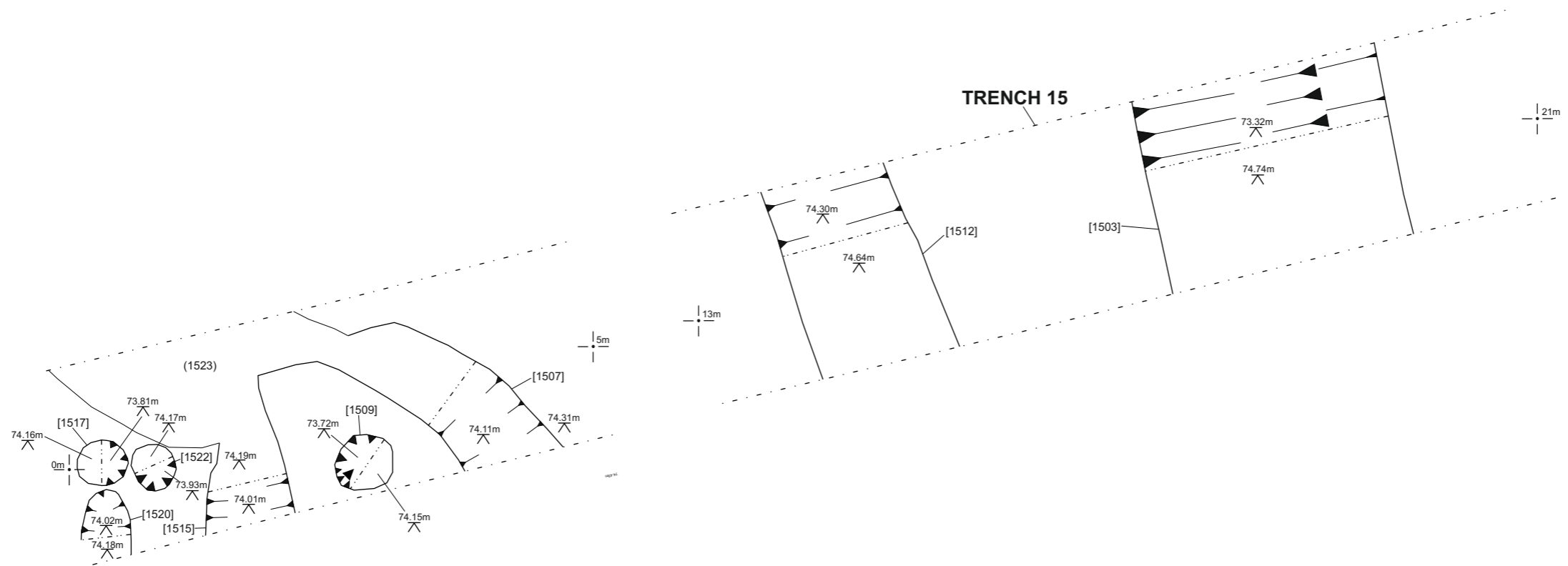
FIGURE 5: Trenches 11 and 12 Plans



Site Code: PFC12
 Accession Code:

FIGURE 6: Trench 13 Plans



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Accession Code:

FIGURE 7: Trench 14 Plans

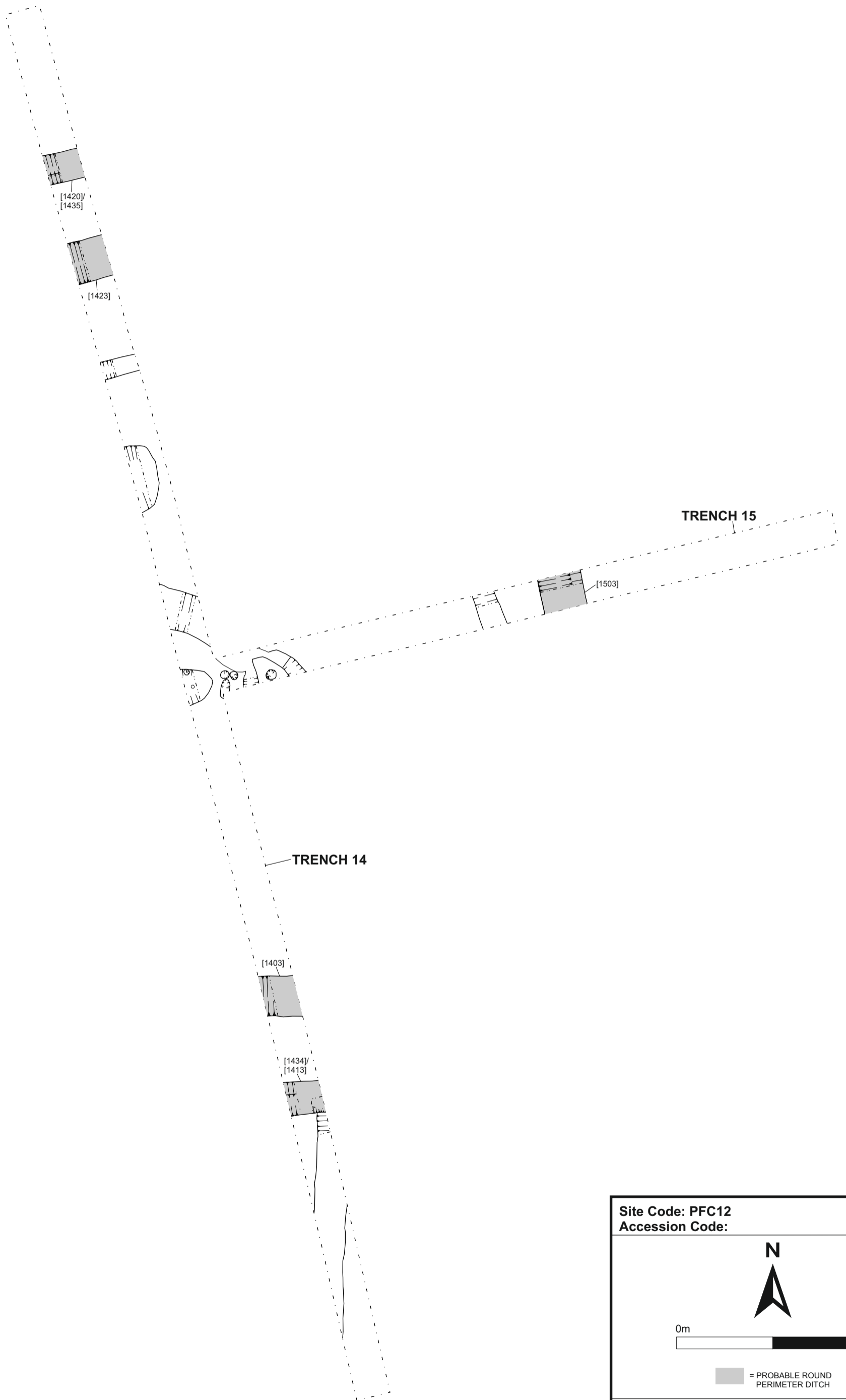


Site Code: PFC12
 Accession Code:

N

0m 2m

FIGURE 8: Trench 15 Plans



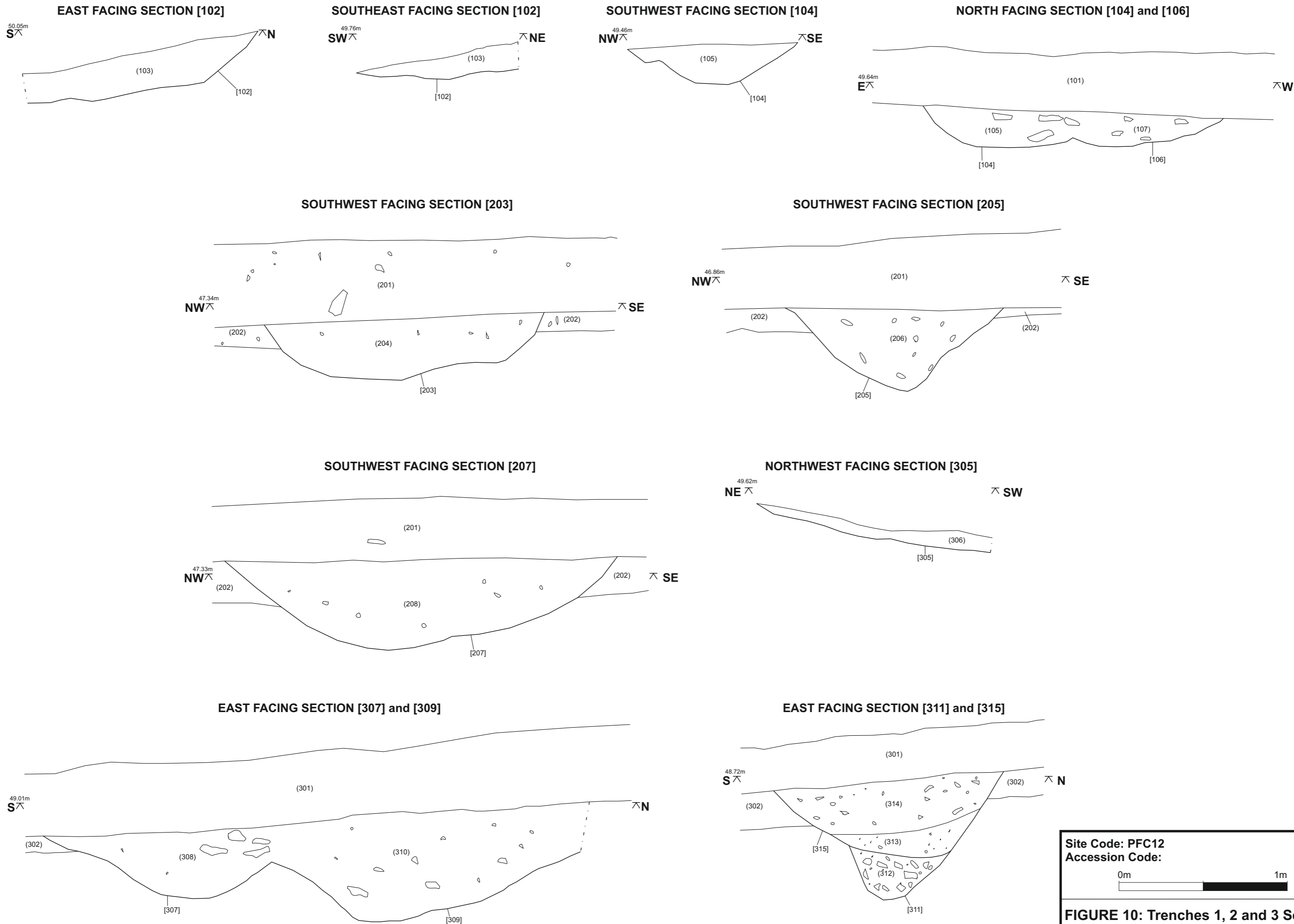
Site Code: PFC12
 Accession Code:

N

0m 10m

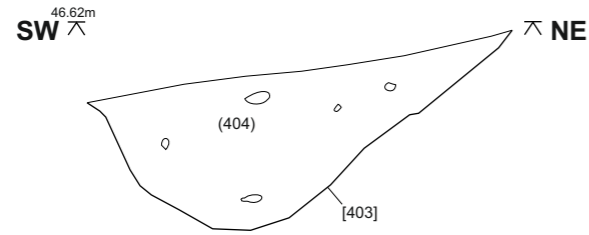
■ = PROBABLE ROUND PERIMETER DITCH

FIGURE 9: Trenches 14 and 15 Combined Plan

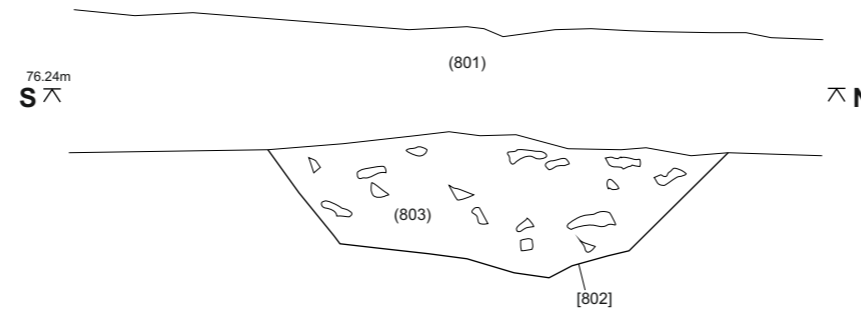


Site Code: PFC12
 Accession Code:
 0m 1m
FIGURE 10: Trenches 1, 2 and 3 Sections

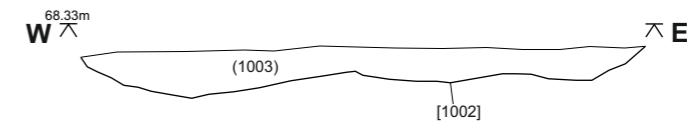
SOUTHEAST FACING SECTION [403]



EAST FACING SECTION [802]



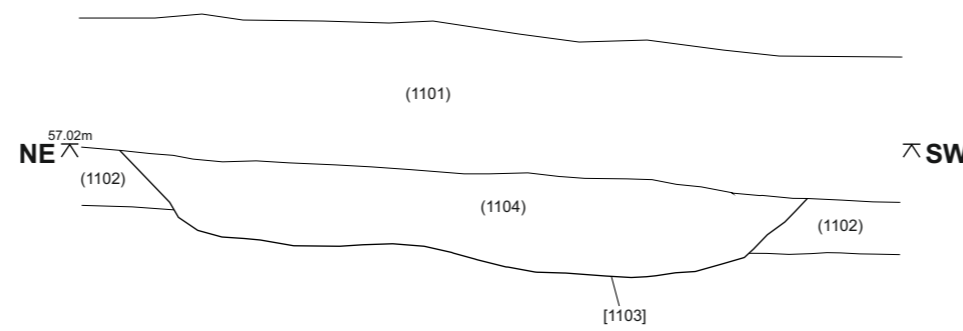
SOUTH FACING SECTION [1002]



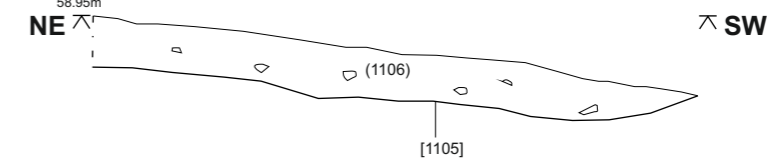
NORTHWEST FACING SECTION [1004]



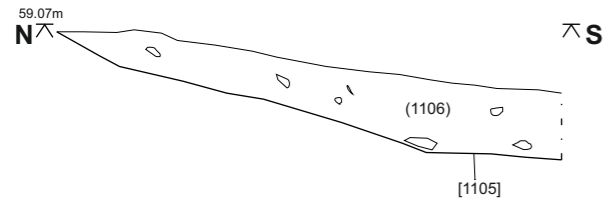
NORTHWEST FACING SECTION [1103]



NORTHWEST FACING SECTION [1105]



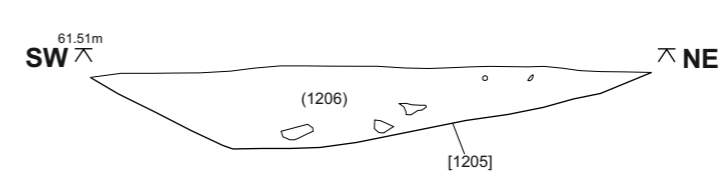
WEST FACING SECTION [1105]



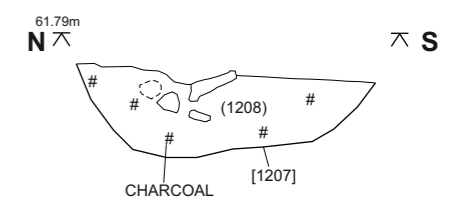
SOUTH FACING SECTION [1203]



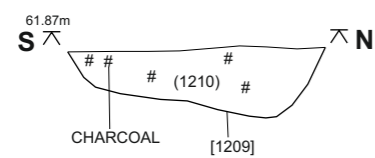
SOUTHEAST FACING SECTION [1205]



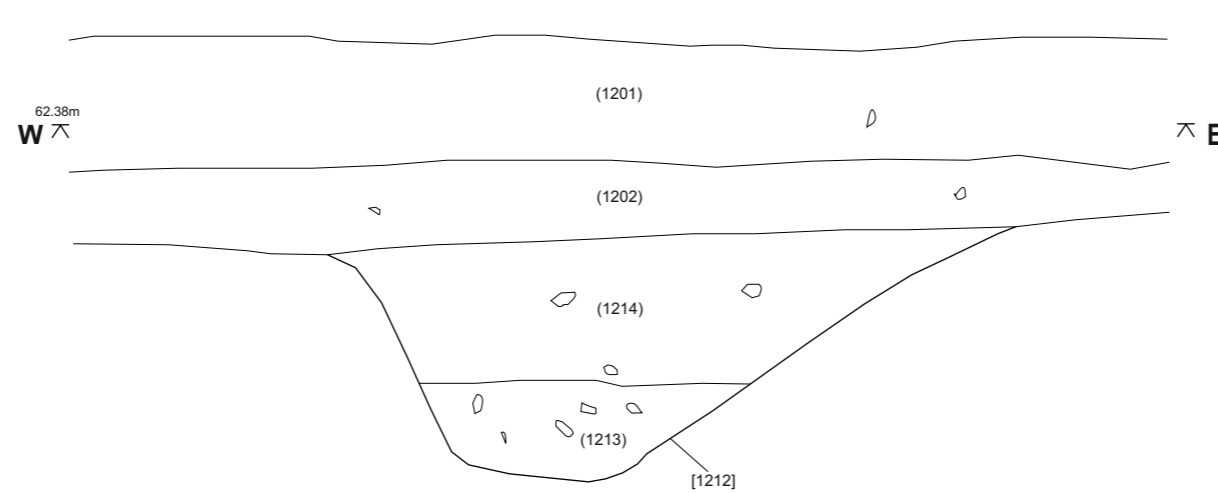
WEST FACING SECTION [1207]



EAST FACING SECTION [1209]

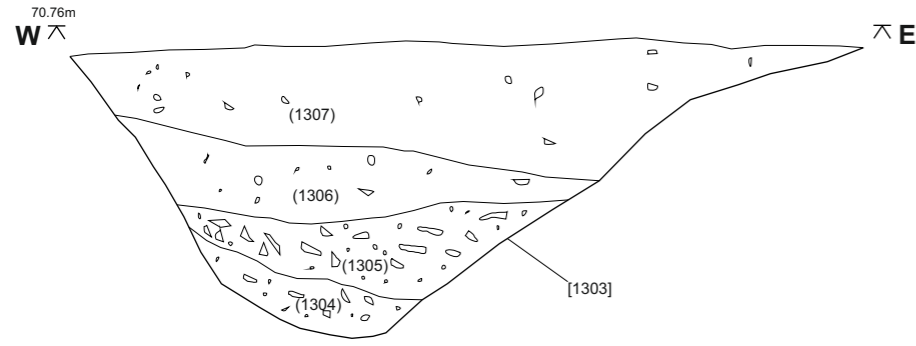


SOUTH FACING SECTION [1212]

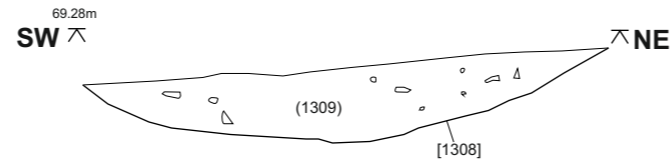


Site Code: PFC12
Accession Code:
0m 1m
FIGURE 11: Trenches 4, 8, 10, 11 and 12 Sections

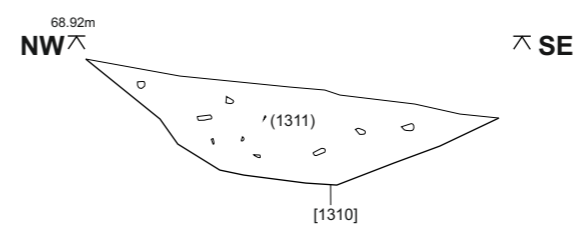
SOUTH FACING SECTION [1303]



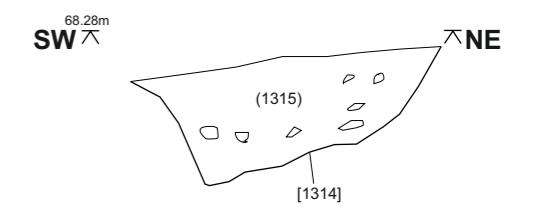
SOUTHEAST FACING SECTION [1308]



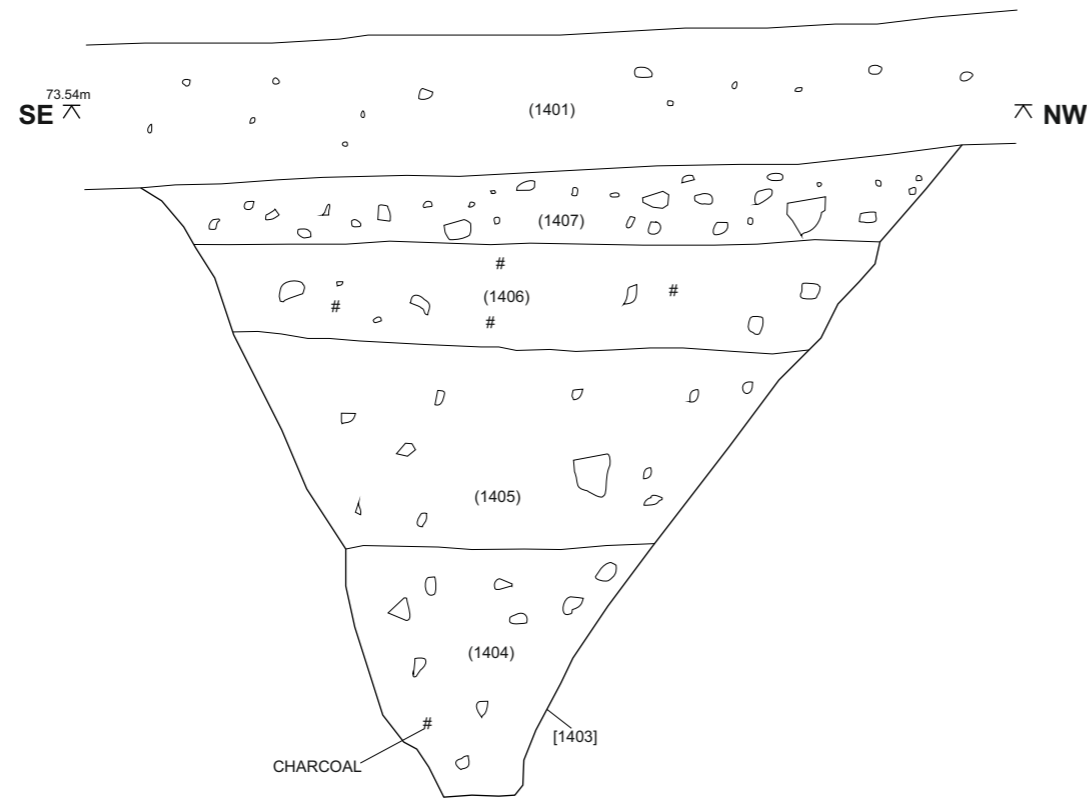
SOUTHWEST FACING SECTION [1310]



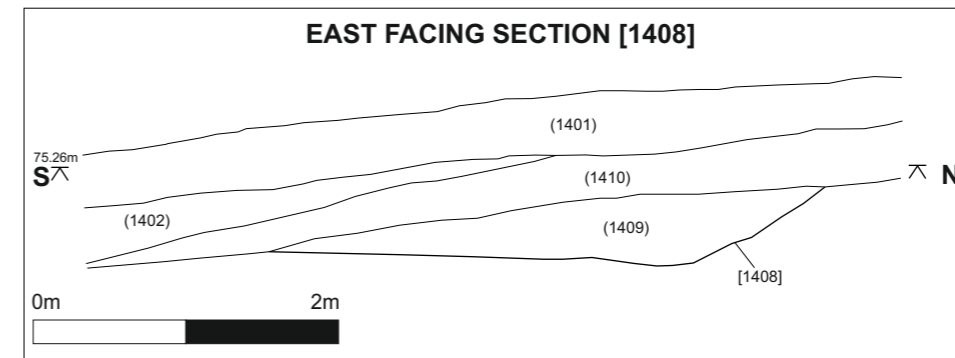
SOUTHEAST FACING SECTION [1314]



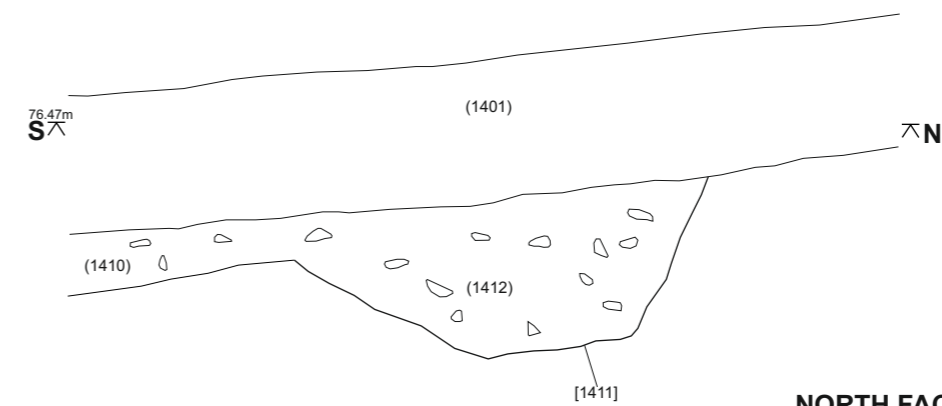
NORTHEAST FACING SECTION [1403]



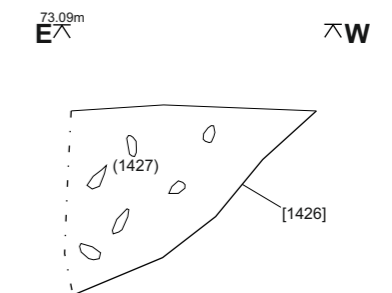
EAST FACING SECTION [1408]



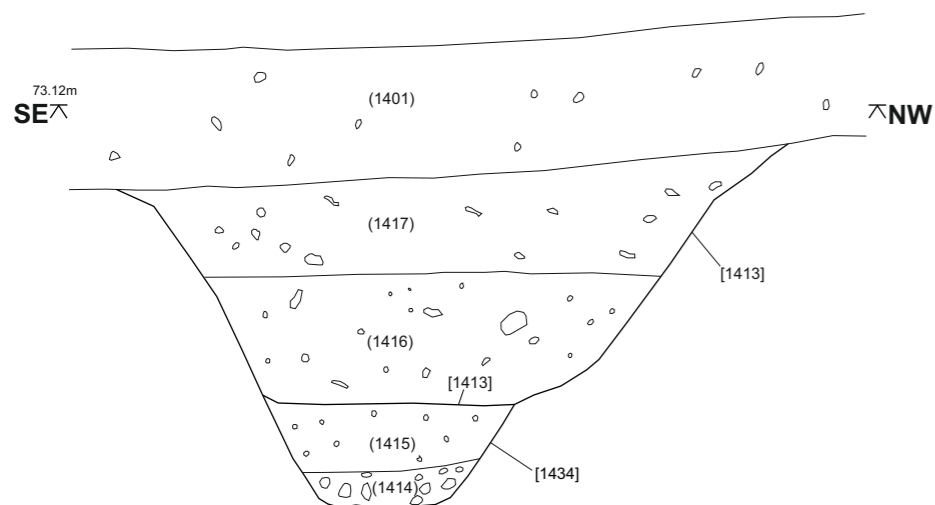
EAST FACING SECTION [1411]



NORTH FACING SECTION [1426]



NORTHEAST FACING SECTION [1413] and [1434]



SOUTHWEST FACING SECTION [1413] and [1426]

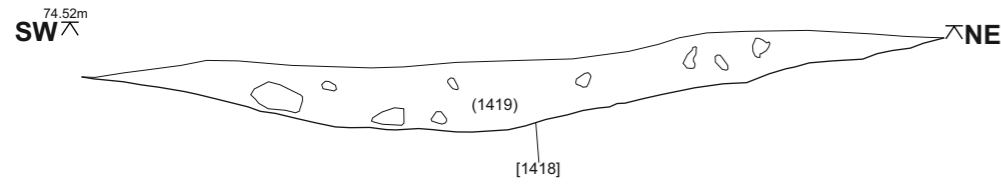


Site Code: PFC12
Accession Code:

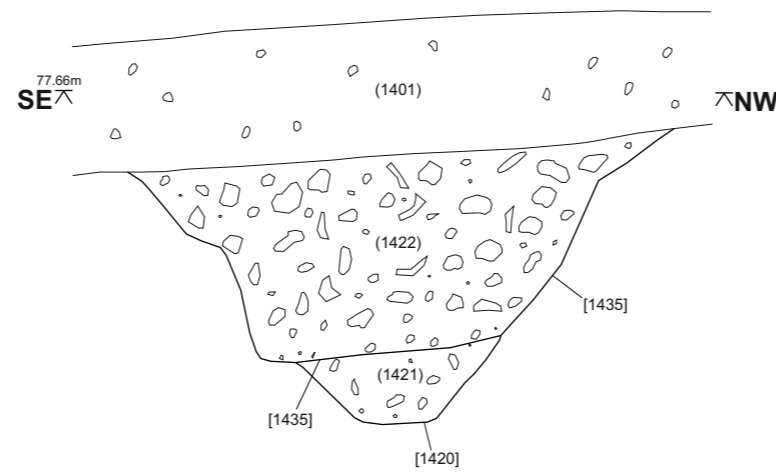


FIGURE 12: Trenches 13 and 14 Sections

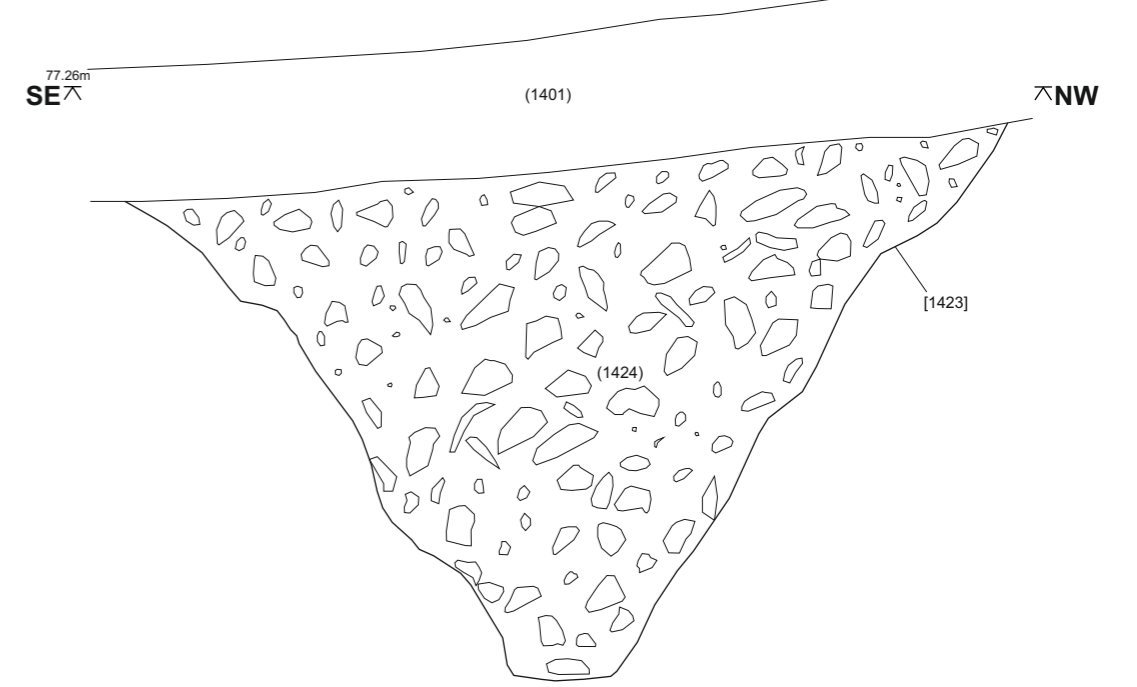
SOUTHEAST FACING SECTION [1418]



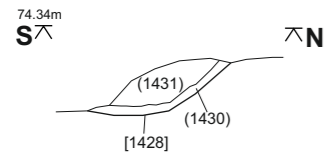
NORTHEAST FACING SECTION [1420] and [1435]



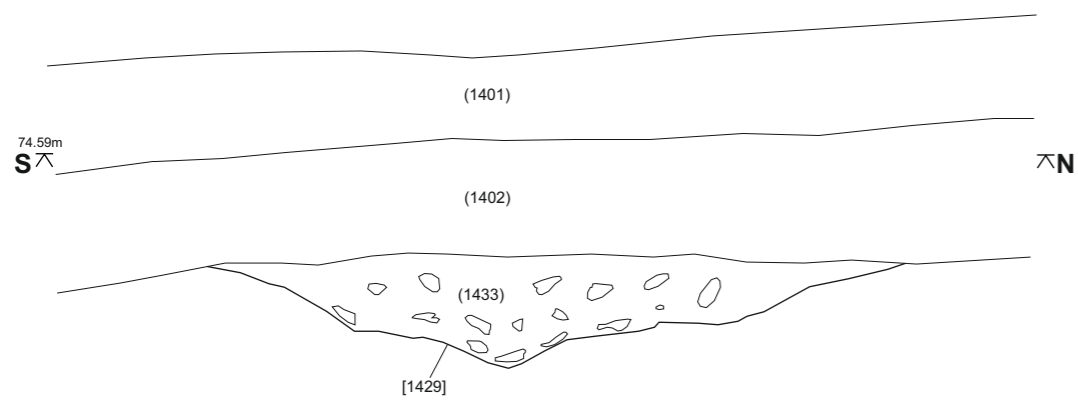
NORTHEAST FACING SECTION [1423]



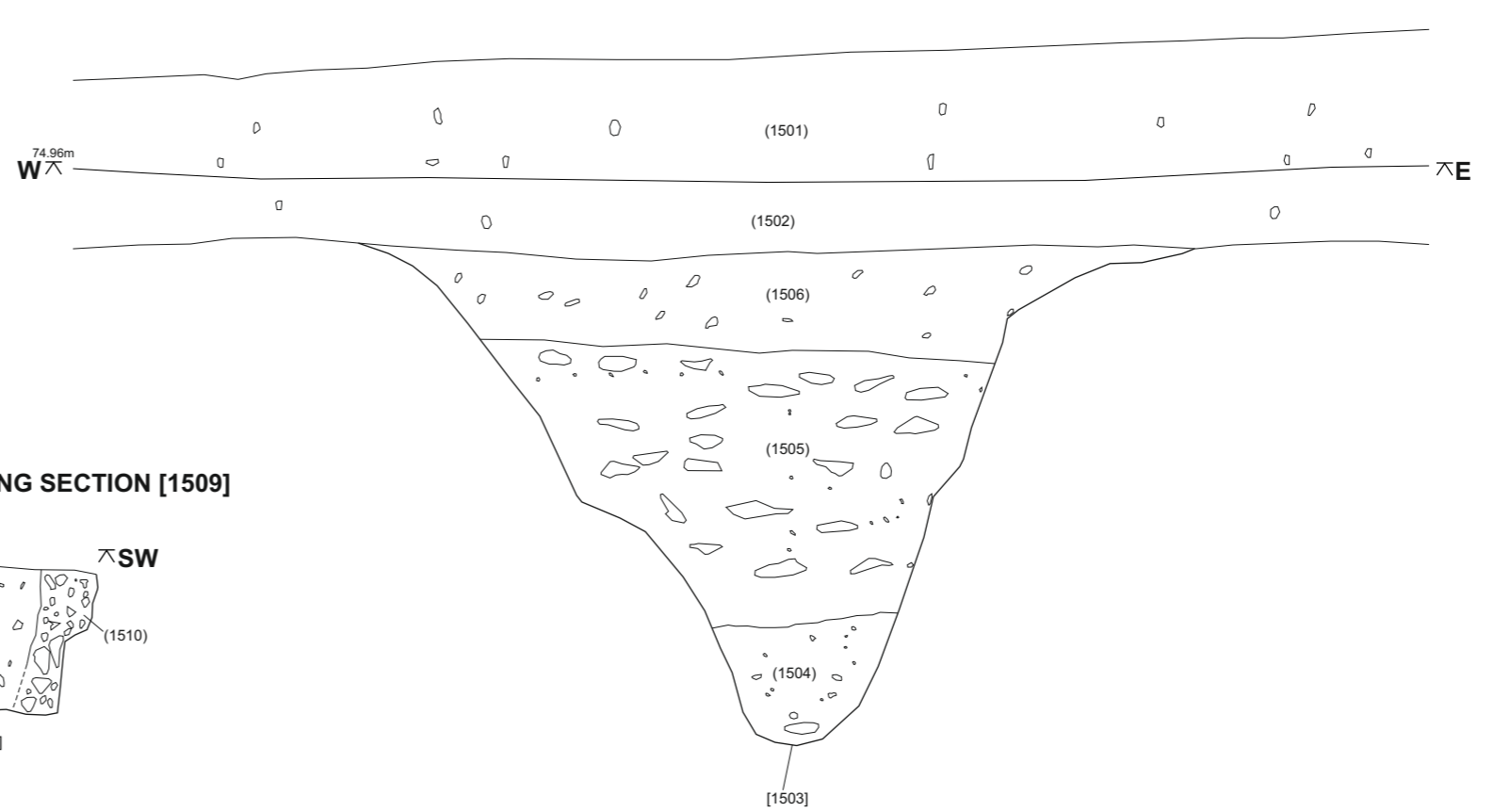
EAST FACING SECTION [1428]



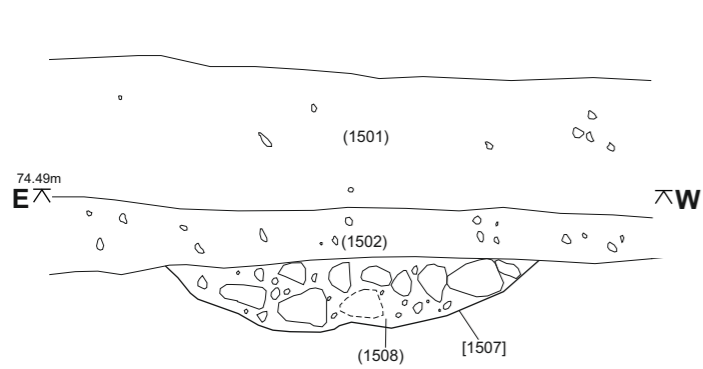
EAST FACING SECTION [1429]



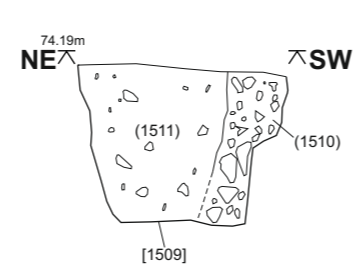
SOUTH FACING SECTION [1503]



NORTH FACING SECTION [1507]

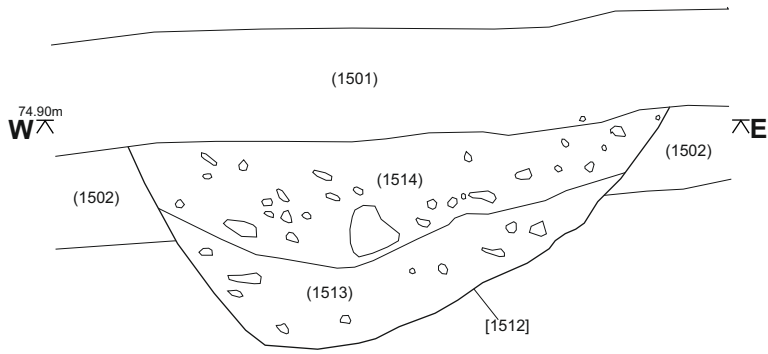


NORTHWEST FACING SECTION [1509]

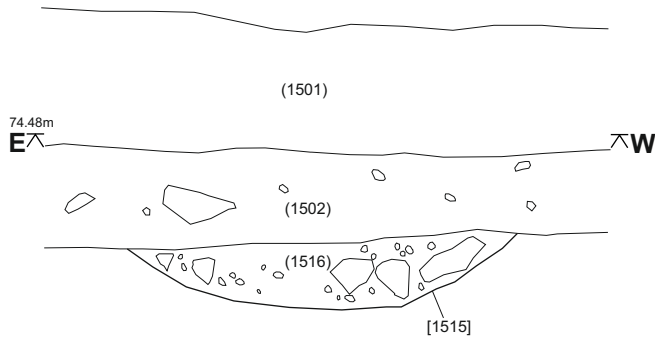


Site Code: PFC12
 Accession Code:
 0m 1m
FIGURE 13: Trenches 14 and 15 Sections

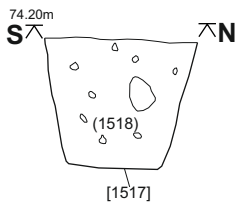
SOUTH FACING SECTION [1512]



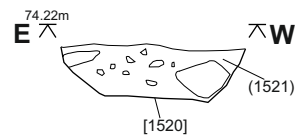
NORTH FACING SECTION [1515]



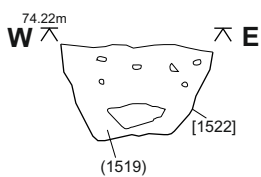
EAST FACING SECTION [1517]



NORTH FACING SECTION [1520]



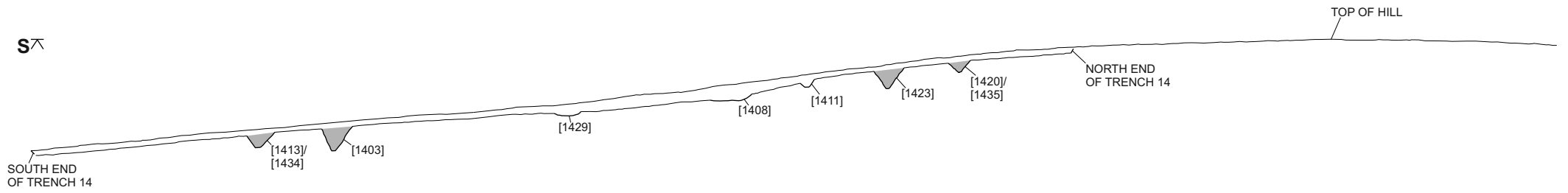
SOUTH FACING SECTION [1522]



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Accession Code:



FIGURE 14: Trench 15 Sections

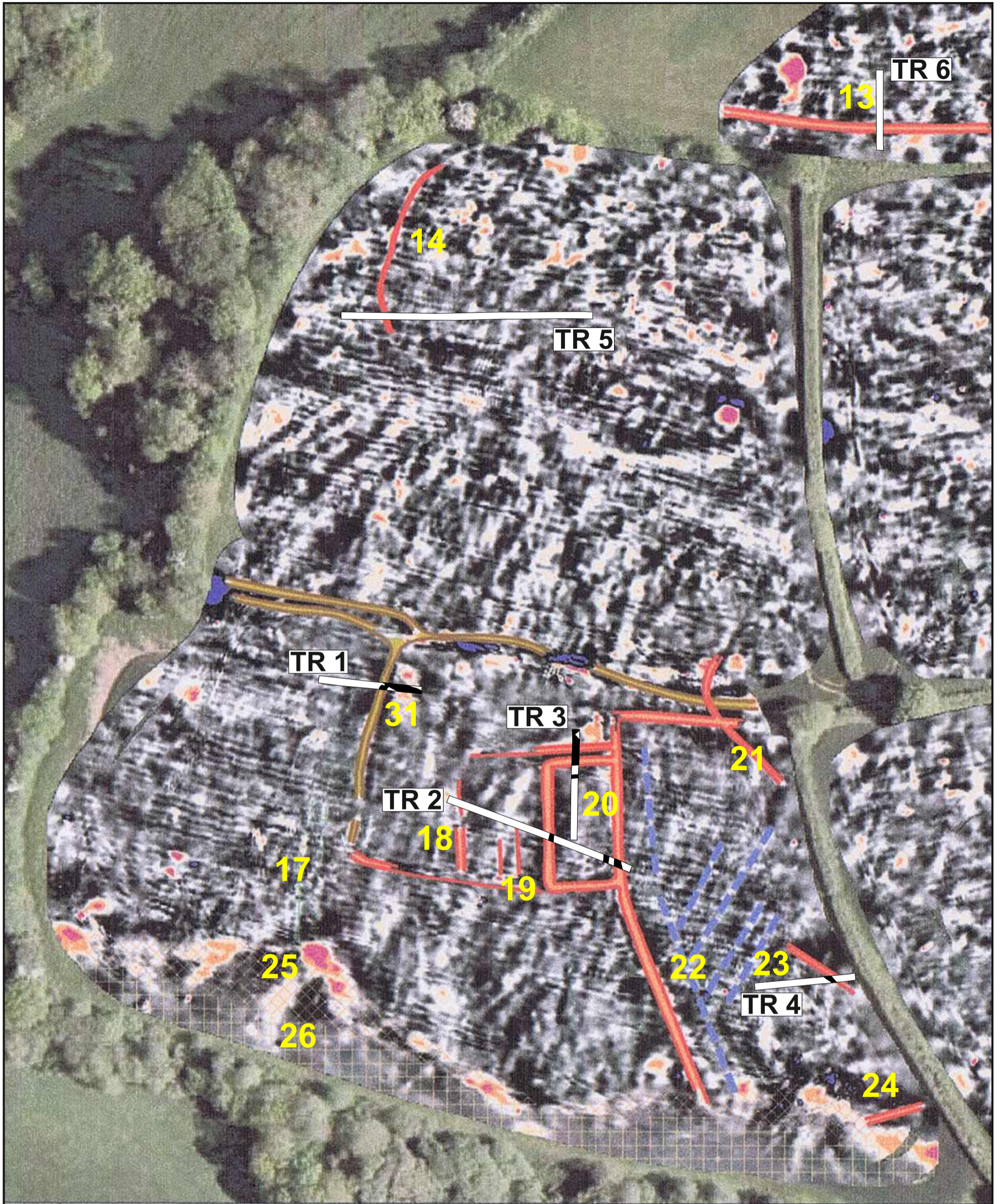


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Accession Code:

0m 20m

= PROBABLE ROUND PERIMETER DITCH

FIGURE 15: Trench 14, Schematic Trench Section Showing Profile Across Round



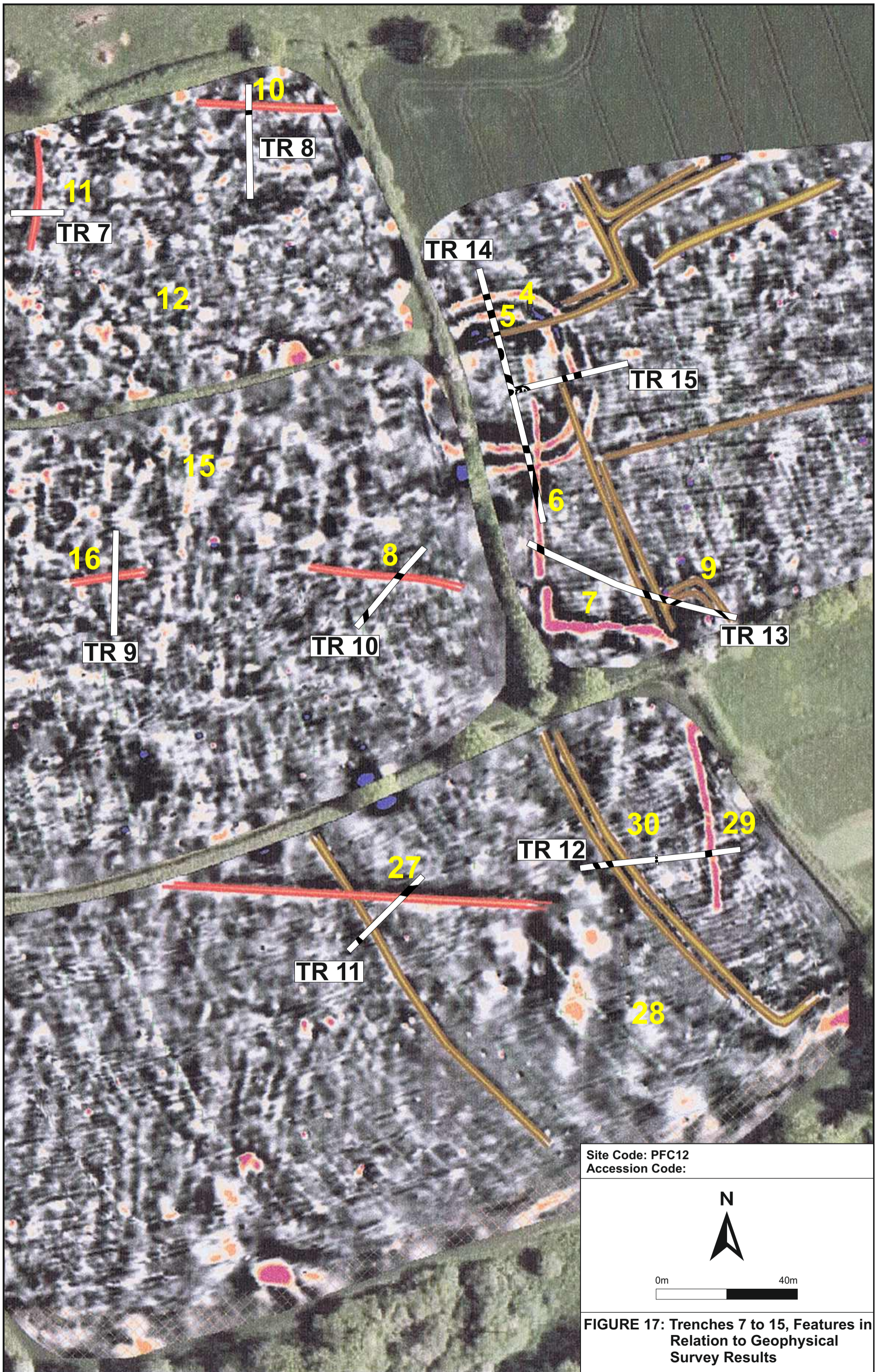
BASED ON GEOPHYSICAL PLAN: ARCAEOPHYSICA LTD. 2012

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N

0m 40m

FIGURE 16: Trenches 1 to 6, Features in Relation to Geophysical Survey Results



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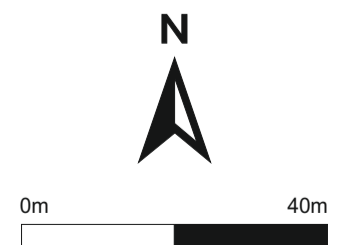


FIGURE 17: Trenches 7 to 15, Features in Relation to Geophysical Survey Results