

# LAND NEAR PERRANWELL STATION

## PERRANWELL

## CORNWALL

Results of a Desk-Based Assessment, Geophysical Survey  
and Heritage Impact Appraisal



South West Archaeology Ltd. report no. 170331



[www.swarch.net](http://www.swarch.net) Tel. 01769 573555

# Land near Perranwell Station, Perranwell, Cornwall

## Results of a Desk-Based Assessment, Geophysical Survey & Heritage Impact Appraisal

---

By J. Bampton & B. Morris  
Report Version FINAL  
31<sup>st</sup> March 2017

Work undertaken by SWARCH for Louisa Meek of CSA Architects  
On behalf of Mr. H. Kneebone and Mr. G. Taberer

### Summary

---

*This report presents the results of a desk-based assessment, geophysical survey and heritage impact appraisal carried out by South West Archaeology Ltd. (SWARCH) for land near Perranwell station, Perranwell, Cornwall, carried out on behalf of Louisa Meek of CSA Architects (the Agent) on behalf of Mr H. Kneebone and Mr G. Taberer (the Clients), in advance of a planning application.*

*The site is located on the edge of the settlement of Perranwell Station and formerly part of the tenement known as Mellingey Farm. Mellingey is first documented in 1324. Historic OS maps show the remains of a mine worked before 1838 straddle the site; these abandoned workings follow a lode of galena that trends in a north-south direction; one Old Shaft is shown within the site, with another beyond the southern boundary.*

*The geophysical survey that was carried out identified relict field boundaries, a small number of pits and the Old Shaft shown on the historic OS maps. It also identified a faint north-south anomaly that may relate to mining activity. Otherwise, the archaeological potential of the site appears fairly low.*

*The historic visual impact appraisal undertaken focused on a single designated asset, the Grade II Baytree Lodge. The attractive qualities of Baytree Lodge, and its status as one of the most complete surviving fragments of the Mellingey of John Jose, a wealthy Cornish industrialist who made his fortune in the mines of South America, mean that the impact of the proposed development could be as high as negative/moderate, though appropriate mitigation through design or tree planting would help offset that impact.*

---



March 2017

South West Archaeology Ltd. shall retain the copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved, excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project.

# CONTENTS

---

<i>CONTENTS</i>	3
<i>LIST OF FIGURES</i>	4
<i>LIST OF TABLES</i>	4
<i>LIST OF APPENDICES</i>	4
<i>ACKNOWLEDGEMENTS</i>	4
<i>PROJECT CREDITS</i>	4
<b>1.0 INTRODUCTION</b>	<b>5</b>
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
<b>2.0 DESK-BASED ASSESSMENT</b>	<b>7</b>
2.1 DOCUMENTARY HISTORY	7
2.2 CARTOGRAPHIC DEVELOPMENT	7
<b>3.0 ARCHAEOLOGICAL BACKGROUND</b>	<b>11</b>
3.2 LIDAR AND AERIAL PHOTOGRAPHY	14
3.3 SITE INSPECTION	14
3.4 ARCHAEOLOGICAL POTENTIAL	15
<b>4.0 GEOPHYSICAL SURVEY</b>	<b>16</b>
4.1 INTRODUCTION	16
4.2 METHODOLOGY	16
4.3 RESULTS	16
4.4 DISCUSSION	20
<b>5.0 HERITAGE IMPACT APPRAISAL</b>	<b>22</b>
5.1 HERITAGE IMPACT APPRAISAL - OVERVIEW	22
5.2 NATIONAL POLICY	22
5.3 CULTURAL VALUE – DESIGNATED HERITAGE ASSETS	22
5.4 CONCEPTS – CONSERVATION PRINCIPLES	24
5.5 SETTING – THE SETTING OF HERITAGE ASSETS	26
5.6 TYPE AND SCALE OF IMPACT	29
5.7 METHODOLOGY	31
5.8 IDENTIFY THE HERITAGE ASSETS	32
<b>6.0 CONCLUSION</b>	<b>34</b>
<b>7.0 BIBLIOGRAPHY &amp; REFERENCES</b>	<b>37</b>

## LIST OF FIGURES

---

*Cover plate:* View across the site from the entrance in the north-west corner; looking south.

FIGURE 1: SITE LOCATION.	6
FIGURE 2: EXTRACT FROM THE 1811 OS SURVEYOR'S DRAFT MAPS FOR HELSTON AND GRAMPOUND.	8
FIGURE 3: EXTRACT FROM THE 1840 PERRANARWORTHAL TITHE MAP.	8
FIGURE 4: EXTRACT FROM THE OS 1 <sup>ST</sup> EDITION MAP OF 1888; THE SITE IS INDICATED.	10
FIGURE 5: EXTRACT FROM THE OS 2 <sup>ND</sup> EDITION MAP OF 1907; THE SITE IS INDICATED.	10
FIGURE 6: MAP OF NEARBY HERITAGE ASSETS.	12
FIGURE 7: IMAGE DERIVED FROM DTM LIDAR DATA, SHOWING THE SITE.	14
FIGURE 8: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.	18
FIGURE 9: INTERPRETATION OF GRADIOMETER SURVEY DATA.	19

## LIST OF TABLES

---

TABLE 1: EXTRACT FROM THE 1842 PERRANARWORTHAL TITHE APPORTIONMENT.	8
TABLE 2: TABLE OF NEARBY HERITAGE ASSETS.	12
TABLE 3: INTERPRETATION OF GRADIOMETER SURVEY DATA.	16
TABLE 4: THE HIERARCHY OF VALUE/IMPORTANCE.	24
TABLE 5: THE CONCEPTUAL MODEL FOR VISUAL IMPACT ASSESSMENT PROPOSED BY THE UNIVERSITY OF NEWCASTLE.	30
TABLE 6: MAGNITUDE OF IMPACT.	31
TABLE 7: SIGNIFICANCE OF EFFECTS MATRIX.	31
TABLE 8: SCALE OF IMPACT.	31

## LIST OF APPENDICES

---

APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY	36
APPENDIX 2: BASELINE PHOTOGRAHS	40

## ACKNOWLEDGEMENTS

---

LOUISA MEEK OF CSA ARCHITECTS (THE AGENT)  
MR H. KNEEBONE & G. TABERER (THE CLIENTS)  
THE STAFF OF THE CORNWALL RECORD OFFICE

## PROJECT CREDITS

---

DIRECTOR: BRYN MORRIS  
DESK-BASED ASSESSMENT: JOE BAMPTON; BRYN MORRIS  
FIELDWORK: JOE BAMPTON  
REPORT: JOE BAMPTON  
EDITING: BRYN MORRIS; NATALIE BOYD  
GRAPHICS: JOE BAMPTON

## 1.0 INTRODUCTION

---

<b>Location:</b>	Land near Perranwell Station, Perranwell
<b>Parish:</b>	Perranarworthal
<b>County:</b>	Cornwall
<b>NGR:</b>	SW 77998 39659
<b>Planning no.</b>	n/a
<b>SWARCH ref.</b>	PSR17

### 1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by Louisa Meek of CSA Architects (the Agent) on behalf of Mr H. Kneebone and Mr G. Taberer (the Clients) to undertake a desk-based assessment, geophysical survey and heritage impact appraisal for land near Perranwell Station, Perranwell, Cornwall, as part of the pre-application requirements for a proposed residential development. This work was undertaken in accordance with best practice and ClfA guidelines.

### 1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

The site is located off Station Road, east of the village of Perranwell and south-west of the railway station. The site straddles two subrectangular fields on a south-south-east facing slope at an altitude of 15-35m AOD. Beyond the limits of the site to the south is the bed of a silted-up creek; the stream flows eastwards into the River Kennal. The soils of this area are the well-drained fine loamy soils of the Denbigh 2 Association (SSEW 1983), which overlie the slates and siltstones of the Mylor Slate Formation (BGS 2017).

### 1.3 HISTORICAL BACKGROUND

Perranwell lies within the parish of Perranarworthal, in the deanery and east division of the Hundred of Kerrier. The place-names Perranwell and Perranarworthal refer to Saint Piran, meaning 'well of St Piran' and Cornish *ar-gothel* meaning 'St Piren in the marsh/watery ground' (Watts 2011). In the 1840s these fields belonged to the tenement of *Vellingey*. *Old shafts* are shown on the site on historic OS maps, indicating historic mining activity in the area. In 1814 the Manor of Perranarworthal covered two thirds of the parish and the Basset family held five sixths of the parish (Lysons 1814).

### 1.4 ARCHAEOLOGICAL BACKGROUND

Very little active archaeological investigation has taken place in this area, although an archaeological assessment of the area was conducted as part of the *Mineral Tramways Project* (CAU 1990). That report states that the Carnon Valley, which includes Perranwell, was once heavily industrialised, with tin mining and chemical processing including arsenic and sulphur; however, surviving remains are relatively scarce. An appraisal of the Cornwall and Scilly Historic Environment Record (HER) indicates human activity in the surrounding area including a stone axe findspot (HER No.9038), Bronze Age barrow (9031); medieval fieldsystems and settlements including Perranarworthal (18516) and Mellingey (18514); and post-medieval mining and mineral processing including mines (40894) and tin smelting- and arsenic works (40902; 40903). North-east of the site is a Grade II Listed 19<sup>th</sup> century building, Baytree Lodge (List Entry 1310270).



## 2.0 DESK-BASED ASSESSMENT

---

### 2.1 DOCUMENTARY HISTORY

Perranwell is one of the larger settlements within the parish of Perranarworthal, which lies in the deanery and east division of the Hundred of Kerrier; it lies on the former Turnpike road between Truro and Penryn (Lysons 1814), and the Falmouth branch of the Cornwall Railway (opened 1863). The place-names Perranarworthal and Perranwell both feature the prefix *Piran* (presumably Saint Piran) with the suffixes *well* ('well of St Piran') and *ar-gothel* or *gwythel* ('St Piren in the marsh/thicket') (Watts 2004).

In 1814 the Manor of Perranarworthal still covered two thirds of the parish and it, together with five sixths of the land, was held by the pre-eminent Cornish industrialists, the Bassets of Tehidy. In the distant past the Manor had belonged to the Fitz-William family, from whom it passed via an heiress to the Mohun family, who in turn sold it in the early 17<sup>th</sup> century to Samuel Pendarves Esq. of Roscrow. Like Roscrow, it passed by inheritance to the Bassets in the late 18<sup>th</sup> century. Other prominent landholders in the parish at that time included Lord Falmouth and a Mr Hill (Lysons 1814).

The 1842 tithe apportionment indicates that the site belonged to the tenement of *Vellingey*, owned and occupied by one Maurice Thomas. In 1814 a common recovery indicates Vellingey was owned by Cornelius Cardew and tenanted by John Barber (CRO: TLP/531); the Rev. Cornelius Cardew (1748-1831) is noted elsewhere (e.g. CRO: BTRU/463) as the Headmaster of Truro Grammer School (discussed in glowing terms by Polwhele 1806, 64-5), a JP, a Mayor of Truro (1780 & 1797) and Chaplain in Ordinary to the Prince of Wales (The Spectator 1987).

Immediately to the east is the tenement of *Mellingey*, a settlement first recorded in 1327 with a name derived from the Cornish *melyn-jy* meaning 'mill-house'. The similarity of the names *Vellingey* and *Mellingey* indicates they formed part of a single medieval estate. Polsue states 'the little river Tarnondain alias Trewedna Water, flows through the village' (1872, 43).

*Silver Hill Mine* (HER 40894) was a small lead mine working a north-south trending lead lode to the east of Perranwell station. Jenkin (1961) states the mine was abandoned before 1838. This mine is directly associated with the *old shafts* shown on historic OS maps north of the site (see below), and perhaps also with the *old shafts* and spoil heaps on or close to the site.

### 2.2 CARTOGRAPHIC DEVELOPMENT

The site is located on the edge of the OS surveyor's draft maps for Helston and Grampound, both of 1811. The scale of these maps (see Figure 2) is too small to be particularly helpful, but the draft maps do tend to distinguish between enclosed and unenclosed land with some accuracy. The main road through Perranwell is lined with properties, and the area to the north of the road is shown as open and unenclosed.

The earliest accurate cartographic source available to this study is the tithe map of c.1840 (Figure 3). The basic layout of the site is similar to that of today, although in 1840 the eastern field was split into three and had access tracks running north-south along both sides. The field boundaries appear to be a mix of gently-curving medieval hedges and more straight-sided post-medieval boundaries.



The 1842 tithe apportionment states that these fields (field nos. 1152-5 and 1159) formed part of *Vellingey*, a farm located on the tithe map to the west of the site and owned and occupied by one Maurice Thomas. *Mellingey* to the east was owned and occupied by one Richard Thomas, and given the similarity of the names, it is probable Vellingey and Mellingey were formerly one landholding, split between family members. In the 1861 Census Richard Thomas is listed as a land surveyor. The fields in question are listed as being under arable cultivation and the field-names are entirely prosaic: *Yonder Field*, *Near Yonder Field*, *Lower Long Field* and *Long Field*.

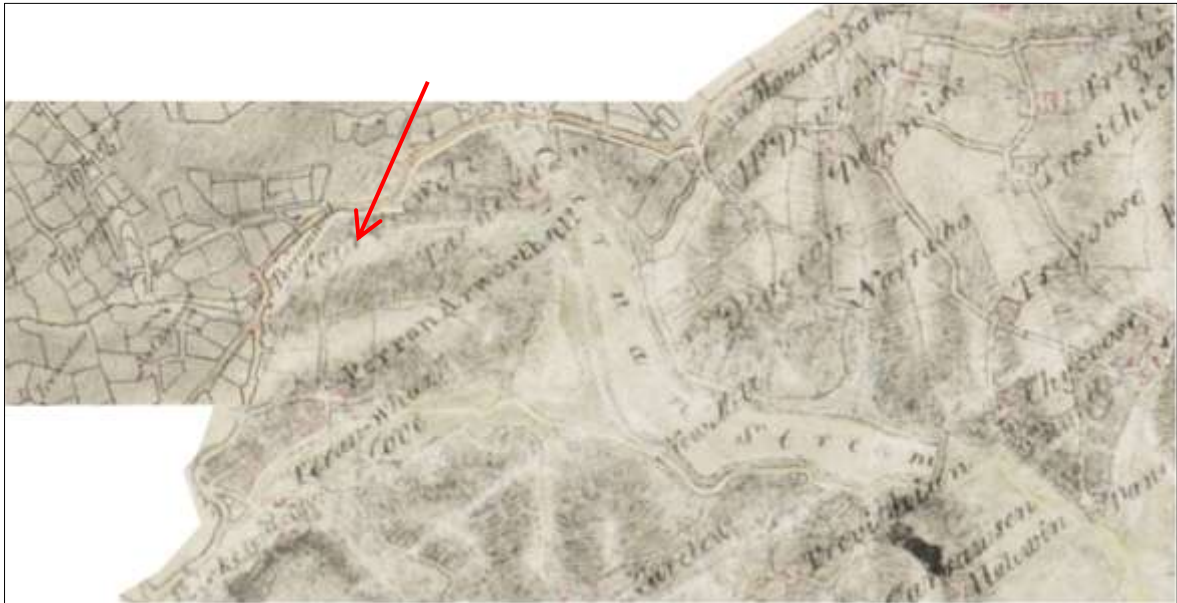


FIGURE 2: EXTRACT FROM THE 1811 OS SURVEYOR'S DRAFT MAPS FOR HELSTON AND GRAMPOND (BL).



FIGURE 3: EXTRACT FROM THE 1840 PERRANARWORTHAL TITHE MAP (CRO).

TABLE 1: EXTRACT FROM THE 1842 PERRANARWORTHAL TITHE APPORTIONMENT; THE FIELDS OF THE SITE ARE INDICATED.

Number	Landowner	Tenant	Field Name	Cultivation
Greenwich Common				
1103	Harriet Maria Hill	William Tresidder	Chapel Close	Arable
1104	Jane Hill		Middle Plot	Arable
1105	Lady Basset Earl of Falmouth (William Tresidder -		Slip	Arable



Number	Landowner	Tenant	Field Name	Cultivation
	Lessee)			
1106	Harriet Maria Hill Jane Hill Lady Basset Earl of Falmouth (Margaret Treweek - Lessee)	Margaret Treweek	Long Field	Arable
Mellingey				
1133	Richard Thomas	Richard Thomas	Plantation	Trees
1134			Plantation	Trees
1135			Way Field	Arable
1140			Plantation Copse	Trees
1141			Quarry Field	Arable
1142			Meadow	Arable
1143			Lower Plot	Arable
1144			Fish Ponds	Water
1145			Plot	Arable
1146		Peggy Edwards	House and Garden	Homestead
1147			Orchard	Orchard
1148		Francis Mills	Cottage and Garden	Homestead
1149		Richard Thomas	Fanny's Meadow	Arable
1150			Plantation	Trees
1151			Private Road	Waste
Vellingey				
1152	Maurice Thomas	Maurice Thomas	Yonder Field	Arable
1153			Near Yonder Field	Arable
1154			Lower Long Field	Arable
1155			Vellingey Meadow	Arable
1156			Lower Moor	Arable
1157			Middle Moor	Arable
1158			Near Vellingey Meadow	Arable
1159			Long Field	Arable
1160			Private Road	Waste
1166			House and Garden	Cottage and Garden

The historic OS maps indicate a number of changes occurred between 1840 and 1888. Firstly, the Falmouth Branch of the Cornwall Railway, together with its associated buildings and infrastructure, were constructed and opened in 1863x4. Secondly, the small farmstead located south-east of the site (occupied by Peggy Edwards and Francis Mills in 1842) was swept away during this period and a lodge constructed at the entrance to the drive leading to Mellingey. The OS maps indicate the fields to the east of the site were successively incorporated into a small polite landscape associated with Mellingey House. Thirdly, the OS maps depict two *Old Shafts*, one on the western edge of the site, and one just beyond the site boundary to the south. The western shaft lay within a small enclosure, presumably intended to isolate the shaft and make it safe. These *Old Shafts* are not shown on the tithe map so it is probable they belonged to the earlier 19<sup>th</sup> century exploitation of a north-south trending lead lode (*Silver Hill Mine*) (Jenkin 1961).

By 1907 (Figure 6) a pair of cottages had been built in the north-eastern corner of the eastern field and the *Old Shaft* on its western side had been cleared away. Later OS maps (not illustrated) indicate that the internal subdivisions of the eastern field were removed before 1972-3 and after 1992. Housing appears within the polite landscape attached to Mellingey House from c.1970, and the footprint of the house itself appears much reduced.

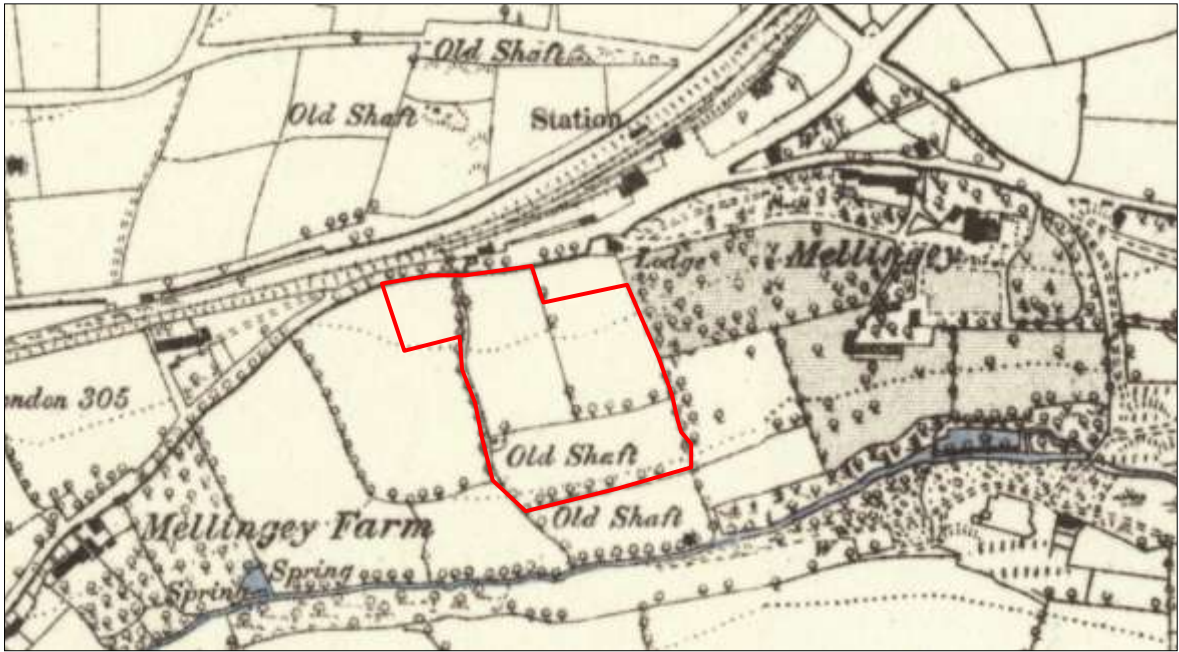


FIGURE 4: EXTRACT FROM THE OS 1<sup>ST</sup> EDITION MAP OF 1888 (CRO); THE SITE IS INDICATED.



FIGURE 5: EXTRACT FROM THE OS 2<sup>ND</sup> EDITION MAP OF 1907 (CRO); THE SITE IS INDICATED.

## 3.0 ARCHAEOLOGICAL BACKGROUND

---

Very little active archaeological investigation has taken place close to the site. The area fell within the ambit of the *Mineral Tramways Project* (CAU 1990); this recorded and assessed industrial/mining heritage assets such as shafts, rail- and tramways and Listed buildings around what would become the World Heritage Sites and informed conservation management plans. It characterised the Carnon Valley, which includes Perranwell, as being heavily industrialised, but that relatively little evidence survives above ground.

The Cornwall and Scilly HER records evidence for human activity in the surrounding area from the Prehistoric to post-medieval period (see Figure 8 and Table 2). The Cornwall and Scilly Historic Landscape Characterisation (HLC) characterises the site as being part of *post-medieval enclosed land*, with the fields on the opposing slope as *medieval farmland*, forming part of *Anciently Enclosed Land* (AEL).

### 3.1.1 PREHISTORIC 4000BC - AD43

Approximately 1km east of the site a dolerite axe was reported (HER No.9038) and an undated burial uncovered (18495); a Bronze Age bowl barrow partly destroyed by a railway cutting is visible as an earthwork near Roseland (9031), c.0.5km north-east of the site.

### 3.1.2 EARLY MEDIEVAL AD410 – AD1065

The archaeology of the early medieval period is poorly represented, but *tre* place-names, which are relatively frequent in the immediate area are normally regarded as indicative of a settlement established during this period; such as in the example of *Tredrea* (18517), approximately 1km to the south-west of the site, which was first recorded in 1609. The cropmark of a possible extractive pit (55921), approximately 0.5km south of the site, has also been recorded to this period, although this is most likely medieval or later.

### 3.1.3 MEDIEVAL AD1066 - AD1540

Relict field boundaries identified as medieval have been identified across the area (9034, 55858 and 55957). The settlements of Perranarworthal (18516) and Mellingey (18514) are documented from 1180 and 1327, and there is a 15<sup>th</sup> century church, cross and holy well (18478, 18479 and 18219) at Perranarworthal.

### 3.1.4 POST-MEDIEVAL AND MODERN AD1540 - PRESENT

Population and settlement expanded during the post-medieval period, driven by the increasing industrialisation of the Cornish landscape and the significant developments associated with the construction of the turnpike and then the railway in the 19<sup>th</sup> century. The construction of chapels (138088) and infrastructure such as toll houses (176753), railway sheds and buildings (MCO54947) and bridges (172414), reflect these developments in this area. In the immediate locality the historic OS maps shown quarries, mines and engine houses; parts of the *Silver Hill Mine* (40894), which included lead and tin smelting and was succeeded by an arsenic works (40902 and 40903), are located on the site itself. Modern heritage assets include signposts in Perranwell and near Perranwell Station.



FIGURE 6: MAP OF NEARBY HERITAGE ASSETS (SOURCE: CORNWALL AND SCILLY HER).

TABLE 2: TABLE OF NEARBY HERITAGE ASSETS (SEE FIGURE 7) (SOURCE: CORNWALL AND SCILLY HER).

HER No.	Name	Record	Description
9031	Roseland, Bronze Age barrow	Earthwork	SAM 32918. Bowl barrow partially destroyed by railway cutting.
9038	Carnon Valley, stone axe	Findspot	A dolerite Axe was found in Carnon Valley, now in the Institute of Archaeology, London.
18495	Carnon Valley, undated burial	Findspot	The site of a skeleton discovered in March 1823 in the Carnon streamworks. Possibly a contemporary of other skeletons found 33 years previously (18496).
55921	Perranarworthal, Early Medieval extractive pit	Cropmark	A small (15m across) pit-like feature is visible as cropmarks on vertical aerial photographs taken in 1946 lying on the hill-top to the east of Perranarworthal. The site which is considered likely to be of medieval or later origin, was plotted during the Cornwall NMP.
18517	Tredrea, Early Medieval settlement	Documentary	The settlement of Tredrea is first recorded in 1609, but may be of medieval or early medieval origin, the latter being implied by the place-name element 'Tre'; Cornish element for 'estate, farmstead', possibly represented by the second as well as the first element of the name. This site is now occupied by a hotel.
9034	Grenna Farm, medieval field system	Documentary	Fragmentary remains of strip fields south of Grenna Farm, now completely reorganised through boundary removal.
18219	Perranarworthal, Medieval holy well	Extant	Tonkin says that Piran Ar Worthal or Piran Well, a chapelry in Stithians parish, was named after "a strong chalybeate spring, much frequented of late years". The OS record this holy well site under SW73NW. Meyrick suggests it may be situated in Kennall Vale, which seems unlikely as the dedication of the well there is to Our Lady (see 18218.01), or south of Perranarworthal church. He describes a well at this location, in a 'grotto' cut into the rock and built up with masonry and having a stone trough. The well comprises a rock-cut chamber in the hillside, faced in granite masonry with a granite lintel, all of uncertain date. The spring flows from the rear into a pool at the base of the chamber.



HER No.	Name	Record	Description
18478	Perranarworthal, Medieval church	Extant	The parish church of Perranarworthal, dedicated to St Piran, was built in the C15 on the site of a Norman church. Brown notes that part of a Norman tympanum survives. Pevsner describes the one remaining part of the C15 church, the west tower, as being built of granite without buttresses, with supporting angels beneath the pinnacles. Brown notes that the tower is of three stages. The rest of the church was rebuilt in 1882-1884 by JP St Aubyn, retaining only the tower.
18479	Perranarworthal, Medieval cross	Extant	Remains of a cross shaft with incised decoration in the garden of the old vicarage.
18514	Mellingey, Medieval settlement	Documentary	The settlement of Mellingey is first recorded in 1327. The name is Cornish and contains the compound melyn-jy, 'mill-house'. Mellingey is still occupied.
18516	Perranarworthal, Medieval settlement	Documentary	The settlement of Perranarworthal is first recorded in 1180.
38219	Carnon Valley, Medieval and later bridge	Documentary/ Extant	The bridge over Devoran or Restrouguet Creek is recorded in 1469 and named as Carnon Bridge in 1535.
55858	Perranarworthal, medieval field system	Extant	The extant field system to the east of Perranarworthal is considered likely to be of medieval origin (CAU 1994 Cornwall Landscape Assessment). Field boundaries which fit into this extant field pattern are visible as cropmarks on vertical aerial photographs and were plotted during the Cornwall NMP.
55957	Coldwind, Medieval or later field boundary	Cropmark	Plough-levelled field boundaries are visible as cropmarks on vertical aerial photographs on the north-east facing slope above the Carnon River. This area was assessed as being recently enclosed land (post medieval) as part of Cornwall Landscape Assessment (CAU, 1994), however the field pattern is not dissimilar to the anciently enclosed land to the north-east at Grenna Farm and therefore a medieval origin for these field boundaries cannot be ruled out.
40894	Silver Hill, Post Medieval mine	Extant	Hamilton Jenkin records Silver Hill Mine which produced lead but was abandoned in 1838.
40900	Perranwell, Post Medieval blacksmiths workshop	Documentary	A smithy at Perranwell is recorded here on the Tithe Map c1842.
40902	Tarrandean, Post medieval smelting house	Documentary	A tin smelting house at Tarrandean was in operation in 1755 and comprised six furnaces in 1802, but was derelict by 1811.
40903	Tarrandean, Post medieval arsenic works	Documentary	This works set up in 1812 on the site of a former tin smelting house (40902) at Tarrandean that lay at the head of Mellingey Creek, by Richard Edwards, William Williams and William Gregory, marked the beginnings of commercial arsenic production in Britain.
138088	Perranwell, Post Medieval nonconformist chapel	Extant	Wesleyan chapel designed by James Hicks is now converted to a nursery school.
172414	Perranwell, Post Medieval bridge	Extant	Grade II Listed. An early C19 road bridge over a stream at Perranwell is a simple but attractive design. The bridge is unusually low spanning a wide stream that was formerly forded.
176753	Perranwell Station, Post Medieval toll house	Extant	Grade II Listed. The former toll house, situated at a road junction in the village of Perranwell, now converted for use as a domestic garage.
MCO54759	Perranwell, Post Medieval railway bridge	Extant	A bridge carrying the public road over the line of the Cornwall Railway.
MCO54760	Perranwell, Post Medieval goods shed	Extant	The goods shed at Perranwell station is an original Cornwall Railway building of 1863, and is one of the few surviving broad gauge buildings in Cornwall.
MCO54761	Greenwith, Post Medieval railway bridge	Extant	A bridge carrying the line of the Cornwall Railway over the public road.
MCO54947	Perranwell Station, Post Medieval railway station	Extant	Perranwell Station was opened as part of the Cornwall Railway on 24th August 1863.
MCO56129	Carnon Valley, Modern signpost	Extant	A standard cast iron fingerpost survives on the northern side of an unclassified road junction off Old Carnon Hill, in the Carnon Valley.
MCO56747	Perranwell, C20 signpost	Extant	A Visick type 2 fingerpost survives at the junction of Greenwith Hill and Station Road, Perranwell.

\*Only Post Medieval and modern assets within 0.5km have been recorded in this table. In the surrounding area are numerous assets associated with Post-Medieval mining activity.

### 3.2 LIDAR AND AERIAL PHOTOGRAPHY

Processed LiDAR data (Figure 7) shows earthworks immediately to the south of the site that are probably to be associated with one of the *Old Shafts* depicted on the historic OS maps (above). The removed historic boundaries on the site are not visible.

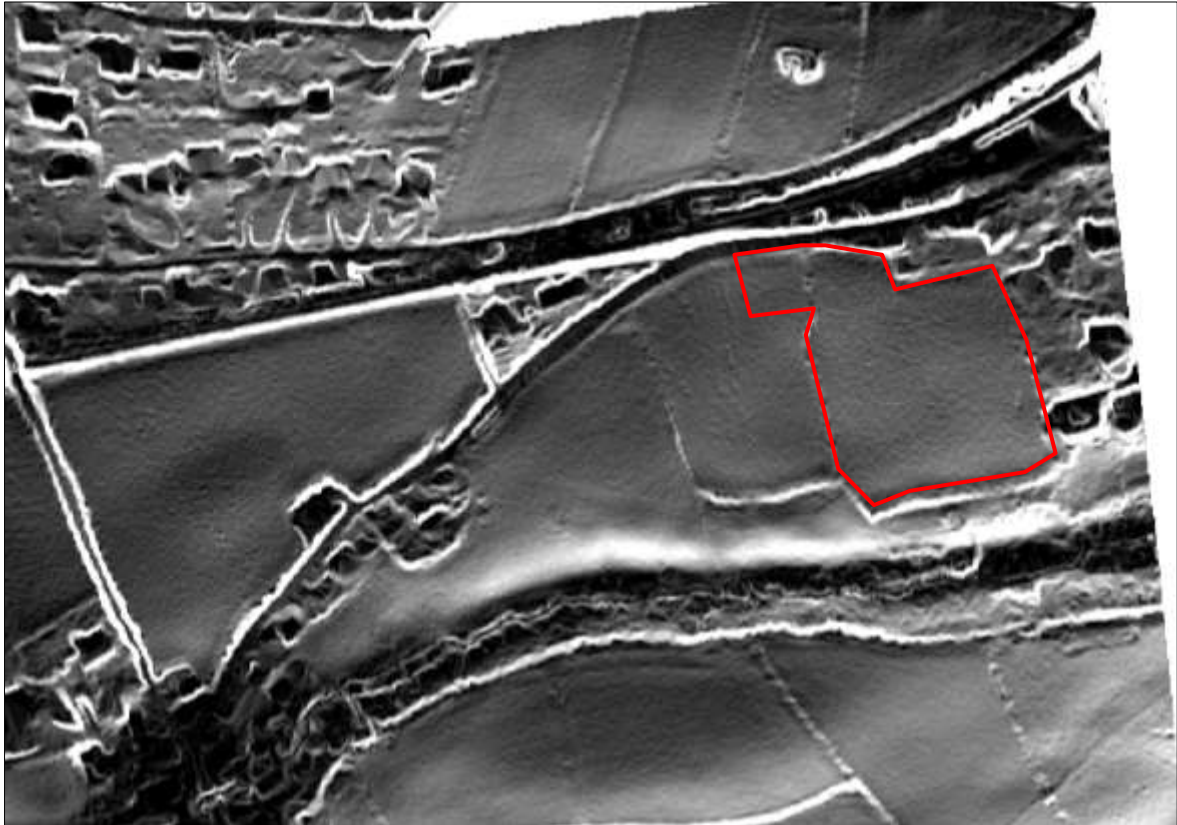


FIGURE 7: IMAGE DERIVED FROM DTM LIDAR DATA, SHOWING THE SITE (CENTRE RIGHT)(PROCESSED USING QGIS VER2.18, TERRAIN ANALYSIS/SLOPE, VERTICAL EXAGGERATION 3.0). DATA: © ENVIRONMENT AGENCY COPYRIGHT AND DATABASE RIGHTS 2017; CONTAINS OS DATA © CROWN COPYRIGHT AND DATABASE RIGHTS 2017; THE SITE INDICATED.

### 3.3 SITE INSPECTION

The site comprises a single large field and the north-eastern corner of the adjacent field. These fields were bounded to the east and west by Cornish hedgebanks. The southern boundary of the site fell away almost vertically, with a stone-faced retaining wall. The northern boundary opens onto the road in the north-west corner, but is defined elsewhere by a bank/retaining wall to the rear of the properties along Station Road. Oak and alder were noted, particularly to the east, but most of the hedgebanks were overgrown with grass, bramble and gorse. At the time of the survey the eastern field was under a rough grass sward; the adjacent field had been ploughed more recently, and the high proportion of rock in the topsoil would suggest a relatively shallow topsoil. This stony material included a reasonably high proportion of medium to large quartz rocks, presumably derived from secondary mineralisation of the bedrock below. Backfilled geotechnical pits were observed along the southern end of the site, close the eastern side and in the centre-west part of the main field. A complement of baseline photographs can be found in Appendix 2.



### 3.4 ARCHAEOLOGICAL POTENTIAL

The archaeological potential of the site can be seen to be fairly *low* overall, but relatively *high* for mining-related deposits or features on the western and southern parts of the site. The stony character of the topsoil would suggest the soils, at least those at the higher, northern end of the site, are relatively shallow and archaeological features or deposits in that area are likely to have been subject to plough damage.

The southern part of the site has the potential for mining related activity including adits, shafts, prospection pits and waste material. A galena lode may cross the site north to south; galena is a lead ore but could also be mined for its associated silver content (hence the name, presumably, of the *Silver Hill Mine*).

## 4.0 GEOPHYSICAL SURVEY

---

### 4.1 INTRODUCTION

An area of c.1.7ha was the subject of a magnetometry (gradiometer) survey. The purpose of this survey was to identify and record magnetic anomalies within the proposed site. While identified anomalies may relate to archaeological deposits and structures the dimensions of recorded anomalies may not correspond directly with any associated features. The following discussion attempts to clarify and characterise the identified anomalies. The survey was undertaken on the 23<sup>rd</sup> of February 2017 by J. Bampton; the survey data was processed by J. Bampton.

### 4.2 METHODOLOGY

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

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 -1 interval (grid a15), by -3 intervals (grid a10), by -2 intervals (all other grids).

Details: 1.6519ha surveyed; Max. 108.28nT, Min. -100.11nT; Standard Deviation 6.41nT, mean 0.15nT, median 0.00nT.

### 4.3 RESULTS

Table 3 with the accompanying Figures 9 and 10 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 1.

TABLE 3: INTERPRETATION OF GRADIOMETER SURVEY DATA.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Moderate negative with flanking positive, probable	Linear	Historic field boundaries	Typical of Cornish hedgebanks these boundaries are present on historic mapping. The north-south anomaly is absent from OS mapping by 1972/3 and the east-west anomaly was removed post-1992 OS mapping. Typical responses of -5nT to -30nT and +4nT to +25nT.
2	Weak negative, probable	Linear	Modern service/pipe-line	Indictative of a small ceramic pipe or plastic cable running from the rear of the property north of the site to a telegraph pole and property (constructed c.1970) east of the site. Responses vary between -5nT and -17nT.
3	Weak-moderate positive, probable	Linear	Drainage channel	Indicative of a cut channel that may have been severely truncated by ploughing. Probably associated with drainage from the property to the north of the site.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
				Responses vary up to c. +20nT.
4	Moderate positive, possible	Ovoid	Tree-throws , pits	Indicative of discrete cut features that may correspond to tree-throws or pits. The examples that are adjacent to Group 1 anomalies are probably tree-throws or associated with disturbance during removal or the boundary. Trees are shown along the historic field boundary on historic mapping. Responses vary between typically c. +20nT and +40nT. A cluster of smaller weaker (c.+16nT) examples in this group forming a circular shape may be associated with Groups 5 and 6 and mineral prospection.
5	Moderate dipolar, possible	Sub-rectangular	Possible geotechnical pits or mineral prospection/ventilation shafts	This group may equate to the geotechnical pits identified during the survey and in the geophysical data; however, their response signatures differ slightly from the other anomalies identified as such. These may indicate ventilation shafts or prospection pits associated with the 'Old Shafts' depicted on historic mapping at the southern end of the site. Responses vary from between +35nT to -50nT.
6	Moderate positive, probable	Ovoid	Mining activity, shaft	An 'Old Shaft' is depicted on the OS 1 <sup>st</sup> edition at this location. It is probable that the area of magnetic disturbance immediately north of this anomaly is associated with it. Response of c.+57nT. Possibly associated with Groups 5 and 7.
7	Weak positive, possible	Amorphous	Geological variation or mining prospection	Weak magnetic variation usually indicative of geological variation. However, an 'Old Shaft' is depicted on historic mapping south of this anomaly and it may indicate an exploited lode close to the surface. Response of c.+12nT.
8	Weak negative, probable	Linear	Trackway	Indicative of compacted material. A track is shown on historic mapping along this boundary and this may indicate that it existed on this side of the boundary. Response of c.-10nT.

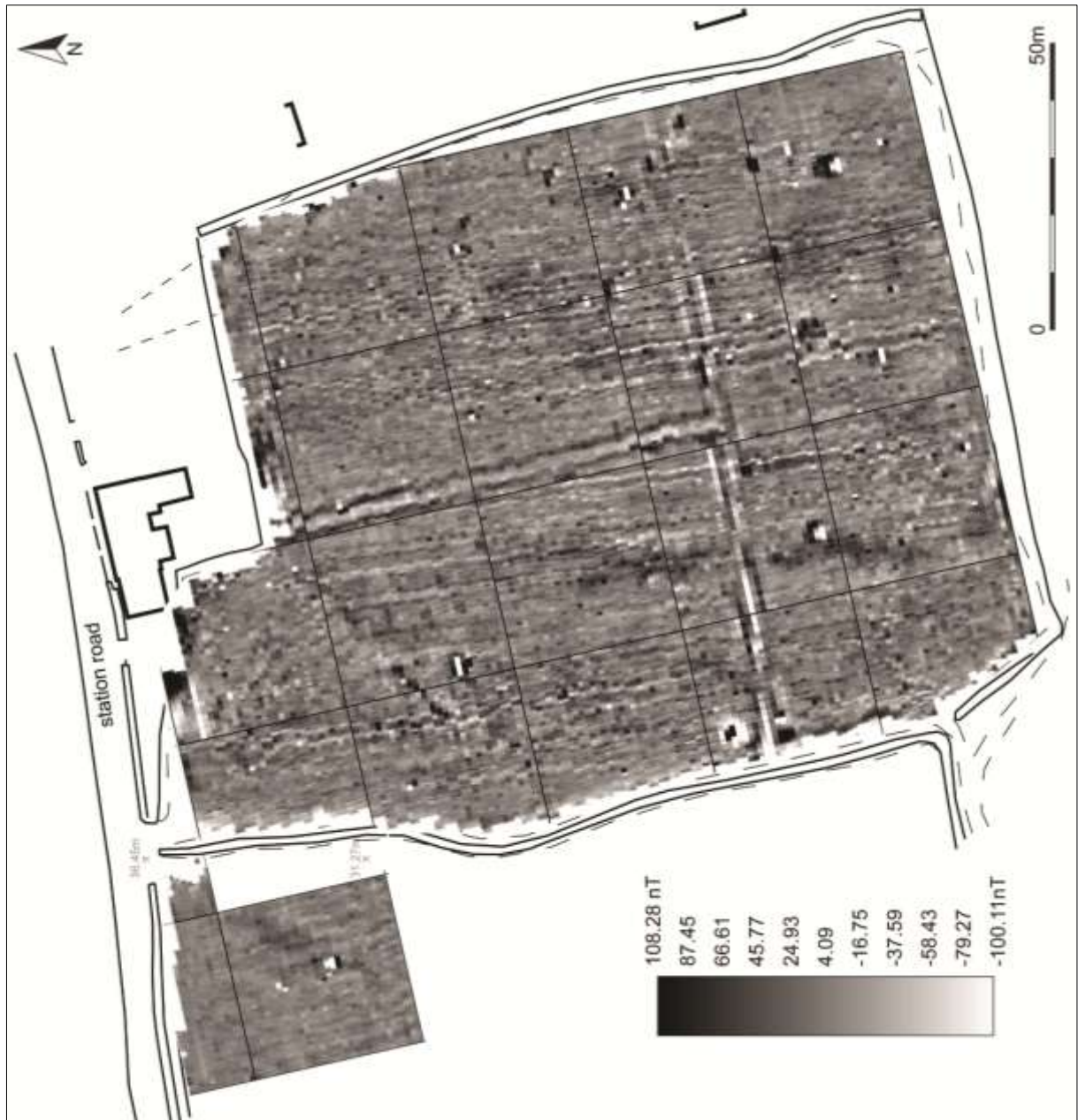


FIGURE 8: SHADE PLOT OF GRADIOMETER SURVEY DATA; MINIMAL PROCESSING.

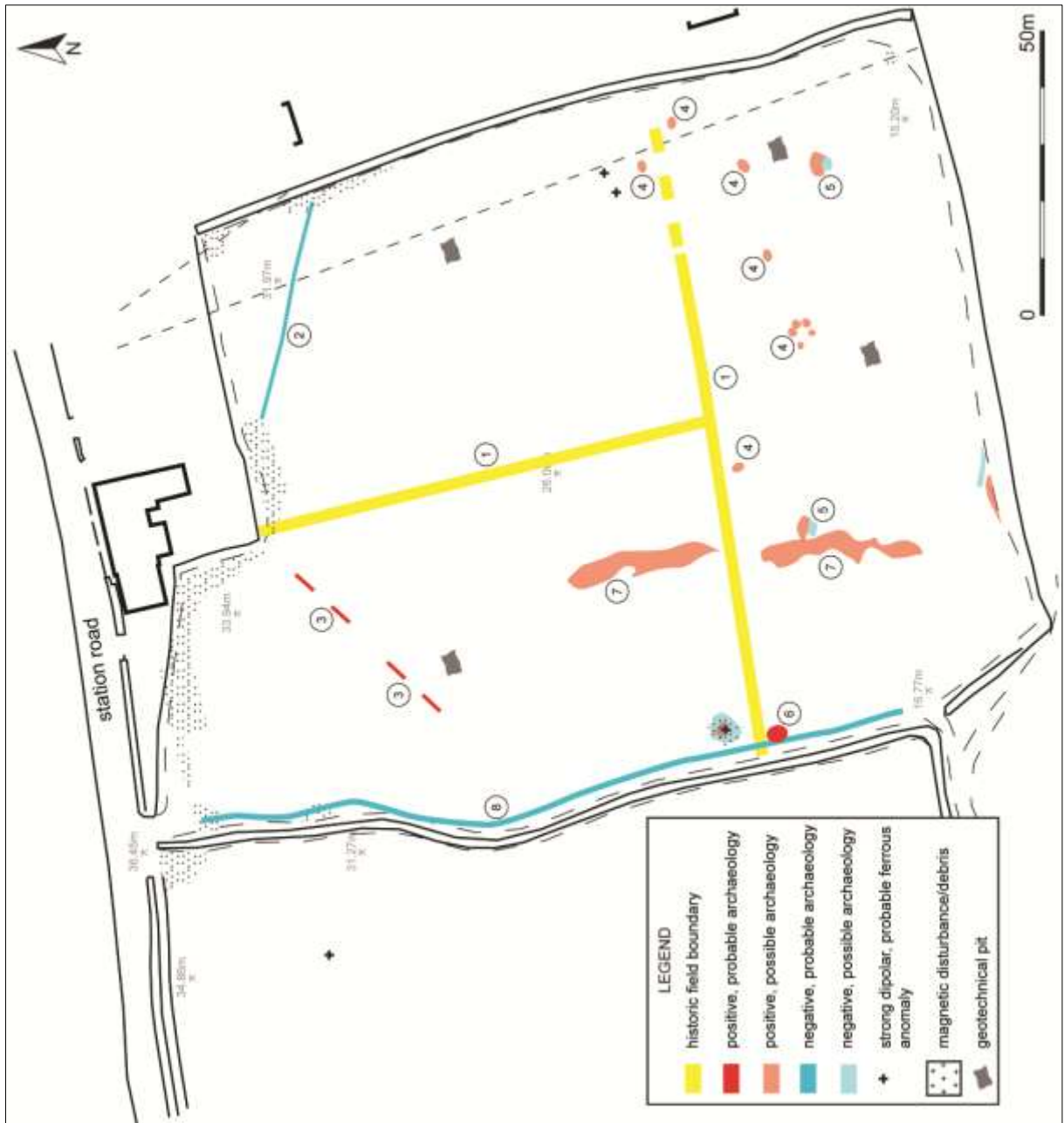


FIGURE 9: INTERPRETATION OF GRADIOMETER SURVEY DATA.

#### 4.4 DISCUSSION

The survey identified eight groups of anomalies. Most of these anomalies relate, or are likely to relate, to modern and historic features with some anomalies possibly associated with mining activity across the southern half of the site. Instances of ferrous objects were also evident in the survey, some within back-filled geotechnical pits. The survey data indicates the site has been ploughed, and this ploughing activity, aligned with the slope and approximately north-south, may obscure land drains that run in the same direction. Cartographic and visual sources supporting the discussion and comments can be seen in the *Cartographic Development* section of this report (Section 2.2).

Group 1 represents moderate (15nT to -30nT) negative linear anomalies, flanked by moderate (+4nT to +25nT) linear anomalies, and are indicative of Cornish hedgebanks. They equate to historic field boundaries removed in the 20<sup>th</sup> century. OS mapping indicates that the north-south aligned boundary was removed by the early 1970s, and that the east-west aligned boundary was removed sometime after 1992.

Group 2 represent a weak (-5nT to -17nT) negative linear anomaly indicative of a modern plastic or small ceramic service pipe. It runs between two c.1970s dwellings via a telegraph pole along the eastern edge of the site.

Group 3 represents a weak-moderate (up to c.+20nT) positive linear anomaly indicative of a cut feature such as a ditch. It is probably a drainage channel or soakaway associated with the property on the north side of the site. It may have been truncated by ploughing and have fed into land drains that appear similar to- or have been obscured by ploughing.

Group 4 represents a series of moderate (c.+20nT to +40nT) positive oval anomalies that are indicative of discrete cut features such as pits, or possibly tree-throws. Some of these are located close to removed historic field boundaries and it is possible they were generated when the trees along this boundary were removed and the hedgebank destroyed. A cluster of smaller weaker (c.+16nT) examples in this group that appear to conform to a circular shape might be associated with Groups 5 and 6, which form a line across the site and reflect mineral prospecting/mining activity.

Group 5 represents two moderate (c.+35nT to -50nT) dipolar sub-rectangular anomalies indicative of an area of disturbed ground. These are in similar locations and responses are similar to identified geotechnical pits. If these anomalies are not geotechnical pits they may be areas of disturbed ground, such as small bonfires, prospecting pits or patches of waste material. It is possible that these are geotechnical pits and that the variation in their response to the other examples is due to the nature of the excavated underlying geology and the opening and back-filling of the pit. However, taken together with a cluster of Group 4 anomalies and the anomalies of Group 6, they form a line across the site and thus may be associated with mining activity related to the *Old Shafts* shown on historic OS maps (above). Group 5 may represent ventilation shafts or mineral prospecting. The response of Group 5 could also indicate small bonfire events.

Group 6 represents a moderate (c.+57nT) oval anomaly indicative of a discrete cut feature. It is close to the site of the *Old Shaft* within its own enclosure depicted on the 1888 1<sup>st</sup> edition OS map. The geophysical survey did not pick up the enclosure, which may lie within an area of magnetic disturbance immediately north of this.

Group 7 represents a weak (c.+12nT) amorphous anomaly that would usually be indicative of geological variation, perhaps exacerbated by ploughing. However, its potential relationship to an



*Old Shaft*, and its proximity to a Group 5 anomaly, may indicate sub-surface mineral extraction close to the surface.

Group 8 represents a weak (c.-10nT) linear anomaly indicative of compacted ground located parallel to the western site boundary; this probably relates to the metalling of a track shown on tithe map and the later OS maps.

## 5.0 HERITAGE IMPACT APPRAISAL

---

### 5.1 HERITAGE IMPACT APPRAISAL - OVERVIEW

The purpose of heritage impact appraisal is twofold: Firstly, to understand – insofar as is reasonable practicable and in proportion to the importance of the asset – the significance of a historic building, complex, area or archaeological monument (the ‘heritage asset’). Secondly, to assess the likely effect of a proposed development on the heritage asset (direct impact) and its setting (indirect impact). This methodology employed in this appraisal is based on the staged approach advocated in *The Setting of Heritage Assets* (GPA3 Historic England 2015), used in conjunction with the ICOMOS (2011) and DoT (DMRB vol.11; WEBTAG) guidance. Sections 5.2-5.6 discuss policy, concepts and approach; section 5.7 covers the methodology, and section 5.8 individual assessments.

### 5.2 NATIONAL POLICY

General policy and guidance for the conservation of the historic environment are now contained within the *National Planning Policy Framework* (Department for Communities and Local Government 2012). The relevant guidance is reproduced below:

*Paragraph 128*

*In determining applications, local planning authorities should require the applicant to describe the significance of any heritage assets affected, including the contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should be consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which a development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*

*Paragraph 129*

*Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset’s conservation and any aspect of the proposal.*

A further key document is the Planning (Listed Buildings and Conservation Areas) Act 1990, in particular section 66(1), which provides *statutory protection* to the setting of Listed buildings:

*In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.*

### 5.3 CULTURAL VALUE – DESIGNATED HERITAGE ASSETS

The majority of the most important (‘nationally important’) heritage assets are protected through *designation*, with varying levels of statutory protection. These assets fall into one of six categories,

although designations often overlap, so a Listed early medieval cross may also be Scheduled, lie within the curtilage of Listed church, inside a Conservation Area, and on the edge of a Registered Park and Garden that falls within a world Heritage Site.

### 5.3.1 LISTED BUILDINGS

A Listed building is an occupied dwelling or standing structure which is of special architectural or historical interest. These structures are found on the *Statutory List of Buildings of Special Architectural or Historic Interest*. The status of Listed buildings is applied to 300,000-400,000 buildings across the United Kingdom. Recognition of the need to protect historic buildings began after the Second World War, where significant numbers of buildings had been damaged in the county towns and capitals of the United Kingdom. Buildings that were considered to be of 'architectural merit' were included. The Inspectorate of Ancient Monuments supervised the collation of the list, drawn up by members of two societies: The Royal Institute of British Architects and the Society for the Protection of Ancient Buildings. Initially the lists were only used to assess which buildings should receive government grants to be repaired and conserved if damaged by bombing. The *Town and Country Planning Act 1947* formalised the process within England and Wales, Scotland and Ireland following different procedures. Under the 1979 *Ancient Monuments and Archaeological Areas Act* a structure cannot be considered a Scheduled Monument if it is occupied as a dwelling, making a clear distinction in the treatment of the two forms of heritage asset. Any alterations or works intended to a Listed Building must first acquire Listed Building Consent, as well as planning permission. Further phases of 'listing' were rolled out in the 1960s, 1980s and 2000s; English Heritage advise on the listing process and administer the procedure, in England, as with the Scheduled Monuments.

Some exemption is given to buildings used for worship where institutions or religious organisations (such as the Church of England) have their own permissions and regulatory procedures. Some structures, such as bridges, monuments, military structures and some ancient structures may also be Scheduled as well as Listed. War memorials, milestones and other structures are included in the list, and more modern structures are increasingly being included for their architectural or social value.

Buildings are split into various levels of significance: Grade I (2.5% of the total) representing buildings of exceptional (international) interest; Grade II\* (5.5% of the total) representing buildings of particular (national) importance; Grade II (92%) buildings are of merit and are by far the most widespread. Inevitably, accuracy of the Listing for individual structures varies, particularly for Grade II structures; for instance, it is not always clear why some 19<sup>th</sup> century farmhouses are Listed while others are not, and differences may only reflect local government boundaries, policies and individuals.

Other buildings that fall within the curtilage of a Listed building are afforded some protection as they form part of the essential setting of the designated structure, e.g. a farmyard of barns, complexes of historic industrial buildings, service buildings to stately homes etc. These can be described as having *group value*.

### 5.3.2 VALUE AND IMPORTANCE

While every heritage asset, designated or otherwise, has some intrinsic merit, the act of designation creates a hierarchy of importance that is reflected by the weight afforded to their preservation and enhancement within the planning system. The system is far from perfect, impaired by an imperfect understanding of individual heritage assets, but the value system that has evolved does provide a useful guide to the *relative* importance of heritage assets. Provision is also made for heritage assets where value is not recognised through designation (e.g. undesignated 'monuments of Schedulable quality and importance' should be regarded as being of *high value*); equally, there are designated monuments and structures of *low* relative merit.

TABLE 4: THE HIERARCHY OF VALUE/IMPORTANCE (BASED ON THE DMRB VOL.11 TABLES 5.1, 6.1 & 7.1).

Hierarchy of Value/Importance	
Very High	Structures inscribed as of universal importance as World Heritage Sites; Other buildings of recognised international importance; World Heritage Sites (including nominated sites) with archaeological remains; Archaeological assets of acknowledged international importance; Archaeological assets that can contribute significantly to international research objectives; World Heritage Sites inscribed for their historic landscape qualities; Historic landscapes of international value, whether designated or not; Extremely well preserved historic landscapes with exceptional coherence, time-depth, or other critical factor(s).
High	Scheduled Monuments with standing remains; Grade I and Grade II* (Scotland: Category A) Listed Buildings; Other Listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the Listing grade; Conservation Areas containing very important buildings; Undesignated structures of clear national importance; Undesignated assets of Schedulable quality and importance; Assets that can contribute significantly to national research objectives. Designated historic landscapes of outstanding interest; Undesignated landscapes of outstanding interest; Undesignated landscapes of high quality and importance, demonstrable national value; Well-preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factor(s).
Medium	Grade II (Scotland: Category B) Listed Buildings; Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations; Conservation Areas containing buildings that contribute significantly to its historic character; Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures); Designated or undesignated archaeological assets that contribute to regional research objectives; Designated special historic landscapes; Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value; Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factor(s).
Low	Locally Listed buildings (Scotland Category C(S) Listed Buildings); Historic (unlisted) buildings of modest quality in their fabric or historical association; Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures); Designated and undesignated archaeological assets of local importance; Archaeological assets compromised by poor preservation and/or poor survival of contextual associations; Archaeological assets of limited value, but with potential to contribute to local research objectives; Robust undesignated historic landscapes; Historic landscapes with importance to local interest groups; Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Buildings of no architectural or historical note; buildings of an intrusive character; Assets with very little or no surviving archaeological interest; Landscapes with little or no significant historical interest.
Unknown	Buildings with some hidden (i.e. inaccessible) potential for historic significance; The importance of the archaeological resource has not been ascertained.

#### 5.4 CONCEPTS – CONSERVATION PRINCIPLES

In making an assessment, this document adopts the conservation values (*evidential, historical, aesthetic and communal*) laid out in *Conservation Principles* (English Heritage 2008), and the concepts of *authenticity* and *integrity* as laid out in the guidance on assessing World Heritage Sites (ICOMOS 2011). This is in order to determine the relative importance of *setting* to the significance of a given heritage asset.

##### 5.4.1 EVIDENTIAL VALUE

*Evidential value* (or research potential) is derived from the potential of a structure or site to provide physical evidence about past human activity, and may not be readily recognised or even visible. This is the primary form of data for periods without adequate written documentation. This is the least equivocal value: evidential value is absolute; all other ascribed values (see below) are subjective. However,

#### 5.4.2 HISTORICAL VALUE

*Historical value* (narrative) is derived from the ways in which past people, events and aspects of life can be connected via a place to the present; it can be *illustrative* or *associative*.

*Illustrative value* is the visible expression of evidential value; it has the power to aid interpretation of the past through making connections with, and providing insights into, past communities and their activities through a shared experience of place. Illustrative value tends to be greater if a place features the first or only surviving example of a particular innovation of design or technology.

*Associative value* arises from a connection to a notable person, family, event or historical movement. It can intensify understanding by linking the historical past to the physical present, always assuming the place bears any resemblance to its appearance at the time. Associational value can also be derived from known or suspected links with other monuments (e.g. barrow cemeteries, church towers) or cultural affiliations (e.g. Methodism).

Buildings and landscapes can also be associated with literature, art, music or film, and this association can inform and guide responses to those places.

Historical value depends on sound identification and the direct experience of physical remains or landscapes. Authenticity can be strengthened by change, being a living building or landscape, and historical values are harmed only where adaptation obliterates or conceals them. The appropriate use of a place – e.g. a working mill, or a church for worship – illustrates the relationship between design and function and may make a major contribution to historical value. Conversely, cessation of that activity – e.g. conversion of farm buildings to holiday homes – may essentially destroy it.

#### 5.4.3 AESTHETIC VALUE

*Aesthetic value* (emotion) is derived from the way in which people draw sensory and intellectual stimulation from a place or landscape. Value can be the result of *conscious design*, or the *fortuitous outcome* of landscape evolution; many places combine both aspects, often enhanced by the passage of time.

*Design value* relates primarily to the aesthetic qualities generated by the conscious design of a building, structure or landscape; it incorporates composition, materials, philosophy and the role of patronage. It may have associational value, if undertaken by a known architect or landscape gardener, and its importance is enhanced if it is seen as innovative, influential or a good surviving example. Landscape parks, country houses and model farms all have design value. The landscape is not static, and a designed feature can develop and mature, resulting in the ‘patina of age’.

Some aesthetic value developed *fortuitously* over time as the result of a succession of responses within a particular cultural framework e.g. the seemingly organic form of an urban or rural landscape or the relationship of vernacular buildings and their materials to the landscape. Aesthetic values are where a proposed development usually have their most pronounced impact: the indirect effects of most developments are predominantly visual or aural, and can extend many kilometres from the site itself. In many instances the impact of a development is incongruous, but that is itself an aesthetic response, conditioned by prevailing cultural attitudes to what the historic landscape should look like.

#### 5.4.4 COMMUNAL VALUE

*Communal value* (togetherness) is derived from the meaning a place holds for people, and may be closely bound up with historical/associative and aesthetic values; it can be *commemorative*, *symbolic*, *social* or *spiritual*.

*Commemorative and symbolic value* reflects the meanings of a place to those who draw part of their identity from it, or who have emotional links to it e.g. war memorials. Some buildings or places (e.g. the Palace of Westminster) can symbolise wider values. Other places (e.g. Porton Down Chemical Testing Facility) have negative or uncomfortable associations that nonetheless have meaning and significance to some and should not be forgotten. *Social value* need not have any relationship to surviving fabric, as it is the continuity of function that is important. *Spiritual value* is attached to places and can arise from the beliefs of a particular religion or past or contemporary perceptions of the spirit of place. Spiritual value can be ascribed to places sanctified by hundreds of years of veneration or worship, or wild places with few signs of modern life. Value is dependent on the perceived survival of historic fabric or character, and can be very sensitive to change. The key aspect of communal value is that it brings specific groups of people together in a meaningful way.

#### 5.4.5 AUTHENTICITY

Authenticity, as defined by UNESCO (2015, no.80), is the ability of a property to convey the attributes of the outstanding universal value of the property. 'The ability to understand the value attributed to the heritage depends on the degree to which information sources about this value may be understood as credible or truthful'. Outside of a World Heritage Site, authenticity may usefully be employed to convey the sense a place or structure is a truthful representation of the thing it purports to portray. Converted farmbuildings, for instance, survive in good condition, but are drained of the authenticity of a working farm environment.

#### 5.4.6 INTEGRITY

Integrity, as defined by UNESCO (2015, no.88), is the measure of wholeness or intactness of the cultural heritage and its attributes. Outside of a World Heritage Site, integrity can be taken to represent the survival and condition of a structure, monument or landscape. The intrinsic value of those examples that survive in good condition is undoubtedly greater than those where survival is partial, and condition poor.

#### 5.4.7 SUMMARY

As indicated, individual developments have a minimal or tangential effect on most of the heritage values outlined above, largely because almost all effects are indirect. The principal values in contention are aesthetic/designed and, to a lesser degree aesthetic/fortuitous. There are also clear implications for other value elements (particularly historical and associational, communal and spiritual), where views or sensory experience is important. As ever, however, the key element here is not the intrinsic value of the heritage asset, nor the impact on setting, but the relative contribution of setting to the value of the asset.

### 5.5 SETTING – THE SETTING OF HERITAGE ASSETS

The principle guidance on this topic is contained within two publications: *The Setting of Heritage Assets* (Historic England 2015) and *Seeing History in the View* (English Heritage 2011). While interlinked and complementary, it is useful to consider heritage assets in terms of their *setting* i.e. their immediate landscape context and the environment within which they are seen and experienced, and their *views* i.e. designed or fortuitous vistas experienced by the visitor when at the heritage asset itself, or those that include the heritage asset. This corresponds to the experience of its wider landscape setting.

Where the impact of a proposed development is largely indirect, *setting* is the primary consideration of any HIA. It is a somewhat nebulous and subjective assessment of what does,



should, could or did constitute the lived experience of a monument or structure. The following extracts are from the Historic England publication *The Setting of Heritage Assets* (2015, 2 & 4):

*The NPPF makes it clear that the setting of a heritage asset is the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve.*

*Setting is not a heritage asset, nor a heritage designation. Its importance lies in what it contributes to the significance of the heritage asset. This depends on a wide range of physical elements within, as well as perceptual and associational attributes, pertaining to the heritage asset's surroundings.*

*While setting can be mapped in the context of an individual application or proposal, it does not have a fixed boundary and cannot be definitively and permanently described for all time as a spatially bounded area or as lying within a set distance of a heritage asset because what comprises a heritage asset's setting may change as the asset and its surroundings evolve or as the asset becomes better understood or due to the varying impacts of different proposals.*

The HIA below sets out to determine the magnitude of the effect and the sensitivity of the heritage asset to that effect. The fundamental issue is that proximity and visual and/or aural relationships may affect the experience of a heritage asset, but if setting is tangential to the significance of that monument or structure, then the impact assessment will reflect this. This is explored in more detail below.

#### 5.5.1 LANDSCAPE CONTEXT

The determination of *landscape context* is an important part of the assessment process. This is the physical space within which any given heritage asset is perceived and experienced. The experience of this physical space is related to the scale of the landform, and modified by cultural and biological factors like field boundaries, settlements, trees and woodland. Together, these determine the character and extent of the setting.

Landscape context is based on topography, and can vary in scale from the very small – e.g. a narrow valley where views and vistas are restricted – to the very large – e.g. wide valleys or extensive upland moors with 360° views. Where very large landforms are concerned, a distinction can be drawn between the immediate context of an asset (this can be limited to a few hundred metres or less, where cultural and biological factors impede visibility and/or experience), and the wider context (i.e. the wider landscape within which the asset sits).

When new developments are introduced into a landscape, proximity alone is not a guide to magnitude of effect. Dependant on the nature and sensitivity of the heritage asset, the magnitude of effect is potentially much greater where the proposed development is to be located within the landscape context of a given heritage asset. Likewise, where the proposed development would be located outside the landscape context of a given heritage asset, the magnitude of effect would usually be lower. Each case is judged on its individual merits, and in some instances the significance of an asset is actually greater outside of its immediate landscape context, for example, where church towers function as landmarks in the wider landscape.

#### 5.5.2 VIEWS

Historic and significant views are the associated and complementary element to setting, but can be considered separately as developments may appear in a designed view without necessarily falling within the setting of a heritage asset *per se*. As such, significant views fall within the aesthetic value of a heritage asset, and may be *designed* (i.e. deliberately conceived and arranged, such as within parkland or an urban environment) or *fortuitous* (i.e. the graduated development of a landscape 'naturally' brings forth something considered aesthetically pleasing,

or at least impressive, as with particular rural landscapes or seascapes), or a combination of both (i.e. the *patina of age*, see below). The following extract is from the English Heritage publication *Seeing History in the View* (2011, 3):

*Views play an important part in shaping our appreciation and understanding of England's historic environment, whether in towns or cities or in the countryside. Some of those views were deliberately designed to be seen as a unity. Much more commonly, a significant view is a historical composite, the cumulative result of a long process of development.*

*The Setting of Heritage Assets* (2015, 3) lists a number of instances where views contribute to the particular significance of a heritage asset:

- Views where relationships between the asset and other historic assets or places or natural features are particularly relevant;
- Views with historical associations, including viewing points and the topography of battlefields;
- Views where the composition within the view was a fundamental aspect of the design or function of the heritage asset;
- Views between heritage assets and natural or topographic features, or phenomena such as solar and lunar events;
- Views between heritage assets which were intended to be seen from one another for aesthetic, functional, ceremonial or religious reasons, such as military or defensive sites, telegraphs or beacons, Prehistoric funerary and ceremonial sites.

On a landscape scale, views, taken in the broadest sense, are possible from anywhere to anything, and each may be accorded an aesthetic value according to subjective taste. Given that terrain, the biological and built environment, and public access restrict our theoretical ability to see anything from anywhere, in this assessment the term *principal view* is employed to denote both the deliberate views created within designed landscapes, and those fortuitous views that may be considered of aesthetic value and worth preserving. It should be noted, however, that there are distance thresholds beyond which perception and recognition fail, and this is directly related to the scale, height, massing and nature of the heritage asset in question. For instance, beyond 2km the Grade II cottage comprises a single indistinct component within the wider historic landscape, whereas at 5km or even 10km a large stately home or castle may still be recognisable. By extension, where assets cannot be seen or recognised i.e. entirely concealed within woodland, or too distant to be distinguished, then visual harm to setting is moot. To reflect this emphasis on recognition, the term *landmark asset* is employed to denote those sites where the structure (e.g. church tower), remains (e.g. earthwork ramparts) or – in some instances – the physical character of the immediate landscape (e.g. a distinctive landform like a tall domed hill) make them visible on a landscape scale. In some cases, these landmark assets may exert landscape *primacy*, where they are the tallest or most obvious man-made structure within line-of-sight. However, this is not always the case, typically where there are numerous similar monuments (multiple engine houses in mining areas, for instance) or where modern developments have overtaken the heritage asset in height and/or massing.

Yet visibility alone is not a clear guide to visual impact. People perceive size, shape and distance using many cues, so context is critically important. For instance, research on electricity pylons (Hull & Bishop 1988) has indicated scenic impact is influenced by landscape complexity: the visual impact of pylons is less pronounced within complex scenes, especially at longer distances, presumably because they are less of a focal point and the attention of the observer is diverted. There are many qualifiers that serve to increase or decrease the visual impact of a proposed development (see Table 2), some of which are seasonal or weather-related.

Thus the principal consideration of assessment of indirect effects cannot be visual impact *per se*. It is an assessment of the likely magnitude of effect, the importance of setting to the significance of the heritage asset, and the sensitivity of that setting to the visual or aural intrusion of the proposed development. The schema used to guide assessments is shown in Table 5 (below).

## 5.6 TYPE AND SCALE OF IMPACT

The effect of a proposed development on a heritage asset can be direct (i.e. the designated structure itself is being modified or demolished, the archaeological monument will be built over), or indirect (e.g. a housing estate built in the fields next to a Listed farmhouse, and wind turbine erected near a hillfort etc.); in the latter instance the principal effect is on the setting of the heritage asset. A distinction can be made between construction and operational phase effects. Individual developments can affect multiple heritage assets (aggregate impact), and contribute to overall change within the historic environment (cumulative impact).

**Construction phase:** construction works have direct, physical effects on the buried archaeology of a site, and a pronounced but indirect effect on neighbouring properties. Direct effects may extend beyond the nominal footprint of a site e.g. where related works or site compounds are located off-site. Indirect effects are both visual and aural, and may also affect air quality, water flow and traffic in the local area.

**Operational phase:** the operational phase of a development is either temporary (e.g. wind turbine or mobile phone mast) or effectively permanent (housing development or road scheme). The effects at this stage are largely indirect, and can be partly mitigated over time through provision of screening. Large development would have an effect on historic landscape character, as they transform areas from one character type (e.g. agricultural farmland) into another (e.g. suburban).

**Cumulative Impact:** a single development will have a physical and a visual impact, but a second and a third site in the same area will have a synergistic and cumulative impact above and beyond that of a single site. The cumulative impact of a proposed development is particularly difficult to estimate, given the assessment must take into consideration operational, consented and proposals in planning.

**Aggregate Impact:** a single development will usually affect multiple individual heritage assets. In this assessment, the term aggregate impact is used to distinguish this from cumulative impact. In essence, this is the impact on the designated parts of the historic environment as a whole.

### 5.6.1 SCALE OF IMPACT

The effect of development and associated infrastructure on the historic environment can include positive as well as negative outcomes. However, all development changes the character of a local environment, and alters the character of a building, or the setting within which it is experienced. change is invariably viewed as negative, particularly within respect to larger developments; thus while there can be beneficial outcomes (e.g. positive/moderate), there is a presumption here that, as large and inescapably modern intrusive visual actors in the historic landscape, the impact of a development will almost always be **neutral** (i.e. no impact) or **negative** i.e. it will have a **detrimental impact** on the setting of ancient monuments and protected historic buildings.

This assessment incorporates the systematic approach outlined in the ICOMOS and DoT guidance (see Tables 3-4), used to complement and support the more narrative but subjective approach advocated by Historic England (see Table 5). This provides a useful balance between rigid logic and nebulous subjectivity (e.g. the significance of effect on a Grade II Listed building can never be greater than moderate/large; an impact of negative/substantial is almost never achieved). This is in adherence with GPA3 (2015, 7).

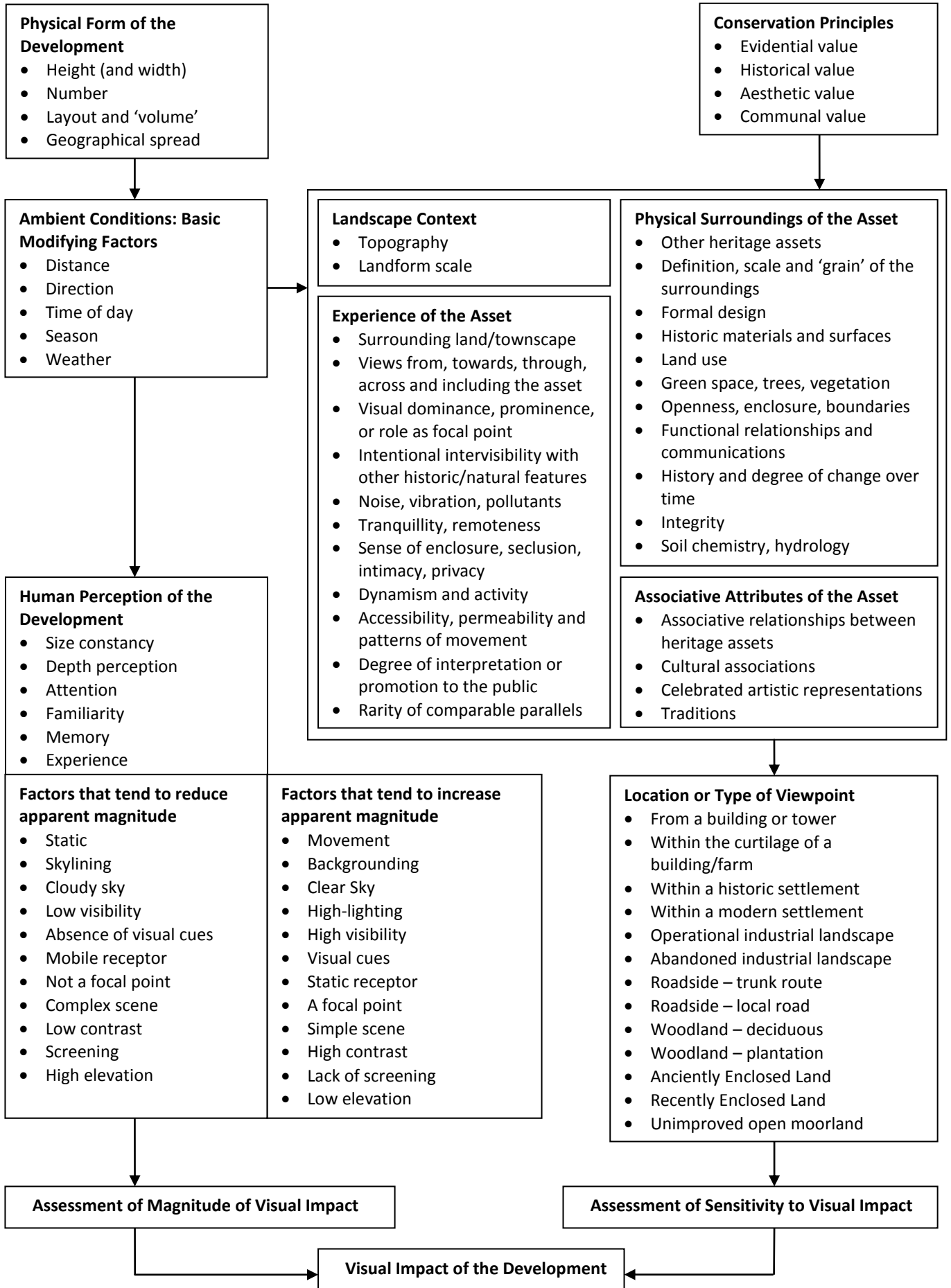


TABLE 5: THE CONCEPTUAL MODEL FOR VISUAL IMPACT ASSESSMENT PROPOSED BY THE UNIVERSITY OF NEWCASTLE (2002, 63), MODIFIED TO INCLUDE ELEMENTS OF ASSESSMENT STEP 2 FROM THE SETTING OF HERITAGE ASSETS (HISTORIC ENGLAND 2015, 9).

TABLE 6: MAGNITUDE OF IMPACT (BASED ON DMRB VOL.11 TABLES 5.3, 6.3 AND 7.3).

Factors in the Assessment of Magnitude of Impact – Buildings and Archaeology	
Major	Change to key historic building elements, such that the resource is totally altered; Change to most or all key archaeological materials, so that the resource is totally altered; Comprehensive changes to the setting.
Moderate	Change to many key historic building elements, the resource is significantly modified; Changes to many key archaeological materials, so that the resource is clearly modified; Changes to the setting of an historic building or asset, such that it is significantly modified.
Minor	Change to key historic building elements, such that the asset is slightly different; Changes to key archaeological materials, such that the asset is slightly altered; Change to setting of an historic building, such that it is noticeably changed.
Negligible	Slight changes to elements of a heritage asset or setting that hardly affects it.
No Change	No change to fabric or setting.
Factors in the Assessment of Magnitude of Impact – Historic Landscapes	
Major	Change to most or all key historic landscape elements, parcels – components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to historic landscape character unit.
Moderate	Changes to many key historic landscape elements or components, visual change to many key aspects of the historic landscape, noticeable differences in noise quality, considerable changes to use or access; resulting in moderate changes to historic landscape character.
Minor	Changes to few key historic landscape elements, or components, slight visual changes to few key aspects of historic landscape, limited changes to noise levels or sound quality; slight changes to use or access: resulting in minor changes to historic landscape character.
Negligible	Very minor changes to key historic landscape elements, parcels or components, virtually unchanged visual effects, very slight changes in noise levels or sound quality; very slight changes to use or access; resulting in a very small change to historic landscape character.
No Change	No change to elements, parcels or components; no visual or audible changes; no changes arising from in amenity or community factors.

TABLE 7: SIGNIFICANCE OF EFFECTS MATRIX (BASED ON DRMB VOL.11 TABLES 5.4, 6.4 AND 7.4; ICOMOS 2011, 9-10).

Value of Assets	Magnitude of Impact (positive or negative)				
	No Change	Negligible	Minor	Moderate	Major
Very High	Neutral	Slight	Moderate/Large	Large/Very Large	Very Large
High	Neutral	Slight	Moderate/Slight	Moderate/Large	Large/Very Large
Medium	Neutral	Neutral/Slight	Slight	Moderate	Moderate/Large
Low	Neutral	Neutral/Slight	Neutral/Slight	Slight	Slight/Moderate
Negligible	Neutral	Neutral	Neutral/Slight	Neutral/Slight	Slight

TABLE 8: SCALE OF IMPACT.

Scale of Impact	
<i>Neutral</i>	No impact on the heritage asset.
<i>Negligible</i>	Where the developments may be visible or audible, but would not affect the heritage asset or its setting, due to the nature of the asset, distance, topography, or local blocking.
<i>Negative/minor</i>	Where the development would have an effect on the heritage asset or its setting, but that effect is restricted due to the nature of the asset, distance, or screening from other buildings or vegetation.
<i>Negative/moderate</i>	Where the development would have a pronounced impact on the heritage asset or its setting, due to the sensitivity of the asset and/or proximity. The effect may be ameliorated by screening or mitigation.
<i>Negative/substantial</i>	Where the development would have a severe and unavoidable effect on the heritage asset or its setting, due to the particular sensitivity of the asset and/or close physical proximity. Screening or mitigation could not ameliorate the effect of the development in these instances.

## 5.7 METHODOLOGY

The methodology adopted in this document is based on that outlined in *The Setting of Heritage Assets* (GPA3 Historic England 2015), with reference to ICOMOS (2011) and DoT (DMRB, WEBTAG) guidance. The assessment of effect at this stage of a development is an essentially subjective one, but one based on the experience and professional judgement of the authors.

## 5.8 IDENTIFY THE HERITAGE ASSETS

In this instance, only a single heritage asset is considered: the Grade II Listed Baytree Lodge located north-east of the site. There are other assets in the local area (e.g. Toll House at SW781368; the cluster of Listed buildings in Perranwell); but it is adjudged that the principal impact will fall on a single asset – Baytree Lodge – and this assessment will focus on this building.

### 5.8.1 LESSER GENTRY SEATS

*Older houses with an element of formal planning; may survive as farmhouses*

These structures have much in common with the greater Houses, but are more usually Grade II Listed structures. There were many more minor landed gentry and thus a great number of minor Houses. Not all landed families prospered; for those that did, they built Houses with architectural pretensions with elements of formal planning. The sensitivity of those structures to the visual impact of a development would be commensurable to those of the great Houses, albeit on a more restricted scale. For those families that did not prosper, or those who owned multiple gentry residences, their former gentry seat may survive as farmhouse within a curtilage of later farm buildings. In these instances, traces of former grandeur may be in evidence, as may be elements of landscape planning; however, subsequent developments will often have concealed or removed most of the evidence. Therefore the sensitivity of these sites to the visual impact of a development is less pronounced.

What is important and why

The lesser houses are examples of regional or national architectural trends, as realised through the local vernacular (evidential value); this value can vary with the state of preservation. They were typically built by gentry or prosperous merchants, could stage historically important events, and could be depicted in art and painting; they are typically associated with a range of other ancillary structures and gardens/parks (historical/associational). However, the lesser status of these dwellings means the likelihood of important historical links is much reduced. They are examples of designed structures, often within a designed landscape (aesthetic/design); however, the financial limitation of gentry or merchant families means that design and extent is usually less ambitious than for the great houses. Survival may also be patchy, and smaller dwellings are more vulnerable to piecemeal development or subdivision. The 'patina of age' can improve such a dwelling, but usually degrades it, sometimes to the point of destruction. There is limited communal value, unless the modern use extends to a nursing home etc.

<b>Asset Name: Baytree Lodge and entrance wall and piers at roadside</b>	
<i>Parish:</i> Perranworthal	<i>Value:</i> Medium
<i>Designation:</i> Grade II Listed	<i>Distance to Development:</i> c.20m
<i>Description:</i> Listing: Lodge to country house, known as Melingey (original house not extant) and including gate-piers, terminal piers and entrance walling. Circa late C19. Faced coursed local freestone with some dressed stone. Slate roofs with gable ends embellished with pierced roundels to wooden bargeboards and open panels over collar, all carried on corbels. Tall ashlar chimneys with cornices, over gable end, left, and over side wall right. L-shaped 3-room plan with square-on-plan entrance porch in the angle. Vernacular Victorian gothic style. Extended C20 to rear. Single storey. Plinth. North front has side wall of east wing, left, porch in angle and gable end of north wing, right. East wing has central 3-light transomed mullioned window with half-hipped dormer with segmental pierced bargeboard. Porch rises as tower above other eaves tire and has steep pyramidal roof over machicolated and moulded eaves cornice, trefoil head light to front and pointed doorway in left-hand (east) wall. Top-glazed panelled door and single pane overlight to tympanum. North gable end has 5-light transomed canted bay window with lower mullions of turned columns with carved capitals. Further but less elaborate windows to other fronts. All windows with original leaded glazing. Interior not inspected. Entrance wall has square coursed freestone entrance gateway and terminal piers. Truncated finials over gate-piers and moulded capitals with ball finials over terminal piers. Moulded copings to low wall between.	



<p><i>Supplemental Comments:</i> Interior not inspected. Built between 1870 and 1880, and presumably contemporary with a rebuilding of Mellingey House. The Census for 1881 and 1891 lists the occupant of the House as John Jose. John Jose was the son of a Gwennap copper miner who made good in the mines of South America and returned a wealthy man in the 1870s. He is presumably responsible for rebuilding the House and creating the Lodge, where is Butler was resident in 1891.</p>
<p><i>Evidential Value:</i> The interior of the house was not inspected during Listing, and thus period fixtures and fitting may survive. Note, as the surviving part of the Mellingey estate it represents a snapshot of what Mellingey may have looked like.</p>
<p><i>Historical Value:</i> The Lodge, as the remaining fragment of the late 19<sup>th</sup> century Mellingey of John Jose (see Exeter University 2017), is of some historical value. It is built in the fashionable style by a wealthy industrialist with strong connections to South America, the Perran Foundry, and interests in the Carn Brea and Tincroft mines. He was also a philanthropist, giving land and money for a chapel and village institute at Perranarworthal. The rebuilding of Mellingey represents an attempt to legitimise commercial wealth through landed respectability.</p>
<p><i>Aesthetic Value:</i> The Lodge is an attractively and neatly composed gothic fantasy. The principal elevations face onto the road, with the 20<sup>th</sup> century extension largely hidden from view. The Lodge was designed to be viewed within its 'threshold' context, leading into the pocket landscape park surrounding Mellingey House. The trees around the building provide a good degree of screening to the development within Mellingey, retaining the value of the original setting.</p>
<p><i>Communal Value:</i> The building has no communal value.</p>
<p><i>Authenticity:</i> From the exterior the Lodge retains a good degree of authenticity.</p>
<p><i>Integrity:</i> The Lodge appears to survive in good condition.</p>
<p><i>Topographical Location and Landscape Context:</i> The house is towards the top of a south-south-west facing slope overlooking a gentle valley.</p>
<p><i>Principal Views:</i> Limited, with screening provided by the mature trees to the south and either side of the roads. Views to the Lodge from the direction of the House have been blocked (garage built in the former drive).</p>
<p><i>Landscape Presence:</i> None. The Lodge and immediate surroundings are concealed by trees.</p>
<p><i>Immediate Setting:</i> The Lodge stands next to the roadside, just down and across from the goods yard at Perranwell Station. Screening is provided by a line of mature trees, including some specimen examples. To the west is a short row of cottages, to the east are the wooded grounds of Mellingey House. Open agricultural fields lie to the south.</p>
<p><i>Wider Setting:</i> The Lodge is located within the rolling hilly landscape around the lower Carnon River.</p>
<p><i>Enhancing Elements:</i> The mature specimen trees around the Lodge.</p>
<p><i>Detracting Elements:</i> The telegraph poles and cables in the garden; the goods yard opposite.</p>
<p><i>Direct Effects:</i> None. The Lodge lies outside the footprint of the proposed development.</p>
<p><i>Indirect Effects:</i> There would be an effect on the setting of the house during the construction and occupation phases. Noise and dust from construction works would negatively effect the immediate setting of the Lodge. The open fields to the south of the Lodge are visible past the house from the road, and thus development in those fields would impact on views of the Lodge and its principal elevations from the road.</p>
<p><i>Contribution of Setting to the Significance of the Asset:</i> Setting is clearly a designed function of this building, being the lodge to Mellingey House. However, the changes that have occurred to Mellingey and its drive have largely removed that physical association, leaving it a standalone building stripped of function. It is still an attractive structure within a relatively attractive semi-wooded setting.</p>
<p><i>Magnitude of Impact:</i> The proposed development would see the residential development of the field south-west of the Lodge and not directly congruent. However, it would appear in views across the Lodge from the roadside, substituting a residential backdrop for a rural one. These would constitute <i>moderate</i> changes to the setting of the Lodge.</p>
<p><i>Impact Assessment:</i> Medium value asset + moderate change = Moderate impact</p>
<p><i>Overall Impact Assessment:</i> Negative/Minor</p>

## 6.0 CONCLUSION

---

The site is located on the edge of the settlement of Perranwell Station, formerly parcel of the Manor of Perranarworthal and forming one part of the tenement known as Mellingey Farm. Mellingey is first documented in 1324, with the place-name derived from the Cornish *melyn-jy* meaning 'mill-house'. Mellingey House, no longer extant, was rebuilt in the 1860-70s by John Jose, a Cornish miner who made his fortune in the mines of South America. Historic OS maps show the remains of a mine worked before 1838 (Silver Hill Mine) straddle the site. These abandoned workings follow a lode of galena that trends in a north-south direction; one *Old Shaft* is shown within the site, with another beyond the southern boundary.

The geophysical survey that was carried out identified relict field boundaries removed during the 20<sup>th</sup> century and a small number of pits. It also identified the *Old Shaft* shown on the historic OS maps, and a faint north-south anomaly that may relate to mining activity along the galena lode. Otherwise, the archaeological potential of the site appears fairly *low*.

The historic visual impact appraisal undertaken focused on a single designated asset, the Grade II Baytree Lodge, which is located just north-west of the site. Other designated assets in the area are unlikely to be affected due to a combination of local blocking and the variable importance of setting to the significance of each asset. The attractive qualities of Baytree Lodge, and its status as one of the most complete surviving fragments of the Mellingey of John Jose, mean that the impact of the proposed development could be as high as negative/moderate, though appropriate mitigation through design or tree planting would help offset that impact.

## 7.0 BIBLIOGRAPHY & REFERENCES

---

### *Published Sources:*

- Chartered Institute of Field Archaeologists** 2014a: *Standard and Guidance for Historic Environment Desk-based Assessment*.
- Chartered Institute for Archaeologists** 2014b: *Standard and Guidance for Archaeological Geophysical Survey*.
- English Heritage** 2008a: *Conservation Principles: policies and guidance for the sustainable management of the historic environment*.
- English Heritage** 2008b: *Geophysical Survey in Archaeological Field Evaluation*.
- English Heritage** 2011: *Seeing History in the View*.
- English Heritage** 2012: *Understanding Place: historic area assessments in a planning and development context*.
- Hamilton, A.K.H.** 1961: *Mines and Miners of Cornwall*.
- Historic England** 2015: *The setting of Heritage Assets: Good Practice Advice Note 3*.
- Historic Scotland** 2010: *Managing Change in the Historic Environment: Setting*.
- Hull, R.B. & Bishop, I.D.** 1988: 'Scenic Impacts of Electricity Transmission Towers: the influence of landscape types and observer distance', *Journal of Environmental Management* 27, 99-108.
- ICOMOS** 2011: *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*. International Council on Monuments and Sites.
- Lysons, D. & Lysons, S.** 1814: *Magna Britannia, volume 3: Cornwall*. London,
- Landscape Institute** 2013: *Guidelines for Landscape and Visual Impact Assessment, 3<sup>rd</sup> edition*. London.
- Polwhele, R.** 1806: *The Civil and Military History of Cornwall; with Illustrations from Devonshire*. London.
- Polsue, J.** 1872: *A Complete Parochial History of the County of Cornwall compiled from the best authorities and corrected and improved from actual survey vol. IV*. Truro.
- Schmidt, A.** 2002: *Geophysical Data in Archaeology: A Guide to Good Practice*. ADS series of Guides to Good Practice. Oxbow Books, Oxford.
- Soil Survey of England and Wales** 1983: *Legend for the 1:250,000 Soil Map of England and Wales (a brief explanation of the constituent soil associations)*.
- UNESCO** 2015: *Operational Guidelines for the Implementation of the World Heritage Convention*.
- University of Newcastle** 2002: *Visual Assessment of Wind Farms: Best Practice*.
- Watts, V.** 2004: *The Cambridge Dictionary to English Place Names*. Cambridge University Press.
- Wilson, J.M.** 1870-72: *Imperial Gazetteer of England and Wales*.

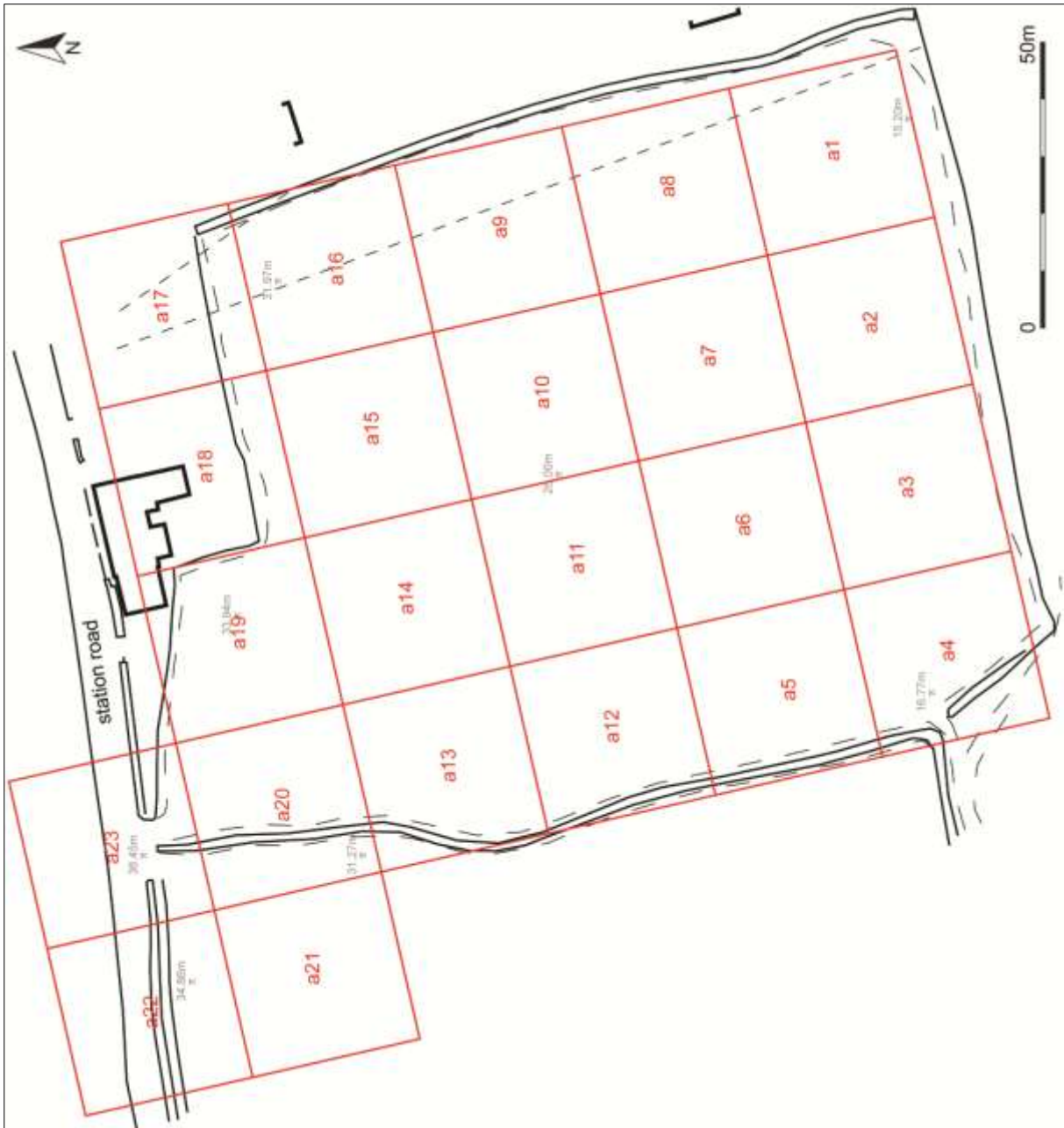
### *Websites:*

- British Geological Survey** 2017: *Geology of Britain Viewer*.  
[http://maps.bgs.ac.uk/geologyviewer\\_google/googleviewer.html](http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html)
- Cornwall Council Interactive Map** 2017: *HER and HLC*  
<https://map.cornwall.gov.uk>
- Design Manual for Roads and Bridges (DMRB)** 2017: Volume 11, Cultural Heritage  
<http://www.standardsforhighways.co.uk/DMRB/vol11/index.htm>
- Environment Agency** 2017: *LiDAR, Digital Surface Model data*  
<http://environment.data.gov.uk/ds/survey#>
- Exeter University** 2017: *The Cornish in Latin America*  
<http://projects.exeter.ac.uk/cornishlatin/Johnjose.htm>
- The Spectator Archive** 1987: *Gathering of the Cardews*  
<http://archive.spectator.co.uk/article/19th-september-1987/19/gathering-of-the-cardews>
- WEBTAG** 2017: *Transport Analysis Guidance, Cultural Heritage*  
<https://www.gov.uk/guidance/transport-analysis-guidance-webtag>

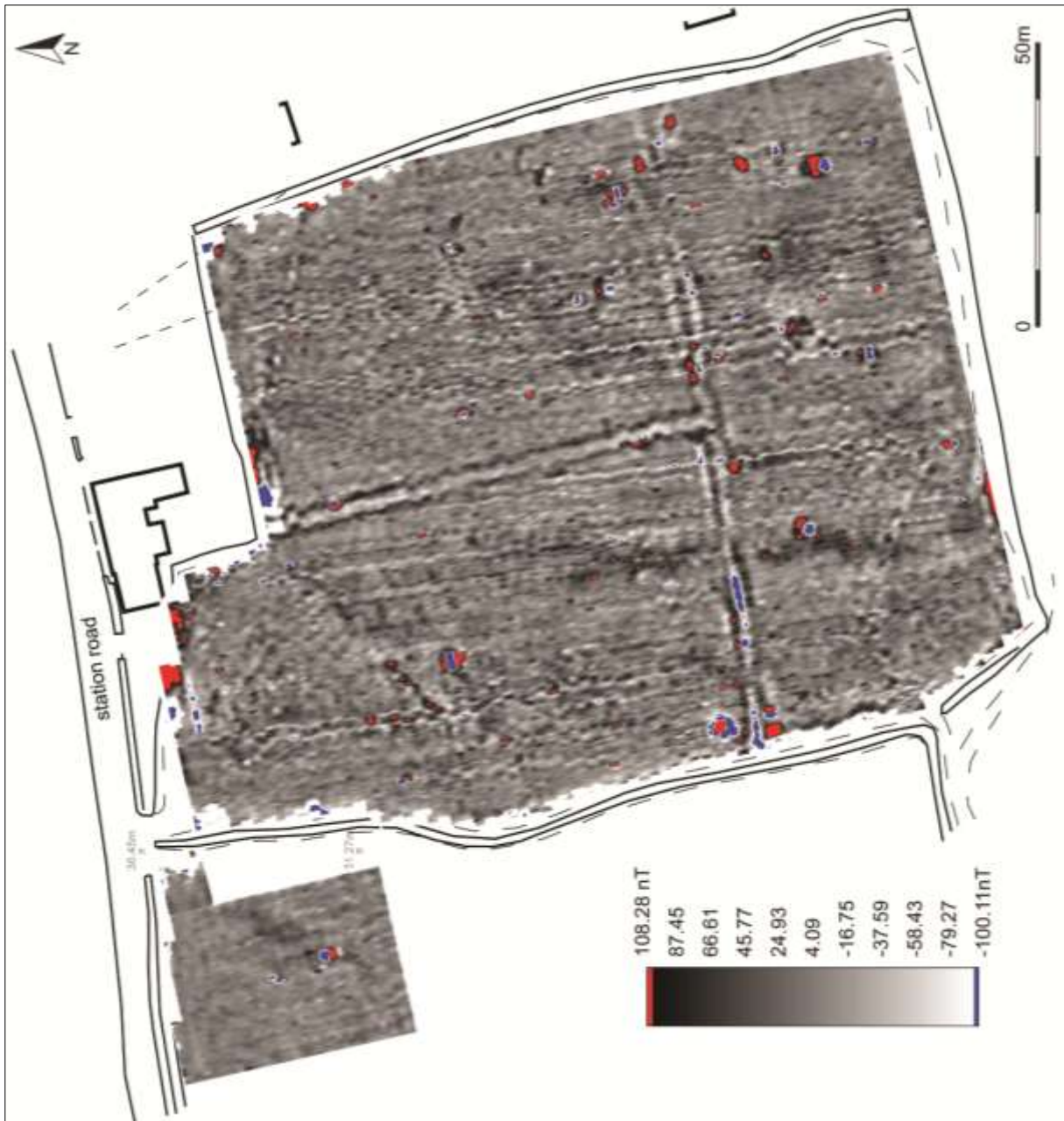
### *Unpublished Sources: Cornwall Record Office*

Perranarworthal tithe map and apportionment c.1840

APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

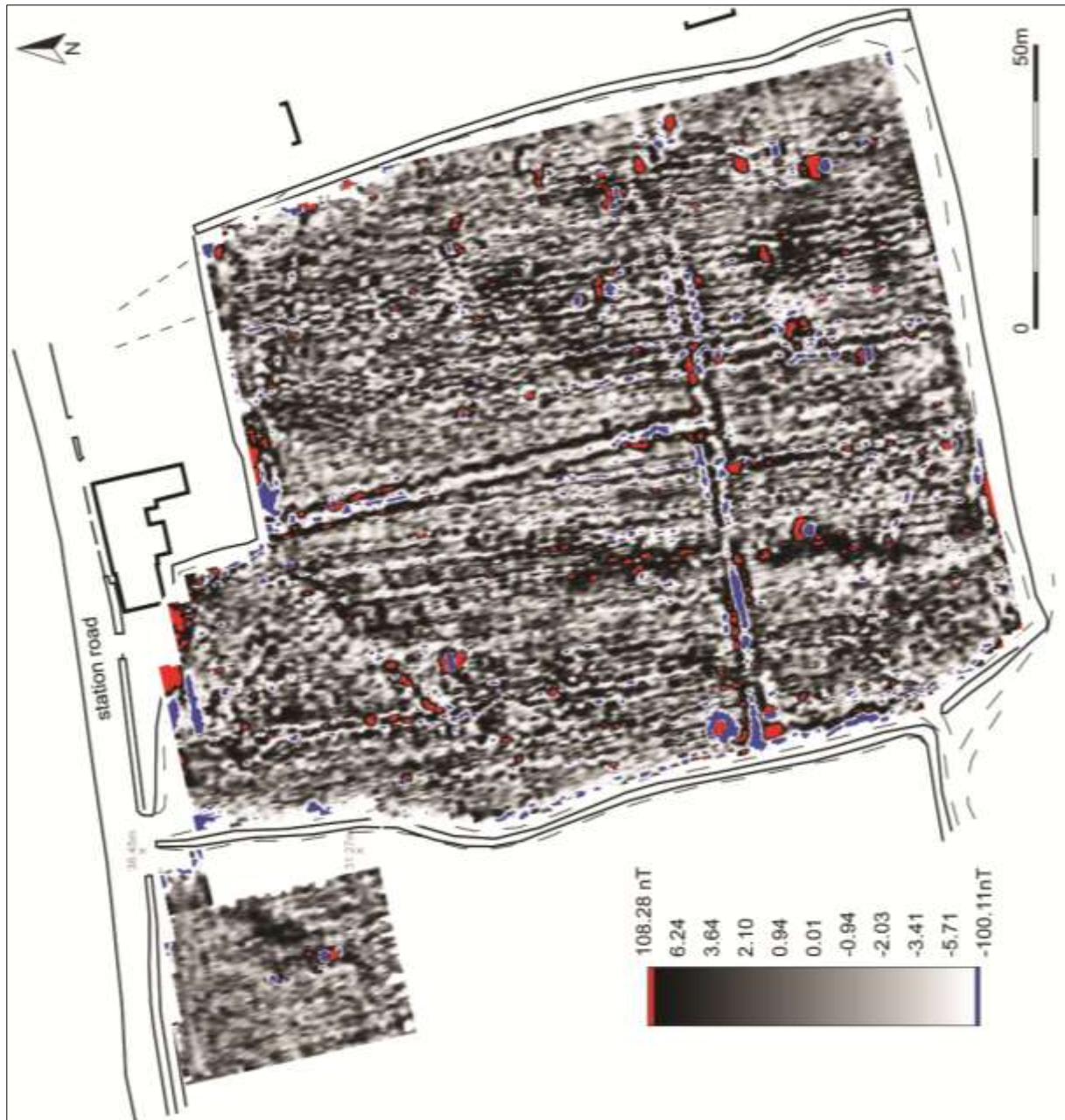


Geophysical survey grid location, layout and numbering.

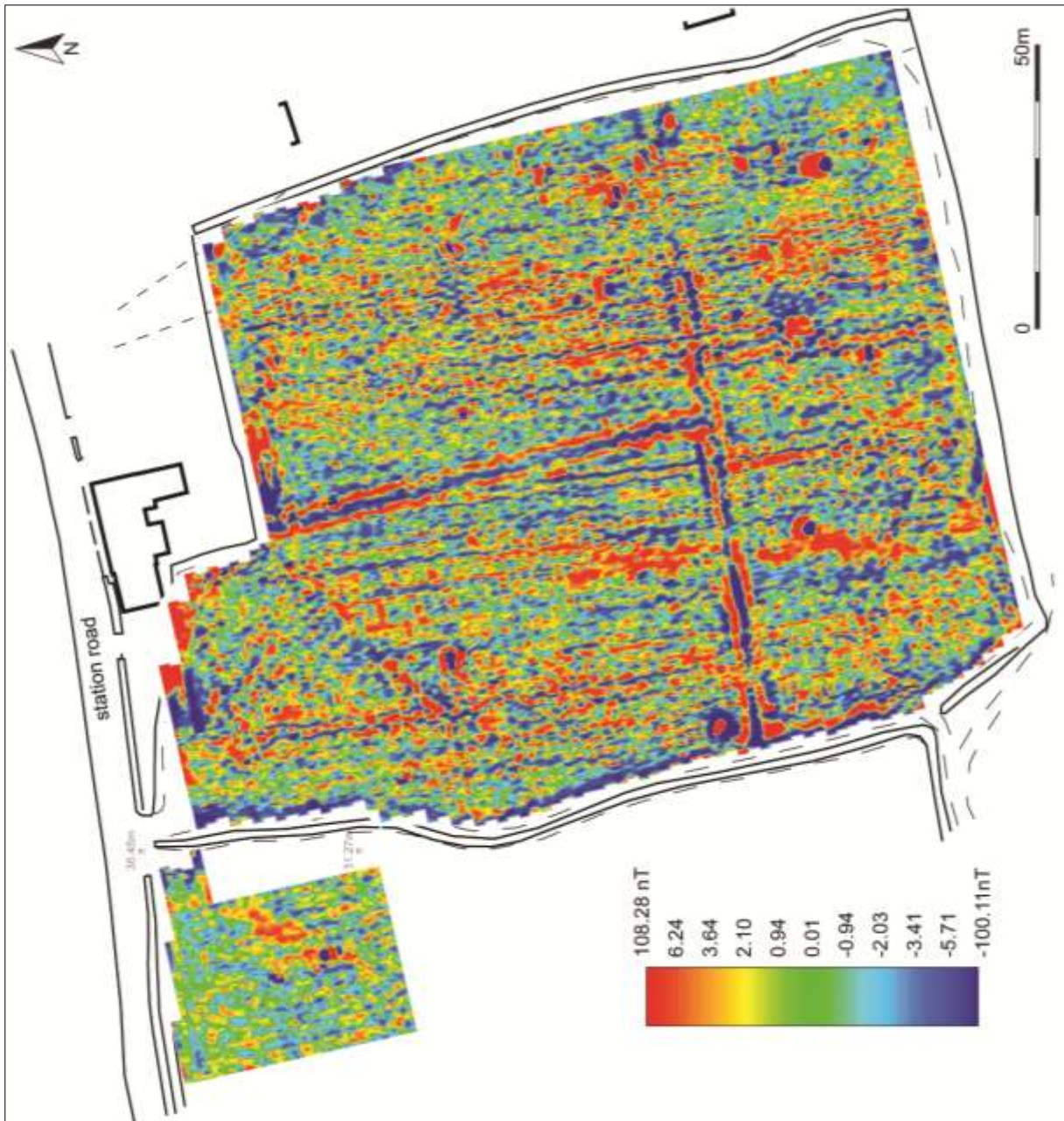


RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; GRADIATED SHADING.





RED-GREY-BLUE SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WIEGHT EQUALISED; GRADIATED SHADING.



RED-BLUE-GREEN(2) SHADE PLOT OF GRADIOMETER SURVEY DATA; BAND WIEIGHT EQUALISED; GRADIATED SHADING.



APPENDIX 2: BASELINE PHOTOGRAPHS



THE EASTERN FIELD FROM ITS NORTH-WEST CORNER; VIEWED FROM THE NORTH-WEST.



THE ENTRANCE TO THE EASTERN FIELD FROM STATION ROAD, LOOKING ALONG THE WESTERN BOUNDARY OF THE SITE; VIEWED FROM THE NORTH.





THE ENTRANCE TO THE WESTERN FIELD FROM STATION ROAD, NORTH-WEST CORNER OF THE SITE; VIEWED FROM THE NORTH.



The Old Dairy  
Hacche Lane Business Park  
Pathfields Business Park  
South Molton  
Devon  
EX36 3LH

Tel: 01769 573555  
Email: [mail@swarch.net](mailto:mail@swarch.net)