



# **West Haye, Callington, Cornwall**

## **Archaeological Watching Brief**



**Historic Environment Projects**



Report No

2014R022

Report Name

West Haye, Callington, Cornwall:  
Archaeological Watching Brief

Report Author

C. Buck

Event Type

Watching Brief

Client Organisation

Goldbeck Construction Ltd.

Client Contact

Antje Bergmann

Monuments (MonUID)

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Fieldwork dates (From) (To)

30/10/13

21/11/13

(Created By)

Colin Buck

(Create Date)

7/03/14

Location (postal address; or general location and parish)

West Haye Farm, Callington, Cornwall. Site  
encompasses eight fields north west of Callington.

(Town - for urban sites)

(Postcode)

(Easting) X co-ord

SX 34490

(Northing) Y co-ord

70300



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# 1. Project background

In 2010 Cornwall Council Historic Environment Projects undertook an archaeological assessment of a proposed solar farm site at West Haze, Callington, commissioned by Wardell Armstrong International (Parkes 2010). The assessment recommended geophysical survey on part of the proposed solar farm area and this was subsequently carried out by Stratascan Ltd over two fields (Fig 2, Fields A and B). A short addendum to the archaeological assessment, reporting on interpretation of the geophysical survey results, was produced by Historic Environment Projects in 2011 (Parkes 2011).

The initial planning scheme to develop the solar farm on the site lapsed but new proposals were carried forward by Inazin Power Ltd, a subsidiary of Low Carbon Developers, on a site enlarged to include an additional field, identified as G on Figure 2.

A brief was provided by the HEPAO (Phil Copleston). This set out the minimum requirements for archaeological recording at West Haze, Callington. The work is required to discharge condition 6 (for archaeological recording) of planning application PA11/00774 placed on the development.

Planning application PA11/00774 was approved on the 26 September 2011 and was for the *'The development of a 5 MW solar photovoltaic farm on 17.39 Ha of land close to Callington, Cornwall along with attendant equipment and infrastructure'*.

Following discussions on the proposed development, the Historic Environment Planning Advice Archaeologist (HEPAO) for Cornwall Council's East 2 Operational Area, requested further geophysical survey to cover the remainder of the proposed solar farm site. This was carried out by ArchaeoPhysica Ltd and reported on in March 2012 (ArchaeoPhysica 2012, Fig 2, Fields C to F). Subsequently, another report by Cornwall Council Historic Environment Projects (Kirkham 2012), provided further desk-based commentary on and interpretation of the archaeological potential of the proposed development site in the light of the combined Stratascan and ArchaeoPhysica survey data, and the previous archaeological assessment and addendum (Parkes 2010; 2011). Archaeological recommendations were limited to two sites identified by the assessment and the earlier geophysical survey and three small additional sites identified by the second geophysical survey.

Following the initial assessment, HE Projects provided a Written Scheme of Investigation (WSI) and estimate (22/11/2011) for an archaeological watching brief to meet the requirements of Planning Condition 6 (PA12/08856). The scheme did not progress until later in 2013, when HE Projects were commissioned by Goldbeck Construction Ltd to undertake the archaeological recording defined in the original WSI and cost estimate. This report describes the results of the archaeological recording which took place from October to November 2013.

# 2. Location, setting and survey background

The proposed solar farm site, is centred around NGR SX 34940 70300 (Fig 1), and located in an area of rolling hills and deeply cut valleys between the extensive Bodmin Moor to the west and the lesser upland of Kit Hill and Hingston Down to the east (Parkes 2010, fig 15). It lies on the slightly sloping top and south-facing side of a small spur, approximately 150m to 130m above sea level, between streams running south west into the Lynher, one of the region's main rivers, draining the east side of Bodmin Moor. It comprises eight fields, each identified by the letters A to H (Fig 2), forming an irregular block measuring approximately 580m east-west and 480m north-south. The total area of the fields is about 17 ha. The stream valley north and west of the site is steep-sided and below the site is covered in secondary woodland (post-dating the 2nd edition Ordnance Survey 1:2500 map of c 1907). The hamlet of West Haze is approximately 130m to the south of the project area and the edge of the town of Callington around 700m south east.

The site lies on slates, siltstones and sandstones of the Brendon Formation (British Geological Survey 2008, EW 337 Tavistock). Soils are Denbigh 1 type brown earths (National Soil Resources Institute Soil Systems Group, 2004).

## **2.1 Archaeological survey background** (excerpts from Kirkham 2012)

### *Assessment survey*

The archaeological assessment (Parkes 2010) established that the proposed solar farm site did not incorporate any Scheduled Monuments or Listed Buildings. However, the hedges dividing the medieval-derived field system (Parkes 2010, site 2) are considered 'important' under Hedgerow Regulations.

The historic name of field A (Fig 2), High Borough, suggested the possible presence of an earthwork (Parkes 2010, site 1). A very substantial rise in the ground in that field (extending into field B to the south) identified during the walkover survey could conceivably be a large earthwork potentially of national importance. Alternatively, it could be a natural rise, a ploughed down barrow mound of potential regional importance upon it. Another possibility is that the mound served as the site of an ornamental tree clump – it was tree-covered in the early nineteenth century – forming part of a designed landscape associated with a nearby country house and estate, perhaps that of Haye, with which it is intervisible.

Other features identified by the assessment were a track, a farm building, the site of a well and a possible historic quarry (Parkes, 2010, sites 3-6).

### *Geophysical survey results*

#### **Stratascan geophysics 2010: fields A and B**

A geophysical survey was carried out by Stratascan Ltd in December 2010 (Fig 9). The survey was over two fields, A and B (Figs 2 and 5), considered particularly sensitive archaeologically because of the potential of site 1, the possible earthwork.

The survey results for field A identified irregular areas of magnetic disturbance on the north-east side of the possible earthwork at site 1, but provided no indications of a ditch or other anomalies defining the feature (Fig 5; Parkes 2011). The geophysics results suggested that ploughing within the field – clearly evident elsewhere as anomalies across the remainder of the surveyed area – did not extend onto the mound. The survey also showed a possible linear feature passing approximately E-W across the north-east corner of field A. This feature was broken and showed an apparent turn to the north of its western portion.

In field B the survey interpretation (Fig 5) indicated a scatter of pit-like features and several other positive anomalies in the central and especially the northern part of the field. It also suggested the possible presence of an enclosure, possibly pre-medieval, in the south-eastern corner. A cluster of anomalies suggesting a possible sub-rectangular structure was located in the north-eastern corner of the possible enclosure accompanied by a scatter of pit-like responses (Parkes 2011).

#### **Archaeophisica geophysical survey 2012: fields C-H**

On 22 February 2012 Archaeophisica Ltd carried out a magnetometry survey over an area of approximately 11 ha, covering the remainder of the proposed solar farm site (fields C-H; Fig 2). The ArchaeoPhysica report (2012) identified 33 anomalies of possible archaeological significance; although in some instances it is more probable that individual anomalies are of geological origin. The ArchaeoPhysica catalogue maps illustrating and locating these features are included in this report as Figures 6-9.

Following the geophysical surveys a report was produced which detailed archaeological constraint and mitigation areas (see Figure 3 after Kirkham 2012). This showed areas which were recommended not to be impacted upon by either solar panels or below ground cable duct trenches. The solar panel project development company accepted these constraints and redesigned the project around the archaeological features. Figure 4 is a Goldbeck Ltd. plan showing the site layout of the panels and duct trenches, whilst Figures 5-9 show the spatial impact of the deep duct trenches on the geophysical survey features. The physical impacts and archaeological features identified along the duct trenches are described in Section 5.

### 3. Aims and objectives

The project aims set out in the project brief (Appendix 1) were to:

- Establish the presence/absence of archaeological remains within the site using information derived from the previous archaeological assessment and geophysical survey and from the geophysical survey commissioned by the client;
- Produce a short report interpreting the geophysical surveys to assist in determining whether further archaeological investigation is required;
- Draw together the historical and archaeological information about the site;
- Inform whether an archaeological evaluation or further archaeological recording of any potential buried remains, preservation or other mitigation are recommended.
- The project objective was to produce a report on the archaeology of the site through assessment and geophysical survey.

### 4. Working methods

All recording work was undertaken according to the Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff followed the *IfA Code of Conduct* and *Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Institute for Archaeologists is the professional body for archaeologists working in the UK. The standard of archaeological recording followed that outlined in the WSI (see Appendix 1).

The site archaeologist was present during significantly deep and impacting ground work excavation associated with the excavation of deep cable duct trenches and foundation excavations for four site buildings (see Figs 5 to 9). These areas were then inspected by an archaeologist for any archaeological features or layers exposed in the stripped areas or trenches. Potential sites that were revealed were carefully excavated by hand and archaeologically recorded by written description, plan and section and photographic record as appropriate. The level of recording was focussed and appropriate to the character/importance of the archaeological remains.

Most of the potential archaeological impacts resulted from the excavation of deep cable ducting trenches across the site and in places, the excavation of deep foundations for transformer and switch buildings. Significant features exposed by the trenching activity or building excavation were sectioned, recorded and located on a site plan.

### 5. Results

#### General

This solar panel array scheme was for a 6.4 MW output from approximately 26,600 panels (each 240W Yingli panels from China:) set into 17.39 Ha of land north west of Callington, within sight of Kit Hill (see front cover image). The installation scheme was for a period of four to six months, managed by Goldbeck Construction Ltd of Germany.

Archaeological recording commenced on 30/10/13 after the access road of connected timber planks had been laid on '803' aggregate across the storage and turning area east of the solar array fields (see Figure 4). The vertical steel posts supporting the steel frames upon which the panels are set had also started to be forced into the ground from 21/10/13, to an appropriate depth to realise a withdrawal force in excess of one ton (presumably to counteract maximum wind drag). Given the absence of bedrock; the required depth should be 1.9m below ground level. However, problems were encountered with the varying depths of slatestone across the fields. The depth often encountered was approximately 1.1 to 1.3m deep (see Fig 10). From a geological point of view the varying depth of bedrock slatestone is quite interesting – with 'waves' of east/west oriented peaks and troughs going along the sides of the south sloping fields B, C, H and G (see Fig 11) – perhaps its central point being Site 1 (the mound).

The main archaeological impacts to all the fields were the main cable duct trenches running north-south and east-west. There were two trench specifications that had the most impact below ground level: Firstly the cable duct trenches with cabling and string

combiner boxes are oriented north-south through the centre of the fields to collect the electricity generated from the panels and feed them to one of the three transformer/inverter stations. These are Type H.1 (shown as light green on Fig 4), and were excavated to form a 0.6m wide trench to a depth of 0.85m (see Fig 12). Secondly, Types A.1 and A.2 high voltage trenches connect each of the Transformer/inverter stations in series to the main Substation. Both the Type A.1 and A.2 trenches (shown in red on Fig 4) were excavated to form a 0.5m wide trench to a depth of 0.85m. The single A.2 trench extends from the Transformer/inverter station in field G to the substation in its south east corner. Narrower earth cable duct trenches: Type E.1 (0.45m x 0.2m), were excavated around the outsides of the panels parallel to the existing hedges – all were too narrow to record archaeological features.

Digital colour and black and white photographs of the fields were taken during solar panel erection and during/after cable trench excavation. Archaeological mitigation to minimise damage to the main significant archaeological feature (Site 3) was successful, primarily due to the assessment and mitigation recommendation reports produced by HE Projects (Parkes 2010; 2011; Kirkham 2012). Four sections were recorded; three of the buried remains of removed and ploughed out earlier hedge boundaries (Sections A-A to C-C), and one of a geophysical anomaly (possibly a medieval enclosure boundary-Section D-D). The location of Sections A and B are shown on Figure 9, and Sections C and D on Figure 7. The section drawings can be found within the site archive (GRE 807).

The average soil profile recorded in the middle and lower sections of each field during excavation of the cable duct trenches (Figs 4, 5-9), consisted of 0.05m of grass, roots and topsoil overlying 0.25m of darker brown topsoil, overlying 0.3m depth of lighter brown soil/stony subsoil, overlying 0.3m of dark blue/black slatestone to the base of the cable duct trenches which were all approximately 0.85m deep (Fig 4). The slatestone and shillet bedrock lay at the base of the deeper trenches at the lower end of the fields but higher up the fields (further to the north of the site), the slatestone generally increased in height to close to ground level – but with variations as described above (see Fig 11. The process of clearing the ground for agricultural use in prehistory, and the use of modern ploughing techniques has smoothed out the soil profile (effectively infilling between the 'peaks' of slatestone formation – see Fig 10 for 'smoothed' field bedrock level compared to Fig 11 for slatestone 'peaks').

The weather conditions during a large proportion of the archaeological recording was primarily very wet and often windy. This unfortunately caused the site to become very muddy – the site contractors hiring numerous tracked Snow Cats to move materials around site. Notwithstanding these problems – it often proved difficult to view the trench impact to sub-surface archaeology of even 'known' sites (for example, sections across removed earlier hedge boundaries). For this site, archaeological mitigation to minimise sub-surface damage to the sites shown in Figure 3 was perhaps the main positive result. No significant archaeological features were recorded and no artefacts were recovered throughout these fields (see Fig 2 for field referencing).

### **Field A**

The survey results for field A identified irregular areas of magnetic disturbance on the north-east side of the possible earthwork at site 1, but provided no indications of a quarry ditch or other anomalies defining the feature (Fig 9; Parkes 2011). The geophysics results suggested that ploughing within the field – clearly evident elsewhere as anomalies across the remainder of the surveyed area – did not extend onto the mound. The survey also showed a possible linear feature passing approximately east-west across the north-east corner of field A. This feature was broken and showed an apparent turn to the north of its western portion.

The Geophysics data with the main cable and transformer duct trenches is shown in black on Figure 5, and appears to intersect with possible archaeological features. It can be seen from this illustration that none of the cable trenches intersected or cut significant archaeological features. Site 1, the 'mound feature' (see Fig 3) appears to be of natural origin. In conversations with the farmer, he stated that close ploughing to the foot of the mound removed clumps of bedrock, and that the site was a natural geological outcrop. This statement is perhaps substantiated by the observation that when the vertical steel posts near the foot of the mound were banged into the ground, they did not go in very far! In fact the ground bedrock west and east of the main outcrop was

relatively close to surface – with only 0.2 to 0.3m depth of soil between the base of topsoil and the start of sub-bedrock shillet.

### **Field B**

In field B the geophysical survey (Fig 5) indicated a scatter of pit-like features and several other positive anomalies in the central and especially the northern part of the field. It also suggested the possible presence of an enclosure, possibly pre-medieval, in the south-eastern corner. A cluster of anomalies suggesting a possible sub-rectangular structure was located in the north-eastern corner of the possible enclosure accompanied by a scatter of pit-like responses (Parkes 2011). The clustering of these features is interesting but identification of an enclosure remains tentative.

Archaeological mitigation for the presence of probable sub-surface archaeological features, particularly in the southern part of this field recommended that the site was not developed as part of the solar farm. This recommendation was carried out (see Fig 4). However, after having walked around the site with the farmer, and having been shown a sub-surface drain from the field feeding into a tunnel under the adjacent lane to the south of the field – it may well be the case that the 'positive linear anomaly' (Fig 5) described as a 'possible enclosure', may well in fact be a field drain.

The overlaid cable duct trenches (shown as black lines in Fig 5), intersected two 'positive area anomalies', but upon site inspection in the trench section – no archaeological features were visible – presumably the anomaly being geological. The soil profile to the lower and middle section of field B are similar to those of fields H and G (C being wetter).

### **Field C**

The most significant features shown in the geophysical survey (Fig 6) for this field were three double-ditched anomalies (removed Cornish hedges). The middle hedge is shown as extant in 1841 (Parkes 2010, Fig 19). The other hedges above and below the middle hedge were part of a later medieval field system. The overlaid cable duct trenches (shown as black lines in Fig 6), intersected at right angles the three sub-surface sites of the removed hedge boundaries. But upon site inspection in the trench section – no significant archaeological features were recorded.

### **Fields D and E**

Kirkham (2012, 8) states: *'The most significant results from the two surveys are the identification of three anomalies representing possible ring ditches in the area around the mound recorded as site 1 by the archaeological assessment (Parkes 2010) . These features - anomaly 5 in field D and anomalies 6 and 7 in field E – hint at the possible presence of former ditched barrows of the Early Bronze Age or of roundhouses of later prehistoric type. Proximity to distinctive topographical features or visible earlier monuments – either of which may be represented by site 1 – can be an attribute of both earlier prehistoric barrow groups and of later prehistoric settlement (for example, Jones 2005, ch 5; Jones 2008).'*

Figure 4 shows that a buffer zone around the three anomalies in fields D and E were in fact created when designing the solar panel array for archaeological mitigation. Figure 7 (black lines) shows that the cable duct trenches went around site 5 in Field D, and did not interfere with sites 6 and 7 in Field E. In fact it appears that there was no known geophysical/archaeological impact for Field E.

Field D in Figure 7 shows that the main cable duct trench crossed the foundations for two double ditched former field boundaries, and at the northern end of the field, the west end of feature 3 (labelled on Figure 7). *'Anomaly 9 in field E and a double-ditched anomaly (removed Cornish hedge) to the east in field G appear to align with the linear feature crossing the north-east corner of field A indicated by the Stratascan survey (Fig 5). Anomalies 2 and 4 in field D and 8 in field E could represent further elements of an earlier layout of agricultural enclosures in this area (Fig 4). A possible interpretation is that these represent a series of encroachments of land cleared for agriculture into the probable former wooded area on the lower slopes to the north'* (Kirkham (2012, 8).

Two sections were recorded within field D, Section D-D at the intersection point between the cable duct trench and the double ditch hedge boundary, and Section C-C, the intersection point between the cable duct trench and the possible medieval enclosure boundary. Neither is reproduced within this report (as they are atypical examples), but a

photograph of Section D-D is reproduced in Figure 13. GRE drawings (No. 807) for both sections have been produced and are archived in the CC HE Project GRE folders.

The average soil profile recorded within this field during excavation of the cable duct trenches (Fig 8), consisted of 0.05m of grass, roots and topsoil overlying 0.15m of darker brown topsoil, then 0.7m depth of stony and slatestone bedrock near the archaeological features of Sites 1 (the natural stone 'mound') in field A, and anomaly 5 in Field D. However, further northwards at Section C-C, the average soil profile recorded consisted of 0.05m of grass, roots and topsoil overlying 0.25m of darker brown topsoil, overlying 0.5m depth of stony and slatestone bedrock.

Note: **Field F** was not impacted by the solar array, although the geophysical survey was undertaken and shown on Figure 8. Kirkham (2012, 8) states: '*Anomalies 11 in field F and 1 in field D may similarly represent historic boundaries dividing agricultural land from the former wooded area to the north and west (Figure 8)*'.

### **Fields G and H**

Figure 8 shows the northern part of fields G and H and Figure 9 the southern parts. Field H, being located on the east side of field B, has (in its southern section – Fig 9) some geophysical linear features possibly related to those tentative 'medieval enclosure' features in the lower section of field B (see description above in Field B). The most significant features shown in the geophysical survey (Figs 8 and 9) for this field are thus described and interpreted: '*The anomaly forming the possible northern ditch of the enclosure may continue into field H to the east as either anomaly 21 or 22 identified by the ArchaeoPhysica survey; other minor linear anomalies (24, 29) occur in the same area. ... it is conceivable that both the boundary between fields B and H and the southern boundary of field B originated as the boundaries of a putative enclosure*' (Kirkham 2012, 8). '*Linear anomalies 25, 26, 27 and 28 within the southern portions of fields G and H make up a pattern of two adjoining rectilinear enclosures (Fig 9). That to the north appears to be approximately 55-60m across and these boundaries would therefore fall within the broad parameters of later prehistoric rectilinear field systems identified elsewhere in Cornwall. Such an identification must be tentative, however, and other origins for these anomalies are certainly possible.... Feature 23 in field H (Fig 9) is a probable post-medieval boundary partitioning field H into smaller parcels comparable to those dividing fields B and G to east and west*' (Kirkham 2012, 9).

Reference to the overlaid cable duct trenches (shown as black lines in Fig 9), intersected the following geophysical anomalies: 23 to 25, within the southern section of field H, no geophysical features were recorded for the northern section of this field which includes the site of a transformer/inverter station (Fig 9). No archaeological features were observed in these cable duct trenches. Figure 12 is an image of this field viewed from the north looking downhill to the south.

The geophysical survey results of Field G (Figs 8 and 9), mainly show the (now removed) later medieval derived field boundaries. The cable duct trenches are shown overlaid in black intersecting the former hedge boundaries in places. Sections A-A and B-B (not included within this report) were recorded at two of these intersection locations, and are atypical examples of hedge construction (see Figure 9 for section locations). There were no other archaeological features viewed in the excavated cable duct trenches.

### **Summary**

No significant archaeological features were recorded and no artefacts were recovered throughout this field.

The soil profile, although consistent in nature throughout the middle and lower parts (albeit wetter) of each field varied both in terms of the depth and size of slatestone bedrock. The amount of sub-soil diminishes and bedrock increases within the upper parts of all the south facing fields (in west/east undulating 'waves'), the further one went upslope towards the 'natural' mound (Site 1), and its adjacent hedge line across the site. It was difficult to see sectional evidence of any archaeological features (primarily removed hedge boundaries). No artefacts were recovered in the course of this project.

## 6. Conclusions/discussion

Apart from geophysical and archaeological field survey evidence for removed field boundaries, no other features of archaeological interest were seen within any of the long sections of (relatively deep), cable duct trenches. Although, the geophysical analysis and interpretation suggests the presence of medieval enclosures and their related boundary ditches, this was not manifested by field survey in narrow trenches across the site. Presumably, this is due to a number of factors. Firstly, the wet weather is likely to have masked archaeological layers. Secondly, the geophysics results mainly showed the presence of subtle changes in the ground of possibly earlier medieval ditch enclosures (or prehistoric field boundaries), and removed later medieval hedge boundaries – all of which were too small to observe in the long trench excavations, and thirdly perhaps the medieval ditches/hedges were very slightly constructed and did not leave many visual traces.

There is no doubt that the programme of archaeological assessment and consultancy providing mitigation measures for interpreting the geophysical surveys to inform and guide the position of the solar panels and their attendant cable duct trenches, has minimised sub-surface archaeological impacts. It was concluded that this development had no impact on any significant buried archaeological remains.

## 7. References

### Publications

- ArchaeoPhysica 2012. *Southlands Farm, Callington, Cornwall: geophysical survey report*, Harewood End, Hereford
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- Jones, A M, 2005. *Cornish Bronze Age ceremonial landscapes, c 2500-1500 BC*, British Archaeological Reports, British Series, 394, Oxford
- Jones, A M, 2008. *Houses for the dead and cairns for the living; a reconsideration of the Early to Middle Bronze Age transition in south-west England*, *Oxford Jnl Arch*, 27, 2, 153-74
- Kirkham, G, 2012. *West Haye, Callington, Cornwall: Assessment of Geophysical surveys*, Truro (Historic Environment Projects, Cornwall Council)
- National Soil Resources Institute Soil Systems Group, 2004 (data Copyright © Cranfield University, 2004) [digital data licensed by Cornwall Council]
- Parkes, C, 2010. *Proposed West Haye Solar Farm, Callington, Cornwall. Archaeological assessment*, Truro (Historic Environment Projects, Cornwall Council)
- Parkes, C, 2011. *Addendum to archaeological assessment, proposed West Haye solar farm, Callington*, Truro (Historic Environment Projects, Cornwall Council)
- Sharpe, A, 2011. *West Haye (Blogsters) solar farm, Callington: Written Scheme of Investigation for assessment of results of geophysical survey*, Truro (Cornwall Council, Historic Environment Projects)

## 8. Project archive

The HE project number is **146321**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. Projects file containing site records and notes, project correspondence and administration (146321).
2. Field plans and copies of historic maps stored in an A2-size plastic envelope (GRE 807).
3. Digital photographs stored in the directory: R:\Historic Environment (Images)\SITES.U-Z\West Haye, Callington solar farm WB 2013
4. English Heritage/ADS OASIS online reference: cornwall2-175204
5. This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites W\West Haye solar farm Callington WB 146321\Report\West Haye report WB 146321.doc



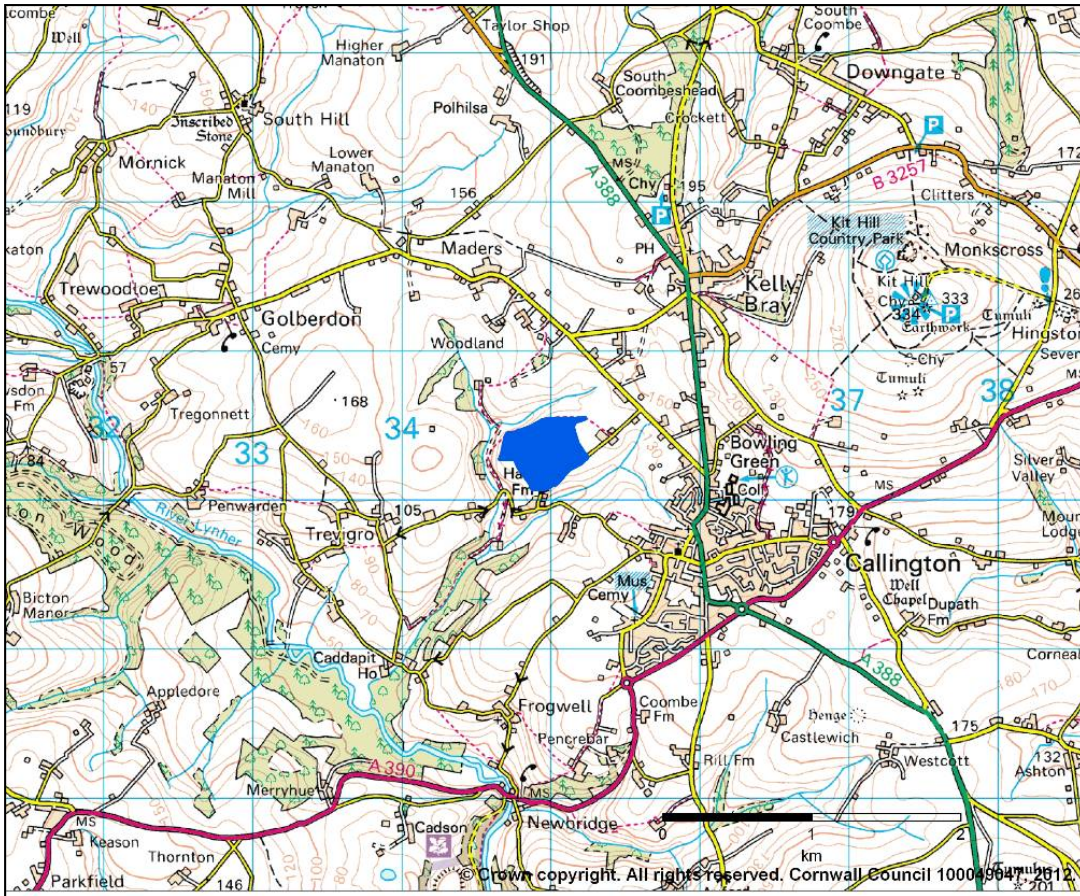


Figure 1 Site location of West Hays solar farm.

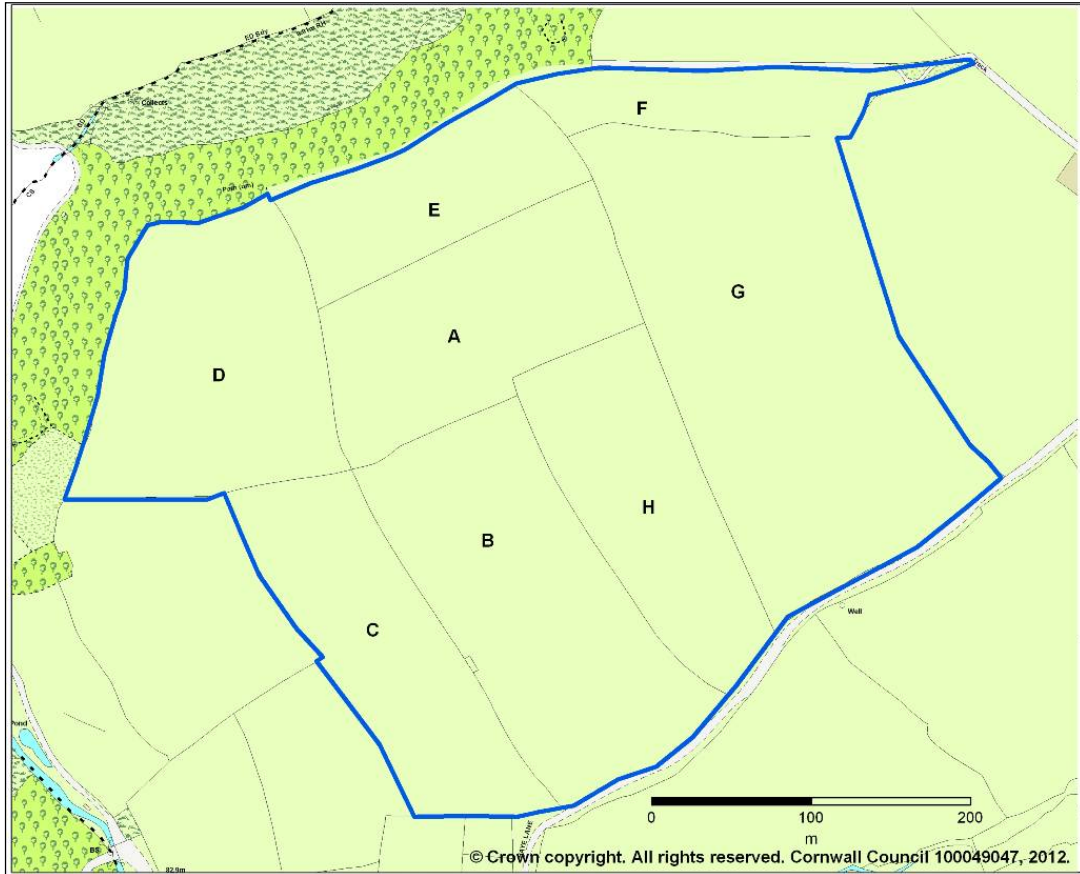


Figure 2 Location and extent of West Hays solar farm (letters denote fields within the solar farm boundary). Note: Field F was not impacted by the solar farm.



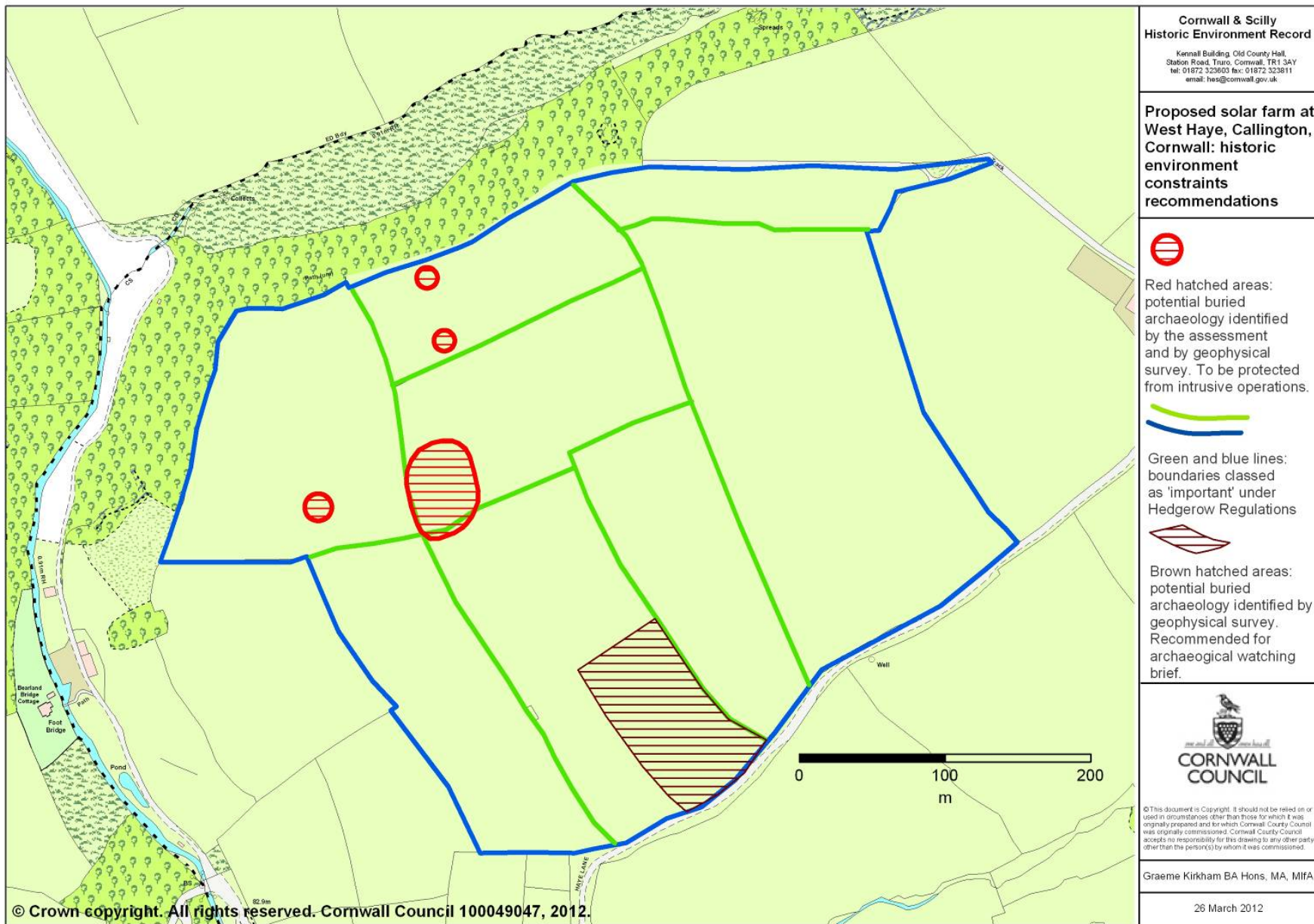


Figure 3 Recommended historic environment constraints and mitigation (after Kirkham, 2012).



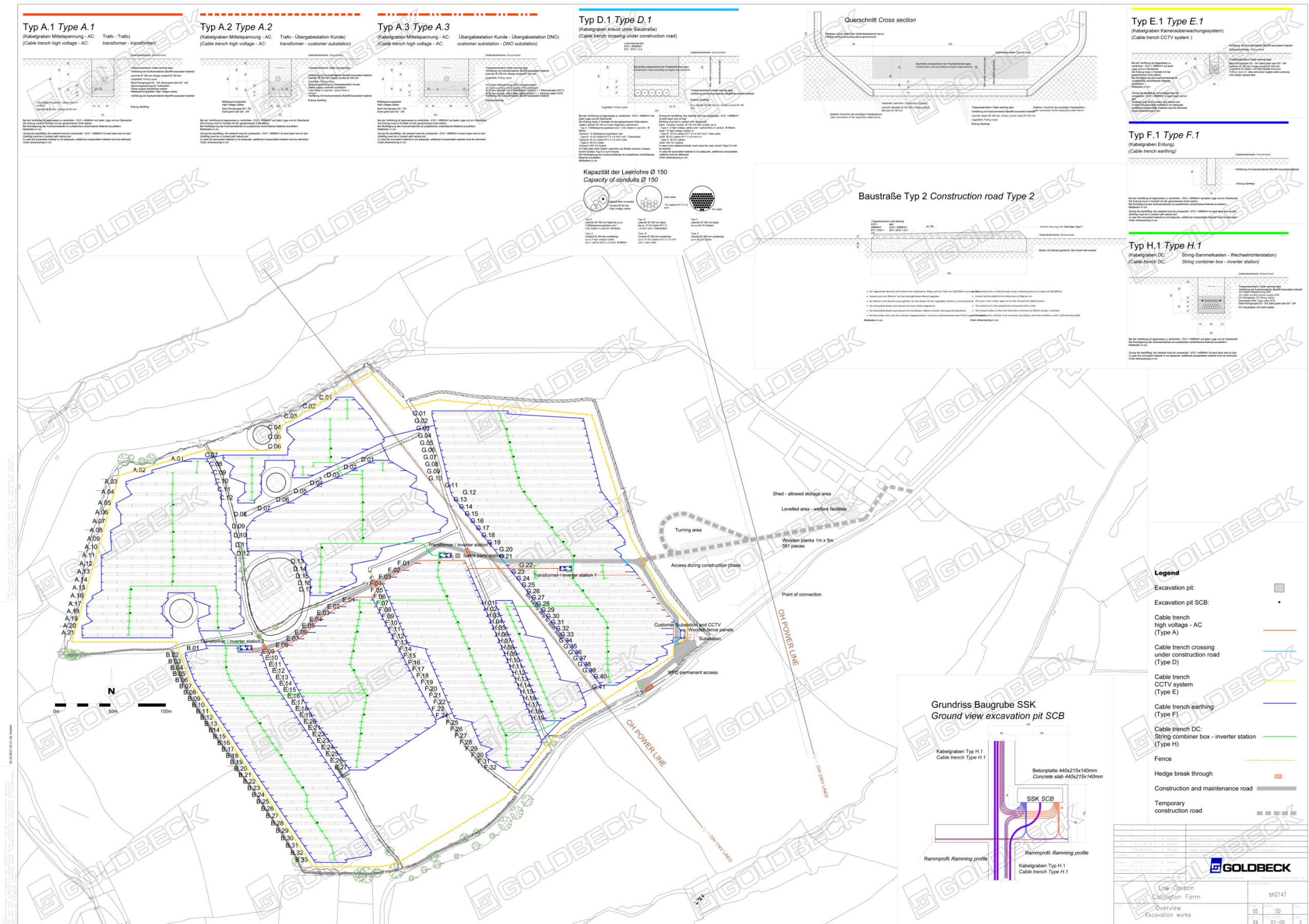


Figure 4 Site plan showing the solar panel layout mitigating the recommended archaeological constraints resulting from geophysical survey. Plan also shows cable duct trenches and cable duct section profiles. Plan © Goldbeck Dwg. Bh0147 01-00 'Overview Excavation works Dated 15/10/2013.





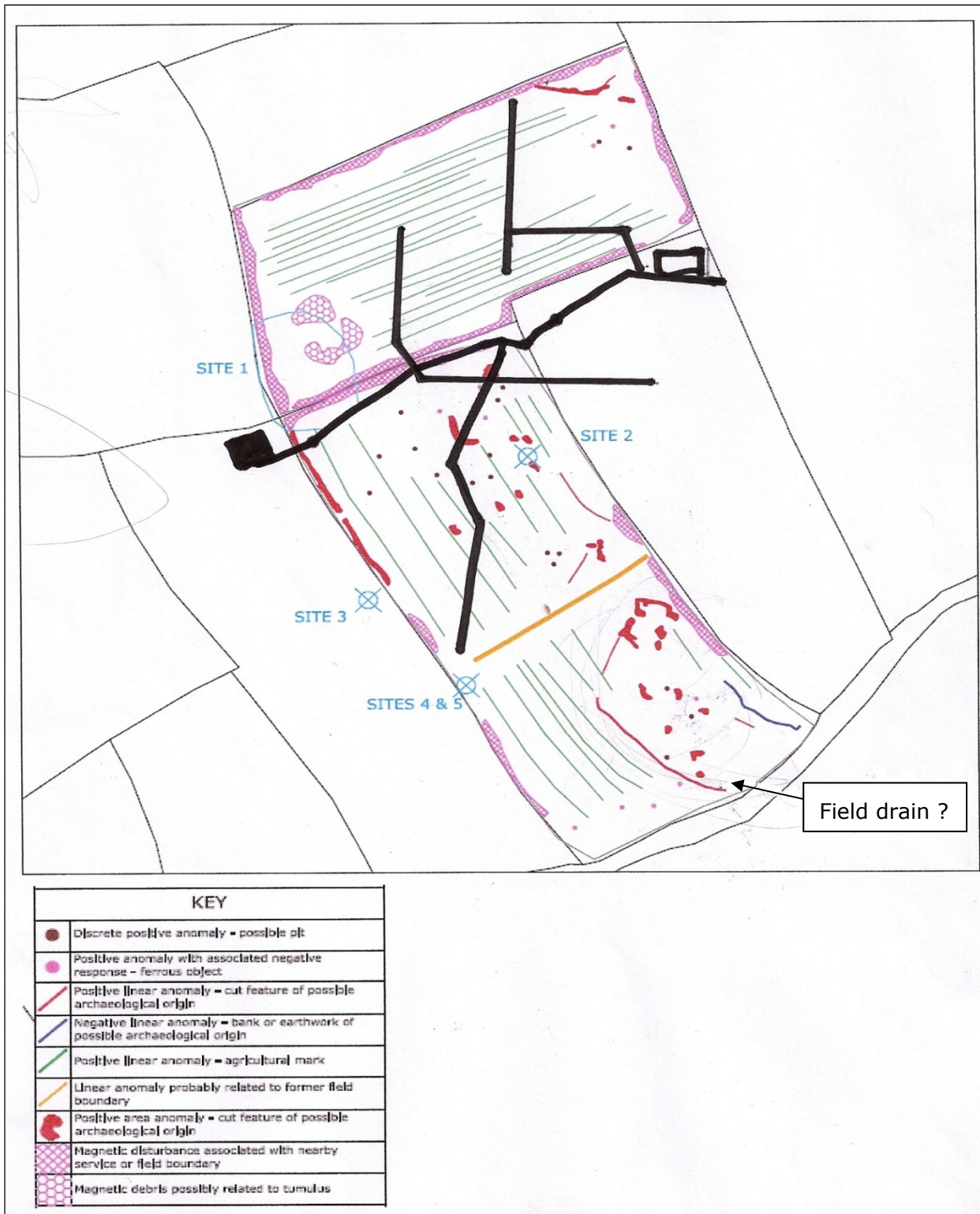


Figure 5 Geophysics data (Stratascan) for Fields A and B (see Figure 2 for site locations), with main cable and transformer duct trenches shown in black intersecting possible archaeological features.





Figure 6 Geophysics data for Field C (see Figure 2 for site locations), with main cable and transformer duct trenches shown in black intersecting possible archaeological features



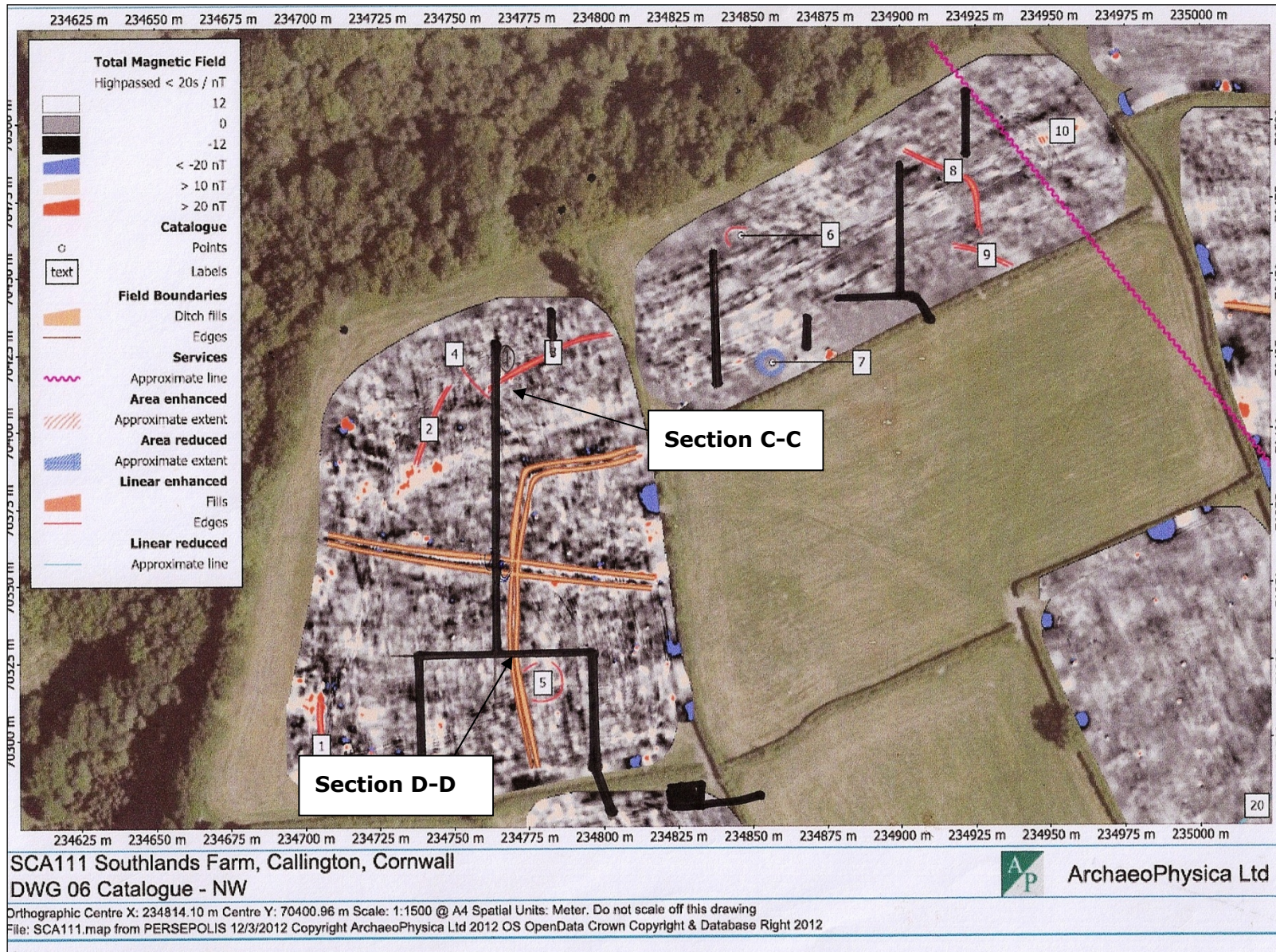


Figure 7 Geophysics data for Fields D and E (see Figure 2 for site locations), with main cable and transformer duct trenches shown in black intersecting possible archaeological features.



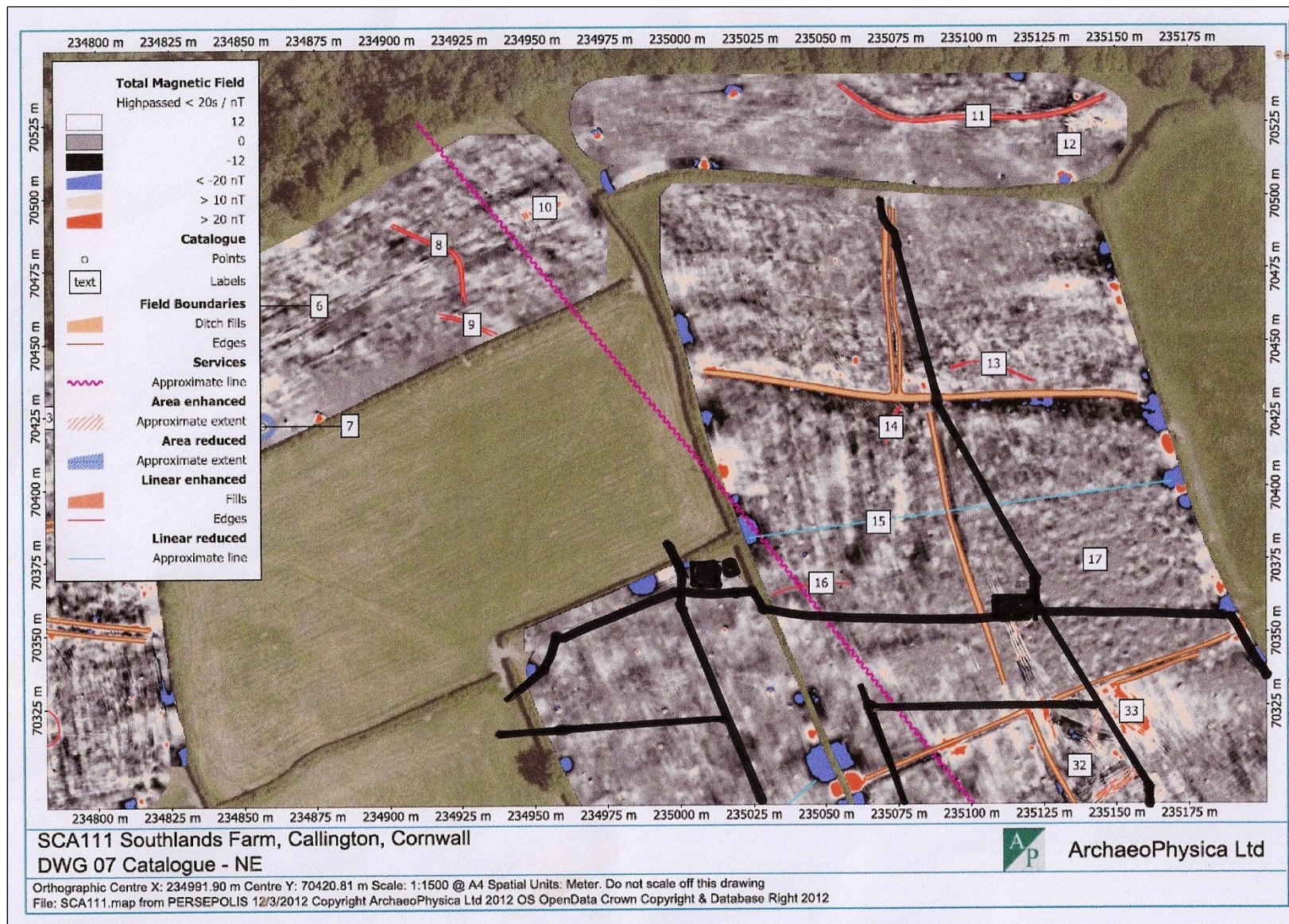


Figure 8 Geophysics data for Fields G and H (northern sections-see Figure 2 for site locations), with main cable and transformer duct trenches shown in black intersecting possible archaeological features. Field F was not affected by solar panel installation.



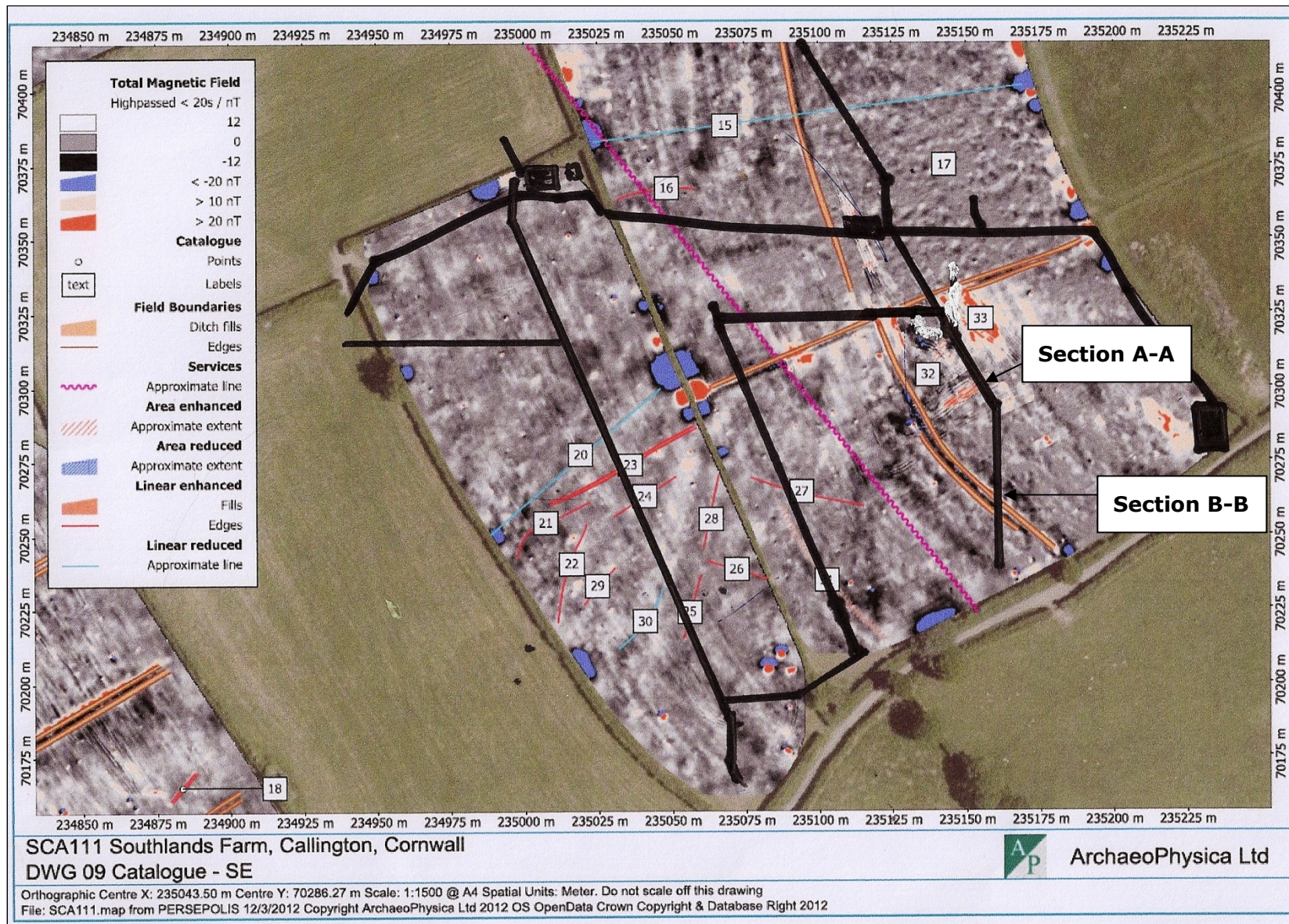


Figure 9 Geophysics data for Fields G and H (southern sections-see Figure 2 for site locations), with main cable and transformer duct trenches shown in black intersecting possible archaeological features.





*Figure 10 Image (from the south looking north) of field C after the main cable duct trenches were excavated and vertical posts forced into the ground © HE Projects, CC 5/11/2013.*



*Figure 11 Image (from the south looking north) of field B showing the various depths of hard slate-stone deposits from north to south © HE Projects, CC 5/11/2013.*





*Figure 12 Image (from the north looking south) of field H showing the Type H cable duct trench with inter connecting stringer boxes and partially assemble solar panel frames © HE Projects, CC 21/11/2013.*



*Figure 13 Image (north side) of Section D-D. See Figure 7 for site location. © HE Projects, CC 21/11/2013.*

# **Appendix 1: West Haye (Blogsters) solar farm, Callington: Written Scheme of Investigation for assessment of results of geophysical survey and for carrying out an archaeological watching brief.**

Client: Low Carbon Developers  
Client contact: Alex Herbert  
Client tel: 01285 380054  
Client email: alex.herbert@lowcarbondevelopers.com

## **Site history**

The proposed solar farm site, centred at around NGR SX 34940 70300, is located in an area of rolling hills and quite deeply cut valleys between the extensive Bodmin Moor to the west and the lesser upland of Kit Hill and Hingston Down to the east. It lies on the slightly sloping top and south facing side of a small spur, approximately 150m to 130m above sea level, between streams running south west into the Lynher, one of the regions main rivers, draining the east side of Bodmin Moor. It comprises eight fields, forming an irregular, roughly T-shaped block, measuring up to approximately 580m across east-west, and 420m north-south. The total area of the fields is just over 14 hectares, some 35 acres. The stream valley north and west of the site is steeply sided and below the site is covered in secondary woodland (post-dating the 1906 OS map), with ancient woodland at Blogsters Wood further east; it forms part of a Cornwall Nature Conservation site in the valley system (County Wildlife Site CN41, Bearlands). The hamlet of West Haye is approximately 130m away to the south, and the edge of the town of Callington is around 700m south east.

An archaeological assessment has been produced for this site (Parkes, C. 2010, *Proposed West Haye solar farm, Callington, Cornwall: archaeological assessment*, HE Projects report 2010R135), this having been incorporated into a Wardell Armstrong International impact assessment for the development proposal.

The proposed solar farm land forms part of a large area of the 'Medieval Farmland' HLC Type of 'Anciently Enclosed Land' (AEL), interlocked with ancient woodland or rough ground in the steep valleys intersecting the area, such as that to the north of West Haye. The valleys, with the high downs which covered great areas to the east before their enclosure in the mining era, whilst uncultivated, were still an integral part of the medieval farming landscape, seasonally exploited at least from medieval times by the farming settlements as part of their traditional economic systems, as sources of fuel and rough grazing.

Some changes were made to the layout of the 'Medieval farmland' here in the 19<sup>th</sup> century, including sub-division of several fields with new, straight boundaries, but two of these boundaries were removed again in the 20<sup>th</sup> century, so that the 'Medieval Farmland' character here remains predominant and aspects of it have in fact been restored rather than degraded in recent times. The most significant degradation of the medieval character here is limited to the southern part of the east arm of the proposed solar farm area, where a field boundary of medieval origin forming the edge of the area has been removed and the field formerly enclosed by it incorporated in a more extensive group of altered fields beyond the study area.

The DBA and walkover survey revealed the locations of a number of archaeological sites of local importance, including a medieval derived field system and a substantial, undated mounded feature with a field with a 'barrow' name, suggesting that this feature may be of prehistoric date. Geophysical survey within two of the fields provided some further detail relating to the possible barrow and identified an enclosure of possibly prehistoric date in the field to its south.

## **Project background**

A brief has been provided by the HEPAO (Phil Copleston), setting out the minimum requirements for archaeological recording at West Haye, Callington. This work is required to discharge condition 5 of planning application PA11/00774 placed on the development.

Planning application PA11/00774 was approved on the 26 September 2011 and was for the 'The development of a 5 MW solar photovoltaic farm on 17.39 Ha of land close to Callington, Cornwall along with attendant equipment and infrastructure'. This application has been approved subject to 17 conditions. Condition 6 states:

*"No development shall take place within the site until the applicant has secured and implemented a programme of archaeological work in accordance with a written scheme of investigation to be submitted by the applicant and approved in writing by the LPA. Once agreed the agreed scheme shall be implemented in accordance with the details."*

A scheme for decommissioning the development no more than 25 years from the scheme will also be required prior to that decommissioning in pursuance of condition 17. This scheme will need to take into account archaeological considerations. The applicant, their agents and any subcontractors are reminded in the brief that where there are other conditions requiring satisfaction in advance of the commencement of works on site, it is the responsibility of the applicant to liaise with the planning officer concerned to ensure that the timetabling of these works is managed.

An archaeological assessment of this site has already been undertaken (Parkes 2010), whilst two fields at the centre of the site have been the subject of a geophysical survey (Stratascan 2010). The client is to commission geophysical survey of the remainder of the site, and the results of this investigation will be reported on by HE Projects.

The Historic Environment Planning Advice Officer is Phil Copleston, Historic Environment Advisor (Archaeology), Room 82, Luxestowe House, Trevannion Road, Liskeard, PL27 7NU, 01579 341406.

## **Project extent**

The site consists of eight adjacent fields at West Haye (Blogsters), Callington. The watching brief will be limited to the archaeological monitoring of those areas which are to be subjected to ground disturbance during the development of the solar farm, including areas disturbed by cable trenching, but excluding activities associated with the installation of ground anchors where buried archaeological remains may be disturbed. The areas to be monitored are likely to include any temporary compound areas or roadways where the topsoil is stripped and areas prepared for the platforms for permanent plant such as inverters and transformers.

## **Aims and objectives**

As set out in the brief, the project aims are to:

- Establish the presence/absence of archaeological remains within the site using information derived from the existing archaeological assessment and geophysical survey and from the geophysical survey to be commissioned by the client
- Produce a short report interpreting the geophysical survey to assist in determining whether further archaeological investigation is required.
- Undertake an archaeological watching brief during groundworks to:
- determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- establish the nature of the activity on the site
- identify any artefacts relating to the occupation or use of the site
- provide further information on the archaeology of West Haye Farm from any archaeological remains encountered.

The project objectives are to obtain information concerning the sub-surface archaeology of the site through geophysical survey and to create a record of areas of the site to be subjected to disturbance through an archaeological watching brief.



In addition, Conditions and 17 of the planning consent for the development control the process of decommissioning of the site. Condition 17 is to ensure that a specific written scheme is required immediately prior to decommissioning works. In relation to this aspect of the project, HE Projects will liaise with the client in the production of their method statement for the decommissioning of the site to minimise potential ground disturbance. If required, a methodology to undertake suitable recording would be submitted as a separate WSI prior to decommissioning.

## Working methods

All recording work will be undertaken according to the Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff will follow the *IfA Code of Conduct* and *Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Institute for Archaeologists is the professional body for archaeologists working in the UK.

### Desk-based assessment

A desk-based assessment and walk-over survey have been carried out and reported on (Parkes, C. 2010, *Proposed West Haze Solar Farm, Callington, Cornwall: archaeological assessment*, HE Projects report 2010R135).

### Geophysical survey

Two of the fields at West Haze were subjected to geophysical survey by StrataScan on the instructions of Wardell Armstrong International on behalf of their client; the remaining six fields were excluded from this survey. It is understood that the current developer (Low Carbon Developers) will commission a magnetometer survey of the remaining six fields following discussions with the HEPAO. The results of this geophysical survey will be made available to HE Projects and to the HEPAO in advance of site development taking place and will be used to determine whether further stages of archaeological investigation and recording are required. A summary report of the results will be prepared, which will include considerations concerning any potential requirements for site investigation in advance of final site design.

### Fieldwork: watching brief

The site archaeologist will be present during all ground works associated with the development, unless circumstances dictate a different approach. For larger areas, a toothless ditching bucket will be used for the removal of any overburden until the first archaeological horizon is exposed. This will then be hand cleaned as appropriate.

Machines will not run over the stripped area until the archaeological works are complete. The area will then be inspected by an archaeologist and any archaeological features or layers exposed in the stripped area will be carefully excavated by hand and archaeologically recorded by written description, plan and section and photographic record as appropriate by an HE Projects archaeologist.

During the archaeological recording the archaeologist will identify and record any archaeological features that are revealed in the stripped area; the level of recording will be appropriate to the character/importance of the archaeological remains.

If complex and/or significant archaeological deposits are encountered then the archaeological requirements should be reviewed by the client, the Historic Environment Planning Advice Officer and HE Projects. **In the event that remains cannot be preserved *in situ* then full-scale excavation may be required.** A contingency should be allowed to record any significant archaeological remains which are uncovered during the stripping. The significance of the remains should be agreed between the client, the Historic Environment Planning Advice Officer and HE Projects.

An archaeological watching brief will be carried out during the excavation of cable trenches. Where practicable, any features exposed by the trenching activity will be sectioned, recorded and located on a site plan; artefacts will be recovered from the trenching spoil.

Where necessary the detailed archaeological recording may include:

- Excavation of archaeological features exposed in the stripped area and plotting them onto a base map.
- Production of plans and section drawings of the excavated features and recording of

features using a continuous numbering system.

- Retrieval of artefacts.

### **Recording: general**

Site drawings (plans, sections, locations of finds) will be made by pencil (4H) on drafting film; all plans will be linked to the Ordnance Survey Landline (electronic) map; all drawings will include standard information: site details, personnel, date, scale, north-point. A site grid and site bench mark (TBM) will be set up and features and finds will be recorded in relation to these. The site grid and TBM will be located relative to the National Grid through measured survey from the nearest OS bench mark at SW 76042 49076.

- All features and finds will be accurately located at an appropriate scale. Sections will normally be drawn at 1:10 and plans at 1:20.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence.
- Photography: scaled monochrome photography will be used as the main record medium, with colour digital images used more selectively and for illustrative purposes. This will include both general and site specific photographs. Photographs should have a scale and detailed ones should include a north arrow.
- Drawings and photographs will be recorded in a register giving details of feature number and location.
- Sealed/undisturbed archaeological contexts in the form of buried soils, layers or deposits within significant archaeological features (ditches and pits, etc) will be sampled for environmental evidence and dating material. In the event that significant organic remains are encountered, advice may be needed from Vanessa Straker (Regional Advisor for Archaeological Science). Any necessary environmental sampling will be guided by *Environmental Archaeology* (English Heritage Centre for Archaeological Guidelines. 2001/02).

### **Treatment of finds**

The archaeological fieldwork may produce artefactual material.

- All finds in significant stratified contexts predating 1800 AD (e.g. settlement features) should be collected by context and described. Post medieval or modern finds may be disposed of at the cataloguing stage. This process will be reviewed ahead of its implementation.
- All finds will be collected in sealable plastic bags which will be labelled immediately with the context number or other identifier.

### **Human remains**

Any human remains which are encountered will initially be left in situ and reported to the HEPAO and the appropriate authorities (the Coroner), where appropriate. If removal is necessary this must comply with the relevant Government regulations. If burials are encountered their legal status must be ascertained and recording and/or removal must comply with the legal guidelines. If human remains are not to be removed their physical security will be ensured by back filling as soon as possible after recording. If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view. Once excavated, human remains will not be exposed to public view.

### **Fieldwork: photographic recording**

The photographic record shall consist of prints in both black and white and colour together with the negatives. Digital photography will be used for report illustration. For both general and specific photographs, a photographic scale shall be included. In the case of detailed photographs it may be appropriate to include a north arrow. The photographic record shall be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

The photo record will comprise:

- general views
- examples of significant detail

Methodology for the archive standard photography is set out as follows:

- Photographs of details will be taken with lenses of appropriate focal length
- A tripod will be used to take advantage of natural light and slower exposures
- Difficulties of back-lighting will be dealt with where necessary by balancing the lighting by the use of flash
- A metric scale will be included in all views, except where health and safety considerations make this impractical

### **Archiving**

Following review with the HE Project Manager the results from the fieldwork will be collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006* upon completion of the project.

This will involve washing and cataloguing of finds, the indexing and cross-referencing of photographs, drawings and context records.

All finds, etc will be stored in a proper manner (being clearly labelled and marked and stored according to HE guidelines). All finds work will be to accepted professional standards and will adhere to the Institute for Archaeologists *Guidelines for Finds Work*.

All records (context sheets, photographs, etc) will be ordered, catalogued and stored in an appropriate manner (according to HE guidelines).

The site archive and finds will initially be stored at HE premises. The archive including a copy of the written report shall be deposited with the Royal Cornwall Museum within two months of the completion of the full report and confirmed in writing with the HEPAO. The RCM will be notified of the commencement of the project and included in discussions for sampling and disposal as appropriate.

The full report including all specialist assessments of artefact assemblages shall be submitted within a length of time (but not exceeding six months) to be agreed between the applicant and the archaeological contractor, Cornwall Council Historic Environment Service and the Royal Cornwall Museum. A further digital copy shall be supplied on CD-ROM preferably in 'Adobe Acrobat' PDF format. This report will be held by the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation. A copy of the report will be supplied to the National Monuments Record (NMR) in Swindon, to the Courtney Library of the Royal Cornwall Museum and to the Cornish Studies Library.

In the event that there are no finds or they are retained by the owner, the documentary archive in due course shall be deposited with the Cornwall Record Office, but in the medium term will be stored at ReStore. All digital records will be filed on the Cornwall Council network.

### **Archive reporting**

A summary report on the findings of the geophysical survey will be prepared; following the construction phase, the results from the fieldwork will be presented in a concise report. Copies of the reports will be distributed to the Client, the Cornwall and Scilly HER and the local and main archaeological record libraries. PDF copy of the reports will be produced.

This will involve:

- producing descriptive text;
- producing maps and line drawings;
- selecting photographs;
- report design;
- report editing;
- dissemination of the finished report;



- deposition of archive and finds in the Royal Cornwall Museum, Truro.

The report on the watching brief will have the following contents:

- Summary
- Project background
- Aims and objectives
- Methodology
- Location and setting
- Designations
- Site history
- Archaeological results
- Chronology/dating evidence
- Significance
- Mitigation measures
- Conclusions
- References
- Project archive index
- Supporting illustrations: location map, historic maps, plans, elevations/sections, photographs

English Heritage/ADS online access to the index of archaeological investigations (OASIS) records will be prepared for each phase of the archaeological reporting.

### **Assessment/analysis / publication**

The structural and stratigraphic data and artefactual material will be assessed to establish whether further analyses and reporting is appropriate. The outline of the final report, and the work required to produce it will be determined in an updated project design.

In the event of significant remains being recovered (e.g. prehistoric or medieval artefacts) it may be appropriate to:

- Consult with the Historic Environment Planning Advice Officer over the requirements for assessment, analysis and reporting.
- Liaise with specialists (e.g. artefacts) to arrange for assessment of the potential for further analysis and reporting.
- Arrange for specialist analyses, where appropriate.
- Produce a final report, for example for publication in an academic journal such as *Cornish Archaeology*.

### **Timetable**

The study is anticipated to be commenced during winter 2011. HE will require at least three weeks notice before commencement of work, in order to allow the allocation of field staff time and arrange other logistics.

The archive report will be completed within 3 months of the end of the fieldwork. The deposition of the archive will be completed within 3 months of the completion of the archive report.

### **Monitoring and Signing Off Condition**

Monitoring of the project will be carried out by Dan Ratcliffe, Historic Environment Planning Advice Officer. The HEPAO will be regularly kept informed of progress. Notification of the start of work shall be given in writing to the HEPAO at least one week in advance of its commencement. Any variations to the WSI shall be agreed with the HEPAO, preferably in writing, prior to them being carried out.

Monitoring points during the study will include:

- Approval of the WSI
- Completion of fieldwork
- Completion of archive report
- Deposition of the archive

Where the Historic Environment Planning Advice Officer is satisfied with the archive report and the deposition of the archive written discharge of the planning condition will be expected from the local planning authority (LPA).

## Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE employs some 20 project staff with a broad range of expertise, undertaking around 80 projects each year.

HE is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis
- Maritime and coastal zone assessments
- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

## Standards



HE is a Registered Organisation with the Institute for Archaeologists and follows their Standards and Code of Conduct.

As part of Cornwall Council, HE has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

## Terms and conditions

### Contract

The HE projects team is part of Historic Environment, Cornwall Council. If accepted, the contract for this work will be between the client and Cornwall Council.

The views and recommendations expressed will be those of the HE projects team and will be presented in good faith on the basis of professional judgement and on information currently available.

### **Project staff**

An experienced archaeologist employed by HE will carry out the archaeological fieldwork.

The report will be compiled by experienced archaeologist(s) employed by HE.

Relevant experienced and qualified specialists will be employed to undertake appropriate tasks during the assessment and analysis stages of the project.

The project will be managed by a nominated Senior Archaeologist (Adam Sharpe BA MIFA) who will:

- Discuss and agree the detailed objectives and programme of each stage of the project with the client and the field officers, including arrangements for health and safety.
- Monitor progress and results for each stage.
- Edit the project report.
- Liaise with the client regarding the budget and related issues.

Work will be carried out by HE field staff, with assistance from qualified specialists and sub-contractors where appropriate.

### **Report distribution**

Paper copies of the reports will be distributed to the client, to local archives and national archaeological record centres.

Digital copies of the report, illustrations and any other files will be held in the Cornwall HER and also supplied to the client on CD or other suitable media.

### **Copyright**

Copyright of all material gathered as a result of the project will be reserved to the Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

### **Freedom of Information Act**

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

HE will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

### **Health and safety statement**

HE follows the Council's *Statement of Safety Policy*. For more specific policy and guidelines HE uses the manual *Health and Safety in Field Archaeology* (2002) endorsed by the Standing Conference of Archaeological Unit Managers.

Prior to carrying out on-site work HE will carry out a Risk Assessment.

### **Insurance**

As part of Cornwall Council, HE is covered by Public and Employers Liability Insurance.

### **Standards**

The HE follows the Institute for Archaeologists' Standards and Code of Conduct and is a Registered Archaeological Organization.

As part of Environment, Planning and Economy Directorate of Cornwall Council, the HE projects team has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

**Notes**

- It is assumed that the client will supply the mechanical excavator required during the archaeological watching brief. The cost is not included in the project estimate.
- The client will be responsible for the Health and Safety arrangements onsite.
- In the event that human remains are uncovered the client will ensure that appropriate screening is put in place.
- The post excavation programme (assessment, analysis and reporting) will need to be reviewed in the light of the fieldwork.

*Adam Sharpe BA MIfA*

*Senior Archaeologist*

*22/11/2011*

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