

East Helscott, Marhamchurch, Cornwall  
Archaeological geophysical survey

Cornwall Archaeological Unit

Report No: 2017R028



# **East Helscott, Marhamchurch, Cornwall**

## **Archaeological geophysical survey**

<b>Client</b>	<b>Qila Biogas Ltd.</b>
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## **Acknowledgements**

This study was commissioned by Emma Dawson of Qila Biogas Ltd. and was carried out by Cornwall Archaeological Unit, Cornwall Council.

The geophysical survey was undertaken by TigerGeo Ltd.

The Project Manager was Dr. Andy Jones.

The views and recommendations expressed in this report are those of Cornwall Archaeological Unit and are presented in good faith on the basis of professional judgement and on information currently available.

## **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.



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Cover illustration

*An extract from the geophysical survey results from the south-western part of the East Helscott site.*

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*Fig 13. Geophysical results from the central area. [13] indicates an area of cultivation activity. The brighter colours derive from a buried metal pipe or similar.*

*Fig 14. The results from the eastern area. [18] represents a potentially early enclosure, whilst [15] and [16] may be related. Survey of the western part of this area was not possible due to ground obstructions, though archaeological features clearly extend into it.*

## Abbreviations

CAU	Cornwall Archaeological Unit
CIfA	Chartered Institute for Archaeologists
HER	Cornwall and the Isles of Scilly Historic Environment Record
MCO	Monument number in Cornwall HER
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

## **1 Summary**

Cornwall Archaeological Unit were commissioned by Qila Energy Ltd. to carry out a magnetometer survey of an area at East Helscott Farm, Marhamchurch, Cornwall which may be impacted on by the proposed construction of an anaerobic digester and gas injection plant utilising agricultural feedstock. The survey was sub-contracted to TigerGeo Ltd. and was undertaken in mid-April 2017, though its completion in one area was hampered by mounds of excavated spoil.

The area close to Eat Helscott contains a number of Iron Age/Romano-British rounds (enclosed farm settlements) and the survey appeared to show agricultural enclosures and activity areas related to these within two areas to the south-west and east of the modern farm which would be impacted on by the proposals. Other areas of the farm which were covered by the survey produced evidence suggesting medieval cultivation activity, removed post-medieval boundaries and indications of land drainage features. The results of the survey were summarised in a report to the client.

It was recommended that the areas immediately to the east of the core of the modern farm and the area to its south-west where it is proposed that a new lagoon will be excavated should be the subject of further archaeological investigation and recording in advance of any groundworks taking place.

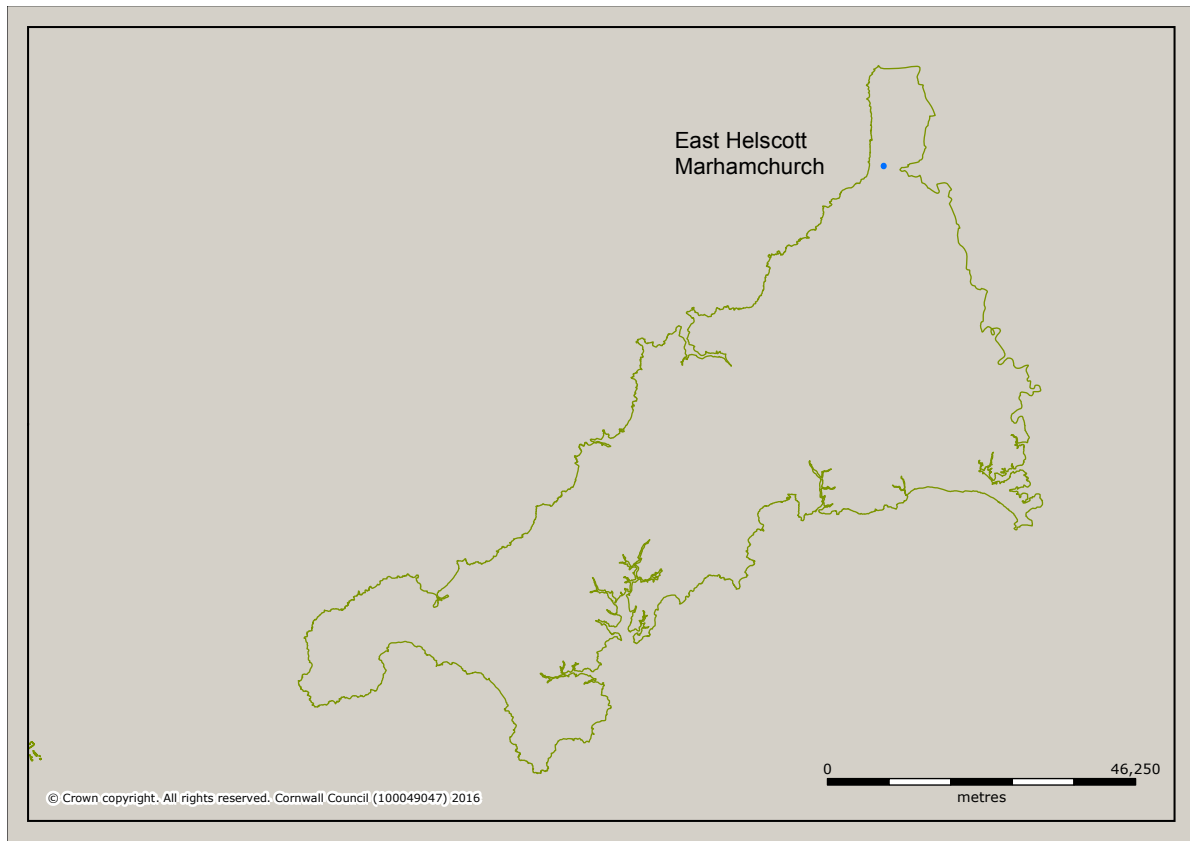


Fig 1. The location of East Helscott, Marhamchurch.

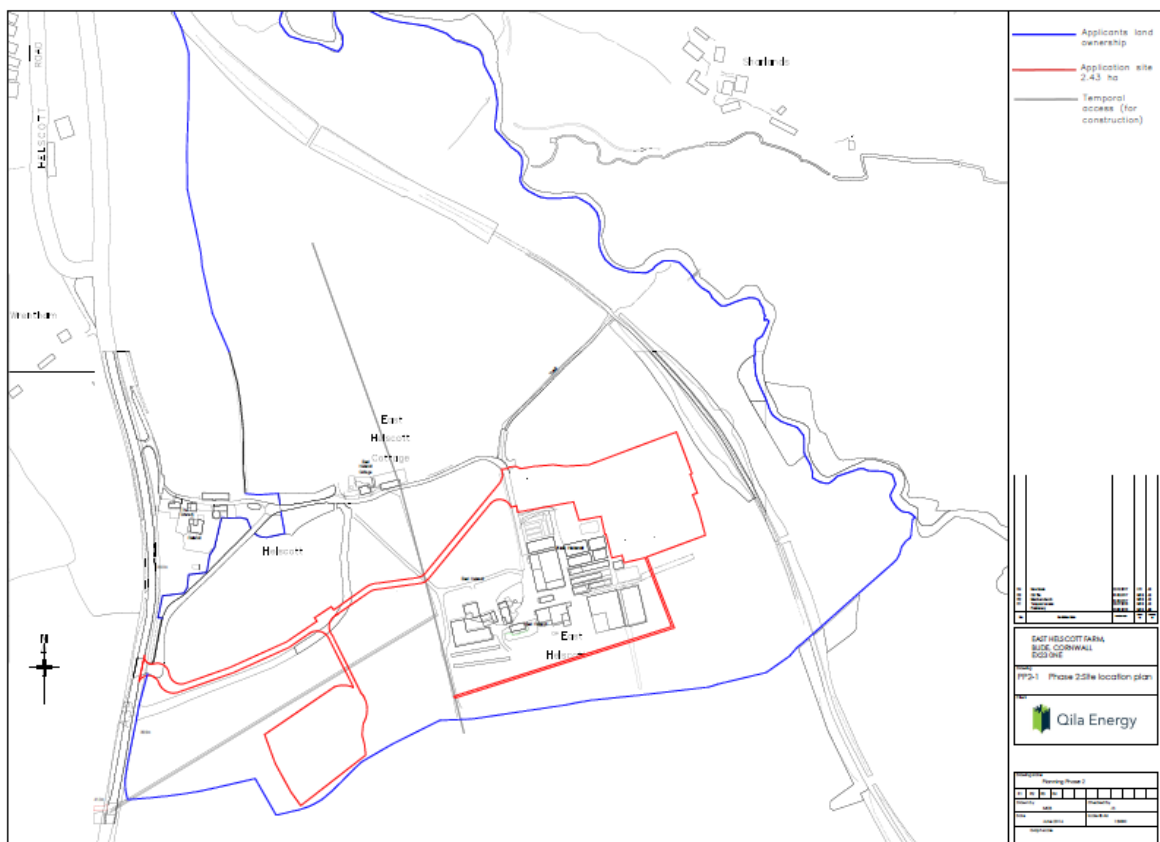


Fig 2. The extent of the proposed development at East Helscott (enclosed within the redline boundary).



## 2 Introduction

### 2.1 Project background

Cornwall Archaeological Unit (CAU) were contacted on 24 February 2017 by Emma Dawson of Qila Energy Ltd. with a request for a geophysical survey of the footprint of a proposed anaerobic digester and gas injection plant at East Helscott Farm, Marhamchurch, north-east Cornwall.

CAU requested tenders from a number of specialised geophysical survey contractors to undertake this work; the work was let to TigerGeo Ltd. whose survey fieldwork was undertaken in late April 2017.

### 2.2 Aims

No specific brief has been produced which covers the aims and objectives of this watching brief.

The site specific aims are to:

- Establish the presence/absence of archaeological remains.
- Determine, where possible, the extent, condition, nature, character, date and significance of any archaeological remains revealed within the proposed development area.
- Establish the nature of previous human activity in this section of the Cornish landscape.
- To provide further information on the archaeology of the landscape around East Helscott from any archaeological remains encountered.

The project objective is to produce a report setting out the results of the archaeological geophysical survey, placing them in their historical and landscape context. A further objective is to create an entry to the Historic England OASIS/ADS national online database of archaeological projects.

### 2.3 Methods

#### 2.3.1 Desk-based assessment

An outline desk-based assessment based on the consultation of historical databases and archives was undertaken in order to obtain information about the history of the site. The principal sources consulted were:

- The Cornwall HER;
- Early maps;
- Relevant GIS databases available to CAU.

#### 2.3.2 Geophysical survey

A survey of the footprint of the development, including proposed roadways, a new lagoon and other features was carried out in April 2017 by TigerGeo Ltd. The survey was undertaken using a non-gradiometric array of real-time GNSS-tracked caesium vapour magnetometers on an ATV-towed sledge. A total of 3.0ha was surveyed. Owing to the presence of a number of large temporary soil dumps occupying the western half of the field immediately to the east of the farm complex it did not prove possible to survey the whole of the proposed development area.

A non-gradiometric configuration for the magnetic sensors was used to avoid measurement sensitisation in the shallowest region of the soil, allowing deeper structures to be imaged. This approach removes the suppression of ambient noise and temporal trends; these are removed during post-fieldwork data processing.

Caesium instrumentation has a greater sensitivity than fluxgate-based instruments, however, at the 10 Hz sampling rate used here this increase in sensitivity is limited to

about one order of magnitude. The array system is designed to be non-magnetic and to contribute virtually nothing to the magnetic measurement, whether through direct interference or through motion noise.

The magnetic susceptibility of the soils across the site are considered suitable for detection by magnetic survey of archaeological features cut into natural soil strata, though some background magnetic variations may arise from localised hydrological conditions.

### **3 Location and setting**

See Figures 1 and 2.

The project area at East Helscott is centred at SS 22068 10268. The site slopes from west to east from 60m OD to 40m OD (Fig 8). The site is underlain by sandstone bedrock of the Bude Formation, whilst the soils are freely-draining slightly acid loams over most of the site, with freely-draining floodplain soils covering the eastern half of the survey area (BGS data).

East Helscott adjoins the A39 on its eastern side, whilst the settlement and parish centre of Marhamchurch is sited on rising ground to its north at a distance of just over one kilometre. Widemouth Bay and the sea are 2.25km away to the west. The Marhamchurch parish boundary is locally formed by the southern edge of East Helscott Farm.

### **4 Designations**

#### **4.1 National**

No national designations apply to the East Helscott site.

#### **4.2 Regional/county**

No regional or county designations apply to the East Helscott site.

### **5 Site history**

Helscott, adjoining to the A39, was first recorded in 1252, when it was called 'Hillvescott'. The name is derived from the English 'hill edge cottage'

East Helscott is a post-medieval farm and is presumed to have been created from the eastern part of the original Helscott holdings. It was not shown on Gascoyne's map of Cornwall dating to 1699, though two separate farms at 'Hillscott' equating to Helscott and East Helscott were depicted on Martyn's map dating to 1748, suggesting that this creation of the new farm took place during the early 18<sup>th</sup> century. 'Hillscot' was depicted on the 1<sup>st</sup> Edition OS 1" to a mile mapping, the name apparently applying to East Helscott.

East Helscott' was shown on the 1840 Marhamchurch Tithe Map (Fig 3), when the farm was owned by Sir John Buller Yard and occupied by Robert Hicks. The farm was entirely in arable at that date. Helscott itself was by that date referred to as Little Helscott. East Helscott (Helscott on the Tithe Award mapping) consisted of a farmhouse and five closely-set outbuildings in two groups.

The range of farm buildings had been extended at its eastern end by 1880 and a small orchard or paddock nearby had been planted with trees (Fig 4); a small pair of buildings had been added to the east of the farmhouse by 1908 and the Holsworthy to Bude branch of the London and South Western Railway (LSWR) had been constructed through its eastern fields; this opened in 1898 and closed in 1966 (Fig 5). No further building had taken place by the time of the 1932-39 OS map revision (Fig 6).

The modern farm incorporates a number of large modern agricultural buildings and covered yards, these having been constructed to the east and north-east of the original

core of the farm (Fig 7). The farm is located only a short distance to the west of a north-flowing tributary of the River Neet, though is separated from it by the remains of the abandoned railway trackbed.

Cropmark features plotted by the National Mapping Programme from aerial photographs include a number of sub-rectangular and sub-circular enclosed farming settlements of the Iron Age or Romano-British period (rounds) close to the river on both banks, two overlying examples (MCO39113 and MCO39112 – see Fig 10) being sited 375m to the south-west of East Helscott Farm just to the east of the A39 at Elmscote. The presence of these and other enclosed farming settlements of this date which have been recorded in the landscape around Marhamchurch clearly indicates the longevity of farming activity in this part of the north Cornish landscape (and see Fig 9).

## **6 Archaeological results**

See Figures 11 to 14.

The following is derived from the TigerGeo technical report.

### Land use

No aspects of modern land use on site were expected to have materially affected the magnetic properties or character of the ground, and hence the detection of features of archaeological interest. The limiting factors on the site derived from the natural environment or from the large dumps of topsoil in the area to the east of the farm.

The current field system predates the 1840 Tithe Map, with only minimal boundary loss since that time (two boundaries have been removed). One of these is evident in the data from the southernmost field as a typically double-ditched Cornish hedge with a (probably) associated headland (Fig 12, shown in brown). The other was not detected but may be masked by an underground steel pipe or cable (Fig 13).

In the eastern field [15] and [16] appear to be former field boundaries predating what seem to be post-medieval fields, but their full extent could not be mapped owing to obstructions within the field. In contrast [1] in the west and possibly [6] to the south of it seem to be former boundaries in terms of their relationship with the extant field system, but are not known of from the map evidence, and therefore cannot conclusively be identified as such. Likewise [7] may also be within this category.

More enigmatic and perhaps cultivation or drainage-related are weak anomalies [8] and [9], both of these curving slightly and potentially aligned with one or more sets of relict cultivation furrows, these being most clearly apparent in the western part of the survey. In the same field a wide (3m to 4m) band of slightly reduced field strength [10] probably marks a former arable headland, this being parallel to the present field boundary. A similar feature [21] exists to the east of the farm.

There is evidence for former ridge-and-furrow type cultivation in all of the fields and to varying extents, this probably being due to natural changes in soil magnetic properties and not the presence of absence of former arable activity. It is most clear at [13] (Fig 13) where it is aligned with the lane giving access to the buildings to the north. Further west it is less clear, although two slightly differently aligned sets of furrows seem to exist in the southern part of the survey.

Land drains are apparent in the same field, but not elsewhere, highlighting the possible impact in this area of hydrological conditions upon soil magnetic properties.

East of the farm buildings (Fig 14) there is again evidence for cultivation, much the same as [13] north of the buildings. There are also weak and/or enigmatic short linear anomalies [17] and [19] which might be cultivation-related or perhaps drains, or perhaps ditch fills of archaeological interest.

## Archaeology

Included in this category is a feature generically interpreted as a ditch fill [1] which could be of archaeological interest, but could equally be a field boundary removed prior to 1840, as noted above.

Within the southern part of the survey (Fig 12) there is a dense concentration of features likely to be of archaeological interest, including parts of two enclosures [2] and [3] plus a number of small discrete foci of possible activity [4]. These are each about 8m - 10m across but lack distinct structural detail, being regions of more magnetic soil within the wider region [5] of higher magnetic susceptibility. This wider region may be due to the 'habitation effect', whereby anthropogenic processes including heating and biochemical processes associated with settlement or industrial activity enhance the susceptibility of an area; however it could also have a natural origin. If the latter is the case then the three areas [4] could represent pockets of natural variation, although if this is the case they are unusual at this site. Within the same region there appear to be short fragments of linear, presumably ditch, fills.

The two enclosures are both rectilinear, and apparently part of a complex, however the significance of ditch fill [6], suggested above to be a former field boundary, is uncertain within this context, especially as the southern edge of [2] appears to be perpendicular to [6] and co-incident with a longer ditch fill. A larger area would need to be surveyed to determine whether these enclosures are actually separate or are subdivisions of a larger system. Again, [7] is basically a linear ditch fill and could be interpreted as a former field boundary or part of the complex represented by [2-6].

Elsewhere, [12] and [20] could be natural features, small pit fills or possibly hearths. There is insufficient context in each case to permit better identification, these classes of feature all having the potential to produce similar magnetic anomalies.

East of the farm buildings (Fig 14) there are two pairs of possible ditch fills [17] and [19], and as discussed above both could be cultivation-related, but could have an alternative origin. A further small enclosure exists in this area [18], this apparently being a small, slightly-rounded sub-rectangular enclosure unrelated to the extant field boundaries. Insufficient of this feature is visible to determine whether it is part of a possible medieval field system hinted at by fills [15] and [16] nearby, or whether it could be an earlier feature, possibly an early enclosure.

## Conclusions

The data reveals that this area of the Cornish landscape has been under arable cultivation throughout, and that there are few indications of an agricultural landscape pre-dating the present field system. Some elements of the boundary features revealed probably reflect the post-medieval enclosure of areas of former medieval strip cultivation.

There is a definite concentration of early enclosures to the south-west of the modern farm, perhaps related to the crop-mark features identified by the NMP immediately adjacent to the south – these may represent elements of related enclosures, part of a field system of Iron Age/Romano-British date, or discrete enclosures within a wider area of activity. The presence of a region of elevated background magnetic susceptibility might, if this is not due to a natural origin, suggest the presence of associated settlement or industrial activity.

Further enclosures revealed to the east of the farm buildings may in part reflect medieval land divisions removed prior to the 1840s, though earlier origins are also possible.

## **7 Chronology/dating evidence**

The geophysical survey has revealed evidence for phases of settlement and related agricultural activity pre-dating that shown on the *circa* 1840 Tithe Award mapping (Fig

3) which frames the modern field systems at East Helscott. The Cornwall HLC mapping (Fig 9) suggests that these field systems are of medieval origin, though they have clearly been considerably modified. The survey has potentially revealed some evidence for some elements of the medieval cultivation arrangements on which the modern boundaries were based.

These appear to be underlain in some areas of the farm (particularly to the south-west) by elements of an probably earlier field system which may be associated with the Iron Age/Romano-British period enclosed farming settlements which have been recorded as cropmarks to the south-west of East Helscott (Fig 10). However, these features potentially overlies a further area of settlement or related activity (Fig 12), suggesting considerable complexity and time depth in the evolution of this landscape.

## **8 Conclusions and recommendations**

The geophysical survey undertaken at East Helscott covers only part of the enclosed land related to the farm, and only a limited area was available for survey to the east of the farm buildings owing to the presence of significant physical obstructions occupying around 50% of this field. This is unfortunate given that this part of the farm is likely to be subjected to a considerable degree of physical impact should the current proposals be given planning consent, as the construction of a series of large rectangular slurry tanks is planned for this part of the site.

The soils at East Helscott proved susceptible to magnetometer survey. The results from the eastern part of the survey area (Fig 14) include both cultivation evidence and linear anomalies (as well as a possible sub-rectangular enclosure) that clearly predate the modern field layout. These may all be features dating to the medieval period, but may alternatively include elements of a pre-existing settlement and agricultural landscape, possibly dating to the Iron Age/Romano-British period. Owing to the physical restrictions on survey within this area of the site it has not been possible to gain sufficient information to characterise or date these features, or to plot their full extent, and it is therefore recommended that this part of the proposed development site is the subject of additional archaeological investigation and recording, preferably once the soil dumps have been removed from it.

The three northern linear survey areas produced only limited evidence for underlying archaeology (Fig 13), with the exception of some well-preserved cultivation furrows on two crossing alignments which may predate the modern boundary arrangements. It is not felt that any features within these three areas which adjoin areas proposed as roadways and which will site the digester units and associated plant requires further archaeological investigation.

The most archaeologically interesting survey results come from the area to the south-west of the farm (Fig 12), where the data includes a series of linked linear anomalies [2] and [3] which appear to represent elements of a field system of potentially early date. This part of the site also includes an area [5] and three foci coded [4] where the data suggests the possibility of prehistoric settlement or industrial activity. Whilst the survey can indicate the location, extent and broad character of these features, establishing its detail and date could only be achieved through detailed archaeological investigation and recording. A programme of targeted evaluation trenching, agreed with the Historic Environment Planning Advice Archaeologist, would be the most appropriate method of gaining the level of information required to determine the potential impacts of the proposals on the sub-surface archaeology of this area of the farm; this might need to be followed up with a controlled soil-strip and recording, or by further more detailed excavation and recording, dependant on the results from the evaluation trenching. As this is designed to be the site of a substantial lagoon, all archaeological features within this particular area will be removed should the proposal go ahead.

## 9 References

### 9.1 Primary sources

Ordnance Survey, c1880. 25 Inch Map First Edition (licensed digital copy at CAU);

Ordnance Survey, c1907. 25 Inch Map Second Edition (licensed digital copy at CAU);

Ordnance Survey 1932-1939, 25 inch map revision (on-line copy via CC intranet website);

Ordnance Survey, MasterMap Topography;

Tithe Map and Apportionment, c1840. Parish of Marhamchurch (licensed digital copy at CRO).

Joel Gascoyne's Map of Cornwall, 1699

Thomas Martyn's Map of Cornwall, 1748

### 9.2 Websites

<http://www.heritagegateway.org.uk/gateway/> Online database of Sites and Monuments Records, and Listed Buildings

## 10 Project archive

The CAU project number is **146681**

The project's documentary, digital, photographic and drawn archive is maintained by Cornwall Archaeological Unit

Electronic data is stored in the following locations:

Project admin: \\Sites\Sites E\East Helscott Marhamchurch geophysics\

Electronic drawings: \\Historic Environment (CAD)\CAD Archive\Sites E\East Helscott Marhamchurch geophysics

Historic England/ADS OASIS online reference: cornwall2-284039



Fig 3. The project area (circled) as shown on the circa 1840 Marhamchurch Tithe Map.

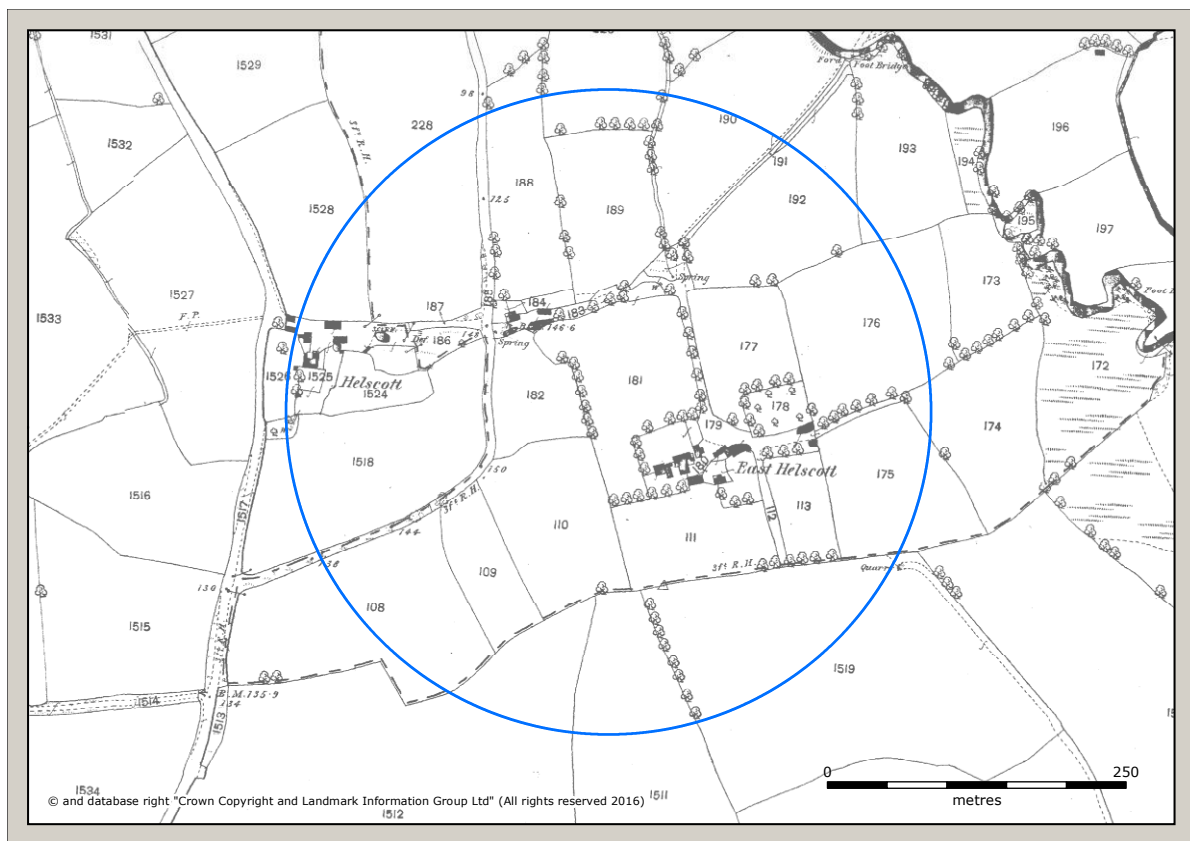


Fig 4. The project area as shown on the circa 1878 1<sup>st</sup> Edition OS 25" mapping.

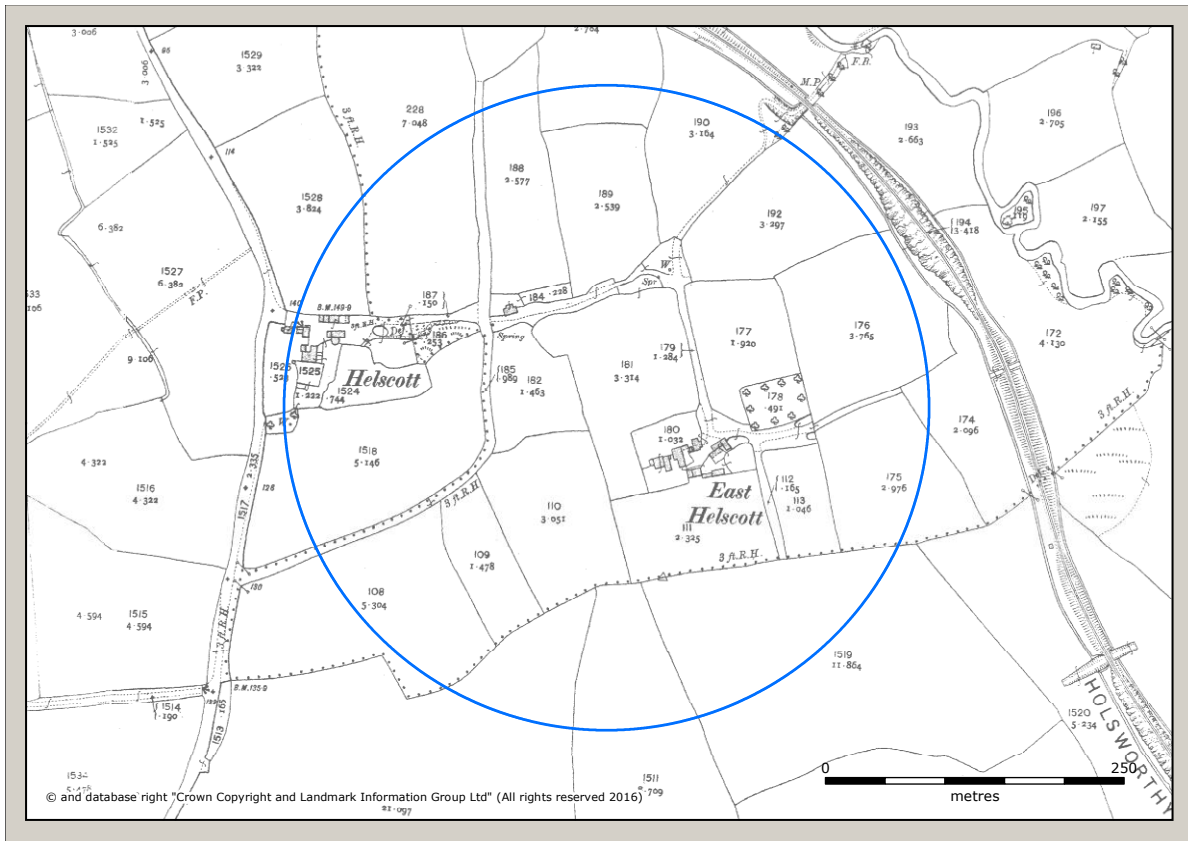


Fig 5. The project area as shown on the circa 1908 OS 25" mapping.

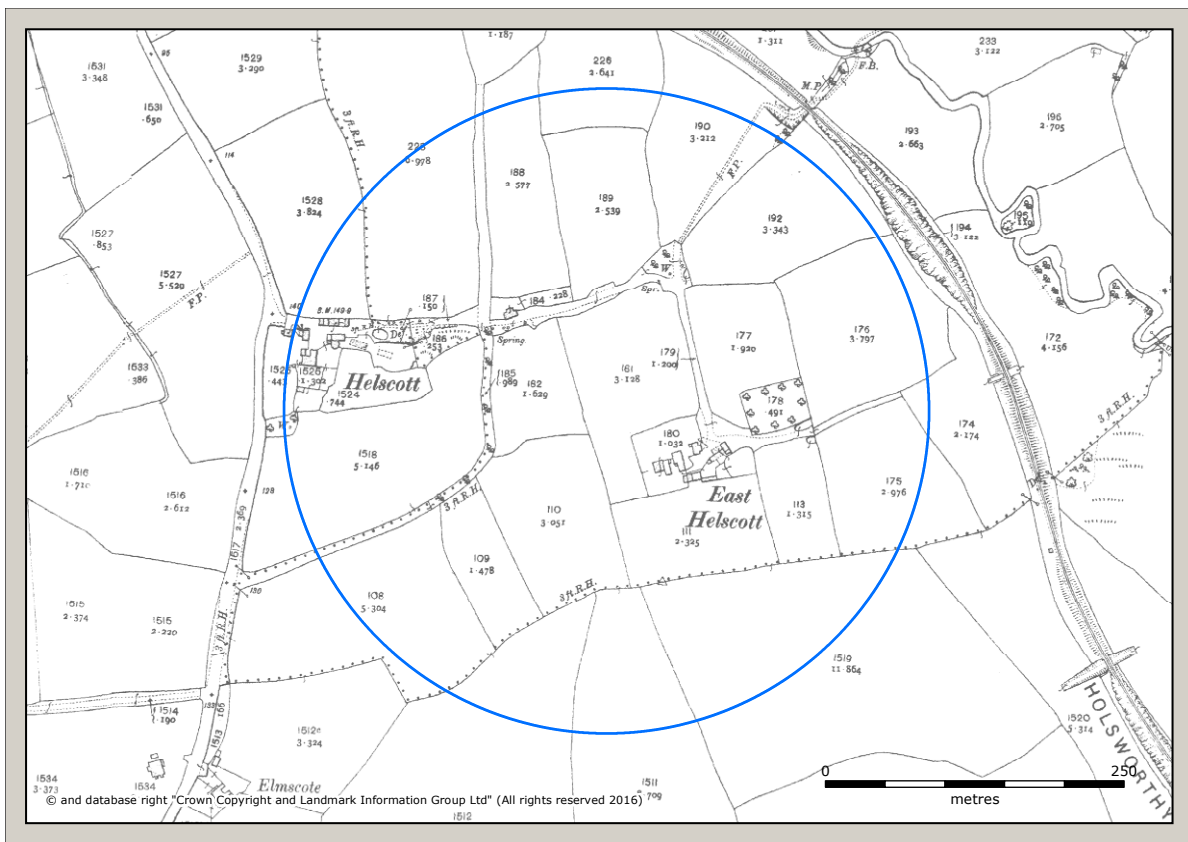


Fig 6. The project area as shown on the circa 1932 OS 25" mapping.





Fig 7. The project area as shown on the 2005 CCC aerial photographic mapping.

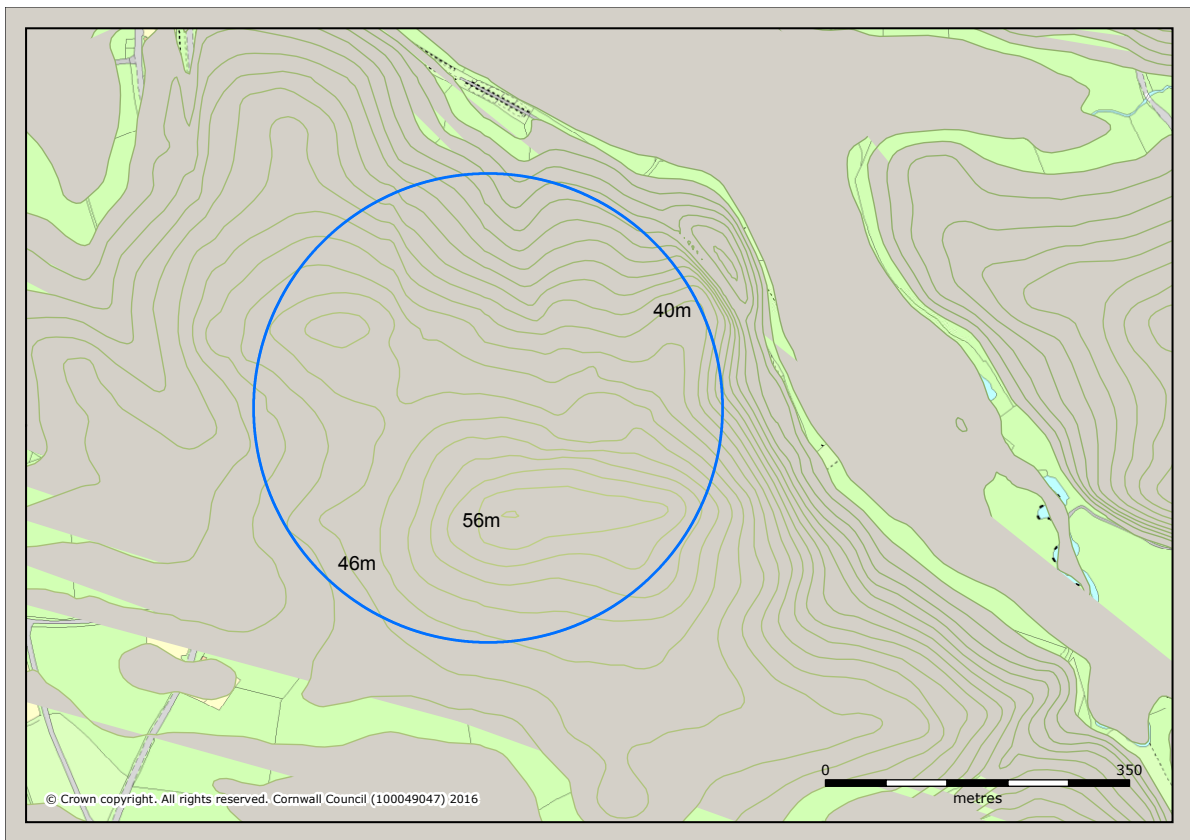


Fig 8. The topography of the project area.



Fig 9. The Historic Landscape Character of the project area. Darker green represents fields enclosed in the medieval period, the lighter green represents more recently enclosed land.

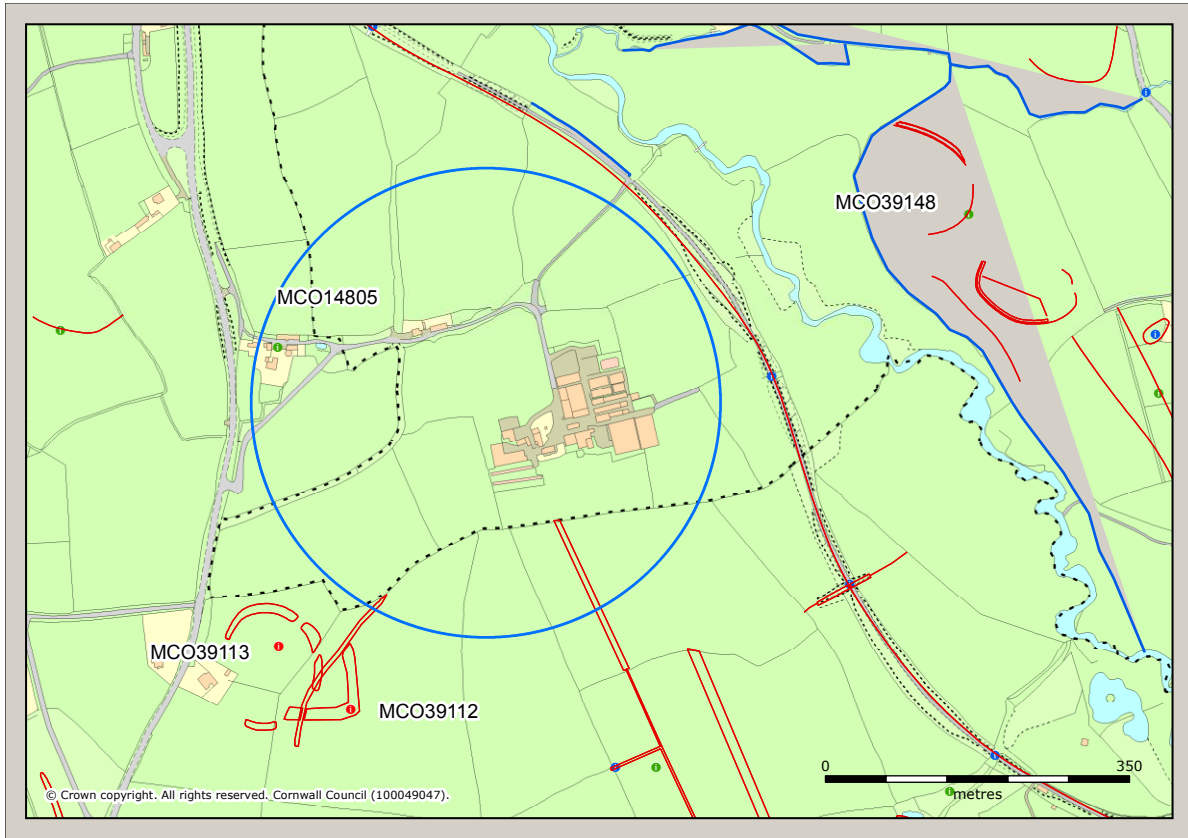


Fig 10. Archaeological features plotted by the National Mapping Programme and sites recorded in the Cornwall and Scilly Historic Environment Record.



Fig 11. The interpreted geophysical survey results from East Helscott.

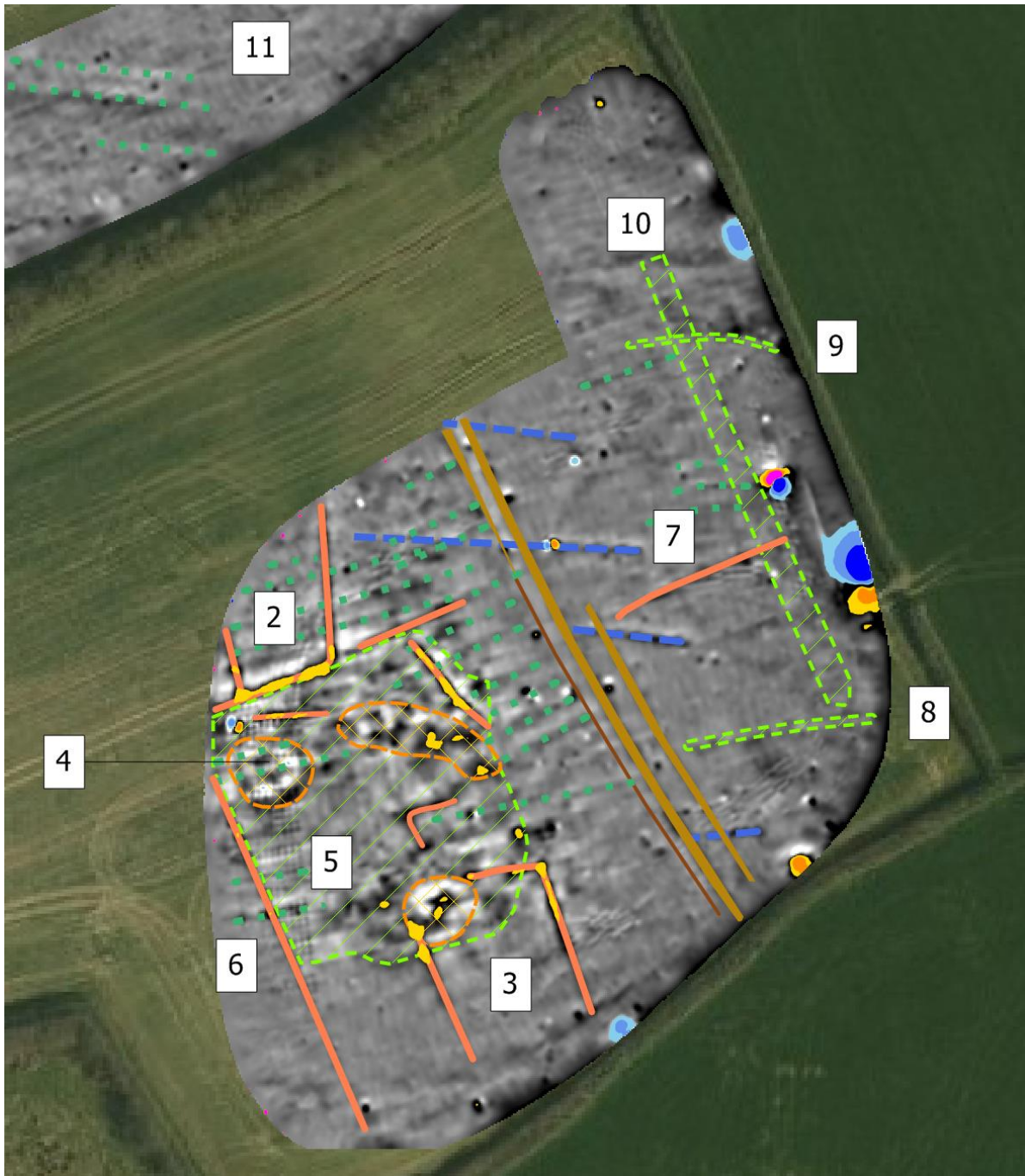


Fig 12. An extract from the interpreted geophysical survey for the south-western part of the site, showing [5] the area of higher magnetic susceptibility interpreted as potentially resulting from settlement or industrial activity, [2] and [3] probably early enclosures and [4] three areas interpreted as activity foci. [7] are probably land drains. Boundaries [6] and [7] may be of the same period as enclosures [2] and [3].



Fig 13. Geophysical results from the central area. [13] indicates an area of cultivation activity. The brighter colours derive from a buried metal pipe or similar.



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