

Findings of a geophysical survey



Lizard Village, Landewednack, Cornwall

Findings of a geophysical survey

Client	Wm G Weller and Son Ltd
Report Number	2014R017
Date	24 February 2014
Status	Final
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Acknowledgements

This study was commissioned by David Perry of Wm G Weller and Son Ltd and carried out by Historic Environment Projects, Cornwall Council.

The geophysical survey was undertaken by Archaeophysica Ltd. .

The Project Manager was Adam Sharpe

The views and recommendations expressed in this report are those of Historic Environment Projects 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

Lizard Village, Landwednack; extract from the First Edition OS c1809 1" to 1 mile map

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Abbreviations

CRO	Cornwall County Record Office
EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
MCO	Monument number in Cornwall HER
NGR	National Grid Reference
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

1 Summary

Historic Environment Projects were approached by David Perry of Wm G Weller and Son Ltd with a request for an assessment of a site proposed for a small housing development on land adjacent to Cross Common, to the north of Lizard Village, Landwednack; the assessment was to consist of the summarised results of a geophysical survey and a desk based assessment to provide a context for these and was commissioned early February 2014.

The desk based assessment suggested that the survey area had been part of a discrete area of downland that saw post medieval or later enclosure. This was neighboured to either side by more consistently farmed 'Anciently Enclosed Land' of at least early medieval or medieval origin. Nearby monuments recorded in the Cornwall HER included a possible Bronze Age barrow, a possible prehistoric or Romano-British settlement and two medieval field systems, all located within 500m of the proposed development site.

The magnetometer survey of the project area was compromised by less than optimal ground conditions and a spread of modern materials across the surface area. Parts of the site were considered unsuitable for survey as a result of this while other areas may have seen more subtle archaeological features obscured by the stronger responses produced by modern dumping. A small range of linear features were identified by the survey. Two of these features were thought to represent historic field boundaries that appeared on late 19th century mapping. Three linear features in the south of the area were thought to represent field or enclosure boundaries preceding this date. Their alignment potentially suggests a relationship to the medieval field system to the northwest of the proposed development site. Their proximity to the area of prehistoric or Romano-British settlement may indicate an association, although this was not sufficiently demonstrated by the available evidence, to date.

The features identified by the geophysical survey were not considered to be of particular archaeological significance. Given the less than optimal conditions for the geophysical survey, however, and the potential for additional archaeological features to have been missed or obscured, it has been recommended that the HEPAO retain the option to request further assessment, such as evaluation trenches or a watching brief, prior to or during groundworks on the site.

A report detailing the findings of the assessment was prepared for the Client.

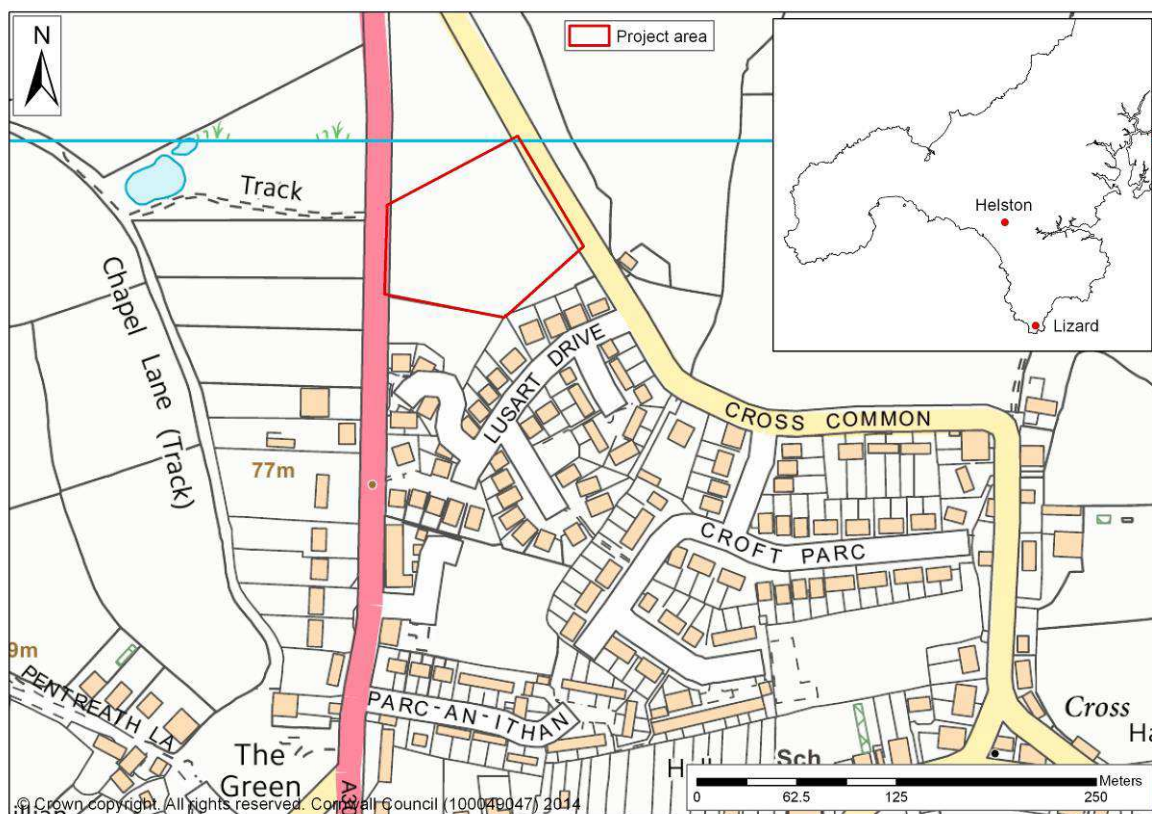


Fig 1 The location and extent of the proposed development area at Lizard Village

2 Introduction

2.1 Project background

Historic Environment Projects, Cornwall, was approached by David Perry of Wm G Weller and Son Ltd on behalf of Cornwall Rural Housing Association with a request to provide an assessment for a proposed development of 25 affordable homes on land adjacent to Cross Common, to the north of Lizard Village, Landewednack, covering an area of 0.95 Ha centred at SW 70440 12940 (Fig 1). The project assessment follows the commission of Archaeophysica Ltd by the client to undertake a magnetometer survey at Lizard in line with a requirement from the Historic Environment Planning Advice Officer (HEPAO) (West Cornwall and Scilly), carried out in January 2014, and provides a synthesis for the results of that survey within the context of a desk-based assessment.

Planning application number PA12/09061 applies to the proposal, which is currently at pre-application stage.

A brief prepared by Mr. Phil Markham (HEPAO West Cornwall and Scilly) dated 17/10/2012 sets out the requirements for the determination of the potential impacts of the proposal on the historic environment; the Cornwall and Scilly Historic Environment Record (HER) records numerous potential prehistoric sites within 500m of the proposed development site, including several enclosures and Bronze Age funerary monuments. It was therefore considered that groundworks associated with the development might potentially disturb buried archaeological remains.

The brief states:

We recommend that the application is deferred until an archaeological geophysical survey is undertaken to determine the buried archaeological potential. If however, consent is granted we recommend that that an archaeological recording condition is included. This would require that an archaeological geophysical survey is undertaken, the results of which may inform further archaeological works, which should be included in the developments time frame. The following proposed condition is in line with the National Planning Policy Framework paragraph 141.

2.2 Aims

The principal aim of the study is to gain a better understanding of the impacts which would result from the construction of housing on land at Lizard Village in the parish of Landewednack.

The overall project aims are to:

- Collect and report on additional archaeological information about the development site in order to determine the potential direct impacts on the archaeology of the site which would result from the current proposal.
- To recommend any mitigation measures which might be required by the HEPAO to offset or mitigate any determinable impacts on the site.

The site specific project aims are to:

- Produce a report summarising the geophysical survey in interpreted form.
- Inform whether further archaeological recording or other mitigation is recommended in advance of, or during the construction of housing.

The objective of the project is to produce a report setting out the likely range of impacts of the development on heritage assets within the site and to make recommendations to the Historic Environment Planning Advice Officer relating to the development proposed for this site.

2.3 Methods

2.3.1 Desk-based assessment

During the desk-based assessment historical databases and archives were consulted in order to obtain information about the history of the site and the structures and features that were likely to survive. The main sources consulted were as follows:

- Cornwall HER
- Early maps (see Section 5)

2.3.2 Geophysical survey

A suitably qualified sub-contractor (Archaeophysica Ltd.) was engaged by Wm G Weller and Son Ltd to carry out a geophysical survey of the land proposed for the housing development at Lizard Village.

On an initial survey visit to the site, the geophysical team found that the clearance of dumped material and scrub vegetation had been insufficient to allow the survey to be carried out, and even when further clearance work was subsequently undertaken by the client, the ground conditions for the survey remained less than optimal. Although cleared of dumped hard core and other materials there were still areas of the proposed development land that were affected by waste and fly-tipping. There were some issues with extreme rutting of the ground surface (a small area to the east); while on the northern and western extents the land had been fenced. As a result these areas were omitted due to being unsuitable for either a walked or towed survey. In total 0.74 Ha of the proposed area for development was covered by the geophysical survey.

Geometrics MagMapper G858 caesium magnetometers were used to carry out the magnetometry survey, utilising a multisensor acquisition system. The sensors were set to 0.03 nT at 10Hz to maximise sensitivity whilst decreasing the effects of surface anomalies. Line separation was 1.0m to achieve a compromise between speed of coverage and lateral resolution. The along-line interval was 0.3m in line with English Heritage guidance.

A sledge mounted system was used to undertake the survey as this provides a faster rate of coverage, less ground contact and imparts less ground pressure than a walking surveyor; it also provides a more stable measurement platform. Real-time tracking was provided by a GNSS receiver, obviating the need to set out temporary grids. The driver of the quad bike towing the sledge also tracks information in real time, monitors data quality, positional accuracy and survey resolution.

Caesium vapour magnetic data collected in this fashion usually requires very little levelling to achieve a seamless sheet of data, an elementary corrections are usually limited to heading reduction and a little light smoothing. Heading reduction is a statistical process designed to reduce normal constant offsets between the zero or DC measurement from each sensor generated by slight rotational differences due to their manufacture. The sheet or mosaic is then subjected to normal potential field processing techniques including reduction of the background regional field and splitting of the resultant residual field into different depth models through analysis in the frequency domain. This yields the shallow data set, a model of anomalies within the upper 3m of ground and also a pseudo-gradient data set which models the response of a 1m vertical gradiometer, which can sometimes better reveal the edges of weakly magnetic structures.

The data was presented as a series of greyscale images overlaid onto map data geo-referenced to the OS grid. A separate catalogue map graphically highlights the most significant anomalies regardless of their origin; a numerical key to a detailed anomaly catalogue is included within the survey report text.

Alongside the catalogue, the report text includes a detailed methodological description and justification and analysis of the geophysical environment and its impact upon or

presence within the data. Significant aspects of the results are discussed within the specialist's report.

2.3.3 Post-fieldwork

On completion of the project and following review with the HE Project Manager the results of the study were collated as an archive in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006*. The site archive will initially be stored at ReStore, with the eventual aim of deposition at Cornwall Record Office.

An archive report (this report) has been produced and supplied to the Client. This report will be lodged in digital form with the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation once a planning application for the site has been made. 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. All digital records will be filed on the Cornwall Council network.

An English Heritage/ADS online access to the index of archaeological investigations (OASIS) record has been made covering this project.

3 Location and setting

The proposed land for development is centred at SW 70440 12940 and extends to 0.95 Ha. The field within which the proposed development land sits occupies the northern extent of a small plateau situated at around 76 m OD and is shown to have comprised three smaller fields on the c1840's tithe map for Landewednack (Fig 6). The underlying geology is igneous in origin, an intrusion into the surrounding bedrock during the Devonian period that has formed the Lizard Complex rocks, generically Serpentine, characteristic of the wider Lizard area.

The proposed development site is bordered to the west by the roads northwards out of Lizard Village towards Helston, currently the A3038, and to the east by the road out of Tregaminion and Landewednack, which joins with the A3038 just to the north of the proposed development site. Both roads are historic routeways shown on Gascoyne's map of 1699, Martyn's map dating to the mid 18th century and the OS 1st Edition 1 inch to the mile map of *circa* 1809 (Figs 3 to 5). The core of Lizard Village lies around 500m to the south of the proposed development site but 20th century expansion has extended progressively northwards and now abuts the proposed site to the south.

The proposed development site sits within land characterised in the Cornwall and Scilly Historic Environment Record (HER) as 'Recently Enclosed Land' (REL) – Farmland Post Medieval: typically areas of upland ground or poorer soils that may have seen little, if any, formal enclosure prior to this period except where there was periodic expansion onto these areas during times of increased pressure for arable land. Nonetheless, there is some potential for archaeological evidence deriving from prehistoric activity in these areas and closer to the margins of 'Anciently Enclosed Land' (AEL) there may be evidence of historic relict field boundaries and enclosures, typically Romano-British or medieval in origin, that reflect the expansion and contraction of farmed land over periods of time.

4 Designations

4.1 National

None apply within the site.

4.2 Regional/county

The proposed development site lies within The Lizard Peninsula (and Helford River) Area of Great Scientific Value (AGSV) and within the Cornwall South Coast (Western) Area of Outstanding Natural Beauty (AONB). Immediately to its west the site is bordered by The Lizard Peninsula Area of Great Historic Value (AGHV).

4.3 Local

No local designations apply to the site proposed for the development.

4.4 Rights of Way

No rights of way traverse the proposed development site. This area is not registered as open access land under the CROW Act 2005.

5 Site history

The proposed development site occupies the high and relatively level plateau of the Lizard Peninsula to the southeast of Lizard Downs and on the northern outskirts of Lizard Village, towards the southernmost extent of Cornwall. Situated on an area of discrete former downland the site is surrounded from the northwest round to the northeast by ancient farmland, as demonstrated by the broader fieldscape of irregular enclosures and farming settlements of typically early medieval or medieval origin. The National Mapping Programme (NMP), which maps potential archaeological above ground features using aerial photographs, has shown two medieval field systems (MCO49529/MCO49627) to the northeast and west of the proposed development site (Figs 12 and 13). Shown against the 1st Edition c1880 OS mapping, it can be seen that the alignment of these field systems continued to influence the pattern of enclosure in these areas well into the 19th century and on into the present day.

Archaeological evidence within the wider locale also suggests a rich and varied prehistoric landscape that extended out onto the Lizard downland to the northwest. A significant number of prehistoric enclosures, pits and relict field boundaries are probable testament to long-lived agricultural settlement with a potential date range from the Middle Bronze Age through to the Romano-British period. A concentration of pits and enclosures (MCO49637) potentially associated with prehistoric or Romano-British settlement is recorded around 400m to the west of the proposed development site, situated within the extent of 'Anciently Enclosed Land' (AEL) (Figs 12 and 13).

Earlier evidence for prehistoric activity in the local area lies in the numerous barrows, cairns and cist burials that reflect the ritual funerary practices of the Early Bronze Age. A possible Bronze Age barrow (MCO49608) is situated around 140m to the northeast of the proposed development site (Figs 12 and 13). Less common, and more typically distributed towards the coastal margins, is the more ephemeral evidence of early Mesolithic or Neolithic hunter gatherer groups who would have moved through the area on a more seasonal basis.

The nearby upland ground on Lizard Downs, the lower lying farmland and the surrounding coastal reaches would have provided a varied and valuable resource to local agriculturalist communities throughout prehistory and on into the medieval period and until the middle decades of the 19th century. The majority of the upland ground, potentially including the proposed development site and extending to the northwest, probably remained unenclosed until at least the post medieval period and would have provided both rough pasture for grazing and furze and turf for fuel.

The *circa* 1840 Landewednack tithe map (Fig 6) shows three fields underlying the proposed development site as part of lands at Coparcenary, the homestead being situated in Lizard Village and shown as Trenoweth on the c1880 and c1904 OS historic mapping. The land is recorded as being in the joint ownership of The Earl of Falmouth, the Honorable Anna Maria Agar, Christopher Hawkins Esq, Thomas Henry and Joseph

Lifle (?) Esq. William and Richard Lawrence are recorded as lessees and occupiers. The three fields are named as Great Field, Dray Field and Clay Pit Field; the latter probably refers to a post medieval clay pit (MCO57013) to the immediate west associated with the Lizard Pipe and Brick Works. Neighbouring field boundaries to the south and east of the three fields suggest a more irregular appearance in keeping with enclosures of probable early medieval or medieval origin; the narrowness of some field plots and the curving field boundaries in this area indicate probable medieval strips within an area of communally farmed open field. The boundaries of the three fields themselves are more regular and linear in form, indicative of post medieval enclosure. This reinforces the suggestion that this is an area of later enclosure on the margins of more consistently ancient farmland, although this doesn't preclude the possibility for episodic enclosure or agricultural activity within the proposed development site, given the proximity of this.

By the late 19th to early 20th century there were the beginnings of settlement expansion at Lizard Village along a new road to the east connecting Lizard and Tregaminion, now Beacon Terrace (Figs 7 and 8). During the later 20th century this expansion has increased northwards between Beacon Terrace and Cross Common and now abuts the proposed development site to the south.

6 Summary results of geophysical survey

Note, figures in square brackets relate to features shown on the interpreted geophysics survey map (Fig 15).

The geophysical survey was undertaken by Archaeophysica Ltd and the report containing the processed results were received by HE Projects on 13 February 2014.

The report concluded that the survey results were largely affected by the spread of modern debris across the site, despite recent levelling of the area. As a consequence, the detection of subtle archaeological responses was potentially masked, particularly in the south of the site, with some parts of the proposed development site being unsuitable for survey; 0.74 Ha of the 0.95 Ha site were covered in total.

The survey results indicated faint evidence of past agricultural activity across the project area, principally a magnetic linear anomaly [6] and a linear group of ferrous responses [7]; these probably represent historic field boundaries or trackways that are apparent on 19th century historic mapping.

An additional series of enhanced linear features [8], [9] and [10] situated in the south of the project area were considered of potential archaeological interest, possibly representing ditches or field boundaries dating prior to the late 19th century. On the basis of the geophysical survey, features [8] and [10] appear potentially related and to share an alignment with the Landwednack road and the medieval field system (MCO45929) to the northeast, possibly reflecting the extension of this to the southwest. Feature [9] appears more aligned with the Lizard road to the west and the pattern of post medieval enclosure. It is therefore possible that there is some phasing of activity reflected by these features, although it should be noted that this interpretation is based on a very limited dataset.

7 Significance

On the basis of the geophysical survey results, the features identified were considered unlikely to be of particular archaeological significance. A caveat to this, however, is that the ground conditions were less than optimal for survey and it is possible that additional features of potential archaeological interest have been missed or obscured.

If, as suggested, the linear features [8] and [10] do represent an extension of the medieval field system to the northwest, they potentially illustrate an expansion of arable farming onto less favourable soils during this period. This may have been relatively short lived, however, as it does not appear to have been preserved by the

pattern of post medieval enclosure in this area. It is not impossible that features [8], [9] and [10] may reflect wider prehistoric/Romano-British agricultural settlement in the vicinity, although this cannot be easily demonstrated by the evidence available, to date.

8 Recommendations

The geophysical survey did not reveal any archaeological features of significance which would require site re-design to mitigate potential impacts on them.

However, the conditions for the ground survey were less than optimal and it is possible that additional archaeological features were masked by the responses of modern spread, particularly in the south. The only features of any archaeological potential were recorded in this area and the true extent of these therefore remains unknown. In addition it is possible that small archaeological features, such as pits and postholes, might not have been detected.

The HEPAO retains the option to require further determination of the features revealed by the geophysical survey. This might be achieved either through evaluative trenching in advance of development or through an archaeological watching brief during associated groundworks.

9 References

9.1 Primary sources

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

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

Ordnance Survey, 2007. *Mastermap Digital Mapping*

Tithe Map and Apportionment, c1840. *Parish of Landewednack* (microfiche copy at HE)

9.2 Publications

Fry, R., 2014. Lizard Village, Cornwall. Geophysical Survey Report Produced for Cornwall Council. Project Code LZC121. Archaeophysica Ltd

9.3 Websites

<http://www.heritagegateway.org.uk/gateway/> English Heritage's online database of Sites and Monuments Records, and Listed Buildings

10 Project archive

The HE project number is **146289**

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. A project file containing site records and notes, project correspondence and administration.
2. English Heritage/ADS OASIS online reference: cornwall2-172477

This report text is held in digital form as: <G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites L\Lizard Village geophysical survey 146289\Report\ 2014R017 Lizard Village Geophysical Survey Final Report.doc>



Fig 2 An extract from John Norden's late 17th century map of the hundred of Pyder, showing the location of Lizard (circled).



Fig 3 An extract from Joel Gascoyne's 1699 map of Cornwall, showing the location of Lizard (circled).



Fig 4 An extract from Martyn's mid 18th century map of Cornwall, showing Lizard and the approximate location of the proposed development site between the junction of the two routes northwards from Lizard and Landewednack.

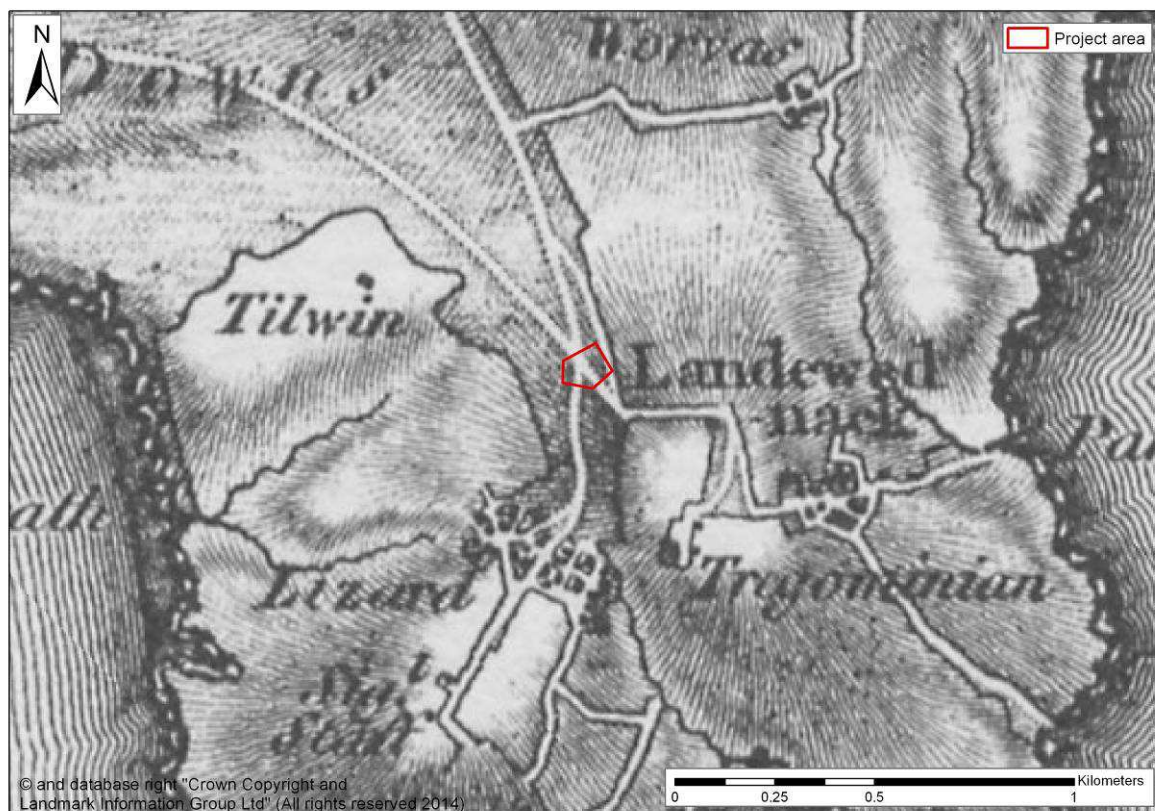


Fig 5 Extract from the OS First Edition One Inch Map c1809 showing the proposed development site at the junction of the two routes northwards from Lizard Village and Landewednack

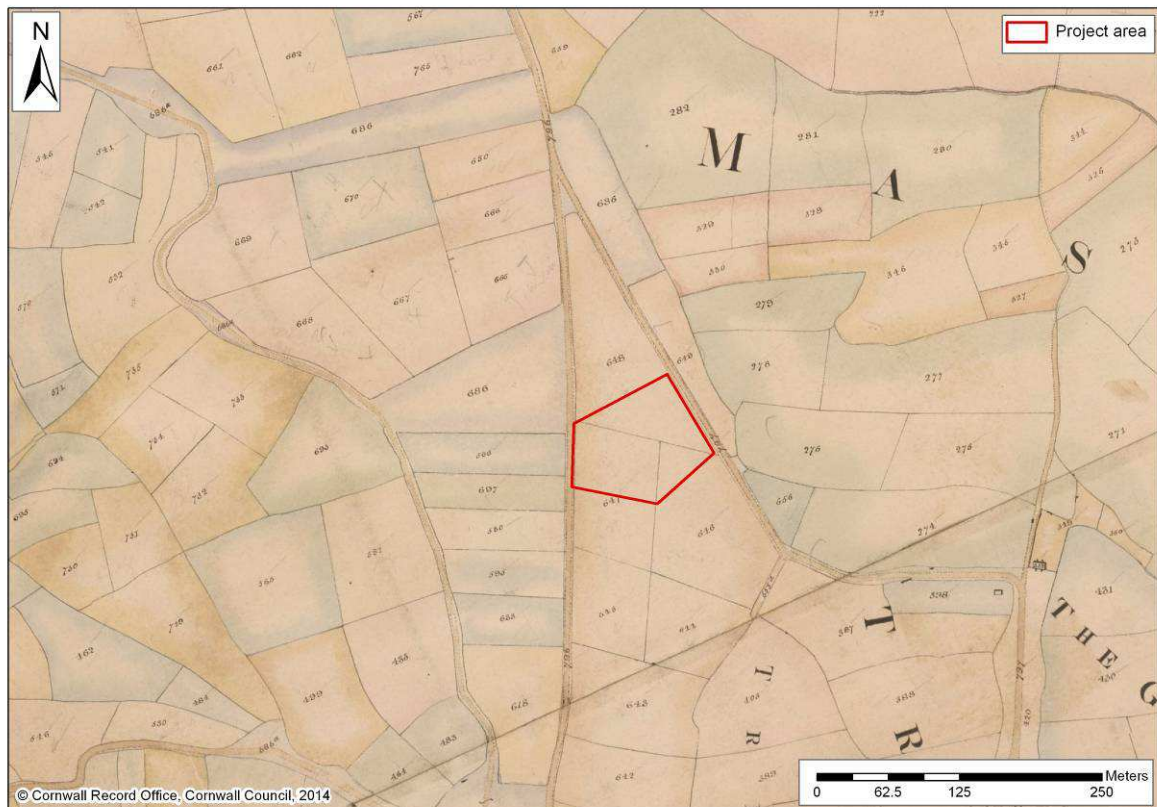


Fig 6 Extract from the Landewednack Tithe Map c1840 showing the proposed development site within an area of regular linear enclosures neighboured by the more narrow and curvilinear enclosures typical of 'Anciently Enclosed Land' (AEL).

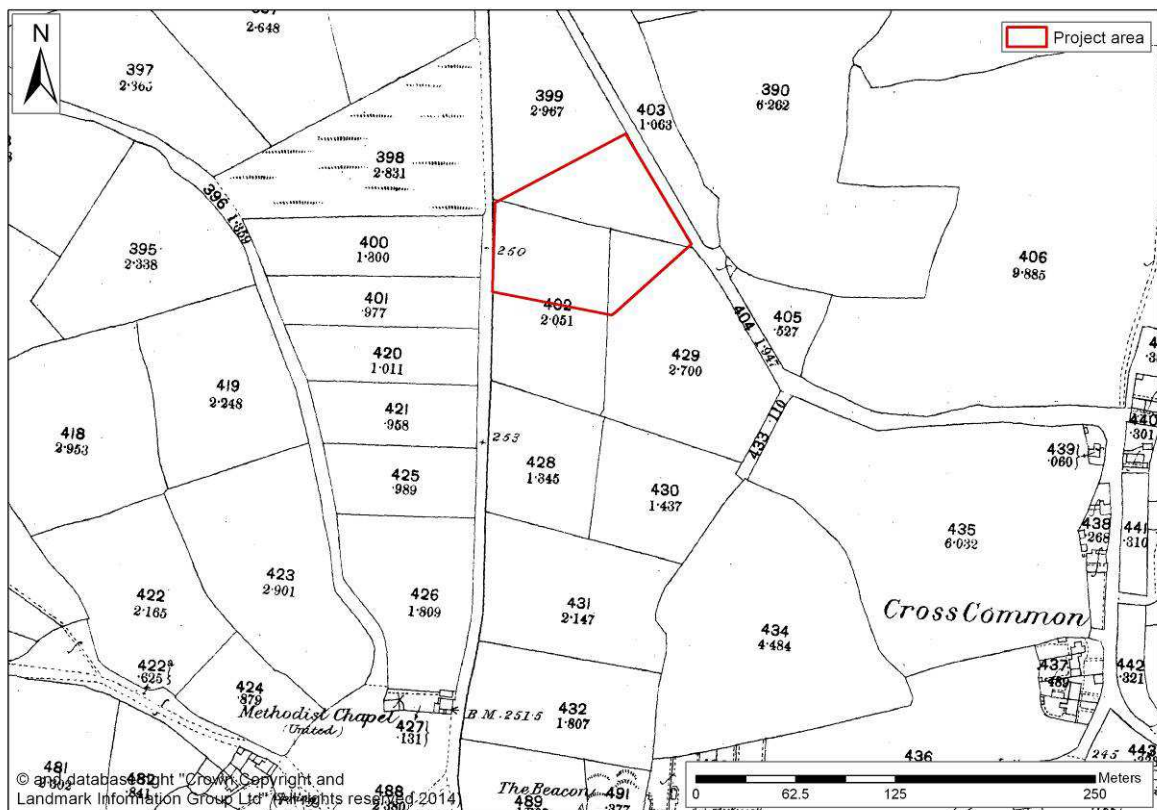


Fig 7 Extract from the First Edition of the Ordnance Survey 25 Inch Map, c1880

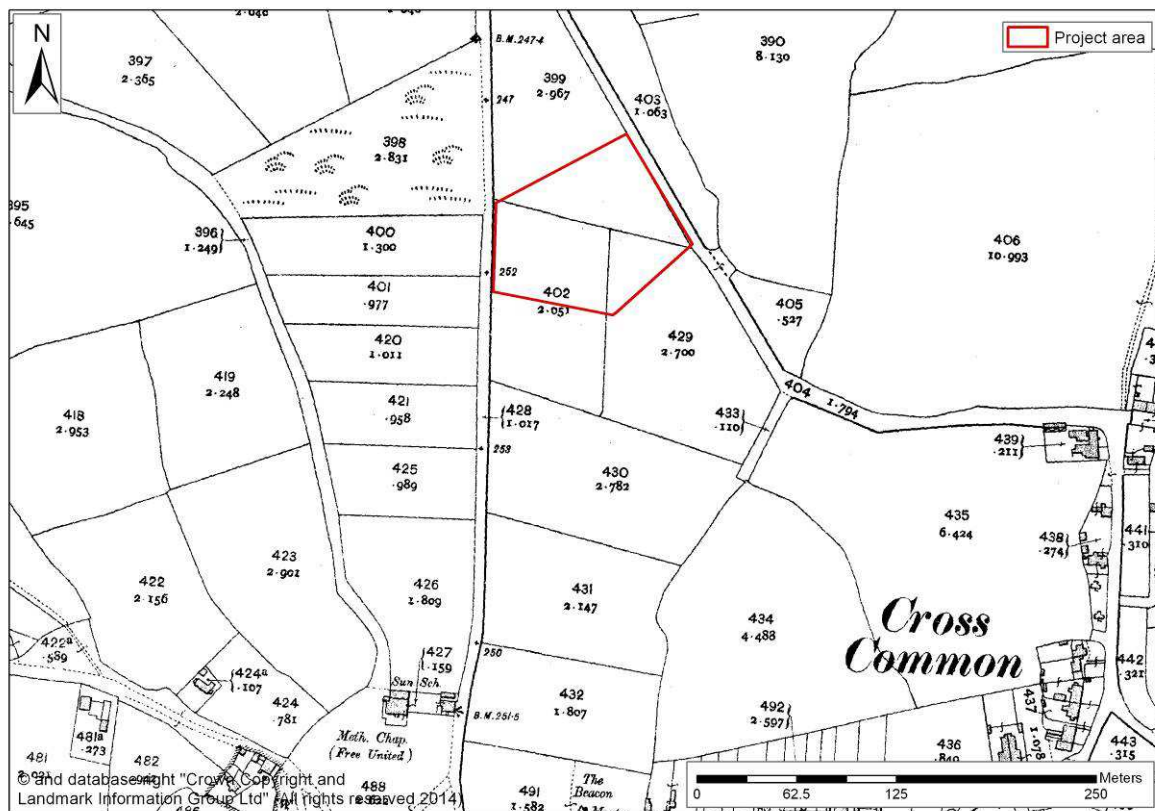


Fig 8 Extract from the Second Edition of the Ordnance Survey 25 Inch Map, c1907; the project area is still divided between three fields at this point.



Fig 9 The project area as shown on a 2000 CCC aerial photograph. The historic field boundaries within the proposed development site appear largely extant and the fields to the south still largely undeveloped.

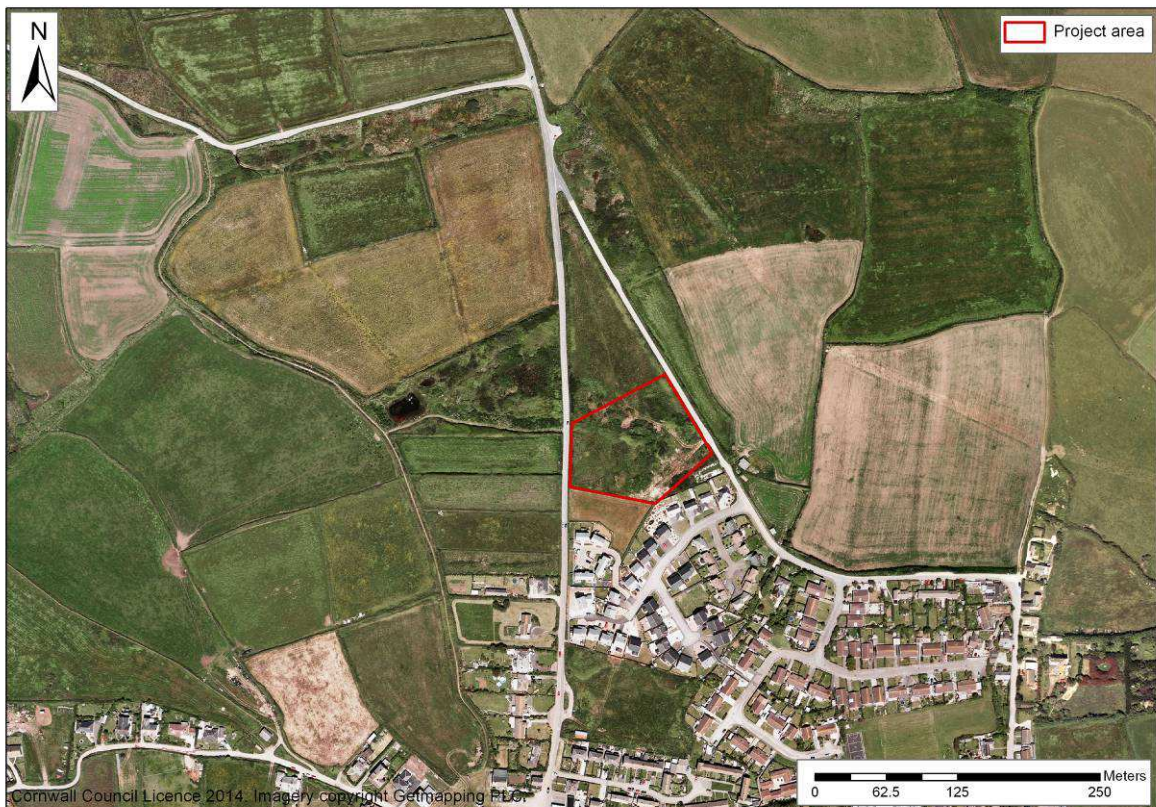


Fig 10 The project area as shown on a 2005 CCC aerial photograph. Only the line of one field boundary appears to be still retained as an area of raised scrub. The fields to the south are now under progressive infill development.

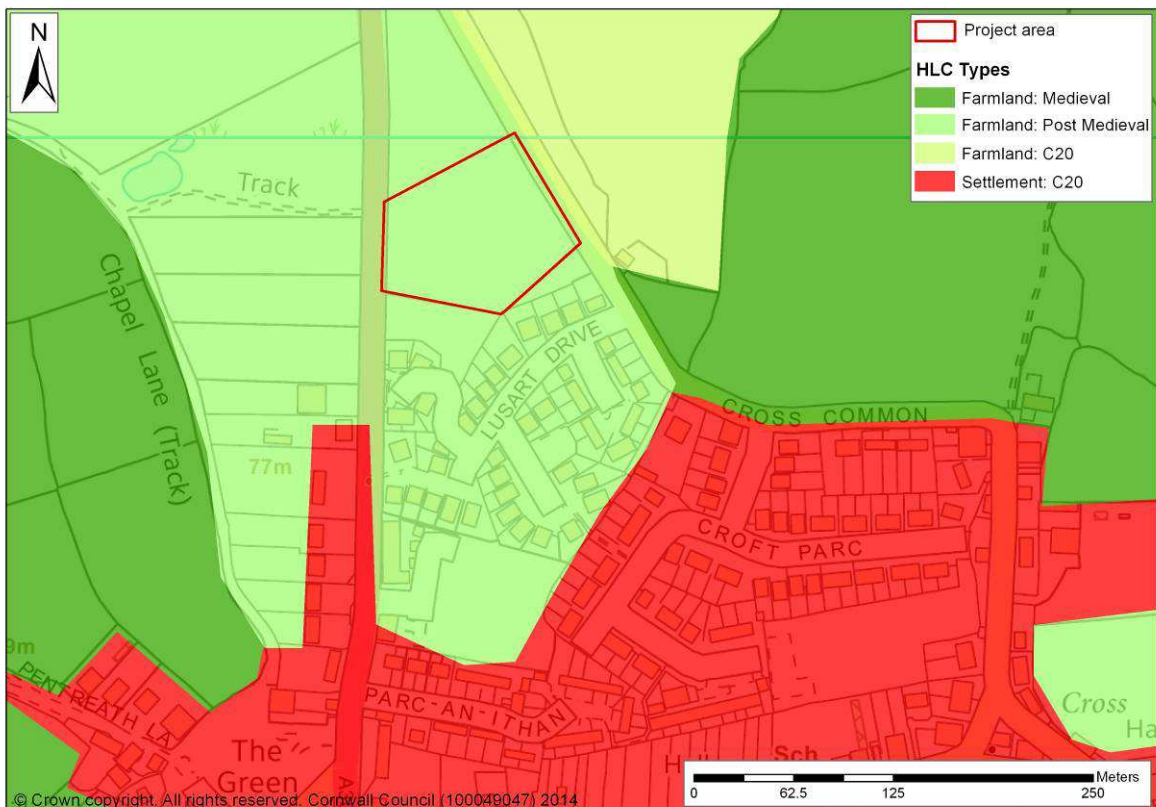


Fig 11 Historic Landscape Characterisation (HLC) showing the project area set within Recently Enclosed Land (REL) and bordered by 'Anciently Enclosed Land' (AEL).

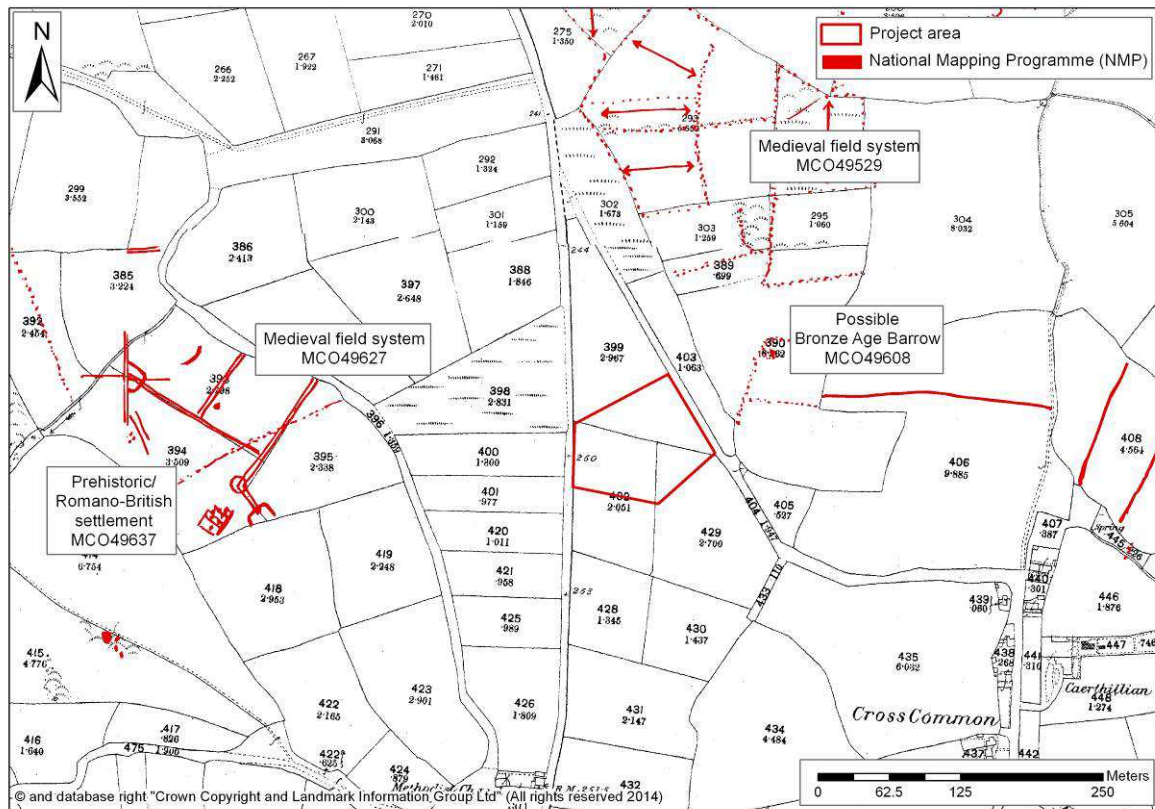


Fig 12 National Mapping Programme (NMP) results shown against the 1st Edition OS c1880 map, indicating relict field boundaries, pits and enclosures potentially associated with settlement activity from the Bronze Age to the medieval period.

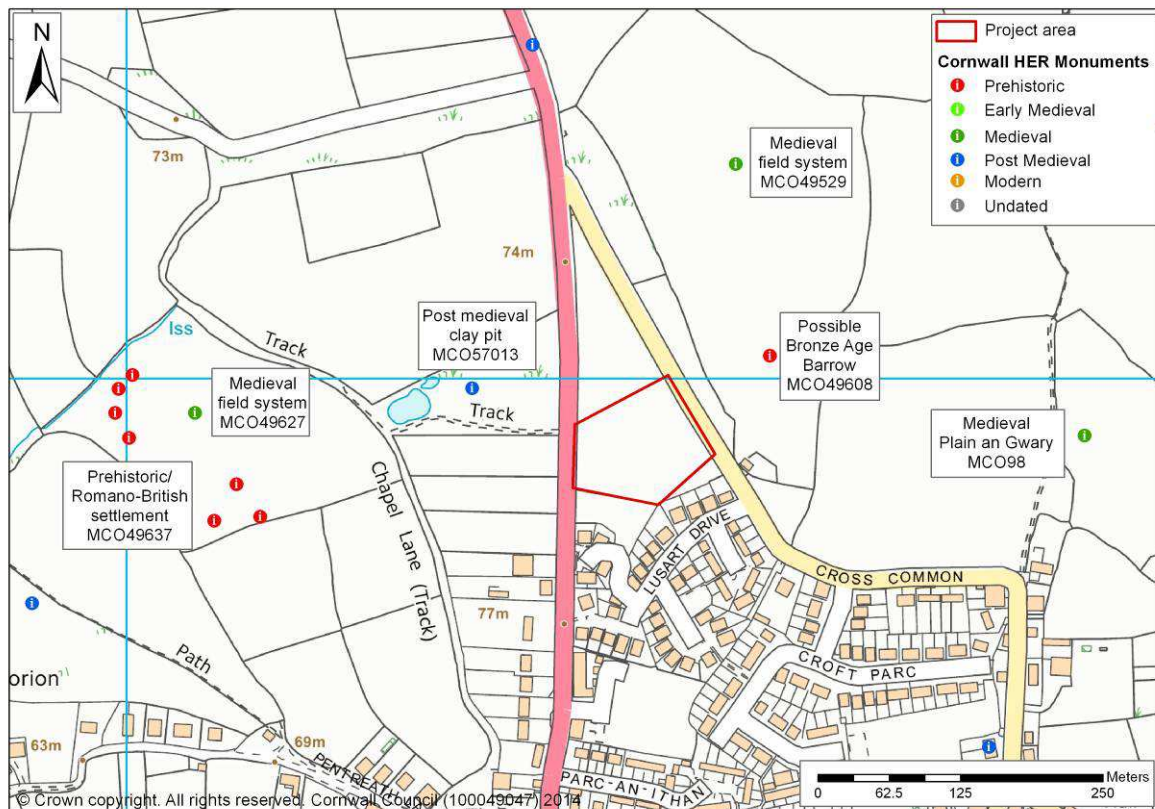


Fig 13 Cornwall HER Monuments in the near vicinity of the project area.



Fig 14 The geophysical survey data for the project area.

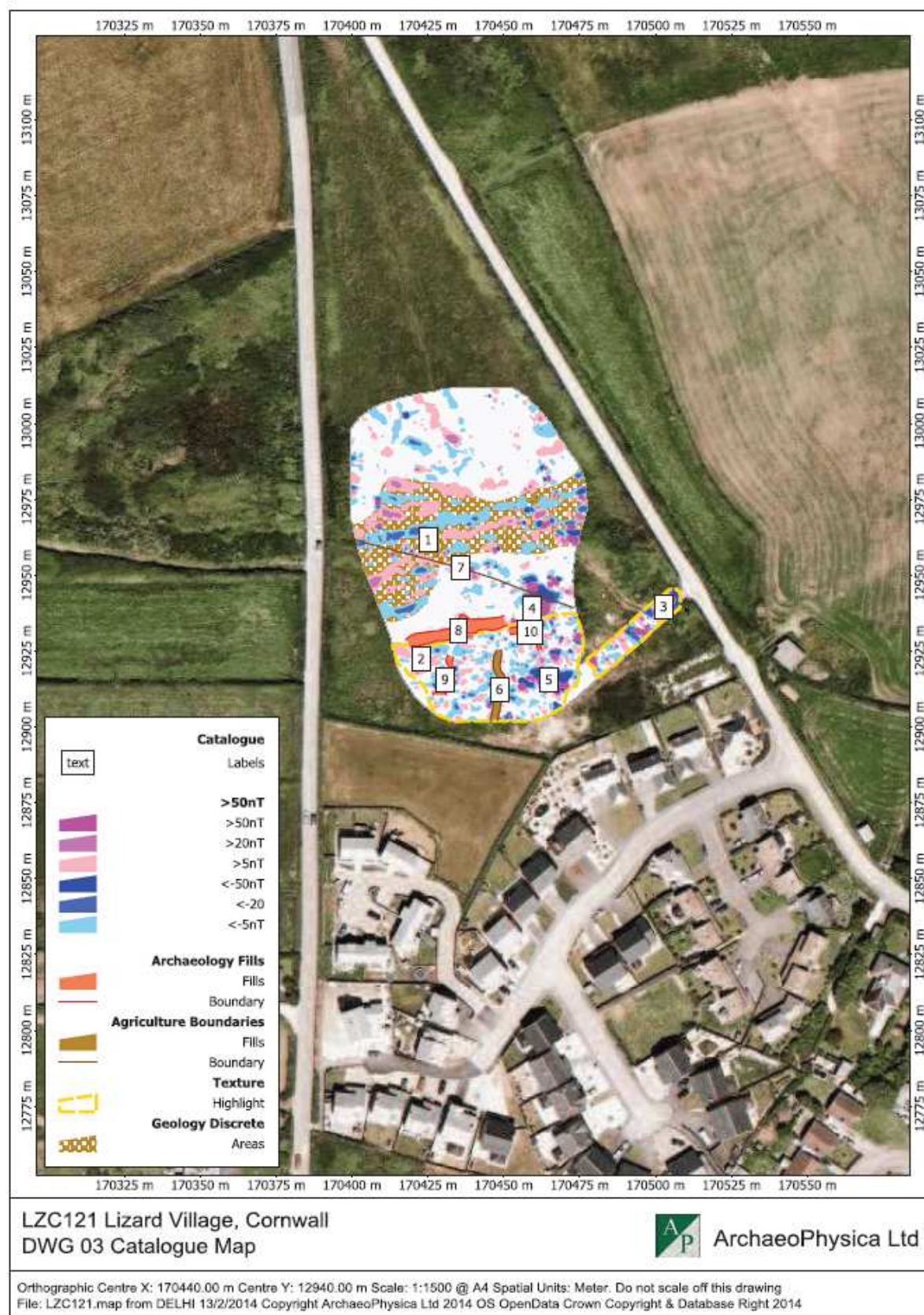


Fig 15 The interpreted geophysical survey data for the project area.