



Three Stacks development, Redruth, Cornwall Archaeological impact assessment

Cornwall Archaeological Unit

Report No: 2016R037

Land Adjacent to Three Stacks, Tolgus, Redruth, Cornwall, Cornwall

Archaeological Assessment

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Acknowledgements

This study was commissioned by Thomas Collett and carried out by Cornwall Archaeological Unit, Cornwall Council.

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

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Cover illustration

The Listed Three Stacks mine chimneys as seen from the proposed development area.

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Abbreviations

CAU	Cornwall Archaeological Unit
CIfA	Chartered Institute for Archaeologists
HER	Cornwall and the Isles of Scilly Historic Environment Record
NGR	National Grid Reference
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

1 Summary

Cornwall Archaeological Unit was commissioned by Treloweth Concepts Ltd to undertake an archaeological impact assessment of a proposed small housing development to the south of West Tolgus Road, Redruth, Cornwall. A desk-based assessment, walkover survey and visual impact assessment were undertaken in May 2016 and the results were summarised in a report to the client.

The site proposed for the development consists of parts of two former miner's smallholding fields adjacent to the former sites of Wheal Raven and West Wheal Tolgus, copper mines within the Redruth-Camborne mining district which are documented as having been tried in the 16th and 18th centuries, though were worked in depth during the 19th century.

No archaeological features other than the smallholding fields and a remnant earth bank defining the former northern boundary of the smallholding were found within the proposed development area, though documentary maps indicate the site of a now removed linear mine spoil dump, which might indicate the sites of early shallow or surface workings.

The visual assessment suggested that there were unlikely to be any negative setting impacts on a group of three Listed mine chimneys a short distance to the east, and that the setting impacts on the surrounding agricultural and post-industrial landscapes would be very limited. It is, however, recommended that the development should not be extended further to the east in the future, given that the likelihood of setting impacts on the Listed mine chimneys would rise considerably should this be proposed. It is also recommended that any ground disturbance associated with the housing development is the subject of a programme of archaeological recording.

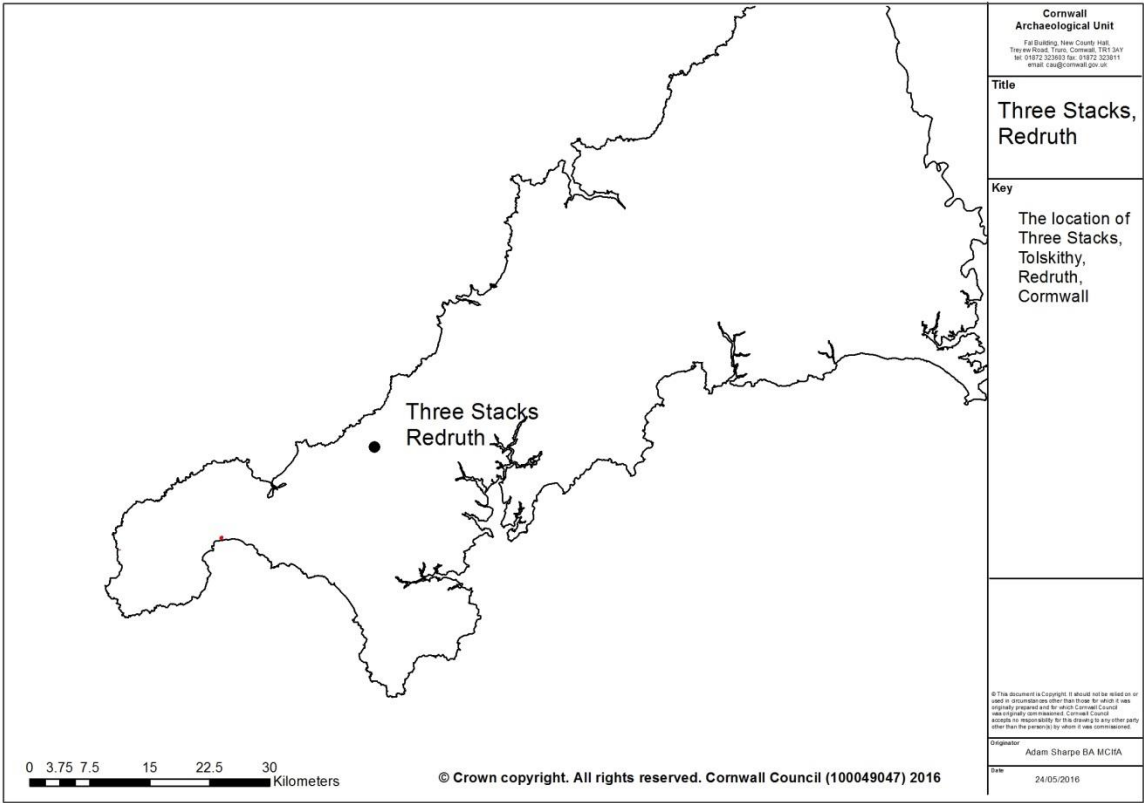


Fig 1. The location of Three Stacks, Toliskithy, Redruth, Cornwall.



Fig 2. The extent of the proposed development site near Three Stacks, Redruth.

2 Introduction

2.1 Project background

A development of five single storey houses is proposed at West Tolgus, Redruth. Thomas Collett, Architectural Designer, commissioned Cornwall Archaeological Unit on 23 May 2016 to undertake a Historic Impact Assessment of the proposal on behalf of Treloweth Concepts Ltd.

The development area extends to 5,500 square metres and occupies the sites of parts of two post-medieval agricultural enclosures. Sites within the surrounding landscape requiring consideration of the potential visual impact which might result from the development principally comprise the three Listed mine chimneys (Fig 11) to the east of this site on the edge of the nearby Tolskithy valley (Fig 12), which itself retains much of its industrial character, and which is clearly visible from the nearby A30.

2.2 Aims

The principal aim of the project is to assess the potential impacts on the archaeology within and surrounding the proposed development site which might result from the construction of five single storey dwellings at this location. A secondary aim of the project is the production of an entry to the Historic England OASIS ADS-Online database of archaeological projects.

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 Historic Environment Record;
- Images of England online Listed Buildings database;
- Published sources;
- Historic maps, including;
 - Joel Gascoyne's map of Cornwall (1699)
 - Thomas Martyn's map of Cornwall (1748),
 - OS 1 inch survey (c1810)
 - The Illogan Tithe map (c1840),
 - 1st and 2nd Editions of the OS 25 inch maps (c1880 and c1907)
- Modern maps;
- Relevant GIS databases accessible to CAU.

2.3.2 Fieldwork

An archaeological walkover was undertaken of the site to determine whether any extant sites survived within it. Site visits were also made to designated and undesignated sites within the surrounding area to determine whether visual impacts on their settings might result from the development.

2.3.3 Post-fieldwork

The project archiving included:

- Digital colour photographs (stored according to HER guidelines and copies of images made available to the client).
- Completion of the Historic England/ADS OASIS online archive index.

An index to the site archive has been created and the archive contents prepared for long term storage, in accordance with CAU standards.

The archive comprises the following:

- All correspondence relating to the project, the WSI, a single paper copy of the report together with an electronic copy on CD, stored in an archive standard (acid-free) documentation box.
- The project archive will be deposited initially at ReStore PLC, Liskeard and in due course (when space permits) at Cornwall Record Office.
- Digital data will be stored on the Cornwall Council network which is regularly and frequently backed up.

3 Location and setting

See Figures 1 and 2.

The site is centred at SW 67886 42573 and is on a level area at 98m OD to the west of the Tolskithy Valley. The development area extends to 5,500 square metres and its Historic Landscape Character is recorded as Recently Enclosed Land (Farmland post-medieval), see Figure 6. The northern part of the proposed development area was recorded as a linear bank of mine spoil on the 1877 OS mapping (Fig 3); this has now been reclaimed, and the area it occupied has been incorporated into the adjacent agricultural enclosures (Fig 5).

West Wheal Tolgus worked Main Lode, coursing E 22 degrees North and underlying 38 degrees North from Richard's Shaft, which was vertical to adit level and on the underlie to the 105 fathom level, Taylor's Shaft which was again vertical to adit level and then on the underlie to the 155 fathom level and Wheal Raven Shaft, which was vertical to the adit and on the underlie to the 75 fathom level. There are also three adit shafts: Railway, Un-named and Park Bottom. The adit level is 670 fathoms long.

4 Designations

4.1 International

None apply to the development site. The trackbed of the Portreath Tramroad, part of the Cornish Mining World Heritage Site, is 400m to its west.

4.2 National

None apply to the development site. Three chimneys associated with an engine house at Wheal Raven and an arsenic processing works in the nearby valley are Listed Buildings, as follows:

- Group of three chimney stacks at West Wheal Tolgus, Grade II, National Reference Number 1160890, Listed 12/09/1989. See Figure 7 for location.

4.3 Regional/county

No Regional or County designations apply to the development area or the immediately surrounding landscape.

5 Site history

The development site is within an area which was enclosed for agricultural purposes from former downland during the post-medieval period as part of the expansion of land under cultivation to support the burgeoning local mining and urban population in the Camborne-Redruth mining district during the early 19th century. The site of West Wheal Tolgus, which exploited underlying copper lodes under the alternative name of Wheal Raven over several periods during the 19th century, is located to the north and east of the development area.

In 1840, the apportionment to the Illogan Tithe Map (Fig 7) indicates that the two fields within which the development is proposed formed two of the three parts of Plot 546 (this taking the form of an elongated sub-triangular area which was divided from west to east into plots of 0.648 acres, 1.107 acres and 0.532 acres). This land, which was almost certainly part of a smallholding laid out during the late decades of the 18th century by a local miner, was recorded as being part of the estate of Great Nancekuke, owned by the Honourable Anna Maria Agar, leased by Reginald Jenkin and by John Richards. In 1840 these fields were occupied by Joseph Knight and described as 'House and Land'. The site of Joseph Knight's cottage is uncertain, as this was not depicted on the Tithe Map. There are no indications of structures associated with Wheal Raven on the 1840 Tithe Map as mines were not subject to tithes, instead paying dues directly to the mineral lord.

This is one of the earliest documented copper mining districts in Cornwall. Ulrich Frosse attempted to develop a mine here for Daniel Hechstetter and the Mines Royal Company in the 1580s, probably for a couple of decades, though operations were abandoned due to the lack of significant results. In the very early 1700s the Tolgus lodes were again re-tried, and Wheal Raven produced some of the earliest copper to be shipped to the Welsh smelting works. This was also the site of some of the first horse whims in Cornwall.

Wheal Raven is first recorded as being at work during the early 18th century, production of copper and a little zinc being recorded during this early period of working. The mine was not one of the larger concerns in this part of the Camborne-Redruth mining district at the time and operated at a loss during much of the 18th century, though produced 700 tons of copper during the 1760s, using water issuing from the nearby Wheal Fortune adit to drive a water wheel to supply power. The mine was abandoned in 1770 and remained closed during the Great Copper Slump during the 1780s when copper from the Parys mountain mine in Anglesey flooded the market.

Attempts to re-start the mine in 1793 and 1805 came to nothing, though a re-opening in 1810 as Wheal Royal lasted until 1819. The mine was again re-started in 1824, selling almost 1,500 tons of copper ore, though closed by the end of the decade. The mine was powered by a 36" pumping engine house sited in the nearby valley, whilst its shafts were worked by five horse whims during this period of operation.

Another short period of operation started in 1831, but lasted only until 1836. In 1844 it was again re-tried, this time under the name of West Wheal Tolgus and Treloweth, the name being shortened to West Wheal Tolgus in 1850. Despite some development, the mine closed in the following year.

John Taylor and Sons took on the right to work the sett from the Robartes and Buller families in 1860 and began the sinking of Taylor's Engine Shaft, the construction of a house for a 60" cylinder engine (later a 65" cylinder engine) with the intention of pumping over 1000 gallons per minute, and by the following year the shaft was down to 312 feet (52 fathoms). The ore mined from this new development often proved poor and in limited supply, however, and the mine did not pay any dividends whatsoever until 1874.

In 1864 120 people were employed at the mine (rising to 230 in 1879); Richards' Shaft was re-opened in the west of the sett, and the engine on Taylor's Shaft was upgraded to a 70". At the end of the 1860s, a series of accidents led to the flooding of the mine, something which took five months to rectify. However, high grade ore was finally discovered around this period, allowing the mine to turn a profit and compressed air rock drills were introduced to aid production. The mine's period of peak production was in 1877, when just short of 4,000 tons of copper ore were raised.

Unfortunately for the shareholders, copper prices were falling sharply during this period and in 1879 breakages of the balance bob in Richard's Shaft again allowed the mine to flood. The mine was notoriously wet and this, coupled with the financial difficulties increasingly experienced by the mine, made it uneconomic for the mine to continue at work, and it was abandoned in February 1884.

The *circa* 1877 1st Edition of the Ordnance Survey 25" to a mile mapping (Fig 3) marked *West Wheal Tolgus (copper)* and showed that the principal areas of surface activity associated with the mine lay to the east and north of the development site. Within the valley to the east was the principal engine house and the main shaft in Wheal Raven (these having been sited just to the north of the present A30 Tolskithy Valley viaduct). Given its sheltered location, an elongated flue had been constructed up the valley side to the north-easterly of the chimneys now standing at the top of the valley slope. The valley base was characterised by spreads of mine spoil and groups of settling tanks associated with tin tailings works. Immediately to the north of the fields now proposed for the development (and occupying a strip along the northern part of the development site) was a linear dump of mine waste, whilst to the north-east, a very extensive dump of mine spoil extended out to the edge of the valley.

The core of the mine around Taylor's Shaft lay to the north of the development site. Here there were Taylor's Shaft pumping engine house, a winding engine house, the mine's copper dressing floors and the mine's count house, smithy and other service buildings. Richards' Shaft lay 250m to the west of the proposed development site in an area now redeveloped to housing, and was accompanied by a pumping engine house and a winding engine house.

In 1907 the 1st revision of the OS 25" (Fig 4) showed West Wheal Tolgus as being disused. The original Wheal Raven Shaft pumping engine chimney had been joined by two others, these being connected by further elongated flues to an arsenic processing works on the northern slopes of the small valley to the south of the development site. The Taylor's Shaft and Richard's Shaft sites had been cleared of their engine houses and associated mine buildings, whilst the Wheal Raven engine house was roofless.

During the 20th and 21st centuries much of the West Tolgus site has been redeveloped for (mostly single storey housing). The three chimney stacks and the remains of parts of its late 19th century arsenic works, together with the count house (now a dwelling) are now the only surviving mine structures.

6 Archaeological impact assessment results

Results of walkover survey

A site walkover was undertaken on 24 May 2016. The weather was clear and sunny and there were no physical impediments to survey.

The site consists of parts of two agricultural enclosures adjoining West Tolgus Road.

A small portion of the western enclosure has already been developed for two bungalows. This field appears to have been grazed or swathe cut fairly recently, and is accessed via a padlocked steel gate off West Tolgus Road at the mid point of its northern hedgeline. The northern, eastern and southern boundaries of the field consist of 1.2m to 1.4m high Cornish hedges (partially stone-faced earth banks) which support mature vegetation including hawthorns and sycamore trees. To the west the boundary consists of a low blockwork wall on top of which is a substantial hit and miss wooden fence which effectively blocks views between the garden of the associated bungalow and the proposed development area (Fig 9). No archaeological features were recorded within this field.

Only the western half of the eastern enclosure is currently proposed for development. This, too, is bounded by Cornish hedges between 1.2m and 1.4m high, and again these have developed mature hedge species, including hawthorn, willow and sycamore. This field is entered from the north via a padlocked steel gate at its western end. An ungated field entrance faces this in its southern boundary, and there is a further ungated connection to the western field at the mid-point of this field's western boundary. The development proposal indicates that this existing field boundary is to be retained within the development, but that a new Cornish hedge is to be constructed across the southern part of this field between Plot 4 and Plot 5. The nature of the other plot

division boundaries and that closing off the development at its eastern end are not indicated.

The northern part of this field has, during the 20th century, been extended across the site of a linear mine spoil dump which was documented on the 1877 OS mapping (Fig 3), but which had been cleared away by 1907 (Fig 4). The eastern field had evidently been allowed to grow in until recently, and although it has recently been flail cut there are numerous brambles here along with the grass. A small stand of Japanese knotweed was found just to the east of the development site, and a small mound of scrubby material within it near its western end. A pair of granite gateposts lie prone near the northern boundary next to the wheel of an iron agricultural implement.

The eastern field also includes an un-faced earth bank 1.3m high and 2m wide running from close to the hedge dividing the eastern and western fields and running roughly parallel with the northern boundary and extending to the boundary running around the edge of the valley slope to the east. The existence of this bank creates an elongated sub-triangular area along the northern edge of the original smallholding, and was defined as a separate plot (2276) on the OS 1877 mapping (Fig 3). The boundary originally extended westwards from its current western end, where it defined the southern edge of a linear mine spoil dump. The spoil dump and its southern boundary had been removed by 1907 (Fig 4) and post 1907 both the area of the former spoil dump and the elongated enclosure to the east had been incorporated into the fields proposed for development (Fig 5).

There are no mapped indications of mine workings underlying the site of the former spoil dump, and its orientation is on a different alignment to those predominantly followed by local lodes. The spoil dump is likely to have originally been more extensive (also occupying Plot 2276 on the archive OS mapping), and thus linking the section of West Wheal Tolgus to the south of Taylor's Shaft and that around Richards' Shaft to the west. It may simply have been an overspill mine dump, but there remains a possibility that it was produced by the development of early outcrop workings. If this is the case, this zone along the northern edge of the development area may contain the sites of partly backfilled early mine shafts or surface workings. These may not have been mapped, given the early dates at which the Wheal Raven lodes were exploited, periods from which it is unlikely that any documentation will survive.

It is recommended that a mining search is undertaken to cover this area in case mitigation of underlying mining features is required on safety grounds.

Results of visual impact assessment

An assessment was made of the proposed development site from the surrounding area to determine whether the settings of any archaeological or historical sites within the vicinity might be adversely visually affected.

The current mature hedge vegetation (especially the trees) along the boundaries of the fields proposed for development effectively block most views in and out of the site from ground level (Fig 9). To the east, however, the Listed Three Stacks can be seen from most areas within both fields (Fig 10). The eastern end of the eastern field has grown in with gorse and fairly dense scrubby vegetation, closing off views of the bases of the chimneys and the footpath/trail which runs past these down into the Tolskithy Valley and on to Illogan Highway. The development site is not, as a result, visible from the trail where it passes close to the chimneys, and thus no visual impact is likely to result should these new houses be constructed quite close to the chimneys. Given the existing hedge vegetation, there are no vantage points from which these new houses are likely to intrude into views of the Listed chimneys and thus negative setting impacts on them are also unlikely.

The wider context of the development site consists of single storey housing along West Tolgus Road to the north (Fig 8), open farmland fringed by the route of the busy A30 to the south, the post-industrial, undeveloped Tolskithy Valley to the east (Fig 12) and

farmland to the west. Whilst there will be some negative setting impacts on the surrounding agricultural and post-industrial landscape from the development, this will be relatively minor given its proposed scale.

Should the hedge vegetation on the existing boundaries surrounding the development area be cut down, this would open up views of the new housing, particularly from the south, and it is recommended that the hedges, shrubs and trees are retained as a visual screen. New plantings of native species along the eastern boundary of the development would also help to screen the development from this direction.

It is recommended that the West Tolgus Road development should not be further extended in the future to the east of the area currently proposed, as the potential for negative intrusion into the settings of the Listed chimneys and of the post-industrial landscape of the Tolskithy Valley would increase considerably.

7 Conclusions and recommendations

The proposed development of five single storey houses to the south of West Tolgus Road extends the footprint of an existing development of similar character. The construction of these houses will result in the loss of a relatively small area of early miner's smallholdings, and of a section of an earth bank which might originally have defined their northern boundary. Given the scale of the development and the single storey design of the new houses, visual and other setting impacts on the nearby Listed mine chimneys or the surrounding agricultural and post-industrial landscape are unlikely, provided that existing tree screens around the development area are retained.

Although not proposed at this time, any future extension of this development to the east would, however, intrude on the settings of the Listed chimneys and would negatively impact on them.

Given the potential for early mine working to be located within the development area, it is recommended that further archaeological recording takes place. The scope of this recording will need to be agreed with the local Planning Authority but could include:

- An archaeological watching brief during construction works to identify and record buried archaeological features

It is also recommended that a mine search is undertaken in advance of any site works.

8 References

8.1 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, 2007. Mastermap Digital Mapping

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

8.2 Publications

Barton, D.B. 1961, *A history of copper mining in Cornwall and Devon*, Truro

Dines, H.G. 1956, *The metalliferous mining region of south-west England*, HMSO

Morrison, T.A. 1980, *Cornwall's Central Mines: Northern District, 1810-95*, Alison Hodge

Sharpe, A. 1993, *Tolskithy Valley: an archaeological assessment for Kerrier Land Reclamation Scheme*, Cornwall Archaeological Unit Report 1993R028

Sherrell, F. 1992, *Factual report of a desk study and a surface reconnaissance inspection relating to old mine workings*, Report to Kerrier District Council

8.3 Websites

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

<http://www.cornwallinfofocus.co.uk/mining/raven.php>

<https://www.cornwall-calling.co.uk/mines/redruth-mines/wheal-tolgus.htm>

9 Project archive

The CAU project number is **146596**

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 T\\Three Stacks Redruth assessment\\Project background

Communications: \\Sites\\Sites T\\Three Stacks Redruth assessment\\Communications

Report: \\Sites\\Sites T\\Three Stacks Redruth assessment\\Report

Digital photographs: \\Historic Environment (Images)\\Three Stacks assessment 2016\\

Historic England/ADS OASIS online reference: cornwall2-253082

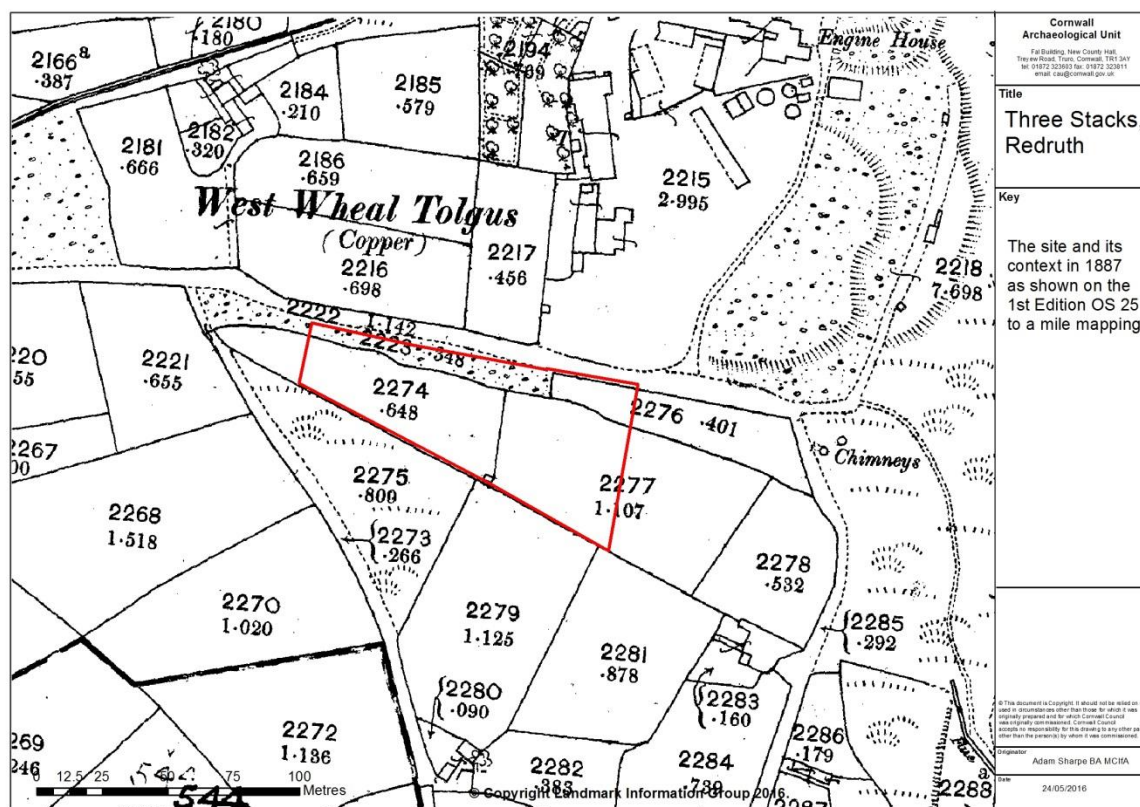


Fig 3. The proposed development site and its surroundings circa 1877. The core of West Wheal Tolgus around Taylor's Shaft is to the north.

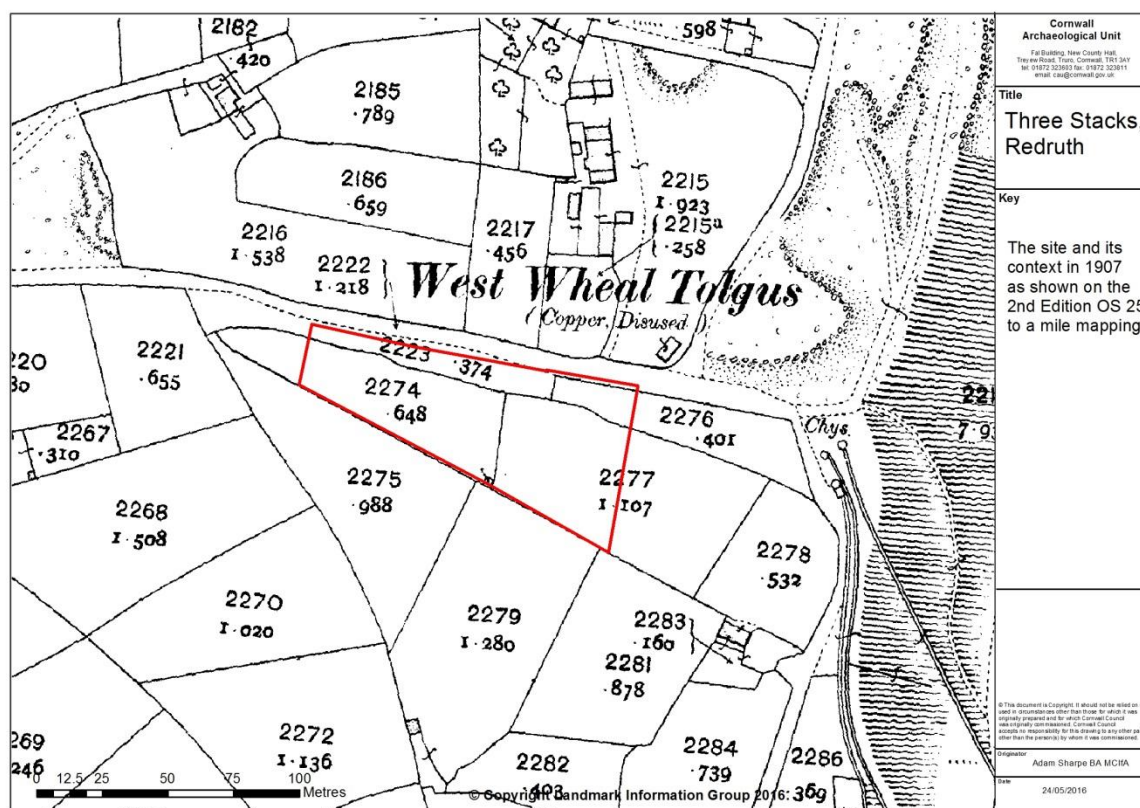


Fig 4. The proposed development site and its surroundings circa 1907. Note the additional chimneys to the east of the site.



Fig 5. The proposed development area and its surroundings in 2005, showing how it forms part of a smallholding whose core lay to the south-east of this area.

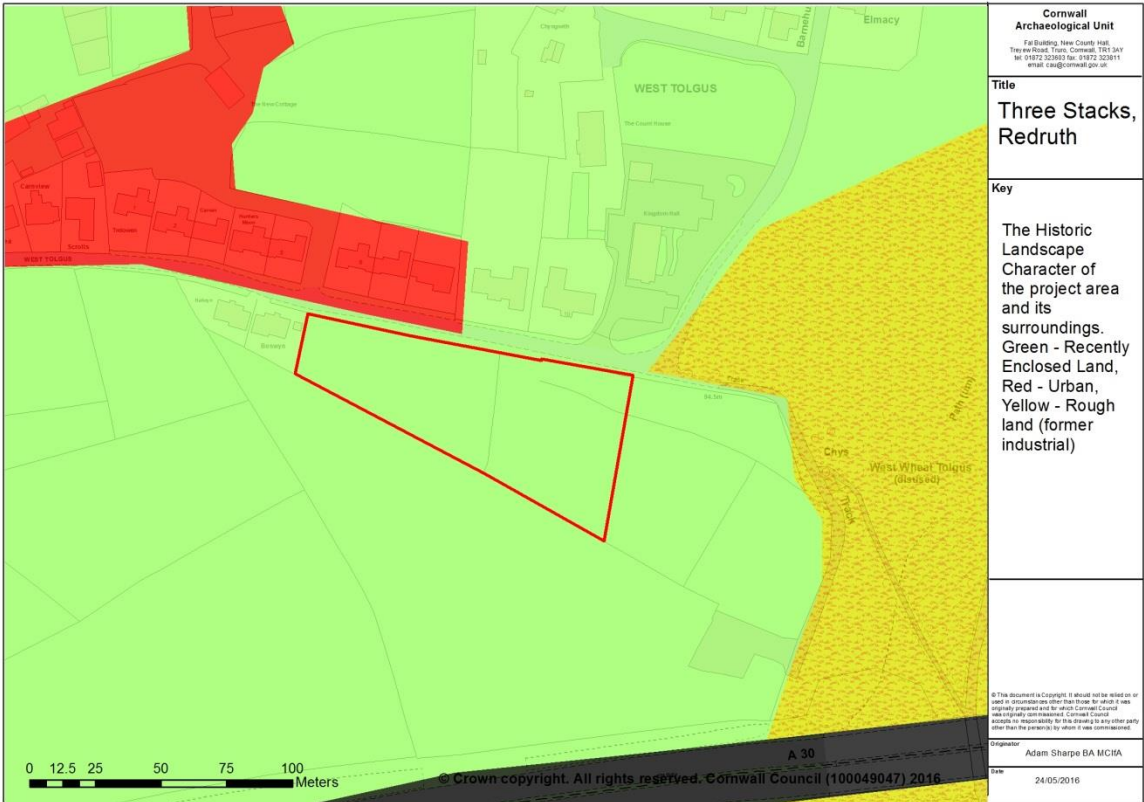


Fig 6. The Historic Landscape Character of the proposed development area and its surroundings. This area at West Tolgus was downland until the 18th century, within which smallholdings and mines soon developed.



Fig 7. The physical relationship between the proposed development area off West Tolgus Road (red) and the three Listed mine chimneys (purple).



Fig 8. Looking east along West Tolgus Road. The proposed development area is to the right of this view.



Fig 9. Looking west across the western part of the proposed development area.



Fig 10. Looking east across the eastern part of the proposed development area towards the three listed mine chimneys. The smallholding boundary bank can be seen in the left hand side of this view.



Fig 11. The Listed Three Stacks above the Tolskithy Valley viewed from the south.



Fig 12. Looking southwards along the Tolskithy Valley past the A30 viaduct crossing it towards Carn Brea.

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