



# Cowlins Mill, Illogan, Pool, Cornwall Archaeological Watching Brief





# Cowlins Mill, Illogan, Pool, Cornwall

## Archaeological Watching Brief

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

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## **Acknowledgements**

This study was commissioned by Cormac Solutions Ltd and carried out by Cornwall Archaeological Unit, Cornwall Council.

The Project Manager was Dr Fiona Fleming

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.

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## **Contents**

<b>1</b>	<b>Summary</b>	<b>1</b>
<b>2</b>	<b>Introduction</b>	<b>3</b>
2.1	Project background	3
2.2	Location and setting	3
2.3	Historical background	3
<b>3</b>	<b>Archaeological results</b>	<b>5</b>
<b>4</b>	<b>Discussion and Conclusion</b>	<b>7</b>
<b>5</b>	<b>References</b>	<b>8</b>
5.1	Primary sources (in chronological order)	8
5.2	Publications	8
5.3	Websites	8
	<b>Appendix 1: Written Scheme of Investigation</b>	<b>19</b>
	Preparation for field recording	23
	Fieldwork: Photography	23
	<b>Appendix 2: Table of contexts</b>	<b>30</b>

## **List of Figures**

Fig 1 Location map.

Fig 2 Site extent.

Fig 3 The site shown against the c1840 Illogan Tithe Map.

Fig 4 The site shown against the OS 1st Edition 1:2500 Map, c1880.

Fig 5 The site shown against the OS 2nd Edition 1:2500 Map, c1907.

Fig 6 Combined plan of the features identified during the watching brief located against the OS Mastermap.

Fig 7 Plan drawings of features 7, 16 and 19.

Fig 8 Combined plan drawing of features 10 and 12.

Fig 9 Section drawings of features 7, 12, 16 and 19.

Fig 10 General shot of southwestern section of the excavated area, looking southwest.

Fig 11 Plan and section photograph feature 7 and deposit (9), looking northwest.

Fig 12 Plan shot of feature 10, looking northwest.

Fig 13 Plan shot of feature 10, looking southeast.

Fig 14 Plan and section photograph of feature 12, looking northwest.

Fig 15 Section photograph of feature 12, with cobbled surface (9), looking northwest.

Fig 16 General plan shot of features 10 and 12, looking southwest.

Fig 17 Plan and section photograph of feature 16, looking northwest.

Fig 18 Plan shot of feature 19, looking northeast.

Fig 19 Section photograph of feature 19, looking northwest.

Fig 20 East facing internal elevation of the leat, looking west.

Fig 21 Looking along the leat towards the railway embankment, looking north.

Fig 22 Looking along the leat towards the former Cowlins Mill, looking south.

## **Abbreviations**

CAU	Cornwall Archaeological Unit
CIfA	Chartered Institute for Archaeologists
HE	Historic England
HER	Cornwall and the Isles of Scilly Historic Environment Record
MCO	Monument number in Cornwall HER
NGR	National Grid Reference
OD	Ordnance Datum
OS	Ordnance Survey
WHS	World Heritage Site
WSI	Written Scheme of Investigation

## **1 Summary**

Cornwall Archaeological Unit (CAU) undertook a programme of archaeological monitoring during October 2021 to January 2022 on land at Cowlins Mill, Pool, in the parish of Illogan, Cornwall, centred at NGR SW 66955 40730. The site is a former industrial yard with mill constructed over an area of earlier mining waste and lies within the Cornwall and West Devon Mining Landscape World Heritage Site (WHS), WHS Area A5, the Camborne and Redruth Mining District. It has conditional Planning consent for mixed use development. A Heritage Impact Assessment has been carried out previously as a separate project by CAU (Motley 2021).

A total of five features were identified, all thought to be disturbed sections of former wall foundations associated with an earlier building, or buildings, on the site. The building remains may be associated with a mine building, or buildings, that formed part of the Tincroft Mine. A stamping mill is documented to have stood on the site and it is possible the features identified during the watching brief are associated with that structure.

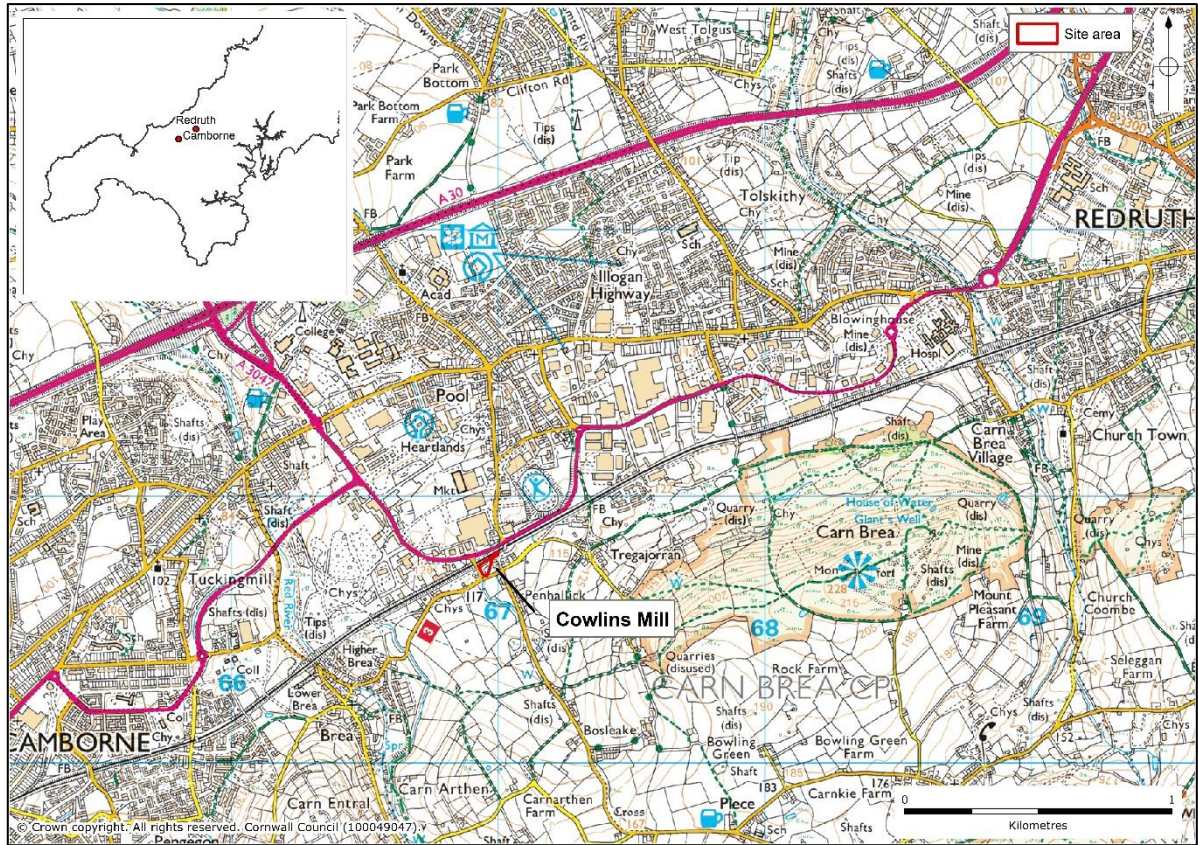


Fig 1 Location map.



Fig 2 Site extent.



## 2 Introduction

### 2.1 Project background

Cornwall Archaeological Unit (CAU) was commissioned by Cormac Solutions Ltd to undertake a programme of archaeological monitoring during ground works ahead of mixed-use development of the site. This work was carried out to satisfy condition 8 of planning application PA21/05635 (Figs 1 and 2).

Further details of the background and the aims and methods of the project can be found in the Written Scheme of Investigation (WSI) (Parkes 2021) reproduced in Appendix 1.

### 2.2 Location and setting

The site lies within Illogan parish and is located on the south side of Pool, on the south side of Dudnance Lane, bordering the south side of the main railway line between Camborne and Redruth, centred at NGR SW 66955 40730. It comprises 0.2ha of land to the southwest of the former Cowlins Mill, a 19th century former flour mill and grocer's shop. The site has in more recent years been used for small-scale commerce and industry, with a row of early to mid-20th century workshops still standing along the north side of the site, believed to have been constructed during the immediately post-war period. Further back, the site formed part of the Tincroft Mine. A leat shown on the c1840s Illogan Tithe Map (Fig 3), that formerly served the Tincroft Mine, still survives in some form above ground on the north side of Cowlins Mill and may survive below current ground levels along the east side of the site, indicated by noticeable changes in ground level along the eastern boundary line.

The underlying geology consists of Devonian Period muds, silts and sandstones of the Mylor Slate Foundation, just to the north side of the Carnmenellis granite intrusion (Geology of Britain Viewer 2022). The soils of the area are generally loamy brown earths (SSEW 1982). The underlying strata across the site itself consists of a depth of mine wastes below made ground.

The site is situated on relatively level ground, gently sloping to the southeast, at around 118m OD. The site lies on the south side of the modern urban spread of Pool, and Pool Industrial Estate. The main railway link through Cornwall, between Penzance and Plymouth and beyond, runs along the north side of the site. During the 19th century the site was part of the larger area occupied by Tincroft Mine and the Historic Landscape Characterisation (HLC) of the land on which the site stands is recorded as 'Industrial Disused' (Cornwall County Council 1996). The site lies within the Cornwall and West Devon Mining Landscape World Heritage Site (WHS), WHS Area A5, the Camborne and Redruth Mining District.

### 2.3 Historical background

*Summarised and adapted from Parkes, C, 2007.*

For the Camborne, Pool, and Redruth area, perhaps more than in any other part of Cornwall, the development of mining in the post-medieval period, particularly the years from c1700 to the early part of the 20th Century, brought enormous changes to the economy, population, settlement and communication patterns, social organisation, and surface landform and environment. Today the remains of these changes can be seen in the engine houses, buildings and spoil heaps, etc that still survive the area, and which reflect its inclusion within the World Heritage site.

The northern edge of the Carn Brea-Carnmenellis granite has been identified as having the most intense tin and copper mineralisation in Cornwall. Exploitation of the resource was expanded near the surface from c1700 through the use of shafts with horse powered pumping systems and drainage adits as well as the earlier openworks and streamworks; and after c1750, pursued to great depths with the introduction of the steam technology necessary for de-watering lower levels. This produced a long, and long-lived, east-west series of mining and related sites.

Through the 18th century and much of the 19th, these mines suffered periods of depression, and some were closed, re-opened, or amalgamated, but in general, they increased in scale, and complexity. The introduction of steam engines, mentioned above, was early in this area, being first recorded at Dolcoath in 1758, and the mines reached great depths and formed extensive complexes at surface, including shallow works, waste dumps, engine houses and other earthworks and buildings around the shaft heads and beyond, covered and open areas for hand-breaking and sorting ore, and storage of ore and materials, and leats and trackways. They continued with many closures, re-workings, expansions, and amalgamations through the 19th and 20th centuries until they were finally abandoned in the 1990s.

The last century brought huge changes to the area, with the virtual cessation of any mining-related activity, and subsequent redevelopment of much of the available land. Only 6 mines remained in the area by 1912, 5 of them being taken over by South Crofty; the inter-war years brought a temporary revival in the local mining industry, but Dolcoath, Carn Brea and Tincroft finally closed between 1919 and 1921; South Crofty alone, working Dolcoath, Cook's Kitchen and other old setts, continuing production to the late 20th century (Cahill 2002, 12; Morrison 1983, 8; Sharpe 2005, 327).

Following the cessation of mining in the later 20th century, redevelopment of abandoned mining sites and former farmland for light industry and retail was encouraged. The Pool and Barncoose Industrial Estates have filled in much of the strip of land between the railway and the former A30, now the A3047, east of Dudnace Lane, with their large, uniform buildings using mass-produced materials and pre-fabrication, and set in landscaped delivery and parking plots in which there are few surface traces of earlier land-use. The sustained mining activity has, nonetheless, left varied and complex archaeological remains, some still standing above ground as visible structures, but with the high potential for surviving below ground remains.

The site at Cowlins Mill is marked as part of Tin Croft Mine on the c1840 Tithe Map for Illogan Parish (Fig 3), which shows a leat running along the eastern side of the development area as a blue line. It seems likely that this leat once fed the Tincroft stamping mill, presumed to have been located in this area. On the OS 1st Edition c1880 map the leat is shown within the development area but no buildings are shown (Fig 4). A former mine shaft, named as 'Sincok's Shaft' on the OS 1st Edition map is located on what is now the north side of the site, on the edge of the railway embankment.

The Cowlins Mill building is first shown on the OS 2nd Edition c1907 map (Fig 5), although it was probably built c1890s as the 1893 and 1897 Kelly's Directories list Richard Cowlin, the owner of Cowlins Mill, as a grocer, and the Kelly's Directory of 1902 as a grocer and flour dealer. Penhallick House, to the south of Cowlins Mill, was built by Richard Cowlin in 1892. The disused mill was previously offices for Cornwall Council. Part of the former mill building lies within the development area, shown on the OS 2nd Edition map as a roofed structure spanning the leat (Fig 5). A row of small workshops was constructed along the north side of the site in 1946.

Known sites within the immediate area include:

- The site of the medieval settlement of Penhellick (MCO16148) is recorded to the north of the site and is named on the c1840s Illogan Tithe Map (Fig 3). The settlement was first documented in 1314. The name is Cornish and contains the elements *pen* 'head or end' and *heligen* 'willow-tree, sallow' (Padel 1985).
- The post-medieval Tincroft Mine was established to the north of the site and extended beyond the site to the south, encompassing it. The Grade II Listed "Compressor house and chimney approx. 45 metres east of Tincroft Mine Man Engine" (List Entry Number 1328163) still survives and is located directly east of the site.
- A post-medieval stamping mill (MCO24848), part of the former Tincroft Mine, is recorded as having stood within the site. No upstanding remains survive, and the precise location of the stamping mill remains currently unverified.
- A post-medieval leat running from Tincroft Mine along the west side of Penhellick and continuing along the east side of the Cowlins Mill site is shown on the c1840s Illogan Tithe Map and subsequent OS 1st and 2nd Edition maps (Figs 3 to 5). Part of the leat

still survives above ground on the north side of the former mill building, within the site, and below ground remains may survive close to the east side of the site.

### **3 Archaeological results**

Prior to an archaeologist being on site for the commissioned watching briefs, the south western portion of the area to be excavated had already been largely dug out down to around a depth of around 0.5-1m, accounting for slope, into the depth of mine waste deposits. A walkover of this area indicated patches of dark blackish grey deposits and demolition debris in amongst the pinkish grey mine waste, including disturbed killas stones and rubble (see Figure 10). The evidence indicated the possible site of a demolished structure, or structures, although no distinct remains could be identified. During a subsequent clean of this area by machine using a toothless bucket, a badly disturbed section of a probable wall foundation (feature 19, below) was identified.

The watching brief was carried out over three separate days, with an additional visit to photograph the section of leat adjacent to the north side of the former mill building, once the concrete surfacing had been removed and the leat exposed.

Prior to an archaeologist being on site, the southwestern section of the area to be excavated had been dug out to a depth of between 0.5m to 1m, understood to have been carried out using a toothed bucket. During the watching brief the site continued to be stripped by a machine using a grading bucket, which included a secondary clean of the area already stripped. Identified features were cleaned and measured in by hand using line and offset. Plan drawings were made and section drawings where features were visible in section in the side of the excavation area. Features were not sectioned within the excavation area itself due to the depth of mining waste. All features were digitally photographed. The results from the watching briefs are presented below.

A total of 20 contexts were recorded of which five were built features. Context numbers were issued from a continuous sequence 1-20. Deposits are given in round brackets and structures without brackets. No cut features were recorded.

Full context descriptions are given in Appendix 2.

#### **Southeast facing section description**

The area being excavated revealed several upper layers of made ground and modern surfacing, visible in section. These layers were variously visible along the north western side of the excavated area, in places very mixed and disturbed, in other places very clear and well defined. Below the current concrete hardstanding (1) was a 0.08m deep layer of dark black gritty, quite oily, sandy clay (2), coal rich in places. Deposit (2) was visible along the entire exposed section and was considered to be a former surface, similar to tarmac and quite industrial in character. Below deposit (2) in places were shallow layers of a gritty crumbly white clay (3) and a fine blackish grey loose gritty sand (4); most clearly visible in section above feature 7 (see Figure 11). Narrow bands of yellowish reddish grey stony silty clay, deposits (11) and (18), were identified in places towards the eastern end of the excavated section (e.g., Fig 19), variously above and below deposit (2), which may represent redeposited natural and/or subsoil introduced during the creation of the upper surface levels.

Below deposit (4) was a deeper, more uniform, deposit of dark mottled yellowish red, sometimes darker brown, slightly stony silty clay (5) – see for example Figures 9, 11, 15, 17 and 19 - considered to be a subsoil that formed, or was introduced, across the area subsequent to the site falling into disuse following the cessation of mining activity.

Below deposit (5) a very mixed dark greyish red compact silty clay (6) containing much brick, stone, ceramics and glass deriving from demolition and midden debris was visible in section and overlying some of the structural features identified (e.g., Figs 8, 9 and 11). This deposit was relatively shallow where recorded, up to 0.25m in depth, but was considered to represent a demolition layer.

Below deposit (6) was a depth of former mine waste (8), between 0.2m and 0.4m in depth, consisting of loose bright pinkish grey angular stones and silty clay (e.g., Figs 9,

11, 15 and 17). Deposit (8) was identified in section abutting the structural features recorded, also occasionally visible within and overlying the uppermost stones, in these instances typically mixed with deposits (5) and/or (6).

### **Feature 7**

*See Figure 9 for section drawing, Figure 7 for plan drawing and Figure 11 for digital photograph. Figure 6 presents an overall plan drawing of recorded features.*

Towards the south western end of the site a loose concentration of large killas stones was identified in section and extending out from the north western side of the excavation area as a very disturbed linear spread around 1.8m long, on a broadly NW-SE alignment. Although badly disturbed, the concentration of stones was distinct from the mining waste deposit (8) to either side, appearing in section as a low, concave, irregular structure just over 1.2m wide and up to 0.25m deep. The feature was assumed to be the remains of a probable wall section.

At the south eastern edge of feature 7 a compacted area comprising a dark black oily sandy deposit containing much stone and some possible slag fragments was identified. A similar deposit was identified across other parts of the site, sometimes having distinct cobble stones set within it. These areas were given one context number (9) and are thought to be the remains of various floor or yard surfaces, although whether internal or external could not be ascertained. Where deposit (9) was identified this underlay mining waste deposit (8).

### **Feature 10**

*See Figure 8 for plan drawing and Figures 12, 13 and 16 for digital photographs. Figure 6 presents an overall plan drawing of recorded features.*

A loose and very disturbed linear concentration of large killas stones was identified broadly central within the excavated area, extending for a distance of around 5.5m on a broadly NW-SE alignment. Feature 10 was around 0.3m wide with a short return to the NE at its northern end. A disturbed area of deposit (6) was present around and within feature 10 and bordering the south eastern side of feature 10 was an area of compact smooth pinkish clay containing patchy areas of deposit (9). Feature 10 was assumed to be the remains of a wall section, with deposit (9) being an associated floor or yard surface. Feature 10 appeared to have a spatial relationship with a further section of wall, feature 12, 6m to its northeast (see Figs 8 and 16).

### **Feature 12**

*See Figure 9 for section drawing, Figure 8 for plan drawing and Figures 14 and 16 for digital photographs. Figure 6 presents an overall plan drawing of recorded features.*

A loose and badly disturbed linear concentration of large killas stones was identified just north of central within the excavated area, 6m distant from, and on the same NW-SE alignment as, feature 10. Feature 12 was also around 5.5m in length and approximately 0.3m wide, with a return to the southwest that mirrored that to the northeast in feature 10 (see Figures 8 and 16). At the north western end of feature 12 there was a gap in the line of stones within which was an area of deposit (9), inset by a number of small rounded oval stone cobbles (see Fig 15). A possible return of feature 12 to the northeast was identified on the south side of deposit (9). Feature 12 also continued north westwards beyond deposit (9) and below the edge of the excavated area, where it could be seen in section as a concave structure of large killas stones approximately 0.7m wide and up to 0.4m high (Figs 14 and 15). This may represent two separate sections of wall, possibly two different structures, or an entrance between two areas of the same structure.

### **Feature 16**

*See Figure 9 for section drawing, Figure 7 for plan drawing and Figure 17 for digital photograph. Figure 6 presents an overall plan drawing of recorded features.*

Towards the eastern end of the excavated area a loose slightly curvilinear concentration of large killas stones was identified, extending south out of the section for approximately 2.5m before curving eastwards for a further 2.2m where it disappeared below the spoil heap. Feature 16 was also considered likely to be the remains of a wall section, possibly

part of a former curvilinear structure or the corner of a rectilinear structure that had been levelled and spread during the demolition process.

In section, feature 16 formed a concave spread of large killas stones around 1.5m wide and up to 0.4m high, abutted on either side by mining waste deposits (8) and (15). Probable earth bonding was identified between the stones at the base of feature 16, mixed with deposit (8) at upper levels. Overlying and respecting feature 16 was a shallow concave deposit of dark black coal-rich silty clay (14), sat within the base of deposit (5).

### **Feature 19**

*See Figure 9 for section drawing, Fig 7 for plan drawing and Figures 18 and 19 for digital photographs. Figure 6 presents an overall plan drawing of recorded features.*

A loosely curvilinear concentration of large killas stones was identified extending south eastwards out of the northwest side of the excavation area, then curving round to the southwest. Feature 19 was around 5.5m long and around 0.4m to 0.6m wide, set within a wider linear spread of dark black, friable, silty clay (17), slightly oily in places, and variously mixed with mining waste deposit (8). Feature 19 was also considered to be the remains of a probable wall section. Deposit/spread (17) may represent the remains of a wall foundation trench or disturbed demolition deposits.

### **Leat**

*See Figures 20–22.*

A visit was made to site to photograph the section of leat adjacent to the north side of the former mill following the removal of the concrete slab overlying the feature. Exposure of the leat revealed that this section of the structure was uniformly shuttered by modern concrete along its internal elevations. The base of the structure was still partially infilled with debris and was not visible. The structure will be further infilled prior to construction of a new boundary fence along its northeast side, along the railway embankment. The course of the leat could be observed extending into the vegetation of the railway embankment but its form was not visible. Beneath the concrete shuttering some remains of the historic stone walls of the leat could be glimpsed but no certain architectural details of the leat, its condition or level of preservation, could be ascertained.

## **4 Discussion and Conclusion**

The structural features (7, 10, 12, 16 and 19) identified during the watching brief were very badly disturbed and truncated, making confident interpretation of their original form, character, function and relationship problematic. Nonetheless, some common factors can be identified. Features 7, 10, 12, 16 and 19 all appear to represent possible or probable linear, or potentially curvilinear, wall sections constructed of large killas rubble stones, probably originally having earth bonding. All of the features share a broadly NW-SE axis and features 10 and 12 in particular appear to have a spatial relationship, potentially forming two sides of a shared space or structure. Areas of former surfaces can be identified adjacent to most of the features, typically consisting of a smooth dark oily sandy clay, inset with cobbles in some areas. Overlying these surfaces and abutting the probable wall sections was a depth of mining waste that may have been introduced as a secondary surface layer during the lifetime of whatever building/structures stood on the site. Demolition deposits overlie the mining waste in places, suggesting a demolition phase occurred subsequent to the introduction of the mining waste, but the mixed nature of these with the mining waste may indicate this was alternatively brought onto the site following demolition of the buildings to act as a levelling agent.

Although no secure evidence was recovered to indicate the date and function of features 7, 10, 12, 16 and 19, it seems likely they belonged commonly to a building or group of structures associated with the former Tincroft Mine, which were demolished by the time the c1840s Illogan Tithe Map was created. The proximity of features 7, 10, 12, 16 and 19 to the leat that ran through the site would suggest it was central to the function of whatever building or structures they represent. The most plausible interpretation is that they form some of the remains of the former stamping mill (MCO24848) documented as

having stood on the site. The mining wastes and mixed demolition deposits may represent phased demolition and disuse of the site, and there was potentially a period of soil development across the site, suggesting it may have returned to rough ground prior to any use of the site by Cowlins Mill and/or post-war for small industrial workshops.

## 5 References

### 5.1 Primary sources (in chronological order)

Kelly's Directory of Devonshire and Cornwall, 1893. [Part 3: Cornwall & Advertisements]

Kelly's Directory of Cornwall, 1897

Kelly's Directory of Devonshire & Cornwall, 1902. [Part 2: Cornwall]

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

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, MasterMap Topography

British Geological Survey, Geology of Britain Viewer (British Geological Survey © UKRI 2022, viewed under Open Government Licence v 3.0)

Soil Survey of England and Wales, 1982. Soils of South West England; 1:250,000 map.

### 5.2 Publications

CIfA, 2014b (Updated 2020). *Standard and guidance for an archaeological watching brief*. Reading, CIfA

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Sharpe, A, 2005. An Archaeological Assessment of South Crofty Mine, Pool, Redruth, Cornwall, *Environmental Impact Assessment, South Crofty Tin Mine, Dudnance Lane, Pool* Vol 2. Redruth, Crofty Developments Limited

### 5.3 Websites

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

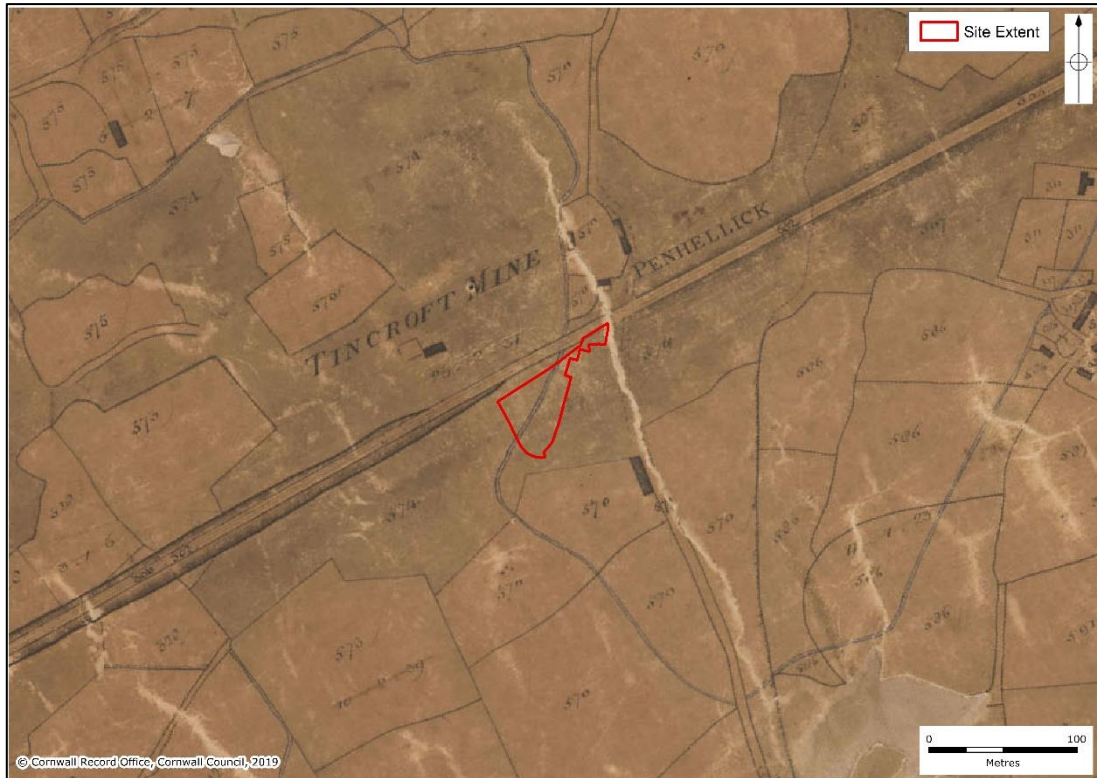


Fig 3 The site shown against the c1840 Illogan Tithe Map.

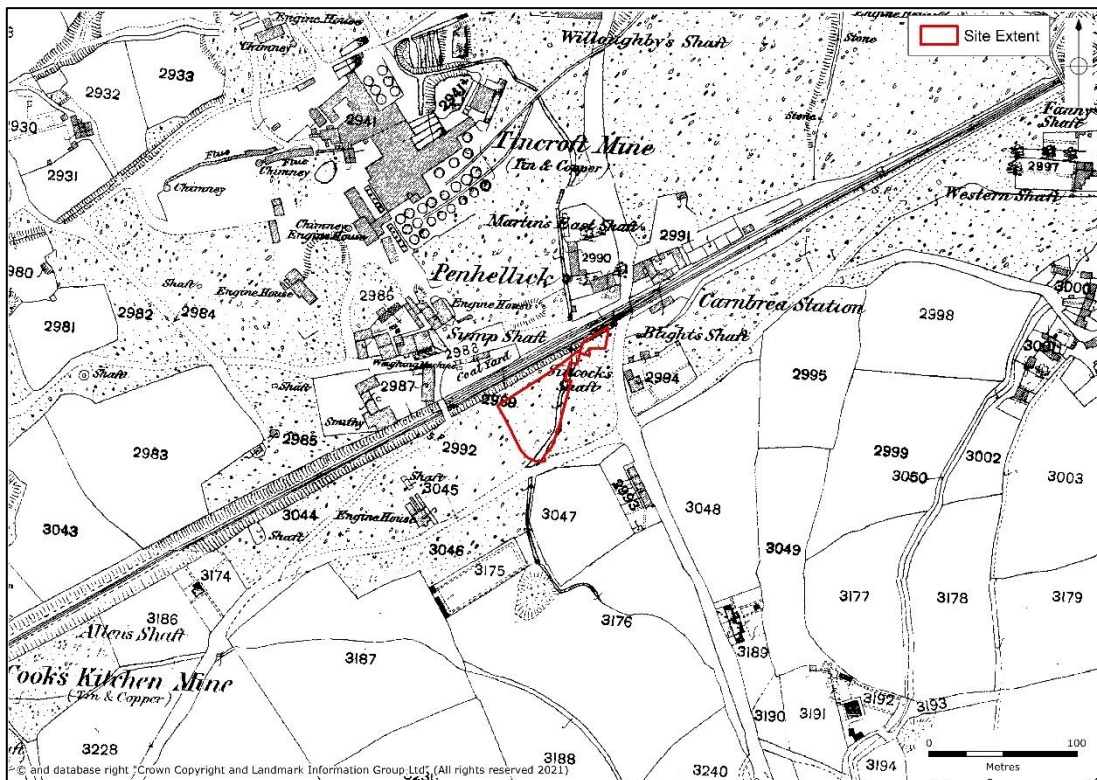


Fig 4 The site shown against the OS 1st Edition 1:2500 Map, c1880.

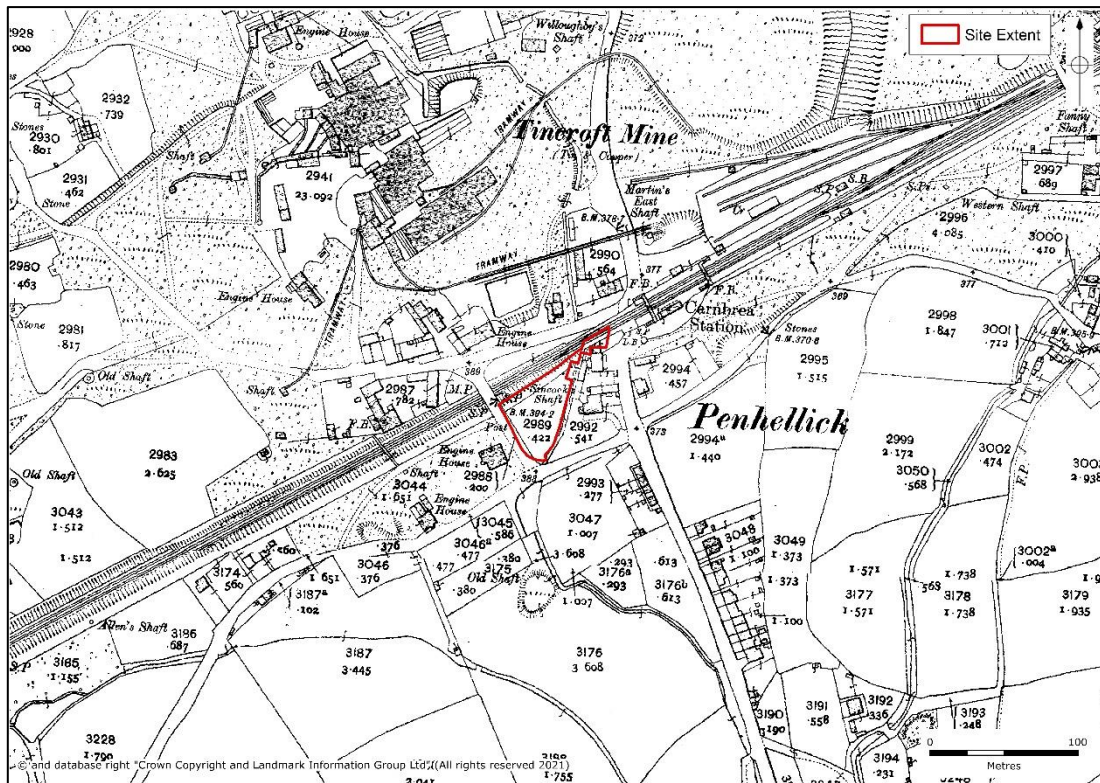


Fig 5 The site shown against the OS 2nd Edition 1:2500 Map, c1907.

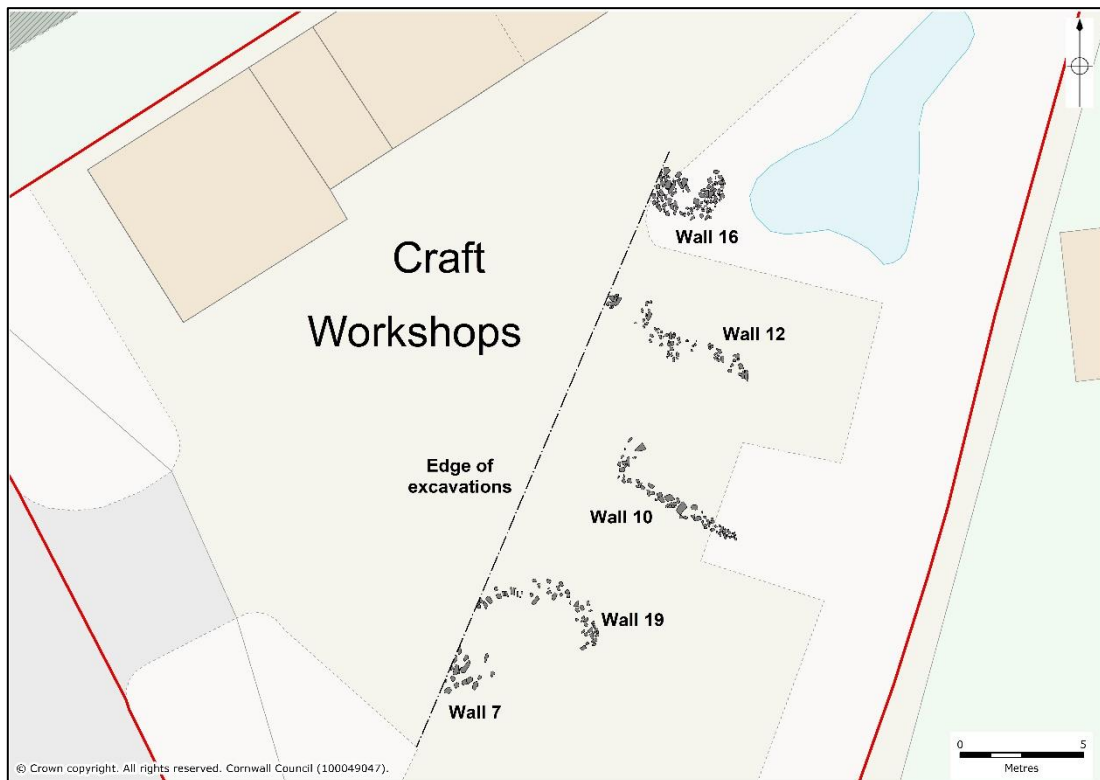


Fig 6 Combined plan of the features identified during the watching brief located against the OS Mastermap.



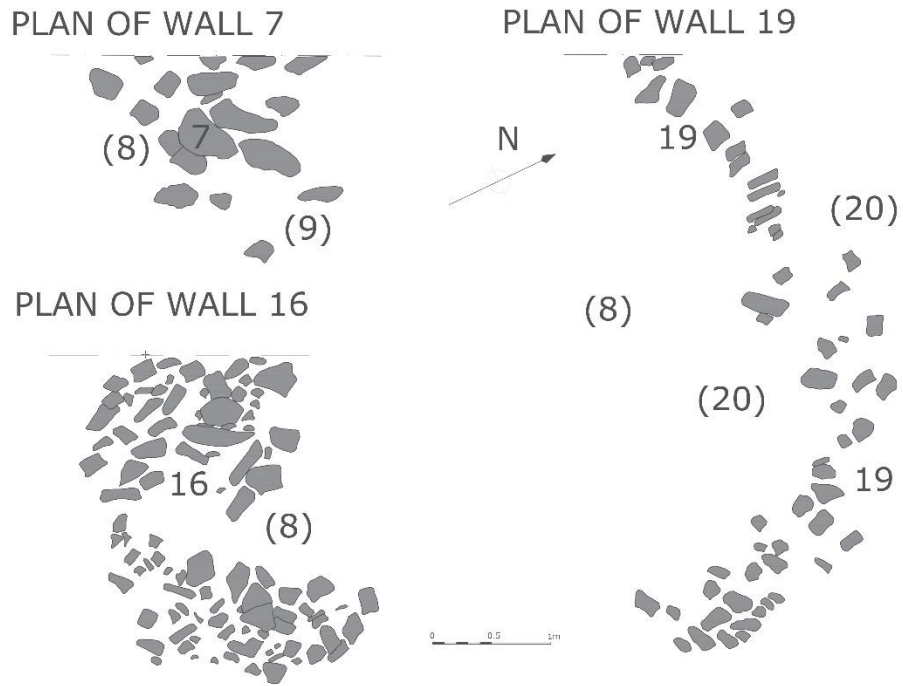


Fig 7 Plan drawings of features 7, 16 and 19.

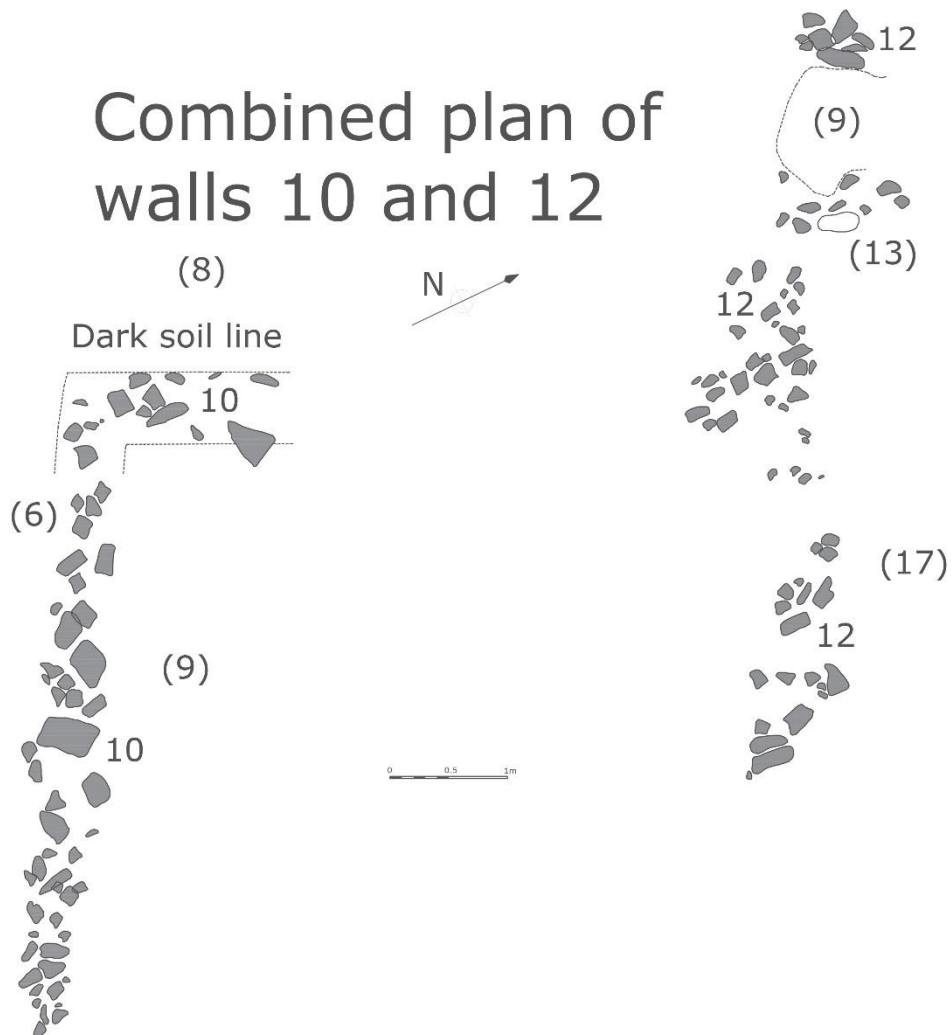


Fig 8 Combined plan drawing of features 10 and 12.

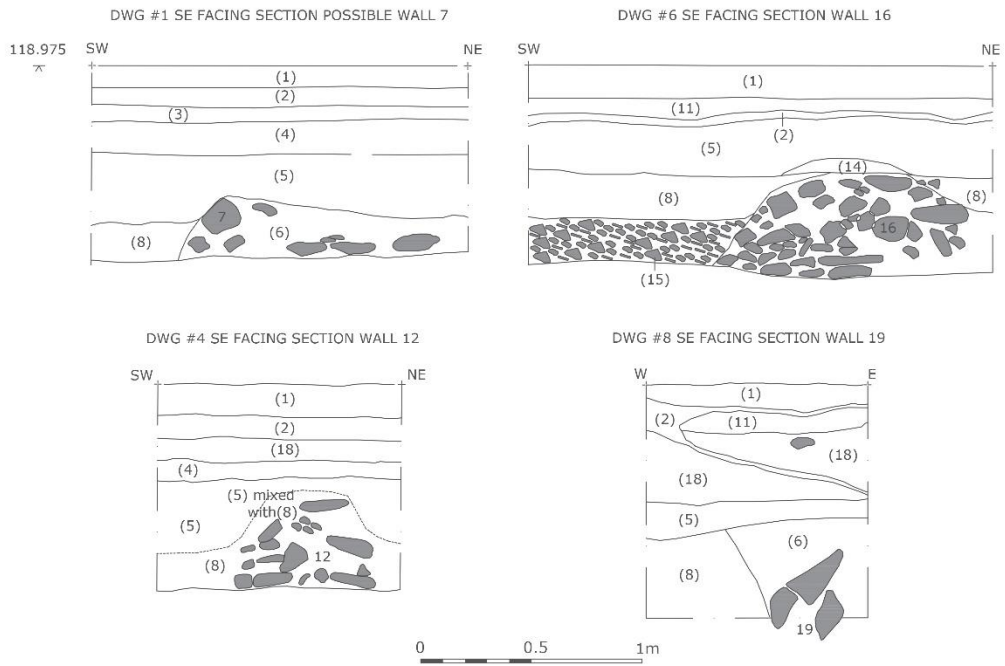


Fig 9 Section drawings of features 7, 12, 16 and 19.



Fig 10 General shot of southwestern section of the excavated area, looking southwest.



*Fig 11 Plan and section photograph feature 7 and deposit (9), looking northwest.*



*Fig 12 Plan shot of feature 10, looking northwest.*



*Fig 13 Plan shot of feature 10, looking southeast.*



*Fig 14 Plan and section photograph of feature 12, looking northwest.*



*Fig 15 Section photograph of feature 12, with cobbled surface (9), looking northwest.*



*Fig 16 General plan shot of features 10 and 12, looking southwest.*



*Fig 17 Plan and section photograph of feature 16, looking northwest.*



*Fig 18 Plan shot of feature 19, looking northeast.*



*Fig 19 Section photograph of feature 19, looking northwest.*



*Fig 20 East facing internal elevation of the leat, looking west.*



*Fig 21 Looking along the leat towards the railway embankment, looking north.*



*Fig 22 Looking along the leat towards the former Cowlins Mill, looking south.*



## Appendix 1: Written Scheme of Investigation

### Cowlins Mill, Penhallick, Pool, Cornwall; Written Scheme of Investigation (WSI) for Archaeological Monitoring

Client: Cormac  
Planning ref PA21/05635

#### Project Background

This WSI by Cornwall Archaeological Unit (CAU) is for archaeological monitoring (or 'watching brief') for groundworks at Cowlins Mill, Penhallick Road, Pool, near Redruth in west Cornwall, NGR SW 66955 40730 (Figs 1 and 2). The site is a former industrial yard with mill on earlier mining waste and lies within the Cornwall and West Devon Mining Landscape World Heritage Site. It has conditional Planning consent for mixed use development. A Heritage Impact Assessment has been carried out previously as a separate project by CAU (Motley 2021).

#### Heritage Designation

The site lies within the Cornwall and West Devon Mining Landscape World Heritage Site (WHS), in WHS Area A5, the Camborne and Redruth Mining District.

#### Planning Background

The development scheme is for redevelopment of the former yard to provide 10 modular accommodation units; with associated refurbishment of former workshops/offices to provide site management and other support facilities; provision of pedestrian walkway to an existing railway footbridge and other access and amenity works. The Historic Environment Planning (Archaeology) Officer (HEPAO) commented July 8th 2021 that;

*'We have consulted the Cornwall & Isles of Scilly Historic Environment Record and the submitted Heritage Impact Assessment (HIA) (Cornwall Archaeological Unit 2020R023), and note that the application site is within the Camborne and Redruth Mining District of the Cornish Mining World Heritage Site (WHS).*

*As the HIA makes clear, within the application site is the site of a former leat that served Tin Croft mine (MCO37544) and the possible site of an early 19th century stamps mill (MCO24848). The documented early workings of Tin Croft mine date to the late 18th/early 19th centuries when it was worked as a copper mine. Later workings were more successful with tin replacing copper as the main ore (MCO29759).*

*We therefore concur with Section 9 of the HIA and consider that an archaeological watching brief should be carried out during the early stages of groundworks, undertaken by a suitably qualified organisation or individual...'*

The HEPAO advised an archaeological condition and this is in place as Condition 8 of the Planning Approval dated 21st July 2021, as follows:

*8 A) No development shall take place until a programme of archaeological recording work including a Written Scheme of Investigation has been submitted to and approved by the local planning authority in writing. The scheme shall include an assessment of significance and research questions, and:*

- 1. The programme and methodology of site investigation and recording*
- 2. The programme for post investigation assessment*
- 3. Provision to be made for analysis of the site investigation and recording*
- 4. Provision to be made for publication and dissemination of the analysis and records of the site investigation*

5. Provision to be made for archive deposition of the analysis and records of the site investigation

6. Nomination of a competent person or persons/organisation to undertake the works set out within the Written Scheme of Investigation

B) No development shall take place other than in accordance with the Written Scheme of Investigation approved under condition (A).

C) The development shall not be occupied until the site investigation and post investigation assessment has been completed in accordance with the programme set out in the Written Scheme of Investigation approved under condition (A) and the provision made for analysis, publication and dissemination of results and archive deposition has been secured.

D) The archaeological recording condition will normally only be discharged when all elements of the WSI including on site works, analysis, report, publication (where applicable) and archive work has been completed.

A pre-commencement condition is necessary in this instance due to the need to ensure that a programme and methodology of site investigation and recording of archaeological features is undertaken before physical works commence on site.

Reason: To ensure that provision is made to record finds of archaeological interest, and in accordance with the aims and intentions of Policy 24 of the Cornwall Local Plan Strategic Policies 2010 - 2030, and paragraph 194 of the National Planning Policy Framework 2021.

## Summary of Site History and Heritage Resource

The following summary is based on extracts from the recent HIA (Motley 2021, 6) which notes that;

The location is behind, and within the grounds of, Cowlins Mill, an undesignated late 19th century flour mill and grocer's shop. The site lies in close proximity to several Listed mining buildings and within Area 5 of the Cornish Mining World Heritage Site. As recorded on the Tithe map of c1840 it lay within the extent of Tincroft Mine, which was worked from at least the 18th century until the early 20th century, with its formerly extensive main surface complex to the north. The 1840 map depicts as a blue line a leat running along the eastern side of the development area, serving Tincroft or the Carn Brea Mines, Cornwall and Isles of Scilly Historic Environment Record (CSHER) no. 34008. On the c1880 OS map the leat is shown running through mine spoil extending across the site.

Directories of 1893 to 1902 list Richard Cowlin as a grocer and flour dealer. Between the time of the OS maps of c1880 and 1907, presumably in the 1890s, Cowlins Mill was established on the east side of the site, and Penhallick House (just east of the site) is said to have been built by Richard Cowlin in 1892. Several workshops were erected on the site during the post-war period; an RAF aerial photograph of 1946 shows these under construction in an area of rough ground and with Cowlins Mill to the north east.

No mine shafts or structures are known within the site extent (Fig 1) and recent drill testing across the yard found none (Wheal Jane Consultancy, 2021). However, the drilling encountered buried mine waste at all points, and as noted in the HIA (*op cit*) groundworks may impact on other below-ground industrial archaeology, in particular, remains associated with Tincroft Mine.

## Project extent

The monitoring project will cover all ground disturbance on the site as defined by the 'red line' in Figure 2 which shows the main elements of the planned works; it will include trenches for services and drains and attenuation tanks.

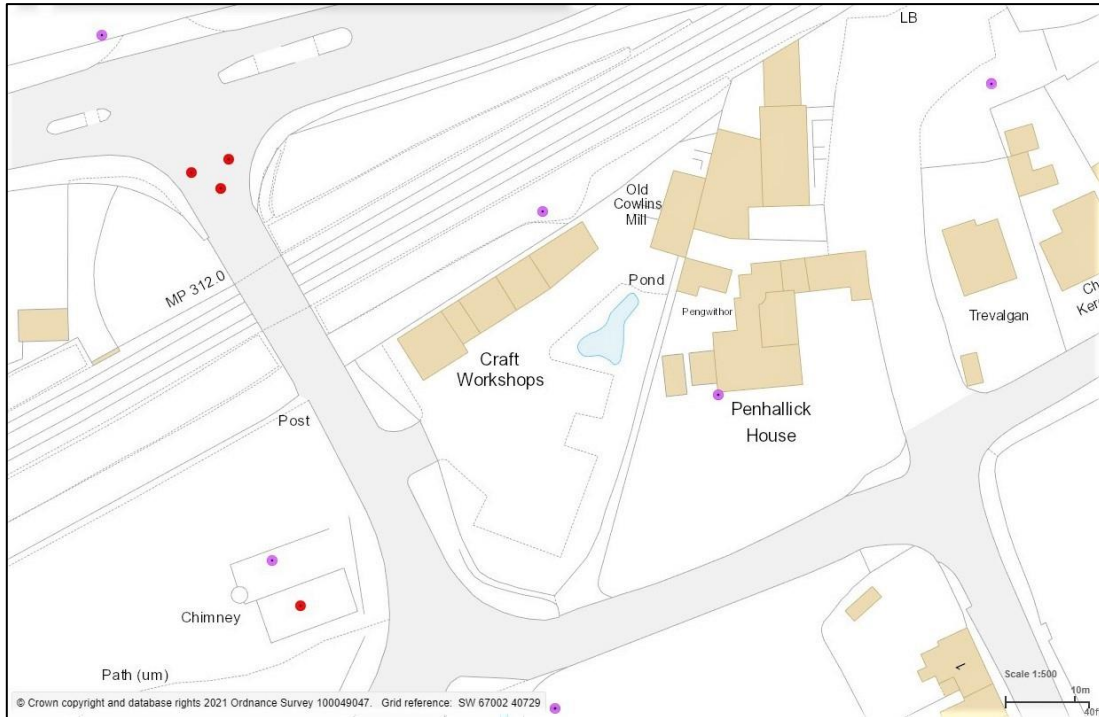


Fig 1 Map of Cowlins Mill showing yard, with line of leat beyond pond on east, and sites of mine shafts (purple points) and engine houses (red) from CSHER mapping.

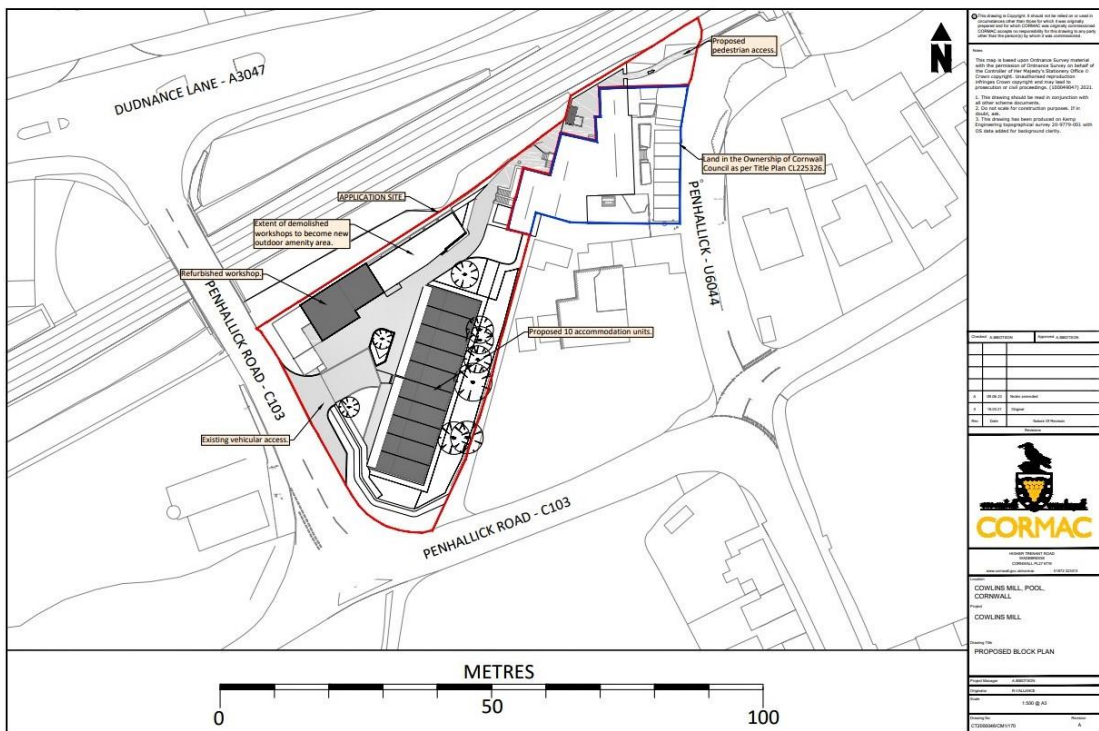


Fig 2 Client's block plan defining site and showing main elements of scheme.

## Aims and Objectives

The archaeological monitoring project is designed to provide for appropriate recording and gain in understanding of any buried mining remains, and their context and significance including as 'attributes' (assets) of the Outstanding Universal Value (OUV) of the WHS Area.

In particular, the project will help assess whether and how any buried remains here contribute to the WHS OUV criteria (Anon, undated, 20-21). Remains relating to Tincroft, reported to be the richest mine in the world in 1870 (Historic England Listing Documentation, Tincroft Man Engine and Loadings, 1160794), and to the Penhallick leat which may have served earlier copper mining, could contribute especially to the evidence of historic developments in technology, an aspect of OUV.

Objectives are to preserve information by recording, for any buried mine-related structures or excavations; to characterise the mine spoil on the site; and to retain any important buried artefacts found.

## Research Questions and Public Value

The monitoring project will address as far as possible several related questions;

- Are there buried remains of the leat with any evidence of its form, date, construction, and past use?
- Does the mine spoil below ground on the site show phases of deposition or change, and does it contain or bury evidence of its origin, or other mining remains?

## Working Methods

All recording work will be undertaken according to the Chartered Institute for Archaeologists (CIfA) guidance (CIfA 2014; 2017; 2019; 2020a; 2020b). Staff will follow the CIfA *Code of Conduct* (2019). The Chartered Institute for Archaeologists is the professional body for archaeologists working in the UK.

### Creation of the physical and digital archive

Results from the recording will be archived following CAU guidelines, including;

- Finds will be washed, catalogued, labelled, marked and stored.
- Record drawings and context sheets will be ordered, catalogued and stored.
- Any black and white negative film will be catalogued and held in the archive.
- An OASIS online archive index entry will be completed.
- Project correspondence, WSI, and a single paper copy of the report, will be stored in an archive standard (acid-free) documentation box.
- Drawings will be stored appropriately (plastic wallets for annotated drawings).
- Additional data (survey, external reports) will be stored in digital format.

### Archive deposition

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

- The project archive will be deposited initially at ReStore PLC, Liskeard and transferred to an accredited archive repository when available.
- Digital data will be stored on the Cornwall Council network.
- Digital data (CAU reports, external reports, survey data, geophysics data, digital photographs, etc) in the site archive will be deposited with the ADS.

CAU uses the following file formats for stored digital data:

DOCX	Word processed documents
XLSX	Spreadsheets
PDF	Exports of completed documents/reports/graphics
JPG	Site graphics and scanned information
DNG or TIF	Digital photographs
DWG	AutoCAD drawings, measured surveys
MXD	ArcView GIS (electronic mapping) data
AI	Adobe Illustrator graphics

## Preliminary to fieldwork

In advance of the fieldwork CAU will discuss and agree with the client as necessary:

- Working methods and programme.
- Health and Safety issues and requirements, including those relating to Covid 19.
- Transfer of Title for artefacts.

## Preparation for field recording

Historic OS and tithe surveys will be used to provide a base map for use in the field. Tehidy Estate maps of this area are also considered potentially an important source for understanding its past development and will be consulted.

## Fieldwork: Photography

Photographic recording will include colour photography using a digital SLR camera (with a resolution of 10 million pixels or higher). CAU follows Historic England guidance on digital image capture and file storage (2015).

The photo record will include:

- General views (setting, landscape, type and progress of investigation).
- Prior to any ground disturbance, the archaeologist will record the location using photography and annotation of a scaled base plan.
- Photography of buried remains revealed including character of old mine spoil.

A metric scale will be included in all views, except where health and safety considerations make this impractical.

## Fieldwork; Monitoring

Methodology will follow CIfA guidance (CIfA 2014b).

All groundworks which might potentially contain archaeological features will be undertaken under archaeological supervision, as far as compatible with safe working. New service or drainage trenches or excavations for tanks will be included.

Woks monitored will include any removal of soil, excavation of pits or trenches, or other activities lowering the present site levels. All soil stripping should be undertaken by a machine equipped with a toothless grading bucket. Should archaeological features be revealed, mechanical excavation will be halted and the exposed features cleaned up by hand, using mattock or trowel, wherever necessary to investigate any layers, cuts, deposits or other indications of archaeological sensitivity to determine their significance prior to either recording or further mechanical excavation. Reasonable time will be provided by the client for the excavation and recording of any features revealed.

Where a temporary stop of work is required the site archaeologist will request this via the developer and the Senior Development Officer Historic Environment (SDOHE).

If complex and/or significant archaeological deposits are encountered then the archaeological requirements will be reviewed by the client, the SDOHE, and CAU. **In the event that remains cannot be preserved *in situ* then full-scale excavation may subsequently be required.** A contingency should be allowed to record any significant archaeological remains uncovered during the groundworks. The significance of the remains will be agreed between the client, the SDOHE, and CAU.

## Recording

During the archaeological watching brief the archaeologist will:

- Identify and record any archaeological features that are revealed; the level of description and drawing will be appropriate to the character/importance of the archaeological remains.
- Make all site drawings (plans and sections) by pencil (4H) on drafting film; all drawings will include the following: site details, personnel, date, scale, north-point.
- Locate all features and finds accurately and at an appropriate scale.

- Record in writing all archaeological contexts using descriptions to a standard format linked to a continuous numbering sequence.
- Record photographically using colour photography with a high resolution digital SLR camera. Photographs will include a record of significant features, record of any specialist samples taken (both their locations, and the progress of the sampling), and general working shots. A metric scale, site and context identifier and a north arrow where appropriate will be included in all record shots unless safety issues make this impossible.

### **Treatment of human remains**

No evidence to indicate that the site contains buried human remains is known.

Should any human remains be found, the presumption is that they will be excavated, removed and treated in accordance with current guidance from Historic England and the Advisory Panel on the Archaeology of Burials in England (APABE) (APABE 2015; APABE 2017; Historic England 2018).

- If human remains are discovered within an archaeological context on the site, the client, the Local Authority Archaeologist and Historic England will be informed.
- The relevant Ministry of Justice licence will be obtained prior to disturbing the remains or their burial soil, if possible.
- Any consents or licenses required will be obtained for the client by CAU.
- If human remains are uncovered, which are not to be preserved *in situ* (see below) they will be excavated with due reverence. Methodology used will follow published guidance (APABE 2015; APABE 2017; Historic England 2018); while the presumption of non-disturbance of such remains in the 2017 publication has been reviewed, the standards set out there for their excavation (Annex 53, points 221-225) will apply.
- Human remains will not be exposed to public view, the site being adequately screened. CAU will ensure respectful treatment, stratigraphic excavation, accurate location and detailed context recording of all remains.

### **Treatment of finds**

The fieldwork could potentially produce artefactual material. The following recording and retention policies will be followed:

- In the event that objects containing precious metal(s) are encountered, the coroner will be informed as per the provisions of the Treasure Act 1996.
- Significant finds in stratified contexts will be plotted on a scaled base plan or with a Leica GPS unit and recorded as small finds.
- All finds will be collected in sealable plastic bags which will be labelled immediately with the site code, the context number or other identifier, the type of material, and the finder's initials.
- Any large assemblages of modern (post-1800) material may be representatively sampled; any association of such material with industrial sites in the World Heritage Site or beyond will be taken into account in determining strategy.

### **Treatment of samples**

The fieldwork may produce environmental samples for example from buried leaf silts. The following collection, recording, and processing policies will be followed:

- Sealed/undisturbed archaeological contexts in the form of buried layers or deposits within significant archaeological features that have the potential to contain palaeoenvironmental evidence and/or material suitable for scientific dating will be sampled.
- Where bulk samples are taken a minimum of 40 litres will be sampled from these deposits where feasible.
- All samples will be described to a standard format linked to a continuous numbering sequence.
- Bulk samples will be processed using flotation with appropriate mesh sizes.

- In the event that significant organic remains are encountered, advice may be sought from the Historic England Regional Advisor for Archaeological Science.
- Sub-sampling for metallurgical or other chemical analysis will also be considered as appropriate; advice will be sought from Hayley McParland, Historic England Science Advisor.

## **Reporting**

The results from the monitoring will be analysed and presented in a concise report. The scope and type of the report will be dependent on the scale and significance of the results from the project. In the case of limited results the findings will be presented in a concise archive report. Which type of report is most appropriate will be agreed by CAU and the SDOHE at the conclusion fieldwork stage as necessary.

In the case of significant and/or extensive results a post excavation assessment report will be produced in accordance with CIfA's guidelines for post-excavation assessment (2014c). This will include a summary of the site archive and work carried out for assessment, a discussion of the potential of the data, and an updated project design (UPD) setting out proposals for analysis and publication.

The report will include the following elements:

- Summary
- Project background
- Aims and objectives
- Methodology
- Location and setting
- Site history
- Archaeological results
- Conclusions
- References
- Project archive index
- Supporting illustrations: maps, plans, elevations/sections, photographs
- Copy of this WSI as an appendix

## **Timetable**

Availability of CAU staff for fieldwork will be dependent on Covid 19 restrictions. We expect to have capacity for the fieldwork in September and request at least 2 weeks' notice before commencement of work, in order to allocate field staff and arrange other logistics.

The monitoring 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.

## **Archaeological Recording Monitoring and Signing Off Condition**

Monitoring of the project will be carried out by the SDOHE. Where the SDOHE is satisfied with the archive report and the deposition of the archive, written discharge of the planning condition will be expected.

- The SDOHE will monitor the work and should be kept informed of progress.
- Notification of the start of work shall be given preferably in writing to the SDOHE at least one week in advance of its commencement.
- Any variations to the WSI will be agreed with the SDOHE, in writing, prior to them being carried out.
- If significant detail is discovered, all works must cease and a meeting convened with the client and the SDOHE to discuss the most appropriate way forward.

Monitoring points during the study will include:

- Approval of the WSI

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

## **References**

- Anon, Undated. *Cornwall and West Devon Mining Landscape World Heritage Site Management Plan 2013-2018*. Cornwall Council, Truro
- APABE. 2015. *Large Burial Grounds Guidance on sampling in archaeological fieldwork projects*, APABE
- APABE, 2017. *Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England*, APABE
- CIfA, 2014. *Standard and guidance for archaeological excavation*, CIfA: Reading
- CIfA, 2017. *Standard and guidance for historic environment desk-based assessment*, CIfA: Reading
- CIfA, 2019 (Revised). *Code of Conduct*, CIfA: Reading
- CIfA, 2020a. (Last updated). *Standard and guidance for an archaeological watching brief*, CIfA: Reading
- CIfA, 2020b. (Last updated). *Standard and guidance for archaeological field evaluation*, CIfA: Reading
- Historic England 2015. *Guidance note on Digital Image Capture and File Storage*, Historic England, Swindon
- Historic England, 2018. *The Role of the Human Osteoarchaeologist in an Archaeological Fieldwork Project*, Historic England: Swindon
- Motley, C, 2021. *Cowlins Mill, Carn Brea, Cornwall Heritage Impact Assessment Updated*, CAU Report no. 2020R023, CAU: Truro
- Wheal Jane Consultancy, 2021. *Site Investigation by Drilling, Cowlins Mill*. Wheal Jane Consultancy: Truro



## Cornwall Archaeological Unit

Cornwall Archaeological Unit is part of Cornwall Council. CAU employs project staff with a broad range of expertise, undertaking around 120 projects each year.

CAU 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



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

<http://www.archaeologists.net/codes/ifa>

## Terms and conditions

### Contract

CAU is part of 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 CAU and will be presented in good faith on the basis of professional judgement and on information currently available.

### Project staff

The project will be managed by a nominated Archaeology Projects Officer 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 CAU field staff, with assistance from qualified specialists and sub-contractors where appropriate. All staff will follow CAU's Health and Safety Policy and work in accordance with a site-specific risk assessment.

In the event that the project is undertaken by CAU, the team is expected to include:

Cathy Parkes

**Cathy Parkes, Senior Archaeologist, Cornwall Archaeological Unit**  
**Educational and Professional qualifications**

BA (Hons) 1987, Archaeology, Class I, University of Exeter.

Member of the Chartered Institute for Archaeologists (MCIfA), elected 2008.

### **Employment history**

Professional archaeologist with Cornwall Archaeological Unit since 1987, with previous experience of archaeological excavations in Cornwall and beyond.

### **Key experience**

Experienced at designing and delivering projects, using scoping and analysis of maps, databases, and documents; discovery, interpretation and recording of sites and landscape in the field; and engaging reporting.

Recent work on industrial archaeology includes HIA and WSI for the Bangors Quarry site, Launceston, in 2017 and 2020, and for the Greenhill arsenic works site at Gunnislake in 2018 and 2020. These examples like many of my projects have also involved archaeological monitoring or evaluation.

Other projects include designation of Scheduled Monuments of all kinds in Cornwall, including Geevor and other mines; Cornwall-wide survey of risk to monuments; management plans for extensive areas such as the National Trust's Lizard estate; and impact assessments of proposed developments, among them the A30 Temple dualling and other road schemes.

### **Key skills and knowledge**

I specialise in historic landscape assessment, involving applied research and innovation, discovering, recording, understanding and reporting on Cornwall's historic places - their meaning, local distinctiveness, sensitivity and potential. Identifying potential for application of results to public benefit is a particular interest. I have developed rapid, 'walkover' survey and plotting as a key element of extensive fieldwork, and have also advanced methodology for assessing visual impacts on settings of heritage assets from new roads and renewable energy infrastructure. My development-related work is informed by creative application of relevant County and National policies and guidance.

Aspects of landscape archaeology I find particularly interesting include recognition of local distinctiveness, our tangible heritage, expressive of past ways of using places and their resources, features once prevalent, often still commonplace, vulnerable but enriching links between people and place, past and present.

I am a Trustee of Cornwall Archaeological Society, organise excursions for the Society, and have contributed various guided archaeological walks and presentations.

## **Monitoring Report Distribution**

A digital copy of the report, illustrations and any other files will be held in the Cornwall HER and also supplied to the client as pdf or other suitable media.

### **Copyright**

Copyright of this Written Scheme of Investigation will be reserved to Cornwall Archaeological Unit, Cornwall Council. It may only be used/reproduced with permission from Cornwall Archaeological Unit.

Existing copyrights of external sources will be acknowledged where required.

### **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.

CAU 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 CAU may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

## **Health and safety statement**

CAU follows Cornwall Council's *Statement of Safety Policy*.

Prior to carrying out on-site work CAU will carry out a site-specific Risk Assessment. Particular attention in the risk assessment will be paid to the potential hazard posed by the presence of arsenic.

## **Insurance**

CAU is covered by Cornwall Council's Public and Employers Liability Insurance, with a policy value of £50m. The Council also has Professional Negligence insurance with a policy value of £10m.

*Cathy Parkes*

*Senior Archaeologist*

*29th July 2021*

### **Cornwall Archaeological Unit**

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## Appendix 2: Table of contexts

\* Built features are in bold

Context Number	Type (Cut/Deposit/Build)	Description	Interpretation	Period (only builds and layers have been interpreted)
1	D	Compact concrete under hessian and gravel surface. 0.1m deep.	Modern hardstanding	
2	D	Dark black oily, gritty, coal rich sandy clay. 0.08m deep.	Former surfacing, industrial in character	
3	D	Dark white loose, crumbly clay. Variable, up to 0.05m deep.	Former surfacing, hardcore deposits	
4	D	Mid to dark blackish grey, very fine loose gritty sand. Variable up to 0.15m deep.	Former surfacing, hardcore deposits	
5	D	Mid to dark blackish brown, sometimes mottled yellowish red compact silty clay, occasional small angular shillet stones. Variable up to 0.3m deep. A few blue and white ceramic fragments from this deposit, unstratified.	Subsoil, redeposited, made ground.	
6	D	Very dark greyish red compact silty clay containing much brick, stone, ceramics and glass. Also a fragment of clay pipe, unstrat. Variable up to 0.25m deep.	Demolition layer, mixed with disturbed wall sections, particularly wall 7. Appears mixed with mine waste deposit (8) in places.	
<b>7</b>	<b>B</b>	<b>A loose tumble of large stones up to 0.25m deep. Visible in section and part plan.</b>	<b>Possible wall section. Possibly part of a former wall foundation.</b>	<b>Post-medieval</b>
8	D	Mid pinkish grey very loose stony rubble and silty clay, very gingery surface in places. In many areas of the site abuts and is mixed within wall sections. Depth greater than 0.2m. Appears to lie above possible surfaces areas (9).	Mining wastes used for levelling ground – and/or as a ground surface? In places appears mixed with earth bonding for wall sections. Upper surface visibly higher than wall foundations in other places, possibly suggesting the deposit was laid after walls were constructed.	
9	D	Compact dark blackish oily sandy surface containing small angular stones and rounded cobbles, some fragments of possible slag in amongst it. Alongside wall 10 this sits within a compact, smooth, pinkish reddish clay. Very patchy but visible respecting parts of wall sections 7,10 and 12. Visible below mine waste deposit (8).	Former surface, uncertain whether internal or external.	
<b>10</b>	<b>B</b>	<b>A loose and very disturbed line of large killas stones aligned broadly SE-NW with a return to the NE at its northwestern end. Approximately 5.5m visible length, 0.25-0.3m wide.</b>	<b>Wall foundations of a NW-SE aligned building/room.</b>	<b>Post-medieval</b>
11	D	Mid yellowish reddish grey silty clay, slightly stony. Up to 0.2m deep, sits above (4) and below (2) along some parts of the excavation section and above (2) in others, very mixed, intermittently visible deposit.	Probably redeposited natural/subsoil, made ground.	

Context Number	Type (Cut/Deposit/Build)	Description	Interpretation	Period (only builds and layers have been interpreted)
12	B	A loose and very disturbed line of large killas stones aligned broadly SE-NW. Approximately 5.5m visible length, 0.25-0.3m wide, disappears below the north side of the excavated area. A return to the SW at a point along its SW side appears to correspond with the return to the NE on wall 10, suggesting an association.	Wall foundations of a NW-SE aligned building/room, possibly the NE side of a room contained by walls 10 and 12.	Post-medieval
13	D	A discrete spread of very loose greyish greenish yellow sandy material between the disturbed foundation stones of wall 12.	Part of the mixed waste deposits found across the site, very mixed coverage and deposition. Uncertain origin.	
14	D	A discrete area of dark coal rich soil overlying wall 16 - seen in section - within base of (5).	Uncertain, respects top of wall 16, overtopped by (5).	
15	D	Pinkish grey loose angular shillet stones, 0.2m deep. Lies below mine waste deposits (8) and abuts wall 16.	Mining waste? Same as (8)?	
16	B	A badly disturbed slightly curvilinear section of probable wall, up to 0.4m high where seen in section. Broadly SE alignment. About 1m wide in section, but with probable spread and tumble. Bonding appears to be earth mixed with mine wastes (8), although possibly mixed during demolition process. Abutted by (8) and also (15) on its NW side.	Wall foundations.	Post-medieval
17	D	Patches of compacted, smooth, whitish grey clay on the SE sides of wall section 12, possibly a former surface.	Possible former surface, unclear whether internal or external.	
18	D	Mid yellowish grey compact silty clay with frequent small shillet stones. Up to 0.3m deep. Appears intermittently.	Redeposited natural/made ground.	
19	B	A slightly curvilinear line of large killas stones, around 5.5m long and 0.4-0.6m wide, very disturbed, aligned broadly SE to SSE curving to SW.	Wall foundations.	Post-medieval
20	D	Very dark greyish black, loose, silty clay. Very mixed, with patches of oily black deposit and mixed with mine waste (8). Visible along length of wall 19.	Possibly mixed deposits of (8), (6) and (9), perhaps within a grubbed-out foundation trench, or just part of the general spread of demolition disturbance.	

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