



Wheal Martyn Mica Dry, Carthew, St Austell, Cornwall
Archaeological Evaluation trenching

Cornwall Archaeological Unit

Report No: 2017R003

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2017R003

Report Name

Wheal Martyn Mica Dry, Carthew, St Austell, Cornwall. Archaeological Evaluation Trenching.

Report Author

Ryan P Smith

Event Type

Evaluation

Client Organisation

Wheal Martyn Trust

Client Contact

Julia Orchard

Monuments (MonUID)

DCO 1149

Fieldwork dates (From)

11/01/17

(To)

27/1/17

(Created By)

Ryan Smith

(Create Date)

31/1/17

Location (postal address; or general location and parish)

Wheal Martyn, Carthew, St Austell, Cornwall

(Town - for urban sites)

St Austell

(Postcode)

PL26 8XG

(Easting) X co-ord

SX

(Northing) Y co-ord

00354

55489



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1 Project background

Cornwall Archaeological Unit (CAU) were commissioned by Ms Julia Orchard, Clay Works Project Officer with the Wheal Martyn Trust, to excavate a series of evaluation trenches within the area of the former Mica Dry at the China Clayworks at Wheal Martyn, Carthew, Cornwall (Figs 1 & 2). These were required to determine the nature and condition of the original floor within the Mica Dry building and to establish if the current (open) western end of the building represented the location of its original western wall or, if the original building was much longer and had once continued further west towards an associated chimney, as is suggested by archive mapping.

Scheduled Monument Consent was granted for the work following discussions with Nick Russell, Inspector of Monuments, Historic England. Three trenches were originally planned but four were eventually excavated in the light of inconclusive results from the original trenching scheme.

This report details the results of the evaluation.

2 Aims and objectives

The principal aim of the study was to gain a better understanding of the survival of features associated with the Mica Dry kiln pan floor and identify the location of the western wall of the original building. This was required in order to better inform the future development of the building and this part of the Wheal Martyn Museum complex.

Key Objectives were:

- To establish the nature and survival of the features associated with the pan kiln floor and the location of the original western wall of the building.
- To provide further information on the archaeology and history of Wheal Martyn from any archaeological remains encountered.

3 Working methods

All recording work was undertaken according to the Chartered Institute for Archaeologists *Standards and Guidance for Archaeological watching brief* (CIfA 2014) and *Standard and guidance for Archaeological excavation* (CIfA 2014). The Chartered Institute for Archaeologists is the professional body for archaeologists working in the UK.

The initial excavations took place over three days (11th January to 13th January 2017) and were followed up later by the excavation of another trench (4) on 27th January 2017. To begin with three trenches (Fig 5) were excavated by hand; these measured 3m x 1m, 2m x 2m and a smaller linking trench (between trenches 1 and 2) measured 2m x 1m.

Trench 1 was intended to examine the character and degree of survival of the floor of the building; Trench 2 was positioned over the recorded western end of the building as shown on the *circa* 1877 OS mapping (Fig 3); Trench 3 – a linking trench see above was excavated to explore an anomalous, undocumented feature between the two trenches. An additional trench (Trench 4) was later opened up adjacent to the chimney and was intended to explore an area documented in 1908 (OS map) as siting the western wall of an extension to the original Mica Dry building (Figs 4 & 5).

Site drawings (plans, sections) were made by pencil on drafting film; all plans have been linked to the Ordnance Survey Landline (electronic map; all drawings were made at either 1:10 or 1:20 scale). All contexts sequentially numbered (Appendix 2). No artefacts were found.

Photographs were taken using a Nikon D3300 Digital SLR (24.2mp) and a Canon B&W SLR using 400ASA film.

4 Results

Detailed descriptions of the contexts are given in Appendix 2. The stratigraphic sequence in each individual trench is described from top to bottom.

Trench 1

See Figures (5, 6, 7, 8 & 12)

Situated at the north western end inside the building, Trench 1 (originally 3m x 1m) was aligned east-west. It was positioned here in order to investigate the condition of the original floor and underlying hypocaust system. The condition of this had been described by J R Smith as being poor in his assessment (Smith 1999).

During fieldwork the client requested that a larger area be opened up (an additional 1m x 1m trench) set against the northern wall of the Mica Dry to determine the condition and extent of the wall's foundation. This was absorbed into Trench 1.

Prior to excavation the surface area of Trench 1 and the wider setting was found to be covered in a mass of demolition rubble (101) which overlaid a grey brown coloured silty loam (which was less than 0.05m deep). The rubble comprised pieces of flue brick, broken floor tiles, china clay slurry, burnt sandy ash and pieces of rusting metal, all mixed up and dumped in this area apparently during the 1980s when the museum was being developed. The material was compacted in places and very loose in others, cavities were present within the rubble. In one section of the trench there was a spread of clay slurry (102) which had seeped into the underlying material; this smothered larger pieces of rubble and reached a depth of at least 0.23m below the surface spread. This overlaid a mid-brown sandy earthy deposit (103) which appeared to be a mixture of (101) and (102). Below this deposit was another layer of clay slurry (104).

Within Trench 1 were the remains of a number of hypocaust walls [105] orientated along the length of the building; these were constructed of red and off-white coloured bricks. A single brick in thickness, the individual walls heights are not provided, only the number of courses revealed due to only walls four and five being bottomed. These walls were probably at least eight to nine courses of brick in height, over 0.6m from the original bedding surface. No sign of the former capping tiles was found.

Wall 1

The easternmost wall was combined with modern concrete foundations found projecting about 0.4m from the wall and extending at least 0.4m below the pre-excavation ground level. The modern concrete covered what appeared to be a brick wall possibly associated with the flue.

Wall 2

Approximately 0.38m to the south of wall 1, were the poor remains of Wall 2 which were reduced to red sandy dust stain in the floor of the trench. Although in notably poor condition this shared the same alignment as its neighbouring walls and is presumed to be contemporary.

Wall 3

Standing approximately 0.38m from wall 2, wall 3 was reasonably intact and comprised three courses of brick still upstanding and exposed during the excavation.

Wall 4

Wall 4 lay approximately 0.36m from wall 3, and like its neighbour (wall 5) this intact wall had eight courses of brick; the condition of some of the bricks was however poor and appeared to be highly degraded (turning to sand), the likely outcome of exposure to intense heating during the operation of the hypocaust.

Wall 5

Approximately 0.37m from wall 4 stood wall 5 which had eight courses of brick still upstanding; the lower two courses were in poor condition and were turning to sand. This wall was recorded along the length of trench 3 (see below) where it possibly terminated under a large granite stone. The northern end of the wall was in poor condition and its upper courses were missing.

Wall 6

Wall 6 stood approximately 0.32m from wall 5. It had two visible courses of intact brickwork although this was patchy at best. These were red bricks. The wall terminated abruptly, possibly through partial collapse and/or demolition or having been disturbed by a later floor (revealed in trench 3).

The space between walls 4 and 5 was bottomed at the request of the client to identify the actual depth of the flue. This was found to be 0.6m deep. The depth of the base of wall 4 from the original rubble surface was about 1m.

Directly below the demolition layer excavated from the space between walls 4 and 5 was a compacted localised layer of orangey red grit/sand (112), which had been subjected to intense heat. (It was less than 0.1m deep). This overlaid another even more compacted layer (113) - an off-white very gritty layer whose true depth was not reached but which appeared to go under the base of the first course of brick work revealed in wall 4. This may have been a pre-construction levelling layer.

The spaces between the hypocaust walls contained demolition rubble and the clay slurry mix; the remains of the top of the highest upstanding walls, (wall 5) was about 0.42m below the present ground surface.

Trench 2 (Figs 5 & 12)

Trench 2 (approximately 2m x 2m) was excavated in the area identified as being within an extended section of the Mica Dry, as shown on the 1907 Ordnance Survey map (Fig 4). The surface area of the trench was covered in rubble from demolition (101), and clay slurry was present amongst the rubble, which also included patches of soil and sandy ash mixed material. There was no clear definition or delineation between the various rubble layers which might indicate different dumping events; the material also included metal poles and the remains of corrugated roofing, all were in poor condition. The layer below was found to be a solid floor surface (106) (orientated in a NNW direction; this appeared to comprise a layer of solid baked clay). More of this feature was revealed in Trench 3.

The feature (i.e. floor (106) see Fig 9) exposed in the trench ran diagonally to the line of the Mica Dry hypocaust. Approximately a 1m wide section was exposed in the trench and it consisted of two layers of hypocaust tiles bonded with clay. The combined tiles were 0.15m thick and they appeared to be set onto a concrete wall (108), which had a grey bubbly hard/compacted surface. Wall 5 appeared to run the length of the exposed section of this tiled surface (the possible end of the wall went under a large granite boulder which was too heavy to move but was in any case set into the ground surface and baulk, so whether the wall ended abruptly or continued further) remains unknown.

Trench 3 (Figs 5 & 9)

Trench 3 (2m x 1m) was excavated to combine trenches 1 and 2 in order to find out more about the tiled floor and to work out how it related to the brick walls which formed the Mica Dry hypocaust.

It was decided to orientate the trench along two of the hypocaust walls. Wall 6, as described above, comprised mainly red bricks and continued along the line of Trench 3 from Trench 1 for approximately 1.2m before stopping. The base of the wall was not found because of its poor condition; much of the brickwork was in a state of decay and fell apart when touched, turning into sandy dust as recorded at wall 2 (see above).

Wall 5 was initially constructed of white bricks, though subsequently changed to red bricks; this feature continued along the trench line until it reached an area topped with what appeared to be large granite stones (107). These appeared to follow the line of the tile-floor (106). Several of these were removed in an attempt to determine their purpose. There was no bonding agent and they appeared to have been placed in a soil (109) and rubble mix. Wall 5 continued under the line of stones but its full length could not be determined. The granite stones on top of the wall were too large and heavy and projected from the trench section. The soil and rubble mix (109) material (soft to trowel) was also not bottomed.

Trench 4 (Figs 5, 10 & 13)

Trench 4 was excavated on the 27th January in order to record the extent of the extended Mica Dry hypocaust as well as to confirm the location of an extended western end to the building, if this survived.

The day was extremely wet and trench flooding was a significant issue.

A 1.2m by 1.8m long trench was excavated against the flue chamber entrance to the west of the Mica Dry building. This was orientated along the area of the floor to the extension of the Mica Dry due to the density of overlying demolition rubble (110) within the building.

The rubble (110) was about 0.6m above the potential floor area and comprised an upper layer of dressed granite stone (each being in excess of 0.5m long and some showing signs of having been dressed for use as wall facing material). Lower layers comprised broken brick and smaller stones intermixed with cement; these had an earth covering. The foundations of the walls of the extension to the Mica Dry were revealed rapidly and were found to be intact although the interior of the flue area contained gritty material and rubbish. There was a fair amount of water ingress into the trench during the evaluation work which made excavation and recording difficult.

The exterior walls of the flue building were of breeze block-type construction incorporating a single flue opening which measured 0.73m wide and 0.93m high; the blocks making up the base of this feature were about 0.2m wide.

As the demolition layer was removed, the trench started to fill with water. Nonetheless a pinkish-coloured floor tile was found, apparently level and *in situ*. This was stamped 'CARBIS' (Fig 11). The tile was adjacent to a large iron pipe protruding from the baulk which lay at a downward angle into the water and went under the floor tile. Immediately to the north east were several larger similar pieces of tile; all were angled upwards and thus disturbed even though they were at the same level as the first. This suggests that they too had once been level and part of the same surface until rubble had been dumped onto the floor.

An attempt was made to probe for the remaining walls underneath the rubble but none could be identified for certain; however the probe did go to a depth of at least 0.5m where it hit a more solid base.

Cutting across the trench were two iron rails identified as belonging to the tramway which had carried the wagons used within the Mica Dry to move dried clay. These were not *in situ*.

5 Comments on findings

Trench 1, excavated out from the northern wall towards the centre of the building, confirmed the presence of a strip foundation to the exterior walls. This cap appeared to lie at least 0.4m deep from the surface and comprised a solid concrete mix which incorporated large pebble aggregate. This outer concrete foundation appeared to be built on or over a flue wall, but this could not be confirmed. It is unclear whether this foundation was an original feature of the building or whether it had been retrospectively added to it. The latter interpretation seems more likely.

The hypocaust walls revealed during the excavation were in various states of disrepair and decay. Some of the bricks had been significantly affected by heat and are in the process of reverting to sand. The bonding cement was still evident between the brick courses. These bricks were easily damaged during their cleaning up with a firm brush, and this made the bottoming of the trench impracticable because of the high potential of damage this could cause to the buried archaeology.

The Mica Dry tile floor was not found intact in any section opened up in the evaluation trenches although some large pieces were found lying on top of the hypocaust walls or in the gaps between the flue walls; all of these tiles were damaged. The area had been used as a dumping ground during earlier renovation work, as was evident in the amount of rubble present and its multi-layered form. The deposition of this rubbish must have been fairly rapid and would have damaged any intact remnants of the original floor. This rubbish layer included pieces of metal and what appeared to be sections of scaffold poles, as well as modern rubbish, work gloves and pieces of corrugated metal sheeting.

The feature capped with hypocaust tiles found in Trench 2 is not shown on any maps, and appears to head NNW in the direction of the pump house and former chimney on the northern side of the building. Its exit through this wall is indicated by the presence of modern brickwork in an otherwise granite-constructed structure. The exact nature of this feature cannot be confirmed without further excavation to reveal more of its course. It was not seen in the area on the southern side of the Mica Dry. The feature clearly cut through the brick hypocaust walls. Around one metre of the underlying feature was revealed (though not to any significant depth) but this had no indications of openings corresponding with the hypocaust channels. It seems likely therefore that this feature post-dates the abandonment of the Mica Dry and formed a levelled connection between features to the north and south of the Mica Dry. Without further excavation the function of this feature cannot be confirmed, though it may have been a dwarf wall carrying a pipe, a wooden launder or some other feature associated with the pump house to the north of the Mica Dry, carrying this across the voided floor of the Mica Dry.

Trench 4 revealed the probable continuation of the Mica Dry floor but without the full clearance of rubble from a larger area, possibly up to the granite wall to the north, this cannot be confirmed for certain. The presence of a single *in situ* tile (Fig 11, and others found displaced close by) would certainly support the former presence of a floor. However, it is also clear that large amounts of demolition rubble have been dumped onto the area formerly occupied by the extension to the Mica Dry, possibly onto what was, at the time, a once intact floor. Equally, it is not possible to say whether the walls making up the extension to the hypocaust have survived, but the poor condition of their equivalents in the standing section of the Mica Dry building would suggest that those in the extension to the building could be potentially in a worse condition.

A conversation Julia Orchard had with Ivor Bowditch on the 23rd January 2017 recorded that the Pan Kiln and Gomm Kiln were still in use after WWII and potentially up to the early 1960's. They were used to dry low grade clay recovered from the nearby river. However the Mica Dry had not been used for 30+ years before that. Ivor is certain that it was last used in 1933, when the Mica drags were still in use. This suggests that the feature running diagonally across trench 2 was constructed post 1933 and was in use until (at the latest) the early 1960's (Orchard 2017).

6 Summary of results

The Mica Dry was originally constructed *circa* 1870, the 1st Edition of the OS (25" to a mile) map (*circa* 1877) suggesting that it was 24m in length. A chimney was mapped to the west of the building at this date, and it is likely that the hypocausts were connected to this via a flue from their western end. By 1908, the 2nd Edition of the OS mapping

show that the building had been extended to the west, nearly reaching the chimney and was, as a result, 43.5m in length. It seems likely that the hypocaust system was extended during this phase of extension to provide additional drying capacity within the building. Between 1908 and 1933 the building was truncated back to more or less its original length, and it could not be used for its original function once this had occurred. The most likely date for this would be 1933, when mica treatment at the site stopped. At the time of, or following this truncation, a feature capped with hypocaust tiles was constructed diagonally across the approximate location of the original western end of the building – this being exposed in Trenches 2 and 3. The alignment of this feature might suggest that this probably connected features to the north-west and south-east of the Wheal Martyn Pan Kiln. The area opened up during the 2017 evaluations was insufficient to confirm this possibility and what the original function of this feature was, but it was possibly associated with the pumping station to the north of the Mica Dry.

The excavation in trench 4 appears to support the presence of an extension to the hypocaust floor towards the chimney, but the presence of the rubble associated with work on site during its early years as a museum has made this assessment difficult to confirm.

7 Conclusions and recommendations

The original remit for the January 2017 evaluation trenching was to examine the nature of the foundations for the northern wall of the Mica Dry, to determine the survival of the Mica Dry floor and underlying hypocaust in the original section of the building and to determine the survival and position of the original western end of the building. An additional trench was opened up to examine a feature cutting across the floor of the western end of the building, whilst a further trench was opened up over the location of the western end of the extension to the building.

The findings of the work within the original (roofed) section of the building showed that it had been used as a general dumping ground some decades ago. Its wall foundations appeared to have been retrospectively reinforced in concrete at some date, but its floor tiles had been stripped before the rubble dumping took place and the brickwork of the hypocaust was in very poor condition. Though some indications of a hypocaust floor were found to the west, the extended section of the building had been demolished and the area it had occupied was buried in rubble.

It should also be noted that uncontrolled surface water management during periods of wet weather (possibly originating from an overflowing leat or watercourse) resulted in the flooding of the area opened up in the western section of the building. This water is likely to be making its way back through the rubble fills into the eastern section of the Mica Dry to some extent.

Given the small sizes of the trenches opened up, it is not possible to say conclusively whether what was revealed typifies the condition of the whole of both sections of the building, but the indications from the evaluation trenching are that this is likely to be the case. Without some significant intervention the floor in the eastern section of the building is likely to be unsuitable for re-use, as it is missing its tile covering and the underlying hypocaust walls are in very poor condition. The former western section of the building has been demolished and the area it occupied contains significant amounts of rubble which would need to be removed before its site could be brought back into use. The issues associated with surface water management will also need to be addressed.

It is considered that whilst the trenches opened up in January 2017 gave some indication of the condition of the floor of the building, they may have been too limited in extent to provide the level of information which would be needed to determine the amount of work which would be required to bring this building back into use. Some further evaluation will probably be needed to provide this level of information, but it should be noted that should this be commissioned, the work will require the excavation

and removal of substantial amounts of rubble. A small mechanical excavator would be required to achieve this.

8 References

Laing-Trengrove, D, 2013. *Wheal Martyn China Clay Museum St Austell, Cornwall. Site Gazetteer and condition survey*. South West Archaeology. Rep Nos 130529

Orchard, J 2017. Email regarding interview of Ivor Bowditch

Smith, J, 1999. *Wheal Martyn, Carthew. An Archaeological Assessment*. CAU archive report (1999R072)

9 Project archive

The CAU project number is **146652**

The project's documentary, digital, photographic and drawn archive is maintained by Cornwall Archaeological Unit, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY.

Black & White Images GBP 2397

Drawings GRE 871

Electronic data is stored in the following locations:

Project admin: \\Sites\ Sites W\ Wheal Martyn Mica Dry Evaluation 2017

Digital photographs: \\Historic Environment (Images)\Sites U-Z\ Wheal Martyn Mica Dryer

Electronic drawings: \\Historic Environment (CAD)\Sites W\Wheal Martyn Mica Dryer 2017

No artefacts were recovered during the course of the evaluation.

Historic England/ADS OASIS online reference: cornwall2-274199

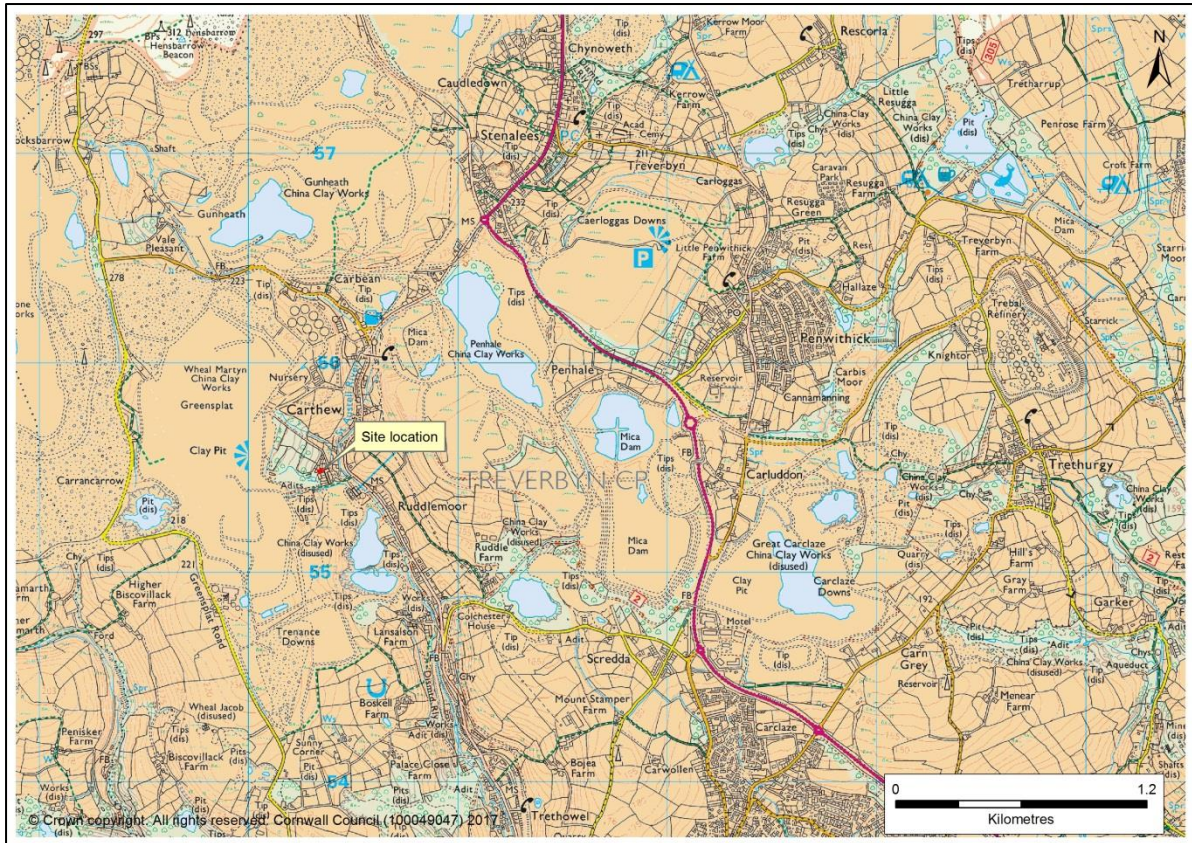


Figure 1: Location of site.

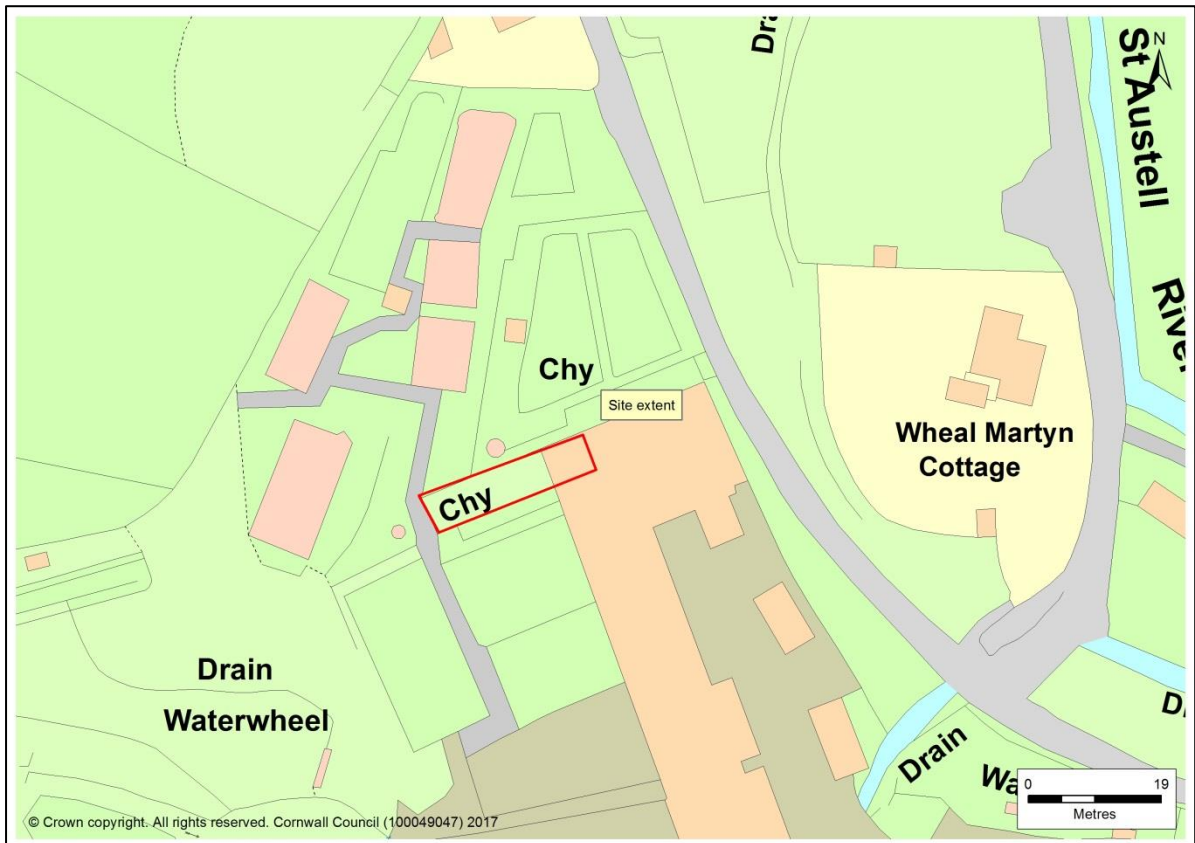


Figure 2: Site extent.

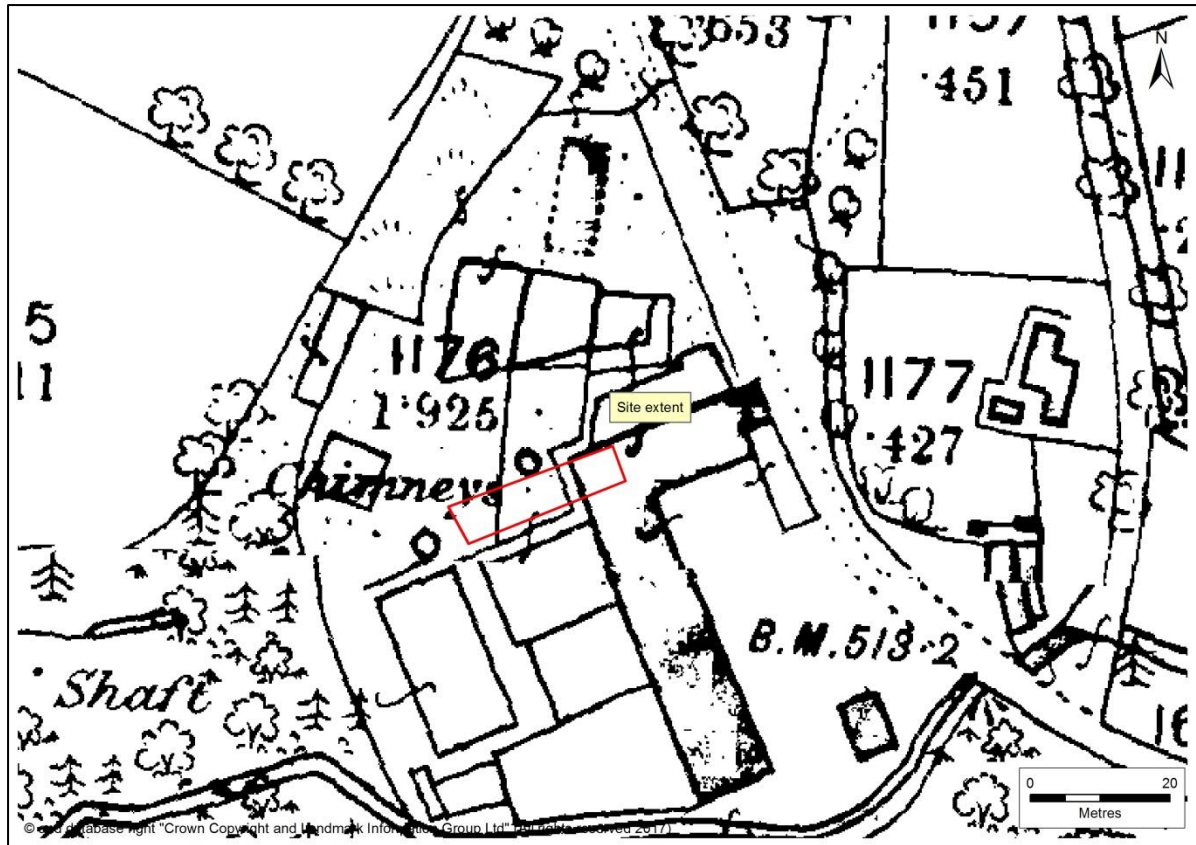


Figure 3: First Edition of the Ordnance Survey 25 Inch Map c1877.

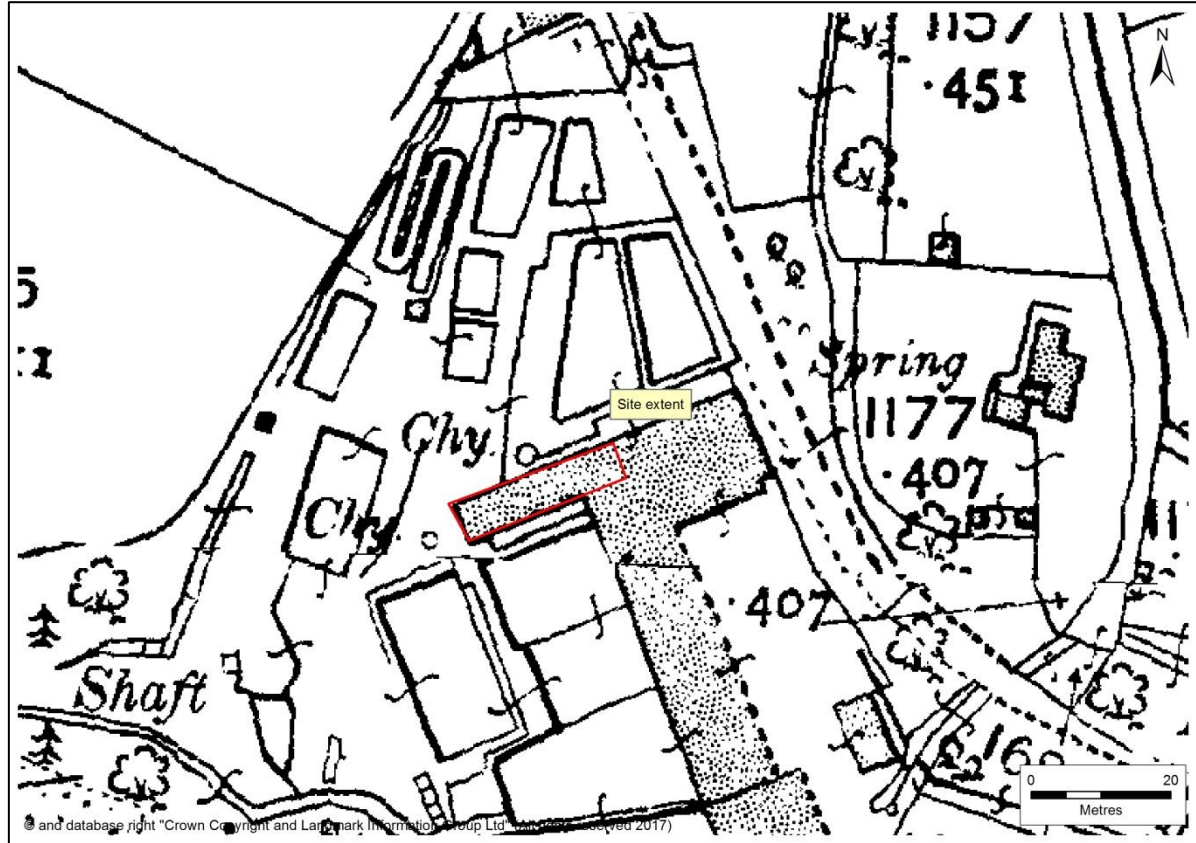


Figure 4: Second Edition of the Ordnance Survey 25 Inch Map c1908, showing that the building had been extended by this date.

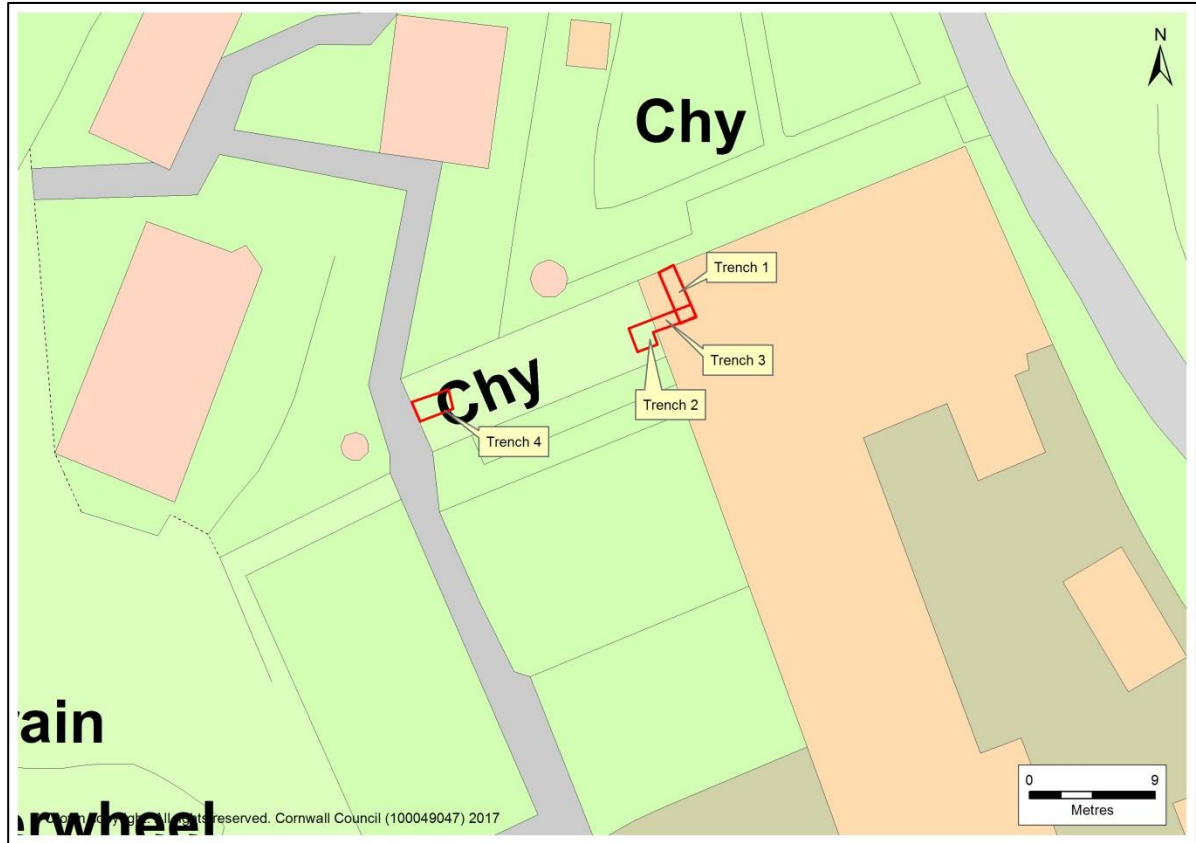


Figure 5: Locations of trenches.



Figure 6: View through Mica Dry looking west-south-west, prior to excavation.



Figure 7: Mid excavation of trench 1 showing demolition rubble (101) in situ.

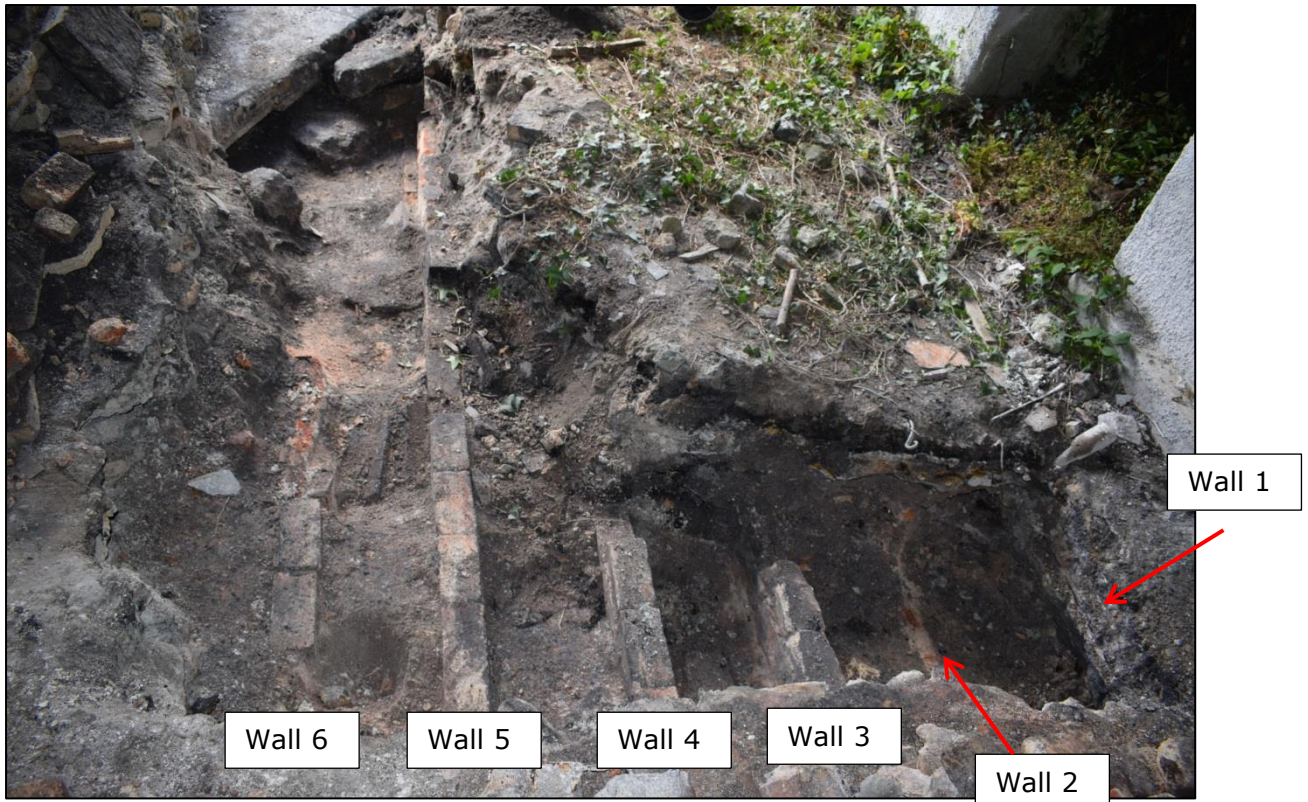


Figure 8: Trenches 1 and 2 showing remains of hypocaust system beneath rubble capping.



Figure 9: Trench 2 showing feature surfaced with double layer of hypocaust tiles.



Figure 10: Trench 4 post excavation.



Figure 11: Floor tile CARBIS (111) in situ.

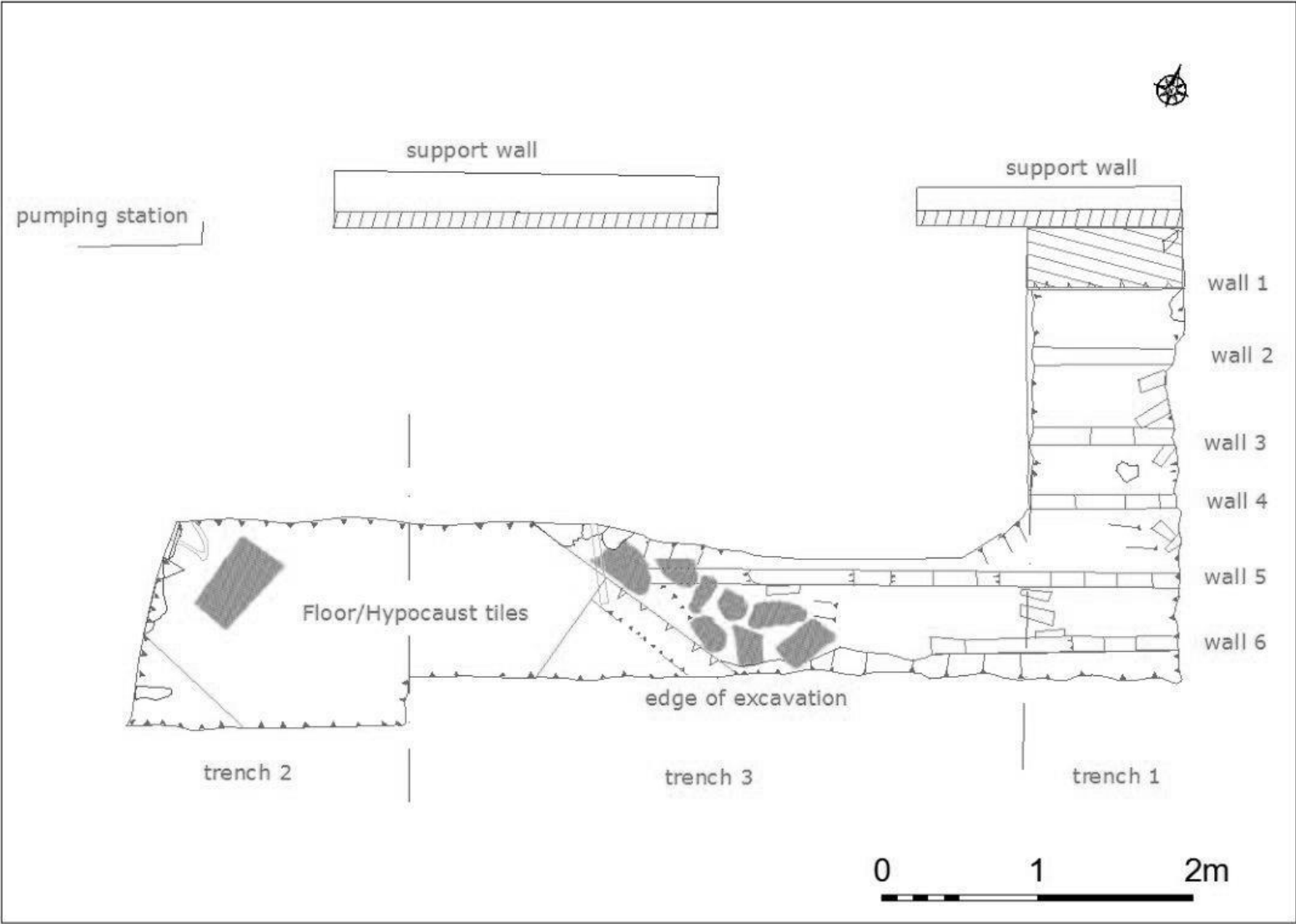


Figure 12: Plan of trenches 1, 2 and 3.

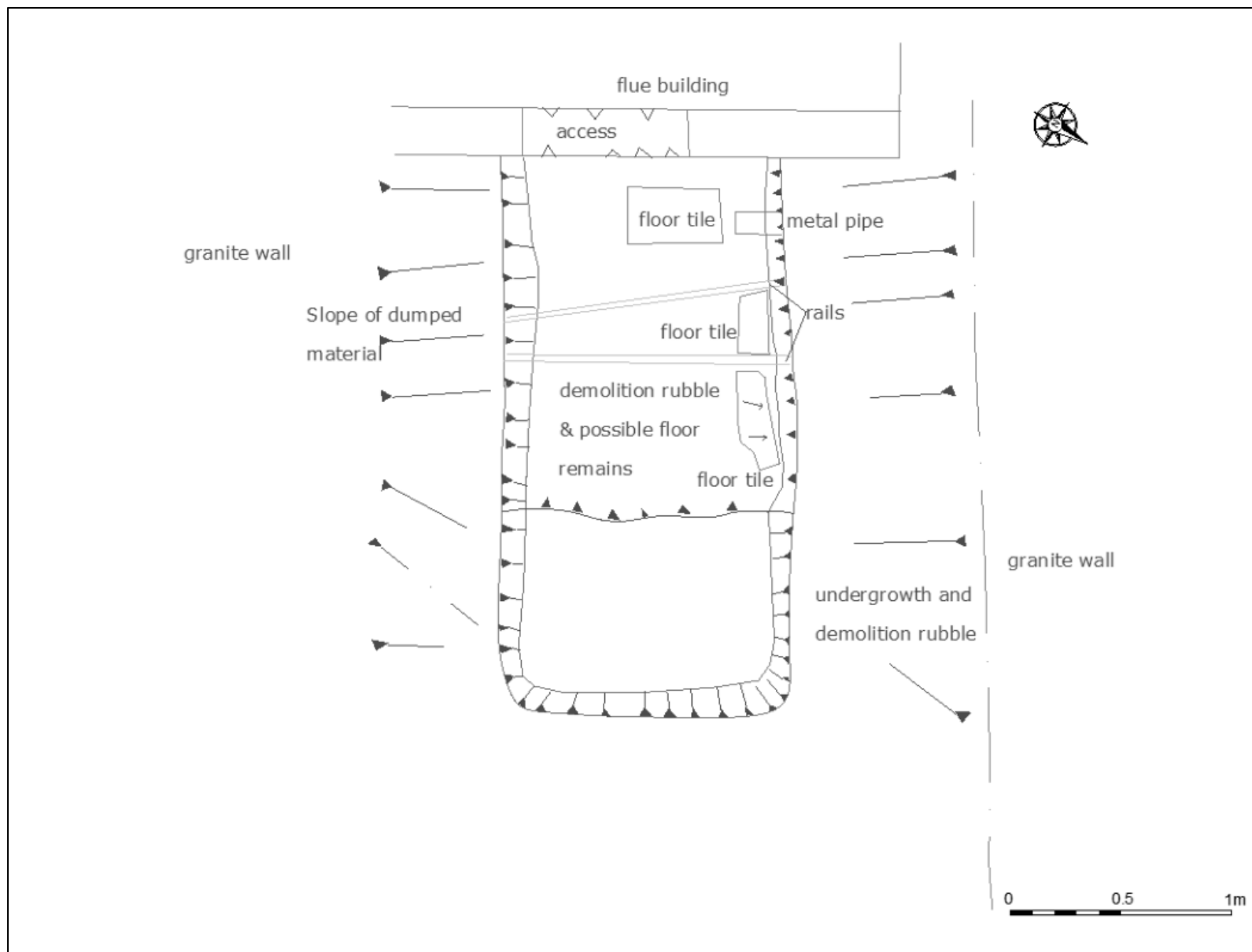
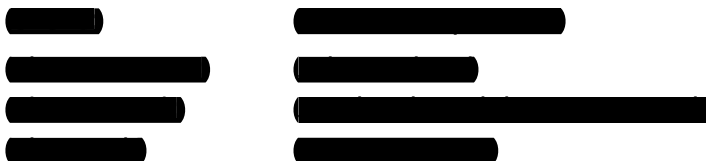


Figure 13: Plan of trench 4 near the end of the flue.

Cornwall Archaeological Unit Cornwall Council



Wheal Martyn mica dry, Carthew, St. Austell, Cornwall: Written Scheme of Investigation for archaeological evaluation trenching



Project background

Cornwall Archaeological Unit were contacted by Julia Orchard, Clay Works Project Officer with the Wheal Martyn Trust, managers of the former Wheal Martyn china clay works at Carthew to the north of St. Austell with a request to submit costs for excavating a pair of evaluation trenches within the area of the former mica dry at the northern end of the former clayworks processing complex. These are required to determine the nature of the original floor within the building and to establish whether the current open western end of the building represents the location of the original end wall or whether the building originally extended further to the west towards the associated chimney. CAU have suggested that a further trench might be cut at a location close to the chimney itself where archive mapping suggests that the original end wall of the demolished western section of the dry formerly stood (see Fig 1, below).

The results of the evaluation trenching will enable the Trust to progress proposals for the future use of this currently partly derelict building. As Wheal Martyn is a Scheduled Monument the evaluation trenching will require Scheduled Monument Consent (SMC).

Dependent upon the results from the evaluative fieldwork, further stages of archaeological recording may be needed to mitigate the impact of any future development of this component of the Wheal Martyn site.

Summary site history

The Wheal Martyn works were established in the 1820s by Elias Martyn and were one of the major producers of china clay until his death in 1872. After a period of partial closure, the works were re-opened by John Lovering who developed the works and introduced new techniques to maximise production. In 1931 the clay pit closed following a slump in demand but the dry remained in use working lower grade clay from other pits in the area and finally closed in 1966. By 1971 the clay pit was again operational and by 1975 much of the processing facilities were opened to the public as a museum. The surviving equipment generally dates to the period when Lovering took over production.

The site became a Scheduled Monument in 1978 and this falls into two areas of protection, including part of a china clay works situated in the Ruddle Valley by the St Austell River at Carthew. The surviving clay works includes a water engine for pumping slurry from the clay pits by vertical rods and a balance bob connected to a working over-shot water wheel, a second waterwheel which worked flat rods to the clay pit, an

engine house, a series of mica and sand drags, settling tanks, the blueing house, workers shelter or crib hut, the linhay or drying area and the coal fired furnace. Most of the structures are complete and the machinery in working order and form the core of exhibits in a museum. Further remains to the south including three oval settling tanks survive but are not on display.

Wheal Martyn is important because it graphically demonstrates and preserves the earlier innovations of the industry before it became the highly mechanised process of today. The china clay quarry is still in use and produces about 2000 tons of china clay per week, which is approximately the same quantity Elias Martyn generated in a year.

Wheal Martyn holds a unique collection of artefacts and archives as the only china clay museum in Europe, probably the world. Preserving a significant part of Cornwall's industrial heritage and history of English China Clays, Wheal Martyn also provides a focus for culture within the 'Clay Country' keeping alive the heritage of local bands, choirs and chapels which are fast disappearing.

A desk-based assessment of Wheal Martyn was undertaken in 1999 by CAU (Smith 1999), and the history of the site was also investigated by Southwest Archaeology in 2013 as part of the gazetteer and condition survey they produced for the site.

Project extent

The evaluation trenches are located within the western end of the surviving section of the former mica dry at the northern end of the Wheal Martyn complex.

Aims and objectives

The principal aim of the study is to gain a better understanding of the survival of features associated with the mica dry pan kiln floor and to identify the location of its original western wall in order to inform the future development of this building as part of the Wheal Martyn Museum complex.

Key objectives are:

- To establish the nature of features associated with the pan kiln floor and the location of its original western wall.
- To provide further information on the archaeology and history of Wheal Martyn from any archaeological remains encountered.

Working methods

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

Desk-based assessment

The Project archaeologist will consult the desk-based assessment undertaken by CAU in 1999 and the gazetteer and condition survey for the site produced by Southwest Archaeology for relevant information in advance of the evaluation trenching; the Cornwall and Scilly HER GIS historic maps will also be consulted.

Fieldwork: archaeological evaluation

Evaluation trenching

Evaluation trenching will be carried out, in order to adequately assess the archaeological potential of the area likely to be affected by the proposed development.

In order to evaluate the survival of features associated with the mica dry, two evaluation trenches will be cut in its floor. A 3m long x 1m wide trench will be aligned across the width of the existing eastern section of the dry near its western end to expose detail of the floor and underlying hypocaust system to determine the degree to which these features have survived. A second 2m x 2m trench will be opened up at the western end of the existing structure to determine whether this was the location of the original western end of the building. CAU recommends that a third 3m x 1m trench is also excavated just to the east of the associated chimney stack to determine whether the mica dry originally extended to this point (Fig 1).

In advance of the evaluation trenching CAU will discuss with the client:

- Working methods and programme.
- Health and Safety arrangements.
- Treatment of artefacts.

Recording – general

- Excavation of archaeological features will be restricted to the minimum necessary to assess their likely potential.
- The positions of the trenches will be marked onto a scaled base map (linked to the National Grid). Prior to the start of the evaluation, the positions of the trenches will be marked out on the ground.
- The trenches will be excavated down to the level of the archaeology or the top of the natural subsoil by hand. Each trench will be hand-cleaned and recorded.
- Site drawings (plans and sections) will be made by pencil (4H) on drafting film; all drawings will include standard information: site details, personnel, date, scale, north-point.
- All features and finds will be accurately located at an appropriate scale.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence.
- Finds will be collected in sealable plastic bags, which will be labelled immediately with the context number or other identifier.
- Monochrome photography (prints and negatives) will be used as a primary record medium, with colour digital images also used to supplement this record and for illustrative purposes.
- Photography will include both general and feature specific photographs.
- Detailed photographs will include a metric scale. A north arrow will also be included where the subject is shown in plan.
- The archive standard photographs will be accompanied by a register detailing as a minimum the feature number, location, and direction of shot.
- Photographs of details will be taken with lenses of appropriate focal length.
- A tripod will be used to take advantage of slower exposures.
- Difficulties of back-lighting will be dealt with where necessary by balancing the lighting by the use of flash.

Treatment of finds

The fieldwork may produce artefactual material.

All finds in stratified contexts will be plotted on a scaled base plan and described.

10 All finds will be offered to the Wheal Martyn Museum for retention.

Fieldwork: photographic recording

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 (2014).

The photo record will comprise:

- General views of the site.
- Archaeological detail.

Creation of site archive

An ordered and cross-referenced site archive will be produced. Site plans, photographs and other records will be completed and indexed, and any artefacts retrieved will be washed and marked (where appropriate) and catalogued.

A Historic England /ADS OASIS online archive index will be created at this stage of the project.

Archive report

The results from the evaluation trenching will be presented in a concise report. A copy of the report will be distributed to the Client for dispersal as required. Other copies of the report will subsequently be sent to the local and main archaeological record libraries. A PDF copy of the report will be produced.

This will involve:

- producing a descriptive text;
- producing maps and line drawings;
- selecting photographs;
- report design;
- report editing;
- dissemination of the finished report
- Deposition of the archive in the Cornwall Record Office or other suitable archive.

The report will have the following contents:

- Summary - Concise non-technical summary.
- Introduction - Background, objectives, aims and methods.
- Results - Factual description of the results of the project.

- Discussion - Discussion of the interpretation of the results, highlighting information gained on a chronological or thematic basis.
Recommendations for further archaeological recording.

- Archive - A brief summary and index to the project archive.
- References - Sources referred to in text.
- Appendix - A copy of the WSI.
- Illustrations - General location plan.
- Detailed location plans to link fieldwork results to OS map.
- Selected plans and section drawings (as appropriate).

- Finds drawings or photographs (as appropriate).
- Photographs.

Report deposition

A digital (PDF) copy of the report, illustrations and any other files will be held in the Cornwall HER. Paper copies of the report will be distributed to the client (if required), to local archives and national archaeological record centres.

- An OASIS record will be made for the project.

Monitoring

- This written scheme of investigation will need to be approved by Historic England as part of an application for Scheduled Monument Consent.

Project Staff

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

The report will be compiled by an experienced archaeologist employed by CAU.

The project will be managed by a member of CAU staff (Adam Sharpe BA MCIfA) who is a Member of the Chartered Institute for Archaeologists, who will:

- Take responsibility for the overall direction of the project.
- Discuss and agree the objectives and programme of each stage of the project with project staff, including arrangements for Health and Safety.
- Monitor progress and results for each stage.
- Edit the project report.

Timetable

The study is anticipated to be commenced during 2016. CAU will require a minimum of two week's notice before commencement of work, in order to allocate field staff and arrange other logistics.

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

Health and safety during the fieldwork

Health and safety statement

As part of Cornwall Council, CAU follows the Council's *Statement of Safety Policy*.

Prior to carrying out any fieldwork CAU will carry out a risk assessment.

Insurance

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

Standards

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

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

Copyright

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

This project design and estimate is the copyright of Cornwall Archaeological Unit, Cornwall Council.

Use of the material will be granted to the client.

Freedom of Information

All information gathered during the implementation of the project will be subject to the rules and regulations of the Freedom of Information Act 2000.

Cornwall Archaeological Unit

Cornwall Archaeological Unit is part of Cornwall Council. CAU employs 20 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.



References

Laing-Trengrove, D. 2013. *Wheal Martyn china clay museum, St. Austell, Cornwall: site gazetteer and condition survey*, Southwest archaeology report to the Wheal Martyn Trust

Smith, J.R. 1999. *Wheal Martyn, Carthew: an archaeological assessment – a report for the China Clay Leader II Projects*, CAU report 1999R072

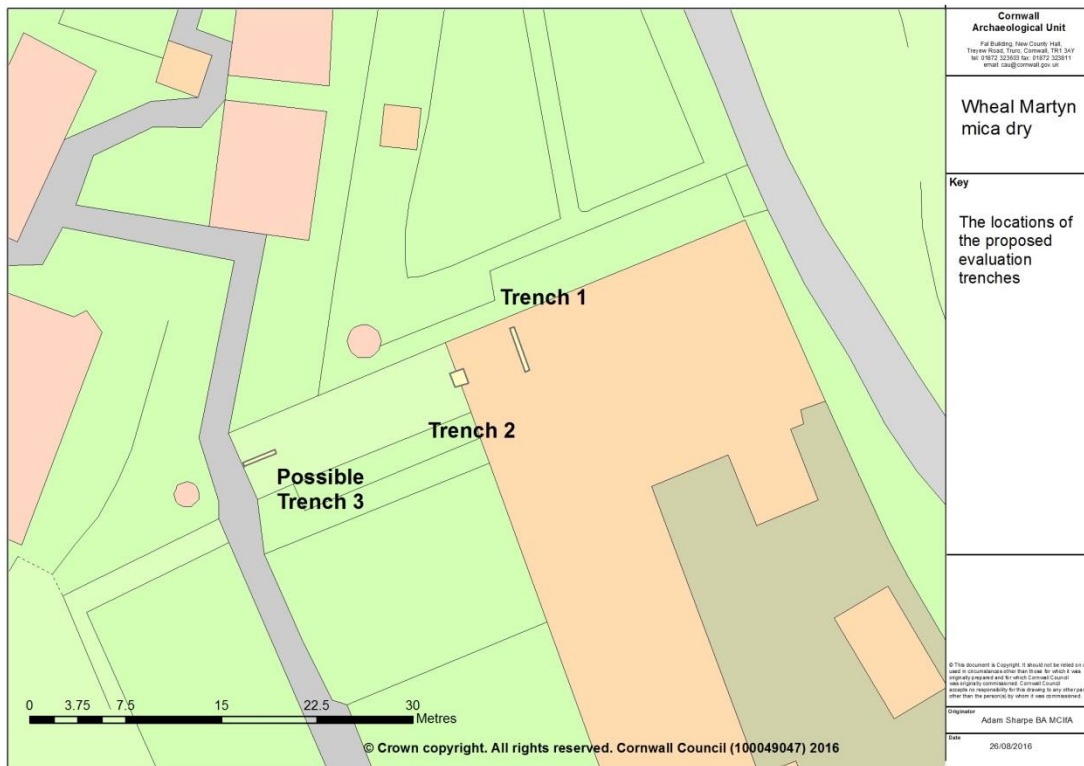


Fig 1 Location of proposed trenches

Appendix 2

Context No	Description
(101)	Surface spread: Surface rubble found over the whole of the area of the building examined, made up of brick, clay slurry, burnt sand, soil, metal, broken flue tiles and pieces of granite. This had been dumped into the building from various locations around the site. The depth of material reached 0.5m within the areas excavated.
(102)	Clay slurry: Off-white area of clay slurry within the section of Trench 1. This appeared to be seepage, was mixed in with the demolition rubble and reached a depth of at least 0.23m.
(103)	A mixture of (101) and (102) a mid-brown sandy earthy deposit.
(104)	Clay slurry, same as (102)
105	<p>Flue brick walls: Associated with the hypocaust systems, six walls revealed during the course of the excavation lying at least 0.42m below the surface of the building. The walls were in varying states of decay owing to exposure to heat when the hypocaust was in use, and were made up of a mixture of red and white or off-white coloured bricks; the red bricks appeared to have decayed faster and had turned to a sandy dust in places. Wall 1 appeared to be the remnants of a brick wall associated with the hypocaust system lying underneath the concrete foundations of the exterior walls. This was added circa 1980s.</p> <p>Wall 2. Lying approximately 0.38m from wall 1, all that remains of the wall is a red band of dust running parallel to walls 1 and 3.</p> <p>Wall 3. Made up of 3 courses of brick, approximately 0.38m from wall 2.</p> <p>Wall 4. Comprised of eight courses of brick, 0.36m from wall 3.</p> <p>Wall 5. Comprised of eight courses of brick, 0.37m from wall 4.</p> <p>Wall 6. Comprised of two courses of brick, poor condition, the wall is visibly truncated as it enters the area between trenches 1 and 2.</p>
106	Floor area made up of two layers of flue tiles, 0.15m thick bonded with what appears to be clay, approximately 1m wide, possibly covering a void.
(107)	Large granite stones: Lying adjacent to 106, several large pieces of granite probably associated with 106 as a retaining feature?
108	Wall of 107: A possible concrete wall underneath 106, bubbly in texture; only a small section was observed at least 0.15m high, appears to support 106.
(109)	Soil rubble mix around (107) depth not known but appears to cover the lower section of the stones, made up of dark brown earthy layer and gritty material from decayed bricks.
(110)	Trench 4 rubble, a soil rubble mix 0.6m deep, containing large dressed granite stones, pieces of brick, cement and floor tiles, along with rubbish.
(111)	Trench 4 floor tile, <i>in situ</i> floor tile, pinkish red in colour, CARBIS imprinted in the surface.
(112)	Trench 1 an orangey red compacted gritty sand, very hard found between walls 4 and 5. 0.1m deep. Subjected to heat, no indication of direct burning.
(113)	Trench 1, between walls 4 and 5. An off- white layer of gritty sand, very hard compacted, depth not known but appears to go below the bottom course of brickwork.

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