



# **Okel Tor Mine, Harewood, Calstock, Cornwall Archaeological Watching Brief**



**Cornwall Archaeological Unit**

Report No

2015R021

Report Name

Okel Tor Mine, Harewood, Calstock

Report Author

Ryan Smith

Event Type

Watching Brief

Client Organisation

Okel Tor Mine

Client Contact

Nick Cole

Monuments (MonUID)

MCO52758

Fieldwork dates (From)

09/03/15

(To)

09/03/15

(Created By)

Ryan Smith

(Create Date)

10/03/15

Location (postal address; or general location and parish)

Okel Tor Mine, Harewood, Calstock, Cornwall.

(Town – for urban sites)

(Postcode)

PL18 9SQ

(Easting) X co-ord

SX 44444

(Northing) Y co-ord

68924



Cornwall Archaeological Unit, Cornwall Council is a Registered Organisation with the Chartered Institute for Archaeologists

Cover illustration: *Pre-excavation view of Okel Tor Mine looking north east.*

© Cornwall Council 2015

No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the prior permission of the publisher.

## List of Figures

<i>Figure 1: Location of site.</i> .....	10
<i>Figure 2: 1877 Ordnance Survey map 1<sup>st</sup> edition showing location of sewage works within area of the mine complex.</i> .....	10
<i>Figure 3: Plan of trenches and pits within project area.</i> .....	11
<i>Figure 4: View looking north east of site prior to excavation.</i> .....	11
<i>Figure 5: View of main sewer trench looking south.(1m scale)</i> .....	12
<i>Figure 6: View of north facing section of main sewage plant pit (1m scale).</i> .....	12

## 1 Project background

Cornwall Archaeological Unit were commissioned by Mr Nick Cole of Okel Tor Mine to carry out an archaeological watching brief during the installation of a new sewage treatment plant and related trenching (SMC 15549, HA 101944, Ref: S00087638), within the boundary of Okel Tor Mine, Harewood, Calstock, Cornwall, a Scheduled Monument (Scheduled Monument Number 15549) (OD SX 44444 68918) (Fig 1).

A written scheme of investigation (WSI) specifying the methodology for archaeological recording during the excavation of the sewage treatment plant and associated trenching was produced (02/03/2015) by Colin Buck (Senior Archaeologist, Cornwall Archaeological Unit) (Appendix 1).

The proposed treatment plant was to be located directly south of Site 11 (a former Miners Dry), and west of Site 16 (site of the balance bob pit) (Fig 2), as described in detail from the archaeological site assessment (Buck 1999).

The WSI is required as a condition of Scheduled Monument Consent, to provide archaeological recording during the excavation of pipe trenches, a new site inspection chamber and new sewage treatment plant.

### *Site description*

Okel Tor Mine is a Scheduled Monument (Ref 15549). The mine buildings are also Grade 2 listed (DCO 1905) and are situated within the Tamar Valley Area of Outstanding Natural Beauty and the Tamar Valley and West Devon World Heritage Site (Area 9). The project area is located on a south facing platform cut into a steep slope on the edge of the River Tamar.

Underlying geology consists of Tavy Formation slate, a sedimentary Bedrock formed approximately 359 to 385 million years ago in the Devonian Period (BGS 2015).

### *Site history*

(Excerpt reproduced from Buck 1999)

The mine has its origins as part of the Trelawney Consols Sett when an adit was driven in c1845, meeting a N-S lead bearing cross-course, later found to be traversing three E-W lodes (Main or North lode, Middle lode and South Lode). Copper and arsenical pyrites were encountered during the sinking of Engine Shaft (80 fathoms with adit at 11 fathoms). A 50" pumping and 22" rotary winding/crushing engine with crusher house were installed in 1864. Mispickel was the main product leading to the construction of the calciners and other plant in 1872. At this time tin was discovered at the eastern end of the sett (65 and 80 fathom levels), which in turn led to the purchase and construction of a 22" stamping engine and dressing floors (107 people employed). The copper lodes had by this time been exhausted (and the surface dressing floors dismantled). The mine closed down and the engines etc placed for auction. By 1881 a new company was formed which invested £60,000 in sinking two new shafts (to access the new tin lodes) and the erection of new copper and tin dressing floors (the rotary engine may well have been replaced by a 40"). A year later this mine merged with Cotehele Consols in the Danescombe valley to treat its arsenic mundic. This amalgamation was short lived and in April 1884 the company was wound up, although surface dumps and easily won ore were re-processed until 1887. From 1858-1883 the mine sold 13,785 tons of copper ore for £40,422; 1871-1887 213 tons of black tin for £13,282; 1858-1881 8,435 tons of arsenical pyrites for £5,962 and 1862-1887 5,585 tons of crude arsenic for £33,441.

Following the archaeological assessment of this site in 1999, building conservation works were undertaken from 2000 to 2001 (Buck 2007, Watching brief report).

## 2 Aims and objectives

The aims of the project were:

- To ensure that the site works associated with the development are carried out in accordance with the Scheduled Monument Consent (EH ref: S0008738, dated 4/9/2014).
- To record archaeological features and deposits affected by the work.
- To recover and record artefacts uncovered by the works.
- To disseminate the results of discoveries appropriately.

## 3 Working methods

### Fieldwork

The archaeological fieldwork was undertaken as an 'archaeological watching brief', with the excavation being carried out under archaeological supervision.

The archaeological watching brief was undertaken on the 9<sup>th</sup> March 2015. Three trenches and two pits were excavated using mechanical excavators, both were fitted with toothed buckets due to the nature of the material being excavated (Fig 3).

All recording work undertaken by this project followed the Chartered Institute for Archaeologists Standards and Guidance for Archaeological Investigation and Recording as outlined in the WSI (Appendix 1).

A sample section of the north facing side of the main sewage plant pit was recorded (GRE 830/1, its simple nature has not been reproduced in this report), along with notes on the west side of the main sewage line trench (nature of soil depth and layers present, etc) see tables below.

## 4 Results

The excavation took place south of the former Miners Dry, along the path of a trackway and continued south to an area that was partially grassed (Fig 4). The underlying geology did not appear to be natural and was comprised of various re-deposited layers produced by the construction of the platform as well as mining waste. All of the trenches and pits were interconnected, limited to within an area of no more than 20m square.

The main sewage line trench was approximately 16m long, 0.6m wide and 0.9m deep (variable). Excavation of the trench started 2.4m from the main doors of the former Miners Dry and continued in a southerly direction, where it terminated at the north east corner of the main sewage plant pit.

### Context table for the west side of the main sewage line trench (Fig 5)

Context No	Description & Interpretation	Depth (if app)
(101)	Gravel surface of the approach track to the mine buildings, comprised of small stones <0.02m in size.	<0.2m
(102)	A reddish black deposit, almost cinder like, loose to excavate, contained stone inclusions and some charcoal or decayed organic material within its matrix. Below (101).	<0.2m
(103)	An orangey brown deposit of loose stone and small gravels, very loose when excavated, the sides collapsed when removed by the machine.	

(104)	A layer of blue grey shillet, very loose and stony, comprised of a very degraded mudstone, which was extremely loose and probably redeposited natural.	<0.9m
(105)	Gravel from present sewage pipe. Small stone unsorted, irregular sizes, <0.02m in size. Follows from the inspection pit located 2.4m south of the doors to the miners dry.	

The compressor line trench was excavated from the south west corner of the mine shaft perimeter fence and proceeded in a westerly direction for approximately 8.5m, and was 0.5m wide and 0.6m deep, joining the main sewer line trench. The trench section contained two contexts, a dark brown almost black silty deposit (201) containing a mixture of large stones and bricks (probably rubble from the nearby engine house) and an orangey brown gravel similar to (103).

The inspection pit, was approximately 1.5m square and 0.9m deep, and the linking trench from the west (joining the main sewage line trench), was less than 2m in length, 0.5m width and 0.9m deep. They were both filled with the same deposits as the main sewage line trench.

The main pit measured 2.2m in length, 2.2m in width and 3.2m in depth. This was excavated to contain the sewage plant (see front cover image). The main sewage line trench entered the pit on the north east corner. When excavated the sides of the pit were unstable causing constant collapses. The blue/grey shillet (204) observed at the base of the pit was very loose and appeared crushed, in normal circumstances this would have been associated with the *in-situ* local geology, but is probably material removed from the local hillside to construct the mine's building platform.

#### Context table for the south side of the sewage plant pit (Fig 6)

Context No	Description & Interpretation	Depth (if app)
(201)	Topsoil, dark brown almost black loose silt, with grass topping, stone inclusions of various sizes, large stones comprised of rubble and bricks, possibly from the local engine house.	<0.2m
(202)	Shillet-rich deposit, reddish in colour, some banding within the layer possible indication of tipping or movement within the layer. Very loose when machined, probable re-deposited natural. Contained larger stones within the fill, but none were attributable as belonging to the engine house, implying this layer was laid prior to the construction of the building.	
(203)	An orangey brown deposit of loose stone and small gravels, very loose when excavated (the sides collapsed when removed by the machine). Contained large loose stones but an obvious boundary of larger stones between (202) and (203).	
(204)	A layer of blue grey shillet, very loose and stony, comprised of a very degraded mudstone, which was extremely loose and probably re-deposited natural.	1.8m - 3.2m

The excavation did not appear to impact on any below ground archaeological features; the material excavated was a typical mix of debris associated with a site which was in decay and left to the elements. The composition of the surface 'soil' appears to have derived from plant decay probably within an open area of sparse woodland and scrub.

There was a small piece of wood protruding from (203) in a vertical position. It did not appear to have been worked, and it could be either a loose piece of wood within the dumped material or have been used to mark the hillside prior to the deposition during construction of the building platform for the central hub of the mine.

No features of archaeological significance were uncovered within the trenched area and no finds were recorded.

## **5 References**

### **Primary Sources**

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

Ordnance Survey, 2007. Mastermap Digital Mapping

### **Publications**

Buck, C. 1999. *Okel Tor Works Archaeological Assessment*. Cornwall Archaeological Unit, Cornwall County Council.

Buck, C. 2007. *Okel Tor Mine Cornwall. Recording during conservation and safety works (2000/2001)*. Historic Environment Service (Projects), Cornwall County Council.

### **Web Site**

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

<http://www.bgs.ac.uk/discoveringgeology/geologyofbritain/viewer.html?src=topNav>  
British Geological Survey Geology of Britain Viewer



## **6 Project Archive**

The CAU project number is 146472.

The project's documentary, photographic and drawn archive is housed at the offices of the Cornwall Archaeological Unit, Cornwall Council, Fal Building, New County Hall, Truro, Cornwall, TR1 3AY. The contents of the archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Field plans and copies of drawings stored in an A2-size plastic envelope (GRE 830/1)
3. Digital photographs stored in the directory: ..:\Historic Environment (Images)\SITES.M-P\Sites O\Okel Tor Mine WB 090315.\
4. Black and white archived under the following index number: GBP 2362
5. English Heritage/ADS OASIS online reference: cornwall2-206168
6. This report is held in digital form as: ..:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites O\Okel Tor Mine\Okel Tor Mine Sewer WB\Report

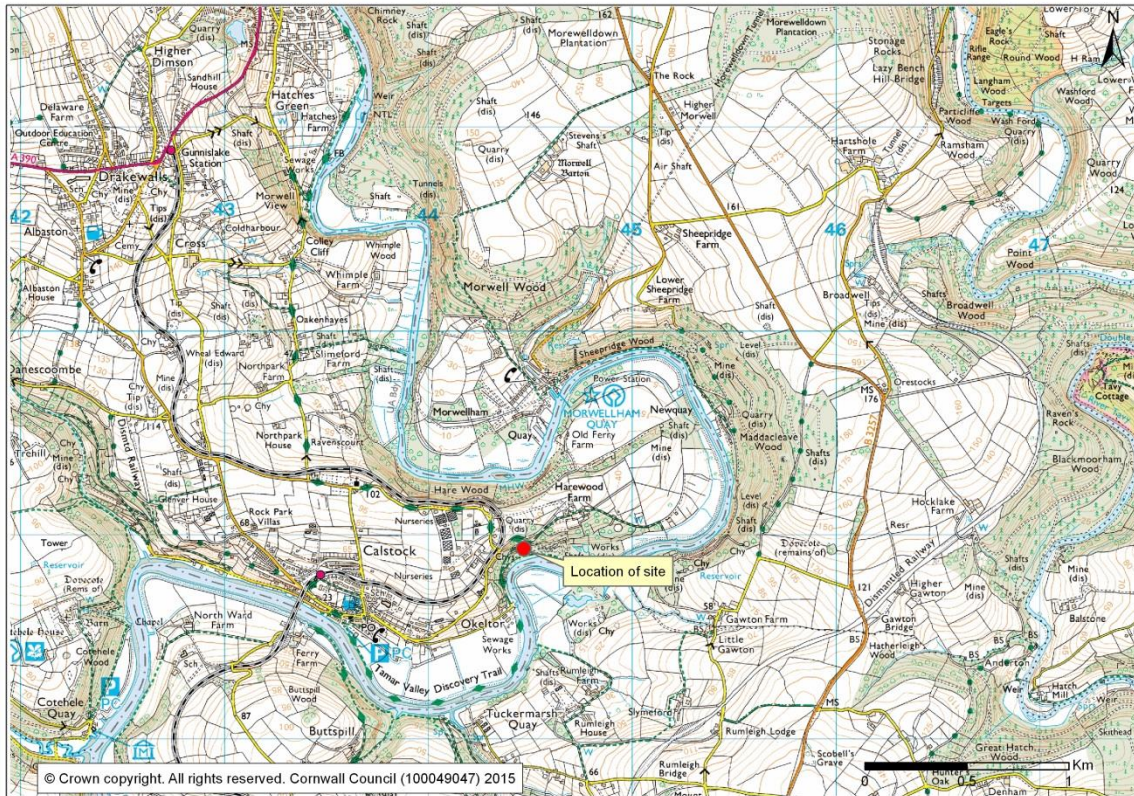


Figure 1: Location of site.

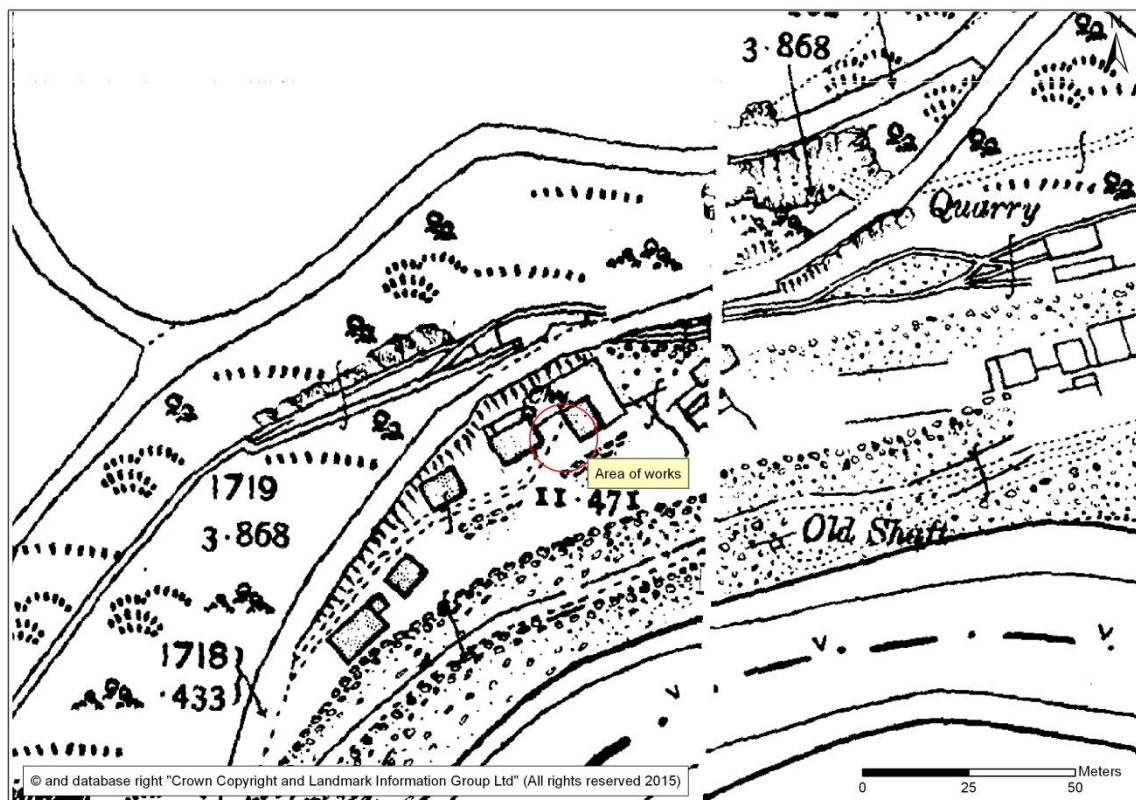


Figure 2: 1877 Ordnance Survey map 1<sup>st</sup> edition showing location of sewage works within area of the mine complex.



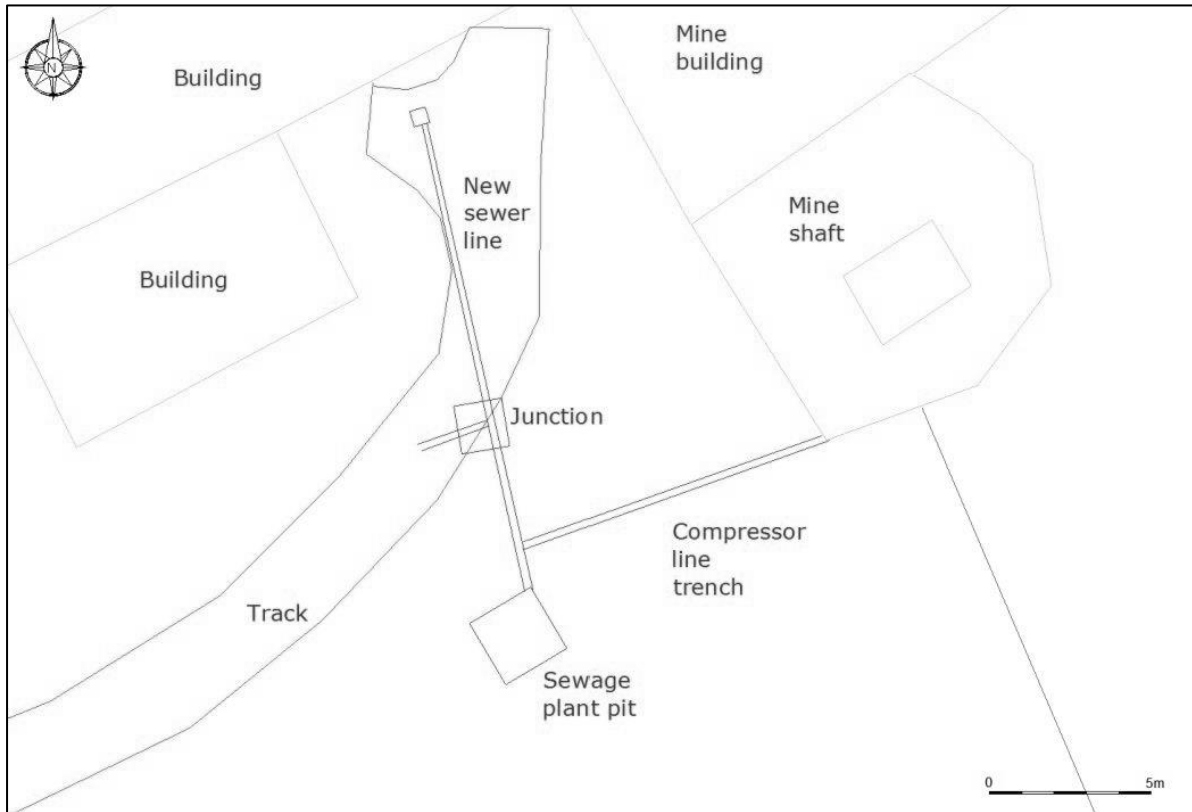


Figure 3: Plan of trenches and pits within project area.



Figure 4: View looking north east of site prior to excavation.





Figure 5: View of main sewer trench looking south (1m scale).



Figure 6: View of north facing section of main sewage plant pit (1m scale).

# Appendix 1: Written Scheme of Investigation for an archaeological watching brief at Okel Tor Mine, Calstock, Cornwall.

**Cornwall Archaeological Unit  
Cornwall Council**



## **Okel Tor Mine, Harewood, Calstock: Written Scheme of Investigation for archaeological watching brief**

Client: Nick Cole  
Client contact: Nick Cole  
Client tel: 01822 833566  
Client email: Tinmine@gmail.com

### **1 Project background**

CAU has been requested by Nick Cole of Okel Tor Mine to provide a Written Scheme of Investigation (WSI) for an archaeological watching brief during an excavation to install a sealed sewage treatment plant and related trenching to and from the plant site at Okel Tor Mine, Calstock, Cornwall.

The sewage treatment plant and related trenching is located at Okel Tor Mine (Scheduled monument No. 15549), Harewood, Calstock. The proposed sewage treatment plant site is shown on Figure 2, directly south of Site 11 (former Miners Dry, and west of Site 16 (site of the balance bob pit), as described in detail from the archaeological site assessment (Buck 1999, Archaeological Assessment). The WSI is required in a condition for Scheduled Monument Consent, to provide archaeological recording during excavation of pipe trenches, a new site inspection chamber, and a new sewage treatment (SMC 15549, HA 101944, Ref: S00087638).

### **2 Site history**

(Excerpt reproduced from Buck, Dec 1999, Section 2)

The mine has its origins as part of the Trelawney Consols Sett when an adit was driven in c1845, meeting a N-S lead bearing cross-course, later found to be traversing three E-W lodes (Main or North lode, Middle lode and South Lode). Copper and arsenical pyrites were encountered during the sinking of Engine Shaft (80 fathoms with adit at 11 fathoms). A 50" pumping and 22" rotary winding/crushing engine with crusher house were installed in 1864. Mispickel was the main product leading to the construction of the calciners and other plant in 1872. At this time tin was discovered at the eastern end of the sett (65 and 80 fathom levels), which in turn led to the purchase and construction of a 22" stamping engine and dressing floors (107 people employed). The copper lodes had by this time been exhausted (and the surface dressing floors dismantled). The mine closed down and the engines etc placed for auction. By 1881 a new company was formed which invested £60,000 in sinking two new shafts (to access the new tin lodes) and the erection of new copper and tin dressing floors (the rotary engine may well have been replaced by a 40"). A year later this mine merged with Cotehele Consols in the Danescombe valley to treat its arsenic mundic. This amalgamation was short lived and in April 1884 the company was wound up, although surface dumps and easily won ore were re-processed until 1887. From



1858-1883 the mine sold 13,785 tons of copper ore for £40,422; 1871-1887 213 tons of black tin for £13,282; 1858-1881 8,435 tons of arsenical pyrites for £5,962 and 1862-1887 5,585 tons of crude arsenic for £33,441.

Following the archaeological assessment of this site in 1999, building conservation works were undertaken from 2000 to 2001 (Buck 2007, Watching brief report).

### **3 Project extent**

The area for the watching brief is shown in Figure 2, as defined by the site trenches (1.2m deep, 0.3 to 0.5m wide) from the newly built dwelling to existing and new inspection chamber and the new sewage treatment plant, and deeper excavation of the new inspection chamber (0.45m X 0.45m X 1.2m), and the sewage treatment plant (1.9m X 2.1m X 2.7m depth). A shallow trench then will be cut eastwards to near the main shaft.

### **4 Aims and objectives**

The principal aim of the watching brief is to provide for identification, recovery or recording, and interpretation of any significant archaeological remains encountered by the works. If any significant archaeological features are uncovered, then mitigation will be undertaken to minimise archaeological impacts. The project also aims to undertake all the aims and objectives outlined in the Scheduled Monument Consent (EH Ref: S00087638, dated 4/9/2014).

### **5 Working methods**

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

#### **5.1 Fieldwork: watching brief**

The site excavation for the trenching and sewage treatment works will be undertaken by a mini-digger and monitored in progress during works by a CAU archaeologist (Ryan Smith), and the project managed by Colin Buck (Senior archaeologist). Any significant artefacts, structures, features, buried surfaces or other layers exposed in the developer's excavation will be archaeologically recorded by written description, plan and section and digital photography, and located in relation to the quay or to the contractor's drawings, as appropriate. The following measures may be taken if necessary;

- The method and level of recording will be varied as appropriate to the character/importance of the archaeological remains. This will also include a combination of colour and Black/white photography with scales and measured sketch surveys – plotted in from known/mapped features.
- If archaeological deposits of a regional or national importance are uncovered, then the cesspit work should be moved or time allowed to review options to ensure the remains are preserved *in situ*. If remains cannot be preserved *in situ* full-scale excavation may be required. The significance of the remains should be agreed between the client (Nick Cole), English Heritage (Nick Russell) and CAU.

## **5.2 Creation of site archive**

To include:

- Digital colour photographs (stored according to HER guidelines and copies of images made available to the client).
- Written description and interpretation at an appropriate level of detail.
- Preparation of finished drawings.
- Completion of the English Heritage/ADS OASIS online archive index.

## **5.3 Archive report**

In view of the small scale of the site, it is expected that the CAU 'short report' format will be used for the written report. This will include;

- Project background
- Aims and objectives
- Working methods
- Results, including dating evidence
- Statement of significance
- References
- Supporting illustrations: location map, historic maps, plans, elevations/sections, photographs
- Project archive details

A paper copy and 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, to local archives and national archaeological record centres.

## **5.4 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 archiving will include the following:

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

## **6 Timetable**

The study is anticipated to be commenced during Monday March 9th 2015. CAU has been given appropriate notice of the commencement of works, and has allocated field staff and arranged 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.

## **7 Monitoring and Signing Off Condition**

Monitoring of the project will be carried out by English Heritage (Nick Russell). When Nick Russell is satisfied with the archive report and the deposition of the archive written, discharge of the SMC condition will be expected.

Monitoring points during the study will include:

- Approval of the WSI
- Completion of fieldwork

- Completion of archive report
- Deposition of the archive

## **8 Cornwall Archaeological Unit**

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

## **9 Standards**



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

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

## **10 Terms and conditions**

### **10.1 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.



## 10.2 Project staff

The project will be managed by a nominated Senior Archaeologist 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. The project team is expected to include:

### **Colin Buck, DipCert, MCIFA Senior Archaeologist**

Specialist in Cornish mining landscapes and assessments since 1993. Involved in numerous recording and appraisal projects including conservation works to many engine houses and other structural conservation works, shaft safety works and mine site access improvements, particularly in the east of Cornwall. Projects include many archaeological impact assessments. Helped Tamar Valley AONB Service prepare CMP for West Devon Mining. Involved in the preparation of policies for the Cornish Mining World Heritage Site Bid's Management Plan and produced the Mineral Tramways Conservation Management Plan. Author of the Okel Tor archaeological assessment and watching brief report during building conservation works (2000-2001).

### **Ryan Smith, BSc(Hons), PCIFA**

Archaeologist Ryan Smith has worked on a variety of projects with the Cornwall Archaeological Unit. Projects undertaken have involved the excavations at Porthleven and the TEDC site in Truro, the evaluations of sites at St Tudy and Four Burrows, as well as a large number of watching briefs, including St Breock Downs, and Otterham Wind Farm.

## 10.3 Report distribution

Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres.

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

## 10.4 Copyright

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

Use of the material will be granted to the client.

## 10.5 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.

## 10.6 Health and safety statement

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

Prior to carrying out on-site work HE will carry out a Risk Assessment.

## **10.7 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.

*Colin Buck  
Senior Archaeologist  
2/3/2015*

### ***Cornwall Archaeological Unit***

*Cornwall Council  
Fal Building, County Hall,  
Treyew Road,  
Truro, Cornwall. TR1 3AY  
Tel: 01872 32[extn]  
Email: [cbuck@cornwall.gov.uk](mailto:cbuck@cornwall.gov.uk)*



Okel Tor Mine, Cess pit/trench excavation, watching brief, WSI; CB 2/3/2015

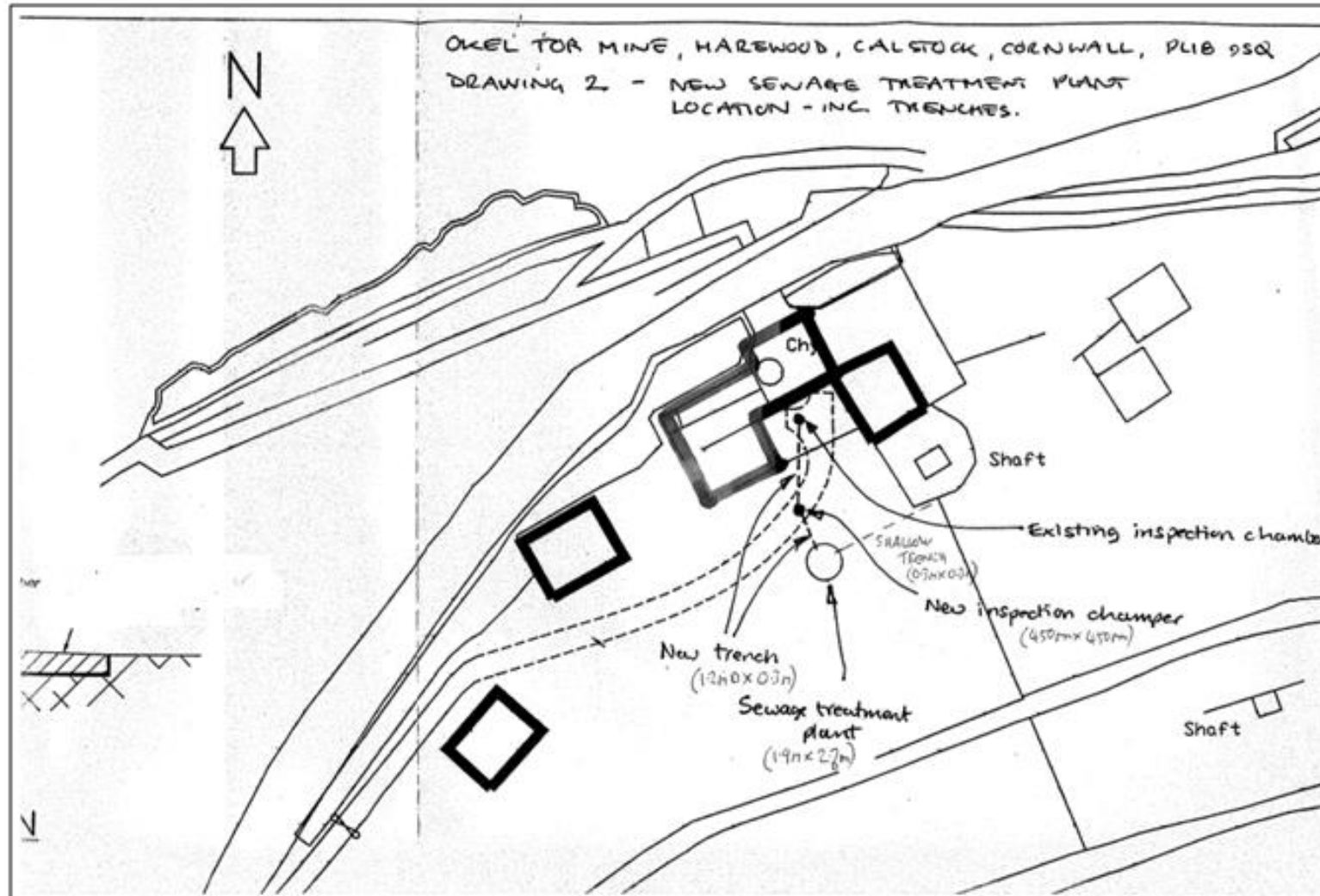


Figure 2 Site plan of archaeological impacts and basic project extents (supplied by Nick Cole)