Perranporth Airfield

Perranzabuloe, Cornwall

Archaeological Watching Brief

Author: Hayley Goacher BA (Hons) PIfA and Matt Mossop MA MGSDip MIAI

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Archaeological Consultancy Limited
Goodagrane, Halvasso, Penryn, Cornwall, TR10 9BX
Tel 0044 (0)1326 341 061
E-mail enquiries@archaeologicalconsultancy.com
Website www.archaeologicalconsultancy.com

England and Wales Registered Company No. 5784610

Archaeological Consultancy Ltd.

Acknowledgements

This study was commissioned by Daniel Conley on behalf of Plymouth University and carried out by Archaeological Consultancy Ltd. The Project Manager was Matt Mossop whilst the fieldwork was undertaken by Matt Mossop and Hayley Goacher.

The desk-based research was undertaken by the authors and Dan Billing, with help kindly provided by Bryn Perry Tapper (Sites and Monuments Records, Historic Environment (HE)), Linda Wyatt (Aerial Photographs), David Thomas at the Cornwall Record Office (CRO) at Cornwall Council (CC); Angela Broome at the Courtney Library (CL); Bob Andrew (Secretary Cornwall Aviation Society), Frank Tyrer (Former mechanic with 145 wing Free French Mobile Airfield, stationed at RAF Perranporth) and Lauren Woodard (RAF Museum).

Cover illustration

Perranporth Airfield, mast at runway extension looking northeast

Archaeological Consultancy Ltd.

Perranporth Airfield

Perranzabuloe, Cornwall.

Archaeological Watching Brief

Author:	**Hayley Goacher BA (Hons) PIfA and Matt Mossop MA MGSDip MIAI**
Report Date:	**June 2011**

Client:	**Plymouth University**
Proposal:	**Temporary radar installation**
Planning Reference:	**PA10/05731**
Statutory Protection:	**World Heritage Site**
	Scheduled Monument 32957
Project No:	**AC10010E**

Civil Parish:	**Perranzabuloe**
District:	**Central 1**
County:	**Cornwall**
National Grid Reference:	**SW 74137 53212 to SW 74379 53395**

Fieldwork Dates:	**January 2011**

Archaeological Consultancy Ltd.

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Abbreviations

AC	Archaeological Consultancy Ltd
CC	Cornwall Council
CRO	Cornwall Record Office
EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HES	Historic Environment Service, Cornwall County Council
NGR	National Grid Reference
NMR	National Monuments Record, Swindon
OASIS	Online Access to the Index of Archaeological Investigations
OS	Ordnance Survey
PRN	Primary Record Number
RCM	Royal Cornwall Museum, Truro
SMR	Sites and Monuments Record
WHS	World Heritage Site

1 Summary

AC Ltd was commissioned by Daniel Conley on behalf of Plymouth University to undertake a watching brief on cabling works associated with the construction of a temporary radar installation at Perranporth Airfield. The cabling runs from NGR SW 74137 53212 to SW 74379 53395.

The watching brief was required by Condition 5 of the associated planning permission and Scheduled Monument Consent. Parts of the site are designated as World Heritage Site and Scheduled Monument.

This fieldwork was undertaken between the 13th and 14th January 2011, it recorded:

- Possible mine workings and deposits relating to the 18th and 19th Century mining activity
- Construction evidence related to the building and extension of the airport during the Second World War

2 Introduction

2.1 Project Background

The proposed radar station is designed to monitor wave activity in the Bristol Channel for a period of four years as part of the wave hub project. The site at Perranporth Airfield was subject to an archaeological assessment (Mossop 2010) which recommended a watching brief of the sub-surface cabling works. A brief was provided for this (Appendix 1) and a written scheme of investigation (Appendix 2) sets out the project background, location details and methodology in more detail.

2.2 Site Location

The site is located approximately one kilometre southwest of Perranporth (see location map in Appendix 2) in the civil parish of Perranzabuloe at the northern end of the airfield between SW 74137 53212 and SW 74379 53395 (NGR).

2.3 Topography

The site is situated on an open and gently undulating coastal plateau to the southeast of 90m high sea cliffs.

2.4 Geology

The bedrock is recorded as Gramscatho Group metamudstone and metasandstone (British Geological Survey), laid down around 350 million years ago when Cornwall was under the sea (Trembath, 1992; 41), with a dyke of Permian Felsite running northeast from Hanover Cove across the site. An area of St Agnes Intrusion granite lies immediately to the northwest at Cligga Head, formed around 300 million years ago. As the granite cooled cracks opened and

filled with minerals leached from the rock, forming veins of quartz rich with tin and copper. Above the granite, superficial deposits of beach and tidal sand and silt are recorded (British Geological Survey).

2.5 Archaeological and Historical Background

The following information is largely taken from the archaeological assessment (Mossop, 2010).

Perranporth Airfield, or Trevellas as it was originally called is the site of Trevellas Downs Bronze Age barrow cemetery (PRN 19400), which included seven or eight barrows. Trevellas Barrow measured 8.8m diameter by 0.45m high in 1940, when it was levelled for the construction of the airfield. Trevellas Little Burrow (PRN 19400.2) lies approximately 100m to the south of the study area.

Another Bronze Age barrow at Caer Dane approximately 3km to the east was also the site of an Iron Age hillfort. To the northeast Caer Kief and Perran Rounds are likely to have been occupied in the late Iron Age and Romano-British period and Perran Round was re-used in the middle ages as a "plain-an-gwarry" (Trebath, 1992; 39).

The name 'Trevellas' has been interpreted as "the thatched housestead" (Benney and Mansell, 2006; 5) and may suggest an Early Medieval origin. The site is thought to lie within the Manor of Tywarnhayle or Tywarnhayle Tyes (David Thomas pers com.). The Manors of Tywarnhayle and neighbouring Perranzabuloe are recorded in the Domesday Book of 1086 (Morris, 1979; 121a and b). Tywarnhayle was held by Algav before 1066 and by The Count of Mortain from St Petroc's in 1086. It included land for 20 ploughs as well as 12 acres of woodland and pasture 5 leagues long by one league wide. It had 20 unbroken mares; 10 cattle and 250 sheep (Morris, 1979; 121a). Strip fields (PRN53688) separated by low earth banks at the southwest end of the assessment area are likely to date this period.

Trevellas is first recorded in 1306 (Padel, 1988; 170), Trevellas Manor Farm is thought to have been built from the ruins of Old Trevellas House (Benney and Mansell, 2006; 32).

The Post-Medieval period saw the development of mining in the area, principally exploiting the copper and tin deposits, though Wolfram was also mined during the C20th at Cligga Mine. Great St George mine was first mentioned in 1598 (PRN 41125). Good Fortune mine (PRN 163237), recorded in the early C19th also included numerous smaller and earlier works, whilst Wheal Union mine (PRN163385) operated from 1800-1804.

The wreck of the packet ship "Hanover" in 1763 (PRN 164413) gave its name to the cove immediately to the west. The vessel was included in the list of designated wrecks on 19/7/1997 and has an exclusion zone radius of 250m.

Both the 1801 (OS) and 1840 (Tithe) maps show the study area as unenclosed with the Tithe apportionment listing it as Trehayle Common. The 1880 and 1888

OS maps show increasing land enclosure to the southeast of the study area, as well as the disused Perran St George Copper Mine.

In 1889 The British and Colonial Explosives Company started the construction of the explosives works immediately to the north of the study area (Earl, 2006; 262) with production commencing in 1891. This was taken over by Nobels in 1893 and closed by 1905, re-opening for shell manufacture during World War I. (Benney and Mansell, 2006; 80). The original office and laboratory for the explosives factory (Earl, 2006; 267) lies at the northeast end of the cabling trench.

The 1907 OS map shows further encroachment of enclosure fields immediately to the southeast of the assessment study area, the explosives works and the Good Fortune Tin Mine, which appears to have reworked some of Perran St George's shafts.

The Perranporth Aerodrome website reports that by March 1924 a former World War I training bi-plane, Avro 504K operated from here, taking locals for flights.

By 1933 (OS map) Good Fortune Mine is depicted as disused.

In 1940, following the evacuation of Dunkirk, the area was purchased by the Air Ministry and construction of the airfield began. This appears to have involved the levelling of considerable mine waste and associated buildings as well as a number of the Bronze Age barrows.

In April 1941 Trevellas Airfield opens, with a single squadron (Squadron 66) of 12 Spitfire Mark II As (Andrew, 1995; 1), split into two flights based at the north end of the airfield. In September 1941, 118 Squadron arrived at the airfield, followed by 130 Squadron in December (both spitfire squadrons). By 1942 a more offensive role was undertaken with fighter sweeps across the channel to northern France.

In 1943 extensions to the runway, a new operations room and control tower are constructed and the mine buildings at Cligga Mine are lowered to improve access to the runways. Spoil heaps around the overshoots are also moved as the airfield continued to grow (Andrew, 1995; 2).

In 1944 many of the Spitfires stationed at Perranporth were moved to Merston Airfield near Chichester in preparation for D-Day and were replaced by Squadrons of Swordfish and Avengers. The airfield closed on April 1st 1944 although it saw brief use the following year. The airfield was placed on a Care and Maintenance basis in May 1945 and sold off with the condition that the buildings were taken down to facilitate its return to agricultural use (Fletcher and Newman, 2003; 2-3).

Whilst most of the buildings were taken down, the airfield was used for military glider training from 1945-1957 and in 1957 the Perranporth Gliding and Flying Club was formed (Perranporth Airfield website).

2.6 Project Aims and Objectives

The principal aims were to:

- Establish the presence/absence of archaeological remains
- Determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- To establish the nature of the activity on the site
- To identify any artefacts relating to the occupation or use of the site
- To provide further information on the mining activity and World War II airfield from any archaeological remains encountered

2.7 Methodology

The trenches were excavated with a toothless bucket under archaeological direction along the line of the proposed cable route to facilitate the recognition of archaeological deposits. Soil was removed down to the bedrock, the top of any archaeological deposits, or to the base of the required electrical trench, as appropriate. The trenches had an average approximate depth of 500mm.

Archaeological remains consisted of probable mining related features and evidence for the wartime extension of the runway. These were cleaned by hand, photographed and recorded in section (the majority at scale 1:20) and plan (scale 1:500 with detail of Trench 3 at 1:50). A variety of bottles were found at the northern extremity of the site. They were photographed and their location was recorded but they were not retained following guidance from the RCM.

Scaled monochrome photographs documented identified archaeology within the study area. Scaled digital colour photography was used to augment this, providing general and detailed shots. All negatives contact prints and where appropriate, CDs will be included in the archive accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

2.7.1 Report

This report describes the results of the archaeological work. Copies of the report will be submitted to: the client; the County Historic Environment Record (HER); Cornwall Record Office; National Monuments Record (NMR) in Swindon, Phil McMahon at English Heritage and all significant contributors where (with the exception of the client's and contributors' copies) they will be available for public consultation.

2.7.2 Site Archive

The documentary archive will be deposited with the Cornwall Record Office, within two months of the completion of the final report. A summary of the contents of the archive is included in this report.

The online OASIS record will be completed when the report is submitted.

3 Results

3.1 Structure of the Results

The cable trench which averaged 0.4m wide by 0.5m deep, was described in 6 principal sections (Trench 1-6) numbered from northeast to southwest (**Figure 1**). Trench 1 was located at the northernmost end of the site to connect the cabling to the former gliding club building and was 17m in length. Trench 2 ran east to west for 120m crossing the runway. Trench 3 followed the western edge of the runway southwards with a short dog-leg to cross the perimeter track, where it followed the line of an earlier drain [14]. Trench 3 measured 123m north to south. Trench 4 shadowed the perimeter track to the south and east for 98m. Trench 5 crossed the perimeter track and continued west 40m to link with Trench 6 which linked to the porta-cabin at the southernmost extremity of the watching brief study area.

3.2 Area Results

Trench 1

The majority of Trench 1 had been disturbed by modern activities associated with the gliding club building. Within the southern 2.5m of the Trench, a layer up to 0.3m thick of dark grey-brown sandy-silt **(4)** included a moderate amount of angular stone. This layer **(4)** continued into Trench 2 measuring at least 57m east to west (Trench 2) by 2.5m north to south (Trench 1) and was overlain by the topsoil **(1)**, which was a 0.22m thick friable grey-brown slightly sandy silty-clay.

Trench 2

At the east end of Trench 2, a compact light orange-brown sandy-clay natural **(2)** including occasional sub-angular granite fragments, was overlain by sandy-silt **(4)**, which in turn was sealed by a layer of firm light orange-brown sandy-clay **(3)** which measured 2m east to west by at least 0.4m north to south by up to 0.2m thick. The orange-brown sandy-clay **(3)** was sealed by the topsoil **(1)** which along with the overlying vegetation included a number of glass objects. These included beer and spirit bottles, a pint mug, jam jar and three coffee jars notably including two mellow bird coffee jars apparently originating from the gliding club (***Plate 1***). The topsoil thickened to the east filling the top of a possible mine working (

Figure 2).

At the west end Trench 2 crossed the runway (***Plate 2***) and parallel grooves cut the orange-brown sandy-clay **(2)** at the base of the trench where the runway **[7]** was cut presumably by machine equipped with toothed buckets. The runway cut **[7]** entirely removed the topsoil **(1)** and was filled with a 0.5m thick layer of hardcore **(6)** made up of small-medium slate/shale fragments and occasional granite rubble in a light pinky-orange sandy-clay matrix. Hardcore **(6)** was topped with a 50mm thick layer of tarmac **[5]** made of 10-50mm angular stones, probably the local slate/shale. The stones within the tarmac were smaller and

more compressed near the surface and it seems likely that a 30mm thick course layer was laid as a base for the 20mm thick fine tarmac surface. The tarmac surface **[5]** of the runway was 43m wide, though the hardcore **(6)** continued 1m either side (east and west) of the tarmac, presumably to facilitate drainage.

Trench 3

Trench 3 included two large features **[8]** and **[10]**, extending across the base of the trench, continuing below the required 0.5m trench depth and both sealed by the topsoil **(1)**. Possible ditch or pit **[8]** measured 1.45m north to south by at least 0.2m deep and was filled with light-grey clay **(9)**.

Eight metres to the south was a possible mine working **[10]**, the top of which measured 12.5m north to south, continuing right across the trench (0.4m wide) and filled with light-grey clay (**Plate 5**), with a diffuse boundary to the topsoil **(1)** above. Heavy rain which ran along the trench drained rapidly into this feature, suggesting considerable voids below the exposed clay, probably around loose rock as the ground appeared relatively solid at the base of the trench.

Immediately to the north of the perimeter track **[23]** an area of brown sandy-clay and sub-angular stone **(28** and **29)** measuring at least 6.5m southwest to northeast, extended across the base of the trench and was overlain by the hardcore foundation **(24)** of the perimeter track **[23]**. The stoney layers **(28** and **29)** were cut by a slate or shale filled linear drain **[12]** which ran parallel to the perimeter track, beneath the hardcore **(6)** of the runway (***Figure 3***). The drain **[12]** measured 1.08m wide by at least 0.4m deep with near vertical sides. It was filled with loosely packed angular slate or shale fragments **(13)** averaging up to 50-200mm in maximum dimensions. This area was found to drain freely.

Trench 3 then turned south again and traversed the perimeter track **[23]** following the line of a drain **[14]** identified in the assessment (Site 12i Mossop, 2010, p12).

A 0.4m thick layer of light yellow-brown sandy clay with at least 70% angular granite and slate or shale fragments **(24)** overlay the natural **(2)**, forming the foundation of the perimeter track. This was surfaced with tarmac **[23]** averaging 80mm in thickness. The drain **[14]** cut through the tarmac **[23]** and contained two ceramic pipes **(30)** re-enforced above with concrete **(15)**.

Trench 4

Trench 4 included only one feature of note; 6.5m from the eastern extremity of this trench, a brick inspection chamber **[17]** provided for a ceramic drain-pipe (***Plate 3***). The inspection chamber **[17]** was constructed of orange-red bricks with quartz inclusions arranged in regular courses of stretcher bond. At the base of the excavation, at a depth of 0.6m, a light yellow orange ceramic pipe **(18)**, of 140mm diameter, similar to **(30)**, was partially exposed extending from the brickwork **[17]**. This group was within cut **[16]** which formed a north-south linear with an irregular stepped side to the west and near vertical edge to the east (***Figure 4***).

Trench 5

The perimeter track was found to be of similar construction as in Trench 3. Either side of the perimeter track stone-filled drains **[19]** and **[21]** cut through the topsoil (**Plate 4**). Both had near vertical sides, and were filled with moderately sorted angular granite and slate or shale fragments (***Figure 6***).

Trench 6

At the southern end of the Trench a 0.16m thick stoney layer **(26)** overlay the topsoil, spreading 0.50m north of the edge of the fighter pen tarmac **[25]**, for which it formed the foundation. Stoney layer **(26)** was composed of granite and slate or shale mixed with material similar to the topsoil.

A low bank **[27]** visible on the surface, sealed the stoney foundation **(26)**, but was otherwise impossible to differentiate from the topsoil **(1)** below. Low bank **[27]** measured 25m west northwest to east southeast by 2.8m, by 0.25m maximum depth and appeared to continue the line of the blast protection bank surrounding the western side of the fighter pen (***Figure 5***).

Plate 1 Bottles and jars from Trench 1 topsoil (1)

Plate 2 Trench 2 section through edge of runway looking northeast

Plate 3 Trench 4 brick inspection chamber [17] looking northwest

Plate 4 Trench 5 stone filled drain [19] at edge of perimeter track looking north

Plate 5 Trench 3 possible mine working [10] looking north

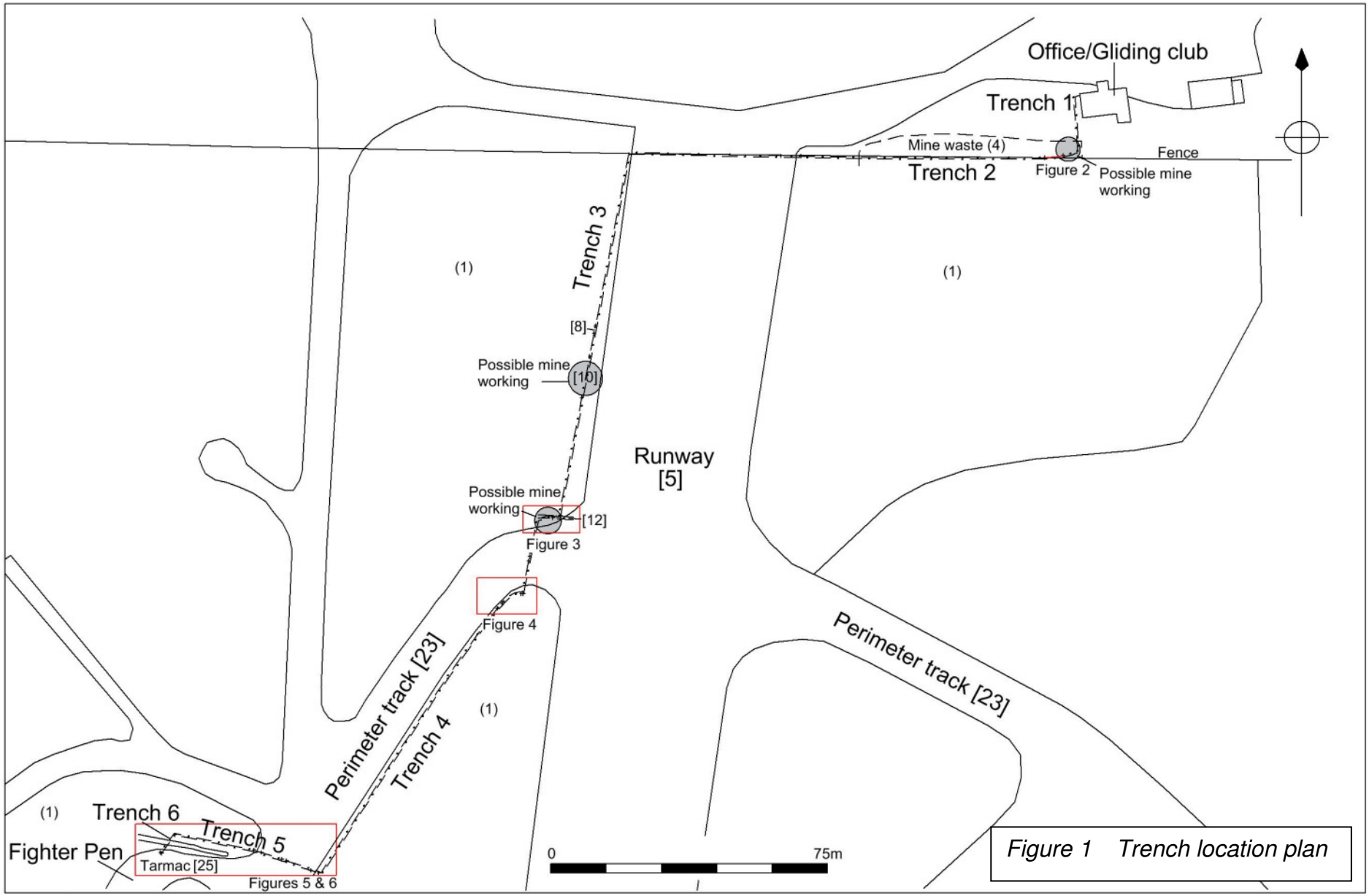

Figure 1 Trench location plan

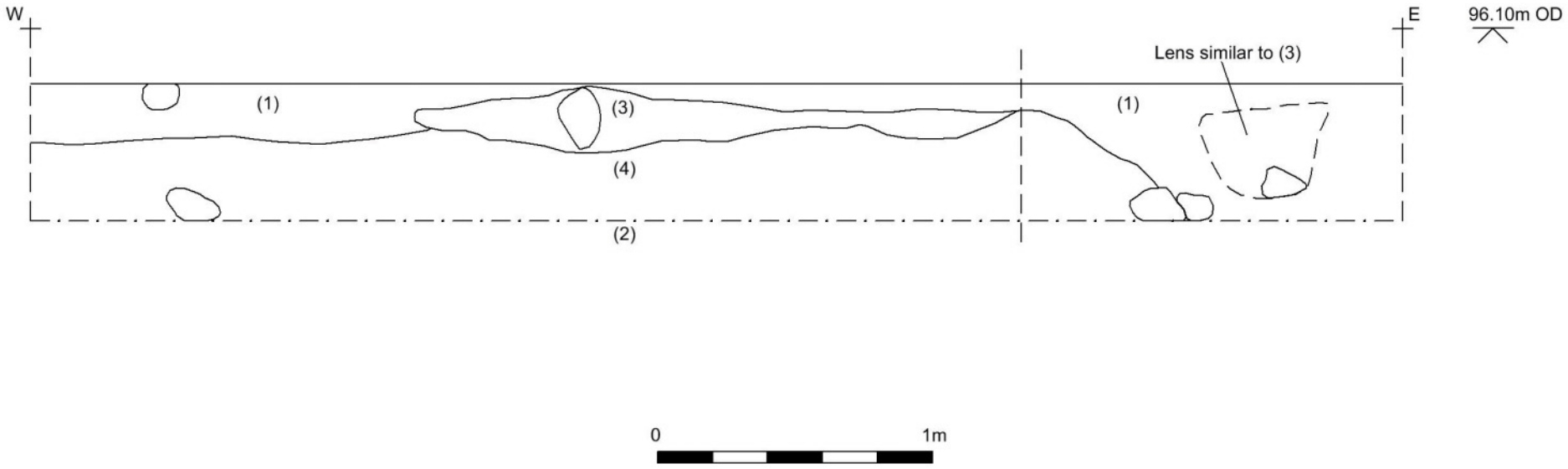

Figure 2 Trench 2 section

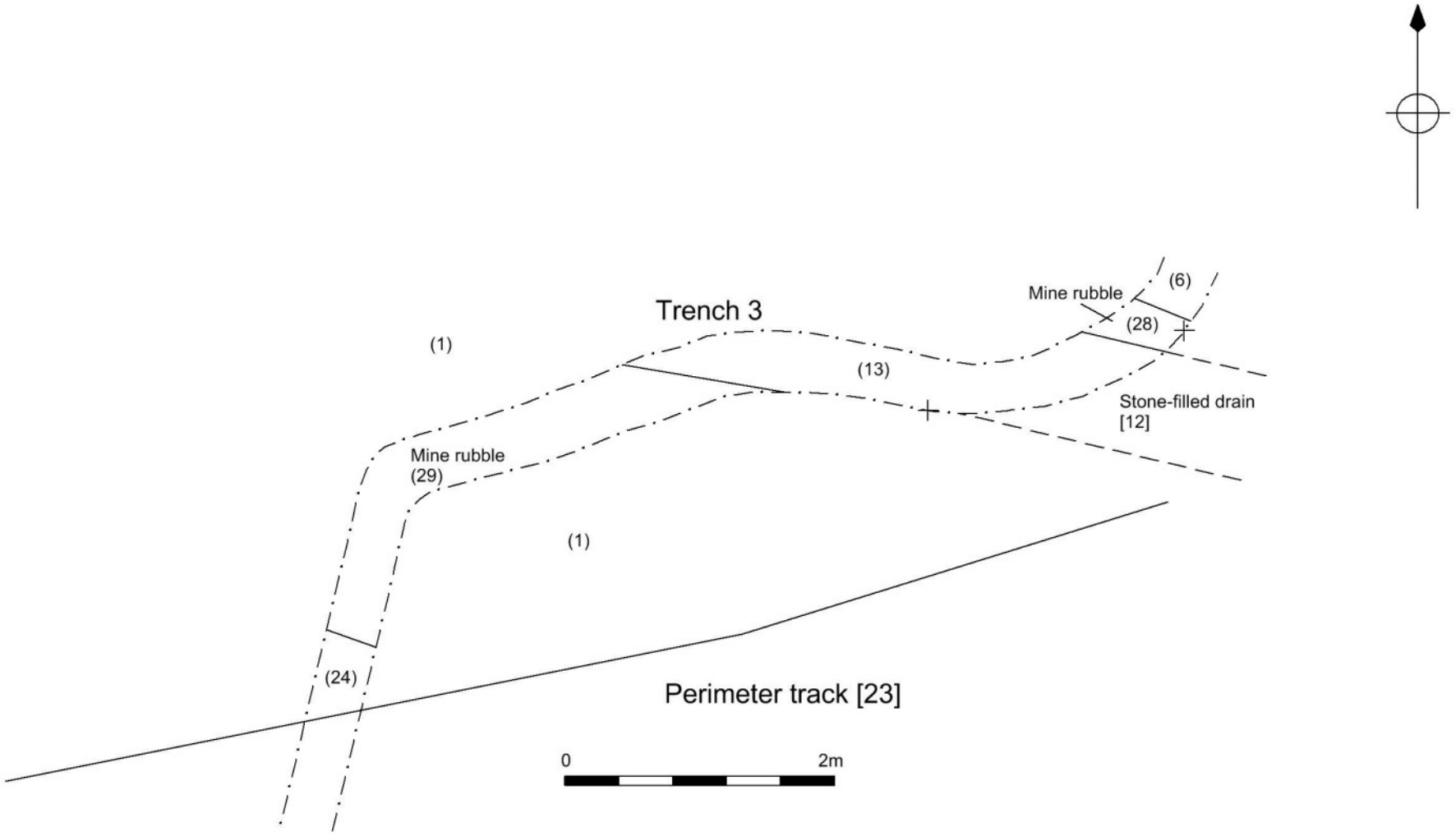

Figure 3 Trench 3 detail

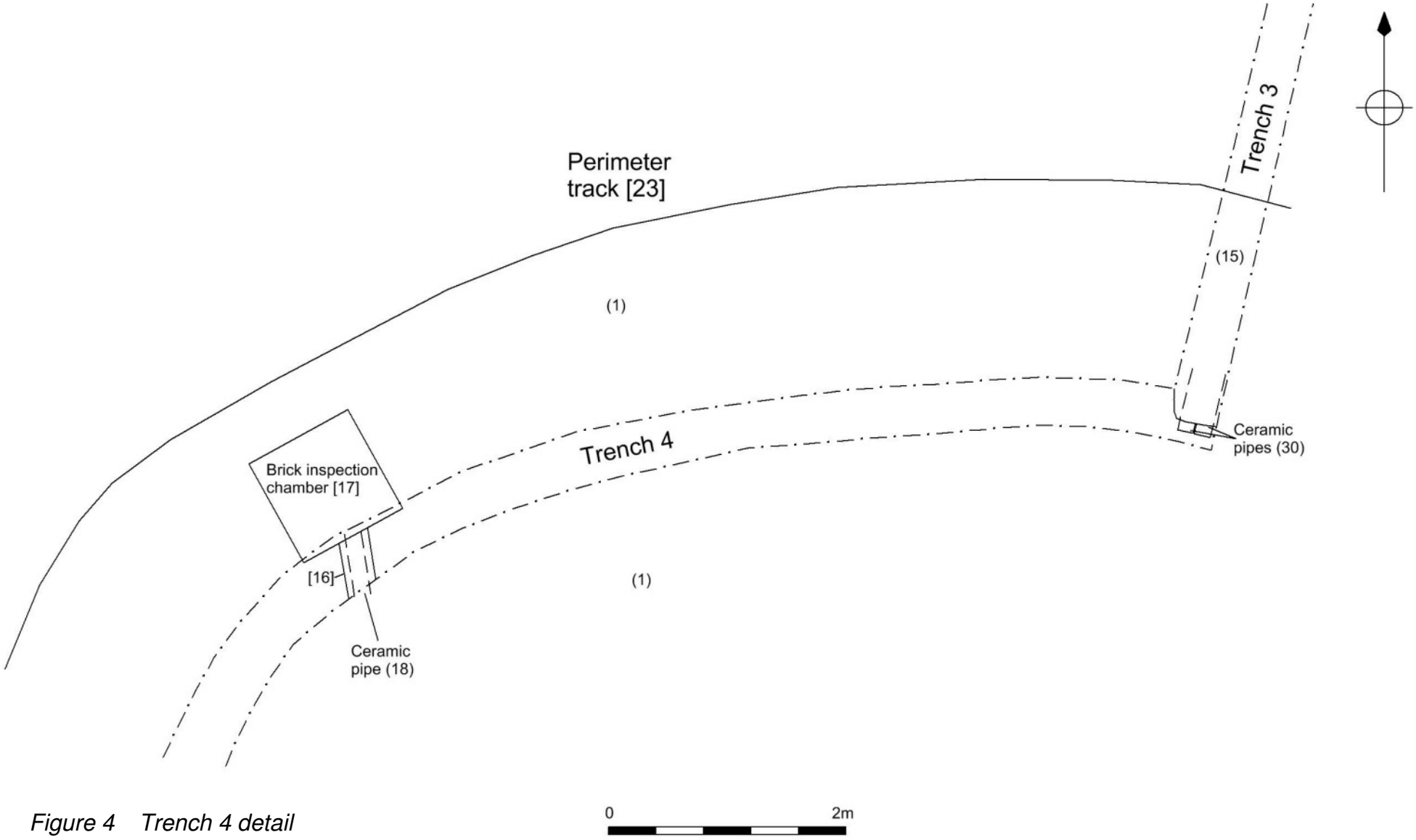

Figure 4 Trench 4 detail

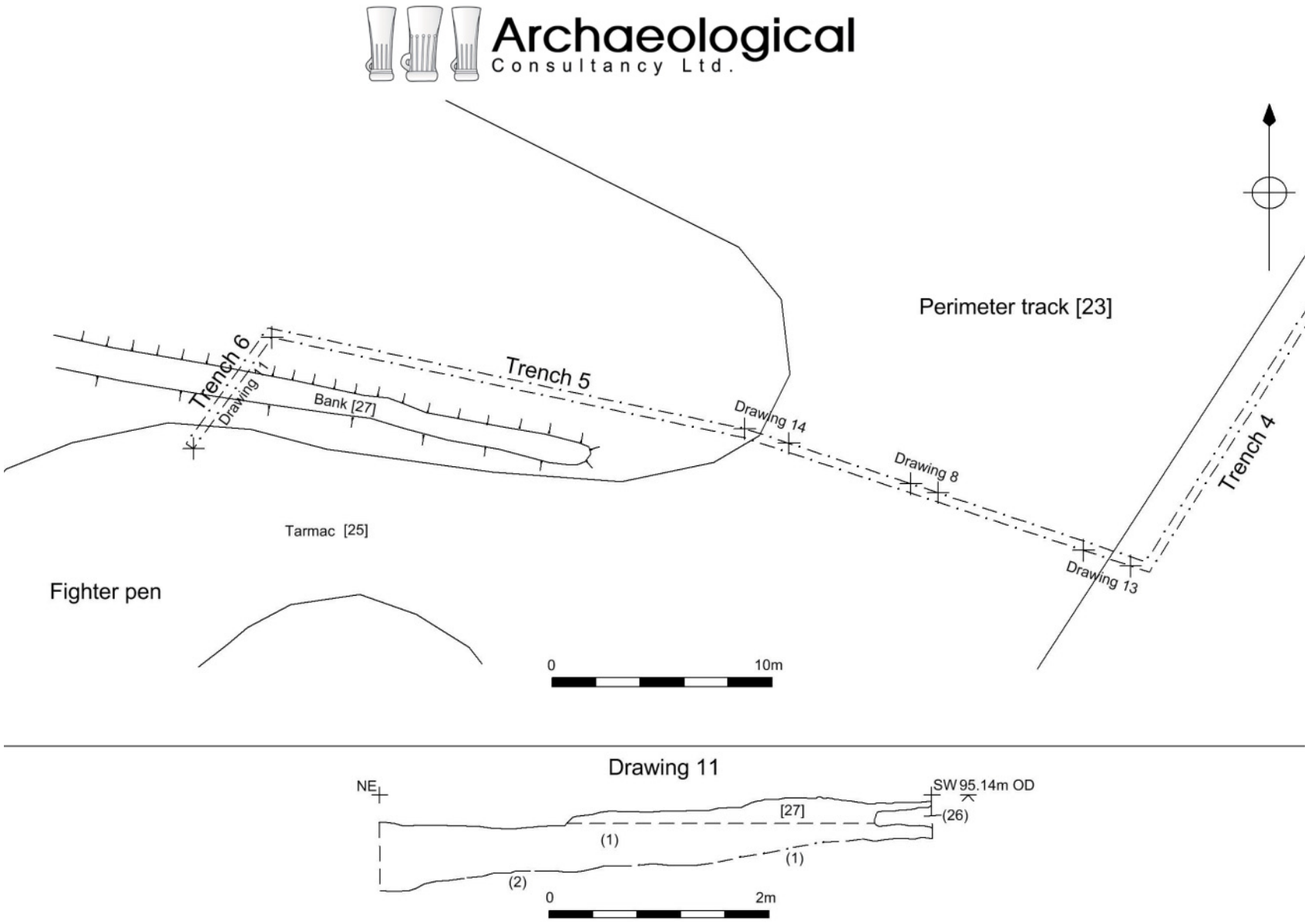

Figure 5 Trench 5 and 6 detail (above) and section through bank [27] below

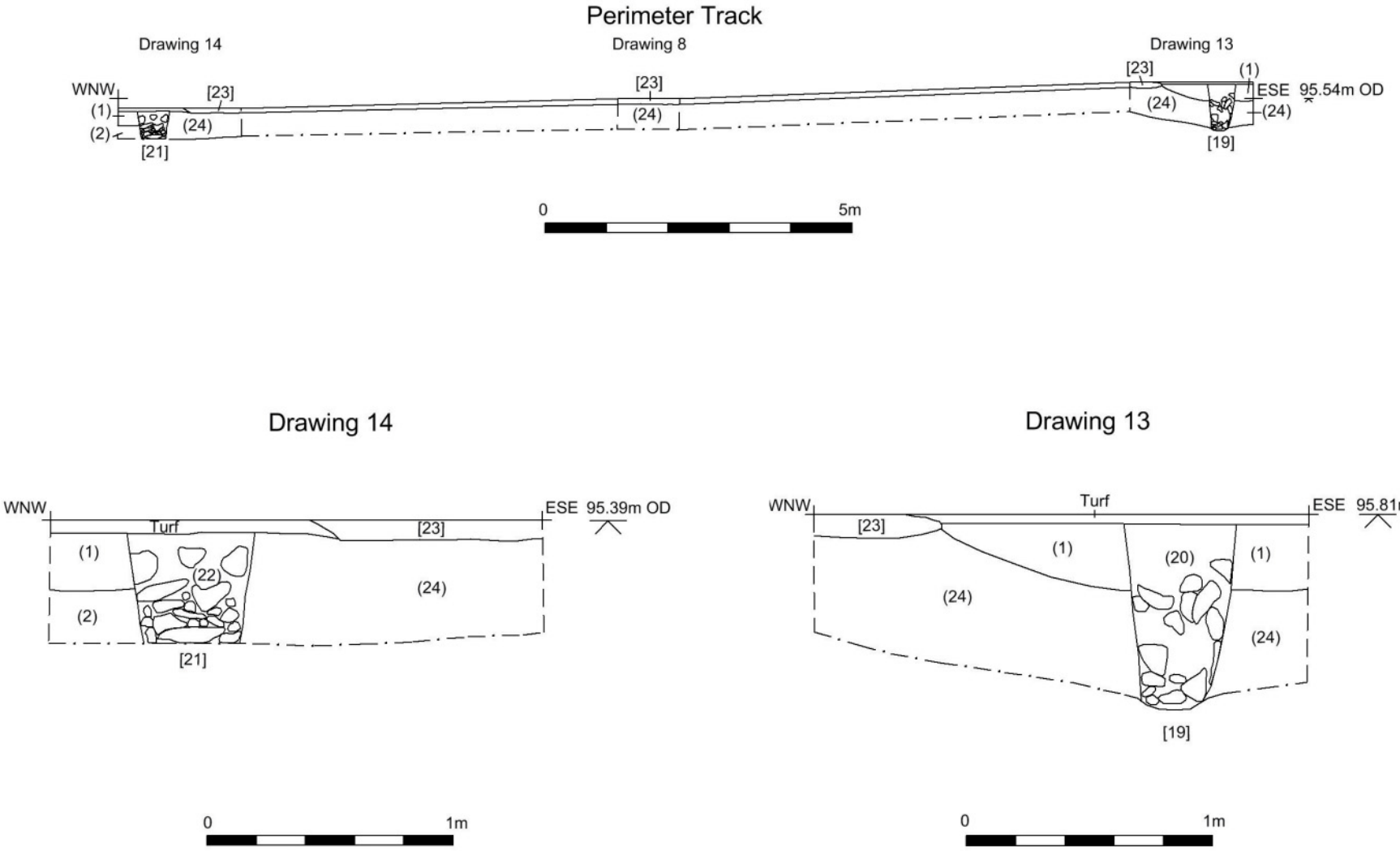

Figure 6 Trench 5 section through perimeter track (above) and details (below)

4 Discussion

The angular stone fragments within the grey-brown sandy-silt **(4)** found in Trenches 1 and 2 appear to suggest mine waste was included in this layer. This material may derive from spoil heaps shown on late 19th century maps immediately to the south, or from a possible mine working at the junction of Trenches 1 and 2. The depression filled with topsoil at this location suggests either a substantial cut or some subsidence and in-filling.

The spoil heaps in this area were largely levelled in 1940 and 1943 to improve lines of sight for the runways, which is likely to explain the mixture of probable mine waste, sandy-silt **(4)** and the orange-brown layer **(3)** which appears to be re-deposited natural.

The relatively sterile light grey clay evident in pit/ditch **[8]** and possible mine working **[10]** was not apparent in the natural clay **(2)** recorded elsewhere and may be a natural clay encountered at depth in one of the mine workings. The presence of angular stone fragments in the vicinity of these features and within **(28)** and **(29)** is indicative of mine waste shown as an extensive spoil heap on the late 19th century mapping. Whilst the drainage around **(28)** and **(29)** is likely to have been helped by the stone-filled drain **[12],** given the free-draining nature of possible mine working **[10]** and the alignment of all three of these areas (***Figure 1***) on a felsite dyke (British Geological Survey) which many of the local shafts exploited, it seems likely that mine workings may be present in these areas. These are likely to have related to Perran St. George Mine, though none of them are depicted on the 19th or 20th century maps.

Of the other features recorded, the majority were related to wartime building works.

Following the excavation of the topsoil in the position of the proposed runways and associated tracks by machines equipped with toothed buckets, the clay subsoil was sealed by a 0.4m thick layer of stone seemingly derived largely from the spoil heaps of the earlier mine workings. This was surfaced with tarmac, which sloped gently in line with the contours allowing for surface drainage.

Stone-filled drains **[12]**, **[19]** and **[21]** were provided for the perimeter track. Drain **[12]** was sealed by the northern end of the runway **[5]** suggesting that this part of the runway was a later extension, presumably carried out with the additional levelling works and extensions to the southwest in 1943.

The ceramic pipe drain **[14]** improved the drainage across the perimeter track sometime after the track was completed. Ceramic drainpipe and associated brick inspection chambers may be related.

The low bank **[27]** crossing Trench 6 continues the line of the blast protection around the fighter pen, though the wingspan of the spitfires rule out a structure of any height in this location. It may be that this material is the remains of the topsoil excavated out of the fighter pen which subsequently weathered to cover over part of the stoney foundation layer **(26)**.

5 Conclusion

The construction of the airfield in 1940 and its extension in 1943 effectively levelled any upstanding remains of the earlier mining activity in the study area, though three areas of possible mine workings were recorded, alongside evidence for the foundations and drainage of the runway, perimeter track and fighter pens.

6 The Archive

The AC Ltd project number is **AC10010E**

The project's documentary, photographic and drawn archive is housed at the offices of Archaeological Consultancy Ltd, Goodagrane, Halvasso, Penryn, Cornwall, TR10 9BX prior to transferral to the CRO. The contents will be summarised below.

Written and Photographic Records

Record	A5*	A4*	A3*	A2*	A1*	≥ A0*	**Total Number**	Comment	Location
Drawing sheets			4	1			5		Roll
Site diary									
Site notes		1					1		Folder
Levels book									
Primary record sheets		3					3	Photo Register Context Register Drawing Register	Folder
Correspondence		4					4		Folder
Project management		1					1	Risk Assessment	Folder
Other Sheets									
B&W Negatives		1					1		Folder
B&W Contact Print Sheets		1					1		Folder

7 Recommendations

Following the completion of archaeological work stipulated by the Written Scheme of Investigation, no further archaeological work is recommended for this development, though the three areas of possible mine workings should be assessed for stability and appropriate stabilisation works undertaken if necessary.

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Tithe Map and Apportionment, 1840. *Parish of Perranzabuloe*

9 Appendices

9.1 Appendix 1 Brief

BRIEF FOR ARCHAEOLOGICAL RECORDING

Date: 01/12/2010

Address: The Airfield Trevellas Airfield Perranporth Cornwall TR5 0XS

Applicant: University of Plymouth

Agent:

Historic Environment Planning Advice Officer: Dan Ratcliffe, Historic Environment Advisor, Cornwall Council Historic Environment Service, St Austell One Stop Shop, 39 Penwinnick Road, St Austell, Cornwall PL25 5DR. 01726 223463 dratcliffe@cornwall.gov.uk

Local Planning Authority Officer:

This brief is only valid for six months. After this period the Historic Environment Planning Advice Officer (HEPAO) should be contacted. Any written scheme of investigation (WSI) resulting from this brief shall only be considered for the same period. The contractor is strongly advised to visit the site before completing their WSI as there may be implications for accurately costing the project.

Contractors Written Scheme of Investigation (WSI)

No ground works are to be undertaken until the HEPAO and the Local Planning Authority (LPA) have approved the archaeological contractor's WSI.

1 Introduction

This brief has been written by the HEPAO and sets out the minimum requirements for archaeological recording at the above site. This work is required to discharge condition 5 of planning application PA10/05731 placed on the development.

2 Site Location and Description

The site is located approximately one kilometre southwest of Perranporth in the civil parish of Perranzabuloe at the northern end of the airfield (NGR SW 74090 53220) The site is situated on an open and gently undulating coastal plateau to the southeast of 90m high sea cliffs. The bedrock is recorded as Gramscatho Group metamudstone and metasandstone (British Geological Survey) with a dyke of Permian Felsite running northeast from Hanover Cove across the site. An area of St Agnes Intrusion granite lies immediately to the northwest at Cligga Head, formed around 300 million years ago. As the granite cooled cracks opened and filled with minerals leached from the rock, forming veins of quartz rich with tin and copper. Above the granite, superficial deposits of beach and tidal sand and silt are recorded (British Geological Survey).

The site is currently occupied by 'Perranporth Airfield' originally operated by the RAF as 'Trevellas' much of which is now Scheduled as monument no. 32957: "World War II Fighter Pens and Defences part of RAF Perranporth" and also includes part of the St Agnes Mining District of the Cornish Mining World Heritage Site.

3 Planning Background

Condition 5 of decision no PA10/05731 reads;

No development shall take place within the site edged red on drawing number 05731.1001 until the applicant has secured and implemented a programme of archaeological work in accordance with a written scheme of investigation to be submitted by the applicant and approved in writing by the Local Planning Authority.

Works on this site are also subject to 'Scheduled Monument Consent' granted by English Heritage on the understanding that below ground works would be subject to appropriate archaeological monitoring secured by planning condition.

The applicant, their agents and any subcontractors should note that where there are other conditions requiring satisfaction in advance of the commencement of works on site; it is the responsibility of the applicant to liase with the planning officer concerned to ensure that the timetabling of these works is managed .

4 Archaeological Background

Perranporth airfield was built during what has been termed the RAF's 'expansion period', characterised by the rapid development of airfield and related infrastructure in the years immediately preceding World War II. Originally designed for 1 squadron of Spitfire fighter aircraft, there were eventually 3 stationed here. Much of the site, including the bulk of the present application area and the building proposed to be used as a laboratory in the application documents, are legally designated as a Scheduled Monument. This means they have been identified by the Secretary of State as 'nationally important', and as such are subject to statutory protection. English Heritage describes the site as "outstandingly well preserved", providing "a very good example of the provision for fighter units, having been built for this purpose and used as such throughout the War".

The St Agnes Mining District of the Cornish Heritage Mining World Heritage Site has been inscribed by UNESCO for its 'Outstanding Universal Value' in representing a 'coherent series of highly distinctive cultural landscapes' resulting from the industrial transformations of the period 1700-1914. The National Mapping Programme (NMP) and historic maps record mining activity in the vicinity of this application within the WHS boundary.

The Cornwall and Scilly Historic Environment Record also records prehistoric sites in the vicinity, notably a group of seven Bronze Age Barrows across Trevellas Down, some of which may have been damaged by the construction of the airfield.

5 Requirement for Work

Ground works associated with the development may disturb buried archaeological remains. It is therefore important that a suitably qualified archaeologist(s) is/are present during these works in order to identify and record any features of interest.

The site specific aims are to:

- Establish the presence/absence of archaeological remains
- Determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- To establish the nature of the activity on the site
- To identify any artefacts relating to the occupation or use of the site
- To provide further information on the archaeology of …… from any archaeological remains encountered

6 General Methodology

6.1 All stages of the investigation shall be supported by a written scheme of investigation (WSI).

6.2 The archaeological contractor is expected to follow the code of the Institute for Archaeologists (IfA).

6.3 Details including the name, qualifications and experience of the site director and all other personnel (including specialist staff) shall be included within the WSI.

6.4 All of the latest Health and Safety guidelines shall be followed on site.

6.5 The IfA's Standards and Guidance should be used for additional guidance in the production of the WSI, the content of the report and the general execution of the project.

6.6 Terminology will be consistent with the English Heritage Thesaurus.

7 Archaeological Recording Methodology

7.1 Prior to the commencement of on site works the archaeological contractor should familiarise themselves with the site by examining the information held by the Cornwall and Scilly Historic Environment record (HER), the Cornwall Records Office at Truro and the Cornwall Centre at Redruth, where appropriate.

7.2 An archaeologist shall be present during all ground works associated with the development, unless circumstances dictate a different approach. A toothless ditching bucket can be used for the removal of any overburden until the first archaeological horizon is exposed. This will then be hand cleaned as appropriate.

7.3 Any surviving remains which will be disturbed or destroyed by the development shall be archaeologically excavated and recorded.

7.4 Details of how all archaeological contexts and artefacts will be excavated, surveyed, recovered and recorded shall be provided. The site will be tied into the national grid.

7.5 Details of the site planning policy shall be given in the WSI. The normal preferred policy for the scale of archaeological site plans is 1:20 and sections 1:10, unless circumstances indicate that other scales would be more appropriate.

7.6 The photographic record shall consist of prints in both black and white and colour together with the negatives. Digital photography may be used for report illustration. For both general and specific photographs, a photographic scale shall be included. In the case of detailed photographs it may be appropriate to include a north arrow. The photographic record shall be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

7.7 If significant archaeological deposits are exposed, all works must cease and a meeting convened with the client and the HEPAO to discuss the most appropriate way forwards.

8 Finds

8.1 All finds, where appropriate, will be retained from each archaeological context excavated.

8.2 All finds, where appropriate, shall be washed.

8.3 All pottery, and other finds, where appropriate, shall be marked with the site code and context number.

8.4 The WSI shall include an agreed list of specialist consultants, who may be required to conserve and/or report on finds, and advise or report on other aspects of the work including environmental sampling.

8.5 The requirements for conservation and storage shall be agreed with the Royal Cornwall Museum prior to the start of work, and confirmed in writing to the HEPAO.

8.6 Finds work should be to accepted professional standards and adhere to the Institute for Archaeologists *Guidelines for Finds Work*.

8.7 Environmental sampling should be guided by *Environmental Archaeology* (English Heritage Centre for Archaeological Guidelines. 2001/02).

8.8 Further English Heritage guidance that may be helpful includes *Geoarchaeology* (2004) and *Archaeometallurgy* (2001).

8.9 The English Heritage Advisor for Archaeological Science will be able to provide archaeological science advice if required (Vanessa Straker 0117 975 0689).

9 Human Remains

9.1 Any human remains which are encountered must initially be left in situ and reported to the HEPAO and the appropriate authorities (the Coroner), where appropriate. If removal is necessary this must comply with the relevant Government regulations. If burials are encountered their legal status must be ascertained and recording and/or removal must comply with the legal guidelines.

9.2 If human remains are not to be removed their physical security must be ensured, preferably by back filling as soon as possible after recording.

9.3 If human remains are to be removed this must be done with due reverence and in accordance to current best practice and legal requirements. The site must be adequately screened from public view. Once excavated, human remains must not be exposed to public view.

10 Results

10.1 The full report including all specialist assessments of artefact assemblages shall be submitted within a length of time (but not exceeding six months) to be agreed between the applicant and the archaeological contractor, Cornwall County Council Historic Environment Service and the Royal Cornwall Museum. A further digital copy shall be supplied on CD-ROM preferably in 'Adobe Acrobat' PDF format.

10.2 The archaeological contractor will undertake the English Heritage/ADS online access to the index of archaeological investigations (OASIS).

10.3 This report will be held by the Cornwall and Scilly Historic Environment Record (HER) and made available for public consultation.

10.4 The report must contain:

- A concise non-technical summary of the project results.
- The aims and methods adopted in the course of the investigation.
- A discussion of the archaeological findings in terms of both the site specific aims and the desk based research.
- A location map, a drawing showing those areas examined as part of the archaeological recording, and copies of any archaeological plans and sections. All plans shall be tied to the national grid.
- All specialist reports and assessments.
- A summary of the archive contents and date of deposition.
- A context register with brief descriptions shall be included as an appendix.
- A copy of the brief and the approved WSI will be included as an appendix.

10.5 A contingency shall be made within the costs for full publication in an appropriate journal. The HEPAO will notify the contractor of such a need within four weeks of receipt of the report.

11 Archive Deposition

11.1 An ordered and integrated site archive will be prepared in accordance with: *Management of Research Projects in the Historic Environment (MoRPHE) English Heritage 2006* upon completion of the project. The requirements for archive storage shall be agreed with the Royal Cornwall Museum.

11.2 If the finds are to remain with the landowner a full copy of the documentary archive shall be housed with the Cornwall County Record Office and with the Courtney Library of the Royal Institution of Cornwall.

11.3 The archive including a copy of the written report shall be deposited with the Royal Cornwall Museum within two months of the completion of the full report and confirmed in writing with the HEPAO.

11.4 Where there is only a documentary archive this will be deposited with the Cornwall Record Office as well as the Courtney Library of the Royal Institution of Cornwall.

11.5 A copy of the report will be supplied to the National Monuments Record (NMR) in Swindon.

11.6 A summary of the contents of the archive shall be supplied to the HEPAO.

11.7 Only on completion of 11.1 to 11.5 (inclusive) will there be a recommendation for the discharge of any archaeological recording condition.

12 Monitoring

12.1 The HEPAO will monitor the work and should be kept regularly informed of progress.

12.2 Notification of the start of work shall be given preferably in writing to the HEPAO at least one week in advance of its commencement.

12.3 Any variations to the WSI shall be agreed with the HEPAO, preferably in writing, prior to them being carried out.

Archaeological Consultancy Ltd.

9.2 Appendix 2 Written Scheme of Investigation

Perranporth Airfield, Perranzabuloe, Cornwall.

Archaeological Watching Brief: Written Scheme of Investigation.

Author:	**Hayley Goacher BA (Hons) PIfA**
Report Date:	**17.12.2010**
Client:	**Plymouth University**
Project No:	**AC10010E**
Planning Reference:	**PA10/05731**
Statutory Protection:	**World Heritage Site**
	Scheduled Monument 32957
Proposal:	**Temporary radar installation**
Civil Parish:	**Perranzabuloe**
District:	**Central 1**
County:	**Cornwall**
Country:	**England**
National Grid Reference:	**from SW 74137 53212**
	to SW 74379 53395

Archaeological Consultancy Limited
Goodagrane, Halvasso, Penryn, Cornwall, TR10 9BX
Tel 0044 (0)1326 341 061
E-mail enquiries@archaeologicalconsultancy.com
Website www.archaeologicalconsultancy.com
England and Wales Registered Company No. 5784610

1 Summary

The proposed temporary radar station site at Perranporth Airfield (from NGR SW 74137 53212 to SW 74379 53395), forms part of scheduled monument 32957: World War II Fighter Pens and Defences part of RAF Perranporth and also includes part of the St Agnes Mining District of the Cornish Mining World Heritage Site. The airfield also sits within a rich mosaic of historic landscapes with significant time-depth (Ratcliffe 2010).

Archaeological Consultancy Limited (AC) have been commissioned by Daniel Conley of Plymouth University, to provide a written scheme of investigation for an archaeological watching brief, in accordance with a brief provided by Daniel Ratcliffe, Historic Environment Planning Advice Officer.

2 Site location

2.1 Location

The site is located approximately one kilometre southwest of Perranporth in the civil parish of Perranzabuloe at the northern end of the airfield (from NGR SW 74137 53212 to SW 74379 53395, Figure 1).

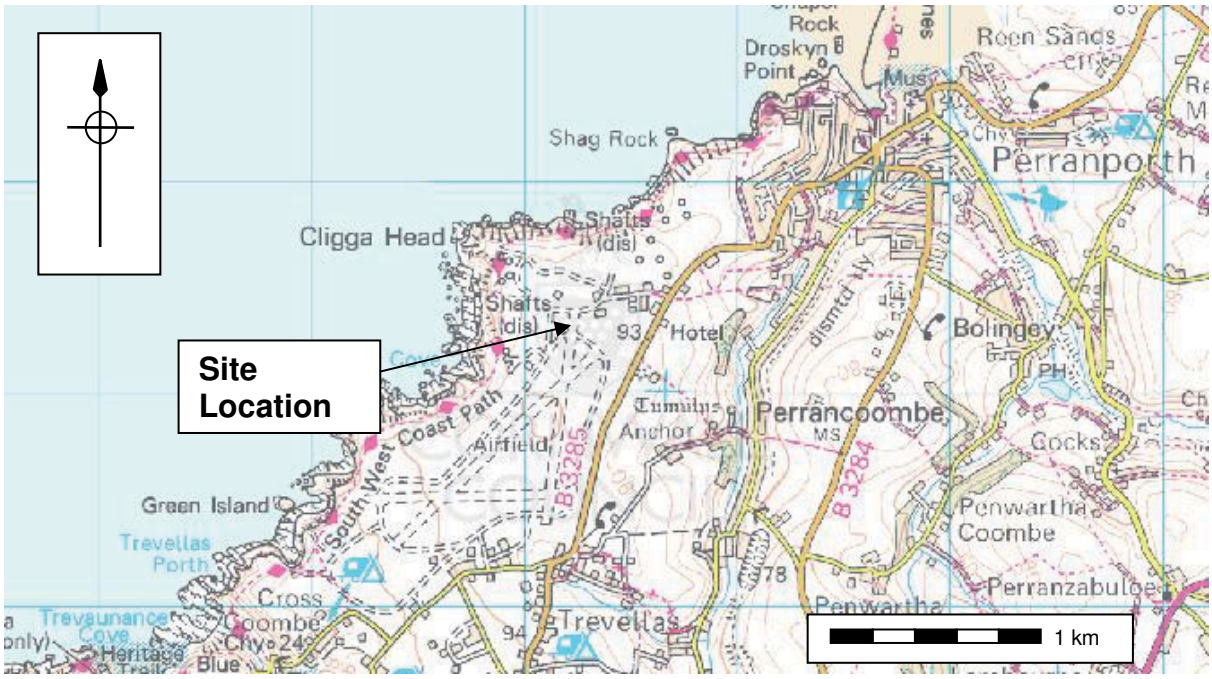

Figure 1: Site Location. Courtesy of Cornwall County Council.

2.2 Topography

The site is situated on an open and gently undulating coastal plateau to the southeast of 90m high sea cliffs.

2.3 Geology

The bedrock is recorded as Gramscatho Group metamudstone and metasandstone with a dyke of Permian Felsite running northeast from Hanover

Cove across the site. An area of St Agnes Intrusion granite lies immediately to the northwest at Cligga Head, formed around 300 million years ago. As the granite cooled cracks opened and filled with minerals leached from the rock, forming veins of quartz rich with tin and copper. Above the granite, superficial deposits of beach and tidal sand and silt are recorded (Mossop, 2010; British Geological Survey).

3 Project background

3.1 Development background

Following an unsuccessful planning application (T25/0287/10/B) and collaboration between Phil McMahon of English Heritage and Dan Ratcliffe (Historic Environment Planning Advice Officer) the client commissioned an archaeological assessment to provide additional information. The resulting archaeological recommendations support the revised planning application (PA10/05731). Planning permission was granted subject to a number of conditions including Condition 5:

> *No development shall take place within the site edged red on drawing number 05732.1001 until the applicant has secured and implemented a programme of archaeological work in accordance with a written scheme of investigation to be submitted by the applicant and approved in writing by the Local Planning Authority.*
>
> *Reason: In order to protect any archaeological value of the site in accordance with the aims and intentions of the Cornwall Structure Plan (2004) saved Policies 1 and 2 and Carrick District Wide Local Plan (1998) saved Policies 4S and 4T.*

Scheduled Monument Consent for the works was granted by English Heritage subject to the following conditions (Lennon 2010):

(a) The works to which this consent relates shall be carried out to the satisfaction of the Secretary of State, who will be advised by English Heritage. At least 4 weeks' notice (or such shorter period as may be mutually agreed) in writing of the commencement of work shall be given to *Phil McMahon, English Heritage, Inspector of Ancient Monuments (29 Queen Square, Bristol, BS1 4ND – 0117 975 0699 – phil.mcmahon@english-heritage.org.uk)* in order that an English Heritage representative can inspect and advise on the works and their effect in compliance with the consent.

(b) No ground works/building works shall take place until the applicant has confirmed in writing the commissioning of a programme of archaeological supervision and recording, before and/or during the development, in accordance with a written scheme of investigation which has been submitted to and approved by the Secretary of State advised by English Heritage.

(c) All those involved in the implementation of the works granted by this consent must be informed by the owner, occupier and/or developer that the land is designated as a scheduled monument under the Ancient

Monuments and Archaeological Areas Act 1979 (as amended); the extent of the scheduled monument as set out in both the scheduled monument description and map; and that the implications of this designation include the requirement to obtain Scheduled Monument Consent for any works to a scheduled monument from the Secretary of State prior to them being undertaken.

(d) Equipment and machinery shall not be used or operated in the scheduled area in conditions or in a manner likely to result in damage to the monument/ground disturbance other than that which is expressly authorised in this consent.

(e) A report on the archaeological recording shall be sent to the County Sites and Monuments Record/Historic Environment Record and to Phil McMahon at English Heritage within 3 months of the completion of the works (or such other period as may be mutually agreed).

A brief for the archaeological watching brief was provided by Ratcliffe (2010). As a desk based assessment was completed for the earlier archaeological assessment, no further research will be undertaken unless necessitated by the findings of the watching brief.

3.2 Archaeological and Historical background

The brief (Ratcliffe 2010) records:

> Perranporth airfield was built during what has been termed the RAF's 'expansion period', characterised by the rapid development of airfield and related infrastructure in the years immediately preceding World War II. Originally designed for 1 squadron of Spitfire fighter aircraft, there were eventually 3 stationed here. Much of the site, including the bulk of the present application area and the building proposed to be used as a laboratory in the application documents, are legally designated as a Scheduled Monument. This means they have been identified by the Secretary of State as 'nationally important', and as such are subject to statutory protection. English Heritage describes the site as "outstandingly well preserved", providing "a very good example of the provision for fighter units, having been built for this purpose and used as such throughout the War".
>
> The St Agnes Mining District of the Cornish Heritage Mining World Heritage Site has been inscribed by UNESCO for its 'Outstanding Universal Value' in representing a 'coherent series of highly distinctive cultural landscapes' resulting from the industrial transformations of the period 1700-1914. The National Mapping Programme (NMP) and historic maps record mining activity in the vicinity of this application within the WHS boundary.
>
> The Cornwall and Scilly Historic Environment Record also records prehistoric sites in the vicinity, notably a group of seven Bronze Age Barrows across Trevellas Down, some of which may have been damaged by the construction of the airfield.

4 Project aims and objectives

The principal aims will be to:

- Establish the presence/absence of archaeological remains
- Determine the extent, condition, nature, character, date and significance of any archaeological remains encountered
- To establish the nature of the activity on the site
- To identify any artefacts relating to the occupation or use of the site
- To provide further information on the mining activity and World War II airfield from any archaeological remains encountered

To achieve these aims the report will:

- Characterise and draw together further historical and archaeological information about the site and its environs, specifically for the 19th and 20th Centuries.

5 Method statement

AC follow the IfA code of conduct and refer to the IfA's Standards and Guidance as appropriate.

5.1 Watching Brief Methodology

A JCB or similar machine equipped with a toothless bucket will excavate the trenches under archaeological direction along the line of the proposed cable route to facilitate the recognition of archaeological deposits.

Soil will be removed under archaeological supervision down to the bedrock, the top of any archaeological deposits, or to the base of the required electrical trench, as appropriate. The trenches are likely to have a maximum approximate depth of 500mm.

Any significant archaeological remains shall be excavated by hand, photographed (see below) and recorded at 1:10 (sections) and 1:20 (plans) as standard, though other scales may be used.

Scaled monochrome photographs will document identified archaeology within the study area. Scaled digital colour photography may augment this to provide general and detailed shots and may be used within the report. All negatives contact prints and where appropriate, CDs will be included in the archive accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

Significant finds will be cleaned, stabilised and marked with accession and context number and packed in accordance to RCM's guidelines. Finds will be described and illustrated as appropriate in advance of any necessary specialist analysis, conservation, or discard. Any discard follows guidance from RCM and will be more specifically advised on at post-excavation stage. The likely requirements for conservation and storage have been agreed in outline with the RCM, though detailed requirements will be re-assessed following completion of fieldwork.

If very significant archaeological deposits are exposed, or objects with very significant conservation costs, all work will cease and a meeting will be convened with AC staff, the client, the HEPAO, the English Heritage Inspector of Ancient Monuments and relevant RCM staff member if appropriate, to discuss the most appropriate way forwards.

Human Remains

Any human remains which are encountered will initially be left *in-situ* and reported to the HEPAO and Coroner, as appropriate, and accorded appropriate respect.

Their legal status will be ascertained and recording and/or removal will comply with legal guidelines.

If human remains are not to be removed their physical security will be ensured, preferably by back filling as soon as possible after recording.

If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view and excavated human remains will not be exposed to public view.

Treasure

Any finds believed to be defined by the recent Treasure Act will be recorded appropriately using the above methodology. Advice will be sought from the Portable Antiquities Scheme Officer and the find(s) will then be reported to the coroner within 14 days as appropriate.

Environmental Sampling

Due to 20th Century disturbance and minimal depth of excavations, paleo-environmental sampling is not likely to be necessary, though this will be assessed on site.

Where appropriate, samples will be retrieved to obtain evidence for the date and function of significant features. Animal and burnt bone will be sampled by context as appropriate with 100% samples standard for likely medieval or earlier material. Other samples may include worked wood, structural timbers and other structural materials, 40 litre or smaller soil samples from primary deposits for wet sieving, chemical, lipid and pollen analysis and soil profiling. A number of these samples are likely to be discarded following initial post-excavation analysis if they are found to be of less significant contexts.

5.2 Report

A single archive report will be prepared to describe the results of the archaeological work. A digital version will also be supplied on CD-ROM for the HER. The final report will contain: summary, aims and methods, discussion, conclusions, recommendations of the potential of the results for further analysis, location and other relevant plans tied in to the OS grid.

Copies of the archive report will be submitted to: the client; the County Historic Environment Record (HER); Cornwall Record Office; National Monuments Record (NMR) in Swindon, Phil McMahon at English Heritage and all significant contributors where (with the exception of the client's and contributors' copies) they will be available for public consultation.

5.3 Archive

The site archive will be prepared in line with the brief and housed at the offices of Archaeological Consultancy Ltd, Goodagrane, Halvasso, Penryn, Cornwall, TR10 9BX pending transferral.

The archive will be deposited in a suitable form with the Cornwall Record Office (documentary only) or at the Royal Cornwall Museum if other material forms part of the archive, within two months of the completion of the final report and confirmed in writing with the HEPAO along with a summary of the archive contents. Both repositories have agreed in principal to accept the archive produced as required. Any necessarily longer timescales for archive transferral to the Royal Cornwall Museum will be confirmed to the Historic Environment Planning Advice Officer and Inspector of Ancient Monuments following completion of the fieldwork. Appropriate interim storage will be provided.

5.4 Web-based publications

An entry to the Online Access to the Index of Archaeological Investigations (OASIS) shall be submitted prior to project completion, and a digital project report shall be deposited with the Archaeology Data Service, via the OASIS form, upon completion

5.4.1 Dissemination

Contingency has been allowed for further archaeological recording, specialist reports and a paper for Cornish Archaeology or other appropriate journal if significant archaeological deposits are encountered.

6 Project management and structure

6.1 Staff

The project will be managed by Matt Mossop (AC) who will direct the watching brief, and compile the report assisted by Hayley Goacher or another archaeologist of similar ability.

Matt Mossop MA MGSDip MIAI Project Manager

Matt has extensive archaeological experience in England, France and Ireland from 1992 onwards, becoming a licensed director in Ireland (2001). He has directed numerous excavations and presented papers for the World Archaeological Congress, Royal Society of Antiquaries of Ireland, universities and local groups in Ireland and the UK.

Hayley Goacher BA (Hons) PIfA Project Officer

Hayley completed her BA in archaeology at The University of Durham in 2009 and has archaeological experience from 2004 onwards, of both excavation and post-excavation, principally with contractual archaeological firms. She joined AC in July 2010 and has since undertaken a number of site assessments, walkover surveys photographic surveys, watching briefs and evaluations, most recently including Nancegollan Farm, 54-55 Castle St and Perranporth Airfield.

Whilst we endeavour to avoid changes to senior project staff, AC reserve the right to change the nominated personnel if necessary.

6.2 Project facilities and infrastructure

The project will be based at the AC office in Halvasso, Penryn. AC has a computer network running Windows XP Professional and Vista. Report texts are generated in Word 2007.

6.3 Timetable

The fieldwork is anticipated to commence as soon as we have approval from the Local Planning Authority and English Heritage and suitable notice has been given to each party. The fieldwork stage of the project is expected to take one to three days.

An archive report will be completed within 3 months of the end of the fieldwork. If the site proves complex or specialist reports are required, an interim statement will be produced in the same time-frame. The deposition of the archive will be completed within 2 months of the completion of the report.

6.2 Health and safety

AC complies with relevant health and safety guidelines and legislation. A risk assessment will be prepared for the site work and all staff will be briefed on the contents of the final version. PPE will be issued and used as required.

6.3 Insurance

AC has adequate insurance for employer's liability, public liability and professional indemnity. Further details are available on request.

7 Bibliography

British Geological Survey www.bgs.ac.uk/geologyviewer accessed 9/12/2010

Lennon, J. 2010. Letter to Daniel Conley regarding application for Scheduled Monument Consent, dated 27th September.

Mossop, M. 2010. Perranporth Airfield, Perranzabuloe, Cornwall. Archaeological Assessment. Unpublished AC report.

Ratcliffe, D. 2010. Brief for Archaeological Recording Perranporth Airfield. Unpublished report for Cornwall Council.

9.3 Appendix 3 Context Register

Context	Type	Fill of/by	Area	Description	Dimensions (LxWxD) in m	Interpretation	References	Date	Initials
1	Deposit		Across site	Brown silt with occasional modern glass bottles and fragments	Av depth 0.3	Topsoil		13/01/2011	HLG
2	Deposit		Across site	Compact, light orangey-brown sandy clay.	Depth ≥0.35	Natural boulder clay		13/01/2011	HLG
3	Deposit		T2	Moderately compact, light orangey-brown sandy clay.	2.2x0.4x0.25	Re-deposited natural	D2	13/01/2011	HLG
4	Deposit		T2	Dark grey-brown slightly clayey sandy-silt with angular stone fragments	58E/W x ≥0.4x0.4	WWII levelling layer including mine waste and topsoil	D2	13/01/2011	HLG
5	Build		T2	Tar coated angular slate shale fragments 10-50mm	105N/S x 42.5 x av 0.5	WWII tarmac runway extension	D1, D3, D3a, D6	13/01/2011	HLG
6	Deposit		T2	Rubble layer of angular granite and slate/shale, ≤200mm in maximum dimensions with orange-brown sandy clay	105N/S x 44.1 x av max 0.4	WWII runway extension foundation	D3, D3a, D6	13/01/2011	HLG
7	Cut	[5] (6)	T2	Linear cut with flat base	107N/S x 42.5 x ≥0.4	Runway extension foundation	D3	13/01/2011	HLG
8	Cut	(9) (1)	T3	Linear apparently E/W sharp break of slope at the top and steep sloping sides	1.45 width x ≥0.2 depth	Ditch/pit	D4	13/01/2011	HLG
9	Deposit	[8]	T3	Light grey clay	1.45n/s x ≥0.4 e/w	Redeposited natural boulder clay	D4	13/01/2011	HLG
10	Cut	(1) (11)	T3	Free-draining cut with clear break of slope at the top and steep sloping sides.	11.6 n/s x ≥0.4m e/w x >0.05 depth	Possible mine working	D5	13/01/2011	HLG
11	Deposit	[10]	T3	Light grey clay	11.6 n/s x ≥0.4 e/w x	Redeposited natural boulder	D5	13/01/2011	HLG

					>0.05 depth	clay			
12	Cut	(13)	T3	E/W linear, sharp break of slope at the top and near vertical sides	>5m x 0.8m x >0.4	Stone-lined drain for perimeter track	D6	13/01/2011	HLG
13	Deposit	[12]	T3	Very angular, poorly sorted Slate/shale and granite (fragments averaging 50-200mm diameter) Similar to (6) but more loosely packed and less clay.	>5m x 0.8m x >0.4	Fill of drain	D6	13/01/2011	HLG
14	Cut	(15)	T3	Linear vertically sided cut	15.5m x 0.4 x ≥0.4 depth	Service trench for drainage pipes	D9	14/01/2011	HLG
15	Deposit	[14]	T3	Concrete sealing ceramic pipes within service trench	15.5m x 0.4 x0.2	Concrete reinforcement for ceramic drain pipes	D9	14/01/2011	HLG
16	Cut	[17] (18) (1)	T4	Steep/vertical sided cut with a flat base	1.6m ne/sw x >0.4 x ≥0.6 depth	Construction trench for inspection chamber and associated drain	D10	14/01/2011	HLG
17	Build	[16]	T4	Brick built inspection chamber exposed at nw side of trench. Chamber built of orange-red bricks with white quartz inclusions laid in stretcher bond with cement mortar	1.1 ne/sw x >0.15 x >0.3 depth	Inspection chamber	D10	14/01/2011	HLG
18	Deposit	[16]	T4	Light yellow-orange ceramic drainage pipes	140mm diameter	Drainage pipe	D10	14/01/2011	HLG
19	Cut	(20)	T5	Ne/sw linear, with sharp break of slope at the top, near vertical sides	0.44 width x ≥0.75 depth	Drain	D13	14/01/2011	HLG
20	Deposit	[19]	T5	Angular granite and slate/shale fragments ≤200mm diameter, moderately sorted	0.44 width x ≥0.75 depth	Rubble fill of drain	D13	14/01/2011	HLG
21	Cut	(22)	T5	Ne/sw linear, with sharp break of slope at the top, near vertical sides	0.5 width x ≥0.45 depth	Drain	D14	14/01/2011	HLG

22	Deposit	[21]	T5	Angular granite and slate/shale, ≤300mm diameter, moderately sorted	0.5 width x ≥0.45 depth	Rubble fill of drain	D14	14/01/2011	HLG
23	Build		T3 T5	Tar coated angular slate/shale fragments, 10-50mm diameter	15.5 width x av 0.08 depth	Tarmac surface of perimeter track	D7, D8, D13, D14	14/01/2011	HLG
24	Deposit		T3 T5	Loose light yellow-brown very sandy clay and 100-250mm diameter very angular, granite and slate/shale.	16 width x ≥0.4 depth	Hardcore foundation for perimeter track	D7, D8, D13, D14	14/01/2011	HLG
25	Build		T6	10-50mm diameter, angular tar coated slate/shale fragments	Across pen x 0.1 depth	Tarmac surface of fighter pen	D12	14/01/2011	HLG
26	Deposit		T6	100mm diameter very angular granite and slate/shale 60% and brown silt	Across pen x ≥0.35 depth	Hardcore foundation for fighter pen	D11, D12	14/01/2011	HLG
27	Build		T6	Low bank of brown silt similar to topsoil. North of fighter pen.	25x2.8x0.25	Upcast topsoil from fighter pen construction	D11	14/01/2011	HLG
28	Deposit		T3	Brown sandy-clay and sub-angular stone.	0.4 x >0.5 x >0.4	Mine waste	D16	14/01/2011	HLG
29	Deposit		T3	Brown sandy-clay and sub-angular stone.	16 x >0.5 x >0.4	Mine waste	D16	14/01/2011	HLG
30	Deposit	[14]	T3	2 parallel ceramic drainage pipes sealed by concrete (15)	140mm diameter	Drainage pipes	D16	14/01/2011	HLG