



Penzance Park and Ride, Cornwall
Archaeological Watching Brief

Cornwall Archaeological Unit

Report No: 2017R019

Penzance Park and Ride, Cornwall

Archaeological watching brief

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Acknowledgements

This study was commissioned by Andy Berryman of COMAC Contracting and was carried out by Cornwall Archaeological Unit, Cornwall Council.

The Project Manager at CAU was Dr Andy Jones.

The views and recommendations expressed in this report are those of Cornwall Archaeological Unit and are presented in good faith on the basis of professional judgement and on information currently available.

Freedom of Information Act

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Cover illustration

A sample of the material within the landfill, indicating deposition of material in this area during the mid-1960s.

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Abbreviations

CAU	Cornwall Archaeological Unit
CIfA	Chartered Institute for Archaeologists
HER	Cornwall and the Isles of Scilly Historic Environment Record
MCO	Monument number in Cornwall HER
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

1 Summary

Cornwall Archaeological Unit was commissioned by CORMAC Contracting to undertake an archaeological watching brief on an area of land at Eastern Green, Penzance which is to be developed as a Park and Ride facility. The site is part of an area backing Mounts Bay which had been reclaimed from marshland. Peat deposits underlie this area and have been identified as having significant potential to provide material for palaeoenvironmental analysis. Ground levels locally are about 4.5m OD and were raised to this level through the deposition of landfill material during the 20th century. The area was most recently used as the carpark for Penzance Heliport from 1964 to 2012 when this facility was closed down.

Given that the majority of the new park and ride facility site is to be built up above pre-existing levels to minimise flood risk as a result of climate change the opportunities to record and sample below ground deposits were very limited. The excavation of a sewerage trench to a maximum of 1.3m below ground level bottomed on a layer of natural clay at the base of the landfill material; the peat deposits were not exposed.

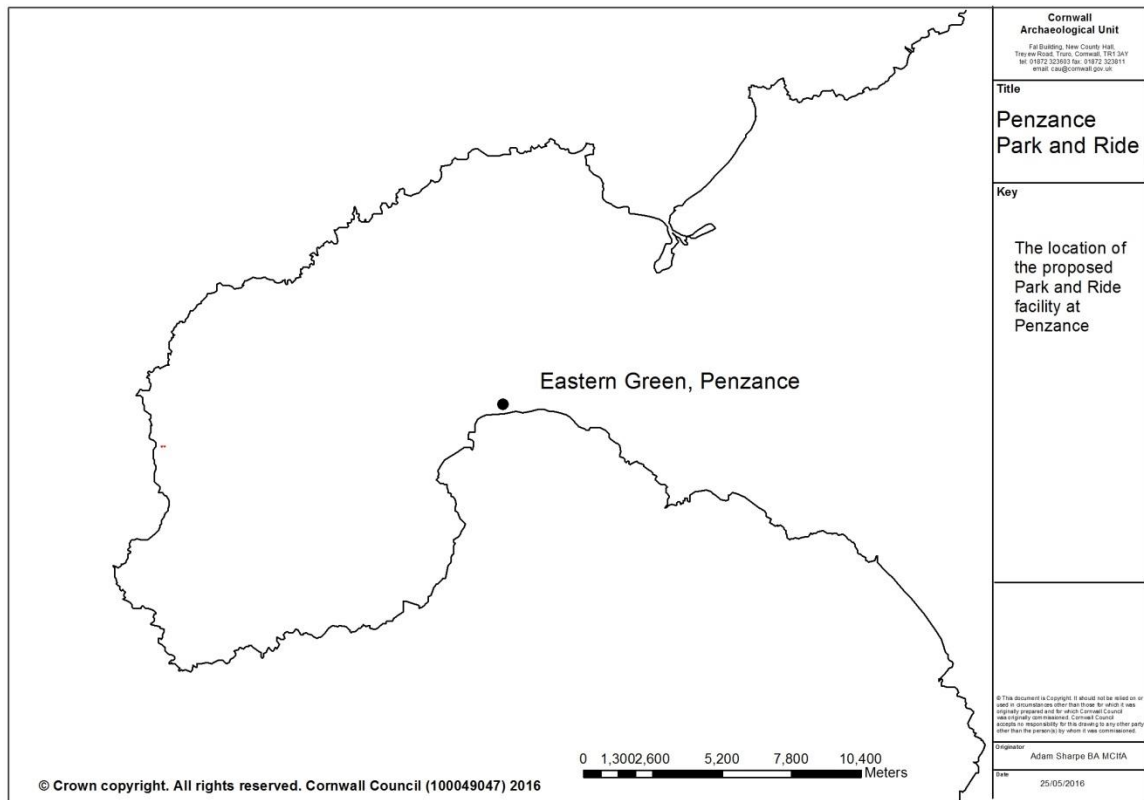


Fig 1. The location of the Penzance Park and Ride, Eastern Green, Penzance.

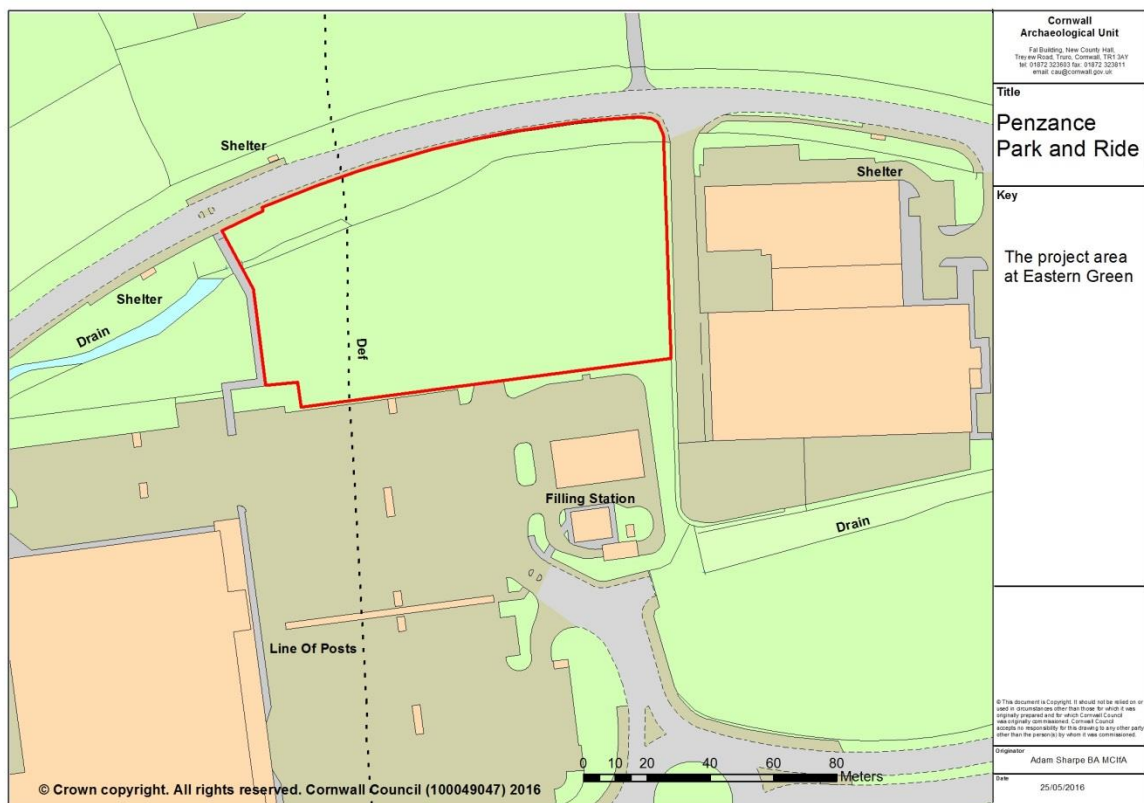


Fig 2. The extent of the area to be re-developed as the Penzance Park and Ride facility.

2 Introduction

2.1 Project background

Cornwall Archaeological Unit was commissioned by Andy Berryman of CORMAC Contracting in February 2017 to undertake an archaeological watching brief on an area of land at Eastern Green, Penzance which is to be developed as a Park and Ride facility for 169 cars. It will also provide 11 disabled driver spaces and bays for 8 coaches. The development is covered by a planning condition (PA10/08714, as modified by PA14/09067 as part of the wider Sainsbury's development) (Figs 1 and 2). The study area had been used as a carpark for Penzance Heliport from 1964 to 2012 when this facility was closed down. A replacement heliport is currently proposed within fields not far to the north-east of the original site.

2.2 Aims

The purpose of the project is to undertake an archaeological watching brief during the groundworks stage of the development of the park and ride facility at the eastern end of Penzance, and to produce a report on the results of the fieldwork.

The keys aims of the watching brief are:

- Undertake an archaeological watching brief during groundworks which will result in the disturbance and exposure of *in situ* peat deposits known to underlie parts of the site.
- Determine the extent, condition, nature, character, date and significance of any archaeological remains encountered.
- Establish the nature of previous human activity in this area near Penzance.
- Retrieve and identify any artefacts relating to the former occupation of this area.
- If this is exposed, undertake the sampling of *in situ* peat for subsequent paeloenvironmental analysis.

The project objective is to produce a report setting out the results of the archaeological recording and watching brief and placing them in their archaeological and landscape context. A further objective is to create an entry to the Historic England OASIS/ADS national online database of archaeological projects.

2.3 Methods

(As set out in the approved WSI for this work).

All work has been undertaken according to the appropriate Institute for Archaeologists *Standards and Guidance*. Staff followed 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.

2.3.1 Desk-based assessment

A desk-based assessment and walkover survey was undertaken in May 2016 (Sharpe 2016).

2.3.2 Fieldwork

The CAU Archaeologist was on site during the stripping of the topsoil or other existing surface materials over all areas of the site which were to be subjected to below-ground disturbance.

All groundworks resulting in potential intrusion into deposits underlying the current surfacing materials and underlying landfill material were, wherever possible, undertaken under archaeological supervision using a machine fitted with a toothless bucket. Following excavation to depths where potentially significant surfaces or deposits were likely to be exposed, the ground surface was inspected by the project

archaeologist. Any archaeological features or layers exposed were to be excavated by hand and recorded by written description, plan, section and photographic record as appropriate. The level of recording undertaken was appropriate to the character/importance of the archaeological remains.

Should *in situ* peat deposits become exposed during the trenching activities, advice was to be sought from the Historic England Science Adviser (South West) on the most appropriate sampling strategy.

Recording - general

Site drawings (plans, sections, locations of finds) were made by pencil (4H) on drafting film; plans are to be linked to the Ordnance Survey Landline (electronic) map; all drawings include standard information: site details, personnel, date, scale, north-point and location. All features and finds were to be accurately located at an appropriate scale. Sections were to be drawn at 1:10 and plans at 1:20.

All archaeological contexts were to be described to a standard format linked to a continuous numbering sequence.

Photography: scaled monochrome photography was to be used as the main record medium, with colour digital images used selectively and for illustrative purposes, and included both general and site specific photographs. All archive photographs were to include a scale whilst photographs of detail were to include a north arrow. Drawings and photographs were to be recorded in a register giving details of feature number and location.

Sealed/undisturbed archaeological contexts in the form of buried soils, layers or deposits within significant archaeological features were to be sampled for environmental evidence and dating material. In the event that significant organic remains are encountered, advice was to be requested from the Historic England Science Adviser (South West) concerning an appropriate sampling strategy.

Treatment of finds

- All finds in significant stratified contexts predating 1800 AD were to be collected by context and described. Post medieval or modern finds would be disposed of at the cataloguing stage. Modern artefacts were not to be collected.
- Finds were to be collected in sealable plastic bags which were to be labelled immediately with the context number or other identifier.
- Any samples retrieved for subsequent palaeoenvironmental analysis were to be collected and stored according to advice from the Historic England Science Advisor (South West).

The site archive will initially be stored at ReStore PLC, Liskeard and in due course (when space permits) at Cornwall Record Office.

2.3.3 Post-fieldwork

All project materials and data have been archived according to CAU standards.

The findings of the watching brief have been summarised in this report.

3 Location and setting

The project area has a rectangular outline, reflecting the shape of the former field in which it was developed, extends to approximately 0.8 Hectares and is centred at SW 48703 31401. The site is in the ecclesiastical parish of Gulval; its western section is in the civil parish of Penzance, whilst its eastern section falls within in the civil parish of Ludgvan. Prior to works the site was almost completely level and at an average elevation of 4.8m OD. The area proposed for the development for the Park and Ride facility (Figs 3 and 4) is bounded to the west and south by fencelines defining Sainsbury's carpark, to the east by a fenceline and service roadway to the rear of Halfords and the former B&Q store and to the north by an open service drain and Jelbert Way. The principal vehicle entrance to the Park and Ride was to be created at

the midpoint of the northern edge of the facility, accessing Jelbert Way via a new road bridge over the drain.

The underlying bedrock consists of the Upper Devonian Mylor series slates (whose upper parts have been shown through investigations undertaken in 2013 to have degraded to gravelly clays). These are overlain by clays, gravels, silts and sand across much of the site; over substantial parts of former heliport these were overlain by landfill deposits between 1m and 4m deep, which in turn were covered with a layer of gravelly hardcore in the western part of the site.

Rising sea levels in the period following the last ice age 12,000 years ago (the later Quaternary) reached their current levels about 6,000 years ago during the Flandrian Marine Transgression. The ancient tree trunks, branches and other material which is occasionally exposed on the beaches at Wherrytown, Chyandour and Marazion provide evidence for the effects of these rising sea levels, and were part of a far larger forest which would have extended out under much of Mounts Bay, as well as some way inland. The marshy land which initially formed in its stead allowed deposits of peat to be laid down, but these were gradually overlain with sands and gravels, and the lower lying parts were eventually submerged beneath Mounts Bay.

The development site occupies very low-lying land backing Mounts Bay, much of which was reclaimed from this former marshland during the 19th century following the construction of the shoreline causeway on which the West Cornwall Railway connection between Truro and Penzance was laid in 1852. The Historic Landscape Character of the project area is Recently Enclosed Land (farmland post-medieval) reflecting this process of gradual reclamation of the former marshes. The gently sloping land to the north is recorded as Anciently Enclosed Land (farmland medieval), associated with the medieval settlements of Lanisey (first recorded in 1086 and now renamed Gulval), Poniou (first recorded in 1327) and Pleming (first recorded in 1346).

Geotechnical investigations of the wider Sainsbury's site were undertaken in 2010 and 2013 by Tweedie Evans Consulting utilising a combination of boreholes and test pits. This programme of investigation confirmed the presence of peats, clays, sands and silts overlying degraded bedrock in some areas of the site. In turn this material was found to be covered by a layer of landfill material of variable depth topped with a relatively thin layer of imported hardcore. Boreholes across the wider Sainsbury's site recorded landfill between a minimum of 0.05m and a maximum of 4.6m from surface and peat deposits between a minimum of 1.5m and a maximum of 5.1m from surface (Tweedie Evans 2010 and 2013). Similar borehole profiles have been recorded during the investigation of other sites backing Mounts Bay (BGS website).

4 Designations

4.1 National

No national designations apply to the project area.

4.2 Regional/county

No regional or county designations apply to the project area.

There are no Public Rights of Way across the project area.

5 Site history

(Summarised from Sharpe 2016).

The proposed development area is situated close to land that is classified as 'Anciently Enclosed Land' (Cornwall Council 1996). This is land which has been settled since at least the medieval period and which often contains buried archaeological remains dating to prehistoric and medieval times. To the south of the development area is

Mounts Bay, where a nationally important submerged forest and peat deposits of Neolithic date have been identified.

Known archaeological sites

The project area is situated in an area with significant archaeological potential, which contains evidence of prehistoric, medieval and later activity. The sites which have been identified in the vicinity and which are included in the Cornwall and Scilly HER include:

- Submerged prehistoric forest and peat deposits extending between Penzance Harbour and Long Rock located to the south of the development area (MCO55163), but have been shown from borehole logs (BGS website) to extend northwards under the low-lying former marshland backing Mounts Bay.
- A Neolithic axe-hammer was found not far to the west of the site (MCO576).
- Cropmark boundaries are visible on aerial photographs traversing the development area. They may be associated with ridge and furrow or be drainage ditches of medieval date (MCO51201).
- The development area is set within an area of former field systems of medieval origin.
- The development area is located to the south of the medieval settlement of Lanisey (MCO15284).
- A post-medieval milestone is located to the south of the development area (MCO54230).

Potential sites

There was considered to be some potential for below-ground prehistoric, Romano-British and medieval sites and artefacts to survive within the project area and for the survival of unrecorded buried archaeological remains and artefacts of all periods, together with paeloenvironmental material dating from the Mesolithic period to the early post-medieval period.

Map regression

Map regression analysis undertaken for the project area during the assessment showed how this area developed from low-lying land backing the coast between Chyandour and Marazion. During the early post-medieval period this area did not contain any farming settlements, as these were set back on the slightly higher ground to the north. By the mid-18th century a causeway had been created along the edge of the bay and the reclamation of the former marshland inland was under way. This process continued through the 19th century and into the first part of the 20th century as the result of the creation of a network of drainage ditches, the reclamation effectively being complete by the 1930s.

The reclaimed land closest to Mounts' Bay must have remained rather boggy, and was identified as being suitable for development during the post-war period. The ground levels in parts of this area were raised through the dumping of local landfill material prior to hardcore being spread over the top of the dump. The land now sites industrial estates and retail parks. The northern edge of the former landfill site is bounded by Jelbert Way. A heliport was established at Eastern Green in 1964, though this facility closed in 2012. The heliport buildings were demolished in 2013, and part of the site now sites a Sainsbury's supermarket, fuel station and parking areas. The eastern section of the heliport site is currently (early 2017) being developed for a new retail unit, whilst its former overflow car parking area is to site the park and ride facility.

6 Results of the archaeological watching brief

Boring and test-pitting on the site have demonstrated the survival of peat and other waterlogged marsh deposits beneath some areas of the modern ground-raising and

levelling materials, effectively sealing them and preventing them from drying out and thus degrading. Most overlie natural clay deposits. Peat deposits 0.5m deep were intersected in Borehole 2 (Tweedie Evans 2013) near the centre of the western half of the site between 1.4m and 1.9m from surface. Other boreholes drilled across the wider Sainsbury's site three years earlier (Tweedie Evans 2010) revealed peat deposits at most locations. The BGS website gives access to further borehole logs from within the area adjacent to the site – many show a peat surface at between 2m and 4m from modern ground levels and an average peat depth of between 0.5m and 1m.

These buried deposits had begun to be laid down *circa* 6000 years ago, and have been shown elsewhere in Mounts Bay to preserve not only organic materials with considerable potential for sampling for preserved wood and other organic material, but also palynological material (pollen, seeds and spores) whose study and analysis can inform us about past climates and habitats. Such well-preserved organic material can also provide material suitable for high precision scientific dating. These deposits have also, on occasions, occasionally provided evidence for human activities during prehistory. The former marshes and areas of standing water fringing Mounts Bay would have provided important areas where wading birds and fish could be hunted, so evidence for human activity from the Mesolithic period onwards might be represented in the now-buried material.

Prior to the development of the park and ride site its western section was covered in a mixture of semi-compacted gravel, hardcore and patches of tarmac with a small area of concrete where a ticketing hut had formerly been sited. The eastern half of the site was unsurfaced, and consisted of levelled landfill material mixed with topsoil; broken glass, stone, concrete, crockery, plastic, metal, rubber and other materials were evident at surface. A mains water supply pipe incorporating a pair of manholes runs east-west just inside the southern boundary of the site. A further pair of manholes is located in the north-eastern corner of the site – these also appear to relate to a water main.

Site mobilisation began on 6th March 2017 with CORMAC undertaking the clearance of woody vegetation flanking the drainage ditch adjacent to Jelbert Way and the removal of the turf surface from the visibility splays at the proposed site entrance. The site compound was also set up and the line of a sewer trench from the facility to Jelbert Way was set out by Kemp Surveys. The preliminary stripping of the 300mm of material from the area to be occupied by the site entrance and its flanking visibility splays showed that the land along the southern side of Jelbert Way was made up of a mixture of landfill material and rather waterlogged topsoil. Three pairs of green plastic pipes intended to carry fibre-optic cables were found running parallel to the south side of Jelbert Way within its verge. The top set were 300mm from ground level and were covered with marker tape. The exposed ground surface consisted of a sticky clay and topsoil mix which was deemed unsuitable for road construction and a small amount of additional material was to be removed (to a maximum depth of 600mm) prior to stone being brought in to form a solid sub base.

The stripping of a layer of topsoil and vegetation from the eastern part of the area which will site the park and ride began on 8th March, and was undertaken by Morcom Construction. This material was stripped to between 100mm and 200mm depth only (Fig 5). These operations did not remove any more than the surface of the mixed topsoil and landfill material which formed the ground surface in this part of the site and no features of archaeological interest were revealed. This surface was compacted prior to the site being built up with a deep layer of 7000 cubic metres of clean stone sourced from Castle an Dinas Quarry, Ludgvan, topped with granular surfacing materials to create the park and ride facility.

Works within two areas of the site had the potential to expose archaeological deposits including the underlying peat deposits. A section of the drainage ditch forming the northern boundary of the site was re-excavated with a ditching bucket. A long-standing build-up of organic material was removed from the ditch, together with some of the underlying clay base of this feature down to a maximum depth of 1.75m from surface.

The surface deposits of topsoil and tree roots mixed with some modern rubbish were found to overlie a 0.75m depth of a dense pale blue-grey, yellow-mottled clay with some small granitic inclusions (Fig 6). This clay base was not bottomed during the ditch cleaning work. The section of the ditch at the location of the new site entrance off Jelbert Way was infilled with clean stone so that it could continue to carry water flows when the site entrance was constructed over it.

The second area of excavation took the form of a narrow (600mm wide) trench excavated from the location of a proposed toilet facility at the location of the park and ride custodian's hut north-west to and across the drainage ditch to a new manhole chamber adjacent to the southern verge of Jelbert Way. The main section of the trench within the P&R site measured 22m in length and that on the northern side of the ditch was 5m in length. The excavation of an east-heading spur 4m long from the manhole at the south-eastern end of the trench to the site of the intended toilet was not observed. The main trench was 1.3m deep at its intersection with the south side of the ditch and just under 1.0m deep at its southern end. Beyond the ditch, a 4m extension of the trench led to the site of a further manhole chamber.

The excavation for the chamber and the section of trench from this to the northern side of the ditch had already been excavated prior to the arrival of the archaeologist on site. The clay layer exposed in the ditch base was found to extend three metres along the trench from the ditch towards the chamber, though at its north-western end this material became less well defined, and incorporated rocky material. The clay was overlain by a deep layer of topsoil and roots mixed with some modern rubbish.

The opening up of the trench within the park and ride site was observed by the archaeologist. Excavation proceeded from the drainage ditch south-eastwards to the location of the proposed toilet. Given the trenching results (below) no drawn section was produced, though representative sections were recorded in note form. The weather during the period that the excavation was open precluded photographic recording.

The profile of the initial three metre section of the trench was found to be broadly similar to that recorded in the southern face of the ditch, though a thin horizontal layer of A803 coarse granular material was exposed just below the surface not far to the south-east of the ditch – this was interpreted as the sub-base for the heliport carpark surface. Between 2.0m from the ditch to 4.0m from the ditch the surface of the clay layer dropped from 0.8m from surface down to 1.3m from surface and from that point south-eastwards formed the base of the trench over its remaining length. It seems likely from this evidence that the deeper section of the clay to the south-east had originally been formed into a bund along the southern edge of the drainage ditch, presumably to prevent the leaching of material from the landfill site into this watercourse.

At four metres along the trench a 300mm deep compacted deposit of broken bottles and other modern landfill materials was exposed in its base. This was covered with a 700mm deep layer of orange/brown broken rock with an average size of 250mm, though it also incorporated some larger stones and small boulders. This was in turn covered with a series of lenses and layers of granular material topped with A803 and a thin covering of topsoil mixed with fine gravel. Copious amounts of brown water began to issue from the landfill material, this evidently having been impounded within the site by the clay bund along the southern side of the drainage ditch.

The character of the landfill material varied along the remaining length of the trench. In some sections further deposits of bottles, crockery, plastic and paper were found, in others the material largely consisted of a compressed, odoriferous black clayey material; at the south-eastern end of the trench the landfill primarily consisted of concrete, broken brick and other builders' rubble. Some sections of this material were notably dry, though in others pockets of leachate were encountered at various depths from surface.

None of the landfill material exposed in the trench sections was more than 500mm thick, though Borehole 2 to the west had found 1.15m depth of this material between 0.25m from surface and 1.4m from surface. At the location of this borehole the landfill had been laid down over 500mm of peat deposits overlying what was interpreted as a natural clay which was proved by drilling to extend from 1.9m to 5.1m from surface, overlying a 1.1m depth of sand which overlaid a further deposit of clay from 6.2m from surface down to its base on bedrock at 6.9m from surface. Test pit 3, excavated just to the east of the sewer trench, had revealed a surface layer of crushed builders' rubble from surface down to 0.15m covering made ground consisting of mixed soil and clay to 0.55m from surface. This capped a deposit of landfill material 0.65m deep with its base at 1.2m from surface, below which the clay layer was proved to 1.5m from surface without being bottomed. The clay layer appears from this (small) group of results from locations within the proposed park and ride site to have had a relatively level surface, though retaining pockets of peat in places, these possibly reflecting the locations of former pools and bogs.

This clay is clearly a natural deposit therefore, rather than an artificially emplaced basal sealing layer for the landfill site, though it appears to have been formed into two low bunds flanking the northern and southern sides of the drainage ditch.

The landfill material exposed in the trench was wholly modern in date (see cover illustration), the inclusion of plastic bottles and similar material suggesting that it was dumped here during the 1960s, probably not long before the former heliport was established at this location in 1964. The landfill site is recorded as having been closed at the end of December 1969 (Environment Agency website), having accepted a mixture of material including inert, industrial, commercial, household and special waste. The Environment Agency mapping of disused landfill sites show an area extending from the Tesco fuel station at the western end of Eastern Green side to the roundabout at the intersection of the eastern end of Jelbert Way and the A30, bounded to its south by the line of the modern A30 and to the north by Jelbert Way. The date when waste was first deposited here is not recorded, though rubbish is likely to have been disposed here on a progressive basis, probably over several decades. As well as allowing for the disposal of all types of locally produced rubbish it also facilitated the reclamation of an area of low-lying boggy land for redevelopment for 20th century housing, light industry and retail developments. Although extensive, the landfill site seems to have been a shallow one along its northern edge, though deeper towards the south, reflecting the topography of the former land surface on which it was deposited.

7 Conclusions/recommendations

The opportunities for the investigation of the archaeological potential of this site proved to be very limited, as a result of the way in which it is to be developed. Observation of the single trench excavated across the northern part of the site near its centre point confirmed the findings of the upper sections of the nearby trial trench and borehole in that the layer of landfill material was found to be in the form of an extensive but thin layer deposited on a pre-existing natural clay surface. Although this had been cloaked with inert rocky material no methane transmission resistance sealing layer had been used to top it. Leachate contamination of the nearby drainage ditches appears (from the trench section) to have been contained by a low clay bund along its southern side. Within the area examined, the rubbish was wholly of modern origin. As a result no artefacts were recovered during the watching brief.

No peat exposures were found, the base of both the trench and re-cut ditch being the natural clay deposits shown through previous investigations to underlie much of this site and its surroundings. These were, according to the BGS website, laid down *circa* two million years ago as floodplain alluvium originating from the two streams now taking the form of the Chyandour Brook and the Red River, the clay being of granitic origin and resulting from the slow erosion of the West Penwith uplands to the north. It seems probable that peat deposits are not ubiquitous across this area immediately to

the north of Mounts Bay, but are most likely to have formed in discrete undulations and hollows in the underlying earlier land surface. These may be exposed during future trenching and other intrusive works within the surrounding landscape, and it is recommended that archaeological recording and sampling conditions are placed on any developments which are considered likely to have the potential to intersect them.

8 References

8.1 Primary sources

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

Ordnance Survey, c1907. 25 Inch Map Second Edition (licensed digital copy at CAU)

Ordnance Survey, MasterMap Topography

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

8.2 Reports and publications

Sharpe, A. 2016, *Penzance Park and Ride Facility, Penzance, Cornwall: archaeological assessment*, CAU report 2016R038

Tweedie Evans Consulting Ltd 2010, *Penzance Heliport, Eastern Green, Penzance: Proposed Sainsbury's Store, Business Units and a Park and Ride. Geo-environmental and Geotechnical Assessment Report*, report reference 0906002.002.01

Tweedie Evans Consulting Ltd 2013, *Penzance Heliport, Eastern Green, Penzance: foundation risk assessment*

8.3 Websites

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

<http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (national mapping of borehole logs)

<http://maps.environment-agency.gov.uk/> Environment Agency mapping of active and disused landfill sites

9 Project archive

The CAU project number is **146666**

The site code is **PZPR17**.

The project's archive is maintained by Cornwall Archaeological Unit

Electronic data relating to the project is stored in the following location:

Project admin: \\Sites\Sites P\Penzance Park and Ride WB

Historic England/ADS OASIS online reference: cornwall2-278871



Fig 3. The proposed layout for the Penzance Park and Ride facility. The blue line indicates the approximate line of the new sewer trench.



Fig 4. A CORMAC image showing the proposed park and ride facility, as viewed from the south-south-east.



Fig 5. A general view looking north across the site during the early stages of the works. The area to the right had been skimmed of topsoil, whilst the new site entrance is in the background at the centre of the image.



Fig 6. The drainage ditch along the northern side of the site, showing the mixed topsoil at surface overlying the upper parts of the clay into which the ditch had been excavated.

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