Report No: 2013R049

Cross Channel Improvements, Pentewan, Cornwall

Archaeological Watching Brief

Historic Environment Projects

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Archaeological Watching Brief

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Report author(s)	**S R Taylor**
Checked by	**Andy Jones**
Approved by	**Andrew Young**

Historic Environment, Cornwall Council
Fal Building, New County Hall, Treyew Road, Truro, Cornwall, TR1 3AY
tel (01872) 323603 fax (01872) 323811 E-mail hes@cornwall.gov.uk
www.cornwall.gov.uk

Acknowledgements

This study was commissioned by the Environment agency and carried out by Historic Environment Projects, Cornwall Council.

The Project Manager was Andy Jones. Conservation of the bomb fragments was undertaken by Laura Ratcliffe

The views and recommendations expressed in this report are those of Historic Environment Projects and are presented in good faith on the basis of professional judgement and on information currently available.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

Historic Environment, Cornwall Council is a Registered Organisation with the Institute for Archaeologists

Cover illustration

The removed wooden penstock now displayed over the new cross channel. Some of the concrete beams that formerly carried rails across the channel are visible on the left.

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Abbreviations

HE	Historic Environment, Cornwall Council
HER	Cornwall and the Isles of Scilly Historic Environment Record
NGR	National Grid Reference
OS	Ordnance Survey
SLR	Single Lens Reflex

1 Summary

HE Projects undertook a watching brief and photographic recording in advance of works to upgrade the flood defences at Pentewan Harbour, a Grade II Listed Building.

The project identified deposits associated with various nineteenth and twentieth century tramways and railways as well as obtaining a profile through the harbour wall. Finds from the site included shrapnel identified as coming from a World War II German bomb.

A photographic record of the original penstock was made, prior to the installation of the new defences.

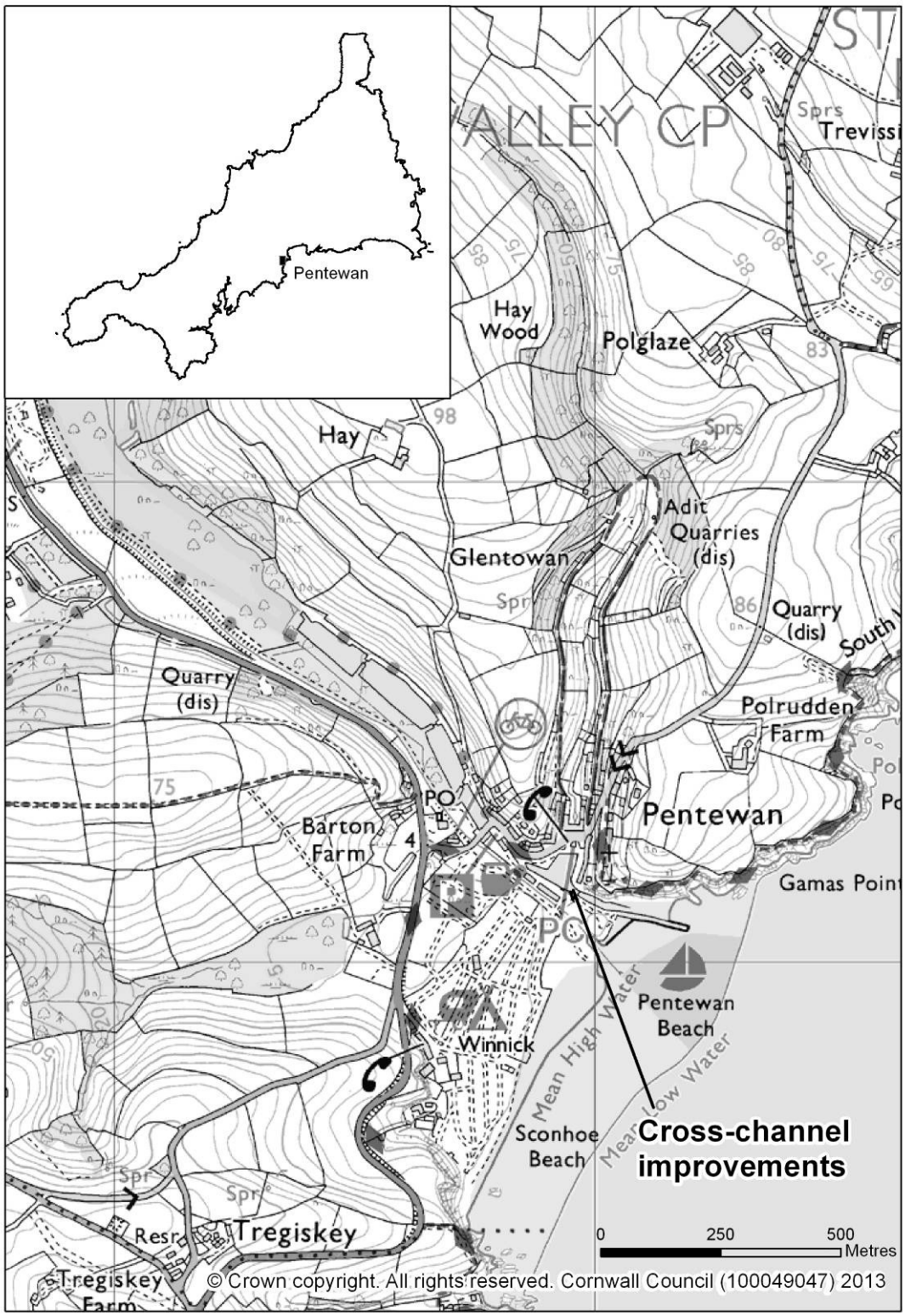

Fig 1 Location map

2 Introduction

2.1 Project background

Historic Environment Projects were requested by Mr Ed Wilson of the Environment Agency to undertake a programme of archaeological recording during the construction of a new culvert at Pentewan (SX 01953 47140) (Fig 1). The work was being undertaken as part of a scheme to reduce the risk of flooding from the Pentewan Stream.

The new culvert required the excavation of a trench approximately 20m long between the southern harbour quay wall and an existing cross channel between the harbour and the White River. The project also involved altering the mouth of the original cross channel and removing the existing timber penstock. The harbour quays are Grade II Listed structures and the entire site falls within the Pentewan Conservation Area and Historic Settlement.

2.2 Aims

The purpose of the archaeological recording was:

- To make a photographic record of the original penstock.
- To record archaeological features, layers and finds affected by the works.
- To establish the extent, condition, significance and character of the archaeological resource.
- To establish the presence / absence of archaeological remains.
- To identify any artefacts relating to the occupation of the area.
- The dissemination and publication of the results.
- The long-term conservation of the project archive in appropriate conditions.

2.3 Methods

The archaeological programme consisted of four stages: preparation, fieldwork, archiving, and report.

2.3.1 Preparation / background map regression

Prior to undertaking the fieldwork the project officer familiarized himself with the archaeological potential of the area. This involved the reading of pertinent data held in the HER and included map regression.

2.3.2 Fieldwork

The fieldwork included the photographic recording of the original penstock and a watching brief during the construction of the new culvert.

Photographic Recording

The original penstock was recorded. This included:

- A photographic record produced at an appropriate scale.
- The elevations of the mechanism were recorded in black and white film and by digital photography.

Archaeological Recording

The culvert excavation was carried out under archaeological supervision with an archaeologist in attendance when significant archaeological layers were becoming exposed or revealed in section.

Given the length of time which was needed to construct the culvert, the watching brief was not continuous and the archaeologist liaised with the client over appropriate days for site visits.

The detailed archaeological recording included:

- Excavation of archaeological features exposed in the stripped area and plotting them onto a base map.
- Production of plans and section drawings of the excavated features (Figs 11 and 12) and recording of features using a continuous numbering system (Appendix A).
- Retrieval of artefacts.

2.3.3 Post-fieldwork

Archiving

The results from the fieldwork were collated as an archive. This involved washing and cataloguing of finds, and the indexing and cross-referencing of photographs, drawings, and context records.

The site archive will initially be stored at HE premises. It will be transferred to the Royal Cornwall Museum (RCM).

Archive report

The results from the fieldwork are presented in this concise report. Copies of the report will be distributed to the Client, the Cornwall HER, and the local and main archaeological record libraries.

3 Location and setting

Pentewan is a small village lying to the north of the White River. It occupies hillslopes overlooking a central square and a disused harbour basin, the mouth of which is now blocked by sand. It is a popular tourist destination, with many drawn to the area by a holiday camp to the south of the White River, a large and sheltered beach, and the sailing club. The village lies at the end of a popular cycle trail that runs from St Austell along the Pentewan Valley.

Pentewan Harbour lies at the mouth of the Pentewan Stream, which occupies a steep-sided valley, Glentowan, running north from the village. The stream is culverted beneath The Square before entering the harbour. The stream exits the harbour basin through lock gates, a culvert, and a cross channel before merging with the White River. The village is isolated from the sea by a blocked-up harbour channel and the large beach.

Pentewan is situated at an interesting location in geological terms, at an intersection between the Gramscatho and Meadfoot mudstone formations. A band of sandstone runs under the village itself whilst to the north, running north west from the coast at Polrudden Cove, is an elvan dyke to which the village has lent its name in the form of Pentewan Stone. This is a fine granitic material that is easily carved and has been used in some of the finest buildings and structures in mid Cornwall from the medieval period onwards, including Pentewan Harbour itself.

4 Designations

4.1 National

The harbour walls, lock, the southern jetty and breakwater extension are Grade II Listed Buildings (List entry number 1211649).

4.2 Local

The harbour area lies within the Pentewan Conservation Area and Historic Settlement.

5 Site history

The settlement of Pentewan is first recorded in 1086 as 'Bentewion', comprising the Cornish elements *ben*, 'foot', and *Tewyn*, the original name of the White River. The first reference to a port here is from 1303 when it is spelt 'Portbentewen'. This contains the Cornish element *porth* meaning 'cove', 'harbour' or 'gateway', and the name of the settlement (Thorpe and Thomas 2002).

Although the settlement is likely to have originated as a fishing village, the harbour was probably used to export Pentewan Stone from at least the thirteenth century and tin streaming up the Pentewan Valley towards St Austell had been undertaken since prehistoric times, adding another product for export.

Cornwall's first copper smelter was built here in the late seventeenth century creating more maritime trade. However, the waste produced by mining and streaming activity caused its own problems and a sandbar built up at the mouth of the harbour. This problem was tackled by the construction of an artificial harbour basin in 1744.

The harbour was improved in 1818-1826 by deepening the basin, building quays, lock gates, and a breakwater, and the construction of a reservoir in the Glentowan valley to flush out the harbour. The work was inspired by the potential of the pilchard fishery and the emerging china clay industry.

A horse-drawn tramway from St Austell had been built by 1830 and an enclosed coal yard on the southern side of the harbour by 1839. The 1842 St Austell Tithe Map (Fig 2) shows the tramway terminating on the western side of the harbour basin. The harbour, although struggling to compete with Charlestown, Par, and Fowey, exported china clay and ironstone, and imported limestone and coal.

The silting of the harbour led to improvements including the construction of four reservoirs along the White River valley and the replacement of the wooden breakwater with a stone structure. At the same time (1870-2) the horse drawn tramway was replaced with a steam-drawn line and associated facilities at the terminal were enlarged. Pre-war photographs show the line along the southern side of the harbour elevated above the ground surface (Frances Frith website). However, trade dropped off and exporting sand for building, to St Austell by rail and from the harbour, became the main economic use. The 1881-2 OS map (Fig 3) shows the railway extended to the beach to facilitate this. This trade developed into a concrete block manufacturing industry but virtually all other trade had finished by the end of World War I (The Cahill Partnership 2002, 10-12). In 1918 the railway lines and rolling stock were removed by the Ministry of Defence for the war effort, cutting the link with St Austell. Following the end of the war a railway was rebuilt down to the beach again to facilitate sand extraction once more (Evans and Prettyman, 24).

The harbour closed at the beginning of World War II and the last commercial vessel departed in 1940. Subsequently much of the harbour area was taken over by American troops and the blockworks made beams for air raid shelters (The Cahill Partnership 2002, 10-12).

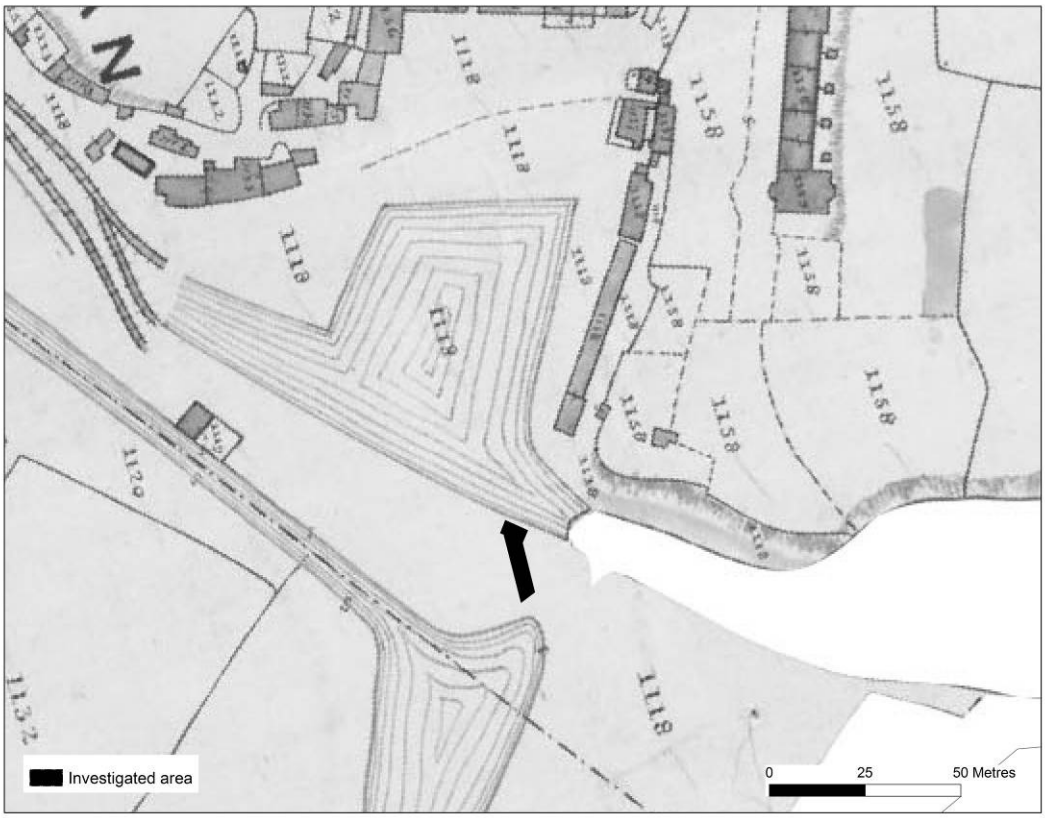

Fig 2 Detail from the 1842 St Austell Tithe Map

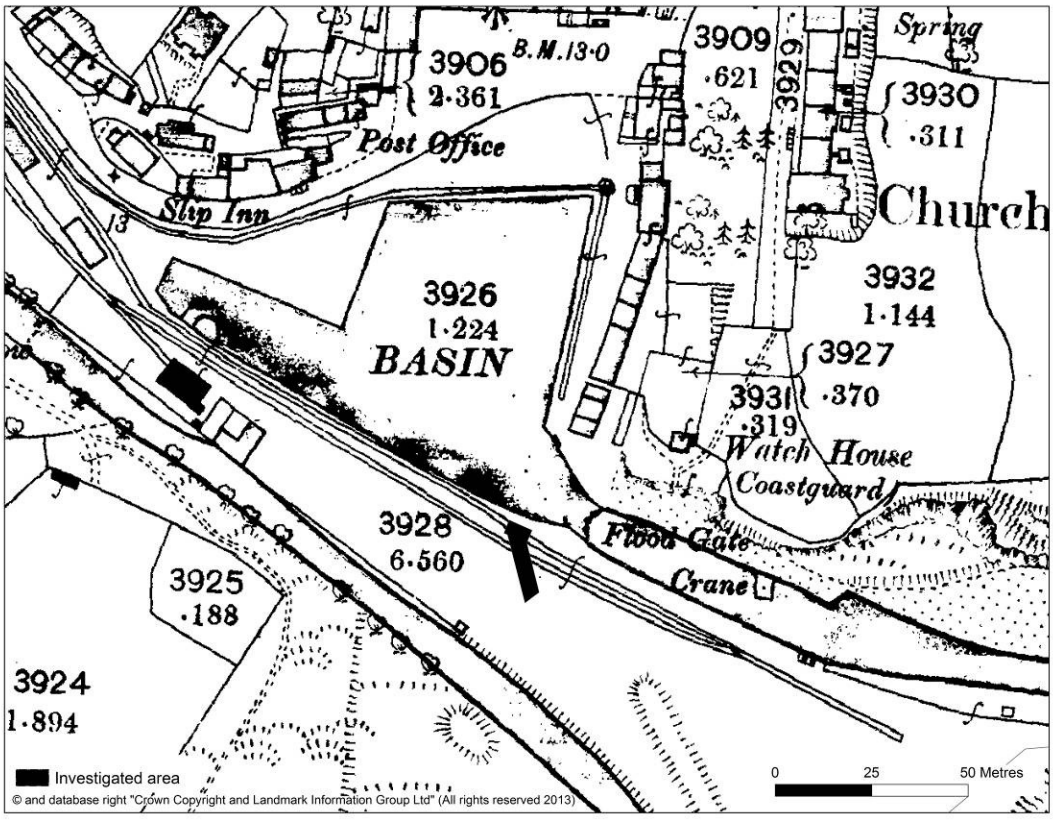

Fig 3 Detail from the OS 25 inch map of 1881-2

Two bombing raids on Pentewan are recorded in Police war diaries. The first took place just before midnight on the 1st August 1941. Four Heinkel HE111s released bombs over the 'seashore at Pentewan Beach' but no casualties or damage were reported (Cornwall Police war diary, entry 762). The second, more serious event, occurred just over a year later, mid afternoon on the 29th August 1942. A Focke Wulf FW190 dropped two bombs on the village itself causing injuries to six people and seriously damaging 27 houses and further damaging 21 more, as well as totally demolishing the Methodist Chapel and damaging a water main (*ibid*, entry 1248; Evans and Prettyman 1986,30). The bombing run began from the direction of the campsite, across the harbour, to North Road, the site of the chapel (BBC People's War website).

Following the war some refurbishment of the harbour took place but the port was used by pleasure craft only until the channel silted up again. The blockworks expanded in this period, laying down more railway lines across the beach, but this enterprise closed down in 1966. The main concern of the village is now tourism (The Cahill Partnership 2002, 13). Sadly, OS mapping at a scale sufficient to show the development of the railway network is unavailable between 1907 and 1971 (Old Maps website), the latter showing the position of the by now unused rail network and also the cross channel from the harbour basin to the White River.

6 Archaeological results

The works consisted of the construction of a new culvert, which required the excavation of a trench approximately 20m long between the southern harbour quay wall and an existing cross channel between the harbour and the White River. The work involved removing a section of the harbour wall (wall **1** below) approximately 7m long and another section of concrete block walling (wall **28**) 7.5m long. A watching brief was carried out throughout the excavation of the trench. Areas containing archaeological features were planned and a long section was recorded across the eastern side of the trench (Figs 11 and 12).

The relationship between the harbour wall and various episodes of backfilling and making ground to the south was unclear. This was partly the result of the site working methods which required the insertion of steel shuttering at regular intervals prior to excavation in order to prevent the collapse of the sides of the trench. For the purposes of archaeological recording this meant that 'windows' of 0.5m-1m were visible along the length of the trench but that the stratigraphy remained hidden behind the 13 0.6m wide sections of shuttering along the recorded section (the north-eastern side of the trench).

6.1 Stratigraphy

The harbour wall, **1**, is constructed of Pentewan Stone, dressed on the outer face and the joins but rough on the interior, where it faces a rubble core of killas backed by an inner facing of flat-laid killas, **2** (Fig 4). The core was consolidated by concrete of beach sand origins. The wall comprises six courses of stone to a height of 1.92m facing the harbour.

Set against the back of the wall were two large dressed granite boulders, **5**, the smaller one a broken fragment of a larger object, the other whole (Fig 5). The smaller boulder was 1m by 0.7m by 0.35m and featured a circular cutaway on one corner, presumably forming part of a collar when joined with other blocks. It was also drilled with a hole. The larger block was 1.3m by 0.73m by 0.6m. The stones appeared to be buttressing the harbour wall. They were set in deposits of clay intercalated with sand, **(4)**, possibly derived from dredging the harbour. Finds from this material included shrapnel, in the form of a nosecone, from a World War II bomb (see Appendix B). This deposit was sealed by a thin dark clay, **(3)**, containing water-worn pebbles.

*Fig 4 Section through harbour wall **1** and rubble core and face **2***

*Fig 5 Section through harbour wall **1** and rubble core and face **2** showing granite buttress **5** and concrete mooring bollard*

The relationship between deposit **(4)** and those to the south east was unclear due to the positioning of shuttering (see above). Beyond this point the earliest deposits were **(16)**, a sandy clay containing fragments of shillet, and **(11)**, a loose sand and shillet. The former may represent original *in situ* alluvial material or possibly channel dredging. The latter represents made ground, probably for the purposes of backfilling and levelling an area.

Above these two deposits at the north western end of the trench were two more deposits representing made ground. Layer **(10)** was a coarse sand containing pebbles, above which layer **(9)** was a sandy clay containing sub-angular shillet fragments and water-worn pebbles. These coincided with the position of wall **28**, a section of which had been removed prior to construction works. It was unclear whether deposits **(9)** and **(10)** represented a bedding trench for the wall or whether these were earlier deposits that had been truncated by events to either side, perhaps a bomb blast to the north east (unlikely since there is no record of a bomb hitting the harbour) or the construction of railway lines to the south east.

Wall **28** is of concrete block construction, up to 2m high to the north, 1.5m high to the south, and 0.4m wide.

Above deposit **(11)** for the bulk of the section to the south east of wall **28** was a sequence of deposits (Fig 6) representing track beds for two to three phases of tramway/railway lines, **29** (the earliest), **25**, and **24** (the latest). The earliest tracked sequence comprised (sequentially – earliest to latest) deposits **(15)**, a sand, **(17)**, a white clay containing black lenses, **(14)**, a compact clay with an iron pan base, **(13)**, a grey clay, and **(12)**, a sandy clay upon which sleepers/rails **29** sat. Of these deposits **(13)**, **(14)**, and **(17)** may represent earlier track beds from which the rails have been removed.

Fig 6 Section through some of the track bed deposits at the middle of the trench

*Fig 7 Railway tracks **24**, hollow steel sleeper **30**, with wooden sleeper **25** visible beyond (facing west, 1m scale)*

Deposit **(12)** was truncated towards the south east of the trench and partially replaced by a different sequence of tracked deposits, **(20)**, a dark sandy clay, and **(8)**/**(18)**, a compact white sand. Sat on this deposit were wooden sleepers **25**, overlain by hollow steel sleepers **30** and railway lines **24** (Fig 7).

These deposits were all sealed by deposit **(19)**, a wind-blown sand.

Cut into some of these deposits, to a depth of 0.85m, was a pit or trench, **[21]**, containing a single fill, **(22)**. This is likely to be the same trench that was observed in plan cutting an area of hard standing, **(7)**, and concrete, **6**, that lay between railway line **24** and an unexcavated line to the south.

6.2 Interpretation

The present harbour wall **1** is likely to belong to the period of improvements of 1818-1826. No earlier structural elements were identified during this project and, although it seems likely that this part of the harbour's edge has not moved since the original construction of the harbour basin in 1744 (since it lies along the southern edge of the channel near the mouth of the basin), earlier features must have been removed by the improvement works.

A sequence of tramway/railway lines is apparent in the section recorded along the eastern side of the excavation. The earliest lines recorded on map sources are those shown on the St Austell Tithe Map of 1842 (Fig 2), which shows the lines of the 'Saint Austell and Pentewan Railway' terminating at the western end of the harbour basin, and therefore not intruding into the excavated area.

The first track bed sequence, represented by layers (**13)**, **(14)**, **(15)**, and **(17)**, is likely to date to the enlargement of facilities and conversion to steam power in the period 1870-2. The OS 25 inch map of 1881-2 (Fig 3)shows two parallel lines running along the southern edge of the harbour before converging on the beach, representing the growth in the export of beach sand for building at this time. The same layout is

shown on the 1907 OS 25 inch map. However, photographs of the time show a railway elevated above the ground surface (Francis Frith website) and none of the buried rails are likely to date to this period.

Sadly, no OS mapping is available for the following 55 years until the 1:10,000 scale map of 1963, which does not show detail of the rail layout. The next 1:2500 map is from 1971 (Old Maps website), at which time the rails have been removed but their route is shown, along with wall **28**, not shown on earlier mapping. This level is probably represented by the sequence above the truncation of deposit **(12)** consisting of deposits **(18)**, **(19)**, and **(20)**, along with railway **25** and its two phases of sleepers, **24** and **30**. The 1971 map also shows the cross channel itself, crossed by two railway lines

The bomb shrapnel (see below and Appendix B) recovered from behind the harbour wall seems likely to have been incorporated into levelling material, perhaps at the same time wall **28** was built, itself probably built in the post war expansion of the blockworks and associated infrastructure. It seems likely that at least some of this material came from the beach and included shrapnel from the bombs dropped in 1941.

6.3 Photographic recording

A photographic record of the original wooden penstock at the mouth of the original cross channel was made prior to its removal. The record was made with black and white negative film (HER ref GBP2246) in a Pentax K1000 SLR camera. The record was supplemented with digital shots taken with an Olympus SW 1030 compact camera, some of which are reproduced below (Figs 8-10).

Fig 8 Wooden penstock prior to removal, facing south (1m scale)

Fig 9 Detail of penstock and mechanism, facing south (1m scale)

Fig 10 Penstock mechanism facing east (1m scale)

7 References

7.1 Primary sources

Cornwall Police war diaries (transcript at HE)

Ordnance Survey, 1881-2. *25 Inch Map* First Edition (licensed digital copy at HE)

Ordnance Survey, 1907. *25 Inch Map* Second Edition (licensed digital copy at HE)

Ordnance Survey, 2007. *Mastermap Digital Mapping*

Tithe Map and Apportionment, 1842. *Parish of St Austell* (microfiche copy at HE)

7.2 Publications

Evans, R E, and Prettyman, G W, 1986. *Pentewan*, Kwikprint, St Austell

The Cahill Partnership 2002, *Pentewan, (St Austell area), Cornwall Industrial Settlements Initiative*, Historic Environment Service, Truro

Thorpe, C, and Thomas, N, 2002. *Pentewan Flood Defence Scheme Archaeological Recording*, CAU, Truro.

7.3 Websites

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

http://www.bbc.co.uk/history/ww2peopleswar/stories/90/a4661390.shtml BBC People's War website

http://www.francisfrith.com/pentewan/photos/the-harbour-1912_64776/#utmcsr=google.co.uk&utmcmd=referral&utmccn=google.co.uk Francis Frith website

http://www.old-maps.co.uk/maps.html Old Maps website

8 Project archive

The HE project number is **2012015**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Field plans and copies of historic maps stored in an A2-size plastic envelope (GRE772).
3. Electronic drawings stored in the directory R:\Historic Environment (CAD)\CAD Archive\Sites P-Q\Pentewan Harbour EA WB 2012
4. Black and white photographs archived under the following index numbers: GBP 2246
5. Digital photographs stored in the directory R:\Historic Environment (Images)\SITES.M-P\Pentewan culvert recording 2012015
6. English Heritage/ADS OASIS online reference: cornwall2-154374

This report text is held in digital form as: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites P\PENTEWAN\Pentewan culvert recording 2012015\Report\Pentewan Cross Channel Improvements Report.doc

Artefacts and environmental material retrieved during the project are stored at the HE Projects Finds Archive Store, Cardrew Industrial Estate, Redruth. The site code is PH12.

9 Appendix A: Recorded contexts

Context Number	Type (Cut/ Deposit /Build)	Description	Plan No	Section No
1	B	Harbour wall. The wall is built of Pentewan stone six courses high. The stone is dressed on the exterior face, undressed on the interior. The harbour was built in 1744 and improvements were completed in 1819. The port was opened between 1820 and 1824.	1	2
2	B	Rubble core of wall 1. Consists of killas rubble, some flat-laid especially on the rear 'surface', the rest jumbled. Held together in a matrix of concrete with lime and shell inclusions.	1	2
(3)	D	Deposit overlying (4). A dark grey plastic clay with occasional water-worn pebble inclusions.	-	3
(4)	D	Deposit overlying the rear of the harbour wall. A mid grey plastic clay intercalated with loose grey sand, both of which appeared mottled light reddish brown due to the oxidisation of iron. Appeared to be redeposited alluvial material, possibly dredged from the harbour basin.	-	4
5	B	Two large roughly dressed granite blocks were located to the rear of the harbour wall, butting against rubble core 2. They appeared to be buttressing it.	1	-
6	B	An area of concrete between two railway lines, forming a hard standing.	3	-
(7)	D	An area of hard standing consisting of a compact light yellowish grey clay and cobbles. The relationship between this deposit and concrete 6 was disrupted by a service trench running between them and it wasn't completely clear as to whether 6 lay over (7) or whether they were at the same level.	3	-
(8)	D	Railway track bed. A light grey loose sand (appeared to be china clay waste) forming the track bed beneath railway 25. Probably the same as (18).	3	-
(9)	D	Made ground to the rear of the harbour wall. A mid yellowish brown friable sandy clay containing frequent shillet/killas fragments and small water-worn pebbles.	-	4
(10)	D	Made ground beneath (9). A mid brownish yellow friable coarse sand containing occasional small pebbles. Possibly oxidised beach sand.	-	4
(11)	D	Made ground beneath (10). A mid pinkish brown mottled yellowish brown loose sand with abundant shillet fragments.	-	4, 5
(12)	D	A mid brownish grey friable sandy clay.	-	4, 5
(13)	D	A thin band of compact grey clay, probably representing a track bed.	-	4, 5
(14)	D	A light grey compact clay with an iron pan base, probably representing a track bed.	-	4
(15)	D	A light reddish brown friable sand.	-	4, 5

Context Number	Type (Cut/ Deposit /Build)	Description	Plan No	Section No
(16)	D	A light brownish grey friable sandy clay with moderate shillet fragments. Made ground.	-	4, 5
(17)	D	A light yellowish white friable clay with two lenses of black material within it. Possibly representing an earlier track bed level.	-	4
(18)	D	A thin band of compact white sand. Represents a track bed for a railway. Probably the same as (8).	-	5
(19)	D	A light greyish brown friable sandy clay. Material lying over railway features, predominately wind-blown sand.	-	4
(20)	D	A dark blackish grey compact sandy clay.	-	5
[21]	C	A cut 0.85m deep and at least 0.3m across, exposed in the section and partly hidden behind pilings. Possibly a posthole or the edge of a service trench. Filled by (22).	-	5
(22)	D	A light whitish grey compact sand containing large quantities of ironwork. Fill of [21].	-	5
(23)	D	A dark greyish brown friable silty clay containing modern artefacts.	-	5
24	B	Railway line comprising two parallel steel rails set on hollow steel sleepers.	3	4
25	B	Wooden sleepers beneath railway 24, representing an earlier phase of track construction.	3	-
26	B	Concrete wall forming the revetment to the culvert channel at the southern end of the scheme.	3	5
(27)	D	An amalgamation of unexcavated deposits to the south of 6 and (7). Comprising a dark greyish black loose sand with pockets of yellowish brown beach sand lying over a track bed deposit.	3	-
28	B	Removed section of concrete block wall.	-	4
29	B	Wooden sleepers and steel rails representing earliest phase of tramway/railway on the site.	-	-
30	B	Hollow steel sleepers bearing railway 24, above wooden sleepers 25.	3	4

10 Appendix B: Conservation record

Lab Number:	**Object Name:** Possible shrapnel	**Material:** Ferrous	**Period/** C20 **date**
Source: HE - Pentewan Harbour (2012015)	**Object Identification Number:(museum accession no./site name context number)**		**Copy to client:**
Photos:	**X-rays:**	**Samples:**	**Previous Treatment:** NA
Date Started: 21.12.2012	**Date Completed:** 21.12.2012	**Conserved By:** Laura Ratcliffe	

Description:

A single piece of ferrous material forming a bowl shape with flared sides and jagged broken edge. It looks very like the nose of a bomb, and therefore shrapnel.
320mm in diameter at the open end
242mm deep from tip to top
20mm thick at the thickest point. There is damage and concretion so the thickness varies at this stage.

Condition:

Major Structural:

Only a part of the object remains, the exposed broken edges being jagged

Accretions:

There is concrete and sand adherent to the object and trapped within corrosion as surface concretion.

Chemical:

The ferrous material has corroded, fusing with sand and forming concretions inside and outside of the item. There are piece of mineralised wood within the conglomerate in the interior of the piece and what appears to be bits of mortar which is consistent with it having been built within the harbour wall for a time. The aggressive nature of the corrosion suggests high moisture and chloride presence, consistent with a harbour side location. The weight of the object suggests that below the iron oxide layer on the surface of the object, ($Fe_2O_3.nH_2O$ & $FeO(OH).FeOH_3$), a substantial amount of metallic material remains.

Disfigurement:

A large portion of the item is missing

Treatment:

Mechanical removal of the loose and bulky concretion down to the remains of the surface on the interior and exterior of the object for identification.
The base is rounded and not flat, the sides are smooth and taper outwards from the base, the effect being that of a bowl. The concretion comes away from an uneven interior surface and relatively smooth outer surface. The interior is suffering from a lot of corrosion bubbles and distortion, probably compounded by the material trapped within the item harbouring moisture and salts.
Some of the corrosion in this area has been very aggressive, particularly under and aground the largest concreted area, possibly as a result of sitting water or this area undergoing greater stress at some point than the rest of the object, making it more prone to corrosion.
Not all of the concretion came away from the interior surface, which is quite deteriorated.

Mineralised wood within the interior

A thin veneer of concrete residue is present over most areas of original surface, removal of this and the heavily compacted concretion remaining inside the object would be best done with an air abrasive machine for a very clean surface. I am not sure if it is however necessary for ID or whether the basic mechanical clean will be enough. It looks very much like the nose of a bomb, although there are no markings or paint layers visible at this time.

Recommendations:

Keep from getting wet or damp to avoid further corrosion.

Treatment time:

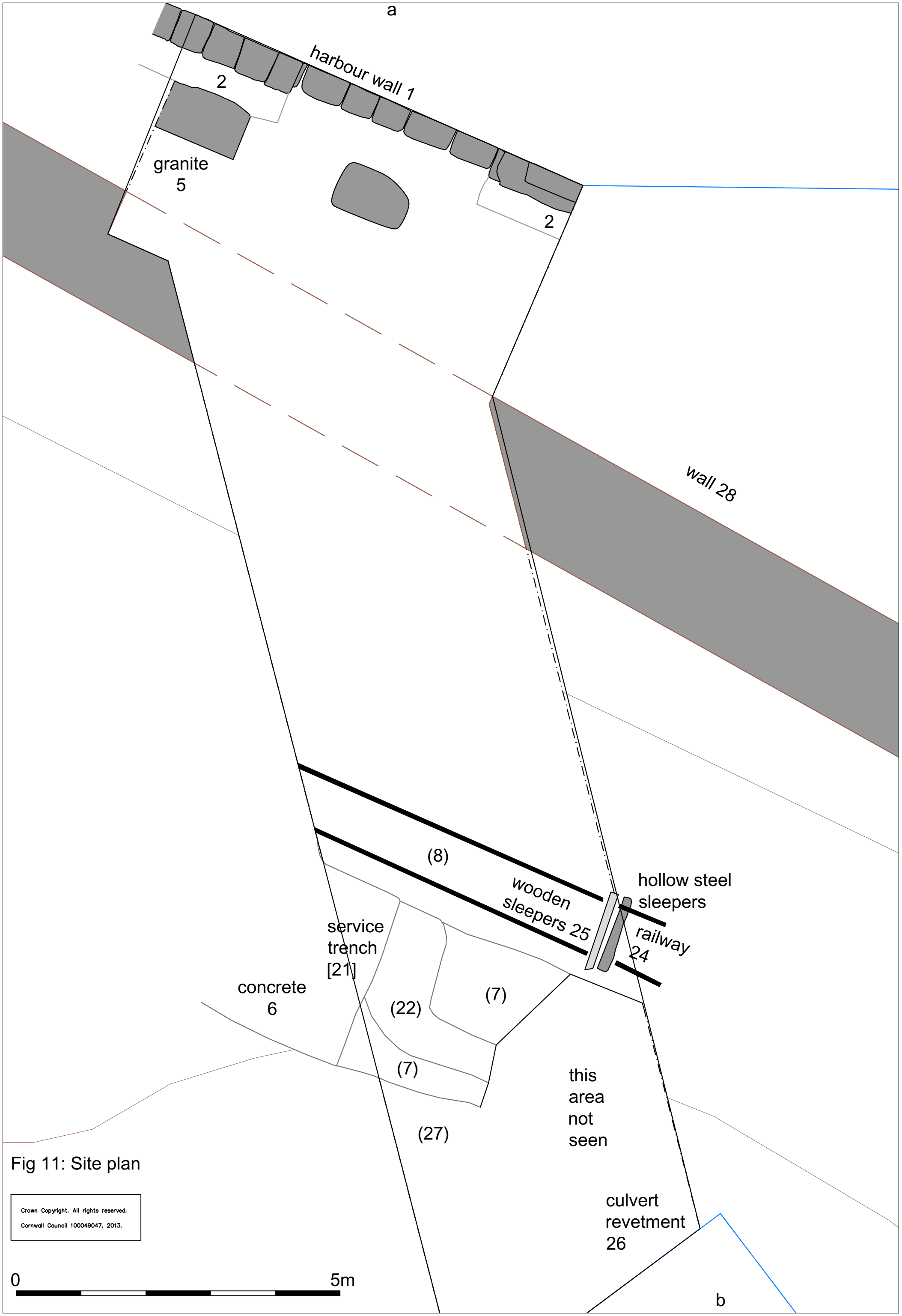

Fig 11: Site plan

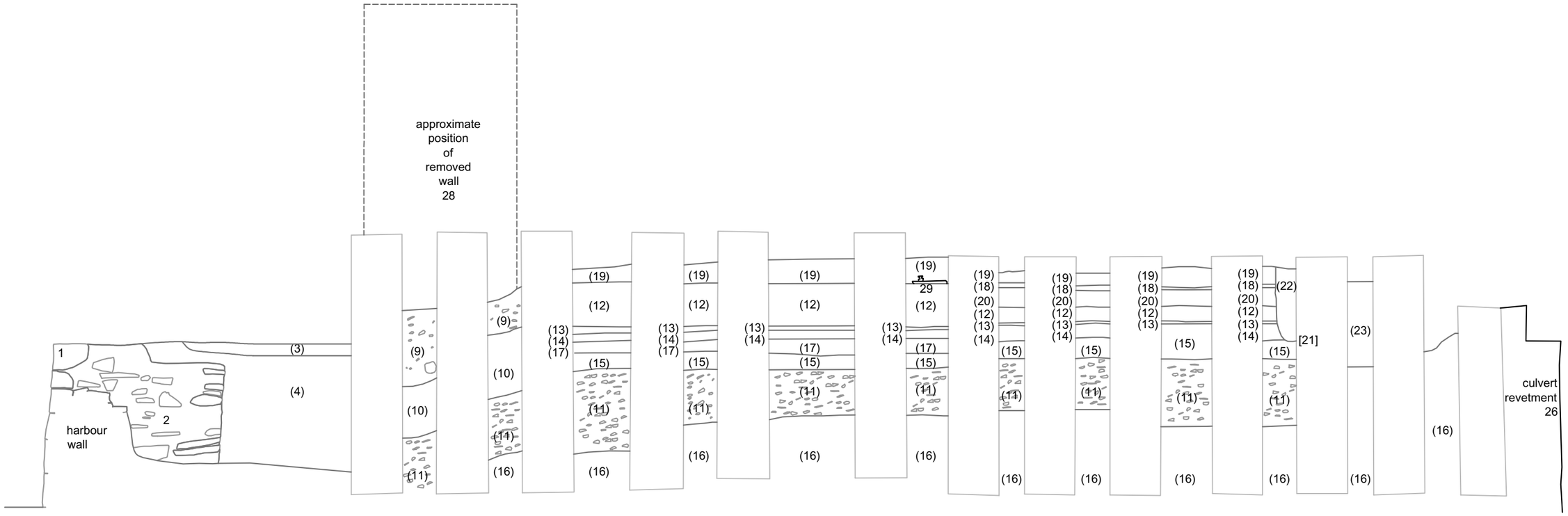

Fig 12: West-facing elevation through the trench