

# *Archaeology Wales*

## **Pentrehafod School, Hafod, Swansea**

### Archaeological Watching Brief



By  
Daniel Moore & Philip Poucher

Report No. 1757

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### Archaeological Watching Brief

Prepared For: Morgan Sindhall Construction & Infrastructure


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## Summary

*This report results from work undertaken by Archaeology Wales Ltd (AW) for Morgan Sindall Construction & Infrastructure Ltd. associated with works at Pentrehafod School, Pentre Mawr Road, Hafod, Swansea, centred on NGR SS 65798 95059. The local planning authority is the City and County of Swansea, and the planning application number is 2016/1164. The report details the results of an archaeological watching brief that took place to ensure the preservation by record of any archaeological remains encountered during the groundworks.*

*The site lies in an area of 19<sup>th</sup> and 20<sup>th</sup> century activity associated with the nearby Hafod Copperworks. The area was used to deposit waste material, and included a railway system and structures associated with it to transport the waste. The site was redeveloped as a school in the early 1970s.*

*A series of mixed dumped deposits were recorded across the site, likely waste material from industrial activity associated with the Copperworks, overlaid by deposits associated with the construction of the school. No structural remains were encountered, and no natural ground was uncovered. No finds, features or deposits of specific archaeological interest were revealed.*

*All work was undertaken to the Standards and Guidance for an Archaeological Watching Brief as set by the Chartered Institute for Archaeologists (2014).*

## Crynodeb

*Mae'r adroddiad hwn yn deillio o waith a wnaed gan Archeoleg Cymru (AW) ar gyfer Morgan Sindall Construction and Infrastructure Ltd. Sy'n gysylltiedig â gwaith yn Ysgol Pentrehafod, Heol Pentre' Mawr, Abertawe, sydd wedi'i ganoli ar NGR SS 65798 95059. Yr awdurdod cynllunio lleol yw Dinas a Sir Abertawe, a'r rhif cais cynllunio yw 2016/1164. Mae'r adroddiad yn rhoi manylion canlyniadau brîff gwyllo archeolegol a gynhaliwyd i sicrhau bod unrhyw olion archeolegol a darganfuwyd yn ystod y gwaith tir yn cael eu cadw drwy gofnod.*

*Mae'r safle wedi'i lleoli mewn ardal o weithgarwch y 19eg a'r 20fed ganrif sy'n gysylltiedig â'r Gweithfeydd Copr Hafod gerllaw. Defnyddiwyd yr ardal i gael gwared â deunydd gwastraff, ac yn cynnwys system reilffordd a strwythurau a oedd yn gysylltiedig â gludo'r gwastraff. Cafodd y safle ei ailddatblygu fel ysgol yn yr 1970au.*

*Cofnodwyd cyfres o ddyddodion cymysg wedi'i dympio ar draws y safle, mae'r rhain yn debygol o fod yn ddeunydd wastraff o weithgarwch diwydiannol sy'n gysylltiedig â'r gweithfeydd copr. Mae'r dyddodion diwydiannol hwn yn cael eu gorchuddio gan ddyddodion sy'n gysylltiedig â'r gwaith adeiladu'r ysgol. Ni wynebwyd unrhyw olion strwythurol, ac ni ddatgelwyd unrhyw dir naturiol. Yn ogystal â hwn, ni ddatgelwyd unrhyw ddarganfyddiadau, nodweddion na dyddodion o ddiddordeb archeolegol penodol.*

*Gwnaed yr holl waith i gydymffurfio â'r Standards and Guidance for an Archaeological Watching Brief fel y pennwyd gan Sefydliad Siartredig yr Archeolegwyr (2014).*

# 1. Introduction

## 1.1 Location and scope of work

Archaeology Wales Ltd (AW) was commissioned by Morgan Sindall Construction & Infrastructure Ltd to undertake an archaeological watching brief during groundworks associated with the development of a new education and changing facilities building, a replacement car park, new road layout, new boundary fences and temporary construction access point at Pentrehafod School, Pentre Mawr Road, Hafod, Swansea, centred on NGR SS 65798 95059. The local planning authority is the City and County of Swansea (CCS), the planning application number is 2016/1164.

Glamorgan-Gwent Archaeological Trust – Curatorial Division (Henceforth – GGATC), in its capacity as archaeological advisors to the local planning authority, recommended that a programme of archaeological work to protect the archaeological resource should be undertaken in association with the development. The relevant recommendation reads:

No development shall take place until the applicant, or their agents or successors in title, has secured agreement for a written scheme of historic environment mitigation which has been submitted by the applicant and approved by the local planning authority. Thereafter, the programme of work will be fully carried out in accordance with the requirements and standards of the written scheme.

Reason: To identify and record any features of archaeological interest discovered during the works, in order to mitigate the impact of works on the archaeological resource.

The purpose of the archaeological watching brief is to protect the potential archaeological resource, the requirements for which are set out in Planning Policy (revised edition 9, 2016), Section 6.5 and Technical Advice Note (TAN) 24: The Historic Environment (2017). Prior to works commencing an approved Written Scheme of Investigation (WSI) was produced by AW in accordance with the Standard and Guidance for Archaeological Watching Briefs (ClfA 2014) and was designed to provide an approved methodology of archaeological work to be implemented during the construction works.

Unfortunately however, due in part to the time delay in the original commissioning of AW in September 2016, and the eventual groundworks taking place in the Autumn/Winter of 2018, some development works took place prior to the commencement of the archaeological watching brief. These unmonitored works included the construction of an extension on the north side of the school, the construction of new building (Pace Unit) to the southeast and resurfacing work to the east of the school. However, details and photographs of these excavations were provided by the developer and are detailed within this report.

The watching brief took place in December 2018 under the supervision of Poppy Alexander, and monitored the surface strip and drainage excavations of new sports pitches to the east of the school. The project was managed by Philip Poucher MCIfA of Archaeology Wales. The

AW project number for the works is 2463 and the site code is PSS/16/WB. The project details are summarised on the Archive Cover Sheet (Appendix III).

## **2. Site Description and Archaeological Background**

### **2.1 Location, Topography and Geology**

Pentrehafod School is a Secondary School situated between the Hafod, Manselton and Landore areas of central Swansea. The school itself occupies two areas of generally level ground. The western area is a raised area of playing fields, the eastern area is generally level with Pentre Mawr Road to the south, and contains the main school buildings, sports hall, car parking and hard surface play areas.

The surrounding area is primarily residential, approximately 2km to the north of the city centre, although the Landore train service depot also lies immediately to the north and Morfa park retail and leisure area lies a short distance to the northeast. The former Swansea canal runs to the east of the site, and the Afon Tawe comes to within 300m to the east of the site. The railway also runs close to the east, and forms the northern boundary to the site.

The solid geology of this area generally comprises the South Wales Upper Coal Measures formation, which is made up of mudstone, siltstone, sandstone, coal, ironstone and ferricrete. These deposits would have formed during the Carboniferous Period, 306 to 308 million years ago. These are overlain largely with till (diamicton) laid down during the Devensian glacial period, with glaciofluvial ice contact deposits of sand and gravel also recorded in close proximity (BGS 2016).

### **2.2 Archaeological and Historical Background**

The site has been subject to a rapid archaeological desk-based appraisal, carried out by Glamorgan-Gwent Archaeological Trust in 2012 (Goldsmith 2012). This work indicated that the site is likely to have been subject to a great deal of activity during the post-medieval period, resulting largely in industrial waste from surrounding works, a railway system constructed in order to transport this waste, and structures associated with this railway system. The small housing development of Pentre-mawr also extended into the southwest area of the development area.

The nearby Swansea canal was constructed in 1798, and in 1809 John Vivian established the Hafod Copperworks (PRN 34089) directly to the northeast of the site. The Copperworks soon expanded, initially dumping its waste to the east, but in 1865 a new tramroad was built to carry the waste over the canal and to start dumping within the development area. Prior to this the site had been an area of enclosed fields and meadows between the settlements of Brynhyfryd and Landore to the north, and the expanding Hafod to the south. This tramway (PCS006) is clearly visible on late 19<sup>th</sup> century editions of the Ordnance Survey maps, associated with an engine house (PRN 01510w) and three structures (PCS004, PCS003 and PCS002), potentially located in the area of car park works, and close to the Pace Unit foundations. During the 19<sup>th</sup> century the Hafod Copperworks was the largest in the world,

employing over 1000 people, and was at the centre of burgeoning copper production in the lower Swansea valley, earning Swansea the moniker 'Copperopolis', and illustrating its' key role in the industrial revolution of the 19<sup>th</sup> century. In 1924 it combined with the nearby Morfa Copperworks under Yorkshire Imperial Metals, and continued to roll copper until its eventual closure in 1980. Two 19<sup>th</sup> century engine houses remain at the site of the Copperworks, and cast copper-slag blocks have found widespread architectural use in the area. A significant amount of waste material would have been produced by these works and dumped on this site, and it had clearly grown sufficiently quickly to require the newly established railway of the mid 19<sup>th</sup> century to be diverted to either side. It no doubt continued to grow, and was also used in the early 20<sup>th</sup> century by the Swansea Hematite Works and Mannesmann Tube Steel Works.

This tip would have grown to a very visible local landmark, and formed a limit on the urban expansion of Hafod to the south. To the south a small housing settlement of Pentre-mawr (PCS005), visible on late-19<sup>th</sup> century mapping and containing several structures and enclosed yards, extended into the current school grounds, although this lies outside the area of current development. Swansea continued to expand around this tip during the late 19<sup>th</sup> century and early 20<sup>th</sup> century, and it is during this period that much of the street pattern and terraced housing visible today was built.

The tramway and engine house are no longer shown on mid-20<sup>th</sup> century mapping, and it presumably by this point that the site ceased to be used as an active dumping ground for industrial waste, although it remained a large slag heap, and can clearly be seen as a significant landmark on aerial photographs of 1945. The area remained a waste ground into the 1970s. In the early 1970s extensive clearance and reclamation work took place in order to develop the site for the establishment of the current Pentrehafod School.

### **3. Methodology**

A watching brief complying with the Chartered Institute for Archaeologists (CIfA) *Standard and Guidance for Archaeological Watching Briefs* (2014) was undertaken during intrusive ground work on the site. The methodology for the watching brief follows the methodology set out within the approved Written Scheme of Investigation, however, as stated in the introduction, some groundworks had taken place prior to the commencement of the watching brief. An initial site visit was undertaken to establish the extent of previous groundworks and likely impact on potential archaeological deposits, and further details and photographs of these works were provided by the developer, and GGATC were informed. With the approval of GGATC the watching brief then commenced on all remaining groundworks associated with the development.

The watching brief was undertaken to allow the preservation by record of any archaeological deposits, the presence and nature of which could not be in advance of works. The watching brief also provides an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological

find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard (ClfA, 2014).

The groundworks comprised the stripping of surface material and the excavation of 13 drainage trenches. All trenches ran parallel with one another on a North - South alignment and situated 5m apart (Trench 1 was the most western trench and trench 13 the most eastern trench). Each trench measured approximately 100m in length, 0.5m in width and between 0.6 and 1m in depth. The groundworks were undertaken by a mechanical excavator using a toothless ditching bucket.

The works were monitored by a suitably trained archaeologist. Sections and plans of the excavation were photographed using a 12MP digital camera. All the deposits encountered were recorded by means of a continuous context numbering system and recorded on pro-forma context sheets. All features and deposits are described in accordance with ClfA conventions. A register of all contexts and photographs was also made.

#### **4. Watching Brief Results (Figures 3 & 4, Photos 1-12)**

At the western end of the site, within Trenches 1 and 2, the only deposit revealed was (012). This was characterized as a loose, mid orange sand, at least 0.8m in depth. This would appear to represent modern made ground, likely associated with the construction of the adjacent main school buildings.

To the east lower deposits became more changeable. The most prevalent deposit was (003), characterised as a moderate red and grey brown sandy silty-gravel. The thickness varied from 0.4m to 0.6m. This appeared consistently in the eastern half of the site (Trenches 7 – 13), but appeared to undulate to the west.

In the southwest corner of the site the lower deposit was (011). This was characterized as loose light red and brown grey gravelly sand. This measured in excess of 0.2m in depth. No artefacts or dateable material was recovered from this deposit, suggesting it may potentially represent a natural subsoil, but given the nature and levels of the remaining deposits it is considered more likely to be redeposited material. This deposit was overlaid by deposit (006), comprising a loose to moderate dark brownish-grey to black silty-clay with infrequent sub-rounded stone inclusions 0.05m-0.15m in diameter. The deposit measured in excess of 0.5m in depth. This deposit also contained frequent coal fragments, mortar and slag fragments that suggests the dumping of industrial waste, potentially from copper-working activity. Infrequent brick fragments of very late post-medieval or early modern date were also recorded.

Deposit (006) was also encountered towards the centre of the area as the lowest visible deposit. The relationship with deposit (003) is uncertain.

Towards the northern end of the site deposit (010) was encountered as the lowest visible deposit. This deposit was characterised as a loose black coal dust type material that measured in excess of 0.2m in depth. Deposit (010) was overlaid by deposit (009) at the north end of Trench 6. (009) was a friable orange sand clay and gravel that measured 0.3m in depth.



Across most of the site these lower deposits, with the exception of (012), were all overlaid by deposit (004), comprising a loose light grey gravel, typically between 0.2m and 0.25m thick. No finds were retrieved from this deposit, but it would appear to represent a modern levelling deposit associated with the school development. Towards the northern end of the site a modern deposit (002) of moderate to compact light grey-brown clayey-silt was recorded overlying deposit (003). An upper layer of sand, deposits (001) and (005) were also noted in patches throughout the area.

A number of modern drainage and service trenches were also revealed throughout the area, and much of the area had been covered in imported topsoil for use as school fields.

#### *Unmonitored development works*

Prior to the watching brief commencing development works included the construction of an extension on the north side of the school, construction of a building to the southeast (Pace Unit) and surface stripping to the east. It was apparent during the initial site visit that surface stripping was relatively shallow, and unlikely to have disturbed deposits below the pre-existing modern surfaces in this area. Similarly the construction of the building to the southeast (Pace Unit) required ground levels to be raised and therefore excavations into underlying material was limited. The evidence from the subsequent watching brief would suggest that these works are also very unlikely to have disturbed material underlying the general modern development layers.

The extension to the north of the school included trenched wall foundations, and would appear to be the most likely development, other than the area subsequently monitored, to have potentially disturbed deposits of archaeological interest. However, photographs were provided showing the area after initial stripping and also subsequent to foundation excavations. These photos appear to show upper levels that include quantities of fragmented brick, possibly associated with the construction of the adjacent school buildings. These overlie a relatively thick layer of dark greyish-brown material with stone and what appears to be slag waste within it. It would seem likely this represents remains of the former slag heap that extended across this area. There is no clear indication of features or deposits of archaeological interest within the visible deposits.

## 5. Conclusion

An archaeological watching brief was undertaken in December 2018 on groundworks associated with development works at Pentrehafod School, Pentre Mawr Road, Hafod, Swansea (NGR SS 65798 95059). The work was undertaken as a condition of the planning permission for the works (2016/1164), on the recommendation of Glamorgan-Gwent Archaeological Trust – Curatorial Division.

The development lies in an area of post-medieval industrial activity, it was used to deposit waste material from the nearby Hafod Copperworks, and included a railway system constructed in order to transport this waste, and structures associated with this system, a small post-medieval housing development also extended partly into the development area.

Development works had commenced prior to the start of the watching brief. However, an initial site visit, photographs provided by the developer, and subsequent watching brief works suggest that these works are unlikely to have disturbed features or deposits of potential archaeological interest. The watching brief was carried out on stripping works and drainage trench excavations over a large area to the east of the school. Although the deepest deposits, at most 1m below pre-existing ground levels, produced no dateable material, overlying deposits included late post-medieval and early modern artefacts, and all deposits would appear to represent a series of dumped and redeposited material likely associated with the 19<sup>th</sup> to 20<sup>th</sup> century industrial waste, overlaid by layers associated with the construction of the school in the early 1970s. No finds, features or deposits of archaeological significance were revealed.

## 6. Bibliography

British Geological Survey (BGS). 2016. *Geology of Britain Online Viewer* (accessed 30/8/16)

Chartered Institute for Archaeologists. 2014. *Standard and guidance for an archaeological watching brief*

Crawford, J. (2015) *GGAT 130: The Sinews of War: South East Wales Industry and The First World War*. GGAT report No. 2015/020

Goldsmith, L. (2012) *Pentrehafod Comprehensive, Hafod, Swansea: Rapid Archaeological Appraisal*. GGAT Report No.2012/068





Figure 1: Location map,  
1:40,000 @ A4

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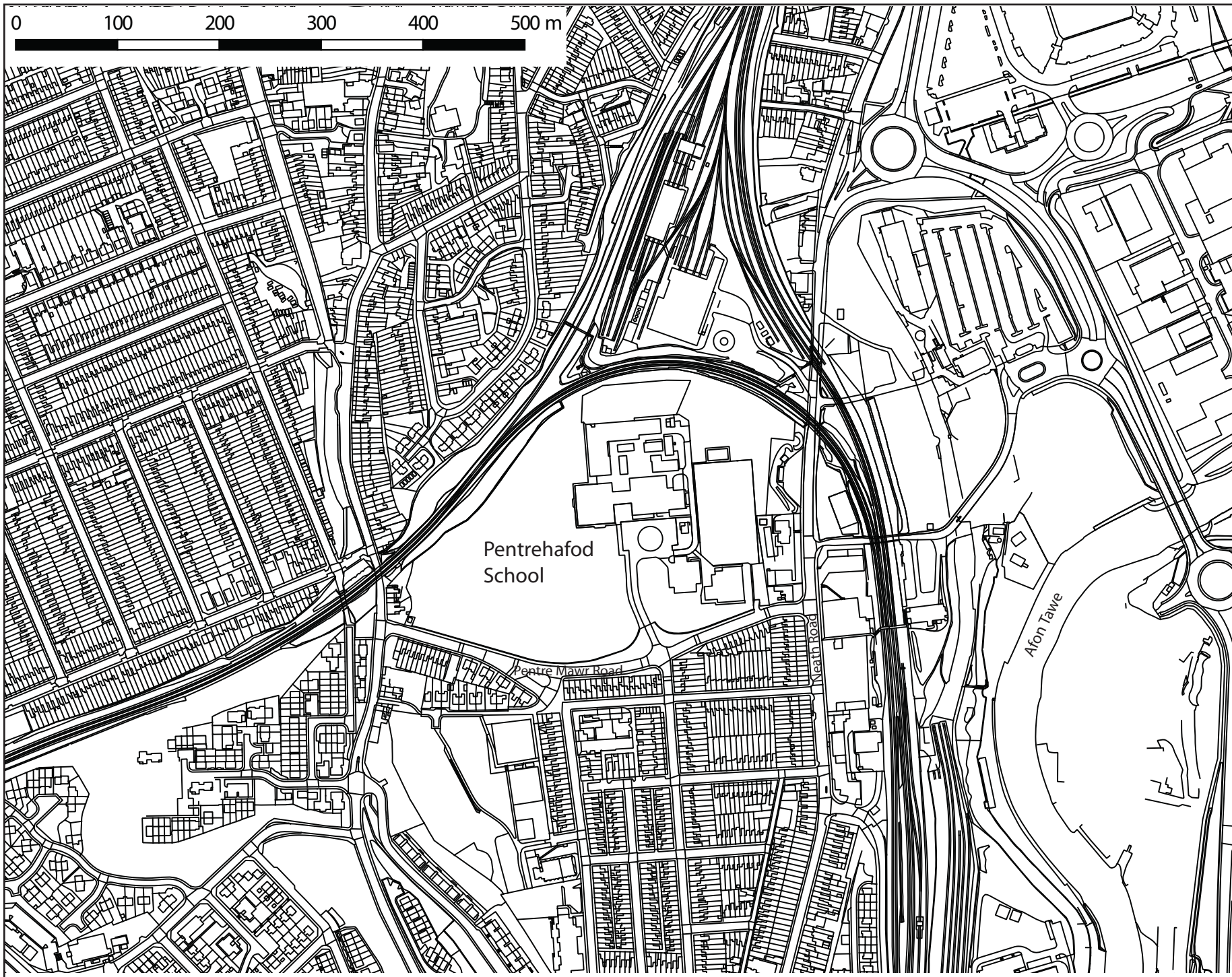


Figure 2: Location map for Pentrehafod School.

1:5000 @ A4

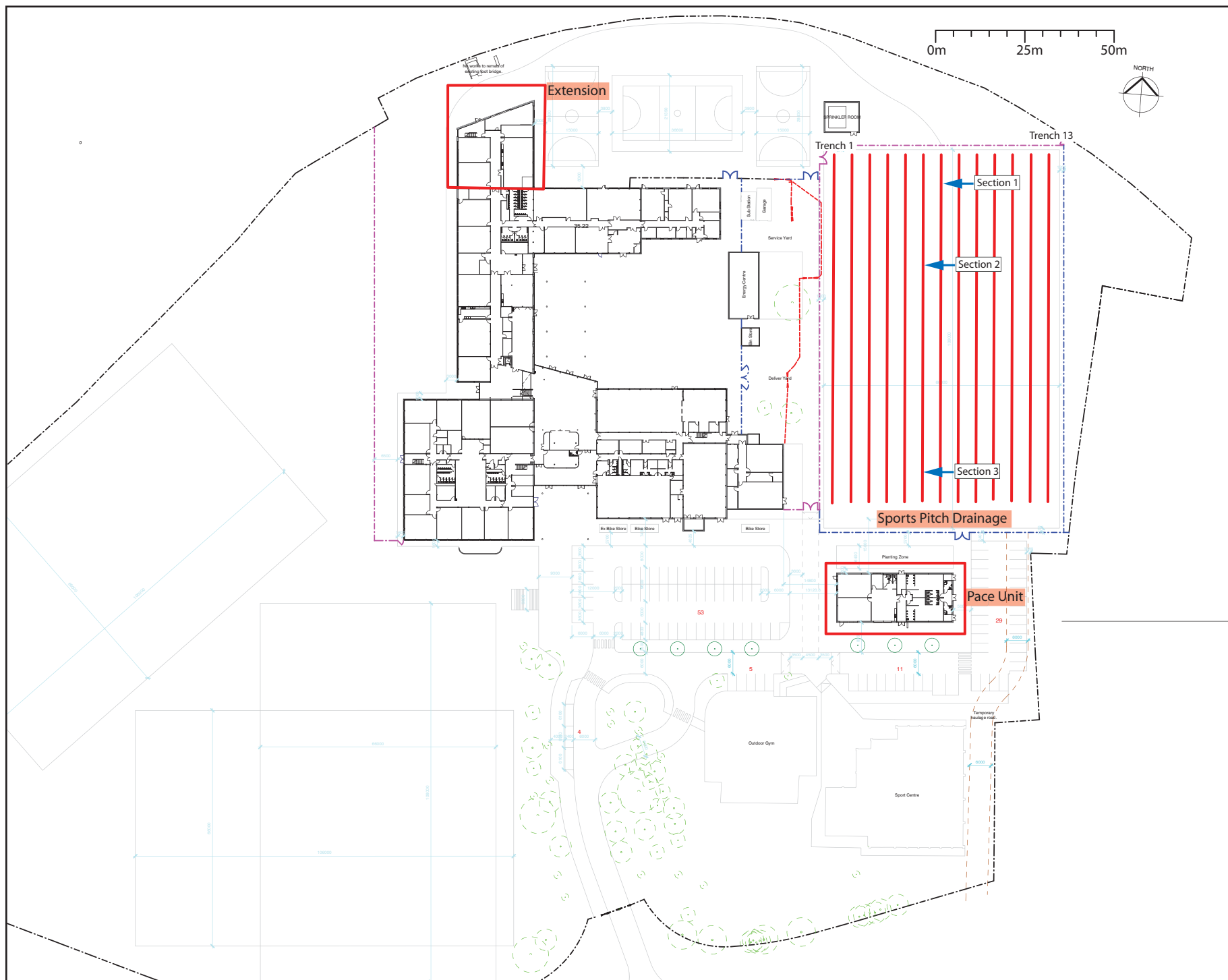
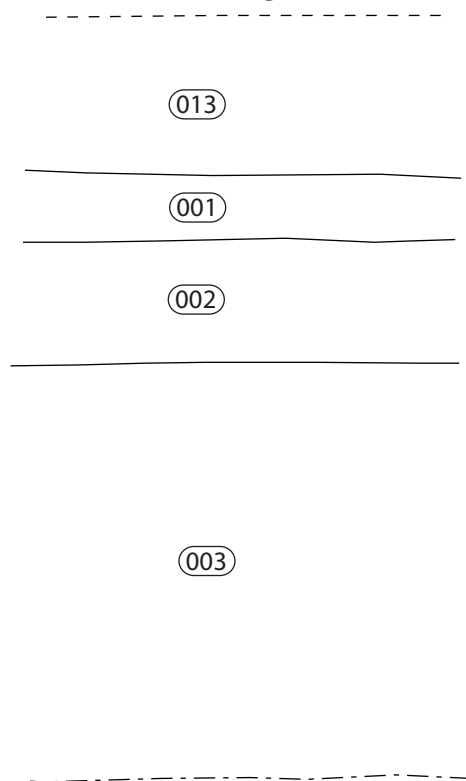
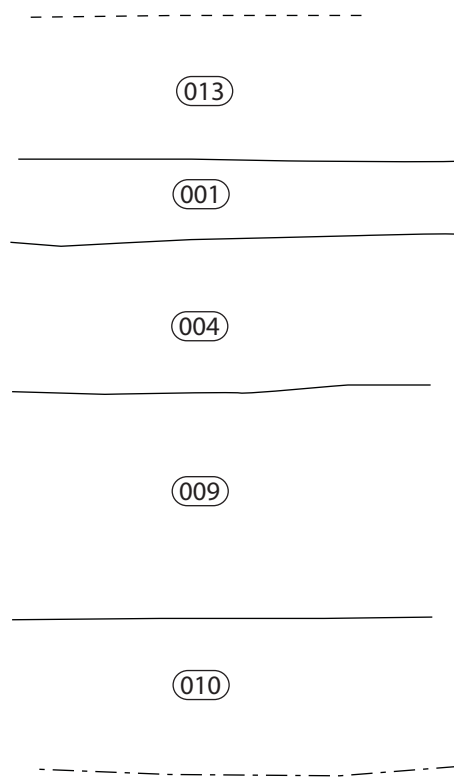


Figure 3: Development plan, with areas mentioned in the main text highlighted in red. Original plan produced by Stride Treglown, drawing number 70311-STL-00-ZZ-DR-A-XX-18001, rev. P1.76. Not reproduced to original scale.

Section 1  
East Facing



Section 2  
East Facing



Section 3  
East Facing

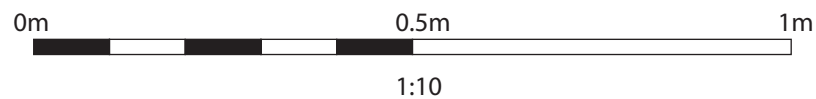
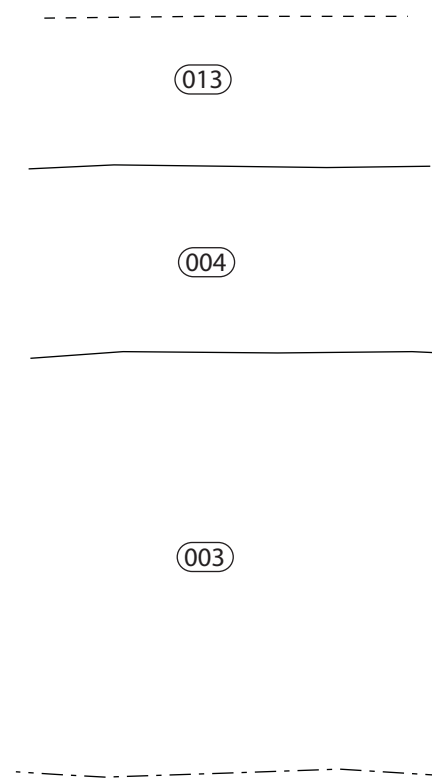


Figure 4: Representative sections within the observed groundworks area.

1:10 @ A4





Photo 1: View north. Initial topsoil (013) strip, revealing deposit (004). 1m scale.



Photo 2: View north, excavation of drainage trenches in progress.





Photo 3: View west, Trench 12 section. 1m scale.



Photo 4: View east, deposit (012). 0.5m scale.





Photo 5: View west, deposit (003) overlaid by (004). 0.5m scale.



Photo 6: View west, deposit (006) at the base, overlaid by (004) and (005).





Photo 7: View west, deposit (003), cut by drain [008], overlaid by deposit (004). 0.5m scale.



Photo 8: View west, deposit (003) overlaid by (002) and (001). 0.5m scale.





Photo 9: View southwest, area of extension on north side of the school, after initial strip.



Photo 10: View south, foundation excavations on north side of the school, exposing pre-existing foundations.





Photo 11: View west, foundation excavations on the north side of the school.



Photo 12: View northwest, foundation excavations on the north side of the school.

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## **APPENDIX I: Context List**

## Appendix 1: Context List

<i>No.</i>	<i>Type</i>	<i>Description</i>	<i>Relationship</i>
001	Deposit	Modern layer. Loose, mid reddish-brown sand	Below (013) Above (002), (004)
002	Deposit	Modern layer. Moderate/Compact, light grey-brown clayey-silt.	Below (001) Above (003)
003	Deposit	Post-med/modern dumped material Moderate, light reddish grey-brown silty, sandy-gravel	Below (002), (004)
004	Deposit	Modern make-up layer Loose, light grey gravel	Below (001), (005) Above (003), (006), (009)
005	Deposit	Modern layer. Loose, reddish-grey sand	Below (013) Above (004)
006	Deposit	Post-med/modern dumped material Loose/Moderate, dark brown-grey silty-clay Finds - Coal, CBM, Mortar, Slag	Below (004)
007	Fill	Fill of modern drain Loose, light grey gravel	Within [008]
008	Cut	Modern drain Linear, steep straight sides.	Contains (007)
009	Deposit	Post-med/modern dumped material Moderate, mid orange sandy-clay gravel	Below (004) Above (010)
010	Deposit	Post-med/modern dumped material Loose, black sooty-ash	Below (009)
011	Deposit	Redeposited natural Loose, light reddish-brown/grey sandy-gravel	Below (004)
012	Deposit	Modern made ground Loose, mid orange sand	
013	Deposit	Imported topsoil Moderate, mid grey-brown clayey-silt	Above (001), (005)

# *Archaeology* *Wales*

## **APPENDIX II** **Written Scheme of Investigation**



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Written Scheme of Investigation  
For an Archaeological Watching Brief

Pentrehafod School, Hafod, Swansea

Prepared for:  
Morgan Sindall Construction & Infrastructure Ltd

Project No: 2463

August 2016

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## NON TECHNICAL SUMMARY

*This Written Scheme of Investigation details a proposal for an archaeological watching brief during development works at Pentrehafod School, Hafod, Swansea. It has been prepared by Archaeology Wales Ltd for Morgan Sindall Construction & Infrastructure Ltd.*

### 1. Introduction

The planned development comprises plans for a new education and changing facilities building, a replacement car park, new road layout, new boundary fences and temporary construction access point at Pentrehafod School, Pentre Mawr Road, Hafod, Swansea (Henceforth – the site), centred on NGR SS 65798 95059 (Figs. 1-3). The local planning authority is the City and County of Swansea, the planning application number is 2016/1164.

This Written Scheme of Investigation (Henceforth – WSI) has been prepared by Philip Poucher, Project Manager, Archaeology Wales Ltd (Henceforth - AW) at the request of Morgan Sindall Construction & Infrastructure Ltd (Henceforth – the Client). It provides information on the methodology which will be employed by AW during an archaeological watching brief. The watching brief will be undertaken during ground-breaking activity associated with the development of the site.

Glamorgan-Gwent Archaeological Trust – Curatorial Division (Henceforth – GGATC), in its capacity as archaeological advisors to the local planning authority, have recommended that a programme of archaeological work to protect the archaeological resource should be undertaken in association with the development. The relevant recommendation reads:

No development shall take place until the applicant, or their agents or successors in title, has secured agreement for a written scheme of historic environment mitigation which has been submitted by the applicant and approved by the local planning authority. Thereafter, the programme of work will be fully carried out in accordance with the requirements and standards of the written scheme.

Reason: To identify and record any features of archaeological interest discovered during the works, in order to mitigate the impact of works on the archaeological resource.

The details set out in this document outline procedures to be undertaken during an archaeological watching brief during ground-breaking activity. This WSI will be submitted to GGATC for approval on behalf of the local planning authority.

All work will be undertaken in accordance with the standards and guidelines of the Chartered Institute for Archaeologists (2014).

### 2 Site description & Previous Archaeological Work

Pentrehafod School is a Secondary School situated between the Hafod, Manselton and Landore areas of central Swansea (Figs 1-2). The school itself occupies two areas of generally level ground. The western area is a raised area of playing fields, the eastern area is generally level with Pentre Mawr Road to the south, and contains the main school buildings, sports hall, car parking and hard surface play areas.

The surrounding area is primarily residential, approximately 2km to the north of the

city centre, although the Landore train service depot also lies immediately to the north and Morfa park retail and leisure area lies a short distance to the northeast. The former Swansea canal runs to the east of the site, and the Afon Tawe comes to within 300m to the east of the site. The railway also runs close to the east, and forms the northern boundary to the site.

The solid geology of this area generally comprises the South Wales Upper Coal Measures formation, which is made up of mudstone, siltstone, sandstone, coal, ironstone and ferricrete. These deposits would have formed during the Carboniferous Period, 306 to 308 million years ago. These are overlain largely with till (diamicton) laid down during the Devensian glacial period, with glaciofluvial ice contact deposits of sand and gravel also recorded in close proximity (BGS 2016).

The site has been subject to a rapid archaeological desk-based appraisal, carried out by Glamorgan-Gwent Archaeological Trust in 2012 (Goldsmith 2012). This work indicated that the site is likely to have been subject to a great deal of activity during the post-medieval period, resulting largely in industrial waste from surrounding works, a railway system constructed in order to transport this waste, and structures associated with this railway system. The small housing development of Pentre-mawr also extended into the southwest area of the development area.

The nearby Swansea canal was constructed in 1798, and in 1809 John Vivian established the Hafod Copperworks (PRN 34089) directly to the northeast of the site. The copperworks soon expanded, initially dumping its waste to the east, but in 1865 a new tramroad was built to carry the waste over the canal and to start dumping within the development area. This tramway (PCS006) is clearly visible on late 19<sup>th</sup> century editions of the Ordnance Survey maps, associated with an engine house (PRN 01510w) and three structures (PCS004, PCS003 and PCS002), potentially located in the area of car park works, and close to the Pace Unit foundations. The Swansea Hematite Works and Mannesmann Tube Steel Works also used the site as a tip during the early 20<sup>th</sup> century. To the south a small housing settlement of Pentre-mawr (PCS005), visible on late-19<sup>th</sup> century mapping and containing several structures and enclosed yards, extended into the current school grounds, although this lies outside the area of current development. The tramway and engine house are no longer shown on mid-20<sup>th</sup> century mapping. At some point in the mid to late 20<sup>th</sup> century the site has undergone clearance and reclamation works, and subsequently developed as a school site.

### 3 Site specific objectives

The primary objective of the watching brief, as defined by the ClfA (2014) are:

- To allow a rapid investigation and recording of any archaeological features that are uncovered during the proposed groundworks within the application area.
- To provide the opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief are not sufficient to support the treatment to a satisfactory or proper standard.

The work will result in a fully illustrated report, which will provide a comprehensive record of all the work undertaken. It will include interpretive statements and provide an assessment of the regional context within which the site is located.

## 4 Watching Brief Methodology

### General

The archaeological watching brief will be undertaken by AW staff using current best practice.

All work will be carried out by a suitable qualified archaeologist with relevant level membership of the Chartered Institute for Archaeologists (CIfA) and will follow the CIfA Standard and Guidance for an archaeological watching brief (2014).

### Detailed

The Watching Brief will be carried out by a suitably qualified archaeologist on groundworks associated with the construction of the changing facilities building, car park works, new road layout, new boundary fences and temporary construction access point and ancillary works (stripping, levelling, foundation excavation, drainage and services excavation) where sub-surface deposits are likely to be exposed or cut into. The mechanical excavation will be undertaken by a machine using a toothless ditching bucket wherever possible.

If archaeological features, finds or deposits are uncovered, work will be stopped in the area of the exposed feature in order that the supervising archaeologist can clean and identify the extent and nature of the feature and for excavation and recording to take place.

All archaeological deposits that are identified will be mapped, cleaned, recorded and fully excavated. The developer will provide a safe working area and sufficient time to record and excavate all features to the satisfaction of AW and GGATC. Full excavation of identified features will not be compromised by the construction programme.

### Contingency Arrangements

In the event of significant or complex archaeological features being discovered all activities in this area of the site can be temporarily suspended, those areas will be fenced off and highlighted to all contractors employed on the site. Machines or contractors shall not enter this area until archaeological recording has been completed. If significant archaeological features are revealed during the work a meeting between the client, their agent, main contractor, GGATC and AW should be called at the earliest convenience.

To comply with professional guidelines, a contingency for further access to each such area with a suitably sized team of archaeologists to enable appropriate and agreed archaeological recording should be provided. Contingency costs will be agreed in advance before any extension to the programme commences and will follow a site meeting between the archaeological contracting company, the client (or their agent) and GGATC. Such work may be also subject to the approval by the LPA of an additional Written Scheme of Investigation.

### Recording

Recording will be carried out using AW recording systems (pro-forma context sheets etc), using a continuous number sequence for all contexts.

Plans and sections will be drawn to a scale of 1:50, 1:20 and 1:10 as required and related to Ordnance Survey datum and published boundaries where appropriate.

All features identified will be tied in to the OS survey grid and fixed to local topographical boundaries. This can be achieved through measured triangulation from various points within the site boundary due to the proximity of extant buildings and other permanent features and their known locations. If required this could be further supplemented using a Topcon GTS725 total station.

Photographs will be taken in digital format, using a camera capable of taking photos of at least 10mp, with photographs stored in Tiff format.

The archaeologist undertaking the watching brief will have access to the AW metal detector and be trained in its use.

### Artefacts

Archaeological artefacts recovered during the course of the excavation will be cleaned and labelled using an accession number, which will be obtained from a suitable museum. A single number sequence will be allocated to all finds. The artefacts will be stored appropriately until they are deposited with a suitable local museum. Contact will be made with Swansea Museum for this purpose. If no suitable local repository exists then attempts will be made to deposit the artefacts at the National Museum, Cardiff. **In the interim any recovered artefacts will be stored in secure premises at AW's offices.**

All finds of gold and silver will be removed to a safe place and the client, the local Finds Liaison Officer and the local coroner informed, within the guidelines of the Treasure Act 1996.

Any finds which are considered to be in need of immediate conservation will be referred to a UKIC qualified conservator (Phil Parkes at Cardiff University).

### Human remains

In the event of burials or cremations being found all work will be halted in the area of the burials and their extent and nature established. The client, GGATC and the Ministry of Justice will be informed and a methodology of excavation agreed which will adhere to Ministry of Justice Guidelines.

### Environmental and technological samples

Environmental samples will be taken where necessary when significant deposits are located. Technological samples will be taken where necessary when significant deposits are located.

### Specialists

In the event of certain finds/features etc. being discovered, the site archaeologist may have to seek specialist opinion for assistance. Such specialists will be accessed either internally within AW itself or from an external source. A list of external specialists is given in the table below.

Type	Name	Tel No.
Flint	Dr Amelia Pannett	02920 899509

Animal bone	Jen Kitch	07739 093712
CBM, heat affected clay, Daub etc.	Rachael Hall	01305 259751
Clay pipe	Hilary Major	01376 329316
Glass	Andy Richmond	01234 888800
Cremated and non- cremated human bone	Malin Holst	01759 368483
Metalwork	Kevin Leahy	01652 658261
Neo/BA pottery	Dr Alex Gibson	Bradford University
IA/Roman pottery	Jane Timby	01453 882851
Post Roman pottery	Mr Stephen Clarke	
Charcoal (wood ID)	John Carrot	01388 772167
Waterlogged wood	Nigel Nayling	University of Wales (Lampeter)
Molluscs and pollen	Dr James Rackham	01992 552256
Charred and waterlogged plant remains	Wendy Carruthers	01443 233466

### *Monitoring*

GGATC will be contacted at least one week prior to the commencement of site works, and subsequently once the work is underway.

Any changes to this WSI that AW may wish to make after approval will be communicated to GGATC for approval on behalf of the Planning Authority.

Representatives of GGATC will be given access to the site so that they may monitor the progress of the building recording and/or watching brief. GGATC will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.

If significant detail is discovered, all works will cease and a meeting will be convened with GGATC to discuss the most appropriate way forward.

## 6 Post Field-work programme

### Conservation

After agreement with the client, GGATC and any identified landowner arrangements will be made for the long term conservation and storage of all artefacts in an appropriate local or national museum.

### Archive

The site archive will be prepared in accordance with MAP 2, Appendix 3 (Historic England (formerly English Heritage) 1991). It will comprise all the data recovered during

the fieldwork and shall be quantified, ordered and indexed and will be internally consistent. The archive will be deposited with the finds in a suitable local museum (contact will be made with Swansea Museum or the National Museum, Cardiff). A digital copy of the archive will be deposited with the National Monuments Record of Wales, held and maintained by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), Aberystwyth, in compliance with their guidelines. If no finds are recovered then the paper archive will also be deposited with the RCAHMW.

### Final reporting

A draft report will be submitted to the client for comments within 2 months of the watching brief being completed.

A full client report of the results of the archaeological work will be prepared within 3 months of the end of the on-site works. Copies of the report will be sent to the client and GGATC, and for inclusion in the regional Historical Environment Record. Digital copies will also be provided in pdf format.

Terminology will be consistent with the English Heritage Thesaurus.

The client report will contain, as a minimum, the following elements:

- Non-technical summary
- The aims and methods adopted in the course of the investigation with details of how all the buildings and structures were surveyed and recorded
- A brief history of the site
- Location plan showing the area/s covered by the watching brief, all artefacts, structures and features found
- Plan and section drawings with ground level, ordnance datum and vertical and horizontal scales.
- Written description and interpretation of all deposits identified, including their character, function, potential dating and relationship to adjacent features. Specialist descriptions and illustrations of all artefacts and soil samples will be included as appropriate.
- An indication of the potential of archaeological deposits which have not been disturbed by the development
- Statement of local, regional and national context of the remains
- Conclusions as appropriate
- Bibliography
- A detailed archive list at the rear listing all contexts recorded, all samples finds and find types, drawings and photographs taken. This will include a statement of the intent to deposit, and location of deposition, of the archive.

A search of the regional Historic Environment Record (HER), held and maintained by Glamorgan-Gwent Archaeological Trust, may also be required to help place the findings of the archaeological work into context.

## 6 Resources and timetable

### Standards

The field work will be undertaken by AW staff using current best practice. All work will

be undertaken to the standards and guidelines of the CIfA.

#### Staff

The project will be undertaken by suitably qualified AW staff. The project will be managed by Philip Poucher.

#### Equipment

The project will use existing AW equipment.

#### Expected timetable of archaeological works

The on-site work will be undertaken at the convenience of the client. No start date has yet been put forward.

#### Insurance

AW holds Public Liability Insurance through Aviva Insurance Ltd, with a £5,000,000 Limit of Indemnity (expires 05/12/16), Employers Liability Insurance through Aviva Insurance Ltd, with a £10,000,000 Limit of Indemnity (expires 05/12/16) and Professional Indemnity Insurance through Hiscox Insurance Company Ltd, with a £1,000,000 Limit of Indemnity (expires 05/12/16).

#### Arbitration

In the event of any dispute arising out of this Agreement (including those considered as such by only one of the parties) either party may forthwith give to the other notice in writing of such a dispute or difference and the same shall be and is hereby referred for decision in accordance with the Rules of the Chartered Institute of **Arbitrators' Arbitration scheme for the Institute for Archaeologists** applying at the date of this Agreement.

#### Health and safety

All members of staff will adhere to the requirements of the *Health & Safety at Work Act, 1974*, and the Health and Safety Policy Statement of AW. A site-specific risk assessment will be compiled prior to attendance on site.

#### Bibliography:

British Geological Survey (BGS). 2016. *Geology of Britain Online Viewer* (accessed 30/8/16)

Chartered Institute for Archaeologists. 2014. *Standard and guidance for an archaeological watching brief*

English Heritage. 2006. *Understanding Historic Buildings. A guide to good recording practice.*

Goldsmith, L. 2012. *Pentrehafod Comprehensive, Hafod, Swansea: Rapid Archaeological Appraisal*. Glamorgan-Gwent Archaeological Trust Report No.



2012/068

# *Archaeology* *Wales*

## **APPENDIX III: Archive Cover Sheet**

# ARCHIVE COVER SHEET

## Pentrehafod School, Hafod, Swansea

Site Name:	Pentrehafod School
Site Code:	PSS/16/WB
PRN:	01509w, 01510w
NPRN:	418771, 418911
SAM:	-
Other Ref No:	-
NGR:	NGR SS 65798 95059
Site Type:	Development works at Pentrehafod School, including new buildings and sports pitches, on site of 19 <sup>th</sup> /20 <sup>th</sup> century industrial tip and associated features
Project Type:	Watching Brief
Project Manager:	Philip Poucher
Project Dates:	September 2016 - January 2019
Categories Present:	None
Location of Original Archive:	AW
Location of duplicate Archives:	RCAHMW, Aberystwyth
Number of Finds Boxes:	-
Location of Finds:	-
Museum Reference:	-
Copyright:	AW
Restrictions to access:	None

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