

CROSS HANDS ECONOMIC LINK ROAD PHASE TWO: ARCHAEOLOGICAL WATCHING BRIEF 2021



Section of surviving tramway along the Cross Hands Economic Link Road.



Prepared by Dyfed Archaeological Trust
For: Alun Griffiths (Ltd)



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CROSS HANDS ECONOMIC LINK ROAD PHASE TWO: ARCHAEOLOGICAL WATCHING BRIEF 2021

By

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**CROSS HANDS ECONOMIC LINK ROAD PHASE 2: ARCHAEOLOGICAL
WATCHING BRIEF 2021**

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CROSS HANDS ECONOMIC LINK ROAD PHASE 2: ARCHAEOLOGICAL WATCHING BRIEF 2021

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CROSS HANDS ECONOMIC LINK ROAD PHASE TWO: ARCHAEOLOGICAL WATCHING BRIEF

SUMMARY

DAT Archaeological Services were commissioned to undertake an archaeological watching brief during groundworks associated with Phase 2 of the development of the Cross Hands Economic Link Road, which sees the continuation of the Link Road from the point at which it currently intersects with Black Lion Road (completed in Phase 1a and 1b) northwards to join with the A476 (Llandeilo Road). Archaeological mitigation associated with Phase 1 was undertaken in 2018 and has already been reported on (Enright 2018).

The watching brief focussed on two areas of identified archaeological potential. Within Area 1 early 20th century structural remains were recorded, potentially associated with Emlyn Colliery (PRN 41236), but the remaining area had been previously stripped to bedrock levels and was devoid of archaeological remains. Within Area 2 remains of a former colliery tramroad survived to the east of the development area, but no evidence of former colliery structures or deposits of archaeological interest were identified within the development area.

CRYNODEB

Comisiynwyd Gwasanaethau Archaeolegol YAD i gynnal brîff gwylio archeolegol yn ystod gwaith daear sy'n gysylltiedig â Cham 2 o ddatblygiad Ffordd Gyswllt Economaidd Cross Hands, sy'n gweld parhad y Ffordd Gyswllt o'r pwynt y mae'n croesi â Heol Black Lion ar hyn o bryd (cwblhawyd yng Ngham 1a ac 1b) tua'r gogledd i ymuno â'r A476 (Ffordd Llandeilo). Ymgwymerwyd â lliniaru archeolegol sy'n gysylltiedig â Cham 1 yn 2018 ac adroddwyd arno eisoes (Enright 2018).

Roedd y brîff gwylio yn canolbwyntio ar ddau adrannau o botensial archeolegol a nodwyd. O fewn Ardal 1 cofnodwyd olion strwythurol o ddechrau'r 20fed ganrif, a allai fod yn gysylltiedig â Phwll Glo Emlyn (PRN 41236), ond roedd yr ardal a oedd yn weddill wedi'i thynnu o'r blaen i lefelau creigwely ac nid oedd yn cynnwys olion archeolegol. O fewn Ardal 2 roedd olion hen dramffordd pwll glo wedi goroesi i'r dwyrain o'r ardal ddatblygu, ond ni nodwyd unrhyw dystiolaeth o strwythurau pyllau glo blaenorol na dyddodion o ddiddordeb archeolegol yn yr ardal ddatblygu.

1 INTRODUCTION

1.1 Project Commission

- 1.1.1 DAT Archaeological Services were commissioned by Alun Griffiths Ltd to undertake a programme of archaeological mitigation during the proposed development of the Cross Hands Economic Link Road (Planning Consent E/32266) centred on NGR 5610 1330 (Figure 1).
- 1.1.2 The scheme is being delivered in two phases, with the current archaeological works focusing on a section of new road construction known as Phase Two, which sees the continuation of the link road from the point at which it currently intersects with Black Lion Road (completed in Phase 1a and 1b) northwards to join with the A476 (Llandeilo Road). The scheme will consist of a two-lane distributor road that provides a route connecting the Amman and Gwendraeth Valleys, in Carmarthenshire.
- 1.1.3 Following consultation the Development Management section of Dyfed Archaeological Trust (DAT-DM) were of the opinion that there were no archaeological constraints on development. However, the environmental appraisal report prepared by Jacobs recommended that an archaeological watching brief should be undertaken at several identified sites of archaeological potential.
- 1.1.4 The first phase of archaeological mitigation was undertaken by DAT Archaeological Services in 2018, in an area identified as having potential for surviving archaeology due to its proximity to 19th and 20th century colliery features. This work has already been reported on (Enright 2018).
- 1.1.5 Following a short break in the works the development resumed and DAT Archaeological Services were requested to undertake further mitigation in areas identified as having archaeological potential as part of the Phase Two works.
- 1.1.6 A Written Scheme of Investigation (WSI) for the archaeological works had been prepared by Alun Griffiths Ltd (Appendix I) but a supplementary WSI (Appendix II) was prepared by DAT Archaeological Services detailing the methodology for the proposed archaeological watching brief.
- 1.1.7 The purpose of a watching brief, as laid down in the CIfA S&G AWB (CIfA 2014) is:
 - To allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works.
 - To provide 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.

1.2 Scope of Project

- 1.2.1 A Written Specification of Investigation (WSI) for the watching brief was prepared by DAT Archaeological Services prior to the commencement of works (Appendix II). The WSI outlined the methodologies by which the watching brief should be undertaken, including those:
 - To identify the presence/absence of any archaeological deposits.
 - To establish the character, extent and date range for any archaeological deposits to be affected by the proposed ground works.

- To appropriately investigate and record any archaeological deposits to be affected by the ground works.
- To produce an archive and report of any results.

1.3 Report Outline

- 1.3.1 This report describes the location of the development works, reviews the archaeological background, and provides a summary and discussion of the archaeological watching briefs and their results.

1.4 Abbreviations

- 1.4.1 Sites recorded on the Regional Historic Environment Record¹ (HER) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). Dyfed Archaeological Trust Development Management – DAT-DM; Scheduled Monument – SM; Written Scheme of Investigation – WSI.

1.5 Illustrations

- 1.5.1 Printed map extracts are not necessarily produced to their original scale.

1.6 Timeline

- 1.6.1 The following timeline (Table 1) is used within this report to give date ranges for the various archaeological periods that may be mentioned within the text.

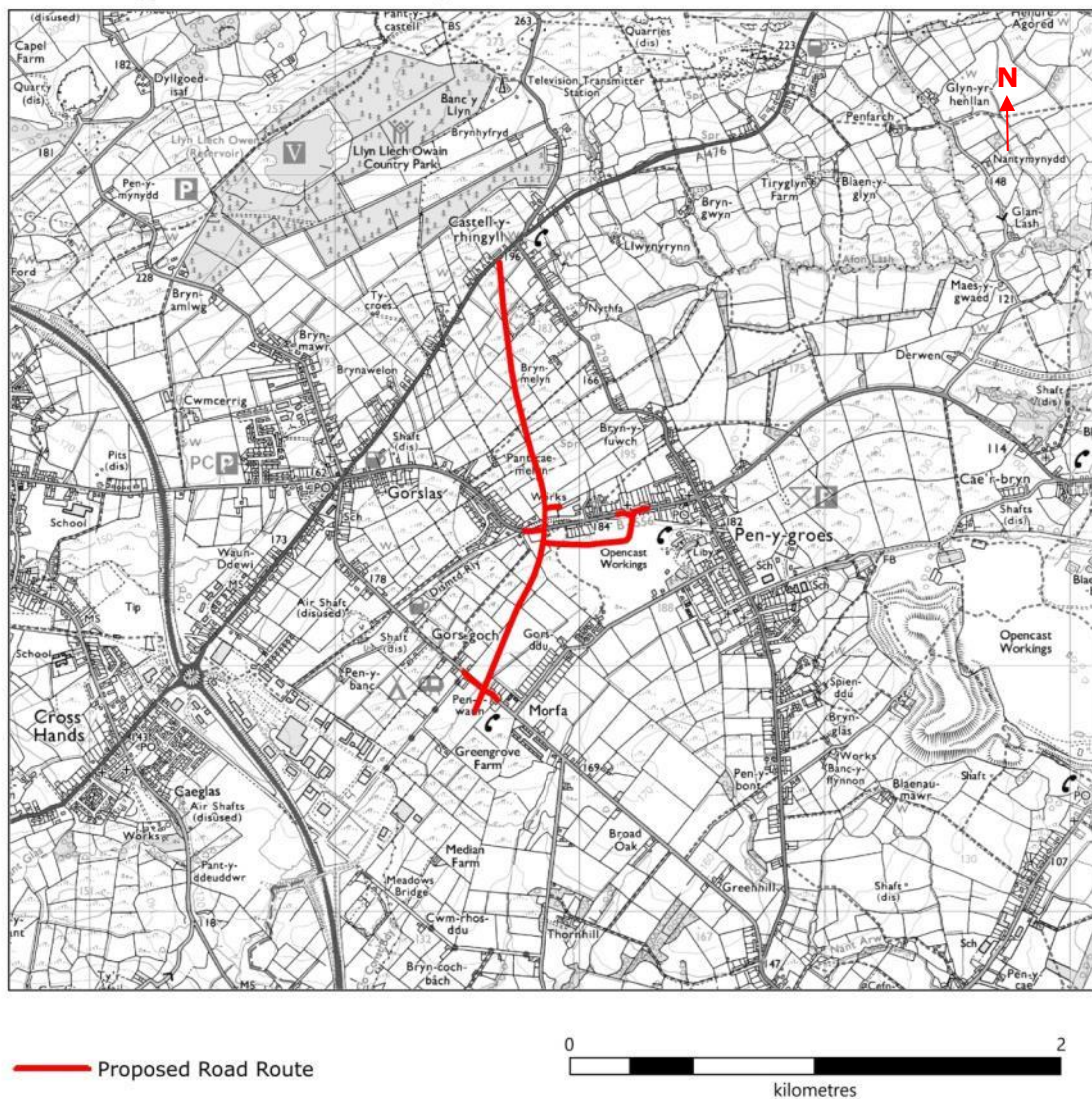
Period	Approximate date	
Palaeolithic –	c.450,000 – 10,000 BC	Prehistoric
Mesolithic –	c. 10,000 – 4400 BC	
Neolithic –	c.4400 – 2300 BC	
Bronze Age –	c.2300 – 700 BC	
Iron Age –	c.700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – c. AD 410	Historic
Post-Roman / Early Medieval Period –	c. AD 410 – AD 1086	
Medieval Period –	1086 – 1536	
Post-Medieval Period ² –	1536 – 1750	
Industrial Period –	1750 – 1899	
Modern –	20 th century onwards	

Table 1: Archaeological and Historical Timeline for Wales.

¹ Held and managed by Dyfed Archaeological Trust, Corner House 6 Carmarthen Street, Llandeilo, Carmarthenshire SA19 6AE.

² The post-medieval and industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust

Figure 1: Location plan.



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2 SITE DETAILS

2.1 Location

- 2.1.1 The following information has been extracted from the WSI prepared by Alun Griffiths Ltd.
- 2.1.2 The proposed Cross Hands Economic Link Road Phase 2 is located within agricultural land a short distance to the north of Cross Hands (Figure 1).
- 2.1.3 The road will run from the Black Lion Road to the junction of Llandeilo Road and Gate Road.
- 2.1.4 The agricultural landscape is one of small, enclosed fields within what was previously a landscape dominated by the coal industry; in particular the nearby collieries of California Colliery in the 19th century and Emlyn Colliery (PRN 41236) in the 20th century.
- 2.1.5 The underlying solid geology comprises South Wales Middle Coal Measures Formation - Mudstone, Siltstone and Sandstone. Sedimentary Bedrock formed approximately 310 to 318 million years ago in the Carboniferous Period. No overlying superficial deposits area recorded. (Source: British Geological Survey).

2.2 Archaeological Background

- 2.2.1 The following information has been extracted from the Environmental Appraisal 'WelTAG Stage 2 – Environmental Appraisal Report (Costain 2013).

The only potential prehistoric activity in the study area is represented by the Carreg Calch standing stone (Asset 5). This site may have been Bronze Age in origin but may equally be one of the many medieval or post-medieval boundary stones which are common in Carmarthenshire. The location of the standing stone was identified on 19th century maps but is no longer visible on site (PRN14492).

There are no further identified assets representing the period between the Bronze Age and the post-medieval period within the study area. The remaining assets consist of sites related to the post-medieval and modern industrial development of Cross Hands. The village grew as a settlement located at a noted cross-roads on the route from Carmarthen to Swansea which was an important staging post for travellers during the era of coach travel (James, 1991).

During the 18th and 19th centuries the landscape was transformed from an agricultural one to a mining landscape by the opening of a succession of coal mines developed along the Gwendraeth Valley from Cross Hands to Carway. The presence of the exploitable coal measures led to immense industrialisation of the area and an influx of labour from different areas. However, unlike the coal mining valleys of south eastern Wales, historically the Gwendraeth Valley retained a mix of farming alongside the coal mines, thus making coal mining a seasonal occupation. The temperate climate of cool summers and mild winters as well as the high rainfall in the area combined to enable mixed farming to remain a profitable occupation. It is due to the surviving agricultural traditions and the relative isolation that, despite the presence of coal mining and other outside influences, the area retained its rural traditions and majority of the population retained the Welsh language.

Rich seams of high quality anthracite coal were found in the Gwendraeth Fawr valley and the Mynydd Mawr, which led to the growth of a coal industry and large villages around the coal mines such as Cross Hands, Tumble, Penygroes, Cwmmawr, Pontyberem, Ponthenry and Trimsaran. The study area is associated with the former California Colliery, later superseded by the Emlyn colliery, as well as the remains of associated mining structures tramways, quarries and colliery waste tips.

3 WATCHING BRIEF METHODOLOGY

3.1 Fieldwork Methodology

- 3.1.1 The presence of DAT Archaeological Services was requested by Alun Griffiths Ltd to undertake an archaeological watching brief at the locations of sites identified in the HER in the vicinity of the intersection of the Cross Hands economic link road and the B4556. Figure 2 illustrates the location of each recorded HER point along the proposed route, overlaid on the 1st edition Ordnance Survey (OS) map. Table 2 provides a summary of each HER point.
- 3.1.2 Most of the recorded HER points relate to trackways and field boundaries that are no longer present, but during a walk-over survey on the 6th May 2021, two areas of potential archaeological interest were identified that may be affected by planned groundworks, these are labelled Area 1 and Area 2 in Figure 2. Most points in these areas include built structures that may have surviving remains. One of the built structures (associated with HER PRN 41236) in Area 1 may have already been exposed and recorded during an earlier site visit in January 2020 and is discussed in the results section of this report.
- 3.1.3 A combination of watching brief and trial trenching around the areas of potential interest was utilised in order to identify any potential archaeological remains.
- 3.1.4 This watching brief was undertaken in accordance with the relevant CIfA *Standard and Guidance for an Archaeological Watching Brief* (CIfA 2014).
- 3.1.5 Recording of all archaeological features or deposits conformed to best current professional practice and was carried out in accordance with the Recording Manual³ used by DAT Archaeological Services.
- 3.1.6 All numbers within the text within square brackets [] refer to the unique context number given to all individual deposits using the open-ended numbering system in accordance with the DAT Archaeological Services' Recording Manual. A list of contexts is recorded in Appendix III.

3.2 Post-Fieldwork Reporting and Archiving

- 3.2.1 All data recovered during the fieldwork will be collated into a site archive structured in accordance with specifications in *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2007), and procedures recommended by the National Monuments Record, Aberystwyth.
- 3.2.2 The results of the fieldwork have been assessed in local, regional and wider contexts.
- 3.2.3 The report includes a desk-based research element to ensure that the site is placed within its wider archaeological context.

³ DAT Archaeological Services has adopted the Recording Manual developed by English Heritage Centre for Archaeology.

Table 2: Summary of HER information. Red text indicates HER points in Area 1, blue text indicates HER points in Area 2 (see Figure 2, above).

WSI No	HER PRN	Description
10	41164	Field and quarry boundary. In total length boundary is approx. 70 metres long. Area of clearance banks in this area. Survival unknown. Quarry (PRN: 41165) related and house of Ty-Newydd to west. CAP 2000
33	41165	Small quarry as marked on OS 1st & 2nd ed maps. Shown on 1921 map with tram tracks and three related roofed structures. Quarry likely utilised for construction of early 'California quarry', remains of which are to the north. Vegetation covered. California quarry. CAP 200
34	41166	Track/footpath that used to lead to and from the small quarry passing through the small farm of Banc-twlc-Gwili to the west. Still evident. Dense grass at time of field visit. Quarry (PRN: 41165) related and house of Ty-Newydd to west. CAP 2000
	41167	Boundary running NW-SE. At southern end boundary meets up with dog leg of sluice (PRN 41168). Length from sluice to road is approx. 25 metres. No visible surface remains. Enclosure Acts. CAP 2000
	41168	E to W run of sluice. Approx. 2 m wide X 1.5 m deep and 73 m in length. 1905/6 map shows sluice running into a collecting tank (PRN:41169) to the E, however by 1921 main colliery tip had covered over the tank and 40 m of sluice. Not on 1940's/1970's AP's. Related to sluice (PRN: 41162) and holding tank (PRN: 41169). CAP 2000
14	41169	Water collection tank fed by EW sluice (PRN: 41168). Only depicted on 1905/6 map. Tank was approx. 6m X 3m. Not shown on 1921 map because of expanding tip, however possible structure still evident on 1972 AP's due to tip removal by later Emlyn Brickworks. No surface trace evident. Related to sluice channel (PRN: 44168). CAP 2000
15	41206	Boundary as marked on 2nd edition 1905/6 map. Runs from base of tipping northwards toward the line of the old railway track (PRN: 41158). Covered by tip on 1921 map. No visible surface trace. Related to early colliery workings 1905/6. Possibly earlier. CAP 2000
17	41224	Roofed structure at south side of Norton Road, opposite Calvinist chapel, 'Jerusalem'. At time of field visit no structure in this area was seen, however area was densely covered by brambles and other vegetation. Possibly related to PRN: 41224/41297/41226/41298 CAP 2000
20	41225	Roofed structure at south side of Norton Road, opposite Calvinist

WSI No	HER PRN	Description
		chapel, 'Jerusalem'. At time of field visit no structure in this area was seen, however area was densely covered by brambles and other vegetation. Possibly related to PRN: 41224/41297/41226/41298 CAP 2000
20	41226	Roofed structure at south side of Norton Road, opposite Calvinist chapel, 'Jerusalem'. At time of field visit no structure in this area was seen, however area was densely covered by brambles and other vegetation. Possibly related to PRNs 41224/41297/41225/41298. CAP 2000
34	41236	One of three small structures (loading bays) as shown in 1921 provisional edition map. Structure is only 3 metres X 2 metres in size and appears to have been roofed with a short length of tram track (approx. 15 metres) into quarry (PRN 41165). Unknown. Dense vegetation in area. Quarry (PRN: 41165) CAP 2000
8	41255	Field boundary as shown on 1st edition 1876 map. Remnants still at north end, otherwise untraceable. Barely traceable today. Pre-Colliery field boundary. CAP 2000
16	41296	Small structure at north edge of railway siding. Condition and form unknown as vegetation too dense. Unknown. (PRN: 41298/41297) CAP 2000
16	41297	Small structure at north edge of railway siding. Condition and form unknown as vegetation too dense. Unknown. (PRN: 41296). CAP 2000
9	41298	Tramline to and from quarry (PRN: 41185). Leads to small processing? sheds (PRN:41238/41236) No visible surface trace remains. At time of field visit area densely vegetated. Quarrying (PRN: 41185). CAP 2000

4 RESULTS

4.1 Area 1

- 4.1.1 A watching brief was undertaken on the 20th January 2020 when Alun Griffiths Ltd requested the presence of DAT Archaeological Services as structural remains had been exposed during bramble clearance in the northern part of Area 1 (Figure 2).
- 4.1.2 The remains consisted of a single structure, immediately south of the B4556 and comprised a wall standing up to 2m high, laid out in an L shape, perpendicular to the road, enclosing an area approximately 7m by 5m (Photo 1). The walls were built of mortared random rubble with brick inclusions, largely covered with vegetation. Internal surfaces were not exposed. On the southern side of the building was what appeared to be a wheel pit, a sunken rectangular area running the full width of the structure, and approximately 1.5m to 2m wide (Photo 2). These remains are in the location of PRN 41236 (see Table 2) so it is thought that this building may be one of the three structures shown in the 1921 provisional edition map, and therefore early 20th century in date. On the east side of the building was a covered shaft (Photo 3).



Photo 1: Internal view of the structural remains in Area 1. 1m scale.



Photo 2: Possible wheel pit on the south side of the building. 1m scale.



Photo 3: Shaft on the east side of the building. 1m scale.

- 4.1.3 In June 2021 a further watching brief was undertaken by DAT Archaeological Services. The works included ground reduction ahead of the proposed bypass route through Area 1 (Figure 2). This area was approximately 30m to the south of the former structure described above, although little remains of this building were evident upon arrival on site (Photo 4).
- 4.1.4 Works were undertaken using a JCB 20 tonne 360-degree excavator using both a toothless and a toothed bucket due to the nature of the ground deposits. Upon arrival it was apparent that the area had already been heavily disturbed by previous groundworks.
- 4.1.5 Initial work involved the stripping of modern overburden and vegetation from an area measuring 50m east/west and 40m north/south. This area had been compacted using modern equipment and included bricks, stone, road bedding and spoil. There were large amounts of modern rubbish included in this layer (Photo 5). Although the site was mostly void of vegetation there was occasional Japanese Knotweed and other weeds covering the site.
- 4.1.6 After the removal of the initial layer it was apparent that no archaeological deposits remained and that the site had been stripped, likely using a bulldozer, probably during Phase I works (Photo 6).
- 4.1.7 What remained was a heavily disturbed bedrock with frequent modern inclusions. Below this was an undisturbed bedrock consisting of a fragmented limestone.
- 4.1.8 Accordingly, the wider area was determined to have negligible archaeological potential and the watching brief on this area was abandoned.



Photo 4: General view of Area 1 prior to site works in June 2021.



Photo 5: Groundworks in progress in Area 1, showing modern ground deposits. View south, 1m scale.



Photo 6: Modern deposits exposed in Area 1. View north, 1m scale.

4.2 Area 2

- 4.2.1 There were seven individual HER points recorded in this area which included five structures, a boundary and a water tank (see Figure 2 and Table 2). In addition, a former tramroad runs roughly east – west through this area, parallel to the rear boundary of houses on the south side of the road. During the archaeological watching brief access across the tramroad from Norton Road had already been established so there was no opportunity to look at the tramroad itself aside from general photography. The tramroad was still visible as a levelled track bed within a partial cutting to the east (See Photo 7) but had largely been redeveloped to the west. The structures in the vicinity of the tramroad (PRNs 41224, 41225, 41226, 41296 & 41297) were not visible at the time of the watching brief, and the area in which they were located had been cleared and landscaped, suggesting it was unlikely that remains of these structures survive (Photo 8).



Photo 7: View east along the route of the former tramroad.



Photo 8: View northwest across the developed area adjacent to the tramroad.

- 4.2.2 In order to investigate PRNs 41169 and 41206 (Table 2; WSI nos. 14 and 15 respectively) three trenches were excavated south of the tramroad on the line of the proposed road. Each trench was excavated to a level just below that required to excavate and build the road.
- 4.2.3 All the trenches showed infill material from open-cast mining that had been carried out in this area. There was nothing of archaeological interest within the deposits, and no evidence related to PRN 41169 (a water tank) or PRN 41206 (a boundary) was identified.

Trench 1

- 4.2.4 Trench 1 was located at SN 58201 13477. An area approximately 10m by 4m was machine stripped, with a smaller area 5m by 1.9m excavated in the centre to a depth of 1m.
- 4.2.5 The lowest deposit observed was a firm, dark grey-black, mixed crushed stone and coal dust, in excess of 0.5m deep, and visible throughout the central excavated area. This was overlain by a 0.3m thick, firm, light orange-brown, sandy silt with abundant medium to large, sub-angular stones. The topsoil was a 0.1m thick deposit of friable, mid grey-brown, sandy silt with scrubby turf. See Photos 9 & 10.



Photo 9: Overall view of Trench 1 prior to exaction of the lowest deposit. 1m scale.



Photo 10: Section of Trench 1 showing the stratigraphic sequence of deposits. 0.5m scale.

Trench 2

- 4.2.6 Trench 2 was located at SN 58235 13532. An area approximately 10m by 4m was stripped by machine, with a smaller area 6m by 3m excavated further in the centre to a maximum depth of 0.80m.
- 4.2.7 The deposits observed in Trench 2 were very similar to those in Trench 1 but occurred in slightly thinner overlying bands. The lowest deposit was a firm, dark grey-black, mixed crushed stone and coal dust. This was overlaid by a 0.15m thick firm, light orange-brown, sandy silt with abundant medium to large, sub-angular stones. This in turn was overlaid by another layer of firm, dark grey-black, mixed crushed stone and coal dust, 0.3m thick, and a final layer of firm, light orange-brown, sandy silt with abundant medium to large sub-angular stones again, on top of that, 0.20m thick. See Photos 11 & 12.



Photo 11: Overall photo of Trench 2. 1m scale.



Photo 12: section of Trench 2 showing stratigraphic sequence of deposits. 0.5m scale.

Trench 3

- 4.2.8 Trench 3 was located at SN 58216 13566. An area approximately 8m by 4m was machine stripped, with a small area 5m by 1.8m excavated in the centre, to a maximum depth of 0.9m.
- 4.2.9 The deposits observed here were identical to those in Trench 1. The lowest deposit was a firm, dark grey-black, mixed crushed stone and coal dust, more than 0.5m deep. This was overlaid by a 0.5m thick, firm, light orange-brown, sandy silt with abundant medium to large sub-angular stones. See Photo 13.



Photo 13: Overall photo of Trench 3. 1m & 0.5m scale.

5. CONCLUSION

- 5.1 DAT Archaeological Services were commissioned to carry out an archaeological watching brief during groundworks associated with Phase 2 of the Crosshands Economic Link Road development.
- 5.2 Two areas of archaeological potential had been identified by the site contractors, based on an initial environmental appraisal report, as areas of potential archaeological significance requiring the archaeological watching brief. Each area included sites recorded on the regional HER associated with 19th and 20th century coal mining activity.
- 5.3 Within Area 1 the structural remains of an early 20th century masonry building were recorded, possibly associated with Emlyn Colliery (PRN 41236), after they were exposed during the clearance of vegetation. These comprised two walls of a rectangular structure, with attached wheel-pit and adjacent shaft. The remaining area appeared to have been cleared of any potential archaeological remains, with only modern deposits and natural bedrock exposed.
- 5.4 Within Area 2 the line of a former late 19th to early 20th century tramroad crossed the development area, with earthwork remains of the route surviving to the east of the development area. Contemporary structures around the tramroad appeared to have been cleared, and excavated trenches to the south revealed deposits consistent with substantial colliery backfill deposits, and no evidence of previous structures or features in this area were identified.
- 5.5 The watching brief demonstrated that the ground works associated with Phase 2 of the road scheme development did not appear to have an adverse impact upon significant archaeological remains or deposits.

6 SOURCES

6.1 Unpublished

Alun Griffiths Ltd, 2018. *Cross Hands Economic Link Road Phase 2. Written Scheme of Investigation.*

Brown, D. H., 2007. *Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation.* Institute of Field Archaeologists

CIfA. 2014. *Chartered Institute of Field Archaeologists Standards and Guidance for Archaeological Watching Brief*

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Enright, C., 2018. *Cross Hands Economic Link Road: Phase Two: Archaeological Watching Brief (SN 5610 1330).* DAT Report no. 2018-33.

6.2 Database

Dyfed Archaeological Trust Historic Environment Record, housed with Dyfed Archaeological Trust in The Corner House, Llandeilo, Carmarthenshire, SA19 6AE

British Geological Survey:

<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

6.3 Cartographic

Ordnance Survey 1st edition 1:2500 map published in 1878

Ordnance Survey 1:2500 map published in 1921

Ordnance Survey Map, 2001, 1:25 000

APPENDIX I

Project Archive

ERN: 126653

63 x Digital photographs; Film Number 126653 (JPEGs & TIFFs)

1x Photo catalogue

Site visit notes and context descriptions

APPENDIX II:

WSI PREPARED BY ALUN GRIFFITHS LTD

CROSS HANDS ECONOMIC LINK ROAD PHASE 2

WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL WATCHING BRIEF

OCTOBER 2017

SUMMARY

This document is presented as a written scheme of investigation (WSI) for an archaeological watching brief relation to the proposed development of Cross Hands Economic Link Road Phase 2.

The Cross Hands Economic Link Road is referenced as a transformational scheme of regional importance in the Joint Local Transport Plan for South West Wales (2015 - 2020) and the recently launched 'A strategic regeneration plan for Carmarthenshire 2015-2030 -Transformations'.

The scheme is to be delivered in phases, with this contract focusing on a section of new road construction known as Phase 2 which sees the continuation of the Link Road from the point at which it currently intersects with Black Lion Road (Completed as Phase 1a and 1b) Northwards to join with the A476 (Llandeilo Road) a length of 1.7km.

Phase 2a links Black Lion Road within Norton Road, Penygroes, with Phase 2b continuing on to the A476. The road, which will unlock key sites identified in the Swansea Bay City Deal. The road consist of a new 2 lane distributor road with associated Active Travel provision. This road would serve the A48 trunk road and Cross Hands Business Park; linking Gorslas and Cross Hands via The Cross Hands Business Park, and additionally reducing congestion at the A48 Cross Hands roundabout, improved local environmental conditions for residents of Gorslas and Cross Hands by effectively bypassing the Gorslas residential area.

The scheme provides a route that connects the Amman and Gwendraeth Valleys and in doing so provides improved links between communities and key employment, health, education and leisure sites by a number of different modes.

This route continues in a north-easterly direction from the end of the ELR Phase 1 across Black Lion Road with a near straight alignment. It would then move into a left hand bend and cross Norton Road seeking to minimise impact on the associated residential properties. From here the route would run north, again with a near straight alignment, to the east of the Caeau Blaen-yr-Orfa SSSI whilst avoiding direct impact on a field actively used for horses, before moving into a right hand bend to join the A476 Llandeilo Road just south of the existing B4297 Gate Road junction. This route would approach the A476 at an angle that facilitates a continuous alignment with the existing A476, which would assist in re-routing strategic traffic onto the new route. The approximate length of the proposed route would be 2.0km.

The Head of Planning's report dated the 19th April 2017 to Carmarthenshire County Councils Planning Committee in relation to application no. E/32266. Following consultations it was stated that Dyfed Archaeology had no objection as there are no historic constraints on site.

However the Environmental appraisal report prepared by Jacobs recommended that an archaeological investigation should be undertaken. Due to the heavily Industrialised nature of the area the potential for unknown archaeological features pre-dating the Industrial revolution is considered to be low. A desktop review of historic maps show no recorded areas of historic interest. This WSI outlines measures to be undertaken during the works to record and preserve any historic remnants discovered.

This WSI outlines the methodology of an archaeological watching brief proposed in order to determine the archaeological presence and significance of any remains on the areas identified within the Environmental Statement.

1. INTRODUCTION

2.1 Project Background

- 2.1.1 This report is presented as a written scheme of investigation (WSI) for an archaeological watching brief in relation to a proposed development at Cross Hands Economic Link Road Phase 2.
- 2.1.2 Planning consent (E/32266) has been sought from Carmarthenshire County Council for the Cross Hands Economic Link Road Phase 2.
- 2.1.3 Dyfed Archaeology had no objection to the granting of planning as there are no historic constraints on site. Dyfed Archaeology letter dated 29th March 2017 referred to the environmental appraisal report prepared by Jacobs and highlighted a desk top review for the scheme. This had been completed and submitted within the Environmental Statement for the submitted scheme. The Environmental Statement highlighted areas of archaeological interest which required further investigation.

2.2 Site Location and description

- 2.2.1 The proposed Cross Hands Economic Link Road Phase 2 is located within agricultural land, with a short length passing through a disused coal tip, a short distance to the north of Cross Hands.
- 2.2.2 The road will run from the Black Lion Road to the junction of Llandeilo Road and Gate Road.
- 2.2.3 The agricultural landscape is one of large enclosed fields. The disused coal tip is bounded by the former Emlyn and California colliery.
- 2.2.4 Unlike the coal mining valleys of south eastern Wales, historically the Gwendraeth Valley retained a mix of farming alongside the coal mines, thus making coal mining a seasonal occupation.
- 2.2.5 The temperate climate of cool summers and mild winters as well as the high rainfall of in the area combined to enable mixed farming to remain a profitable occupation. During the 18th and 19th centuries a succession of coal mines developed along the Gwendraeth Valley from Cross Hands to Carway and the presence of the coal measures led to immense industrialisation and an influx of labour from different areas. However, the surviving agricultural traditions and the relative isolation may be the reasons that, despite the presence of coal mining and other outside influences, the area retained its rural traditions and majority of the population

3. AIMS AND METHODOLOGY

3.1 Aims

3.1.1 The Investigation proposes an archaeological watching brief on the areas identified within the Environmental Statement as shown on the attached plan reference WSI 01

3.1.2 The aims of the watching brief proposed in this WSI are to:

- Determine the extent, condition, nature, character, date and significance of any archaeological remains encountered.
- Establish the nature of the activity on the site.
- Identify and establish the extent of any Prehistoric activity on the site.
- Identify any artefacts relating to the use of the site.
- Provide further information on the archaeology of the site from any archaeological remains encountered.
- Determine the geological and soil formation at the site and establish the depths of topsoil.
- To make available to interested parties the results of the investigation subject to any confidentiality restrictions.

4. SCOPE AND METHODOLOGY OF WORKS

- 4.1 The proposed archaeological works will comprise a watching brief on the topsoil strip of the identified area, possibly undertaken as localised trenching at the locations indicated on plan WSI 01 which were identified in the Environmental Masterplan, which was submitted with the original application.
- 4.2 The investigative works for the WSI will be done under supervision by a suitably qualified archaeologist.
- 4.3 The monitoring archaeologist will examine excavated areas for archaeological features, deposits or artefacts as the work proceeds. Resulting sections will be recorded in order to aid in assessing the potential for preserved archaeological stratigraphy at the site.
- 4.4 The watching brief will be undertaken in accordance with the relevant Standards and Guidance published by the Chartered Institute for Archaeologists (CIfA, 2014a).
- 4.5 Decisions made on the methods and strategies for sampling features will be based upon the nature and extent of any deposits when and where they are revealed. This will be reviewed once any surviving archaeology is revealed and agreed with the Archaeological Advisor to the Planning Authority (Planning Archaeologist) as appropriate. As a minimum guideline however, discrete features will be half-sectioned in the first instance; linear features will be sampled at a minimum of 10% along their length (each sample section not less than 1m), or a minimum of a 1m sample section if the feature is less than 10m long.

General Methodologies

- 4.6 Topsoil strip of the identified areas will be undertaken as localised trenching at locations identified on plan WSI 01 by an excavator fitted with a flat-bladed bucket and under archaeological supervision, removing any topsoil until the first archaeological horizon or undisturbed natural subsoil is exposed. Thereafter, any identified deposits will be cleaned manually to define their extent, nature, form and, where possible, date.
- 4.7 All information identified in the course of the site works will be recorded stratigraphically, with sufficient pictorial record to identify and illustrate individual features. It should be noted that, where possible, data will be collected and stored digitally and in a format suitable for long term storage by the Archaeological Data Service (ADS). Primary records will be available for inspection at all times.
- 4.8 The excavation, sampling and recording will include, as a minimum:
 - The recording of individual contexts on appropriate pro-formas

- Excavation plans on GPS; planning and section drawing of appropriate trench sections, single contexts and features (usually at 1:20 scale for plans and 1:10 scale for inhumations and sections)
- Photographs; and other appropriate drawn and written records

4.9 The survey and recording works will meet the following requirements:

- All levels will be recorded and reduced to OS datum
- All trench locations will be electronically surveyed with National Grid references
- The locations of trenches shall be plotted on appropriate scale plans related to the National Grid and labelled with six figure eastings and northings
- The electronic survey record shall be retained with the project archive.

4.10 Site photography will be by high resolution (7 megapixel or greater) colour DSLR photography. Photography will include general site shots, shots of each trench, and shots of individual features and groups of features. All photographs will include a suitable photographic scale and will be recorded on a photographic register detailing as a minimum the subject, feature number, location and direction of each shot.

Finds

4.11 Artefact collection policy will be concerned with the provision of adequate samples for meeting the objectives of the work. If archaeological objects are recovered an appropriate retention/discard strategy will be agreed with the relevant repository. Discarded artefactual materials will be described and quantified through assignment to broad categories in the field.

4.12 All retained finds and archaeo-environmental samples are to be treated and conserved in accordance with the English Heritage guidance document A Strategy for the Care and Investigation of Finds (English Heritage, 1995) and the UKIC's document Guidelines for the Preparation of Excavation Archives for Long Term Storage (UKIC, 1990). Assessment and analysis of finds and archaeo-environmental samples will be undertaken, as necessary. Finds and sample storage will be at Rubicon Heritage's Office unless an alternative is required.

4.13 Any human remains discovered will be recorded in plan and full excavated (see section 5.2). A Ministry of Justice licence under Section 25 of the Burial Act 1857 will be obtained. Any exhumation and post-excavation treatment will be carried out in accordance with published guidelines (McKinley & Roberts 1993; Brickley & McKinley 2004).

4.14 In general finds will be treated in the following way:

- All finds, where appropriate, will be retained from each archaeological context excavated.
- All finds, where appropriate, shall be washed.

- All Pottery, and other finds, where appropriate, shall be marked with the, the site code and context number.
- Finds work will be undertaken in line with the Chartered Institute for Archaeologists Guidelines for Finds Work.

Environmental Sampling

- 4.15 Where appropriate contexts will be sampled in accordance with the guidelines provided by English Heritage (2011). Samples will be collected for technological, pedological and chronological analysis as appropriate.
- 4.16 Should archaeological remains be identified soil samples will be taken as appropriate to contribute to the evaluation of the nature, date and extent of those remains. The exact sampling methodology can only be determined once the nature of archaeological remains becomes apparent, however given the dry condition of the site it is most likely that flotation samples of up to 40 Ltr will be taken from individual contexts with the aim of recovering charred plant remains. These charred plant remains would contribute to the evaluation if there was material suitable for dating features, or if they could contribute to the interpretation of the function of features. Where ever possible samples should be taken in response to specific research questions.
- 4.17 Any bone recovered from stratified deposits will also be subject to assessment; analysis will be limited to material that can provide metrical, ageing or sex information.

Reporting & Archiving

- 4.18 Within two weeks of completion of the onsite works a fieldwork report will be produced covering this element of works. One unbound, three bound copies, a CD-ROM and a digital copy in PDF format will be supplied to the client, if required, for distribution to relevant parties.
- 4.19 The preparation of the report will follow the guidelines published by the Chartered Institute for Archaeologists (CIfA 2014b). Details of style and format will be determined by Rubicon Heritage Limited but will include:
- A non-technical summary.
 - The site location.
 - Aims and purpose of the archaeological work.
 - The methodology of works.
 - A description of the project results.
 - An objective interpretation of the results, placing them in an appropriate local and regional context.

- Site layout plans on an OS base, with the location of the watching brief areas.
- Plans of each area in which archaeological features were recorded.
- Sections and feature sections (with OD heights).
- Site matrices where appropriate.
- A consideration of evidence within its wider context.
- Site photographs, including key features, and an index to the full photographic archive.
- A summary table and descriptive text showing the features, classes and numbers of artefacts located, and soil profiles, with interpretation.
- An archive statement, which will summarise the contents, location, and projected deposition date of the archive, if required.
- Supporting illustrations & plans, suitably captioned, at appropriate scales. These will include a location map and site plan; copies of historic map & historic photographs where relevant.

4.20 The results of the archaeological work will form the basis of a full archive to professional standards, in accordance with:-

The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017.

National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017 will also be adhered to in relation to the compilation and treatment of the archive.

- 4.21 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the CIfA in that organisation's code of conduct (CIfA) and this will be adhered to in relation to the current project.
- 4.22 Digital archives will be submitted to RCAHMW while the physical site archive will ultimately be deposited with Carmarthenshire Museum, this will also include a copy of the report.
- 4.23 Hard copy project reports as well as a digital copy will be submitted to the regional HER.
- 4.24 A summary of the project will be submitted, within two years of completion, for suitable publication in a journal (eg. *The Carmarthenshire Antiquary*, *ArchaeologiaCambrensis*)

5. UNFORSEEN ARCHAEOLOGICAL REMAINS FOUND DURING WORKS

5.1 Unforeseen Archaeological Remains of Significance

- 5.1.1 In the event of archaeological remains of unexpected or exceptional (i.e. of regional or national) importance that requires further investigation being encountered, during either archaeological or non-archaeological works on site, the following will be undertaken:
- The stripping of soil, ground reduction or ground disturbance will cease in that area.
 - The archaeologist will examine the remains as soon as is practically possible, and certainly within 24 hours of the find.
 - The Project Archaeologist will inform the Planning Archaeologist of the finds and arrange a site meeting at the earliest possible convenience to all parties.
 - The Project Archaeologist will, if necessary, erect temporary fencing around the area of possible archaeological remains until such a meeting.
 - The impact on archaeological remains will be mitigated in a manner appropriate to their importance.

5.2 Human Remains

- 5.2.1 Any discovered human remains will be left *in situ*, covered and protected.
- 5.2.2 If removal is necessary the Project Archaeologist will inform the Planning Archaeologist, the Client, and the local Coroner as appropriate. Advice will be sought from the Ministry of Justice by the Project Archaeologist as to whether a licence may be required to exhume any or all remains.
- 5.2.3 A strategy for the excavation, analysis, retention and/or reburial of a) disarticulated and b) articulated human remains will need to be developed and specified in a discussion with the Planning Archaeologist covering the identified human remains. The cataloguing and analysis of all human remains will be undertaken, as necessary, by Carmelita Troy, osteoarchaeologist. All treatment of remains will follow industry-standard procedures (McKinley and Roberts, 1993).
- 5.2.4 Normal conditions will apply with regard to finds ownership and the Treasure Act 1996.

6. PROGRAMME & MONITORING

6.1 Provisional Programme

- 6.1.1 It is intended that the work shall commence during the site clearance works of the scheme.
- 6.1.2 The post-excavation assessment report on the results will be completed within 6 months of the completion of fieldwork.

6.2 Monitoring Responsibilities

- 6.2.1 The appointed qualified archaeologist will keep the Planning Archaeologist informed on the progress of works, including post-excavation works, as necessary.

- 6.2.2 Reasonable access to the site is to be arranged at all times for Planning Archaeologist, should they request to make a site inspection to ensure that the archaeological works is progressing satisfactorily.
- 6.2.3 Any variations to the WSI shall be agreed with the Planning Archaeologist, in writing, prior to them being carried out.

7. ADDITIONAL INFORMATION

7.1 Health & Safety

- 7.1.1 A risk assessment for the archaeological evaluation trenching works will be produced and submitted to the client for review prior to the progression of such works.
- 7.1.2 The following statutory provisions and codes of practice will be adhered to where relevant:

All statutory provisions and by-laws relating to the work in question, especially the Health and Safety at Work etc. Act 1974

The Chartered Institute for Archaeologists Code of Conduct
Chartered Institute for Archaeologists Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology

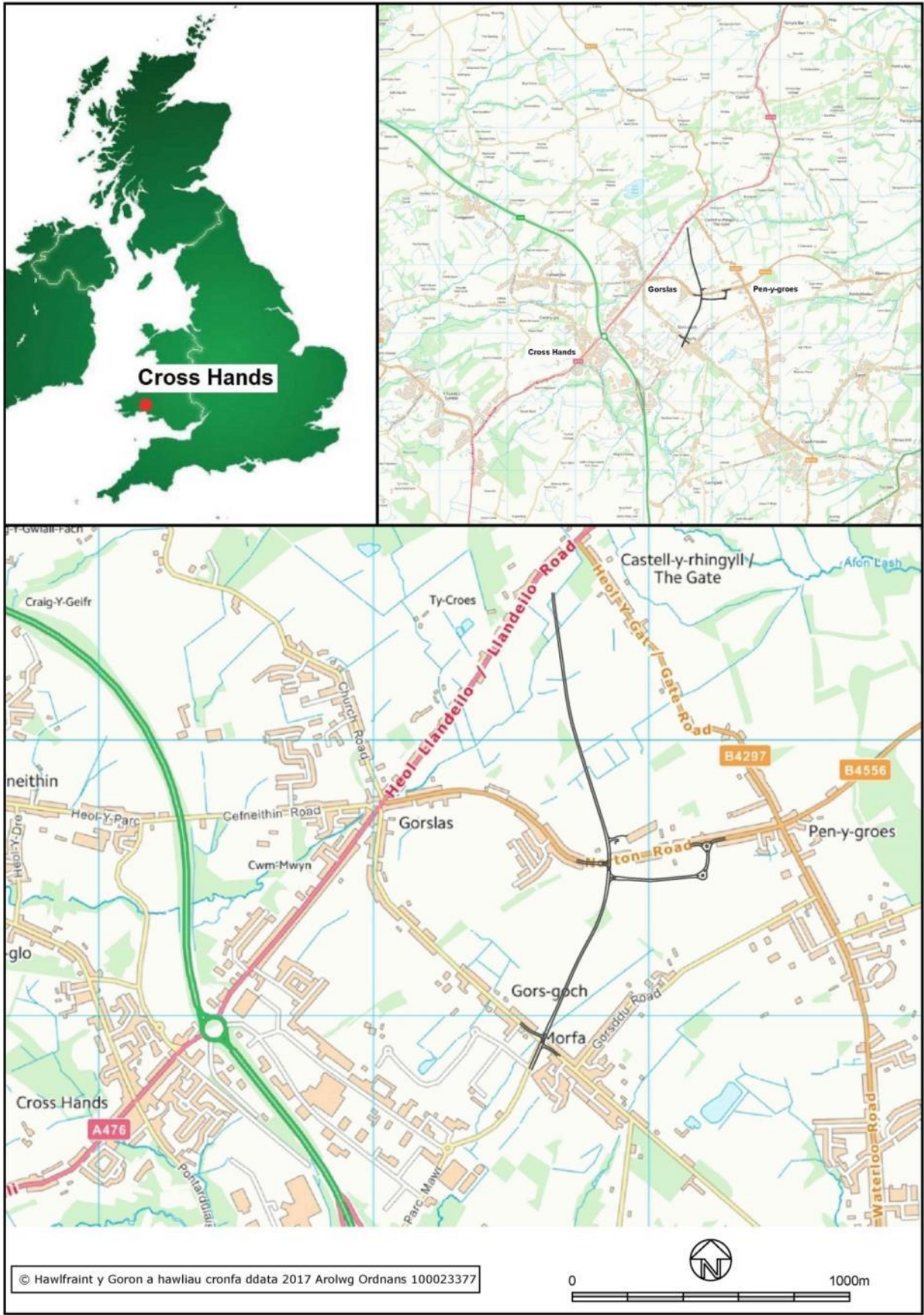
7.2 Personnel

- 7.2.1 The field team deployed by appointed archaeologist will include only full time professional archaeological staff. All staff in supervisory positions will be members, at an appropriate level, of the Chartered Institute for Archaeologists (CIfA).
- 7.2.2 The overall management of the various stages of the project will be done by a Project Archaeologist, who will oversee all phases of the archaeological programme of works, through to its completion.
- 7.2.3 The analysis of the finds and environmental data will be undertaken by the Project Archaeologist.

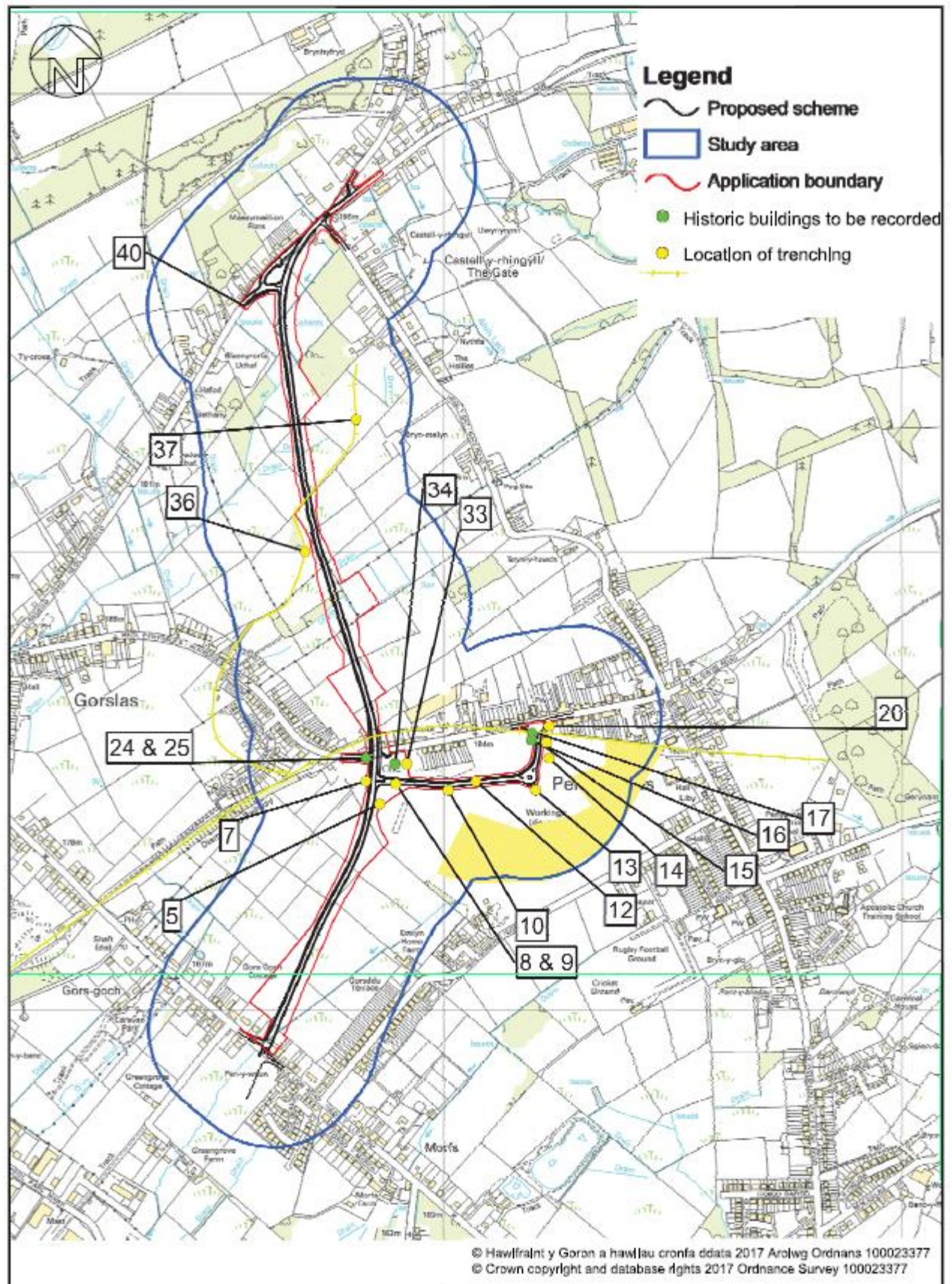
7.3 Variations

- 7.3.1 Any variations to this Written Scheme of Investigation that may be needed as a result of the emerging results of works will be approved in advance with the Planning Archaeologist.

Figure 1 - Cross Hands Economic Link Road Phase 2, Carmarthen: Site location.



WS1 01 – Extents of WSI



Extract from Environmental Statement

11.4 Predicted Impacts

11.4.1 Potential impacts assessed to be of moderate magnitude or above are presented below. Impacts of less than moderate magnitude are presented in Appendix 11.4 (Potential Impacts) in Volume 2 Technical Appendices.

Archaeological Remains

Construction

11.4.2 Construction of the proposed scheme would have potential impacts of moderate or above magnitude on 15 archaeological remains. Please refer to Table 11-12.

Table 11-12: Potential impacts of moderate magnitude or above on Archaeological Remains - Construction

Asset Number	Asset Name	Value of Asset	Magnitude of Impact	Significance of Effect
5	Emlyn Colliery Field Boundary	Negligible	Major	Slight
7	Emlyn Colliery Road	Negligible	Moderate	Slight
8	Emlyn Colliery Field Boundary	Negligible	Major	Slight
9	Emlyn Colliery Tramway	Low	Moderate	Slight
10	Emlyn Colliery Field and Quarry Boundary	Negligible	Major	Slight
12	Emlyn Colliery Water Channel	Negligible	Major	Slight
13	Emlyn Colliery Trackway	Low	Moderate	Slight
14	Emlyn Colliery Water Tank	Negligible	Moderate	Slight
15	Emlyn Colliery Boundary	Negligible	Major	Slight
20	Emlyn Colliery Roofed Structure	Negligible	Major	Slight
31	Former Mnydd Mawr Railway	Low	Moderate	Slight
33	Emlyn Colliery Quarry	Negligible	Major	Slight
36	Glas pant Tramway	Low	Moderate	Slight
37	Bryn-Melyn Tramway	Low	Moderate	Slight
40	Site of Carreg Ar Holt Boundary Stone	Negligible	Major	Slight

11.4.3 As a result of assets being within the footprint of the proposed scheme, construction would remove archaeological remains comprising field and quarry boundaries and a water channel associated with Emlyn Colliery and

Emlyn Quarry (Assets 5, 8, 10, 12 and 15), as well as removing archaeological remains comprising Emlyn Quarry itself (Asset 33). The magnitude of impact on all six assets has been assessed as major and the significance of effect as Slight.

11.4.4 Assets 7, 9, 13, 31, 36 and 37 comprise elements of a transport infrastructure associated with 19th and early 20th century industrial activity within the study area. Assets include a track-way, road, railway and tramways. Construction of the proposed scheme would remove archaeological remains associated with these assets where each asset is severed by the scheme. The magnitude of impact on them has been assessed to be moderate and the significance of effect as Slight.

11.4.5 Construction of the proposed scheme would result in the removal of archaeological remains comprising site of the Carreg Ar Holt Boundary Stone (Asset 40) to the west of Castell-y-Rhingyll village. The magnitude of impact has been assessed to be major and the significance of effect as Slight.

11.4.6 Potential impacts of less than moderate magnitude are predicted on a further 20 archaeological remains, as described in Appendix 11.4 (Potential Impacts) in Volume 2 Technical Appendices.

Operation

11.4.7 The severance experienced by Assets 7, 9, 13, 31, 36 and 37 during construction would continue into Operation. The magnitude of impact on them has been assessed to be moderate and the significance of effect as Slight. Please refer to Table 11-13.

Table 11-13: Potential impacts of moderate magnitude or above on Archaeological Remains – Operation

Asset Number	Asset Name	Value of Asset	Magnitude of Impact	Significance of Effect
7	Emlyn Colliery Road	Negligible	Moderate	Slight
9	Emlyn Colliery Tramway	Low	Moderate	Slight
13	Emlyn Colliery Trackway	Low	Moderate	Slight
31	Former Mnydd Mawr Railway	Low	Moderate	Slight
36	Glaspant Tramway	Low	Moderate	Slight
37	Bryn-Melyn Tramway	Low	Moderate	Slight

11.4.9 The value of the other archaeological remains identified within the study area results from their physical remains rather than their settings. As such no further impacts on archaeological remains during Operation are predicted.

APPENDIX III

CROSS HANDS ECONOMIC LINK ROAD PHASE 2 WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL WATCHING BRIEF

1 INTRODUCTION

- 1.1 This Written Scheme of Investigation (WSI) has been prepared by DAT Archaeological Services following a request from Alun Griffiths (Contractors) Ltd to provide an archaeological watching brief. The watching brief will be undertaken in identified areas where there is a potential for archaeological remains to be present. By doing this, it will ensure that any archaeological remains exposed by the groundworks can be appropriately recorded, and a report and archive prepared.
- 1.2 Alun Griffiths (Contractors) Ltd have already prepared a detailed WSI detailing the project background and potential impacts on archaeological remains. This WSI includes more detailed information on the scheme and a summary archaeological and historical background. This information is not been repeated here.
- 1.3 The works being undertaken are associated with the northern section of the Phase 2 element of the Cross Hands Economic Link Road. The Phase 2 works sees the continuation of the Link Road from the point at which it currently intersects with the Black Lion Road (completed as Phase 1a and 1b), northwards to join with the A476 (Llandeilo Road) a length of 1.7km. The present WSI will be for works undertaken on the northern side of the B4556 Penygroes Road. Further works will be required to the south but these are unlikely to be done until 2019.
- 1.4 This WSI is intended to be a brief supplementary WSI detailing the methodology DAT Archaeological Services will employ, our code of practices and policies adhered to. This document has been prepared for the client and is specifically prepared for DAT Archaeological Services to undertake the required archaeological works. The WSI cannot be used by any third party.
- 1.5 The written scheme of investigation is in accordance with the *Standard and Guidance for Archaeological Watching Briefs* (Chartered Institute for Archaeologists (CIfA), 2014).
- 1.6 DAT Archaeological Services has considerable experience of this type of project and always operates to best professional practice. DAT Archaeological Services is the contractual arm of Dyfed Archaeological Trust that has its own Health and Safety Policy, and all works are covered by appropriate Employer's Liability and Public Liability Insurances. Copies of all are available on request.
- 1.7 Dyfed Archaeological Trust is a CIfA Registered Organisation and all permanent staff are CSCS registered.

2. WATCHING BRIEF

- 2.1 The definition of archaeological watching brief, taken from the Chartered Institute for Archaeologists Standards and Guidance: for Archaeological Watching Briefs (CifA S&G: AWB 2014) is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.
- 2.2 The purpose of a watching brief, as laid down in the CifA S&G AWB is:
to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works;
- 2.3 This document provides a scheme of works for:
- 2.4 ***Archaeological attendance during ground works focusing on the northern section of the Phase 2 part of the Cross Hands Economic Link Road. This will include areas previously identified by the contractors as being of archaeological significance. Appropriate investigation and recording of any such remains will be undertaken if revealed. A report and archive of the results of the works will be prepared.***

3. PROJECT OBJECTIVES

- 3.1 Provision of a written scheme of investigation to outline the methodology by which DAT Archaeological Services will undertake the archaeological watching brief.
- 3.2 To monitor ground works in order to identify the presence/absence of any archaeological deposits.
- 3.3 To establish the character, extent and date range for any archaeological deposits to be affected by the proposed ground works.
- 3.4 To appropriately investigate and record any archaeological deposits to be affected by the ground works.
- 3.5 To produce an archive and report of any results.

4. FIELDWORK

- 4.1 The watching brief would entail an archaeologist being present during all ground works where there is a potential for archaeological remains to be exposed, damaged or destroyed. This will be carried out during the initial site strip for the new road line in the area of a former tramway alignment and a railway alignment; both post-medieval in date, where they cross the new road route.
- 4.2 The tramway route has been identified crossing the central part of the proposed road route and the railway line ran to the north of the properties along the Penygroes road near the Six Ways junction.
- 4.3 It was known prior to the works starting, that the route of the tramway through the central part of the area had already been significantly compromised through being firstly reused as a farm track over the years and more recently the area had become very waterlogged and disturbed through plant traffic associated with drilling and grouting operations undertaken by another contractor prior to Griffiths getting on-site. The

area has been deemed to have been totally destroyed and will not be investigated further.

- 4.4 The railway line area will be investigated during the week commencing 4th June 2018.
- 4.5 It is essential coordination between the site contractor's and archaeologist is established at the outset to avoid any potential disturbance to archaeology without an archaeologist being present, or unnecessary visits to the site when works are being carried out that do not require the presence of an archaeologist.
- 4.6 Adequate time must be made available to the visiting archaeologist to ensure that appropriate recording can be undertaken of any archaeological features or deposits exposed during ground works.
- 4.7 Recording of all archaeological features or deposits will conform to best current professional practice and be carried out in accordance with the Recording Manual⁴ used by DAT Archaeological Services. Significant archaeological features or deposits will be drawn at a suitable scale (no less than 1:20) and photographed in an appropriate format.
- 4.8 All archaeologically significant finds will be retained and, where possible, related to the contexts from which they derived. Finds will be temporarily stored by DAT Archaeological Services in stable conditions. All finds, except those deemed to be Treasure, will remain the property of the landowner.
- 4.9 Under the 1996 Treasure Act, "treasure" can be summarised as:
- Any object other than a coin containing at least 10% gold or silver and at least 300 years old;
 - Any prehistoric assemblage of base metal;
 - Coins found together which contain 10% gold or silver (but no single coins) and groups of at least 10 coins of other metals, provided they are at least 300 years old;
 - Any object found associated with treasure except unworked natural objects; and
 - Any object which would have been Treasure Trove before the 1996 Act but not covered above.
- 4.10 In the event that unforeseen archaeological discoveries are made during the development, or that archaeological remains of high significance are exposed, DAT Archaeological Services shall have the power to halt any ground works and shall inform the site agent/project manager and the curatorial officer, and prepare a written statement with plan detailing the archaeological evidence. Following assessment of the archaeological remains by the curatorial officer, DAT Archaeological Services shall, if required, implement on behalf of the Client a contingency scheme for salvage excavation of affected archaeological features. In these instances it would be necessary to employ extra resources to record such features to an appropriate standard.
- 4.11 In the event that human remains are encountered, the District Coroner's Office and the Police will be notified immediately. All human remains will, where possible, be left *in situ*. If preservation *in situ* is not possible all statutory permissions will be obtained in writing before removal begins.

⁴ DAT Archaeological Services have adopted the Recording Manual developed by English Heritage Centre for Archaeology. A copy will be available on-site for inspection if required.

5. POST-FIELDWORK REPORTING AND ARCHIVING

- 5.1 Assuming the site results are considered significant based on the DAT archive retention policy, all data recovered during the evaluation will be collated into a site archive structured in accordance with the specifications in *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (Brown 2011), and the procedures recommended by the National Monuments Record, Aberystwyth. The *National Standards for Wales for Collecting and Depositing Archaeological Archives* produced by the Federation of Museums and Art Galleries of Wales will also be adhered to. Digital archives will be collated using the Royal Commission on the Ancient and Historical Monuments of Wales systems (2015) and deposited with the RCAHMW.
- 5.2 The results of the fieldwork will be assessed in local, regional and wider contexts. The report will include a desk-based research element to ensure that the site is placed within its wider archaeological context. A report that is fully representative of the results of the fieldwork will be prepared and digital copies will be sent to the client for dissemination to all relevant parties. The photographic record will be included as part of this archive.
- 5.3 DAT Archaeological Services will arrange for the deposition of finds, and ascertain the costs of storage and deposition, with an approved body before the project commences and inform the curator of the arrangement which has been made (it is anticipated that the paper and digital archive will be deposited with the Royal Commission on the Ancient and Historical Monuments of Wales and any finds to Carmarthenshire Museum).
- 5.4 A summary of the project results, excluding any confidential information, may be prepared for wider dissemination (e.g. Archaeology in Wales and special interest and period-specific journals).
- 5.5 Digital copies of the reports will be produced for the client. Digital copies of the report will be supplied to Dyfed Archaeological Trust - Development Management and the regional Historic Environment Record.

6. STAFF

- 6.1 This project will be managed by James Meek, Head of DAT Archaeological Services.
- 6.2 Archaeological attendance during the watching brief will be undertaken by staff drawn from the team of archaeologists employed by DAT Archaeological Services.

7. MONITORING

- 7.1 The Dyfed Archaeological Trust – Development Management team should be told of the commencement of the works so that they can arrange a monitoring visit if needed. The fieldwork may need to be monitored by the Head of DAT Archaeological Services. All parties should be provided with free access to the site at any time during the watching brief works.

8. HEALTH AND SAFETY

- 8.1 All DAT Archaeological Services staff are CSCS⁵ registered.
- 8.2 DAT Archaeological Services will carry out a health and safety risk assessment to ensure that all potential risks are minimised.
- 8.3 All relevant health and safety regulations must be followed.

⁵ Construction Skills Certification Scheme (Health and Safety Tested)

- 8.4 All site inductions, H&S procedures and site rules of the site contractor will be made known to DAT Archaeological Services staff prior to them commencing work on-site.
- 8.5 Safety helmets, safety boots, goggles, gloves, long sleeve high visibility vests and trousers are to be used by all site personnel. The site contractors will make all archaeological staff aware of any other PPE⁶ that may be required and provide them. Archaeological staff must not enter any area where there is a considered to be a health and safety risk that has not or is not being appropriately mitigated against.
- 8.6 DAT Archaeological Services staff must ensure that their presence on site is communicated to all relevant site staff, especially machine operators.
- 8.7 A detailed Risk Assessment and Method Statement (RAMS) document has been prepared for the site and submitted to the client.

⁶ *Personal Protection Equipment*

