Archaeology Wales

Land adacent to Clark Road, Dolgarrog Conwy Valley, Gwynedd

Archaeological Watching Brief

By

Ian Davies
& Iestyn Jones

Report No. 1261

Archaeology Wales Limited,
Rhos Helyg, Cwm Belan,
Llanidloes, Powys SY18 6QF
Tel: +44 (0) 1686 440371
E-mail: admin@arch-wales.co.uk

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Archaeological Watching Brief

Prepared For: Cotswold Archaeology

On Behalf of Surf Snowdonia

Edited by: Mark Houliston
Signed: Mark Houlist
Position: Managing Director
Date: 5/9/14

Authorised by: Mark Houliston
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Contents

List of Illustrations

Summary

Archaeology Wales were contracted by Cotswold Archaeology to carry out an Archaeological Watching Brief during ground-works associated with the construction of Surf Snowdonia outdoor leisure complex at Dolgarrog, Conwy, Gwynedd.

Work was carried out at the old Dolgarrog Aluminium Works and uncovered a concrete base of a possible locomotive watering tower, a stone filled pit and sections of a buried rail track. During the removal of railway sidings the poorly preserved track-bed of a standard gauge phase of railway, possibly dating to dating to 1916, was identified and recorded prior to removal. A disturbed brick surface of a possible WWII air raid shelter was also discovered.

1. Introduction

In July 2014 Archaeology Wales was commissioned by Cotswold Archaeology to carry out an archaeological Watching Brief at Dolgarrog, Conwy (AW Project Number: 2258; Planning Authority: Conwy County Borough Council; Planning Reference: 0/39912). The site of the work at Dolgarrog was located adjacent to Clark Street, Dolgarrog (centred on NGR: SH 7716 6736; 4.0m AOD, fig. 1).

This watching brief was carried out by Ian Davies for Archaeology Wales in July 2014.

2. Site Description

Location, Topography, Geology

The development site lies 11km south-southwest of Conwy on floodplain land between the Conwy river located approximately 500m to the east and village of Dolgarrog to the west (NGR centred on SH 7716 6736). The development land slopes gently east (9m AOD) to west (3mAOD) and was originally flood meadows and wet carr woodlands located within old river meanders. The geology of the area is characterized by Ordovician Conwy Mudstones overlaid by alluvium and loamy and clayey floodplain soils (BGS 2014, Soilscapes 2014).

3. Historical Background

Dolgarrog's original name 'Dol y Garrog' (water meadow of the torrent) refers to an escarpment where several streams run down towards the water meadows (Morgan and Owen 2007, 126-127). A destroyed chambered tomb or Cromlech and a lithic discovery approximately 100m north of the site suggest that area was settled during the Neolithic period (CA 2013, 12-17). Later prehistoric and early historic activity is attested by Pen y Gaer Iron Age enclosure 3km to the north-west and Caerhun Roman fort located 3km to the north of the site.

During the medieval period documentary references suggest that a Cistercian fulling mill was located nearby and that wine was being shipped along the river Conwy at Dolgarrog. The former monastic land was mainly used for pasture and meadows during the early post-medieval period (CA 2013, 12-17).

The industrial era heralded exploitation of water, minerals and stone in the Conwy Valley and slate from Cedryn Slate Quarry was transported to quays along the river Conwy near to Dolgarrog during the nineteenth-century. A five-mile narrow-gauge tramway connecting Dolgarrog with the quarry was later extended to include Cwm Eigiau Quarry and, by 1907, a new wider gauge tramway (Eigiau Tramway) replaced the older and narrower track. An aluminium smelting plant was also opened at Dolgarrog in 1907, powered by hydro-electric electricity generated at a dam located further to the west. A rolling mill and hydro-electric generating station followed in 1916 and 1924 respectively and a standard gauge railway was constructed in 1916 connecting the rolling mill with the LNWR near Dolgarrog Station. Although badly affected by a failed dam and disastrous flood in 1925, the factory continued production during the 1930s and 1940s. During World War II the aluminium factory was used to manufacture aircraft components, but subsequently production was scaled down (CA 2013, 12-17) The factory continued some production for several decades under various management companies and was eventually closed in 2007 and demolished in 2009.

4. Watching Brief

4.1 Objective

The objective of the Watching Brief was to monitor, identify, investigate and record all significant archaeological deposits revealed during the ground works. There was a high possibility that buried features associated with the former tram or rail tracks would be present within the development area (see Appendix 1).

Results

The site, originally the location of Dolgarrog Aluminium works, was approximately 115m long E/W by 30m wide N/S, and lay to the immediate south of Clark Street, which was one of the main access routes to the aluminium works and was to be retained as an access route for future use by Surf Snowdonia. All works were carried out by a 20t mechanical excavator fitted with a 2m toothless ditching bucket, with the spoil carried offsite by a 30t dumper.

The watching brief monitored topsoil stripping of the designated area down to the subsoil or natural ground surface below. Attention was given to potential features and artefacts from the industrial period or earlier. The topsoil was of a largely uniform depth throughout the area (0.10-0.15m). It overlay either bright, a greyish yellow, sandy, silty subsoil or a natural stony alluvial deposit. Three features were revealed, all dating to the period of use of the aluminium factory from 1907 onwards (see below).

After the removal of the sleepers, work continued on the topsoil strip in the location of the modern playground area, heading in an easterly direction against the

woodland edge and along the southern side of the aluminium works. Topsoil depth was relatively uniform across this area, at an average of 0.1m. Conditions were dry and dusty. Beneath the topsoil a light, greyish yellow, sandy silt was revealed, which was similar in composition to natural deposits that had been observed during the previous phase of watching brief monitoring. In the area immediately surrounding the play area, no archaeology was observed. Topsoil stripping continued to a location that was positioned roughly centrally within the area of the proposed car park and a large brick surface was revealed (see below).

Feature 1: Concrete Platform. (Fig.4a)
During the topsoil stripping a concrete platform was uncovered on the western boundary of the proposed car parking area. This platform measured 3m by 3m with the bases of steel girders spaced regularly at the four corners of the feature. Each girder base was uniformly 0.50m long by 0.28m wide and had a small, cylindrical, bar beside it that was 0.04m in diameter. All the girders and associated bars had been cut off at floor level, presumably after the structure had gone out of use.

Feature 2: Stone Filled Pit. (Fig. 4b)
During the strip, a stone filled pit was uncovered to the north-west of the designated area. Measuring 2.60m by 2.30m, the pit fill comprised irregularly sized rounded and angular stones varying from 0.10m up to 0.30m in diameter. Modern brick fragments and small pieces of brown ceramic sewer pipe were mixed within the stone fill. The origin of this pit is unknown, but the dimensions of it are close to the width of a standard 2m mechanical excavator ditching bucket. Due to the industrial nature of the area, the pit may have contained hitherto unknown toxic material, and to avoid environmental health and safety problems it was left unexcavated.

Group Feature 3: Railway Siding. (Figs. 5, 6, 7a, 8)
A series of oak timber sleepers were revealed running parallel with Clark Street in an east to west alignment. Approximately 60m of track-bed was exposed, although only approximately 30m of intact sleepers remained, with the remainder of the sleepers having been removed, leaving faint but discernible shadows in the natural. The exposed sleepers were uniformly 2.74m (9') long. Width and depth remained constant at 0.23m (9'') wide, 0.10m (4'') deep apart from two, which while the same length, were slightly more slender at 0.20m (8''). Towards the eastern end, the track-bed had seen an intrusion by the 1970s 'Dolgarrog Aluminium' sign, and the track orientation lined up with the bottom of the narrow gauge slate quarry incline.

All the sleepers appeared to have been laid inset into the natural ground. This suggests that the engineers deemed the natural ground surface sufficiently robust enough to do this, thereby reducing or eliminating the need for track ballast, which would have been a potentially substantial cost saving. However, there were irregular patches of black cinder or firebox waste, which may have been used also as a simple bedding or consolidation layer for the sleepers. They may also have simply been the result of locomotive fire grates being cleaned out *in situ.*

The overall condition of the sleepers varied considerably. Many were in a very poor state of preservation, virtually hollowed out through decomposition, whereas others

were almost intact. This may have been caused by 'spot sleepering', the individual replacement of sleepers or groups of sleepers during the operational life of the track. It is also possible that some of all of the sleepers were acquired second hand and then re-used.

A large number of track spikes were recovered during the initial exposure, all varying in shape and size (Fig. 8), suggesting that they had come from a variety of sources and were possibly reused. *In situ* spikes were uncovered on two sleepers with a gauge measurement very close to 4' 8.5", the measurement of a standard gauge railway. A diamante (paste) encrusted dress clip was found on one of the sleepers. It was Art Deco in appearance and as such probably dates from the 1920s.

Further hand excavation at the extreme west end of the track bed revealed the southern tip of a further eight intact sleepers laying 0.10m below what was likely to be up-cast material from the construction of, or improvements to, Clark Street. It appeared that the ends of the sleepers were beginning to gently curve to the north, away from the incline formation. Careful machine excavation of these sleepers confirmed this to be the case. Further confirmation from locations to the west and north was impossible, as from this point on the track bed had been completely truncated by an oval shaped 'layby' constructed in 2004 to provide easier access for H.G.V.s turning in and out of the aluminium works. Local residents suggest that the standard gauge siding did indeed turn to the north-west at this point, to follow the current alignment of Clark Street towards the old coal yard.

Feature 4: Brick Surface (Fig. 7b)
This roughly-laid, flat, surface measured approximately 20m east to west by 10m north to south and consisted of a mixture of manufactured bricks that varied in colour but not in size. Each brick measured 0.20m long, 0.09m deep and 0.09m wide. Areas consisting of voids, backfilled with brick and stone rubble, are located immediately to the east and south of the brick surface. Large amounts of what appear to be undressed quarry stones within these rubble deposits may represent material that was brought in to complete the backfilling.

At the time of the discovery of the brick surface, a bund of redeposited topsoil had been created in the area located immediately to the north and it was not possible to trace either the brick surfacing or the backfilled voids in this direction. Other than the bricks, no artefacts were recovered.

5. Discussion and Conclusions

The concrete platform (feature 1) represents an enigmatic feature of unknown function. Local knowledge does not recall this platform exposed or in any kind of use during and immediately after WWII. A tennis court and associated pavilion belonging to the aluminium factory was previously located in the area immediately to the west of the platform, in an area now wooded. A photograph brought to the site by a local resident, tentatively dated to before WW2, shows this tennis court and pavilion very clearly. The pavilion is positioned very closely to where the concrete platform would be. However, the pavilion is rectangular in shape, whereas the concrete platform is square. The industrial nature of the platform (metal fixings)

also counts against it being part of the tennis court complex. An alternative and more likely possibility is that the platform is the base of a locomotive watering tower. This would date it to circa 1916 when the aluminium works was connected to the railway network via its new sidings, some of which were located in this area (Neil Henderson, Personal Communication 2014). The concrete platform is located only 6m from the northern edge of the 1922 railway siding, which branched from the main east to west aligned siding to the southwest to bring building materials for the construction of the housing estate on Gwydyr Road and Tayler Avenue. This siding was short lived, lasting only two years before being re-used as a workers access to the aluminium works, but may have been busy enough to justify a watering tower in the location, if there was a reliable source of fresh water to refill the tower after use.

When exposed during the watching brief it was unclear if the sleepers (group feature 3) were part of the 1916 construction of the standard gauge railway branch complex to the mainline, or the older c.1860 narrow gauge slate quarry trackway. However, a number of possible conclusions may be drawn from the available evidence. The measurement of *in situ* spikes suggested that the sleepers were standard gauge and probably dated to the post-1916 phase of rail development. With the exception of the holes in one well-preserved and possibly reused sleeper (Fig. 6a), no evidence was found of any remains of rail or rail chairs. This suggests that this siding was laid using flat-bed rail sections secured to the sleepers using simple 4'' track spikes. This construction technique was more often used on smaller and lighter narrow gauge railway systems (Steve Davies, Pers. Comm. 2014). The evidence can be interpreted as either suggesting that the standard gauge siding was not expected to see regular heavy use by fully loaded rolling stock, or that it was indeed the original narrow gauge track heading down the incline. If it was the standard gauge siding, the whole branch network was probably 'lightly laid', presumably to be done as quickly and as cheaply as possible. The fact that the system was laid in the middle of WWI, when skilled manpower was scarce and the war effort needed aluminium products, makes such a construction technique likely.

Local folk memory identifies the location of the Brick Surface (feature 4) as having contained a WW2 air raid shelter, which was allegedly built in 1940 for the aluminium works. However, it appears that no written, photographic or cartographic records were made of the structure, and little is known of its construction. The shelter is believed to have been demolished shortly after the end of WW2, when it was destroyed by vehicle impact. Although it is unclear whether the brick surface is associated with a WWII shelter or not, the location is consistent with that indicated by local folk memory.

6. Acknowledgements

Archaeology Wales would like to thank Steve Davies for his specialist railway knowledge, which was of considerable assistance during the fieldwork, and Neil Henderson, whose extensive historical knowledge of the local aluminium works was also extremely helpful.

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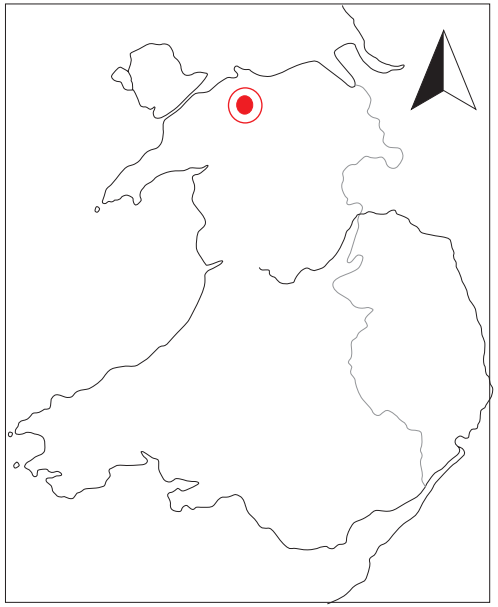

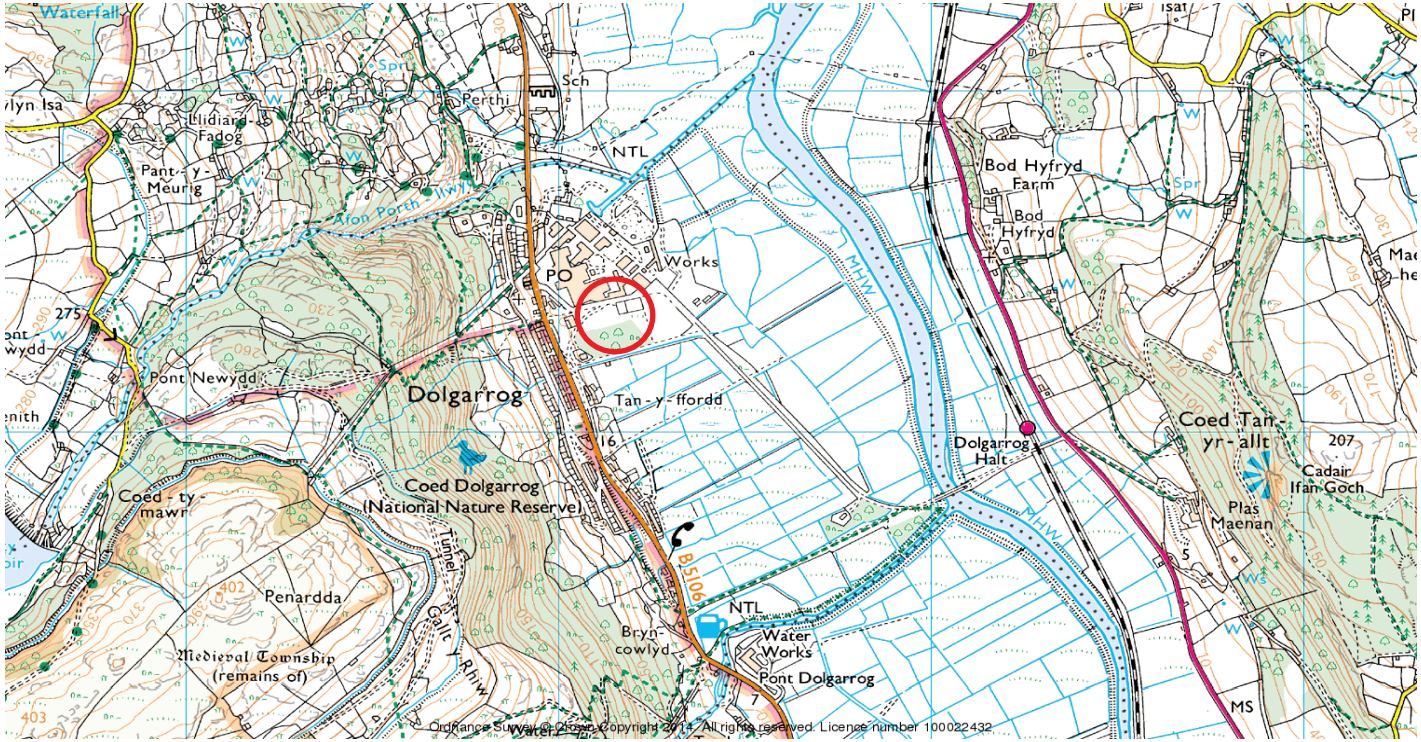

Fig. 1
Location of site

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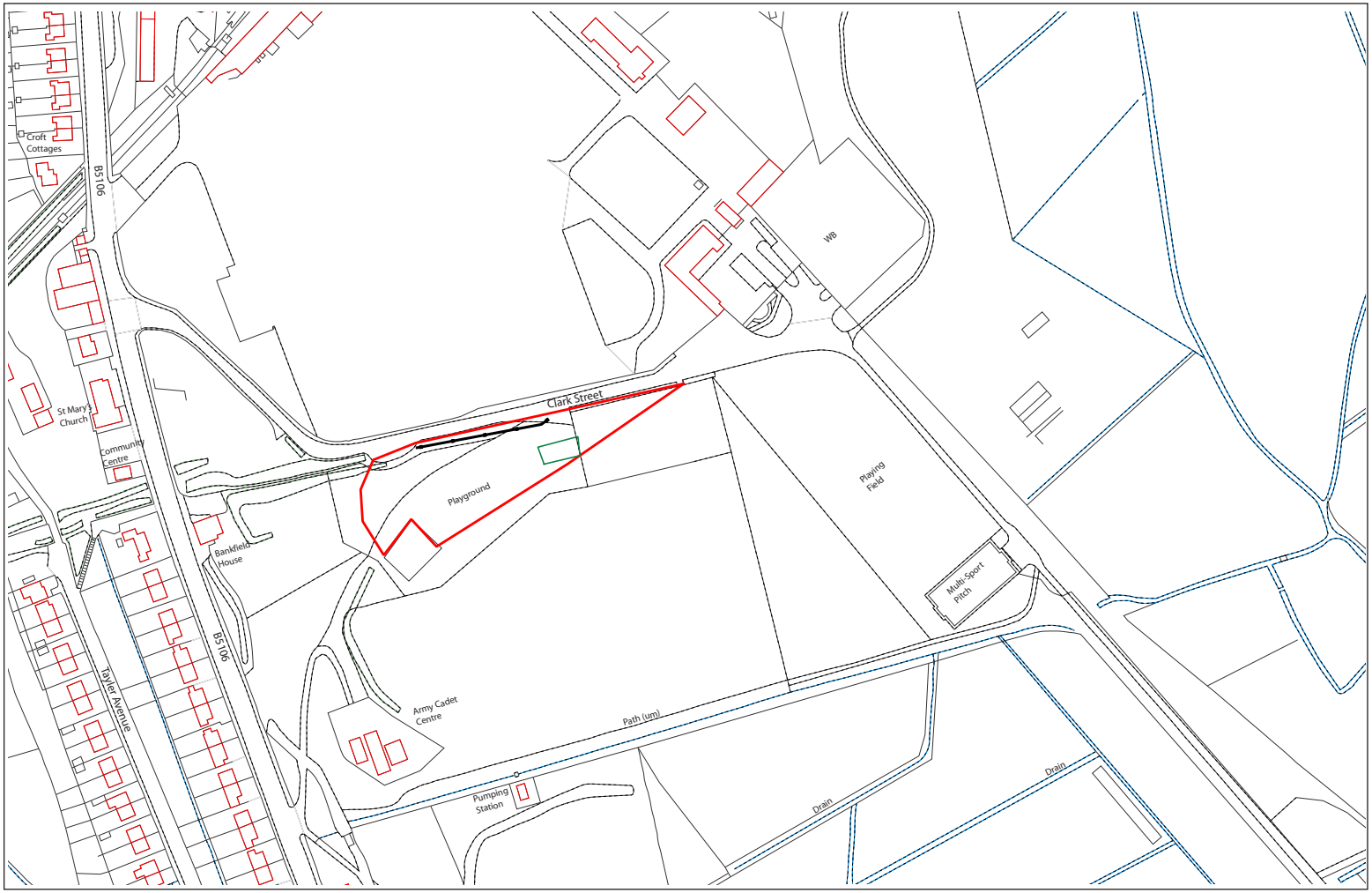

Dolgarrog Map and Site Location

Fig. 2

Watching Brief Location (red outline: see fig. 3 for detail)

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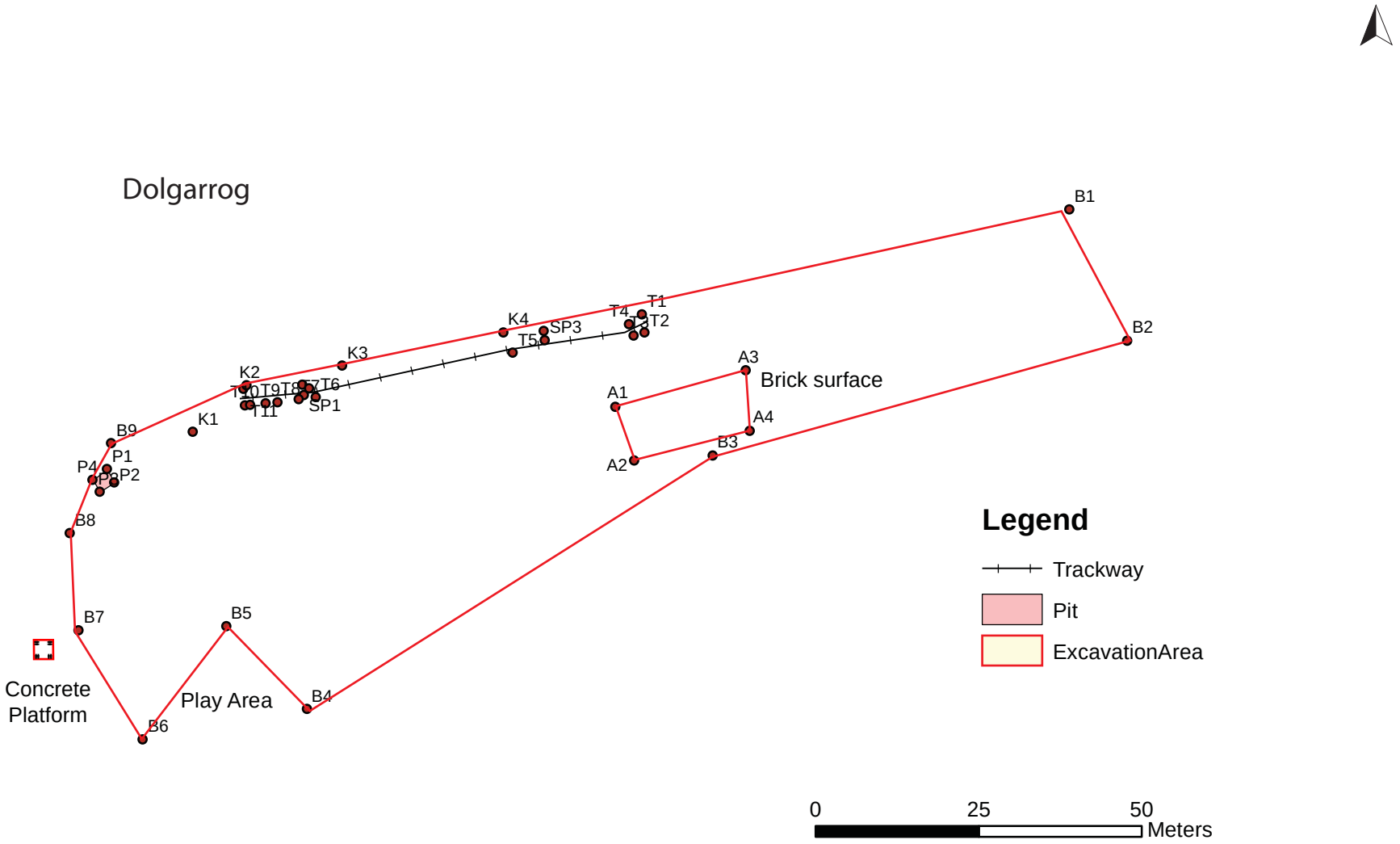

Fig. 3

Watching Brief area and feature locations

Fig. 4a. Concrete Platform (looking north)

Fig. 4b. Stone Filled Pit (looking west)

Fig. 4

Features 1 and 2

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Fig.5a. Railway Sleepers at east end of track (looking west)

Fig. 5b. Railway Sleepers at west end of track (looking west)

Fig. 5

Group Features 3

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Fig. 6a. Close up of well-preserved Railway Sleeper showing Rail Chair holes

Fig. 6b. Close up of poorly preseved Railway Sleeper at west end of track (looking north)

Fig. 6

Group Features 3

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Fig. 7a. Elevated view of trackbed (looking west)

Fig. 7b. Elevated image of brick platform area (looking east)

Fig. 7

Track and feature 4 (brick platform)

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Fig. 8

Selection of Track Spikes

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Fig. 9

Dress clip,
c. 1920's

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APPENDIX I:

Coordinates as surveyed with mushroom antennae
GPS Receiver showing location of trackway (T),
brick surface (A) and spikes (SP) and Pit (P) (Fig. 3)

PointID	Easting	Northing	Height OD m
B10	277081.85	367361.75	5.22
B9	277061.55	367353.37	5.54
B8	277055.24	367339.57	6.51
B7	277056.59	367324.75	6.78
B6	277066.41	367307.98	6.04
B5	277079.18	367325.32	5.89
B4	277091.55	367312.68	5.87
B3	277153.74	367351.51	4.45
B2	277217.32	367369.1	4.22
B1	277208.47	367389.23	4.4
K4	277121.66	367370.37	4.85
SP4	277127.83	367370.56	4.67
SP3	277128.05	367369.17	4.64
SP2	277090.89	367362.36	5.01
SP1	277091.12	367360.76	5.08
BR1	277091.91	367361.77	5.1
P4	277058.67	367347.73	6.32
P3	277059.84	367345.95	6.22
P2	277062.04	367347.36	6.16
P1	277060.95	367349.42	6.2
K3	277096.95	367365.28	4.99
K2	277082.35	367362.27	5.18
K1	277074.08	367355.1	5.39
T11	277082.06	367359.17	5.21
T10	277082.89	367359.24	5.21
T9	277085.23	367359.49	5.19
T8	277087.1	367359.67	5.21
T7	277090.35	367360.09	5.11
T6	277092.89	367360.45	5.04
T5	277123.15	367367.23	4.73
T4	277140.97	367371.6	4.57
T3	277141.62	367369.86	4.57
T2	277143.35	367370.38	4.53
T1	277142.95	367373.09	4.61
RTCM-Ref 0165	301344.51	373724.04	49.61
A1	277139.05	367359.1	4.48
A2	277141.95	367350.95	4.4
A3	277158.91	367364.75	4.39
A4	277159.45	367355.28	4.42

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APPENDIX II:

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METHOD STATEMENT

FOR AN ARCHAEOLOGICAL WATCHING BRIEF

AT

Surf Snowdonia, Dolgarrog, Conwy

Prepared for:

Laurent Coleman
Principal Fieldwork Manager
Cotswold Archaeology
Building 11
Kemble Enterprise Park
Kemble, Cirencester
Gloucestershire, GL7 6BQ

8th July 2014

Archaeology Wales Limited
Rhos Helyg, Cwm Belan, Llanidloes,
Powys, SY18 6QF
Tel: +44 (0) 1686 440371
Email: chris@arch-wales.co.uk

NON TECHNICAL SUMMARY

This method statement contains details of archaeological procedures to be carried out by Archaeology Wales Ltd during a watching brief to be undertaken at Surf Snowdonia, Dolgarrog, Conwy, on behalf of Cotswold Archaeology.

1. Introduction

This document has been drawn up against a written scheme of investigation prepared by Cotswold Archaeology (Coleman, 2014). It details the methodologies to be employed by Archaeology Wales Ltd during a watching brief on the Surf Snowdonia site, Dolgarrog, Conwy (NGR SH 7710 6750).

Outline planning permission for erection of an outdoor leisure complex including water sport and training facilities with associated Use Class A1/A3/D2 development, accommodation facilities (including Use Class C1), infrastructure, landscaping and ancillary works was granted by Conwy County Borough Council (CCBC) (CCBC ref: no. 0/39912), conditional on an archaeological watching brief being undertaken within the main car park and the overspill parking area.

Archaeology Wales Ltd will be undertaking the watching brief, as sub-contractors to Cotswold Archaeology.

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

2. Archaeological Background

The Archaeology Chapter of the Environmental Statement and a document providing Supplementary Heritage Information to Support the Archaeology Chapter of the Environmental Statement have been compiled by CA (CA 2013a and 2013b). Remains of the Cedryn (or Coedyn) Quarry Tramway survive within the site, may be impacted upon by development and are summarised in detail below. Archaeological remains of greater antiquity are less likely to be encountered and reference should be made to the Archaeology Chapter of the Environmental Statement.

The Cedryn (or Coedyn) Quarry Tramway was constructed in 1860 to connect slate quarries in the hills to the west of the proposed development site with a wharf on the River Conwy. The tramway passed up a steep incline to the west of the proposed development site and extended west for 8km (CA 2013a, Fig. 12.1). It was subsequently extended to serve the Cwm Eigiau quarry prior to its closure in 1885. The surviving features of the tramway in the vicinity of the proposed development site are described below from west to east, and comprise:

- The upper incline (approximately 400m west of the site)
- The lower incline (extends to Conwy Road, immediately west of the site)
- The incline ramp (in the western part of the site)
- The valley floor tramway (central and eastern part of the site)

The upper incline

The upper part of the steep incline, now occupied by large diameter pipes supplying the hydro-electric generating plant, outside the proposed development site (visible in the distance in the photograph; CA 2013a, Fig. 12.7). The incline commences approximately 450m east of the proposed development site and extends to within 250m of the western site boundary (CA 2013a, Fig. 12.1).

The upper portion of the tramway beyond the incline to the west of the proposed development site passes through an area subject to an archaeological assessment carried out by Gwynedd Archaeological Trust in 2010 (GAT 2010). This assessment identified two surviving features associated with the tramway system, a former engine shed of corrugated iron construction (GAT 2010, Feature 46 and Plate 6) and a short section of track which may preserve part of the former tramway embankment (GAT 2010, Feature 43). It would appear that much of the remainder of the system has been lost. Two subsequent archaeological assessments carried out in 2011 (GAT 2011a and GAT 2011b) identified the same surviving features.

The lower incline

A lower portion of the steep incline, survives as a narrow gulley in the hillside, passing under two bridges, one for Tayler Avenue, and one for the B5106 road, to the west of the proposed development site. The lower incline extends from approximately 250m west of the proposed development site, eastwards towards Conwy Road immediately adjacent to the western site boundary.

The narrow gully is recorded on all historic Ordnance Survey mapping consulted as part of the assessment, and was inspected during the site visit. It survives as a narrow cutting, approximately 5-10m wide, extending eastwards down the hill side.

The incline ramp

The ramp of the tramway connecting the foot of the hill slope to the flat valley floor survives as an earthwork within the western area of the proposed development site, falling approximately 7m from the level of the road to the factory floor surface level, over a horizontal distance of 70-80m (CA 2013a, Fig. 12.7).

The incline embankment rises westwards until it intersects with Conwy Road on the western boundary of the proposed development site. At Conwy Road the narrow gully of the lower incline (discussed above) connects to the raised embankment of the incline ramp. This relationship is recorded on the 1889, 1900 and 1913 Ordnance Survey maps.

The subsequent 1968 Ordnance Survey map, however, recorded substantial alterations to the historic tramway network. A railway (disused) is recorded extending eastwards along the lower incline towards Conwy Road. Just to the west of Conwy Road the railway line bears northwards, passing below Conwy Road and entering the proposed development site to the north of the historic tramway incline. The gully of this former railway cutting is observable within the proposed development site, within an area of dense vegetation and woodland. The course of this cutting removed part of the historic tramway incline. As the railway was recorded as dis-used in 1968, these alterations occurred at some time between 1913 and 1968, probably during the use of the ‘transhipment depot’ recorded in the vicinity of the incline embankment in the 1950s (GAT 2011b, Fig. 7).

Both the original 19th-century tramway embankment and the 20th-century railway cutting survive in the western part of the proposed development site (CA 2013a, Fig. 12.7). No features other than the earthworks themselves, (e.g. elements of track, pulley mechanisms or other fittings) survive in association with the tramway.

The valley floor tramway

The valley floor tramway extended across the proposed development site, as recorded on the 1889 First Edition Ordnance Survey map (CA 2013a, Fig. 12.2). The valley floor tramway extended eastwards from the incline ramp in the western part of the site (see above) towards a wharf (no longer extant) beyond the proposed development site on the banks of the River Conwy. However, by the time of the Second Edition Ordnance Survey map of 1900 (CA 2013a, Fig. 12.3) the tramway had been closed and removed.

The embankment of the tramway is likely to have been largely removed (or buried by later made-up ground) during the construction of the aluminium works and associated infrastructure in the 20th century. However, the route of the valley floor tramway appears to survive as a short stretch of earthworks in the eastern part of the proposed development site, preserved as a bank and ditch extending east for a short distance across the meadows of the valley floor (CA 2013a, Fig. 12.8).

Multiple ground investigations, including boreholes, window samples and trial pits, were carried out between 2008 and 2013. These indicate that ground conditions generally comprise made ground (typically between 1.4 and 2m thick) overlying slightly sandy silt and clay, with a layer of peat identified in one borehole in the centre of the proposed development site at a depth of 3.3m to 4.0m below the current ground. It is likely that this latter borehole penetrated the former river channel passing across the centre of the proposed development site. The results of the geotechnical works have been summarised by Wardell Armstrong (WA 2014). The presence of peat deposits in the borehole sample obtained in 2008, and the evidence from historic maps of a former river channel passing across the proposed development site, as well as other drainage features, suggests that the potential exists for preserved palaeoenvironmental deposits being present.

3. Watching Brief Objectives

The general aims of the watching brief, as defined by the IfA (2008; revised 2011) 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

Site specific objectives, as defined by the Cotswold Archaeology Written Scheme of Investigation (Coleman, 2014) are:

- To monitor groundworks, and to identify, investigate and record all significant buried archaeological deposits revealed on the site during the course of the

development groundworks

- At the conclusion of the project, to produce an integrated archive for the project work and a report setting out the results of the project and the archaeological conclusions that can be drawn from the recorded data

4. Watching Brief Methodology

General
The archaeological watching brief will be undertaken by AW staff using current best practice and in accordance with the AW technical manual – Procedures for Excavation and Site Recording 2011.

All work will be carried out by a suitably qualified archaeologist with relevant level membership of the Institute for Archaeologists (IfA) and will follow the IfA Standard and Guidance for an archaeological watching brief (2008; revised 2011).

Detailed
The Watching Brief will be carried out by a suitably qualified archaeologist during all intrusive groundworks within the area of the main car park and the overspill parking area. Non-archaeological deposits will be removed by the contractors under close archaeological supervision. Where mechanical excavators are used, these must be equipped with a toothless bucket.

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 GAT. Full excavation of identified features will not be compromised by the construction programme.

Contingency Arrangements
In the event of significant archaeological features being discovered all activities in this area of the site can be temporarily suspended. This will allow a period of consultation with GAT, CA and, if required, the opinion of specialists.

Recording
Recording will be carried out using AW recording systems (pro-forma context sheets etc), using a continuous number sequence for all contexts in accordance with the AW technical manual – Procedures for Excavation and Site Recording 2011.

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 and related to the developer's site plan. The location of all features will also be recorded using a Topcon GTS725 total station.

Photographs will be taken in digital format, using a 14MP camera with photographs stored in Tiff format. Should significant remains be identified that require excavation, photographs will also be taken in black and white and colour slide (35mm film).

Artefacts

Archaeological artefacts recovered during the course of the excavation will be cleaned and labelled using an accession number, which will be obtained from the local 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.

All finds of gold and silver will be removed to a safe place and the Environment Agency, GAT, CA 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, GAT, CA 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. The list of specialists is provided by CA and is shown in the WSI (Coleman, 2014).

5. Post-Fieldwork Programme

Conservation

After agreement with CA, arrangements will be made for the long term conservation and storage of all artefacts in an appropriate local or county museum.

Archive

The site archive will be prepared in accordance with MoRPHE, (English Heritage 2006). 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.

Reporting

The results of the watching brief will be submitted in an illustrated and bound report, which will include the following material:

- Non-technical summary
- 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
- 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.

Monitoring

Any changes to the specification that AW may wish to make after approval will be communicated to GAT and CA for approval on behalf of the Planning Authority.

Representatives of GAT will be given access to the site so that they may monitor the progress of the watching brief. GAT and CA will be kept regularly informed about developments, both during the site works and subsequently during any potential post-excavation.

Archive Format & Deposition

The full site archive will be deposited within one month of the completion of the client report.

A copy of the paper/drawing/digital archive will be deposited at the offices of CA with the finds being deposited with the appropriate local museum. AW will agree the location and timing of the deposition of the archive before the contract commences.

The archive will include all site notes, finds, documents, drawings, photographs, digital data and a copy of the final report and any prior draft versions. All of these items will be clearly quantified in tabular from in an 'archive deposition statement' located at the rear of the clients report, and their ultimate location and proposed date of deposition stated.

6. Resources and timetable

Standards

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

All work will be undertaken to the standards and guidelines of the IFA.

All work will be undertaken in accordance with the AW technical manual – Procedures for Excavation and Site Recording 2011.

Staff

The project will be undertaken by suitably qualified AW staff.

Equipment
The project will use existing AW equipment.

Timetable of archaeological works
The watching brief will be undertaken at the convenience of the client.

Insurance
AW is an affiliated member of the CBA, and holds Insurance through the CBA insurance service.

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.

Archaeology Wales

Archaeology Wales Limited
Rhos Helyg, Cwm Belan, Llanidloes, Powys SY18 6QF
Tel: +44 (0) 1686 440371
Email: admin@arch-wales.co.uk

Company Directors: Mark Houliston MIFA & Jill Houliston
Company Registered No. 7440770 (England & Wales).
Registered off ce: Morgan Gri ths LLP, Cross Chambers,
9 High Street, Newtown, Powys, SY16 2NY