Neath Abbey Ironworks Community Evaluation, Neath Port Talbot

Archaeological community evaluation

July 2019

A report for The Friends of Neath Abbey Iron Company By James Toseland BA GGAT report no. 2019/033 Project no. P1975 National Grid Reference: SS 73820 97738







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Summary

The Friends of Neath Abbey Iron Company commissioned the Glamorgan-Gwent Archaeological Trust to assist in the preparation and implementation of a programme of archaeological works as part of a plan to open up the site of the former Neath Abbey Ironworks (GM389/PRN00854w/NPRN85096) as a visitor and education facility.

Two targeted evaluation trenches, outside the Scheduled Area, were excavated in order to determine the location and survival of the ironworks casting house and wheel pit.

Trench 1 located the remains of the north wall of the casting house. The remains were relatively shallow and they appeared to have been demolished to ground level. In addition, a possible base/support for the roof or some other internal structure, and a possible crane base were also present. Casting sands were also recorded within the trench.

Trench 2 identified the location of the wheel pit of which the northern part had been cut into solid bedrock. Four protruding iron pins located between the wheel pit and the manufactory building uncovered during clearance likely belong to a gear wheel mounting as show on contemporary drawings. Although the upper courses of masonry were missing, general preservation was good.

The scheme fulfilled the dual purpose of archaeologically investigating this important industrial site, and also serving as a training and community excavation for local volunteers, including guided training in excavation techniques, and recording to a professional archaeological level.

It is hoped that these activities will generate sufficient interest to lead on to increased funding and an expanded programme in subsequent years.

The archaeological work was carried out to the professional standards laid down in the Chartered Institute for Archaeologists' Standard and guidance for archaeological field evaluation, 2014.

Comisiynwyd Ymddiriedolaeth Archaeolegol Morgannwg Gwent gan Gyfeillion Cwmni Haearn Mynachlog Nedd i gynorthwyo wrth baratoi a gweithredu rhaglen o waith archaeolegol fel rhan o gynllun i agor safle hen Waith Haearn Mynachlog Nedd (GM389/PRN00854w/NPRN85096) fel cyfleuster ar gyfer ymwelwyr ac addysg.

Cloddiwyd dwy ffos werthuso a dargedwyd, y tu allan i'r Ardal Gofrestredig, er mwyn pennu lleoliad a goroesiad tŷ bwrw a phwll olwyn y gwaith haearn.

Yn Ffos 1 lleolwyd olion wal ogleddol y tŷ bwrw. Roedd yr olion yn gymharol fas ac roedd yn ymddangos eu bod wedi'u dymchwel i lefel y ddaear. Yn ogystal, roedd sail/cynhaliaeth bosibl ar gyfer y to neu ryw strwythur mewnol arall, a sail craen bosibl hefyd yn bresennol. Cofnodwyd swndgastwyr yn y ffos hefyd.

Nododd Ffos 2 leoliad pwll yr olwyn yr oedd y rhan ogleddol wedi'i thorri i mewn i greigwely solet. Mae'n debygol bod dau bin haearn ymwthiol a leolwyd rhwng pwll

yr olwyn ac adeilad y ffatri a ddarganfuwyd yn ystod y gwaith clirio yn perthyn i osodiad olwyn gêr, fel y gwelir mewn lluniadau cyfoes. Er bod y cyrsiau gwaith maen uchaf ar goll, roedd y gadwraeth gyffredinol yn dda.

Cyflawnodd y cynllun y diben deuol o gynnal ymchwiliad archaeolegol i'r safle diwydiannol pwysig hwn, a hefyd cynnig hyfforddiant a chyfle ar gyfer cloddio cymunedol i wirfoddolwyr lleol, gan gynnwys hyfforddiant dan arweiniad mewn technegau cloddio, a chofnodi i lefel archaeolegol broffesiynol.

Y gobaith yw y bydd y gweithgareddau hyn yn creu digon o ddiddordeb i arwain at fwy o gyllid a rhaglen estynedig yn ystod y blynyddoedd nesaf.

Gwnaed y gwaith archaeolegol yn unol â'r safonau proffesiynol a nodir yn Safon a Chanllawiau Sefydliad Siartredig yr Archaeolegwyr ar gyfer gwerthusiad maes archaeolegol, 2014.

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The project was managed by Johnny Crawford MCIfA (Assistant Project Manager). The fieldwork was undertaken by Sophie Lewis-Jones BA ACIfA (Project Archaeologist) and James Toseland BSc MA (Project Archaeologist) of GGAT Projects. The report was prepared by James Toseland and the illustrations prepared by Paul Jones, PCIfA (Senior Illustrator).

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Abbreviations

HER: Historic Environment Record (curated by the Glamorgan-Gwent

Archaeological Trust)

NGR: National Grid Reference

NPRN: National Primary Record Number (in NMR)

PRN: Primary Record Number (in HER)

RCAHMW: Royal Commission on the Ancient and Historical Monuments of Wales

SM: Scheduled Monument (Cadw)

1. Introduction

1.1 Project background

The Friends of Neath Abbey Iron Company (The Friends), funded by LEADER funding, part of the Wales Rural Development Programme and ultimately European Union and Welsh Government, commissioned the Glamorgan-Gwent Archaeological Trust to assist in the preparation and implementation of a programme of archaeological works as part of a plan to open up the site of the former Neath Abbey Ironworks as a visitor and education facility. Following removal of vegetation and clearance of modern rubble, the programme included topographical and laser scanning surveys and a community led archaeological evaluation, including guided training in excavation techniques, and recording to a professional archaeological level. The surveys were undertaken independently and the excavation carried out from the 22nd to the 26th April 2019.

It is hoped that these activities will generate sufficient interest to lead on to increased funding and an expanded programme in subsequent years.

1.2 Site Location

The village of Neath Abbey is located in the Clydach valley and it surrounds the site of the ironworks, which is itself located on flat land within a natural gorge through which runs the River Clydach. The site centred at NGR SS 73820 97738 in general is bounded by Longford Road on the west, Taillywd Road on the east, the A4230 on the south, and the railway viaduct to the north.

1.3 Historical background

Neath Abbey Ironworks was established in the eighteenth century. There are several notable surviving structures including two superb blast furnaces (NPRN 85098) dating from 1793 built against a rock face for ease of charging, Ty Mawr, the ironmaster's house of 1801 and the engine manufactory (NPRN 85097). Higher up the Clydach valley is a former water-powered forge (NPRN 40458) with an iron roof cast at the works in 1825. The building was later used as a woollen mill (NPRN 96478) and machinery was removed to the former Swansea Maritime and Industrial Museum. Further upstream, the river was dammed to ensure a reserve of water and a strong steady flow to the ironworks. The present large masonry dam (NPRN 33643), which carries a public road, dates from about 1840.

The Fox, Tregelles and Price families from Cornwall decided in July 1792 to set up at Neath Abbey blast furnaces, blown by a Boulton and Watt engine. Their purpose was to produce pig iron for sale and for their Cornish foundary. The Works received the patronage of Richard Trevithick and built engines for him The Clydach river powered the water-wheels for the Ironworks, and the Sgwd Clydach waterfall the rolling mills waterwheel.

The blast furnaces were erected against the walls of the natural rock gorge, allowing easy charging and the flow of coke, limestone and iron ore (Lloyd 1993).

The blast furnaces constructed in 1793 were built of pennant sandstone rubble. The south furnace measures 19.8m in height with the north furnace measuring 16.2m. The furnaces taper upwards from bases 11.6 m square. The furnaces went out of use in the mid 1840s. (Newman 1995).

The casting house was supported, at least partially, by brick arches built into the fabric of the blast furnaces. The arches likely supported an open sided structure.

In the early years of the 19th Century under the management of Joseph Tregelles Price (1784-1854), the son of Peter Price, the Works changed from a bulk ironworks to a precision engineering establishment. It rose to become one of the greatest engineering concerns in Great Britain, producing railway locomotives, marine engines, iron ships and stationary steam engines. The Works produced the cast iron rails for the Stockton and Darlington Railway, and George Stephenson visited Neath Abbey to see the rails being produced. Sir Benjamin Baker of Forth Bridge fame served his apprenticeship at the works. Upstream from the furnaces was a forge and rolling mill constructed in 1825, powered by water from the Clydach River. In 1832 the works were commissioned to build the Neath Gas Works, which lead to Neath being the first place in wales to be lit by gas. The Works continued to build every kind of steam engine until 1874 when the Price Quaker family closed it. After a brief attempt to revive iron working, the Neath Abbey Ironworks finally closed in 1885 (Lloyd 1993).

The Engine manufactory itself was a two-storeyed L-shaped building (64m by 13.4m), built of pennant sandstone rubble. The northern half dates to 1800-10 and was extended in 1823. The southern wing housed two water wheels and a steam engine, as well as two cylinder boring shops. The existing bracketed supports at first-floor level on the west elevation of the north block held a cast iron trough which supplied water to the wheels. A fitting shop, offices, smithy and storehouse occupied the ground floor with a pattern makers shop and a pattern store above (Newman 1995).

The water wheel uncovered in the evaluation works is depicted on contemporary plans dating to 1928; some sources suggest it might be 1878 (Plate 1). The purpose of the wheel was for driving fitting shop machinery. The power was fed through an existing door in the west facing elevation.

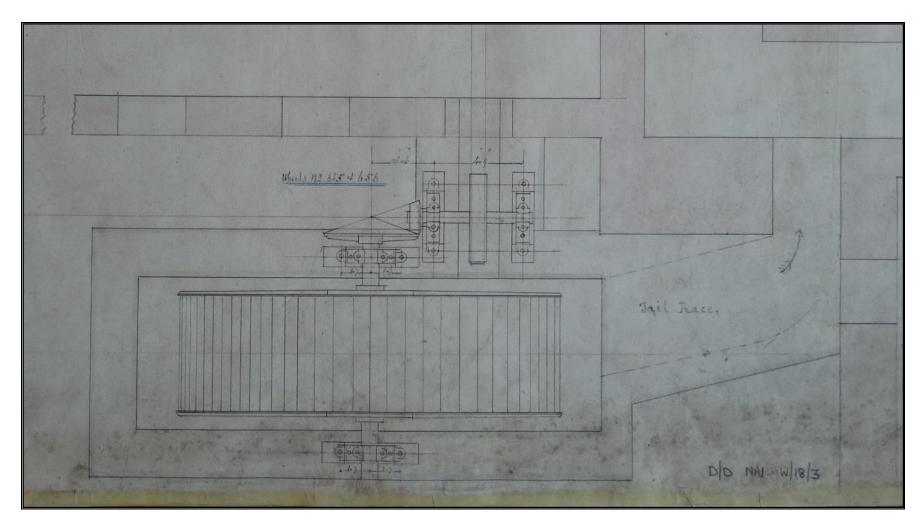


Plate 1. Detail from plan of water wheel (Copyright West Glamorgan Archives)

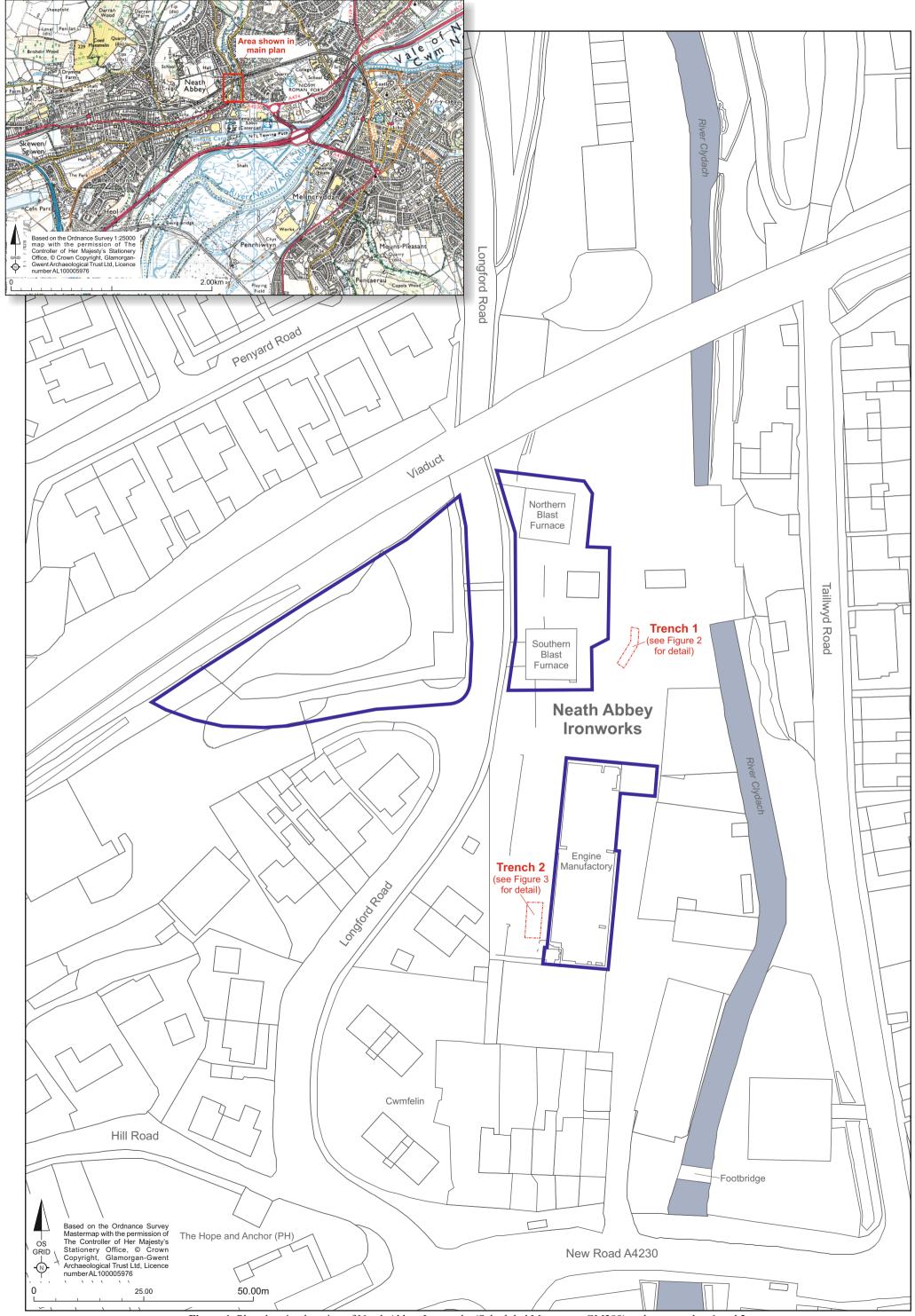


Figure 1. Plan showing location of Neath Abbey Ironworks (Scheduled Monument GM389) and test trenches 1 and 2.

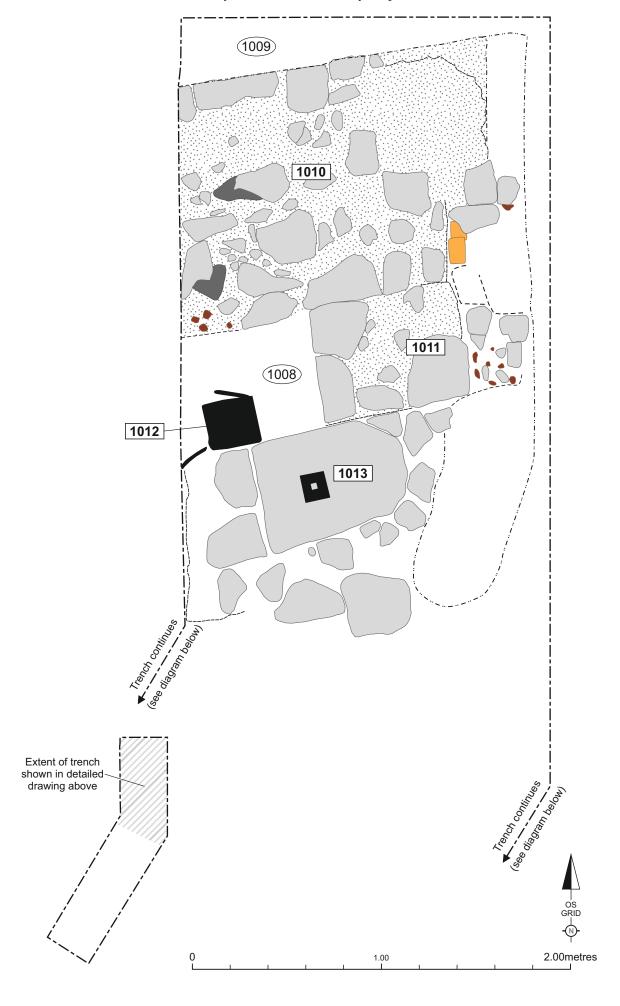


Figure 2. Trench 1. Plan of Casting-house structures.

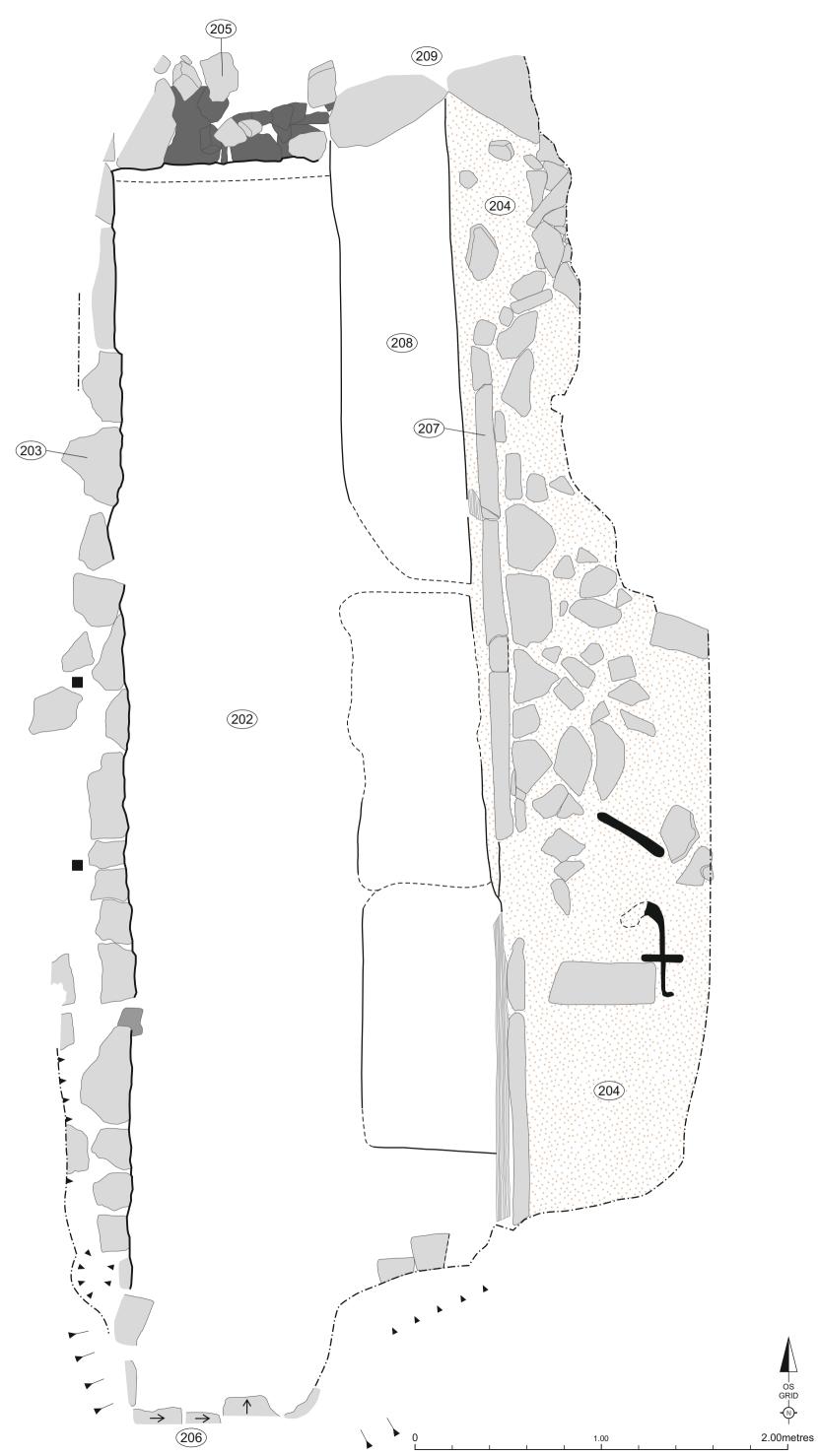
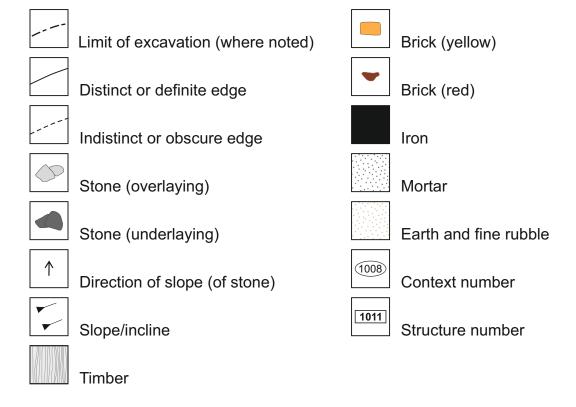


Figure 3. Trench 2. Plan showing the wheel pit.



Key to conventions used in Figures 2 and 3

2. Methodology

Two trenches outside the Scheduled areas of the Neath Abbey Ironworks (PRN00854w/NPRN85096/GM389) were excavated and although this work was outside the Scheduled Area, and no Scheduled Monument Consent required, Cadw were kept aware of the work. Twenty five volunteers participated in the field work in some capacity. An additional 20+ interested individuals walked through the site to ask questions about the site and the work being undertaken. The age group ranged from 13 to 80. All were made aware of the Health and Safety issues associated with the site, and signed required forms. A toolbox talk was given prior to commencing work on site.

The two trenches were located one over the Southern Blast Furnace area (Trench 1) and Trench 2 over the Manufactory area.

Southern Blast Furnace area – Trench 1 (Figure 1 and 2) measured 6m by 3m and consisted of a single slot trench orientated southwest/northeast to establish the extent and nature of any archaeological remains located to the east of southernmost blast furnace. This trench was then extended at the northeast end to capture the casting house wall.

Manufactory area –Trench 2 (Figure 1 and 3) was excavated to the west of the former engine manufactory in order to identify the nature and extent of any surviving remains associated with the wheel pit that housed the wheel that provided power to the manufactory around 1844; this wheel pit is shown on engineering drawings of the period.

The works were carried out by volunteers under the supervision of GGAT staff using hand tools. This included guided training in excavation techniques, and recording to a professional archaeological level.

A HER enquiry was conducted (No 6048) to inform on the sites of archaeological interest within a 250m radius of NGR SS 73820 97738.

A full written, drawn and photographic record was made of all archaeological contexts, in accordance with the GGAT *Manual of Excavation Recording Techniques*. Contexts were recorded using a single continuous numbering system, and are summarised in Appendix I. All significant contexts were photographed using a Fuji Finepix (14mp) digital camera.

An archive of archaeological records relating to the fieldwork (including artefacts and ecofacts subject to the agreement of the site owners; excepting those that may be subject to the *Treasure Act* (1996) and/or *Treasure Order* (2002)) and an archive of records relating to the preparation of the reports will be prepared to the specifications in ICON's guidelines and *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales* (National Panel for Archaeological Archives in Wales 2017).

After an appropriate period has elapsed a digital copy of the report and full archive will be deposited with the *National Monuments Record*, RCAHMW, Aberystwyth, and a digital copy of the report and archive index will be deposited with the *Regional Historic Environment Record*, curated by the Glamorgan-Gwent Archaeological Trust, Swansea. The archaeological work was carried out to the professional standards laid down in the Chartered Institute for Archaeologists' 'Standard and guidance for archaeological field evaluation'. Published December 2014.

3. Results

Trench 1

Trench 1 revealed remains of the casting house. The north wall of the casting house (1010) measured 1.34m in width and was aligned east-west (plate 1). The wall constructed of lime-mortared rubble had been truncated to 0.15m below current ground level. Abutting 1010 to the south was a rectangular masonry structure (1011) measuring 0.6m by 0.74m (plate 2). To the south of 1011, a large stone measuring 0.56m by 0.76m contained an iron mounting (1013) (plate 3). The mounting measured 0.125m square and contained a circular 60mm hole. Abutting 1010 to the north was a hard black metalled surface (1009).

Inside the casting house stratigraphic deposits consisted of layers of sand. The basal deposit (1007) was dark brown silty sand with charcoal flecks encountered at 0.82m below ground level. This was overlain by deposit 1006 a 0.07m thick mixed sandy silt with light sand inclusions. Overlying 1006 was a 0.49m thick dark brown sandy silt with inclusions of slag and large iron lumps (1005); this deposit also overlaid 1010, 1011 and 1012.

Overlying deposit 1005 was a 0.09m thick demolition deposit (1004). Chippings (1003, 1002) overlay 1004 and all were sealed by soil (1001).

Trench 2

Trench 2, which revealed the location of the wheel pit comprised a basal deposit of bedrock (209). The bedrock, which was exposed to the north of the wheel pit, had been cut (210) to create the wheel pit. The bedrock was cut vertically, with evidence of a drilled hole (plate 4) to indicate how the cut was achieved. Four masonry walls (203, 204, 205 and 206) formed the wheel pit; the upper courses were missing throughout as was a section of the wall in the north-east corner exposing the cut in the bedrock (210). The two long walls (203, 204) of the wheel pit each had an internal length of 6.7m and both incorporated a pair of iron mounting pins. The pins had a 40mm square cross section and a circular threaded end were 0.92m apart. Two further mounting pins; 0.9m apart and at ninety degrees to those exposed; were noted on the east side of the wheel pit but were not excavated.

The north wall of the wheel pit (205) was built abutting the natural bedrock 209 and wall 203 (plate 5). The eastern portion of 205 was truncated with only a 1.05m length surviving at the upper excavated levels. Wall 205 of which 0.55m was excavated sloped inwards rather than to the vertical.

The south wall (206), of which 0.5m in height 0.7 in length was excavated, was bonded into wall 203 (plate 6); the junction between 206 and 204 was not excavated due to the proximity of the scheduled monument walls.

The east wall (204) was abutted on the internal west facing elevation by a modern block wall (207) which was in turn abutted by a concrete floor (208) (plate 7). The wheel pit

was excavated to approximately 1m below ground level stopping at the uppermost level of a concrete floor, 208. The area between the walls was infilled with dark brown silty clay containing modern concrete blocks and masonry rubble (202). The uppermost deposit was a clay loam containing frequent roots (201).

4. Conclusions

During the course of the excavation, Trench 1 located the remains of the north wall (1010) of the casting house; the remains were relatively shallow and appear to have been demolished to ground level. A question arose as to whether the north wall represented the base for an open sided building, but it remains unclear. The function of structure 1011 abutting wall 1010 is also unclear, but may be a base/support for roofing or other internal structure. Feature 1013 is possibly part of a crane base. The floor of the casting house, in the area examined, was made up of thick layers of sand, presumably casting sand.

The upper courses of masonry in Trench 2, those over the wheel pit were missing, but the general level of preservation otherwise was good. It was also found that the wheel pit, at least its northern part, had been cut into solid bedrock. The east and west walls, incorporating the mounting pins, and possibly the south wall (206) were then constructed. The northern wall 205 with its sloping face appeared to have been built abutting the west wall and probably the east wall; although the east and north wall junction was not excavated.

Two protruding iron pins located between the wheel pit and the manufactory building uncovered during clearance likely belong to a gear wheel mounting as shown on contemporary drawings.

The wheel pit appears to have been re-used in the second half of the 20th century with the insertion of a blockwork wall along its east side and the addition of a concrete floor. The purpose of this later structure is unclear although suggestions include a vehicle inspection pit. The later structures within the wheel pit may suggest the wheel pit was at least partially open and visible when they were inserted.

The excavation proved the existence and good preservation of the targeted features at a shallow depth below the existing ground. A similar situation may pertain for other buried structures on the site.

The excavation would not have been possible without the support and assistance of the volunteers over the 5 days. Feedback suggested that all enjoyed the experience and that they all gained an insight into archaeological recording techniques.

Plates



Plate 2. Trench 1. Wall 1010-north wall of casting house, view to east (scale 0.5m divisions)



Plate 3. Trench 1. Structure 1011 abutting wall 1010, view to south (scale 0.5mdivisions)



Plate 4. Trench 1. Structure 1013, possibly part of a crane base. View to south (scale 0.5m divisions)



Plate 5. Trench 2. Cut 210 in bedrock 209. View to west (scale 0.5m divisions)



Plate 6. Trench 2. Junction of wall 203 and 205 view to northwest (scale 0.5m divisions)



Plate 7. Trench 2. Junction of wall 203 and 206 view to southwest (scale 0.5m divisions)



Plate 8. Trench 2. General view of wheel pit. View to north (scale 0.5m divisions)



Plate 9. GGAT Specialist (Archaeometallurgy) giving a lecture on industrial processes.



Plate 10. A working shot of trench 2. Looking south.



Plate 11. Friends of Neath Abbey Volunteers working in trench 1. Looking North.

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Appendix I: Inventory of contexts

Context	Type	Description	Depth (m)	Period
1001	Deposit	Topsoil	0.0-0.04	Modern
1002	Deposit	Hard-core	0.04-0.15	Modern
1003	Deposit	Dark black/red	0.15-0.17	Modern
1004	Deposit	Demolition deposit	0.17-0.26	Post-medieval/Modern
1005	Deposit	Dark brown sandy silt	0.26-0.75	Post-medieval
1006	Deposit	Mixed deposit	0.75-0.82	Post-medieval
1007	Deposit	Dark brown sandy silt with charcoal	0.82 nb	Post-medieval
1008	Deposit	Mid red/brown sandy silt	0.26 nb	Post-medieval
1009	Deposit	Hard black surface	0.13 nb	Post-medieval
1010	Structure	Masonry wall	0.17 nb	Post-medieval
1011	Structure	Masonry wall abutting 110	0.08 nb	Post-medieval
1012	Object	FE plate	0.13 nb	Post-medieval
1013	Structure	Large stone and FE mounting	0.10 nb	Post-medieval
201	Deposit	Soil	0.0-0.3	Modern
202	Deposit	Fill of wheel pit. Dark brown silty clay	0.3-1.0 nb	Modern
		loam containing frequent concrete blocks		
		and modern rubbish.		
203	Structure	West wall of wheel pit	0.3-1.0 nb	Post-medieval
204	Structure	East wall of wheel pit	0.4 nb	Post-medieval
205	Structure	North wall of wheel pit	0.3-0.85 nb	Post-medieval
206	Structure	South wall of wheel pit	0.3-1.0 nb	Post-medieval
207	Structure	Modern block wall	0.3-1.0 n.b	Modern
208	Structure	Modern concrete floor	0.7 n.b	Modern
209	Deposit	Bedrock	0.3 n.b	Natural
210	Negative feature	Cut in bedrock to create wheel pit	0.3 nb	Post-medieval

n.b – not bottomed



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Glamorgan-Gwent Archaeological Trust Ltd (Projects Department)



QUALITY CONTROL

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