

Archaeology Wales

Forge Washery, Lower Brynamman

Archaeological Assessment & Site Visit



By
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Report No. 1177




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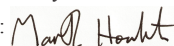
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Non – Technical Summary

An archaeological assessment and site visit was carried out on the Forge Washery site, Lower Brynamman, for Geraint John Planning Ltd. Outline planning permission has been sought for the proposed development of 25 dwellings on the site. This report provides an updated addendum to a previous archaeological Desk-Based Assessment (Page 2002). This report aims to provide an updated conditions survey of archaeological remains, examine the archaeological potential of the site, examine the current development proposals, assess its potential impact and suggest possible mitigations measures to safeguard the archaeological resource.

The visible archaeological remains consist of a Grade II Listed charging bank and possible boiler house wall, a length of walling to its north and surface wall remnants between the two, all of which originate from the 19th century ironworks or subsequent early 20th century brickworks. Several areas of archaeological potential have been identified on the site, the remains of which all lie within Area 1, an area of high archaeological potential. The extent, condition and survival of other archaeological remains relating to the site are currently unknown.

The proposed development involves the construction of dwellings built on crust raft foundations set on and into imported material with minimal ground disturbance. Access roads will also be constructed on imported material. These methods of construction are likely to have minimal impact on the archaeological resource, although it is recommended that the hypothesis is assessed by archaeological evaluation. Evaluation is not feasible or practical during the current site use, and can only be targeted once more detailed development plans are provided at a later stage. Associated drainage, services, clearance and enabling works have potential to expose, damage or destroy archaeological remains. Once evaluation has determined the extent and condition of the remains it is anticipated that these works can be dealt with by an archaeological watching brief. It is further recommended that Area 1 should be avoided within the development, although clearance works may be necessary. General site clearance should be undertaken under archaeological supervision, followed by a programme of building recording on the upstanding remains. Consolidation works are also suggested on these remains.

The Brynamman ironworks is considered to be a site of significant local importance. However, when considering the long-term survival of the archaeological resource, the proposed development is considered to be potentially more beneficial than maintaining the current use of the site. It also has the potential to open up public access to the Listed Building.

1 Introduction

- 1.1 In October 2013 Archaeology Wales (AW) was commissioned by Jon Hurley of Geraint John Planning to carry out an archaeological assessment and site visit on the site of a proposed residential development at Forge Washery, Lower Brynamman (NGR SN 7150 1395, Figure 2 & 3, Planning Application No. P2008/0798). Outline planning permission had previously been sought for the development of this site. However, concerns about the potential impact of the proposed development on the archaeological resource were raised Neil Maylan, of Glamorgan-Gwent Archaeological Trust Curatorial Division (GGAT-CD), in his capacity as archaeological advisor to the Local Planning Authority (Neath Port Talbot County Borough).
- 1.2 An approved Specification was produced by AW and approved by GGAT – CD on behalf of the LPA (see Appendix 1). The specific concerns stated by Mr Maylan are detailed within this Specification.
- 1.3 This assessment is intended to identify the extent and character of the known and potential archaeological resource and provide an assessment of the potential impact of the development on surrounding historic sites. The work includes a conditions survey of archaeological remains, updating that produced in a previous archaeological Desk-Based Assessment (Page 2002).
- 1.4 This report should be viewed as an addendum to the original Desk-Based Assessment, updating the conditions survey, areas of archaeological potential and examining the potential impact with specific reference to the current outline development proposals. The history of the site has not been re-examined.

2 Site visit & general site description

- 2.1 A site visit was undertaken on 21/11/13 by P Poucher. Conditions on the day were dry and bright.
- 2.2 The site is situated in the Amman Valley at the southern margin of the settlement of Brynamman, situated in a bend in the river. Slopes across the site are fairly level, the site being located on the floor of the valley. The site is irregular in outline and has maximum dimensions of 280m by 120m. The River Amman, which flows from east to west in the area, is immediately beyond the northern boundary of the site.
- 2.3 In its current state (as of 21/11/13) the main entrance to the site is from the SW. At the entrance is an area of concrete hard-standing with a brick-built building alongside a weighbridge (photo 3). The building (photo 4) appears contemporary to the weighbridge and therefore later 20th century in date. Arranged around the brick-built building, which is largely disused due to water ingress, are numerous temporary huts and sheds, used as site offices and storage, with some abandoned. The hard-standing to the north of this appears largely used for parking and storage. Currently the main focus of works on site is a large steel-framed shed (visible in photos 3 – 7). Concrete hard-standing continues to the east of this shed across the central area of the site. Along the south side of this hard-standing, bays have been built of concrete blocks, against an earlier stone wall, used to sort and store coal. Along the north side of the hard-standing, just to the east of the large shed, is a disused pond, largely silted up

with fine coal dust residues, beyond which the ground consists largely of coal-dust waste (photo 5) used as a general storage area for disused machinery and equipment and coal tips (photos 6 & 7). The eastern extent of the hard-standing is marked by a large pond (photo 8), formerly used in the coal washery process. Coal tips lie to the west and south of this large pond. This area is still crossed by machinery and vehicles in use on the site. To the east of the pond the ground consists of coal waste and hardcore, largely disused and covered in vegetation (photo 9). Along the southern edge of the site the ground rises some 2m, with the northern edge formed by the stone wall backing the coal storage bays. This raised area is around 15m to 20m wide and fronts the remains of the charging bank platform. The ground consists of coal waste and hardcore rubble. Items of machinery and a disused cabin lie along it, presumably associated with the former washery activities. Backing this area are the remains of the charging bank wall, a Grade II Listed structure, described in more detail below. At its western end it doglegs back into the bank, retaining inbuilt features associated with the former ironworks. Trees and undergrowth lie in front of this section, with a large pile of rubble in front, some 2m to 3m high. At its eastern end the wall cuts back into the hill slope, with a small shed built into the slope, revetted at its base with large timbers and accessed via a flight of stone steps that appear to be reused mortared stones, presumably from the former iron work remains.

3 Survey of upstanding remains of archaeological interest (Fig.7)

3.1 *The charging bank wall (photos 10 & 11)*

- 3.1.1 The most obvious and visible remains of the former ironworks, and now a grade II listed structure, is the high stone-built wall that marks out a section of the southern edge of the site. This wall is only briefly mentioned in the previous DBA (Page 2002) as the charging platform. This consists of a mortared stone wall, c.10m high above the current ground levels, encompassing the main charging platform and a recessed area to the west that may have housed a boiler house.
- 3.1.2 The wall of the main charging platform is built against the steep slopes that bound the southern edge of the site, and projects some 5m into the site. The wall is built of large, dressed, grey-stone blocks. The wall is largely featureless with the exception of two arched openings placed midway up the wall on either side of the centreline. At the time of the site visit these openings were obscured by machinery and therefore precise dimension and description are not possible, but the arch is defined by a double row of bricks. Small square openings, presumably for tying in some sort of structure, are visible in line with the base of the arched openings on either side.
- 3.1.3 The front face of the wall would appear to continue westwards beyond its return into the slope to the rear but soon becomes tumbled and is obscured by ivy cover and trees growing against the face of the wall in this area.
- 3.1.4 Behind this possible extended face, the main structure of the wall turns inwards at a right angle to face the western edge of the rectangular charging platform. Within this face is a third arched opening of similar construction and at the same level as the openings described above. Again, detailed description was impossible at the time of the visit due to a covering of vegetation. The facing wall on the eastern side of the charging bank platform was obscured by a later, now dis-used, metal shed in front.
- 3.1.5 This wall is not maintained, although it appears in relatively good condition. The top of the charging bank platform is tree and scrub covered, with ivy and similar vegetation obscuring the top and corners of the wall. Small trees have established themselves in the various openings in the wall, with root activity likely to cause continued degradation of these openings. Former washery machinery has been placed up against the wall, and rubble has been piled against its base.

3.2 *Possible Boiler House wall (photos 12 – 15)*

- 3.2.1 To the west of the main charging bank platform the wall continues in a WSW direction, built in the same style and at the same height but set back c.5m from the northern face of the charging bank platform and containing three large arched openings. Again, close access to these arched openings was not possible due to vegetation cover.
- 3.2.2 The eastern most arched opening consists of a wide, shallow arch, built in refractory brickwork, extending a short distance into the wall with the floor set roughly midway up the wall. The stone wall forms the sides and floor of this arch. Set centrally within the rear face of this opening is a smaller arched passageway into the slope. Again the roof of the arched passage would appear to be built in refractory brickwork but this feature was only visible from a distance.

- 3.2.3 To the west are two further arched openings, set immediately adjacent to one another. These are slightly narrower, but include taller arched recesses extending to the full height of the wall. The rear and sides of the openings are formed in dressed mortared stonework and the arch is built of refractory brick.
- 3.2.4 These arched openings appear superficially similar to boiler house compartments recently excavated at the near-contemporary Ystalyfera ironworks (Poucher 2013, report forthcoming), although they are shorter and higher. The height of the openings is somewhat problematical for their interpretation as boiler compartments. More detailed recording and interpretation, following clearance and consolidation works, would be required to establish their function.
- 3.2.5 The area in front of this section of wall is covered in trees and dense undergrowth. The very uneven ground beneath this undergrowth appears to consist of dumped material. A long pile of rubble and waste material c.2m to 3m high has also been dumped in front of this area of scrub, further limiting access into this area. The walling itself in this area is in a worse state of repair to the main charging bank wall, facing stones and brickwork have clearly come away, which may threaten the integrity of the arches.

3.3 *The blast furnaces and main brickworks building (photos 16 – 22)*

- 3.3.1 Historic maps indicate two furnaces stood in front (to the north) of the main charging bank platform (Fig.4). Possible open-walled structures on the north side of these furnaces presumably represent a casting house into which the molten iron would be drawn from the base of the furnaces. These furnaces were subsequently replaced by the main brickworks building in the early 20th century (Fig.5), although it is possible this building incorporated remains of the furnaces within its structure. This area now consists of a raised platform along the southern edge of the site, in front of the charging bank wall. This platform is roughly 15m to 20m wide, 2m higher than the ground levels to the north, and is fronted by stone walling along its northern side. The area is largely level, with the ground consisting of compressed coal and rubble hard-core, upon which sits various items of washery machinery, not currently in use. The lower ground in front (to the north) consists of concrete flooring, upon which sits further machinery and coal tips.
- 3.3.2 The most visible upstanding element of archaeological interest is the stone walling that fronts the northern edge of the raised area, for which there are two main sections. At the eastern end of the wall are two blocks of more finely dressed mortared stonework. Only the northern face of these blocks survive, although with enough of the eastern and western faces to indicate the stubs of wall extend further to the south. They are now obscured and covered by the build-up of material behind them. The easternmost block appears c.1.7m wide, and only the uppermost c.0.5m is visible. There is a gap, in-filled with stone rubble, of 2.2m in front of the westernmost block, which is 2.4m wide and stands c.1.8m high. Rubble, or perhaps collapsed masonry, lies in front of these blocks. The stonework is of a similar nature to that of the charging bank wall, although seemingly more finely dressed. It seems likely that these walls are remnants of former ironworks buildings. Comparison with historic mapping suggests they may be part of the buildings attached to the SW corner of the main forge building (Figs. 4 & 5). Their function is unclear from the

currently available information; their location may suggest an alternative Engine and Boiler house location.

- 3.3.3 Butting against the west side of these walls is a mortared stone wall, *c.*2.2m high, and running in a WSW direction for *c.*40m. The wall is built of dressed stone blocks, but not as finely dressed as the wall segments to the east, and the wall is set back from the front of these wall segments by *c.*0.2m. The wall is backed by the raised ground and fronted by a concrete floor, with some remnants of iron rails set within the floor. Concrete breezeblock walls have been built against the front of this wall, to divide the area in front into a series of bays within which the processed coal can be stored, and are still clearly in use as such.
- 3.3.4 This wall is of a different build to the presumed ironworks walling, and does not correspond easily to the ironworks buildings as depicted on the 1898 OS map. It does, however, appear to align better with the northern wall of the subsequent brickworks building that was constructed in front of the charging bank wall, and is visible on the 1918 OS map (Fig. 5). It is possible this brickworks building incorporated remains of the furnaces within its structure, but no clear evidence of this is visible in this wall.
- 3.3.5 This wall would appear to be that described in the previous DBA (Page 2002) as the wall incorporated into the base of the coal washery conveyor. The previous description describes a truncated east wall, fed by rails. Although not immediately clear, it is possible this refers to the two wall stubs at the eastern end. These walls have presumably become more obscured and the rails are no longer apparent. That description, however, appears reminiscent of a rail-fed boiler house recently recorded at Ynys Fach ironworks, excavated by GGAT (R.Hart, pers.comm.). Partial remnants of the second set of rails leading to the north side of the building are still visible in the concrete floor.
- 3.3.6 On the raised area to the south of this wall, a short distance (*c.*8.5m) beyond the eastern end of the charging bank wall, the remains of a mortared stone wall running NNW are visible on the ground surface. The wall is *c.*0.6m wide and is visible for a length of *c.*4m. Its location and orientation suggest that it represents remains associated with either the ironworks or the brickworks, possibly part of the narrow building orientated NNW- SSE visible on the east side of the furnaces on the 1898 OS map (Fig.4) and on the east side of the brickworks on the 1918 map (Fig.5). It is not clear if the brickworks building re-used that from the ironworks, but the location and size of the building would suggest a continuity of use, although not function.
- 3.3.7 The walling at the eastern end is partly tumbled and appears to have become more obscured or degraded since it was described in the previous DBA (Page 2002). The later stretch of stone walling as it currently stands appears in relatively stable condition, even with the passage and use of machinery in the near vicinity, although its western extent has become obscured and possibly damaged by the movement of vehicles. The condition of the fragment of walling visible on the ground surface to the south is unclear, although the passage of vehicles across this area is likely to be degrading the visible surface of the wall.

3.4 Storage Pond

- 3.4.1 The storage pond, as visible on a plan of the ironworks in 1857 (Page 2002, figure 3) is described in the previous report as partially surviving, although altered. Remains of this pond are no longer visible on the ground.
- 3.4.2 There are no further visible structural remains relating to the former ironworks or brickworks visible above ground within the limits of the site.

3.5 Industrial remains outside the site limits

- 3.5.1 The previous report describes the former office building (photo 23), lying just outside the main entrance to the site. This building survives in much the same state as is described in the previous report, although the later 19th century extension is on the western side of the building, not on the east elevation as previously described. A further later 19th century building to the southwest that is shown on the 1898 OS map (Fig.4) also still survives, and is in residential use.
- 3.5.2 These buildings should not be affected by the proposed development.
- 3.5.3 The river's edge around the northern and north-western side of the site has been revetted in stonework along its southern edge. This revetment may be associated with the construction of the ironworks on the site. Set within this walling is a stone-built and brick arched culvert (photos 24-5), presumably for taking waste water away from the ironworks site and draining into the river. This culvert survives in relatively good condition, and is a good indication about the potential for underground features associated with ironworks, not visible on the map sources, surviving within the site area.
- 3.5.4 Stone-built piers also survive within the river itself (photo 26). Presumably their function was to support one of the two rail bridges visible on the 1898 OS map (Fig.4).
- 3.5.5 The well-preserved remains of an iron bridge (photo 27) spanning the river also survives to the northeast of the site. This would have carried the former rail-line that is visible running through the northern side of the iron and tinworks, and later brickworks. As this line enters the site there are no visible remains of any -ground structures associated with the rail line.

4 Areas of archaeological potential

Areas of archaeological potential are discussed in the previous report (section 3.4, see also this report Fig.6). The following sections represent extra detail gleaned from the recent site visit.

- 4.1 **Area 1** encompasses the former brickworks and furnaces site. The southern part of this area encompasses the raised ground in front of the charging bank platform. As noted above, at least one wall fragment is visible on the surface that may relate to earlier structures. It would appear likely therefore, given the build-up of material in this area, that further structures of archaeological importance may survive below the surface and this area should be highlighted as an area of significant archaeological potential. It represents the area that is most at risk from any development activity.
- 4.2 **Area 2**, the site of the main forge buildings has no visible above-ground remains of archaeological interest. This area currently contains large piles of coal and part of the site of the main pond associated with the later washery workings. Clearly the construction of this pond is likely to have disturbed and damaged, if not entirely removed, by elements of the former forge building. Historic photographs (photos 1 & 2) suggest above-ground remains of the main Forge building were removed when the brickworks was established on the site. The survival of potential below-ground archaeological remains beyond the pond is unknown.
- 4.3 **Area 3**, the site of the workshops is a largely flat area, with the ground suggesting a significant build-up of coal waste. This area is used to store machinery and equipment. Material, presumably from past site clearances, has been pushed up against the northern boundary of the site to form a high overgrown bank dividing the site from the riverside footpath to the north. It is possible this bank masks upstanding features associated with the area of workshops. The buildings in this area remained in use into the 20th century, after the closure of the ironworks. The survival of potential below-ground archaeological remains is unknown.
- 4.4 **Area 4** is the area of brickworks buildings in the SE corner of the site. This area is largely unused in the current site workings. Trees and shrubs have established themselves, although an area of relatively open ground survives in the middle. The visible ground deposits indicate that coal waste and rubble hard-core are spread throughout the area. The lack of current intensive use suggests a greater potential for the survival of below-ground remains. However, this area has been identified by previous site investigation works as containing coal mining activity. and no evidence of the former brickworks buildings was noted. Apparently three shafts are marked in this area, although only one shaft was identified by the investigations (Firth Consultants 2010). As noted in the previous report (Page 2002) a cutting from the pond to the river suggests a build-up of c.2m of made ground in this area.
- 4.5 **Area 5** is located centrally within the site and relates to the railway system. This area would appear to encompass rail lines visible on the late 19th and early 20th century mapping, and as such is probably of lesser significance than the rest of the identified areas. This area is currently covered in coal dust and used as an area of storage. The survival of any below-ground remnants of the rail system is unknown.

- 4.6 ***Other features*** identified within the previous report include the charging bank platform and former pond. As stated above, the charging bank platform survives as an upstanding structure and is now Grade II listed. As upstanding designated remains, this wall and the platform above it are of high significance. The wall lies on the edge of the area of the proposed development, while the platform itself lies outside the area. The former pond is no longer visible and this area has presumably been in-filled. As a consequence, however, archaeological remains are likely to survive below ground in this area.

5 Outline of proposed development

5.1 *Previous site investigations*

- 5.1.1 Site investigations, recommendations and plans for the proposed development are contained within the reports undertaken by Blandford Consulting (2006), Firth Consultants (2010) and the Austin Partnership (2013). Blandford Consulting are a firm of geophysical consultants, Firth Consultants undertake environmental risk assessments and the Austin Partnership are civil and structural engineers.
- 5.1.2 Site investigation works carried out by Blandford Consulting (reported in Firth Consultants 2010) identified a consistent deposit of Made Ground across the site. This Made Ground consisted of loose coal sand and compact gravel that included brick, shale, slag, coal and concrete. A consistent deposit of rubble hard-core below the coal sand has also been anecdotally confirmed by the current site manager, which extends across the area of the former ironworks forge and beyond. It is considered that this Made Ground is a combination of demolition material from the former ironworks and brickworks, and imported material used as backfill to create engineering platforms. This Made Ground was found to be no less than 0.5m and up to 3.3m thick across the site – greater in places. Some remnants of foundations from the historic buildings were encountered across the site underlying the Made Ground. The precise locations of these remnants, however, were not recorded within the above reports (section 5.1.1).
- 5.1.3 Naturally occurring clay, gravels and cobbles were encountered below the Made Ground.
- 5.1.4 Further site investigations were undertaken in the south-eastern corner of the site by Quantum GB to investigate potential mining remains, within the area identified as Area 4 in Areas of Archaeological Potential (Page 2002). Made Ground (of a similar nature to that found above) was encountered at depths of 0.2m below the current ground levels, and was generally between 0.7m and 1.8m thick, although up to 4.2m thick in places. The previous archaeological report (Page 2002) also noted a cutting running through this area suggesting c.2m of Made Ground. A single mine adit against the southern boundary of the site was discovered in this area.
- 5.1.5 Unfortunately, no plans were available during the production of this report to pinpoint the exact locations of the trial pits and boreholes excavated throughout the site, although it is understood that there was a comprehensive coverage of small test pits and boreholes.

5.1.6 Due to the presence of some contaminants it was recommended that a 600mm layer of clean cover should be imported on to the site. As neither topsoil nor subsoil was present it was also recommended that such material would need to be imported to create gardens and landscaped areas.

5.1.7 In order to deal with the mine adit identified in the southeast corner of the site (see Fig.7) two options were recommended. The first required the area around the adit to be pressure grouted to a nominal depth of 15m and the adit entrance itself excavated and in-filled with stone. The second option was to create a sterile area, extending 15m from the feature, to be deemed unsuitable for development.

5.2 Proposed development

5.2.1 The proposed development is for the construction of 25 dwellings, with associated services and access routes.

5.2.2 As the depth of Made Ground was inconsistent, and due to the risk of potential contaminants and archaeological remains, the Austin Partnership (2013) consider the ground to be unsuitable for conventional shallow strip foundations. The proposed foundations for the dwellings would, therefore, be a crust raft and a reinforced concrete floor slab with nominal thickenings around the edge. This raft would be constructed on a stone blanket of imported and compacted hardcore.

5.2.3 The typical dimensions for a crust raft of this nature are shown below.

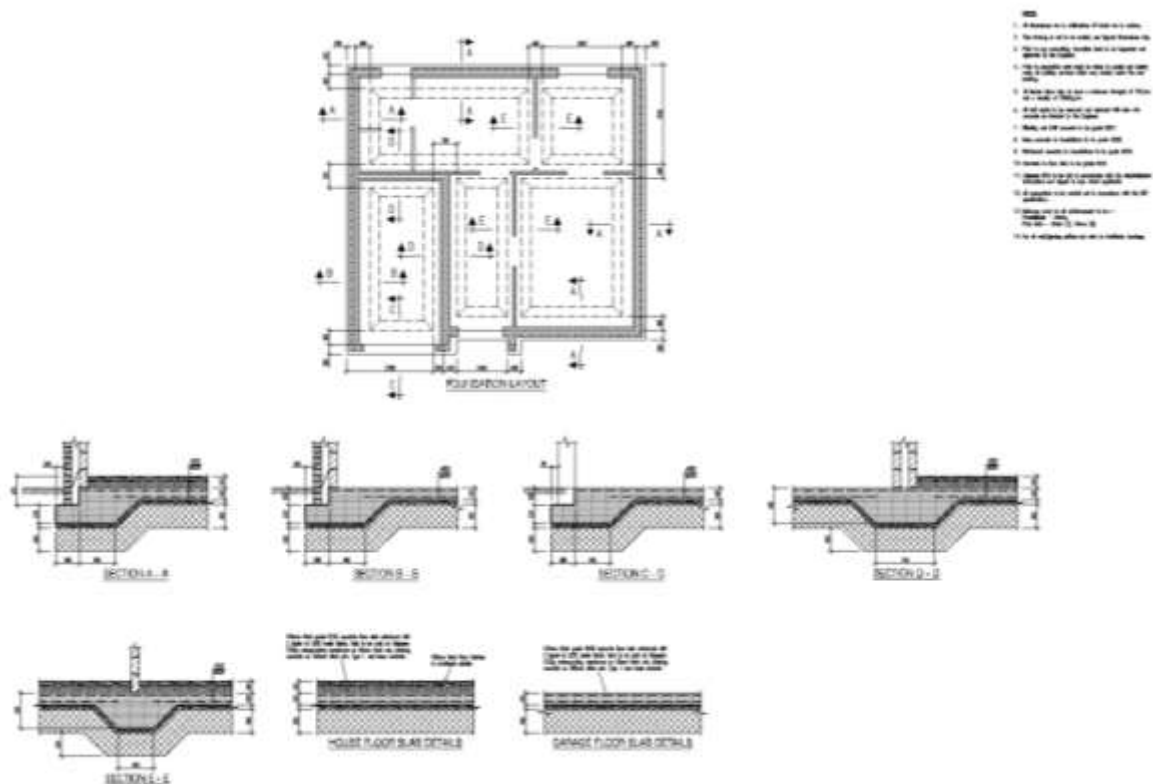


Figure 1: Typical raft foundation details, taken from Austin Partnership 2013.

- 5.2.4 The overall construction depth for such a crust raft is typically 450mm, reaching a maximum of 600mm under the wall-lines. The foundations would, therefore, largely cut in to the imported material (of which a 600mm thickness is stated), although the potential exists for some of the deeper foundations to expose the underlying ground levels.
- 5.2.5 Landscaping around the dwellings for garden and planting areas will consist of the importation of 600mm of topsoil to cover the existing ground.
- 5.2.6 For the various access roads across the site, it is recommended that the routes should be carefully stripped to remove any harmful surface material. To avoid ground breaking that may disturb archaeological remains, the carriageways will be constructed above the surface sub-grade and be a minimum of 500mm thick. The accompanying highway drainage will also be kept to a minimum depth, although it is recommended that the drainage will be 1200mm from the finished road level. It is likely, therefore, that drainage runs will involve some ground-breaking below current ground levels.
- 5.2.7 The proposed development is still at an outline state, and therefore the precise layout of the proposed development, including the locations of the 25 dwellings, has not yet been decided. The location of services associated with these dwellings is also undetermined. Services will be kept at as shallow a depth as possible, although it is likely their construction will involve some ground-breaking below current levels.

5.3 *Heritage Interpretation Plan*

- 5.3.1 No specific heritage interpretation has been included within the application for outline planning consent. It is, however, stated that the change of use from industrial to residential will open up public access to the Grade II Listed building that lies on the southern edge of the site, and potentially other upstanding remains in its vicinity. These sites are currently not accessible to the public. It has also been suggested that heritage interpretation boards could be provided as part of the planned development.
- 5.3.2 As yet no consolidation works are planned on the upstanding remains in this area.

6 Impact Assessment

- 6.1 The proposed crust raft foundations of the dwellings are designed to minimise any ground-breaking activity, and also to more evenly distribute the weight of the construction on the ground below. Such foundations designs have been recommended and used in other areas of archaeological sensitivity to ensure that archaeological remains are preserved *in situ*. There is the potential for some of the deeper elements of the foundations to extend up to, and possible into, current surface levels. The survival and relative depths of potential below-ground archaeological remains has not yet been established through intrusive archaeological investigations, although previous site investigations would suggest a covering of Made Ground of varying depths across much of the site. As such it is considered that this proposed construction method is likely to have minimal impact on the archaeological resource, with one main exception.
- 6.2 This exception is Area 1 (see Fig.6), which was identified as an areas of archaeological potential and illustrated in the previous archaeological study (Page 2002). This area contains upstanding and near-surface archaeological remains and, therefore, any development activity, such as enabling works, landscaping, construction of roads and infrastructure, service installation and the passage of vehicles, and the construction of crust raft foundations, has the potential to expose, damage or destroy such remains.
- 6.3 As the locations of the proposed dwellings are not yet fixed it has been stated that they can be sited in archaeologically less-sensitive areas to further reduce the impact on the potential archaeological resource.
- 6.4 Perhaps the most significant potential impact of the development comes from works associated with the construction of the dwellings. These include:
- Enabling works, such as installation of contractor's compound, construction of access roads, parking areas, storage areas, borrow pits and associated services;
 - Landscaping and terracing works;
 - Construction or roads and infrastructure; and
 - Service installation.

Although the main access roads are, as with the dwellings, to be constructed on top of, or into, imported materials and are therefore of minimal impact, their associated drainage along with the work mentioned above is likely to extend below current ground levels to varying degrees. This has the potential to expose, damage or destroy archaeological remains.

- 6.5 Clearance works that will be required prior to development also have the potential to expose, damage or destroy archaeological works. This is specifically the case for two areas:
- activity within Area 1 (see Fig.6), where machinery lies on top of and against upstanding archaeological remains, and where modern walls abut walls of archaeological interest.
 - any area where the clearance of long-standing areas of rubble and waste material is proposed. These include the bank that surrounds the riverside

edge of the site and other similar mounds of material across the site. Such material could be masking remains of archaeological potential.

7 Mitigation

7.1 Suggested mitigation measures

- 7.1.1 Any initial site clearance works that are likely to disturb ground deposits should be undertaken under archaeological supervision to ensure potential archaeological remains are not disturbed and that where exposed they are adequately recorded. This is particularly the case for areas of longstanding, seemingly modern, dumped material, such as areas of banking that define the riverside edge of the site, and disturbed ground in front of the upstanding possible Boiler House wall. Previous excavations on similar industrial sites have revealed well-preserved archaeological remains hidden beneath dumps of later-20th century material.
- 7.1.2 Area 1, as depicted in the previous archaeological report (Page 2002, Figure 2 & Section 3.4, current report Fig.6), due to the presence of upstanding and visible structures of archaeological interest, is clearly an area of great archaeological potential that may survive both above-ground and in near-surface deposits. It is recommended that this area should be avoided by the proposed development plans in order to preserve archaeological features and deposits *in situ*.
- 7.1.3 Any unavoidable activity within Area 1 in the area around the upstanding wall or wall remnants, such as general site clearance, should be undertaken under archaeological supervision. For example, the removal of the later breezeblock wall forming the coal storage bays that are butted onto the earlier stone wall, or removal of modern material in front of the Charging Bank and possible Boiler House wall. Following any clearance works around these upstanding remains it is recommended that a programme of archaeological building recording be undertaken; this would help to inform future mitigation measures
- 7.1.4 All walling identified as potentially associated with the former ironworks or brickworks should ideally remain *in situ*. The Charging Bank and possible Boiler House wall is a Grade II Listed structure and is therefore legally protected. If development works require the removal of any identified non-listed structures then a programme of archaeological excavation and recording should be undertaken prior to their disturbance.
- 7.1.5 As stated in the previous archaeological report (Page 2002), any planned ground disturbance works in this development area should be preceded by archaeological evaluation to identify the extent and nature of surviving archaeological features. Due to the proposed crust raft foundation, such evaluation trenches may only need to be relatively shallow. Areas of proposed service runs and drainage channels may extend deeper, but as these are likely to extend for longer distances, such works may be dealt with by archaeological watching brief monitoring during the ground disturbance. Sufficient time should be built in to the construction timetable to allow detailed recording of any such remains to be undertaken.
- 7.1.6 It was indicated in supporting statements to the application for outline planning permission for the residential development that, due to the current intensive

operation of the site, archaeological evaluation at present is impractical. This was largely confirmed by the site visit undertaken as part of this study. Coal heaps, machinery, waste material, structures and the passage of site vehicles throughout most of the site prohibits the ability to undertake a meaningful archaeological evaluation. The exception is an area of rough ground at the eastern end of the site, lying to the east of the main pond. This area is little used in the current works, and covers an area of former brickworks buildings (Figure 7). There is available space in this area to undertake an archaeological evaluation, however, it has previously been investigated through two periods of ground investigation work (Blandford Consulting and Quantum GB, as reported in Firth Consultants 2010). Both of which reported thick deposits of Made Ground and later 20th century mining activity, with no mention of brickworks structures. It is possible brickworks structures were missed by these ground investigations. However, confirming the presence or absence of archaeological remains in this area of the site will give no clear indication as to the general survival or archaeological remains across the whole site. Archaeological evaluation would be more meaningfully undertaken once the site has been cleared of modern detritus.

7.2 Suggested consolidation works

- 7.2.1 The trees and scrub in front of the Possible Boiler House wall should be cleared to improve visibility and access. A programme of archaeological building recording should be undertaken at this point to record any upstanding remains of the Charging Bank and possible Boiler House wall and the potential ironworks or brickworks wall located a short distance to the north. This building recording work could then provide further more detailed recommendations as to their consolidation.
- 7.2.2 The Charging Bank and possible Boiler House Wall along the southern edge of the site is a Grade II Listed structure. Any works associated with the consolidation and repair of this structure should be undertaken in consultation with Cadw and will require Listed Building Consent. The main charging bank platform wall appears in relatively good condition although the small trees growing within the structure clearly have the potential to damage the integrity of the wall; the wall would clearly benefit from their removal. The areas around them should then be repointed using mortar appropriate to the rest of the structure. The wall of the possible Boiler House may require more extensive consolidation work, but this would need to be examined in more detail following clearance works in front of this section of walling.
- 7.2.3 Any ground disturbance works in the area immediately in front of both the Charging Bank wall and the Possible Boiler House Wall should be preceded by intrusive archaeological evaluation to determine the archaeological potential of structures surviving in front of them. Clearance should be undertaken under archaeological supervision. This area is likely to have the greatest potential for the survival of below-ground archaeological remains, as evidenced in the fragment of wall visible on the ground surface a short distance to the east of the Charging Bank Platform.

8 Conclusion

- 8.1 This report provides a detailed addendum to a previous desk-based assessment undertaken on the site of the Forge Washery, Lower Brynamman (Page 2002). Section 3 (above) provides an updated conditions survey of the visible archaeological remains within the site boundary. These sites, all of which lie within Area 1 around the central southern part of the site, consist of an upstanding Charging Bank and possible Boiler House Wall (now a Grade II Listed structure), a length of probable ironworks and brickwork walling to the north, and the remnants of a wall visible on the ground surface between the two. The Charging Bank Wall is in relatively good repair, although vegetation growth is likely to be damaging the structure. The possible Boiler House Wall is in a poorer state of repair, but close examination is masked by vegetation cover. The length of walling to the north appears in relatively good condition, although current site works are likely to have damaged its western end. A fragment of presumably earlier walling at the east end relating to the ironworks, appears to have deteriorated since it was described in the previous report. The wall remnant visible between the two is likely to be suffering from the passage of vehicles over its surface.
- 8.2 The proposed development across the site, which is based on environmental assessments and site investigation works, is for the construction of 25 dwellings built on crust raft foundations that will be constructed on and into imported material, to minimise ground disturbances. Similarly access roads are to be built on and into imported material. Site investigation works and anecdotal evidence suggests large amounts of Made Ground survive across the site. Therefore, these elements of the development will have a minimal impact on the archaeological resource so long as they can avoid the upstanding and surface remains described in the conditions survey.
- 8.3 Associated highway drainage, service runs, site clearance and enabling works associated with the development all, however, still have the potential to expose, damage or destroy archaeological remains.
- 8.4 Area 1 should, ideally, be avoided in terms of development works to preserve the upstanding historical walls. However, the area would benefit from clearance works to open up visibility and access to standing remains. Site clearance should be undertaken under archaeological supervision. Following this it is recommended that a programme of archaeological building recording is undertaken. This will help to inform future mitigation measures on these remains.
- 8.5 The extent, condition and survival of archaeological remains have not been determined by intrusive archaeological investigation, and therefore the archaeological potential of large areas of the site remains unknown. Because the site is currently in heavy use, conditions to not exist for meaningful archaeological evaluation to be undertaken at this stage.
- 8.6 It is recommended that where proposed developments are planned, an archaeological evaluation is undertaken to determine the extent and survival of archaeological remains. At the current outline planning stage, the locations of the proposed dwellings and associated works are not yet fixed, therefore evaluation trenches can only be targeted once more detailed plans are provided at a later stage.

- 8.7 Once evaluation has determined the extent and condition of any archaeological remains it is anticipated that drainage and service runs can be dealt with via an archaeological watching brief, as long as sufficient time is incorporated into the timescale to allow adequate recording should archaeology turn up.
- 8.8 Site clearance works should be undertaken under archaeological supervision.
- 8.9 Consolidation works are suggested on the upstanding remains. The Charging Bank and possible Boiler House wall should be cleared of intrusive vegetation and appropriately repointed. The possible Boiler House wall is likely to require greater attention, but this needs to be properly assessed once vegetation has been cleared from the front. These walls are Grade II listed, so any works affecting them will require consultation with Cadw and Listed Building Consent.
- 8.10 The importance of former industrial sites have often been dismissed in the past, but there is a growing awareness of the significance and importance of them in the story of the growth of Wales during the industrial period. The importance of current development site to the history of the local area should not be undervalued as it played a pivotal role in the development of Brynamman; similar sites under development have garnered some intense local interest in recent years. It should be noted that, although no detailed Heritage Interpretation Plan has been produced at this stage, the change of use of the site will open up access to the visible historic remains, particularly the Grade II Listed Charging Bank and possible Boiler House wall. Also, the current use of the site does not appear conducive to the long-term survival of archaeological remains. The current use of machinery, movement of vehicles and, perhaps more significantly, sporadic movement of materials and excavations at the site, could all be damaging the archaeological resource. The degradation of one section of walling and a former pond are noted above. The development of the site into a residential area with a covering of imported material may be the most beneficial regime when considering the long-term survival of the archaeological resource.

9 Sources

Unpublished

Austin Partnership 2013, *Foundation and Highway Construction Appraisal, Forge Washery, Lower Brynamman*. Ref. 13.2281

Blandford Consulting 2006, *Environmental Report on Land at Forge Washery, Brynamman*
Report no. BC/MB/10.06.05

Firth Consultants 2010, *Cost Appraisal for treatment of contamination and mining on land at the Forge Washery, Lower Brynamman, South Wales Final Report*. Report fc37055

Page, N. 2002, *Forge Washery, Brynamman: Archaeological Desk-Based Assessment*.
Cambria Archaeology Report No.2002/09

Cartographic

Ordnance Survey 1898, *2nd edition 1:2500 Carmarthenshire XLIX.03*

Ordnance Survey 1918, *4th edition 1:2500 Carmarthenshire XLIX.03*

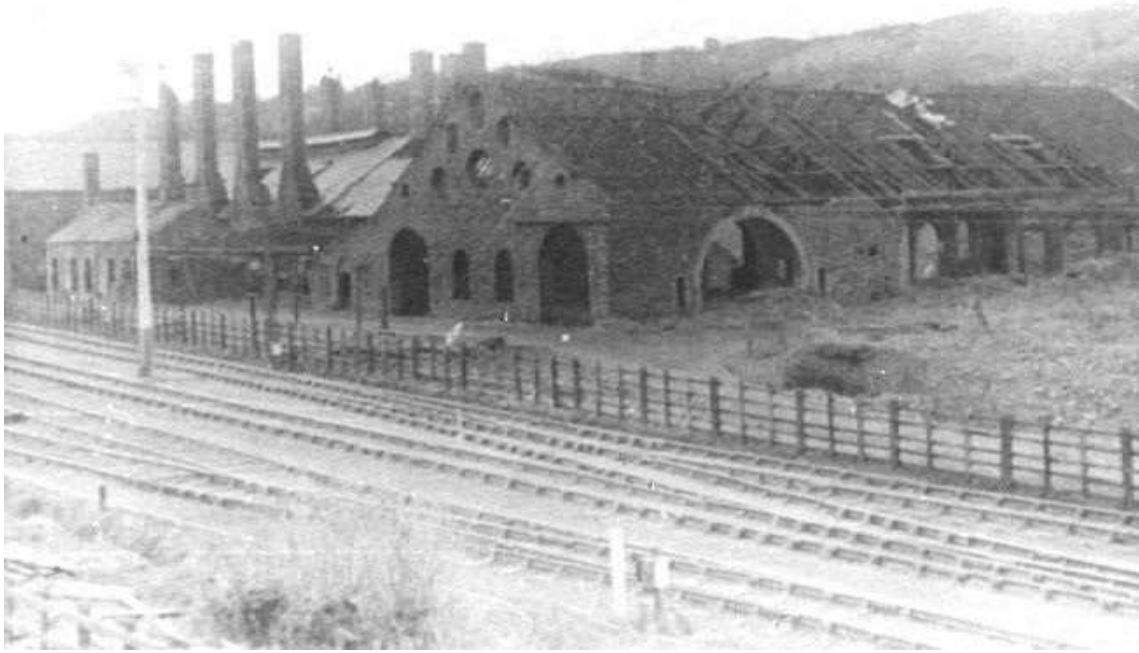


Photo 1: Early 20th century photo of the main forge building of the Amman Iron Works



Photo 2: Early 20th century photo looking SE across the site, presumably when the site was being used as a brickworks.



Photo 3: View NE from the main entrance to the site.



Photo 4: View NW of the brick-built building adjacent to the weighbridge.



Photo 5: View showing typical ground conditions across the site, consisting of coal sand overlying hard-core rubble.



Photo 6: View WSW across the site showing coal tips and storage areas.



Photo 7: View SW showing areas used to store disused machinery.



Photo 8: View W of former washery pond.



Photo 9: View E across the relatively unused eastern part of the site.



Photo 10: View SW showing the charging bank wall in the background. 2m scale.



Photo 11: View E of the charging bank wall. 2m scale.



Photo 12: View SSE showing the vegetation and rubble that has built up in front of the possible Boiler House Wall.



Photo 13: View SSE of the easternmost arched recesses within the wall.



Photo 14: View SE showing more detail on the arched recesses.



Photo 15: View S of the westernmost arched recess, shrouded in undergrowth. The smaller arched passage is just about visible in the centre.



Photo 16: View ENE showing the raised area on the right that covers the site of the blast furnaces and main brickworks building.



Photo 17: View SSE showing the ends of two walls thought to be remnants of the ironworks buildings (see section 3.3.2). 2m scale.



Photo 18: View SSE showing the two adjoining early walls, thought to be surviving elements of the ironworks and brickworks buildings. 2m scale.



Photo 19: View SE of the mortared stone wall forming the rear of the coal-bays. This wall is thought to represent possible remains of the brickworks building.



Photo 20: View S, showing a close-up of the early stone wall. 2m scale.



Photo 21: View SSE of the remains of an earlier mortared stone wall visible in the ground surface, to the right of the 2m scale.



Photo 22: View WSW along the raised area that covers the site of the blast furnaces and main brickworks building. The remains of the earlier stone wall is visible just above the 2m scale.



Photo 23: View W of the former office building outside the site boundary.



Photo 24: View SE of the brick-arched culvert surviving in the river bank outside the site boundary.



Photo 25: View SE inside the brick-arched culvert.



Photo 26: View SW of the former railway bridge piers in the river outside the site boundary.



Photo 27: View ESE of the surviving rail bridge across the river to the northeast of the site.

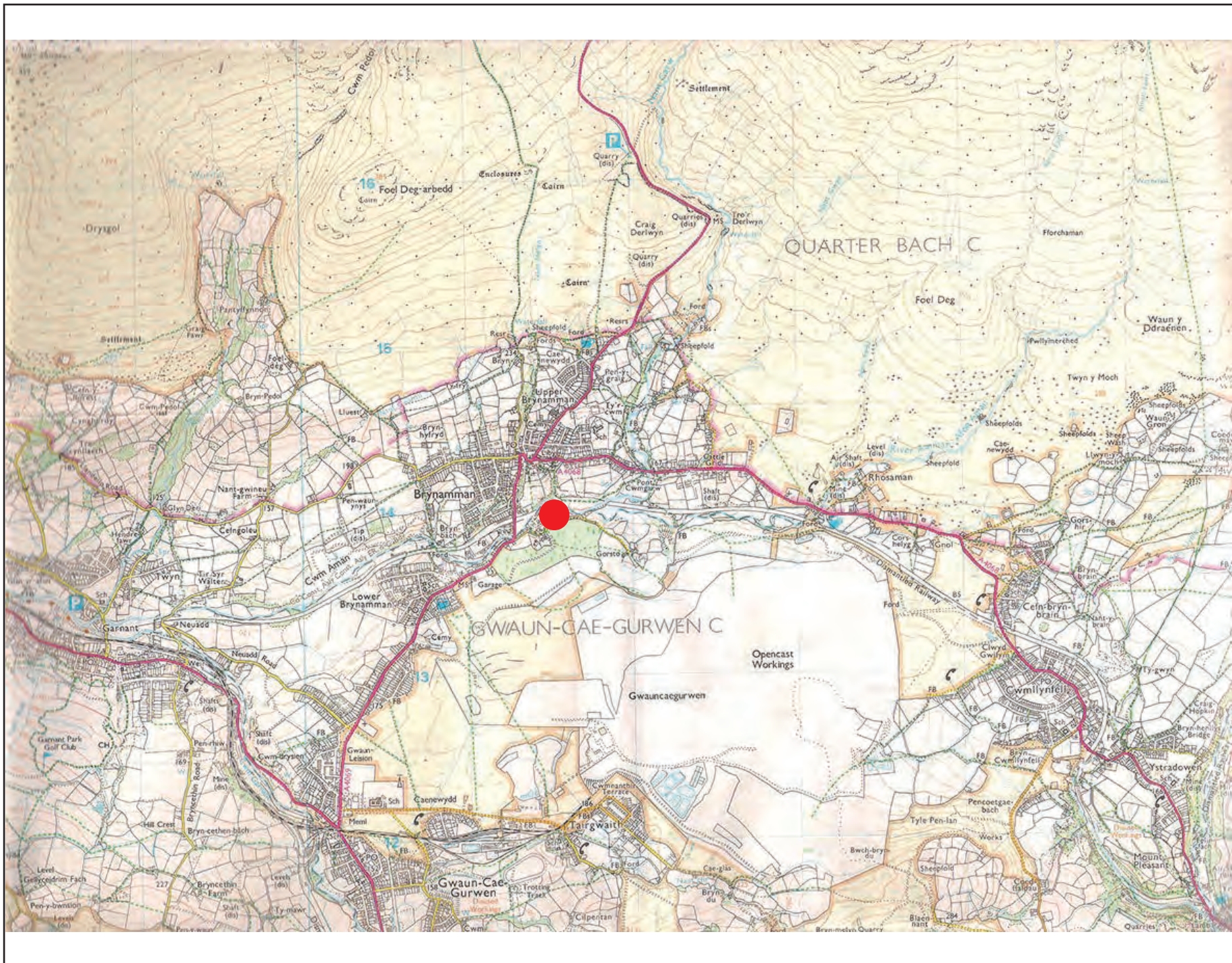


Fig. 2: Site location (in red), based on the 1:25000 Ordnance Survey map

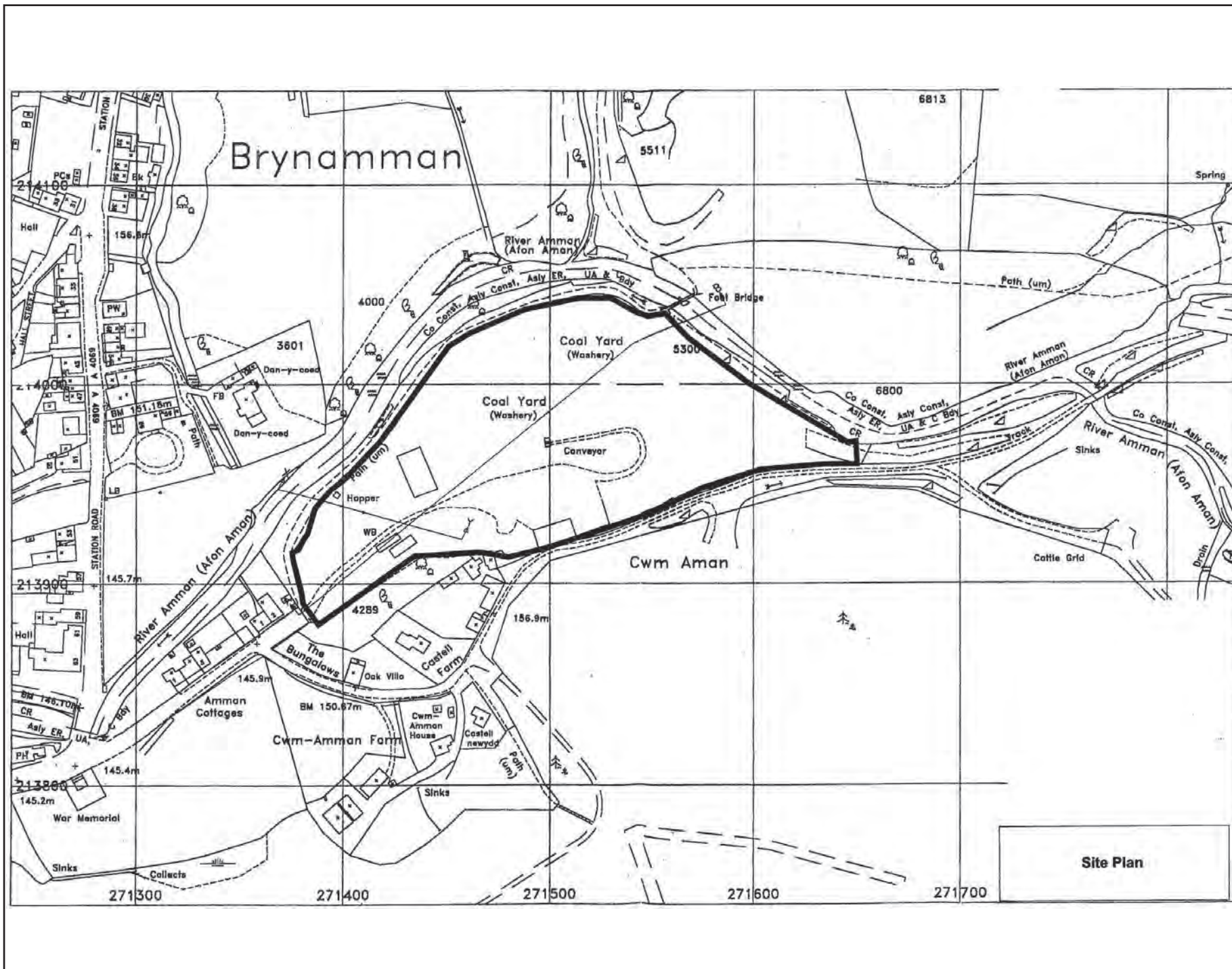


Fig. 3: Site plan

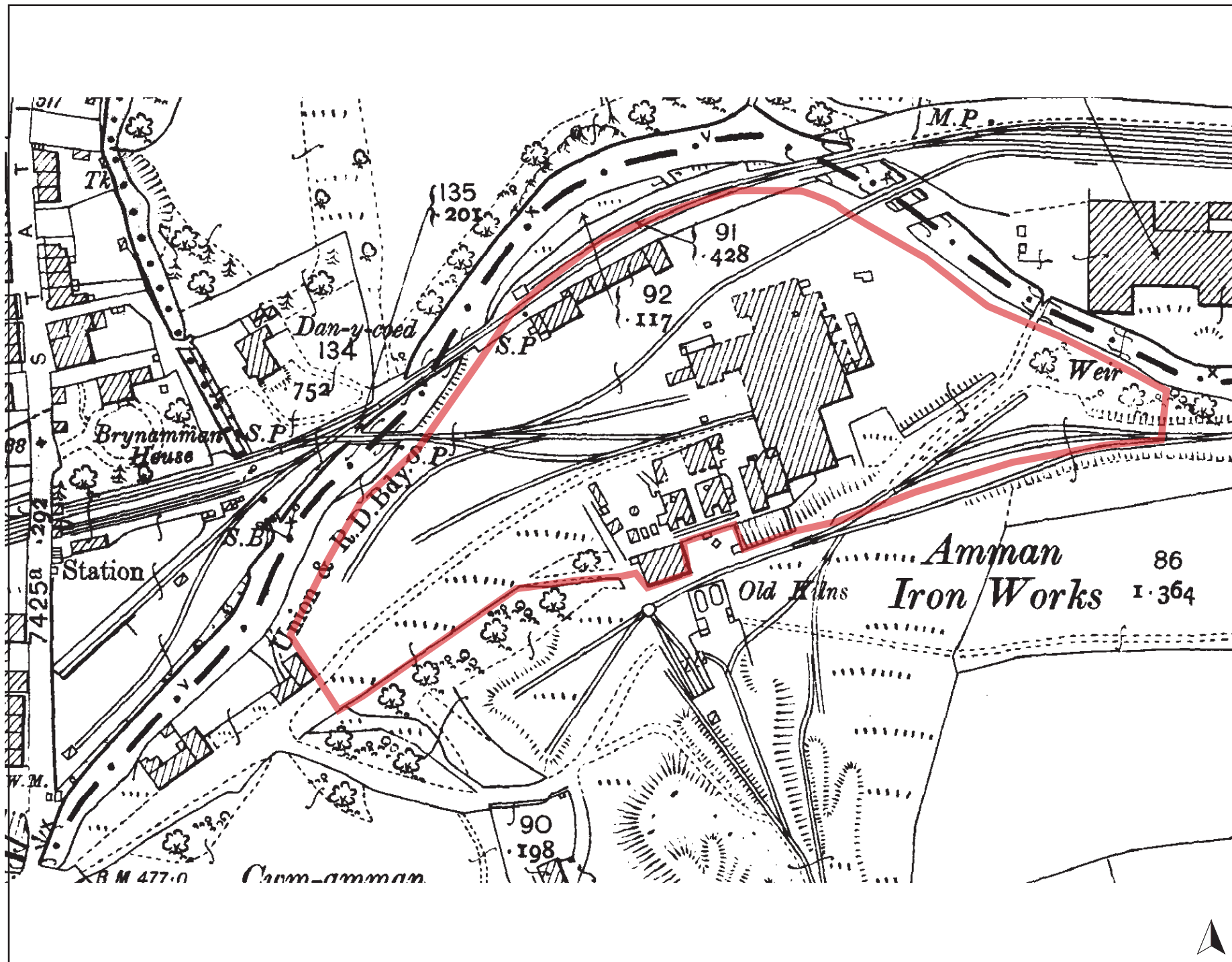


Fig. 4: Extract from the 1;2500 Ordnance Survey map of 1898. Site boundary in red.

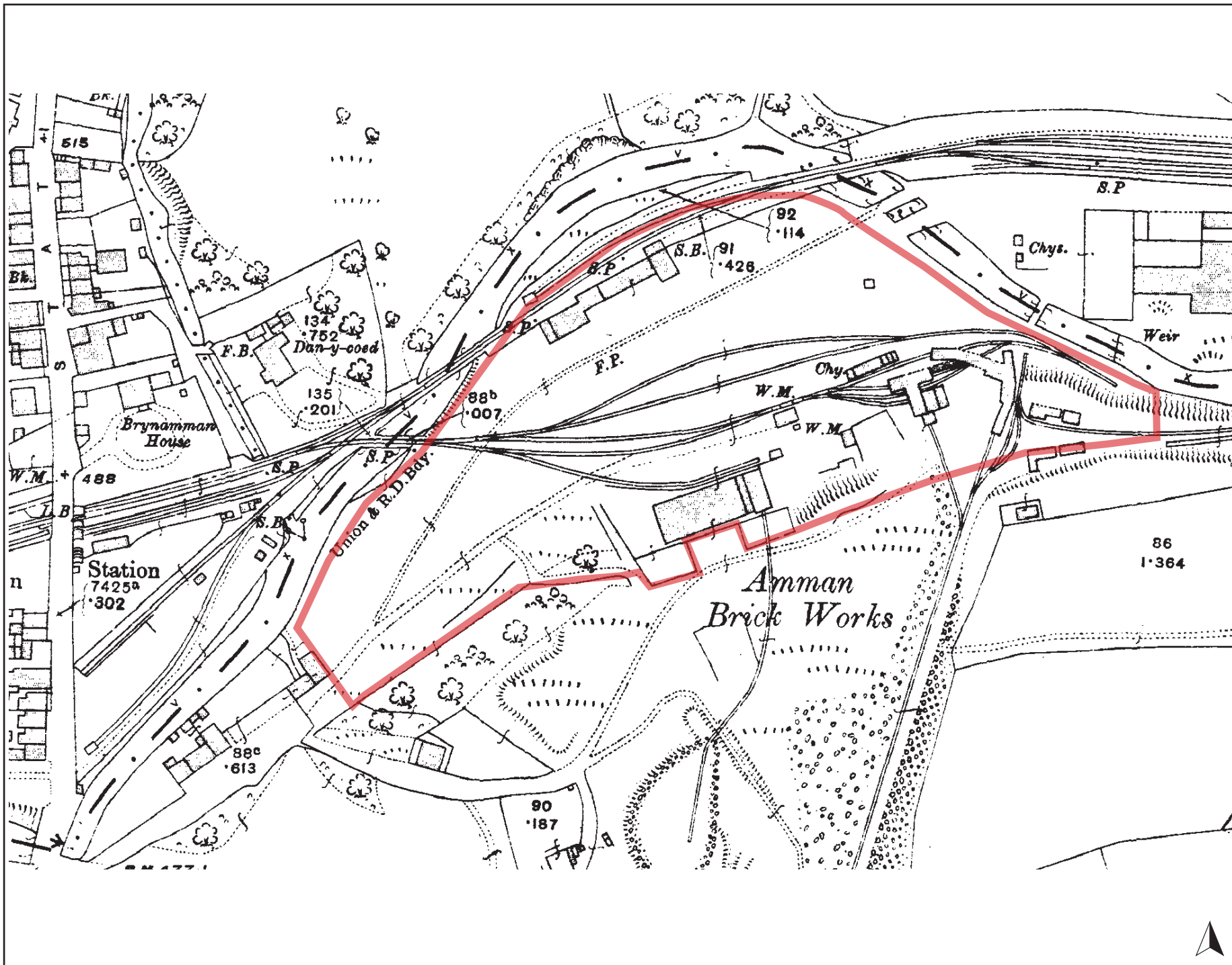


Fig. 5: Extract from the 1:2500 Ordnance Survey map of 1918. Site boundary in red.



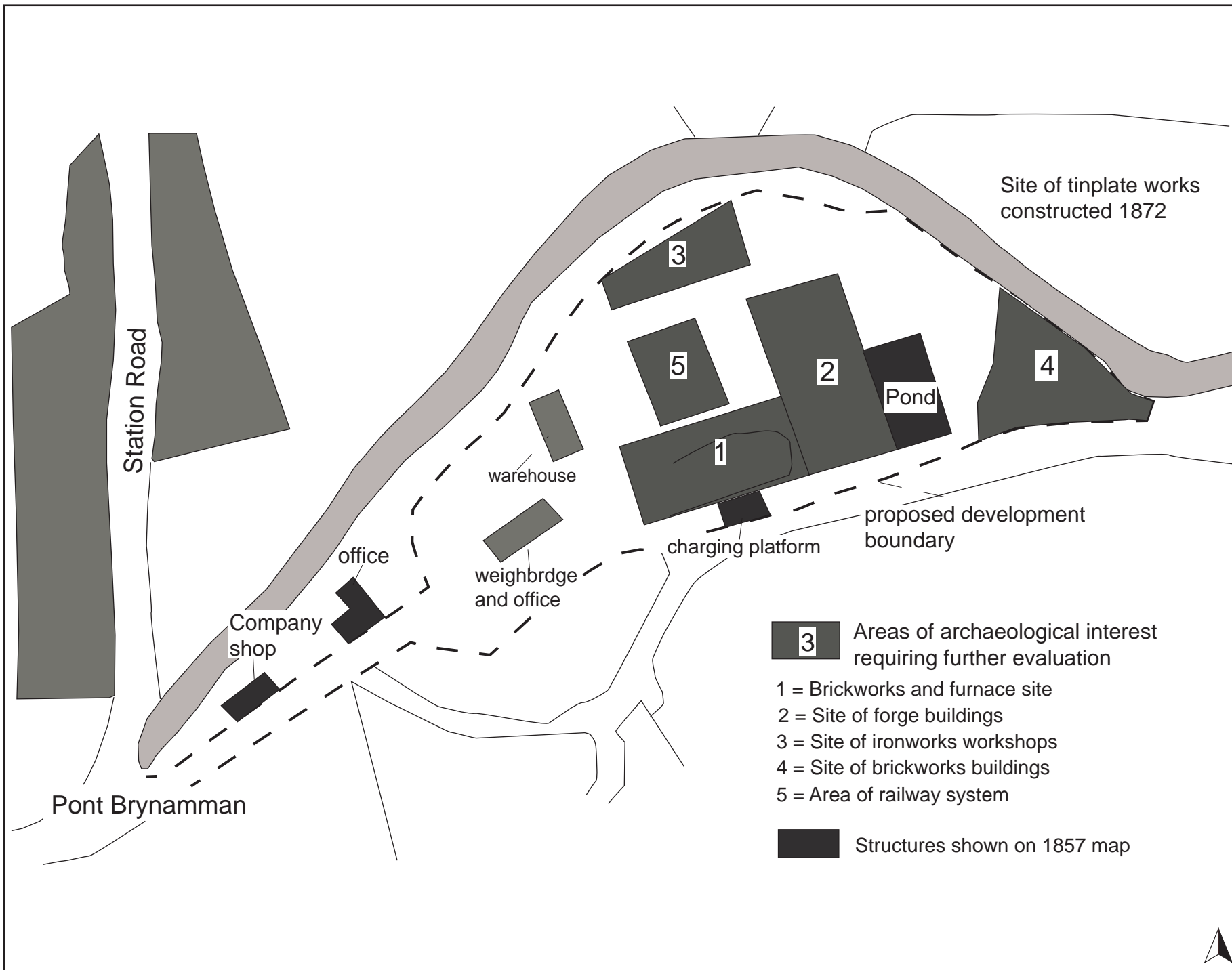


Fig. 6: Plan taken from Page 2002, showing areas of archaeological interest requiring further evaluation.



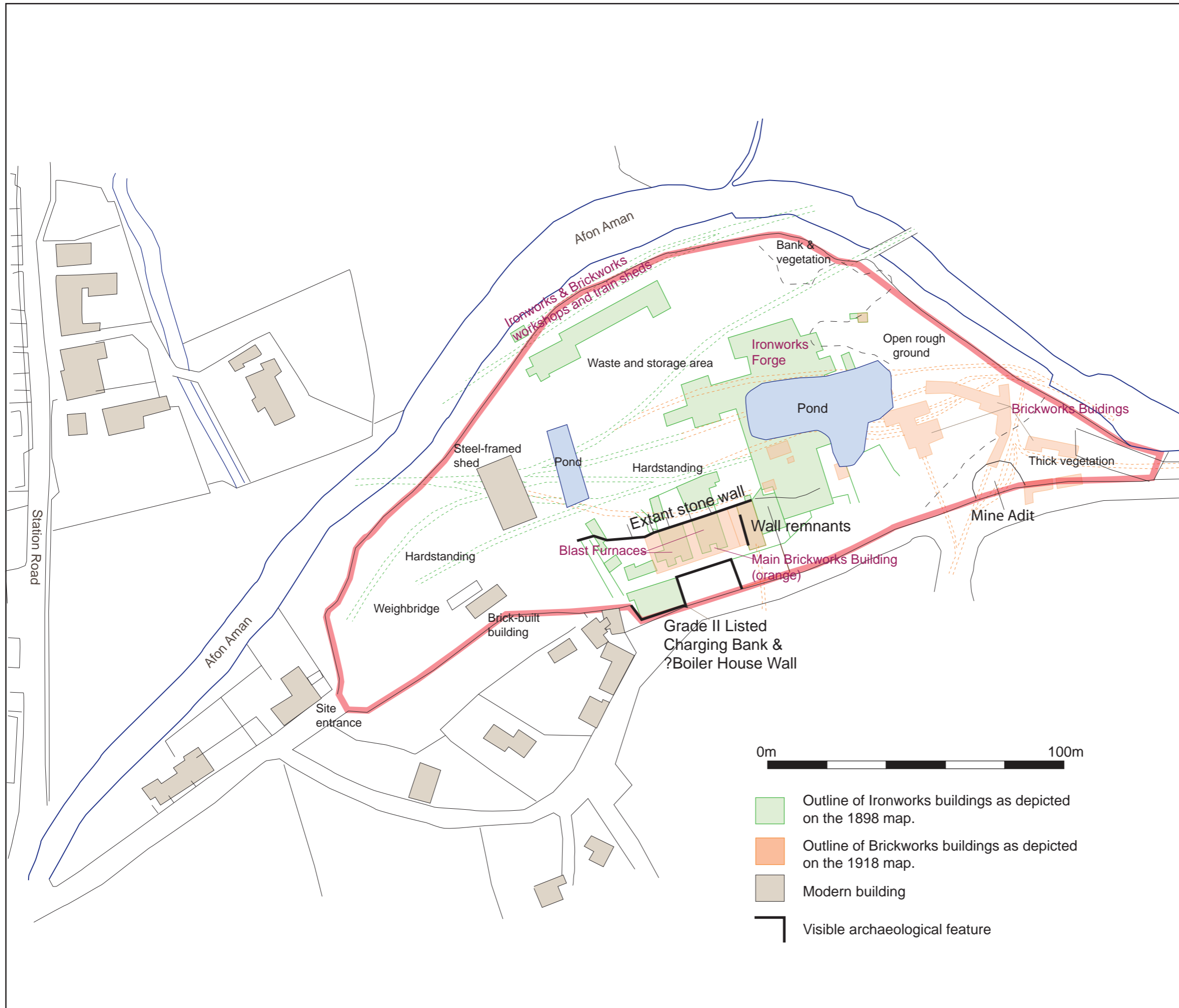


Figure 7: Site plan, showing the current layout, features of archaeological interest and the outlines of the main buildings as depicted on historic maps. The site boundary is shown in red.

Date: 02/12/13

Drawn By: PP



Archaeology

Wales

APPENDIX I: Specification

Specification

For Archaeological Assessment and Site Visit:

Forge Washery Site, Lower Brynamman

Prepared for:
Geraint John Planning Ltd

Project No: 2187

November 2013

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NON TECHNICAL SUMMARY

This Project Design details the proposal for an Archaeological Assessment and Site Visit that provides an addendum to a previous Desk-Based Assessment undertaken by Cambria Archaeology (Page 2002). The current work is designed to provide an updated conditions survey of archaeological features and listed buildings on the site, as well as identifying areas of archaeological potential, discussing proposed development works and suggesting appropriate mitigation to safeguard the archaeological resource. This work is associated with proposed residential development on the site of a former 19th century ironworks and subsequent brickworks at Forge Washery, Lower Brynamman. It has been prepared by Archaeology Wales Ltd for Geraint John Planning Ltd.

1. Introduction

The proposed development comprises plans to build 25 dwellings along with associated infrastructure on the site of the Forge Washery, Lower Brynamman (Henceforth – the site), NGR: SN 7150 1395. Information on the development has been supplied by Geraint John Planning Ltd acting on behalf of their clients. The local planning authority is Neath Port Talbot County Borough Council. The planning application number is P2008/0798.

This specification has been prepared by Philip Poucher, Project Manager, on behalf of Archaeology Wales Ltd (Henceforth - AW) at the request of Jon Hurley, Geraint John Planning Ltd. It provides information on the methodology that will be employed by AW during an Archaeological Assessment and Site Visit.

The purpose of the proposed Archaeological Assessment and Site Visit is to provide the local planning authority with the information they have requested in respect of the proposed development, the requirements for which are set out in Planning Policy WALES, November 2012, Section 6.5, and Welsh Office Circular 60/96. The work is to ensure that all standing and buried remains of potential archaeological interest are fully investigated and recorded if they are disturbed or revealed as a result of activities associated with the development.

The details set out in this specification aim to address concerns raised by Neil Maylan of Glamorgan Gwent Archaeological Trust Curatorial Division (henceforth GGAT-CD), in his capacity as archaeological adviser to the LPA.

All work will conform to the Standard and Guidance for Archaeological Desk Based Assessment (IfA 2008) and be undertaken by suitably qualified staff to the highest professional standards.

2 Site description

The site is situated in the Amman Valley at the southern margin of the settlement of Brynamman, situated in a bend in the river. Slopes across the site are fairly level, the site being located on the floor of the valley. The site is irregular in outline and has a maximum dimensions of 280m by 120m. The River Amman, which flows from east to west in the area, is immediately beyond the northern boundary of the site.

This was originally the site of the former Amman Iron Works and later brickworks. The first works were constructed on the site by the Amman Iron Company in the early to mid-1840s. The first furnaces were constructed on the site in 1847 and the production of pig iron began the following year. The site was extended in the early 1850s with the addition of a forge, and again in the late 1860s with the construction of a third furnace. A tinplate works was built on an adjacent site in 1872. These works played an important role in the establishment of the settlement of Brynamman. In the early years of the 20th century the iron works ceased production and the site became a brickworks, converting and reusing some elements of the former ironworks buildings and infrastructure. The Forge Washery, processing coal, was established in the later 20th century, today the site is used as a coal depot and yard.

Many of the buildings associated with the ironworks and later brickworks have since been destroyed, although some structures do still survive, including a grade II listed charging bank wall at the southern edge of the site. The original office building survives just outside the site, as do elements of revetment wall, culverts and bridge structures along the river to the north. Partial remains of a large building, possibly the brickworks, apparently converted from the early furnaces, survive beneath the washery conveyor. Machinery, equipment, coal heaps and waste cover much of the site today which is still in operation as a coal depot. Much of this modern material may mask further remains both at and below ground level.

3 Proposed Development

This site has been classified as Brownfield and put forward within the local plan to be developed for housing. The current proposals are for 25 dwellings, the locations of which are not yet fixed but dependent on ground conditions. Imported material would be brought in to raise ground levels by 600mm, and the dwellings would be constructed on raft foundations into this imported material. Similarly road levels would be constructed into imported materials. The scheme is designed to minimise ground disturbance in the light of potential contaminants and archaeological remains.

4 Planning background & site specific objectives

A previous Archaeological Desk-Based Assessment was undertaken in 2002 on the site (Page 2002), which examined the archaeological potential of the site and the likely impacts of development. This assessment noted some surviving upstanding remains of the former ironworks and brickworks, and recommended a programme of site clearance from selected areas followed by trial trenching to determine the extent of the survival of potential archaeological remains across the site.

This report was submitted with an outline application for residential development in 2008. GGAT - CD recommended that an archaeological evaluation be undertaken on the site prior to the determination of the planning application. It was felt by the client that due to both the current intensive use of the site and the proposed design scheme that such an evaluation was neither required nor practicable at this stage. Subsequently Neil Maylan, Archaeological Planning Manager at GGAT – CD, in his capacity as advisor to the local planning authority, recommended that further up-to-date archaeological assessment should be undertaken on the site. In his letter to the Head of Planning at Neath Port Talbot County Borough Council, dated 16/8/13, he states:

we recommend that the applicant is requested to commission a qualified professional archaeologist with experience of the redevelopment of industrial remains to look at the current state of the historic remains in the application area in order to provide an up to date assessment of their condition and the likely consolidation requirements for them. The work should also confirm that even limited archaeological evaluation is not possible at this time and would include a careful consideration, using existing information, of the below ground archaeological resource and whether or not the proposed importation of material and use of raft foundations will provide sufficient protection for them from significant damage during the construction of the development. Finally the work should provide an outline of a heritage interpretation plan for the site. This information would mean that sufficient information was available for the determination of the impact of the development on the archaeological and historical resource to be made in accord with Planning Policy Wales 2012 section 6.5.2.

The questions of particular concern are set out in this letter, but can be summarised as follows:

- the need for services and their potential impact on the archaeological resource
- the impact of the development on the Grade II listed structures on the site, in particular on their setting
- the incorporation of surviving non-listed historic structures into the current operational plant and the impact of development on them
- information regarding how the grade II listed buildings will be retained and how public access to them will be provided.

As well as answering these questions, the current archaeological assessment report would need to:

- provide an up to date assessment of the condition of the historic remains and their likely consolidation requirements
- confirm that limited archaeological evaluation is not possible at this time
- provide a careful consideration of the below ground archaeological resource and whether or not the proposed importation of material and use of raft foundations will provide sufficient protection for them from significant damage during the construction of the development
- provide an outline of a heritage interpretation plan for the site.

The work will result in a report that will provide information of sufficient detail to allow informed planning decisions to be made which can safeguard the archaeological resource. Preservation *in situ* will be advocated where at all possible, but where engineering or other factors result in loss of archaeological deposits, preservation by record will be recommended. This report will not replace the previous Archaeological Desk-Based Assessment (Page 2002), but rather provide a detailed Addendum to that report to answer the questions and concerns stated above.

5 The proposed archaeological work

The proposed archaeological work relates to the whole of the site, i.e. all of the application area.

The aim of the work will be to establish and make available information about the archaeological resource existing on the site. The work will include the following elements:

- A site visit (Stage 1)
- The production of an illustrated report and the deposition of the site archive (Stage 2)

6 Method statement for a Site Visit (Stage 1)

A walkover survey will be undertaken of the proposed development area. This will consider the nature, extent and degree of survival of archaeological sites, structures and deposits within the study area.

Drawings will comprise measured and sketch plans and elevations at appropriate scales as appropriate.

Photographs will be taken in high-resolution digital photography with the camera set to take TIFF format images with a resolution greater than eight megapixels.

Written records will be made as appropriate.

7 Method statement for the production of an illustrated report and the deposition of the site archive (Stage 2)

The previous Archaeological Desk-Based Assessment (Page 2002) has already provided a detailed study on the history of the site. This assessment considered the following:

- i) The history of the site.
- ii) The nature, extent and degree of survival of archaeological sites, structures, deposits and landscapes within the study area in 2002.
- iii) The significance of any remains in their context both regionally and nationally and in light of the findings of the desk based study.
- iv) The potential impact of any proposed development on the setting of known sites of archaeological importance.
- v) It provided an assessment of the potential for further investigative work, giving recommendations for further intrusive evaluation to determine the location, extent, date, character, condition, significance and quality of any surviving archaeological remains liable to be threatened by the proposed development.

Point i will not be re-examined in the current report. Points ii, iii, iv and v will however

be re-assessed for the production of the current report both in the light of subsequent activity on the site over the intervening 11-12 years and to assess current development proposals. Particular attention will be paid to assessing the concerns laid out in section 4 above.

The results will be presented in a report and will be detailed and laid out in such a way that data and supporting text are readily cross-referenced. The HER Officer will be contacted to ensure that any sites or monuments not previously recorded in the HER are given a Primary Record Number (PRN) and that data structure is compatible with the HER. The historical development of the site will be presented in phased maps and plans comprising clearly, the outline of the site.

Any relevant historic maps not included in the initial DBA will be included and be fully referenced. Any site photographs included in the report will be appropriately captioned and clearly located on a suitably scaled site plan.

The report will specifically include the following:

1. a copy of the design brief
2. a location plan
3. an updated conditions survey of visible remains of archaeological interest, with recommendations for their consolidation.
4. an assessment of areas of archaeological potential.
5. a description of the proposed development and an assessment of the potential impact on the archaeological resource together with suggested mitigation.
6. A description of any proposed heritage plan for the site

Copies of the report will be sent Geraint John Planning Ltd, GGAT-CD and for inclusion in the HER. Digital copies will be provided in pdf format if required.

A summary report of the work will be submitted for publication to a relevant local or national journal (eg Archaeology in Wales) no later than one year after the completion of the work.

The site archive

A project archive will be prepared in accordance with **IfA's Standards & Guidance for the creation, compilation, transfer and deposition of archaeological archives (2009)** and be deposited within an appropriate local museum on completion of site analysis and report production.

Arrangements will be made with the local museum before work starts. Wherever the archive is deposited, this information will be relayed to the HER.

Although there may be a period during which client confidentiality will need to be maintained, the report and the archive will be deposited not later than six months after completion of the work.

Other significant digital data generated by the survey (ie AP plots, EDM surveys, CAD drawings, GIS maps, etc) will be presented as part of the report on a CD/DVD. The format of this presented data will be agreed with the curator in advance of its preparation.

9 Resources and timetable

Standards

The archaeological assessment and site visit will be undertaken by AW staff using current best practice.

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

Staff

The project will be undertaken by suitably qualified AW staff. Overall management of the project will be undertaken by Philip Poucher (a CV is available upon request).

Equipment

The project will use existing AW equipment.

Timetable of archaeological works

The work will be undertaken at the convenience of the client. No start date has yet been agreed.

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.

If AW has sole possession of the site, then AW will produce a detailed Risk Assessment for approval by the client before any work is undertaken. If another organisation has responsibility for site safety, then AW employees will be briefed on the contents of all existing Risk Assessments, and all other health and safety requirements that may be in place.

Archaeology Wales



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