FORGE WASHERY, BRYNAMMAN ARCHAEOLOGICAL DESK-BASED ASSESSMENT

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By

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ARCHAEOLOGICAL DESK-BASED ASSESSMENT FORGE WASHERY, BRYNAMMAN

CONTENTS **PAGE**

SUMMARY

A planning application to develop the site of the former Forge Washery, Brynamman, has been submitted by Tolkein Property Ltd. through their agent M J Associates. The site (centred on SN71501395) was also the site of the former Amman Iron Works and later brickworks and it was, therefore, necessary to carry out this assessment to determine the archaeological potential of the site and the likely impacts of the proposed development.

The Amman Iron Company constructed the first works on the site in the early – mid 1840s. The first furnaces were constructed in 1847 and the production of pig iron began in 1848. Further expansion occurred during the 1860s, with a large forge built in 1861 and a third furnace added to the site in 1868. A tinplate works was constructed on an adjacent site in 1872. The ironworks was part of a deliberate and planned approach to the industrial development of Brynamman based on the exploitation of the mineral resources of the Amman valley. As the first enterprise of any great size, the Amman Iron Company and its ironworks site are an important factor in the development history of the town.

By 1921 the ironworks had been converted into a brickworks run by the Amman Brick Company. The Forge washery was established sometime post-WWII and today the site is used a coal depot and yard.

Most of the buildings associated with the ironworks and later brickworks have been destroyed, although some notable structures survive. The charging platform for the original 1847 furnaces survives at the southern edge of the site and the original office building survives just outside the site. Remains of a large building, possibly the brickworks, which was apparently converted from the early furnaces, survive beneath the washery conveyor.

Much of the site is obscured by coal heaps and waste and substantial remains of the ironworks and the brickworks may survive both at and below ground level. Therefore, it is recommended that the site be further investigated through a programme of site clearance to remove loose material and modern concrete from selected areas followed by trial trenching.

1. INTRODUCTION

1.1 PROJECT PROPOSALS AND COMMISSION

Tolkein Property Ltd, through their agent M J Associates, have submitted a planning application (Application number P01/1318) for a residential development on the former Forge Washery, Brynamman (NGR SN71501395). The proposed development site was also formerly occupied by the Amman Iron Works and therefore, it was recommended by the regional archaeological curators that an assessment be carried out to assess the implications of the proposals on the archaeological resource. M J Associates, on behalf of Tolkein Property Ltd, commissioned Cambria Archaeology to carry out the assessment.

1.2 SCOPE OF THE PROJECT

The project examined a wide range of documentary, cartographic and photographic sources to try to outline the history and development of the site as well as considering the physical evidence through a series of visits to assess the current extent, condition and value of the remaining structures and features. The results of the project will inform future management decisions and aid in developing a workable strategy for protecting the archaeological resource.

1.3 REPORT OUTLINE

This report describes the physical environment and historical development of the study area (Section 2) before summarising the archaeological resource (Section 3) and the likely impact of the proposed scheme on that resource (Section 4). Outline mitigation measures based on the results of Sections 2, 3 and 4 are given in Section 5. Detailed supporting data are presented in a series of appendices.

1.4 ABBREVIATIONS USED IN THIS REPORT

All sites recorded on the Carmarthenshire or West Glamorgan Sites and Monuments Records (SMR) are identified by their Primary Record Number (PRN) and located by their National Grid Reference (NGR). New sites have been assigned a PRN for the Carmarthenshire SMR and located by their NGR. References to primary cartographic and documentary evidence and published sources will be given in brackets, full details of which will be found in Appendix Two.

2. THE HISTORIC DEVELOPMENT OF THE STUDY AREA

2.1 LOCATION

The proposed development site occupies an irregular piece of land on the south bank of a small meander in the River Amman at NGR SN71501395. It covers an area of 2.3ha of former industrial land, which lies on a terrace on the south side of the narrow River Amman floodplain. The solid geology of the site comprises the Middle Coal Measures of the Carboniferous period (Geological Survey of Britain, 1977, Ammanford sheets 230 – solid and drift editions). The River Amman forms the site boundary on the east, north and west sides and the southern boundary runs along a large bank and a small unclassified road that leads southeast from Castell and Cwm-Amman Farms towards the lower slopes of Gwaun Cae Gurwen.

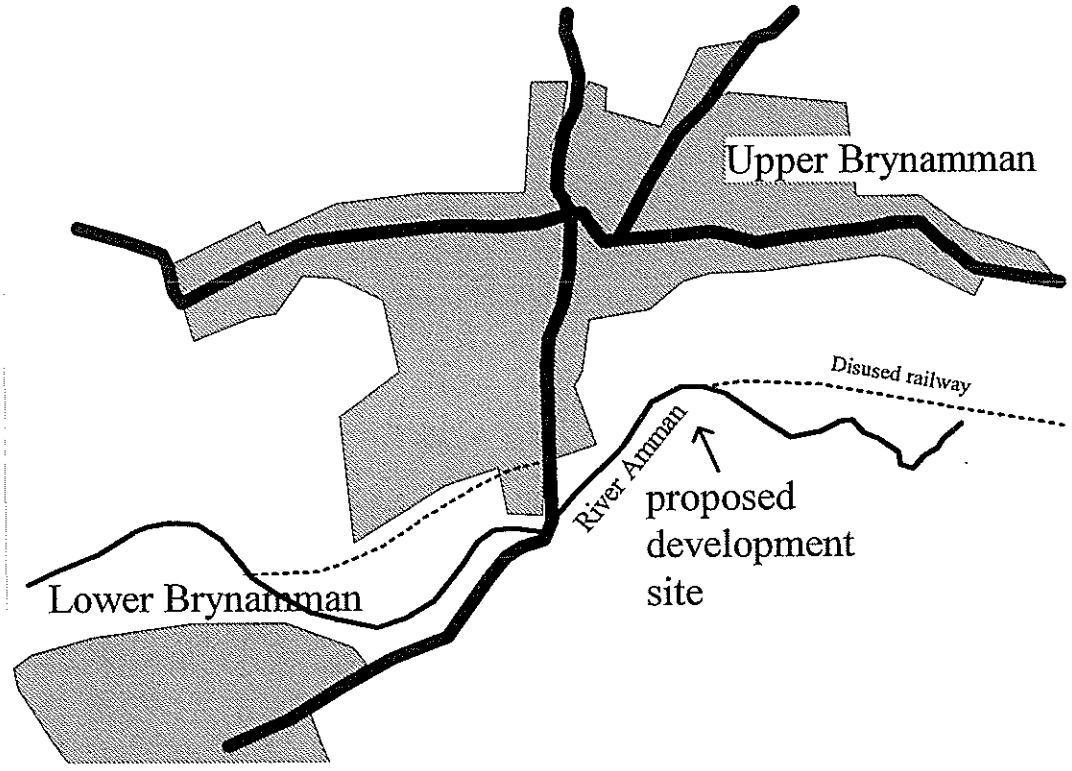

Figure 1: Location plan of proposed development site. Not to scale.

2.2 THE PRE-INDUSTRIAL LANDSCAPE

Evidence for the pre-industrial use of the site comes from historic maps, in particular the tithe maps for Llangadog and Llangiwg parishes and the reprinted Original Ordnance Survey 1 inch to 1 mile maps (David and Charles reprint, 1969, sheet 41). The reprinted Original Ordnance Survey map, which was surveyed between 1824 and 1827 and first published in 1831, shows the area clear of development, although it does show the Amman Colliery a short distance to the southwest and the Gwaun-cae-gurwen Colliery to the south. On the tithe map for Llangadog parish (1839) and the tithe map for Llangiwg parish (1839) the site is shown as agricultural land and a strip of waste alongside the river.

2.3 INDUSTRIAL DEVELOPMENT

Industrial development came relatively late to Brynamman, but when it arrived it was rapid. It is fair to say that the creation of the Amman Iron Works was a very important factor in the development and growth of the town. Industrial activity on the site began in the early – mid 1840s when John Jones, a local man from Brynamman, started the Amman Iron Works on land at Cwmamman Farm, although it was not until after he had sold the works, to a Mr Llewellyn, that the first blast furnaces were built in 1847. Production of pig iron began on the 1st January 1848. Presumably, prior to this, Jones was operating the site as a forge and processing pig iron from other furnaces.

A map of the site from a 1857 'Book of Maps of Land and Minerals Belonging to the Amman Iron Company' (WGCAS ref: D/D SB 13 E/1 map 4) shows two furnaces (figure 2). A third furnace, *Ffwrnes Fawr*, was added in 1868 (Rees 1896, 30; Morgan 1997, 13). Between these times, a forge had been added to the works in 1851, with a larger forge installed by 1861 (Morgan 1997, 13). A tinplate works was constructed in 1872 on the opposite, Carmarthenshire, side of the River Amman.

Ore for smelting at the furnace was obtained locally from the fairly large mineral estate of the Amman Iron Company. They held land and leases on properties in the Amman valley and further afield, including land at Penclawdd on the north Gower coast. Ore was certainly extracted from the Cannon Drift Mine, a short distance to the south of the works on the north-facing slope of Gwaun-cae-gurwen, which was close to land owned by the Amman Iron Company in 1857. The Cannon Drift Mine had become disused by 1906.

In the Articles of Partnership between Messrs. Henry Strick & Co., the Amman Iron Company was described as 'manufacturers of tinplate, manufacturers of iron and workers of collieries' (WGCAS ref D/D SB13 542), and many of the local mines were under their control. They were probably responsible for trial workings on Ynys Dawella Farm, which were apparently unfavourable, as they had surrendered the mineral lease on the farm by 1873. An annotation on a map of Ynys Dawella Farm in the 1857 book of maps dated 25 March 1873 states that the company 'gave up these minerals being of no use' and it is initialled GBS, who can be readily identified as George Burden Strick, the then owner (WGCAS ref D/D SB 13 E/1 map 11).

A miners' strike during the 1870s forced the temporary closure of the works, and it closed for good sometime around the turn of the 20th century.

By 1921 the site had been taken over by the Amman Brick Company and many of the furnace buildings were apparently demolished. It appears that the brickworks were built on the site of the early furnaces and also reused part the southern end of the forge building. Several other brickworks buildings were constructed in the southeast corner of the site. The brickworks continued to use the railway system laid for the ironworks, with a few modifications and alterations to suit the new site layout.

The Forge Washery was established on the site sometime post-WWII, and today the site is used as a coal depot. Much of the washery machinery survives, albeit in varying states of disrepair.

Plate 1: Remains of the brickworks building constructed on the site of the old furnaces and now incorporated into the base for the washery conveyor.

Plate 2: The charging platform for the early blast furnaces.

3. SUMMARY OF THE ARCHAEOLOGICAL RESOURCE

3.1 PRE-INDUSTRIAL FEATURES

There are no surviving pre-industrial features on the site. The construction of the ironworks, brickworks and later coal washery has removed all evidence of the former agricultural activity.

3.2 INDUSTRIAL REMAINS

The buildings, structures coal heaps and the massive amount of coal waste from the washery and existing coal depot that covers the site today obscures much of the earlier ironworks and brickworks. Very few buildings from the ironworks survive, the furnaces at the southern edge of the site and the works office buildings, just outside the washery main gate, are the only structures that can be identified with any certainty.

The furnaces (figure 3) built by William Llewellyn were apparently incorporated into the main **brickworks** building. Some standing remains of the main brickworks building has been incorporated into the base of the existing coal washery conveyor (plate 2). The building is of rubble construction and there are some blocked openings in the east wall. There are short lengths of metal rails surviving, which lead to the north and east sides of the building. The rails on the east side lead towards a blocked opening in the truncated east wall (plate 2), which may have been the west wall of forge and the east wall of the brickworks. It seems likely that the opening was blocked and the rails abandoned when the furnaces were converted to house the brickworks during the early 20th century.

The **charging platform** (figure 2 and 3; plate 3) for the furnaces survives built into the bank that forms the southern edge of the site.

The office building shown on the 1857 site map (figure 2 and 3) lies just outside the proposed development boundary. It is a single storey stone-built structure with a slate gabled roof. The doors and window openings have red brick quoins and arches. A later 19th century extension to the rear, east elevation, was constructed in a similar style, but with rendered window surrounds. The original part of the building is boarded up and disused, but the later addition is currently being lived in.

Part of the **storage pond** (figure 2 and 3; plate 4) for the ironworks survives, although it has been altered.

3.3 POTENTIAL ARCHAEOLOGICAL INTERESTS

The coal heaps, concrete roads and hard standings and coal waste of the former washery and existing coal yard cover much of the site obscuring structures or features from the ironworks and brickworks that may survive. Even though most of the iron and brickworks' buildings have been demolished it is very likely that some remains survive beneath the structures and waste from the washery and coal yard. These remains could be substantial and potentially important to an understanding of the operation of the ironworks and its conversion to a brickworks.

A cutting, *c.*2 deep, that runs east from the pond to the River Amman, shows that there is at least 2m of made ground along the east edge of the site. This suggests that other areas of the site may have been levelled, or built up and deposits of this depth could be masking substantial remains. A number of brickworks buildings were shown in this area and significant and substantial remains may survive.

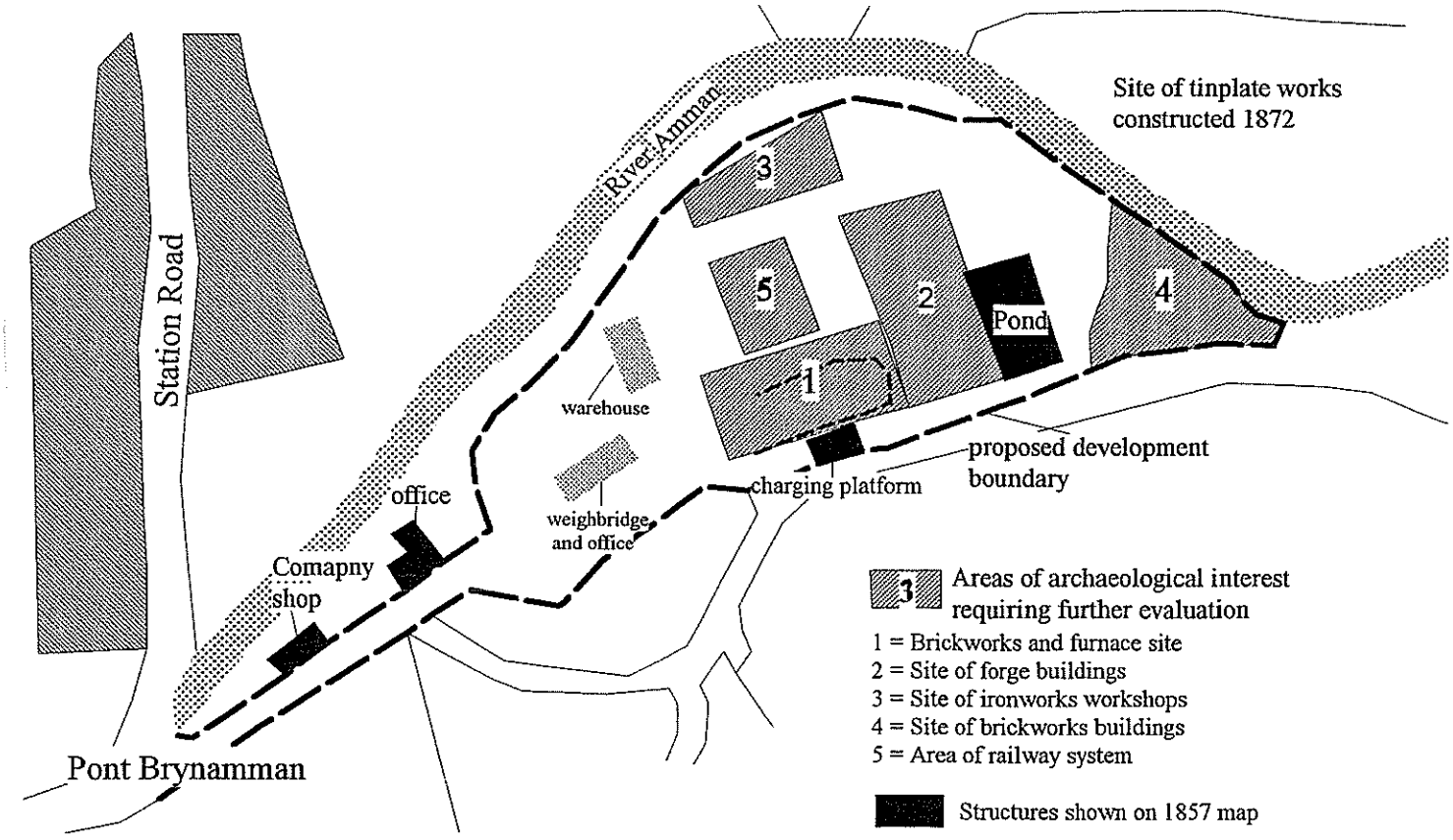

Figure 2: Plan showing areas of archaeological interest requiring further evaluation. Scale 1:2500

3.4 KNOWN OR POTENTIAL FEATURES WITHIN THE PROPOSED DEVELOPMENT SITE

The known and potential features are assessed using a classification system that assigns each site to one of five categories for their condition and value. The categories are:

Condition

A – Intact.
B – Substantially intact, but with some damage or loss.
C – Largely destroyed, but with some surviving elements.
D – Destroyed, no surviving remains.
E – Unknown potential, buried sites in particular.

Value

A - National importance: Scheduled Monuments; Listed Buildings or sites worthy of consideration for Scheduling of Listing.
B - Regional importance: sites not considered suitable of scheduling or listing, but which are considered important to an understanding of the development of the region.
C - Local importance: sites that are considered important to an understanding of the development of a local area, or are characteristic of that particular area.
D – Sites which are heavily damaged, or where too little remains for inclusion in a higher category.
E – Sites of unknown potential, including buried sites, which could be subject to further assessment to determine whether or not they should be assigned to a higher category.

Using these categories it is possible to define the level of archaeological response for each individual site and for the proposed development site as a whole. The responses and any mitigation measures are outlined in Section 5.

Table 1, below, outlines the known sites within the proposed development area and assesses their current condition and their relative importance in local and national contexts.

AREA NO.	TYPE	PERIOD / DATE	CONDITION	VALUE
1	Brickworks converted from furnaces	Later 19th – early 20th century.	C	E*
	Charging platform	1847	A	C
	Pond	1847	B	C

Table 1: Known features within the proposed development site.

*Although some existing elements of the brickworks and furnace do appear to be visible, their full extent is obscured by later structures. The full potential of the earlier structures cannot be properly assessed without further evaluation.

Table 2, below, outlines the various areas of archaeological potential that should be subject to further investigation.

AREA NO.	TYPE	PERIOD / DATE	CONDITION	VALUE
2	Area of the main forge buildings	1847 - 1868	E	E
3	Area of workshops	1847	E	E
4	Area of brickworks buildings in SE corner of site	Early 20th century	E	E
5	Railway system	mid 19th century – early 20th century	E	E

Table 2: Areas of archaeological potential within the proposed development site.

3.5 KNOWN ARCHAEOLOGICAL INTERESTS CLOSE TO, BUT OUTSIDE THE PROPOSED DEVELOPMENT SITE

Table 3, below shows the known sites that are outside, but sufficiently close to the proposed development boundary to be affected by the proposed scheme.

AREA/ SITE NO.	TYPE	PERIOD / DATE	CONDITION	VALUE
	Ironworks office	1847 - 1868	A	C
	Company shop building	1847	A	C

Table 3: Known sites close to the proposed development site.

4. IMPACT OF THE PROPOSED SCHEME ON THE ARCHAEOLOGICAL RESOURCE

4.1 GENERAL IMPLICATIONS OF THE PROPOSED DEVELOPMENT

The nature of the development will inevitably cause some sites to be lost and others to be partially removed. Those sites that may be retained will have their settings affected by the changes in land-use and the change in the nature of the site that will result from this proposed development. The likely implications and impacts of the proposed development on the archaeological resource can be categorised into four main areas of concern. These are:

1. Total loss or significant damage (damage to greater than 50% of the site)
2. Partial loss or damage (damage to less than 50% of the site)
3. Site remains intact, but its setting will be affected. This category includes those sites that are just outside the proposed development boundary.
4. Sites where the impact cannot be fully determined without further assessment.

Category 1	Category 2	Category 3	Category 4
Pond		Office	Brickworks/ furnace site – Area 1
Washery*		Shop building	Area of the forge buildings – Area 2
			Area of the workshops - Area 3
			Area of the brickworks buildings in SE corner of site – Area 4
			Railway system – Area 5

Table 3: Likely impact of the proposed development on the archaeological resource.

*this includes the remains of the washery conveyor, the weighbridge and weighbridge office.

5. MITIGATION MEASURES

5.1 SUGGESTED METHOD FOR DEFINING MITIGATION

The following mitigation measures are suggestions only. The regional archaeological curator, in consultation with the Local Planning Authority, will make all final decisions regarding the future of the archaeological resource of the site. However, the measures suggested below are considered to be an appropriate response to the threats posed by the proposed development. The categories used to assess the archaeological sites in section 3 will form the basis for the following responses. It is worth re-emphasising here the criteria for assigning a site a particular value and therefore the suggested archaeological response. The suggested response is shown in bold type.

A - National importance: Scheduled Monuments; Listed Buildings or sites worthy of consideration for Scheduling of Listing. **There will be a presumption in favour of preservation *in situ* for Category A sites.**

B - Regional importance: sites not considered worthy of scheduling or listing, but which are considered important to an understanding of the development of the region. **There will be a presumption in favour of preservation *in situ* for Category B sites. If this is not practical then these sites should be subject to full and adequate archaeological recording.**

C - Local importance: sites that are considered important to an understanding of the development of a local area, or are characteristic of that particular area. **If preservation *in situ* is not possible for these sites, then they should be subject to adequate archaeological recording prior to and during removal.**

D – Sites which are heavily damaged, or where too little remains for inclusion in a higher category. **These sites should be subject to adequate recording during removal.**

E – Sites of unknown potential, including buried sites, which **may be subject to further assessment to enable them to be assigned to a higher category.**

5.2 MITIGATION MEASURES

Using the criteria set out above it is possible to devise a programme of archaeological works to be carried out prior to and during construction. The programme is divided into pre-construction recording and assessment and an archaeological watching brief carried out during the construction.

The pre-construction works are aimed at providing further information on the areas of archaeological potential, particularly those areas of the site that are currently obscured.

5.3 PRE-CONSTRUCTION RECORDING AND ASSESSMENT

Table 4, below, shows the suggested tasks required before construction commences.

AREA NO.	MITIGATION MEASURES
1) Brickworks / furnace site	Evaluate the surviving structure(s) through the excavation of trial trenches.
2) Site of forge building	Remove any loose material and modern concrete and evaluate the area through trial trenches.
3) Site of ironworks workshops	Remove any loose material and modern concrete and evaluate the area through trial trenches.
4) Site of brickworks buildings in SE corner	Remove any loose material and modern concrete and evaluate the area through trial trenches.
5) Railway system	Remove any loose material and modern concrete and evaluate the area through trial trenches.
Washery	Photographic record of conveyor system, weighbridge and weighbridge office.

Table 4: sites requiring pre-construction recording or further assessment.

5.4 WORKS TO BE UNDERTAKEN DURING CONSTRUCTION

An archaeological watching brief and recording should be undertaken during site clearance and construction works to record any archaeological interests exposed. The remains of the pond and its associated water management system should be examined during the watching brief.

The watching brief should be structured to allow adequate time for recording any significant or substantial remains exposed during the works.

APPENDIX ONE: HISTORY OF THE SITE

INTRODUCTION

Prior to the construction of the Amman Iron Works the land was agricultural and was part of Cwmamman Farm. The land straddled county and parish borders; the bulk of the land was in Llangiwg parish, Glamorgan, with a narrow strip along the northern edge in Llangadog parish, Carmarthenshire. The tithe maps and apportionments of 1839 for both parishes show the site as agricultural land and waste. Industrial development and expansion was fairly late arriving in the Amman valley and it only really took off as the result of a deliberate and forward thinking attempt to create a mineral estate for the exploitation of the coal and mineral reserves of the valley. An indenture of 1842 gave the partnership of Joseph Martin and John Jones the rights to 'erect any building or structure, to build any railway or canal and also the power to draw water in order to further the exploitation of mineral reserves in the area' (Morgan 1997, 13).

This *carte blanche* approach to the industrial development of the region highlights the fact that prior to the 1840s the Amman Valley was still a rural agricultural economy and possessed no infrastructure for the movement of materials and products to the ports of South Wales. The situation began to change in 1842, when John Jones began construction of a railway link from Garnant to Brynamman. The railway was an extension of the Llanelli & Dock Company railway, and it can be regarded as the catalyst for the rapid industrial development and the expansion of the town itself during the late 19th century.

THE AMMAN IRON WORKS

The Amman Iron Works was established by John Jones sometime in the early to mid 1840s on land formerly part of Cwmamman Farm. In 1847 William Llewellyn bought the works and constructed two blast furnaces on the southern part of the site. The furnaces were blown in and the first pig iron produced on the 1st January 1848. In the same year the Amman Iron Company constructed a row of company houses, Old Company Row, for the ironworkers and their families. George Borrow visiting Brynamman in the 1850s described the houses as '*a row of white houses with blue* (i.e. slate) *roofs*' (Borrow 1862, 549). He also described a '*bank of coal rubbish, coke and cinders*', on top of which was '*a fellow performing some dirty office or other, with a spade and barrow*' (Borrow 1862, 549; Morgan 1997, 8). The bank that Borrow described was a crescent-shaped spoil tip from the ironworks and it was shown, along with Old Company Row on a map of Bryn Issa Farm in the 1857 Amman Iron Company's mapbook (WGCAS ref: D/D SB 13 E/1 map 10). The spoil tip was in the area later occupied by the station and it was linked by a short tramway to the ironworks site.

The mapbook shows the extent of the mineral estate of the Amman Iron Company in 1857. The mapbook included 12 farms, which made a combined block of land in and around Brynaman, covering a total of 990 acres (Beckley 1995, 123). On much of the company's mineral estate they did not hold the freehold nor farming lease (Morgan 1997, 13), they simply held mineral rights. Documents in the papers of the Amman Iron Company deposited with the West Glamorgan County Archives Service,

Swansea, also mention land holdings at Penclawdd on the north Gower coast. Clearly the company were investing in areas outside of Brynamman and their mineral estate.

A forge was added to the site in 1851, and in the mid 1850s George Borrow visited the works and saw '*a large steam engine at play, terrible furnaces, and immense heaps of burning, cracking cinders, and a fiery stream of molten metal rolling along*' (Borrow 1862, 550). The map of Cwmamman Farm in the 1857 mapbook shows the works as described by Borrow, with the two furnaces occupying the southern part of the site, the forge to the east of the furnaces and coke ovens to the west. Several other buildings, including an office and workshops as well as various tramways and railways are also shown. The water supply was drawn from the River Amman at a point *c.*400m upstream. From here it was channelled to the northwest, parallel to the north bank of the river, before being turned southwest, to cross land that was later occupied by the tinplate works. It was then taken across the river into a holding pond just southeast of the furnaces and forge (WGCAS ref: D/D SB 13 E/1 maps 4 and 8).

By 1859 the company had been sold and became known as Henry Strick and Company. The Articles of Partnership of the Henry Strick Company in 1859 stated the company business as '*manufacturers of tinplate, manufacturers of iron and workers of collieries*'. It also stated that the business was carried out at '*Ynyspenllwch Tinplate Works and the Amman Iron Works and collieries*' (WGCAS ref D/D SB13 542). A new and larger forge was installed by 1861 and in 1868 a third blast furnace was constructed. The furnace, Blast Furnace No.3, was known as *Ffwrnes Fawr*, (Rees 1896, 30), indicating that it was bigger than the two original furnaces constructed by Llewellyn twenty one years earlier.

In 1872 the tinplate works was established on land on the opposite, Carmarthenshire, bank of the River Amman, which seems to have brought all the metal processing interests of the company onto one site for the first time. The Ordnance Survey 1st edition 1:10560 maps, published in 1883 show the ironworks and the tinplate works fully integrated with railways linking the two plants across the river. As a part of the expansion that saw the tinplate works being constructed, the company also constructed more housing, called Tinworks Row, to house the increased workforce.

The 1870s and early 1880s was a period of industrial unrest in the Amman Valley as the anthracite colliers went on strike for pay and conditions more in line with other colliers in the region. The first strike in 1874 ended without change to the conditions, but another and more sustained dispute in 1880 forced the temporary closure of the furnaces and tinplate works. This strike lasted for 12 months and ended with a concession that wages for anthracite colliers would follow the 'sliding scale of steam coal' (Morgan 1997, 14).

Following the end of the dispute, the 1880s appear to have been a fairly prosperous time for the works and for the area in general. In 1889 an agreement was made between George Burden Strick and William Harries Francis, trading as the Amman Iron Company and the Glynbeudy Tinplate Company for the Glynbeudy concern to carry water from the River Amman across Amman Iron Company land. The Glynbeudy works were constructed, *c.*1km west of the Amman Iron works, sometime during the early 1890s, and it first appears on the Ordnance Survey 2nd edition map of

1908. The Amman Iron and Tinplate Works as it was now known closed for good in 1897.

The Amman Brickworks was established by the Amman Brick Company sometime between 1908 and 1921, when the Ordnance Survey 3rd edition was published. Little is known of the Amman Brick Company operations and the company history is a subject that would benefit from more research. The works had apparently closed by 1926, as it is not among the Brynamman businesses listed in the Kellys' Directory for that year.

The exact foundation date of the Forge Washery is unclear, but it has been in operation since at least the mid 1960s and the site is today used as a coal depot and distribution yard.

THE DEVELOPMENT OF THE AMMAN IRONWORKS USING HISTORIC MAP EVIDENCE (Figures 3; 4; 5 and 6)

1857 – 1883

The first depiction of the Amman Iron Works dates from 1857 (figure 3). The two furnaces constructed by William Llewellyn occupied the south part of the site, with the forge building on its east side. The charging platform and charging bridges are shown leading to the south side of the furnaces. A rectangular building, of unknown use, is shown to the east of the forge. Coke ovens are marked to the west of the furnaces and the works office lies a short distance further west. Another rectangular building of unknown use is shown in the centre of the site and the long rectangular workshop building lies at the north end of the site. The map also shows a company shop at the west entrance to the site. A pond located just east of the forge building was fed via a watercourse, which ran from a point on the River Amman, *c.*400m upstream of the works. A leat took water from the pond to the furnace building. Another watercourse, which leads north from the pond to the River Amman, may have been an overflow channel.

Materials, spoil and finished pig iron was moved around and to and from the site by a system of railways and tramways that linked the buildings on the site with each other and the main transport facilities. A railway line that ran from the forge past the furnaces led to the crescent shaped spoil tip that George Borrow described in the 1850s. This spoil tip was used until the early 20th century.

There are no maps or plans of the site from the period of expansion during the 1860s, which is slightly surprising given the extent of the building works that were carried out. The Ordnance Survey 1st edition 1:10560 map, in the Glamorgan Series, published in 1883 (Glamorgan sheet II.NE) is the first depiction of the newly expanded works and it clearly shows the extent of the expansion and the major changes that had occurred on the site. The forge building, presumably the one constructed in 1861, covers much of the site between the furnaces and the pond and it extends north over half way across the site. It is not possible to be certain from map evidence on the position of the third blast furnace, *Ffwrnes Fawr*, although it may have been positioned in front of, that is just north of, the original furnaces. Extensions had been added to the workshops at the north of the site.

1884 - 1908

The 1st edition 1:10560 map of the site in the Carmarthenshire series published in 1891 (Carmarthenshire sheet XLIX.NE) also shows the tinplate works that were constructed on the opposite side of the river in 1872 (figure 4). The ironworks site differs little between the 1883 and 1891 editions and there were only minor changes by the time the 2nd edition Ordnance Survey maps were published in 1908 (figure 5). There had been some small extensions to the forge building, but it was on a small scale and not a significant rebuilding or re-investment. The railway line that ran from the forge to the crescent shaped spoil tip described by Borrow had been abandoned and removed by this time.

1921 - 1964

By 1921 when the Ordnance Survey 3rd edition maps were produced the Amman Brick Company had established the brickworks on the site (figure 6). By careful comparison of the 1908 and 1921 editions it is clear that the main brickworks building had been constructed on the site of the original furnaces. The forge building had been demolished, although some of its fabric at the southern end may have been incorporated into the brickworks building. The workshops at the north of the site were still in use and a large complex of buildings had been constructed in the southeast corner of the site.

Later Ordnance Survey editions show the site cleared of all the ironworks and brickworks buildings, except the charging platform for the original furnaces.

Modern maps show the existing layout of the site with the weighbridge and weighbridge office marked, along with the modern warehouse building in the centre of the site.

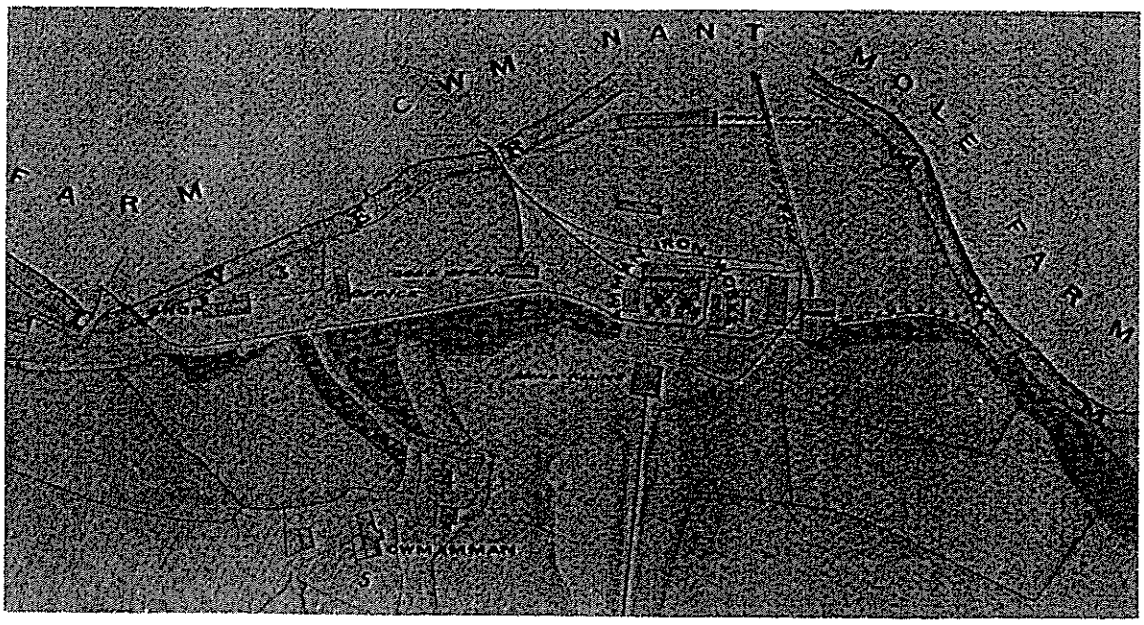

Figure 3: The Amman Ironworks in 1857 (WGCAS ref: D/D SB 13 E/1 map 4)

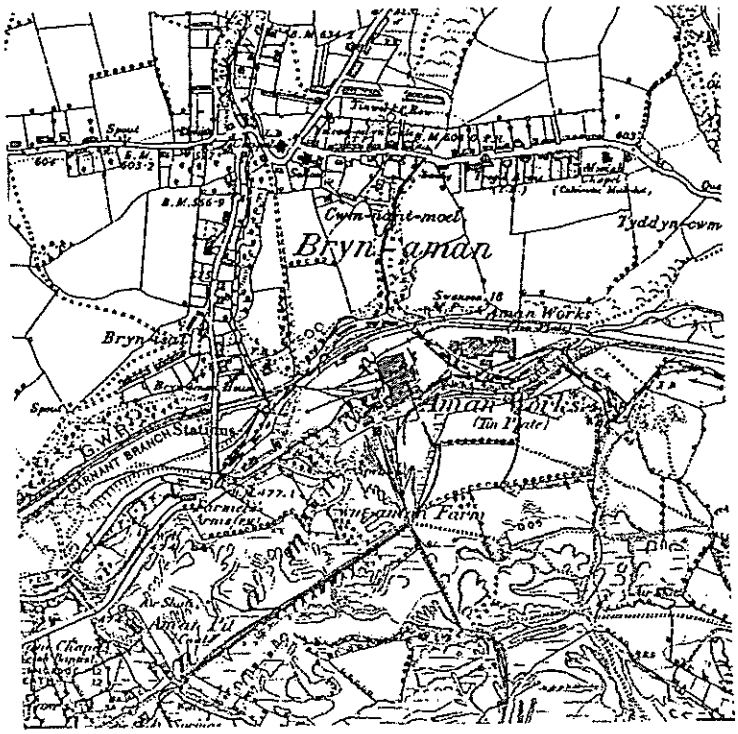

Figure 4: Extract from Ordnance Survey 1st edition 1891 (Carms. Sheet XLIX.NW)

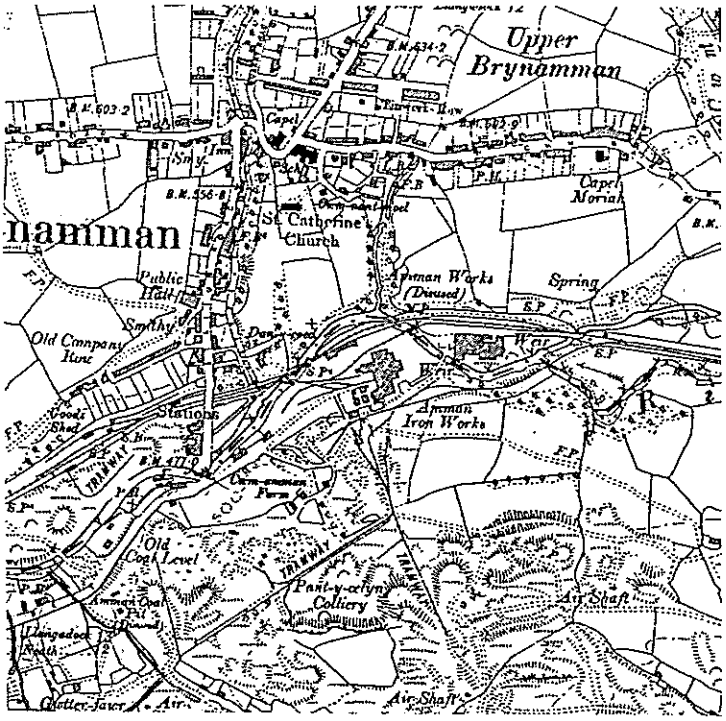

Figure 5: Extract from Ordnance Survey 2nd edition 1908 (Carms. Sheet XLIX.NW)

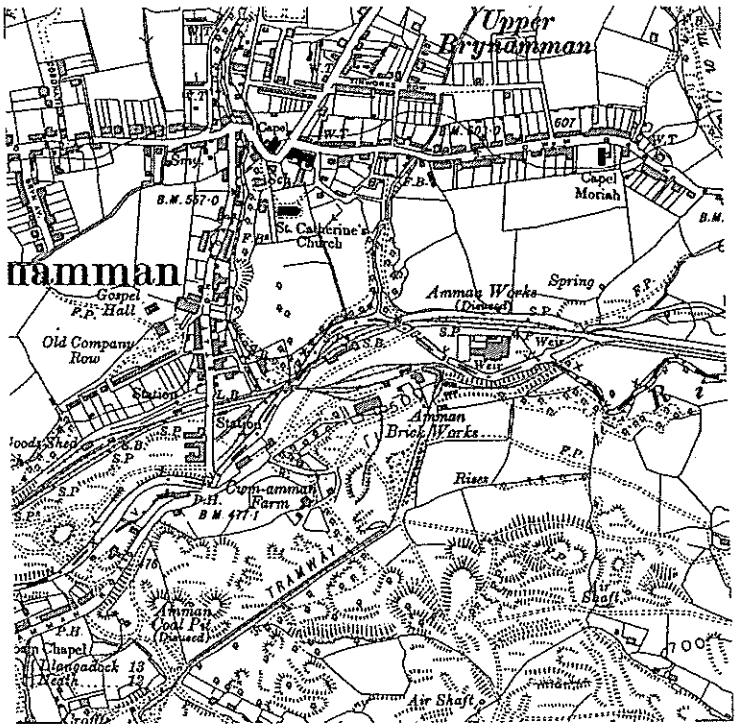

Figure 6: Extract from Ordnance Survey 3rd edition 1921 (Carms. Sheet XLIX.NW)

APPENDIX TWO: SOURCES

CARTOGRAPHIC SOURCES

1839 Llangadog tithe map and apportionment, Quarter Bach hamlet.
1839 Llangiwg tithe map and apportionment (West Glamorgan County Archives Service ref: P/59/9-10).

1857 Book of Maps of Land and Minerals Belonging to the Amman Iron Company (West Glamorgan County Archives Service ref: D/D SB 13 E/1).

1883 Ordnance Survey 1st edition 1:10560, sheet Glam.II.NE.
1891 Ordnance Survey 1st edition 1:10560, sheet Carms.XLIX.NE.
1906 Ordnance Survey 2nd edition 1:10560, sheet Carms.XLIX.NE.
1921 Ordnance Survey 3rd edition 1:10560, sheet Carms.XLIX.NE.
1964 Ordnance Survey provisional edition, sheet SN73SW.

1969 David & Charles reprint of the Original Ordnance Survey 1" – 1 mile map, sheet 41.

1977 Geological Survey of Great Britain (England and Wales), Ammanford, sheet 230, Solid edition.
1977 Geological Survey of Great Britain (England and Wales), Ammanford, sheet 230, Drift edition.

DOCUMENTARY SOURCES

1859 Articles of Partnership between Messrs. Henry Strick & Co. (West Glamorgan County Archives Service ref: D/D SB 13 542).
1889 Lease from Amman Iron Works to the Glynbeudy Tinplate Company for a watercourse over land adjacent to the Old Farmers Arms (West Glamorgan County Archives Service ref D/D SB 13 547).
1898 Conveyance and release and deed of covenant of indenture of £500 (West Glamorgan County Archives Service ref: D/D SB 13 552)

UNPUBLISHED SOURCES

Morgan D E 1997 *Brief Report on the Agricultural and Industrial History of the Upper Amman Valley with Special Reference to Ynys Dawella Farm.* Cambria Archaeology report. Llandeilo.

Page N & Sambrook P 1995 *Dinefwr Historic Settlements project: Gazetteer of Sites.* DAT report. Llandeilo.

Ramsey R 1999 *Amman Valley Sewer Scheme: archaeological assessment.* Cambria Archaeology report. Llandeilo.

PUBLISHED SOURCES

	1926	*Kellys' Directory of Monmouthshire and South Wales.*
Beckley S	1995	The Archives of the Amman Iron Company. *Carmarthenshire Antiquary* Volume **XXXI**, p122-123.
Borrow G	1862	*Wild Wales.* Oxford University Press, 1923. Oxford.
Brook E	1932	*Monograph of Tinplate Works in Britain.*
Rees E	1896	*Hanes Brynaman 1816 – 1896.* Republished by Dyfed County Council. 1992.

APPENDIX THREE: CATALOGUE OF RESEARCH ARCHIVE

The project archive has been indexed and catalogued according to National Monument Record (NMR) categories and contains the following:

A. Copy of the report.

B. Notes from site visits.

D. Site photographs - catalogue, colour slides, B/W contact sheets.

G. Documentary data, including primary and published sources.

I. Draft copies of report.

J. Publication drawings.

M. Miscellaneous correspondence

There is no material for classes **C**, **E**, **F**, **H**, **K**, **L** and **N**.

The project archive is currently held by Cambria Archaeology Field Operations, Llandeilo, Carmarthenshire, as project number 44297.

FORGE WASHERY, BRYNAMMAN
ARCHAEOLOGICAL DESK-BASED ASSESSMENT

REPORT NUMBER 2002/09

JANUARY 2002

This report has been prepared by Nigel Page

Position Project Manager

Signature ..... Date 30/01/02

This report has been checked and approved by Gwilym Hughes on behalf of Cambria Archaeology, Dyfed Archaeological Trust Ltd.

Position Director

Signature ..... Date 30/1/02.

As part of our desire to provide a quality service we would welcome any comments you may have on the content or presentation of this report