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DYFED ARCHAEOLOGICAL TRUST LTD

PROPOSED

CARMARTHEN EASTERN BY-PASS

ARCHAEOLOGICAL
STAGE 2
DESK-TOP ASSESSMENT AND FIELD SEARCH
SEPTEMBER 1994

Commissioned by: **Howard Humphreys & Partners Ltd.**

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SUMMARY

As a part of an environmental assessment of the proposed route of the Carmarthen Eastern By-Pass by Howard Humphreys & Partners Ltd., Dyfed Archaeological Trust were commissioned to carry out an Archaeological Stage 2 Desk-Top Assessment and Field Search to assess the archaeological implications of the scheme. This assessment revealed that the proposed route crosses a landscape containing considerable archaeological interests. Those interests are varied in chronology and nature, ranging from the Roman fort and subsequent Roman town, through early and later medieval ecclesiastical settlements, to post-medieval and modern industrial activity, including the Great Western and London and North Western Railways established in the mid 19th century.

For much of its length the route will follow, and destroy, the lines and architecture, of the former railway network which survive as substantial archaeological and topographical features. It is likely that much of the pre-railway (pre-mid 19th century) archaeological deposits were obscured, and possibly protected, by the hard-core and make up material laid down to support the tracks of the railway. Thus it was not possible in this Stage 2 assessment to be unequivocal regarding the full impact of the proposed by-pass. Therefore it has been necessary to identify a number of areas requiring Stage 3 field evaluation in order to further assess the archaeological impact of the proposed by-pass.

The assessment also revealed the presence of potentially significant palaeoenvironmental deposits at two locations along the route. Where present, palaeoenvironmental data, such as pollen, is a fundamental part of archaeological investigations, as it provides direct evidence of past environments (climate, vegetation etc.) and the influence of past societies on those environments. The recovery of this data for assessment of its potential would form part of the Stage 3 field evaluation.

1. INTRODUCTION

1.1 Development proposals and commission

1.1.1 In advance of the construction of the Carmarthen Eastern By-Pass, Welsh Office Highways Directorate commissioned Howard Humphreys & Partners Ltd. to undertake an environmental assessment of the proposed route. As a part of that assessment Dyfed Archaeological Trust was commissioned to carry out an Archaeological Stage 2 Desk-Top Assessment and Field Search to assess the archaeological implications of the scheme.

1.1.2 This assessment was carried out in accordance with the relevant sections of the Archaeology and the Trunk Road Programme in Wales: A Manual of Best Practice, Section 4, issued by Cadw in 1994 and the Department of Transport's Design Manual for Roads and Bridges (DMRB).

1.2 Methodology

1.2.1 The scale of the scheme determined that it be divided into five sections to allow the adequate assessment of the route. These sections are Pensarn (SN 4115 1918) to the Afon Tywi (SN 4165 1984), the Afon Tywi (SN 4165 1984) to Tanerdy (SN 4257 2088), Tanerdy (SN 4257 2088) to Abergwili (SN 4421 2105), Abergwili (SN 4421 2105) to White Mill (SN 4606 2134) and the Afon Tywi itself. It was felt appropriate to order each section thematically rather than chronologically in view of the time-depth of occupation in the region, and the problems of accurately defining chronological periods in a complex multi-period landscape such as that covered by this assessment. All NGRs taken from approximate centre of the route corridor.

1.2.2 A series of site visits were undertaken in order to assess the current condition of the archaeological resource and to identify any new sites of archaeological interest. All sites contained on the County Sites and Monuments record (SMR) will be identified by their Primary Record Number (PRN and located by their National Grid Reference (NGR). New sites will be numbered in sequence (E.G. CEBP 1) and located by their NGR.

1.2.3 During the assessment extensive cartographic coverage of the area was consulted, including Ordnance Survey 1st and 2nd editions, the original OS surveyor's drawings, land valuation plans, Tithe plans of the relevant parishes, estate plans, plans of the railways and town plans of Carmarthen. This gave cartographic coverage of the area from the 17th century. Also consulted was both RAF and modern (DAT) aerial photographic coverage of the proposed route.

1.3 Categorisation of sites

1.3.1 All sites identified during this assessment have been allocated a category following the guidelines laid down in the DMRB, Volume II, Section 3, part 2. The allocation of a site to

a category defines the archaeological significance of that site. The categories are listed below:

Category A - Sites of national importance

Scheduled Ancient Monuments, Listed Buildings and sites which meet the criteria for scheduling or listing. It is recommended that category A sites will remain *in situ*.

Category B - Sites of regional or county importance

Sites which do not quite meet the criteria for scheduling or listing, but which are of particular importance to the region. Preservation *in situ* will be the preferred option for category B sites, but where damage or destruction is unavoidable appropriate recording will be undertaken.

Category C - Sites of district or local importance

Sites which are not of sufficient importance to justify preservation if threatened. Category C sites merit adequate recording prior to damage or destruction.

Category D - Minor or damaged sites.

Sites of minor importance or so badly damaged that too little remains to justify their inclusion in a higher category. For category D sites, rapid recording, either in advance or during destruction, should be sufficient.

Category E - Sites needing further investigation

Sites whose importance cannot be determined without further investigation in order to assign them to categories A-D. These sites will be subject to field evaluation.

1.4 Scope of the report

1.4.1 This report describes the physical environment of the assessment area (Section 2) before summarising the archaeological potential of the area (Section 3) and the likely impact of the proposals on that resource (Section 4). Section 4 contains a list of sites by category, as defined in the Design Manual for Roads and Bridges, Volume II, Section 3, Part 2, para 3.4. A programme of mitigatory works is outlined in Section 5. Supporting data is presented in a series of appendices.

1.5 Acknowledgements

1.5.1 This report was prepared by N A Page with assistance from S Bishop, P Crane and other Trust Staff, design, layout and DTP by P A Wait. The author is grateful to staff at Carmarthen Museum, Abergwili, for assistance during the research.

2. PHYSICAL ENVIRONMENT

2.1 Location (Fig 1)

2.1.1 This assessment covers the construction corridor of the proposed Carmarthen Eastern By-Pass from Pensarn (NGR SN 4115 1918) to White Mill (NGR SN 4606 2134), Dyfed. The route skirts the southern fringe of the town of Carmarthen, and for most of its length will follow the lines of the old Carmarthen and Cardigan and London and North Western Railways.

2.2 Topography

2.2.1 From Pensarn the route crosses an area of infilled floodplain, before crossing the Afon Tywi and joining the railway below the town. Once it joins the railway the route passes through an area of former industrialisation. At the western edge of Carmarthen the route crosses the floodplain of the Afon Gwili, a tributary of the Tywi. West of Carmarthen the route crosses pasture land, before joining the present A40.

3. SUMMARY OF ARCHAEOLOGICAL RESOURCE

3.1 Introduction

3.1.1 The archaeological resource of the proposed route is rich and varied in both chronology and nature, ranging from the supposed line of a Roman road, through Dark Age and medieval occupation, to post-medieval and modern industrialisation, including the lines of the former Great Western, and London and North western Railways. There is also significant palaeoenvironmental potential, including buried peat deposits at two locations along the route.

Potential of palaeoenvironmental evidence

3.1.2 A fundamental part of any archaeological investigation is the recovery, where possible, of palaeoenvironmental data, as it is only through the systematic recovery and study of this information that a complete picture of past human behaviour can be drawn. All communities operate within, and are therefore affected by, the physical environment. From the earliest times human communities have modified and adapted their environment to better suit their needs. These changes, such as forest clearance, or the introduction of new crop types can be detected through the study of palaeoenvironmental data, such as pollen. The anaerobic environment of the alluvium of the Tywi valley provides optimum conditions for the survival of significant palaeo-environmental data.

3.2 Pensarn-The Afon Tywi (Fig 2)

TOPOGRAPHY

3.2.1 This section is c.0.8km in length and runs from the Pensarn roundabout on the A48 to the Afon Tywi at a point 0.25km upstream of Carmarthen Bridge through an area of light industry and wasteland. The area is largely reclaimed land on the southern fringe of the Tywi floodplain. Test pit data shows that there is up to 4m of modern made up ground overlying the floodplain alluvium. Two of the test pits (STP 1 and STP 2) revealed a layer of peat (see below).

ARCHAEOLOGICAL INTERESTS

3.2.2 The known archaeological resource of this section is small, consisting of the supposed line of a Roman road (PRN 24465) and a post-medieval Ropewalk (PRN 176).

The Roman road (PRN 24465) ? 218

3.2.3 The Roman road is likely to be flanked on either side by a roadside ditch; ditches would have been especially important in this wetland region. Of particular interest will be any surviving evidence for the construction of the road, as there must have been some form of reinforcement, possibly timber piling, to support the section across the frequently inundated floodplain.

3.2.4 Roads close to a major Roman settlement often have burials along either side, as at Caerleon, Gwent (Boon 1972, 106). In 1779 a number of possible cremation burials were reported in a field in Llangunnor (James 1980, 17): the location of this field is not known.

Industry

3.2.5 Industrialisation in this section has been relatively modern, and was only possible following the artificial stabilisation of the floodplain. Prior to the second half of the 19th century industry was likely to have been on a small-scale, smithies etc. The first medium- to large-scale industry appears to have been a chemical works alongside Pensarn Road at SN 4135 1965 (OS 1st edition 6" sheet, surveyed 1886). Modern industry is generally light, consisting of a number of warehouse-style industrial units used for a variety of purposes, including a joinery and car repairs. 91

PALAEOENVIRONMENTAL INTERESTS

The peat (STP 1 and STP 2)

3,2,6 The peat deposits, and the alluvium they overlay, encountered in SPT 1 and SPT 2 are likely to contain important evidence of changes in the environment around Carmarthen. At present the extent of the peat is uncertain, but the fact that it appeared only in two pits suggests that it may be localised, possibly representing an island of drier ground in the surrounding floodplain. However, its location, close to the edge of the floodplain, may represent a drying out of the floodplain ?

during a period of tidal regression. Tidal regression visible as peat formations is well documented along the south coast of Wales (see for example Allen 1987; Allen and Fulford 1986; Parkhouse and Lawler 1990; Parkhouse and Parry 1990; Page 1994), therefore it is possible that these deposits are part of the same process.

3.2.7 Whether the peat deposits are the remains of islands in the floodplain or a tidal regression it is likely that the former drier ground they represent would have been a focus for human activity.

3.2.8 If any elements of the Roman road survive there is the possibility of a sealed land surface beneath. If so, this will provided a vast quantity of significant palaeoenvironmental information about the environment at the time of the earliest known settlement at Carmarthen.

3.3 The Afon Tywi-Tanerdy (Fig 3)

TOPOGRAPHY

3.3.1 This section stretches from the Afon Tywi to the junction of the A484 and the A40 and for most its length follows the former courses of the dismantled Carmarthen and Cardigan, and London and North Western Railways. The route skirts the southern edge of the town, and its construction will necessitate the realignment of the course of the river below Priory Row and at Tanerdy. Before joining the course of the railway, at a point opposite The Esplanade, the route crosses a 0.3km stretch of alluvium. Once the route joins the old railway at SN 4185 2027 it runs along the interface between the solid geology and alluvium before recrossing the floodplain at SN 4212 2054. A proposed spur road may follow the course of the old Carmarthen and Cardigan Railway northwards around the eastern edge of the town. Where possible it is intended to reuse the existing railway embankments and cuttings for this section of the route, although there is likely to be some deviation from the railway along its course.

ARCHAEOLOGICAL INTERESTS

3.3.2 This is a section of known archaeological importance. It follows the line of the railways through an area of fairly intensive post-medieval and modern industrial activity along the southern edge of the Roman (PRN 69; NGR SN 42SW) and later settlement, and may cross part of the site of the early medieval monastery (PRN 71; NGR SN 4190 2045) and the later medieval priory of St. John and St. Teulyddog (PRN 44; NGR SN 4189 2046). The railway crossed the site of a ?post-medieval farm (NGR c.SN 4177 2017). As well as the known archaeology there is a high potential of encountering further deposits, especially during the realignment of the river, such as the possible site of a medieval quay on the crown of Horseshoe Bend at c.SN 4195 2045.

Early medieval occupation (PRN 71)

3.3.3 Evidence of early medieval occupation is mainly documentary, and suggests that the early medieval occupation was ecclesiastical comprising a church and residence, possibly of St. Teilo (Wyn Evans 1991, 251). The location of early medieval ecclesiastical sites near to, or inside, Roman towns is recorded elsewhere, as at Caerwent, Gwent (James 1980, 20; Wyn Evans 1991, 251). A number of ditches which may be of this date were uncovered during the 1979 excavations of the site of the later medieval priory (James 1975, 21). The documentary evidence suggests, and the archaeological evidence tentatively supports this, that the site of the early medieval occupation was on the site of the later medieval priory, and, therefore, may encroach into the assessment area.

The Priory of St. John and St. Teulyddog (PRN 44)

3.3.4 Much has been written concerning the history of the priory and it is not intended to repeat that here. Following the excavations of part of the priory site in 1979 (James 1985) it appears that the southeast corner of the precinct may encroach onto the course of the old railway, and the possibility of buried remains in this section must be considered.

The possible quay site

3.3.5 The town quay is likely to always have been on the site below the castle, downstream of the bridge, but it is probable that there was a smaller quay constructed to service the early medieval settlement and the later priory. Its position upstream of the bridge, and around a bend suggests that it would have been supplied by river craft rather than sea-going vessels. This was certainly the case when the Carmarthen Tinplate Works (established 1761) was operating slightly to the east of the priory site. Cartographic sources do not show a formal quay, not even the accurately surveyed plans of the tinplate works. It is possible that

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the priory quay had been covered by the continual deposition of alluvial silts before the area was surveyed and mapped. It is possible that the quay associated with the Roman town was also on this site.

3.3.6 The alluvium provides an anaerobic (oxygen-free) environment, which preserves organic material not usually recovered during archaeological excavation, such as timber, leather and cloth. Therefore, there is potential for the recovery of timber quay structures, as well as any objects dropped into the river during loading and unloading.

Industry

3.3.7 Even though Carmarthen has never really become extensively industrialised the area between the southern limit of the town and the river and floodplain has been an important industrial area of the town since the post-medieval period. The crucial factor in the industrialisation of this area was the leat (watercourse) (PRN 41; NGR SN 4220 2081) that fed the corn and fulling mills of the medieval priory. It was used to power the Carmarthen Tinplate Works (PRN 82; NGR SN 4215 2065) established in 1761 by Robert Morgan, and a lead smelting works (PRN 84; NGR SN 4199 2044) established in c.1781 by John Campbell.

***The Carmarthen Tinplate Works* (PRN 82)**

3.3.8 The Carmarthen Tinplate Works was the second metalworking enterprise established by Robert Morgan in this area, his first was a blast furnace (PRN 83; NGR SN 4208 2063) which began operating in c.1748 close to the site of the old corn and fulling mills (PRN 42; NGR SN 4206 2053) connected with the medieval priory. The tinplate works consisted of a furnace, an upper and a lower tin mill, a forge, scrap shop, ore house, a boring engine, lime kilns and the leat and several watercourses, some of which led into the Tywi. Much of the fabric of the furnace remains, concealed behind the showrooms of the present sawmill (James 1981, 56). Production at the tinplate works closed in 1900.

3.3.9 The tinworks would have produced vast quantities of waste material which would have to have been disposed of. The disposal practices of the works are not known, although it is evident that some of the waste material was used to strengthen the river banks (see below).

3.3.10 The construction of the railway (see below) must have meant that some of the waterways into the Tywi were either abandoned and infilled, or directed through culverts under the tracks. There was no visible sign of any culverts in this section, although the ground cover, thick hedgerow-type vegetation, may be obscuring them.

***Campbell's lead smelting works* (PRN 84)**

3.3.11 The smelting works were established to process ore from Campbell's own lead mines, although they appear to have operated only for a short period. The works were eventually converted into cottages, which were demolished, along with the only surviving medieval building from the priory, during the construction of the railway in the mid 19th century.

3.3.12 Other industry in this section included a brickworks and a sawmill and timber yard. The brickworks (PRN 87; NGR SN 4157 1995) was established during the first quarter of the 19th century, first appearing on plans of the area in 1834 (CRO ref; 2 (M) Maps 34) when it was known as Mr. Mason's Brick Works. Sometime between 1856 and 1862 a timber yard and saw mill (PRN 86; NGR SN 4165 2002) were established next to the brickworks.

3.3.13 On the first edition Ordnance Survey 25" sheets (1890) a large area below the brickworks (by this time called the Brick and Pipe Works) is marked as a clay pit (PRN 88; NGR SN 4170 1995). Although it is possible that clay extraction in this area pre-dates the brickworks it is more likely that the clay pit is associated with the brickworks. The extraction of clay from this area will almost certainly have removed any pre-early 19th century archaeological deposits. However, the clay pit itself is of archaeological interest as it may contain evidence of 19th century clay extraction techniques as well as a considerable amount of artefactual evidence.

The railways

The Railway Companies

3.3.14 The Carmarthen and Cardigan Railway Company was the first operator to run services into Carmarthen during the mid 1850s. The line was originally constructed as a broad gauge system, and only changed in 1872 when

the then owners the Great Western Railway (GWR) abandoned broad gauge lines in Wales (Morgan 1984, 63). The GWR was joined in operating into Carmarthen in August 1861 when the London and North Western Railway (L&NWR) laid a line to the town (Morgan 1984, 54).

The station PRN 92

3.3.15 In 1890 the station area comprised eastbound and westbound passenger platforms and connecting footbridge at c.SN 4155 1993, a large goods shed at SN 4165 2008, a number of sidings and an engine shed at c.SN 4195 2034.

3.3.16 Besides the two above named railway companies a number of other companies had interests in Carmarthen station which led to operational difficulties with internal wranglings often leading to delays, especially in the transfer of goods from one company's trains to another (Padfield and Burgess 1975, 6).

3.3.17 By 1906 the station had been turned into a goods yard. The alterations carried out at this time included the removal of the passenger platforms, the bridge across the line, the removal of cattle pens from the west end of the station and the removal of a urinal from the back of the eastbound platform, the erection of a number of signal points, the realignment of some sections of track and the construction of new sections. Paradoxically this change from a passenger station to a goods yard operation happened at the time the industry of the area was closing down.

Structural remains

3.3.18 Only the goods shed survives above ground. Although abandoned and semi-derelict the structure appears sound, and it remains a fine example of 19th century railway architecture. It is currently being used as a coal store. A brick-built drain, now filled with medium-sized stones and gravel, was noted at c.SN 4180 2019; it is not certain where the drain exits, although it has to be somewhere on the floodplain below. At SN 4181 2026 a brick-built shed had been constructed against the solid slope below The Parade. There are likely to be other features such as these along the route but the thick vegetation is at present obscuring them.

3.3.19 The course of the railway line is extant. Trial pits in this section shows there to be anything up to 3.0m of hardcore/make-up deposited to support the tracks.

The ?post-medieval farm

3.3.20 The farm was shown on the town plan of 1834 as one structure and a yard, but by 1863 when the area was surveyed for the railway company the farm had expanded and then consisted of four structures and a yard. On the first edition Ordnance Survey 6" sheets, surveyed in 1886 the farm was called Parade Farm. There is an echo of the old farm in as much as there is today a barn at NGR SN 4180 2016. It is not known whether the farm was completely destroyed during the construction of the railway, or whether there are any surviving remains buried beneath the railway track make up.

The rifle range 30084

3.3.21 The early Ordnance Survey coverage of the area shows a rifle range aligned across the bend of the river below Tanerdy. The targets were away from the town, towards Llangunnor. It is not certain what structures, if any, were at the town end of the range. There would have been some form of marker to show the 600 yard distance, and possibly a covered shooting position, although this would have probably been of light construction and left little in the archaeological record. A locally known fishing spot in this area is known as Pwll y Rifle (Roberts 1993, 2; H James pers. comm.)

PALAEOENVIRONMENTAL INTERESTS

3.3.22 The potential for the preservation of some of the quay structure(s) has been outlined above. Besides the potential for structural remains there is the added potential for the recovery of significant palaeoenvironmental evidence, such as pollen and molluscs, contained within the alluvium which would reveal evidence of the environment of Carmarthen. It is possible that the analysis of the pollen would reveal evidence for Osier (a willow used for basket making) cultivation.

3.4 Tanerdy-Abergwili (Fig 4)

TOPOGRAPHY

3.4.1 A 1.75km section stretching from the junction of the A484 and the A40 to the eastern limit of Abergwili. This section of the main by-pass route follows the course of the old London and North Western Railway, passing to the north of Abergwili town. The major topographical

RAILWAY SIGNAL BOX.

feature of this section is the Afon Gwili which the route crosses at SN 4330 2124. For its size the Afon Gwili has a large floodplain, 0.48km wide, that reaches to the western edge of Abergwili. A proposed new spur road will run north from the old Abergwili Junction to the A485 Lampeter Road. Although not formalised it is likely that the course of this spur road will follow the line of the old Carmarthen and Cardigan Railway. It is proposed to use the old Abergwili Junction area as a borrow pit.

ARCHAEOLOGICAL INTERESTS

3.4.2 There are a number of significant archaeological interests in this section, not the least of which are the two sections of railway and their associated sites. Other interests include the site of a fulling mill (PRN 12927; NGR SN 432 212) associated with the medieval priory, the site of the former Dol-Gwili Brick and Tile works (PRN 23982; NGR SN 4310 2145), the water course (PRN 24346; NGR SN 42 22, SN 42 21, SN 42 20) that supplied the Carmarthen Tinplate works, an earthwork, Abergwili Tumulus, of probable glacial origin (NGR SN 4365 2115) and the potential for archaeological deposits on the solid geology (at the interface with the floodplain) either side of the Afon Gwili.

Railway features

The Carmarthen and Cardigan Railway

3.4.3 A proposed spur road linking with the by-pass may follow the line of the old railway, although here physical constraints, such as standing buildings and the narrowness of some of the cuttings may necessitate some deviation away from the line. It is joined by the L&NWR line at SN 4302 2118, at Abergwili Junction, and at SN 4290 2106 passes beneath the A40.

The L&NWR Railway

3.4.4 The course of the by-pass follows the line of the Central Wales and Carmarthen Junction Line of the London and North Western Railway. Although the tracks, and other railway furniture, such as signal posts, have long since been removed the course of the line is still clearly visible. The railway crossed the Afon Gwili at SN 4330 2123.

Abergwili Junction

3.4.5 The two railways met at NGR SN 4303 2113. They were controlled though this point by the Abergwili Junction signal box. A single structure, presumably the signal box, was visible on air photographs of the area taken during the 1950s.

Abergwili station (PRN 16460)

3.4.6 Abergwili had a small station located on the north side of the town at NGR SN 4497 2111. The station comprised a small station building, a single platform and two sidings. The station is now derelict, but the platform survives virtually intact, and there are extensive remains of the station building. The building was approximately 12m x 4m, and walls still stand to between 0.3m and 1.5m.

Industry

The water course **(PRN 23446)** 24346 . E 41

3.4.7 The earliest surviving industrial feature in this section is the water course that formerly provided power for the corn and fulling mills connected to the medieval priory, and then being reused to power the 18th century tinplate works. For much of its length the course is clearly traceable across the landscape, although it is now silted. The waterlogged conditions in the silts may preserve timber structures, such as sluice equipment and planking to protect the sides. At NGR SN 4284 2107 it is crossed by the present A40, and there is a good chance that part of the original, medieval, culvert system may survive.

The fulling mill (PRN 12927)

3.4.8 Although there is no visible evidence remaining for the fulling mill, documentary evidence suggests it to be just on the south side of the old railway on the bank of the Afon Gwili.

The Dol-Gwili Brick and Tile Works (PRN 23982)

3.4.9 Little is known of the Dol-Gwili Brick and Tile Works; it first appears on cartographic surveys of the area in 1886 (Ordnance Survey first edition 6" sheet). By 1890 it had its own railway siding on the Carmarthen and Cardigan Railway. Indeed it may have been built and owned by the railway company, initially to provide bricks for engineering works, and then maintained for commercial sales (M Locock pers. comm.).

3.4.10 The cartographic evidence shows two structures, a large rectangular building that probably housed the covered drying racks, and possibly some brick making machinery (M

Locock pers. comm.), and a large circular structure, that may have been a Circular Hoffman Continuous Firing Kiln, a type invented in 1863 (Rosenthal 1947, 107-9). The post-1863 kiln would fit with the date for the change from broad gauge to standard gauge railway in 1872, when large quantities of building materials would be required.

The Abergwili Tumulus (PRN 1731)

3.4.11 This earthwork feature has been variously interpreted as a burial mound (RCAHMW 1917, 1) and a motte (Soulsby and Delaney 1975, para 3.2.4), although monitoring work carried by the Trust during the construction of a bungalow on the earthwork revealed it to be glacial in origin.

The potential of the interface area between the solid geology and the floodplains

3.4.12 The interface between the floodplains and the solid geology would have been an important area of human activity for early human communities in the region. It would have provided easy access to the resources of the river and its associated wetlands, whilst providing a dry occupation site. This area is particularly significant because of the nearby peat deposits (see below).

PALAEOENVIRONMENTAL INTERESTS

3.4.13 This section crosses the floodplain of the Afon Gwili, and one test pit (B 22) revealed a layer of soft dark brown clayey peat at NGR SN 4293 2109. It also crosses the line of a medieval water course.

The peat (B 22)

3.4.14 As with the peat encountered in the Pensarn-Afon Tywi section this deposit was close to the interface between the solid geology and the superficial alluvium of the floodplain. This would support the theory of a period of tidal regression drying the floodplains. It is likely that as the floodplain dried human activity encroached onto the newly stable land; whether that activity would have been extensive enough to leave a trace in the archaeological record is uncertain without further investigation.

The watercourse ?

3.4.15 The silts filling the watercourse may contain palaeoenvironmental data which will provide evidence for the environmental history of the area.

3.5 Abergwili-White Mill (Fig 5)

TOPOGRAPHY

3.5.1 This section is 1.9km in length and stretches from the eastern limit of Abergwili to a point c.0.5km east of Merlins Hill. For this section the route follows the line of the London and North Western Railway until it joins the A40 at NGR SN 4440 2105.

ARCHAEOLOGICAL INTERESTS

3.5.2 Besides the old L&NWR there are other significant archaeological interests in this section. They are the line of a Roman road (preserved by the A40), the Bishops Palace and gardens, and an earthwork, Bryn Eithin, of unknown date.

The London and North Western Railway

3.5.3 Only a very short length, 0.45km, of the line is affected in this section, although this includes the tunnel that passes below the A40. The line was contained in a cutting, and there was no known railway furniture on this short length.

The Roman road (PRN 3419)

3.5.4 Whilst it is almost certain that the present A40 follows the line of a Roman road (PRN 3419) leading from Carmarthen it is probable that it was also the line of the major pre-Roman land-route. The line of the road, along the edge of the solid geology flanking the north side of the Tywi floodplain is the prime land route along the valley. It is possible that some elements of the Roman road survive beneath the present road.

The Bishop's Palace (PRN ~~1734~~) 1743

3.5.5 Lying just to the south of the proposed route is the Bishop's Palace; the present structure was constructed in 1903 following a fire which destroyed the original 16th century building (Soulsby and Delaney 1975, para 3.2.1). The old palace, which now houses Carmarthen Museum, stands in extensive gardens, including the Bishop's ponds. 25610

Bryn Eithin earthwork (PRN 13017)

3.5.6 A slight earthwork (PRN ~~13071~~ 13017; NGR SN 4440 2106) is visible in a field just north of the proposed route. The date of the earthwork is uncertain, but its form and location suggest that it may be a building platform. It is possible that there may be associated features, such as ditches, running south from the earthwork onto the route.

3.6 The Afon Tywi

3.6.1 The Afon Tywi has been a constant and perhaps the most fundamental factor in the settlement and development of Carmarthen. It has helped to supply and protect the town for nearly 2000 years. It has an extensive, and extremely fertile floodplain that may contain significant archaeological and palaeo-environmental data.

ARCHAEOLOGICAL INTERESTS

3.6.2 Much of the potential archaeology connected with the Tywi has been discussed above, however there are other archaeological considerations. It is likely that following the establishment of the railway, there has been some attempt to control the erosive effects of the river where the two converged. It has been noted that the bank of the upstream bend has been stabilised by the dumping of slag from the tinplate works (Roberts 1993, para 3.1). Slag type deposits were visible during the field visits at a point below Priory Row. Other methods of stabilisation such as piling with timber stakes, or dumping rocks against the bank may have been employed. If strengthening of the bank has taken place there is a good chance that some evidence of it will remain.

3.6.3 As has been mentioned above, the anaerobic conditions within the silts deposited by the Tywi will preserve a range of evidence not normally recoverable during archaeological excavation. Therefore, there is great potential for the recovery of artefacts during the realignment of the river that will reflected the range of activities carried on, or near, the river, such as fishing, fowling and Osier cultivation.

PALAEOENVIRONMENTAL INTERESTS

3.6.4 The realignment of the river will allow comprehensive sampling of the extensive alluvial deposits of the Tywi floodplain which contain significant palaeoenvironmental data.

3.7 Conclusions

3.7.1 The assessment covers a large area and the archaeological resource of that area has the potential to significantly increase the knowledge of past human activity surrounding the historic town of Carmarthen. The proposed route will have a physical impact on a number of structures along its route, including the modern warehouse style industrial units at Pensarn, and the railway bridge and tunnel that carry the A40.

4.IMPACT OF PROPOSALS ON ARCHAEOLOGICAL RESOURCE

4.1 Introduction

4.1.1 Not surprisingly for a scheme of this scale there are a number of significant archaeological and palaeoenvironmental implications. The revisions to the initial proposals have undoubtedly reduced the potential impact of the scheme, although there are a number of archaeological implications that have to be addressed.

4.2 Pensarn-The Afon Tywi

4.2.1 The supposed route of the Roman road and the post-medieval Ropewalk will be crossed and damaged at SN 4128 1922 and SN 4162 1979 respectively, and a number of modern industrial units will be destroyed. The loss of the modern buildings is not considered to be of great archaeological significance, especially as they can be adequately recorded before demolition. Some sections of the Roman road and ropewalk will be destroyed, but this destruction will only affect a specified length and can be adequately monitored.

4.2.2 More significant is the potential impact of the scheme on the peat deposits on the edge of the Towy floodplain. It is possible that the peat will be removed mechanically. Even if the peat is not directly affected during construction, there are a number of factors that have to be considered, such as the changes in ground conditions caused by intrusive works (e.g. piling, or drainage work). Non-intrusive methods of construction can also have a damaging effect on the peat deposits, for example, the construction of embankments over the area of peat will compact the peat, and may lead to a drying of the ground. So it is clear that both intrusive and non-intrusive construction methods will alter the micro-environment within the peat and de-stabilise the archaeological and palaeoenvironmental data it contains.

4.3 The Afon Tywi-Tanerdy

4.3.1 In this section the route will cross and destroy the site of the former clay pit associated with the brickworks. The route will also affect the site of the brickworks, as it crosses its southern edge at NGR SN 4170 1995.

4.3.2 Once the route joins the railway line it is likely that all the existing embankments and cuttings

will be modified, if not destroyed during construction, as the railway will probably be too narrow for the proposed scheme. Therefore, any elements of railway architecture or furniture that may survive will be destroyed.

4.3.3 If intrusive construction techniques are to be used there is a high probability of encountering archaeological deposits, particularly in the area south of the old priory and the tinplate works, NGR c.SN 4197 2040 to NGR SN 4220 2060.

4.3.4 There is also the possibility of encountering buried remains of Parade Farm at NGR c.SN 4177 2017.

4.3.5 For the implications of the realignment of the Afon Tywi in this section see below.

4.4 Tanerdy-Abergwili

4.4.1 The main by-pass route will destroy the remains of the L&NWR line, it will also pass close to the suspected site of the medieval fulling mill.

4.4.2 Construction of a proposed spur road (exact route to be determined) may follow the route of the Carmarthen and Cardigan Railway. If so, construction will require the modification or destruction of the embankments and cuttings, and the possible modification to the tunnel below the A40 and the bridge carrying the railway over the Afon Gwili.

4.4.3 It may be that the physical constraints, standing structures, narrow cuttings etc., along, or near, the railway line will necessitate some deviation. Therefore it is possible that the site of the old Dol-Gwili Brick and Tile works will be directly affected. Cartographic evidence shows fairly large structures on the site, and it is likely there will be substantial buried remains.

4.4.4 The site of the old signal box at Abergwili Junction is extremely vulnerable, as it liable to damage from both the construction of the road, and also from the borrow pit.

4.4.5 The bridge/tunnel where the A40 crosses over the line will be destroyed if the route sticks to the course of the railway.

4.4.6 Construction of the road through Abergwili station will destroy the substantial remains that survive.

4.4.7 The Abergwili Tumulus now has a modern bungalow sited on it, and will not be directly affected.

4.4.8 A proposed borrow pit in this section will destroy a large area of landscape on the archaeologically sensitive interface between the solid geology and the wetlands.

4.5 Abergwili-White Mill

4.5.1 A short length of the L&NWR north of the A40 will be destroyed. Depending on the point at which the route joins the A40 it is likely that tunnel beneath the road will be destroyed. Once the route joins the A40 there is the possibility of the construction damaging any elements of the Roman road which may survive below the road.

4.5.2 The earthwork north of the railway may have associated features that encroach onto the route. If so, they would be damaged during construction.

4.6 The Afon Tywi

4.6.1 The realignment of the river will have significant archaeological and palaeoenvironmental implications. If there are buried remains of the possible quay then they will be destroyed by this realignment, and the changes in the river route will alter the conditions within the sediments of the floodplain, thereby jeopardising the preservation of archaeological and palaeoenvironmental data.

4.7 Categories

4.7.1 This section lists the sites by category as defined in the DMRB, Volume II, Section 3, part 2. The categories define the appropriate level of archaeological response during subsequent phases of works.

Category A
The Bishops Palace (PRN 1743)

Category B
The Carmarthen and Cardigan Railway
The London and North Western Railway
The former Station

Category C
Abergwili Station (PRN 16460)
Tin mill leat (PRN 24346)
The Roman road (PRN 3419)

Category D
Abergwili Junction
Abergwili Tumulus (PRN 1731)

Category E
The possible Roman road (PRN 24465)
The site of the early medieval occupation (PRN 71)
The priory (PRN 44)
The Carmarthen Tinplate Works (PRN 82)
The St. Peter's Brickworks (PRN 87)
The Dol-Gwili Brick and Tile Works (PRN 23982)
The lead smelting works (PRN 87)
The site of the fulling mill (PRN 12927)
The building platform (PRN 13017)
The Abergwili Tumulus (NGR SN 4365 2115)
Areas of Palaeoenvironmental potential (STP1, STP2 and B22)
The interface between the solid geology and the floodplains

5. RECOMMENDATIONS

5.1 Introduction

5.1.1 As a result of this assessment a variety of responses is recommended according to circumstances. The responses fall into three main categories: further assessment by field evaluation (category E sites); mitigatory recording of standing structures and features (category C and D sites); and finally a watching brief during construction work. It is envisaged that field evaluation will allow category E sites to be re-categorised and proposals for subsequent mitigatory measures may then form part of further recommendations. In terms of stages, it is felt that Stage 3 field evaluation is the most pressing requirement. The recording of category C and D sites would probably be best combined with a Stage 4 mitigatory excavation and recording programme.

5.2 Further assessment work

5.2.1 All sites in category E have considerable archaeological potential, but the full extent of this potential remains to be demonstrated. In addition, without field evaluation it is not possible to assess in sufficient detail, the likely impact of the road construction upon archaeological deposits. In some cases it may be that these deposits occur at a level below that likely to be affected by road construction, in which case, no mitigatory measures would be required. In other cases, mitigatory requirements may include full-scale excavation prior to construction, or at the other end of the scale, merely a watching brief during road construction.

5.3 Areas proposed for Stage 3 field evaluation

5.3.1 Those areas requiring further archaeological assessment are outlined below:

PENSARN-AFON TYWI

The Roman road (PRN 24465)

5.3.2 Trial trenching (where access allows) either side of the existing road where it is crossed by the proposed route (at c.SN 4122 1923), to determine the presence, or otherwise, of any surviving elements of the Roman road and associated features, e.g. roadside ditches.

The peat deposits at c.SN 4132 1929, c.SN 4139 1930 (STP1 and STP2)

5.3.3 Trial trenching and palaeoenvironmental sampling to determine the nature and extent of the peat.

AFON TYWI-TANERDY

The site of the old brickworks (PRN 87; NGR SN 4157 1995) , clay pit (PRN 88; NGR SN 4170 1995) and saw mill (PRN 86; NGR SN 4165 2002)

5.3.4 Trial trenching to determine the extent of any buried remains of the brickworks and saw mill and the clay pit. A survey of extant remains of the above should be included in this stage, rather than Stage 4.

The early medieval occupation (PRN 71; NGR SN 4190 2045), the Priory (PRN 44; NGR SN 4189 2046), the Lead Smelting Works (PRN 84; NGR SN 4199 2044) and the Carmarthen Tinplate Works (PRN 82; NGR SN 4215 2065)

5.3.5 Survey by ground radar followed by trial trenching across the route south of the sites of the priory and tinplate works to determine whether there are any traces of the priory, lead smelting works or tinplate works preserved below the made up ground of the railway line.

Parade Farm (NGR c.SN 4177 2017)

5.3.6 Survey by ground radar followed by trial trenching to determine the presence, or otherwise, of any buried remains of the ?post-medieval Parade farm.

TANERDY-ABERGWILI

The fulling mill (PRN 12927; NGR SN 432 2112)

5.3.7 Trial trenching to determine the presence or otherwise of any buried remains of the mill and associated features.

The Dol-Gwili Brick and Tile Works (PRN 23982; NGR SN 4310 2159)

5.3.8 Trial trenching to determine the extent of any buried remains of the brick works. Documentary searches to locate historical evidence of the operation of the works.

Abergwili station (PRN 16460; NGR SN 4398 2109)

5.3.9 Archaeological survey and recording of the remains of Abergwili station.

The borrow pit

5.3.10 Trial trenching and test-pitting of at least 2% of the area to determine the presence or otherwise of archaeological deposits in this potentially significant location.

ABERGWILI-WHITE MILL

Bryn Eithin earthwork (PRN 13017; NGR SN 4440 2106)

5.3.11 Trial trenching of the area below the earthwork to determine if any associated features encroach onto the proposed route.

THE AFON TYWI

River re-alignment

5.3.12 Trial trenching and palaeoenvironmental sampling of the sections of floodplain to be removed during the realignment of the river.

5.4 Areas identified as requiring Stage 4 recording

5.4.1 In addition to any requirements which may arise out of stage 3 evaluation, at present the only features positively identified as requiring Stage 4 recording are associated with the railway network.

The railways

5.4.2 Survey by photography and selective measured drawing of all aspects of railway construction and use, such as the standing structures, the goods shed (if directly affected), Green Meadow Bridge, Abergwili Station, the A40 tunnel and the embankments and cuttings and water culverts.

5.5 Stage 5 watching brief

5.5.1 In addition to requirements arising out of Stage 3, the course of the Tin Mill Leat (PRN 24346) should be subject to an intensive watching brief during construction work.

APPENDIX ONE: INFORMATION CONTAINED ON THE COUNTY SMR

The County Sites and Monuments Record was consulted for information on known sites of archaeological interest likely to be affected by the proposals. Descriptions of sites mentioned in the text are given below.

SITE No 41
NAME Priory watercourse
PARISH Carmarthen
TYPE Mill stream
PERIOD Medieval
NGR SN 4220 2081

SITE No 42
NAME Priory Mills
PARISH Carmarthen
TYPE Grist mill; fulling mill
PERIOD Medieval
NGR SN 4206 2053

SITE No 44
NAME Priory of St. John the Evangelist
PARISH Carmarthen
TYPE Priory
PERIOD Medieval
NGR SN 4189 2046

SITE No 69
NAME Moridunum Demetarum
PARISH Carmarthen
TYPE Roman town
PERIOD Roman
NGR SN 42SW

SITE No 71
NAME Llandeulyddoc; St. Teulyddog
PARISH Carmarthen
TYPE Clas
PERIOD Early medieval
NGR SN 4190 2045

SITE No 82
NAME Carmarthen Tinworks
PARISH Carmarthen
TYPE Tin mill
PERIOD Post-medieval
NGR SN 4215 2065

SITE No 83
NAME Carmarthen Furnace
PARISH Carmarthen
TYPE Blast furnace
PERIOD Post-medieval
NGR SN 4208 2063

SITE No 84
NAME Smelting Houses
PARISH Carmarthen
TYPE Lead smelting house
PERIOD Post-medieval
NGR SN 4199 2044

SITE No 86
NAME St. Peters
PARISH Carmarthen
TYPE Saw mill
PERIOD Post-medieval
NGR SN 4165 2002

SITE No 87
NAME St. Peters
PARISH Carmarthen
TYPE Brickworks
PERIOD Post-medieval
NGR SN 4157 1995

SITE No 88
NAME St. Peters
PARISH Carmarthen
TYPE Clay pit
PERIOD Post-medieval
NGR SN 4170 1995

SITE No 176
NAME Hen Heol Llangunnor
PARISH Carmarthen; Llangunnor
TYPE Ropewalk
PERIOD Post-medieval
NGR SN 416 198

SITE No 1745
NAME Merlins Hill; Merlins Grove
PARISH Abergwili
TYPE Hillfort
PERIOD Iron Age
NGR SN 4550 2150

SITE No 3419
NAME Via Julia Montana
PARISH Several
TYPE Roman road
PERIOD Roman
NGR

SITE No 9827
NAME Fron-Yn
PARISH Abergwili
TYPE Round barrow
PERIOD Bronze Age
NGR SN 4611 2121

SITE No 12927
NAME Carmarthen Priory
PARISH Carmarthen
TYPE Fulling mill
PERIOD Medieval
NGR SN 432 212

SITE No 13017
NAME Bryn Eithin
PARISH Abergwili
TYPE Building platform
PERIOD Unknown
NGR SN 4440 2106

SITE No 13041
NAME Glynmyddin I
PARISH Abergwili
TYPE Round barrow
PERIOD Bronze Age
NGR SN 4566 2101

SITE No 23982
NAME Dol-Gwili Brick and Tile Works
PARISH
TYPE Brickworks
PERIOD Post-medieval
NGR SN 4310 2145

SITE No 24346
NAME Tin Mill Leat
PARISH Carmarthen
TYPE Mill leat
PERIOD Post-medieval
NGR SN 4222; SN 42 21; SN 42 20

SITE No 24465
NAME Carmarthen to Betws Road
PARISH Several
TYPE Pre-turnpike road
PERIOD Post-medieval
NGR SN 41NW

APPENDIX TWO: SITE HISTORY

Introduction

That the area surrounding Carmarthen is of archaeological/historical significance is beyond doubt, so despite there being no provision in the set brief for any form of landscape survey, it was felt appropriate, because of the extent of the proposed scheme, to include a short history that attempts to place the assessment area in its historical and social context. It is not intended here to include the town itself in this discussion to any great extent, as it is outside the assessment area and it is felt to be too large a subject for this assessment stage.

The landscape: opportunities and constraints

Settlement at Carmarthen

For early human communities the Tywi valley would have presented a range of attractive opportunities, the most important of which would have been the abundance of differing food groups found in river valleys. Therefore, it is no surprise that, even though the earliest known settlement on the site of Carmarthen is of Roman date, there is evidence of prehistoric settlement in the area, such as a possible Neolithic henge monument north of the town, two Bronze Age round barrows (PRN 9827; NGR SN 4611 2121 and PRN 13041; NGR SN 4566 2101), and a number of Iron Age hillforts and enclosures, including the large hillfort, Merlins Hill (PRN 1745; NGR SN 4550 2150) 6km to the east.

The town itself is positioned on the northern slopes of the Tywi valley, above the floodplain on a terrace of boulder clays, some seven miles from the sea at the tidal limit of the river (James 1980, 1). The first known settlement was the Roman fort constructed in AD 75-80 on, a site between County Hall and St. Peter's Church, in the Spilman Street area. A civilian town (*vicus*) developed outside the Roman fort in an area between the present Richmond Terrace on the north side, Old Oak Lane on the east, The Parade and The Esplanade on the south, and Little Water Street on the west. The town developed as more and more people were attracted to the area in response to the economic opportunities afforded by the presence of the fort, and the well-paid Roman army. Sometime during the 2nd century the town appears to have become the *civitas* capital (the centre of a regional civilian government). Although the buildings of the *civitas* capital lie beneath the present town, and have, therefore, not been recorded the status of Carmarthen is strongly suggested by the regular grid pattern of streets and the later addition of defences (James 1993, 14).

The post-Roman/early medieval occupation was apparently immediately outside the east gate of the Roman town, in an area which was to become the focus of the Welsh medieval town. A Norman town was established to the west of the Roman town; the castle was on the site of the present County Hall. Throughout much of the medieval period there were two separate and culturally distinct towns (Welsh and Norman) at Carmarthen.

Communication

A fundamental requirement of any settlement is the establishment of reliable communications. Whilst the communication routes of the pre-Roman communities are not known, it can be assumed that the major land route would have followed the course of the river, along the Tywi valley. The line of the present A40 preserves the line of the Roman road (PRN 3419) from Carmarthen, which was also likely to have been the major pre-Roman land route of the area.

Roads and trackways

The physical characteristics of the region, the valley location, the Tywi and Gwili floodplains, would, at least until fairly recent times, have dictated the shape of development. It was only in the late 18th century/ early 19th century that artificial stabilisation of the Tywi floodplain at Pensarn, by means of dumping vast quantities of clay and other materials (information gained from boreholes and test pits in this area show there to be anything up to 4m of made up ground), allowed permanent human encroachment onto the floodplain. This process continued during the 20th century, with two major episodes: the first was in the 1930s when the present bridge was constructed and the land either side of the river was considerably built up; and in the 1960s when Coracle Way was constructed.

Therefore, it is almost certain that the historic infrastructure of the region developed largely as a result of the physical constraints of the landscape rather than as a specific response to human requirements. Roads on the Tywi and Gwili floodplains would have followed either the driest, or the shortest route across the alluvium. Once established there would have been little reason to change them. This is reflected by the fossilisation of the supposed line of two Roman roads, the previously mentioned A40 and another one (PRN 24465) supposedly on the line of the present A484.

There is at present no evidence to suggest the pre-medieval crossing point of the Tywi, so it is not clear to what extent the positioning of bridges affected the routes of roads across the floodplain from Pensarn.

Many of the minor roads are likely to be medieval or later in origin and are probably former trackways which developed into roads as agricultural exploitation of the region became more intensive.

The River

The Afon Tywi was perhaps the most important element in the development of the town, indeed, it is possible that the Romans first reached the site of Carmarthen by river. The river has been a vital communication route for Carmarthen since the first settlement, and it was instrumental to the success of the 18th century and 19th century industrialisation of the town (see below).

The economy: development and decline

Agriculture

From its inception as a civilian town the mainstay of the economy of Carmarthen has been agriculture. It still has a central role in the agricultural economy of the region, with its cattle market. The agriculture is largely pastoral due to the excellent grazing land, especially on the floodplains, which, according to Mr. Hywel Llewellyn, a modern farmer from the Abergwili area, "even in dry spells stays green for longer than other land because of the depth and quality of the soil and the moisture in it" (letter of evidence presented to the public enquiry on the by-pass route). The excellence of the pasture in the floodplain is due to the regular flooding of the valley which deposits nutrient-rich alluvial silts on the fields.

The pasture land of the floodplain is likely to have always been an important resource for the town. For example, it would have provided important grazing for the horses of the garrison of the medieval castle. Along the south coast of Wales reclaimed pasture land on the coastal plain (the Severn Levels), despite periodic inundation, was the most sought after and consequently the most expensive (Page 1994, 20). Although the situation in the floodplain is slightly different as the land is not reclaimed, the general principal that pasture regularly revitalised by water-borne nutrients is of the most value is sure to have applied to the land in the Tywi valley.

Industrialisation

Most of the early industry of the town was agriculturally-based, either by processing the products, such as woollen mills and tanneries, or providing an agricultural service, like the foundries that developed in the northwestern and western sections of the town.

During the middle and second half of the 18th century non-agricultural industry started to develop when Robert Morgan established a blast furnace (1748) and the Carmarthen Tinplate works in 1761 (James 1976, 31) and John Campbell established a lead smelting works (c.1781) to process lead from his north Carmarthenshire mines (James 1985, 123). Other industrial enterprises included a number of brickworks, such as the Dol-Gwili Brick and Tile Works (PRN 23982; NGR SN 4310 2159) and a brick and pipe works (PRN 87; NGR SN 4157 1995) established a short distance to the west of the tin-works during the early 19th century. Sometime between 1856 and 1886 a saw mill was established on the same site.

Location

With regards to this assessment, the principal industrial area was between the southern limits of the town and the Afon Tywi. The governing factor in the establishment of the early metalworking industries in this area was the presence of a leat (an artificial watercourse) that supplied motive power for the medieval mills which formerly stood on the site. The leat ran from the Afon Gwili, and a plan of its course in 1825 shows it to have been 3608 yards (c.2.6 miles) in length (NLW ref: Abergwili C, 469). Much of its course is still visible. The reason for its great length, when the Tywi was only a short distance away, was that it was fed from above the tidal reach of the Afon Gwili, thereby giving a reliable and controllable head of water.

Product transportation

Following the establishment of the metalworking industries during 18th century, and until the arrival of the railway during the middle of the 19th century, the Afon Tywi provided the bulk of transportation for the products leaving the works and the raw materials being brought in. Direct access to the sea from Carmarthen meant that water-borne transport was the most reliable and effective way for the works to service their markets. For example the Carmarthen Tinplate works had important markets in Russia and America, as well as large home markets at Bristol, Liverpool and London. To supply those markets, and to import raw materials they used their own ships which were loaded and unloaded from small river craft somewhere downstream of the town bridge (James 1976, 35). The river craft would then ferry the products to and from the works, presumably landing at a quay, or jetty alongside or inside the works.

The process of unloading into smaller river craft is described in fascinating detail in the logbook of the captain of an early 19th century vessel. The vessel, a Brig named Priscilla, returned from Nova Scotia with

a cargo of timber bound for the saw mills in the town, and because of her draught had to make the journey upriver to Carmarthen in stages at high tides. Some of the timber was unloaded downstream at Gennyman's Pool, before the Priscilla completed the journey into Carmarthen. The journey to the town quay took two days (James 1983, 46; James 1986, 29).

The possible quay: origins and location

Although cartographic evidence for the area does not show a quay associated with the tinplate works there is documentary evidence for a quay associated with the medieval priory. It is likely that there was also some form of landing place for the Roman town and the early medieval settlement.

THE RAILWAY

Development

The first railway company to operate into Carmarthen was the Carmarthen and Cardigan Railway Company which was incorporated by act in 1854 (Padfield and Burgess 1975, 6; Bradshaws Railway Manual 1873, 49). The initial operation was a broad-gauge system and run by the South Wales Railway, although this operation was short-lived and financial difficulties forced the company to close in 1860. The financial troubles were largely due to a number of engineering problems, principally the crossing of the Tywi which resulted in very high construction costs (Padfield and Burgess 1975, 6 & 10).

The line re-opened in 1861 and operated with two hired locomotives. In this same year a standard-gauge line was laid from Llandeilo to Abergwili Junction to meet the broad-gauge Carmarthen and Cardigan Railway. In 1872 the Great Western Railway, the then owners of the Carmarthen and Cardigan Railway, abandoned the broad-gauge system in Wales, and the line was replaced with standard-gauge tracks. Around the turn of this century the station area underwent a programme of rebuilding, changing from a passenger station into a goods yard.

The affect of the railway on the established industry

The arrival of the railway was, at least for a while, an economic boon for the established industry. The tinplate works appears to have flourished after 1865 (James 1976, 50), and the brickworks established sometime during the early 19th century expanded following the construction of the railway. It appears however that this prosperity was fairly short-lived, as both concerns seem to have ceased production shortly after the turn of the century.

Industrial decline

The end of the 19th century/beginning of the 20th century appears to have seen the cessation of all industry in this area, as the tinplate works closed in 1900. The closure was largely due to the imposition of the McKinley tariff (the severe restrictions of tinplate imports into America) in the 1890s. This shows how fundamental the international markets were to the works.

It appears that at around the same time the brick-works and saw mill below the old station were either cutting back, or stopping production, as the area south of the old station was marked as marsh in 1906 (second edition Ordnance Survey 25" sheets). Even though the buildings were still shown (and indeed the works appeared to have expanded slightly) the roads and paths leading to the works were no longer marked suggesting they were unused.

There is no evidence to suggest when the Dol-Gwili Brick and Tile Works ceased production.

Except for the site of the Dol-Gwili Brick and Tile works the sites of the other works were reused; the brickworks became until recently a builders yard, whilst one of the buildings of the tinplate works has been incorporated into a builders' merchants.

PRESENT CONCERNS

Potential impact on the cultural landscape

Since the railways ceased operating the area the southern section of the town has a rural aspect and atmosphere which makes it a popular leisure area, especially for walking and fishing. Whilst never a major factor in the determination of schemes such as the by-pass it is significant in terms of town development that an area of former economic importance is now utilised for such leisure activities. The construction of the road through this area will dramatically alter the prevailing atmosphere, and destroy the southern aspect of the town.

APPENDIX THREE: CATALOGUE OF RESEARCH ARCHIVE

The research archive indexed according to the National Monuments Record (NMR) material categories is held by the Dyfed Archaeological Trust, Llandeilo, and contains the following:

A. Copy of the final report.

B. Notes made during site visits.

C. Photocopies of OS and other maps at various scales, annotated by the researcher.

G. Notes made during searches.

I. Annotated drafts of the report.

L. Brief and specification for the report.

M. Correspondence.

There is no material for classes **D, E, F, G, H, J, K** and **N**.

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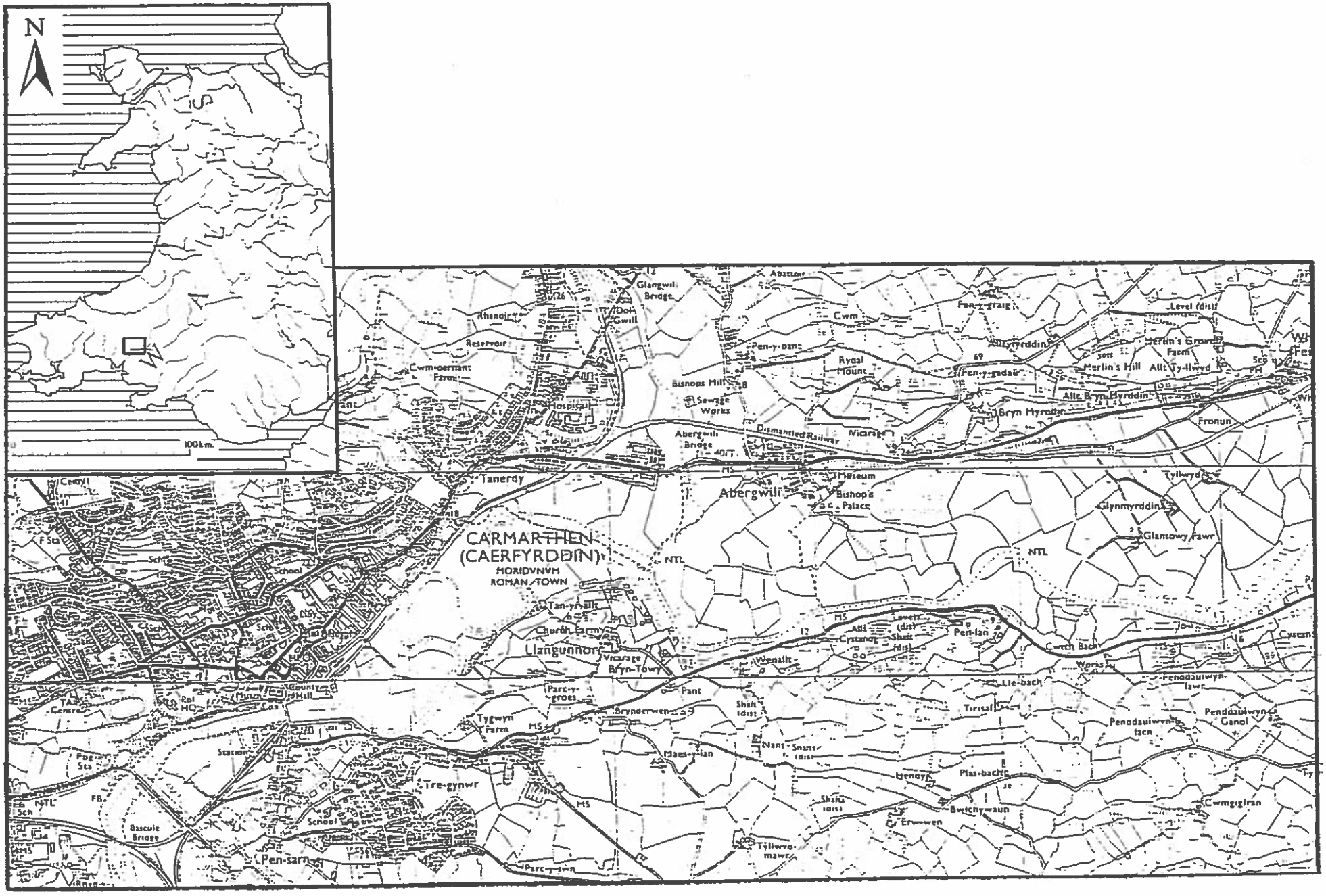

Figure One: Location plan

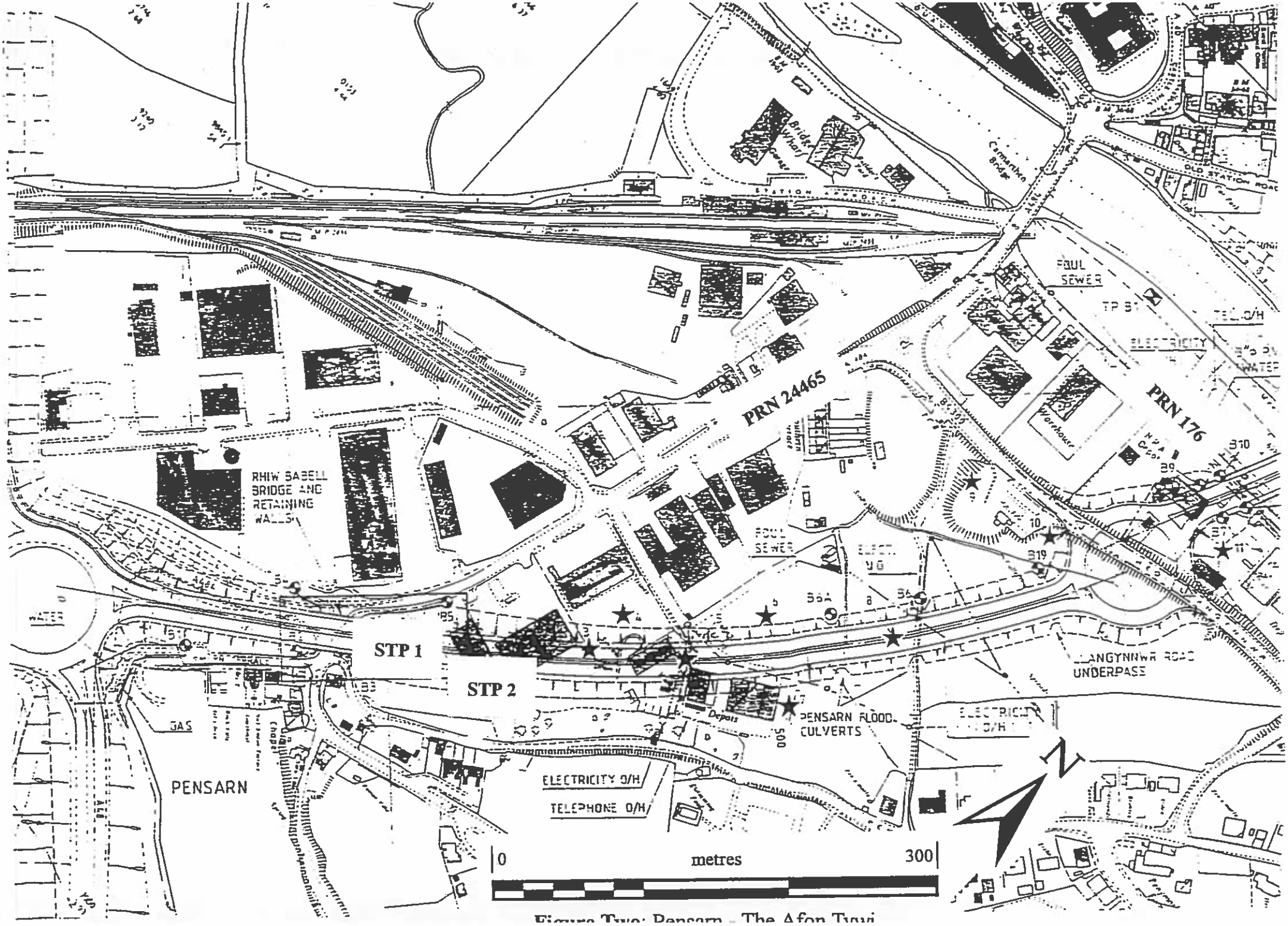

Figure Two: Pensarn - The Afon Tywi

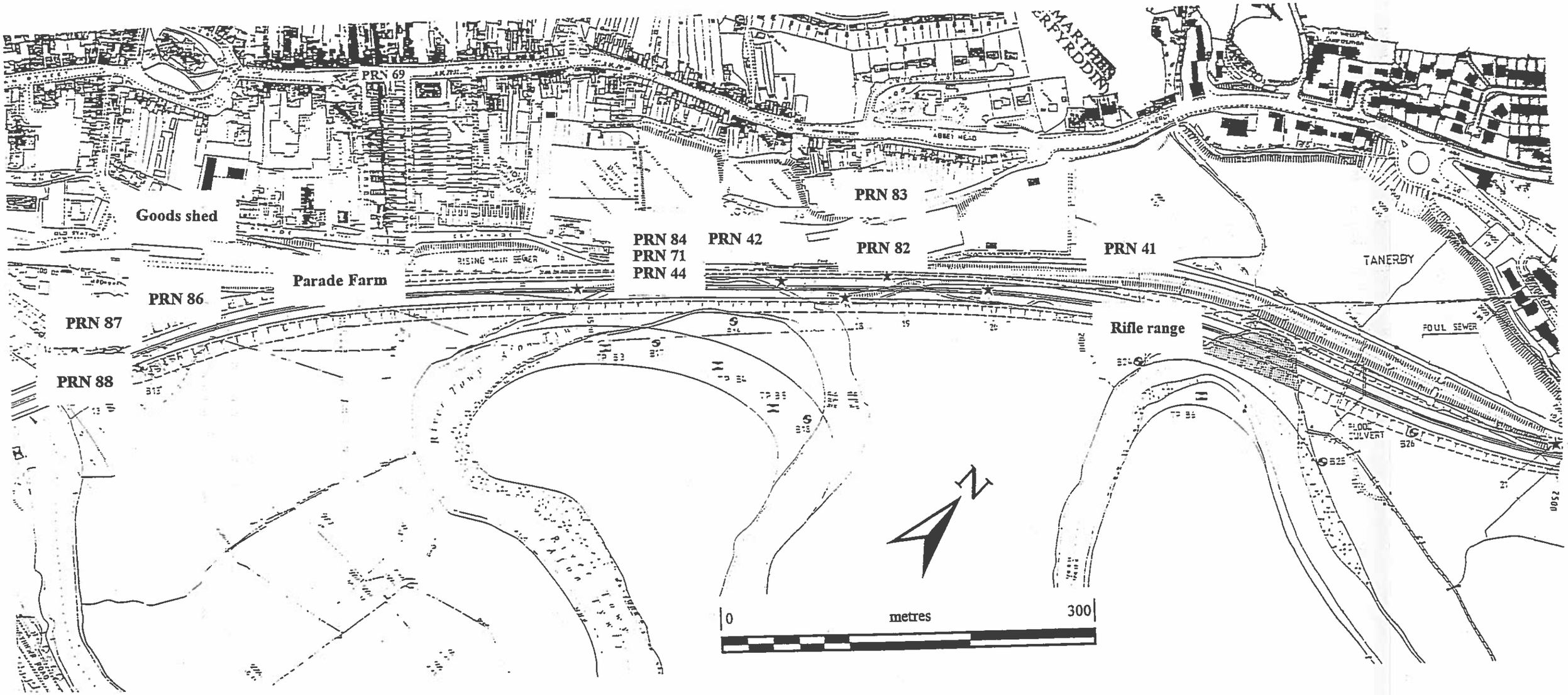

Figure Three: The Afon Tywi - Tanerdy

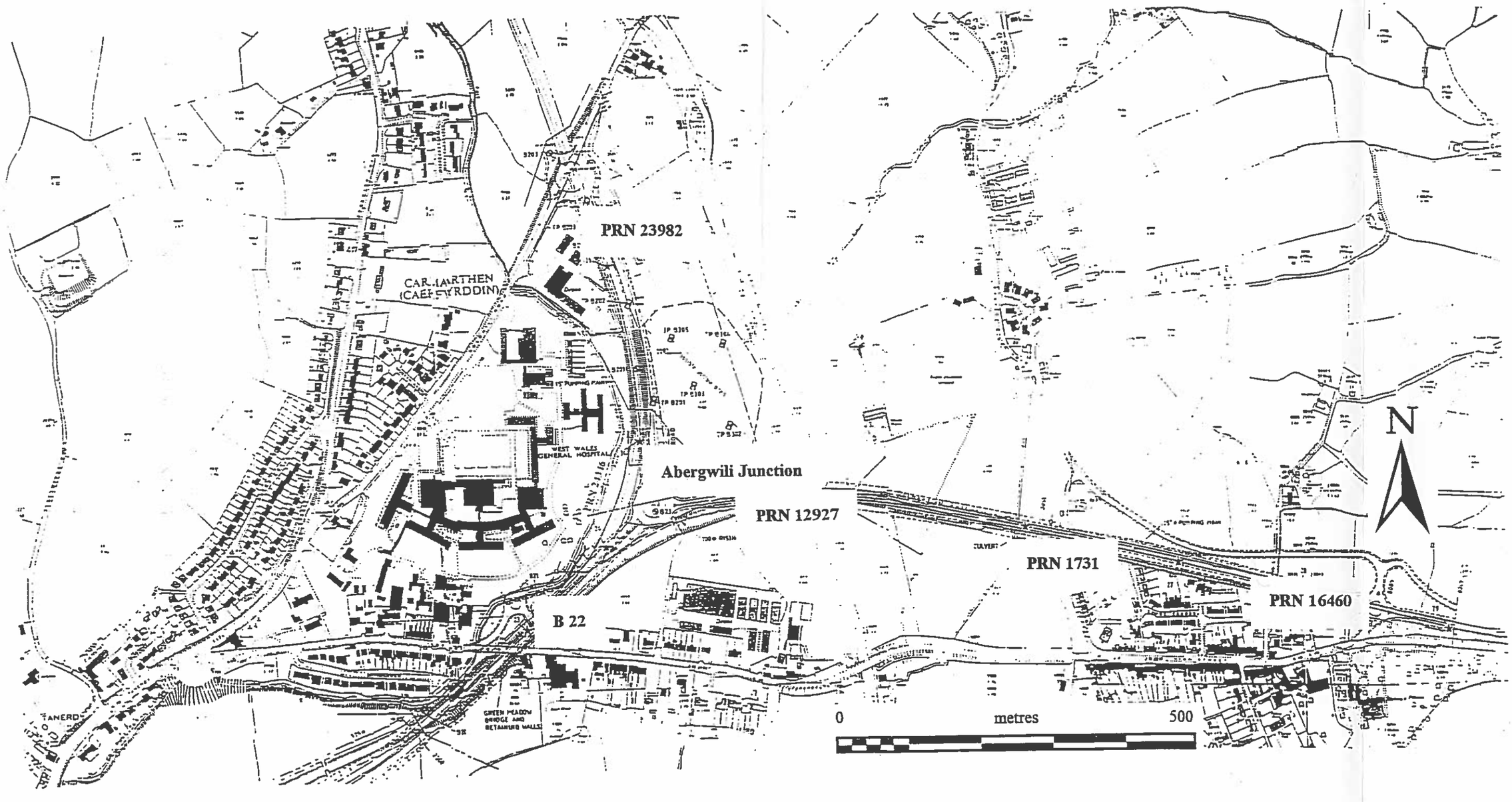

Figure Four: Tanerdy - Abergwili

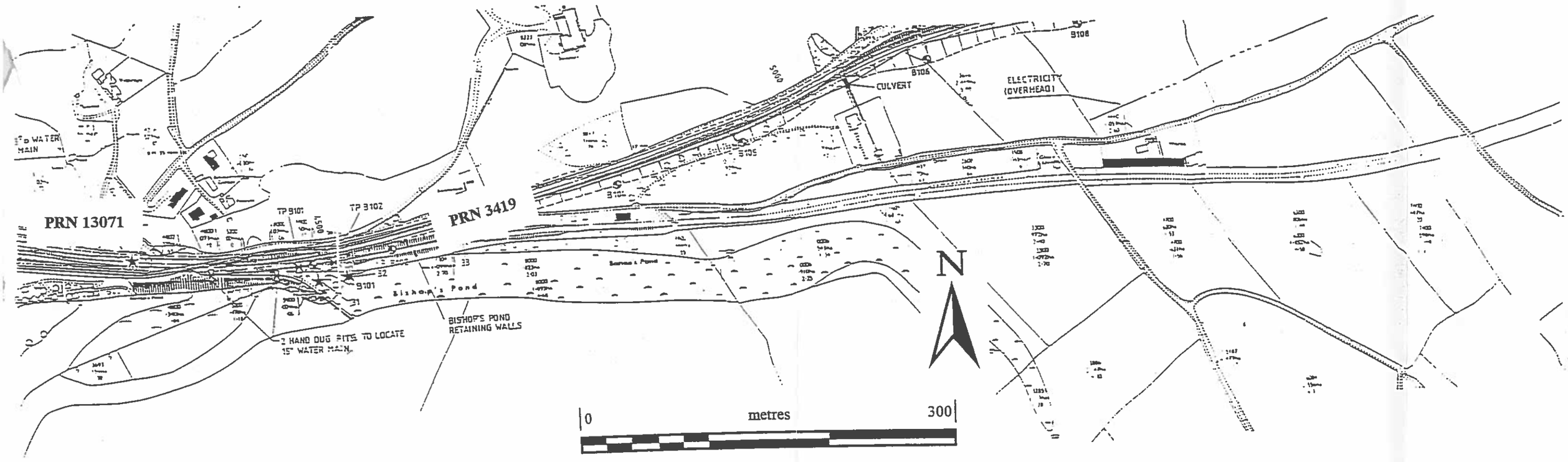

Figure Five: Abergwili - White Mill