Carmarthenshire County Council

Ammanford Distributor Road

Summary Archaeological Report and Recommendations

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Ammanford Distributor Road
Archaeological Evaluation Reports

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Contents

Summary Report

1 Introduction

1.1 During September to November 2002, two areas were evaluated in order to determine their archaeological importance. The sites evaluated were:

- Bryn-du Farm (Site 1); and
- Pantyfynnon Farm (Site 2).

1.2 Due to the probability of encountering contaminated land at the Dynevor Chemical Works (Site 3) it was agreed, in consultation with Cambria Archaeology (Curatorial), that this site would not be evaluated at this time.

1.3 The geophysical evaluations were carried out by Engineering Archaeological Services LTD (EAS) and evaluation trial-trenching was carried out by Marches Archaeology. This report represents a summary of the results of these evaluations; the full results are contained in the following two reports:

- EAS Client Report 2002/24; and
- Marches Archaeology Series Report 259.

2 Evaluation Results and Recommendations

2.1 Bryn-du Farm (Site 1)

2.1.1 This site was recorded on the Sites and Monuments Record due to the occurrence of an earlier topographic name 'Pen-y-garn', which translates as 'top of the cairn'. In addition linear features nearby were indicated on aerial photographs. Initially a geophysical survey was undertaken, which identified two faint linear anomalies, of unknown date or function.

2.1.2 The geophysical survey was followed by the excavation of two trial-trenches across the linear anomalies, which proved to be natural. However, two pits were identified within the trenches. When excavated these pits yielded charcoal and evidence of burnt mudstone, indicating *in situ* burning.

2.1.3 A sample of charcoal was retained and was sent for radiocarbon dating. The sample produced a date of between 4440 and 4320 BC with a 95% probability which suggests a that the charcoal resulted from man-made activity during the Mesolithic to Neolithic transition.

2.1.4 The date range for the charcoal indicates that this site is likely to be of particular importance to study of Mesolithic in Carmarthenshire, where such sites are under-represented. Cambria Archaeology (Curatorial) has indicated that they would expect the mitigation strategy to encompass full excavation of the site. The full extent and

range of the excavation will need to be developed in consultation with Cambria Archaeology (Curatorial).

2.2 Pantyfynnon Mill (Site 2)

2.2.1 This site was identified as a disused mill, from research of historic mapping along the site route. Further earthworks were detected on site during the walk over survey. It was considered possible that the mill may have had medieval antecedents.

2.2.2 The evaluation consisted of the excavation of two trenches across the identified site and an earthwork survey. The trial trenches revealed a culvert related to the 'tail-race' of the mill, indicating a water-management system. The mill appears to have dated from the 18th century, although pottery was found dating from the 16th century.

2.2.3 Cambria Archaeology (Curatorial) has indicated that a mitigation strategy encompassing excavation would be recommended. The full extent and range of the excavation will need to be developed in consultation with Cambria Archaeology (Curatorial).

2.3 Dynevor Tin-plate/Chemical Works (Site 3)

2.3.1 This site was located from historic mapping, indicating the presence of a tin-plate works from the 19th century. The site has an importance in relation to Ammanford historic tinplate industry.

2.3.2 No evaluation was carried out at the site due to the probability of ground contamination within the area. As a result of consultation with Cambria Archaeology (Curatorial) it was recommended that a targeted watching-brief should be carried out at this site to record any archaeological features related to the works.

3 Summary Recommendations

3.1 The full results of the evaluations for the trial trenching and the geophysical surveys have been included in reports, which have been sent to Camarthenshire County Council and Cambria Archaeology (Curatorial) in order to inform the planning process.

3.2 It is recommended that full excavation is undertaken at Bryn-du Farm (Site 1) and Pantyfynnon Farm (Site 2). This work should be carried out in advance of the construction phase of the proposed Ammanford Distributor Road in order to remove the possibility of time-delays due to unexpected discoveries. Further liaison with Cambria Archaeology (Curatorial) will be required to develop the specific details of the required excavation.

3.3 It is recommended that a targeted watching-brief is carried out a Dynevor Tinplate Works (Site 3) during construction of the road.

3.4 In addition a general watching brief should be maintained along the length of the proposed route during the topsoil stripping phase of Construction.

Marches Archaeology

Ammanford Distributor Road
Carmarthenshire

Appendix 1:

Report on an archaeological evaluation

November 2002

Marches Archaeology Series 259

Archaeological Consultants and Contractors

The Ammanford Distributor Road
Carmarthenshire

A report on archaeological evaluations

NGR:
SN 6063 0981
SN 6210 1062

Report by
Jane Kenney

Contents

November 2002

Marches Archaeology Series 259

List of Illustrations

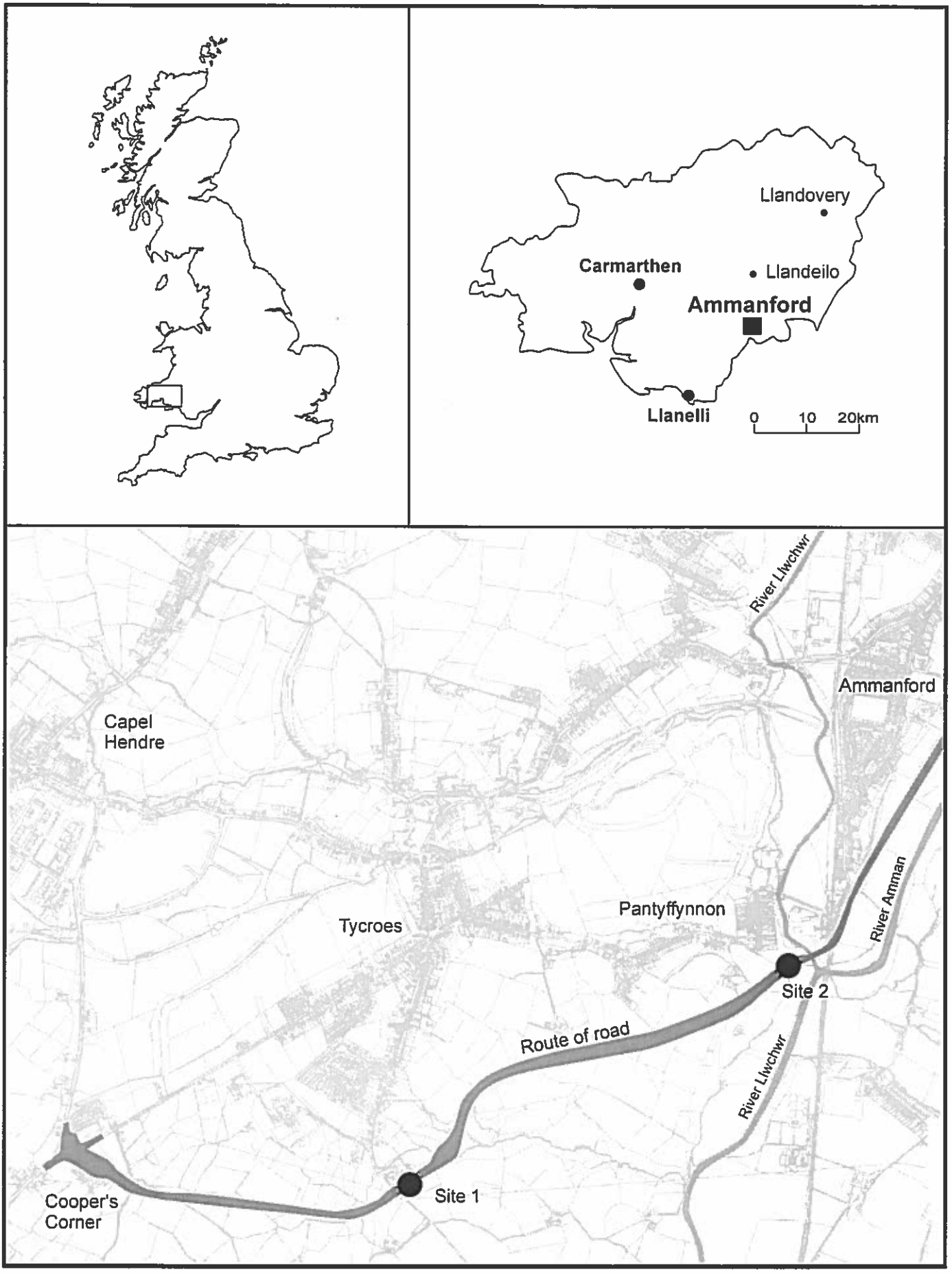

Fig. 1: Location of sites and route of road

The Ammanford Distributor Road
Carmarthenshire

A report on archaeological evaluations

Summary

Two sites of archaeological interest were investigated along the proposed route of the road. A geophysical survey at site 1 (Bryn-du) had identified faint linear anomalies. These were investigated with two trenches and proved to be of natural origin. Some possible man-made features were found in the excavation, hinting at late prehistoric activity on the site, but the results were inconclusive. Site 2 (Pantyffynnon) was the site of a post-medieval watermill. One trench on the site produced no archaeology, but the other revealed the stone culvert leading from the wheel pit. This was of late 18th century date, or later, and there was no evidence of an earlier mill or other medieval activity. The evaluation did demonstrate that the mill remains were well preserved, and considerable detail on the plan and function of the mill might be obtained from further investigation.

1 Introduction

During a desk-top study of the route of a relief road around Ammanford two sites were identified that could contain archaeologically sensitive deposits or features. The first, at Bryn-du Farm, is situated at NGR: SN 6063 0981. The second, at Pantyffynnon Mill, is situated at SN 6210 1062 (Fig. 1).

The sites are registered on the local Sites and Monuments Record (ref.: PRN 4854 and 20640) as sites of archaeological interest. The Local Planning Authority's Archaeology Advisor advised that further information was required before the archaeological implications of the application could be adequately assessed and recommended that an archaeological field evaluation be carried out to provide this information.

Babtie Group produced a Specification for sample excavation and commissioned Marches Archaeology to provide the archaeological services detailed in that document. The commission was based on a Project Proposal provided by Marches Archaeology and approved by the Local Planning Authority. The proposal formed a written scheme of investigation for the archaeological works and should be read in conjunction with the Specification and its attached plans. The fieldwork was carried out between 30th September and 8th October 2002, inclusive, and the report issued on 4th November 2002.

2 Scope and aims of the project

The Brief states that the archaeological project would consist of:

The excavation of two trenches at Bryn-du Farm
The excavation of two trenches at Pantyffynnon Mill

An archaeological evaluation aims to "gain information about the archaeological resource within a given area or site (including presence or absence, character, extent, date, integrity, state of preservation and quality) in order to make an assessment of its merit in the appropriate context. This may lead to one or more of the following: the formulation of a strategy to ensure the recording, preservation or management of the resource; the formulation of a strategy to mitigate a threat to the archaeological resource; the formulation of a proposal for further archaeological investigation within a programme of research" (Institute of Field Archaeologists Standard and Guidance for Archaeological Field Evaluations).

The general objectives of this evaluation, based on the above stated aim, were

to determine the presence or absence of buried archaeological remains
to test provisional interpretation of anomalies identified by a geophysical survey of site 1
to determine the general nature of any significant archaeological features
to determine the approximate date range of the remains
to determine the condition and state of preservation of the remains
to determine the degree of complexity of the stratigraphy of the remains
to determine the range, quality, quantity and nature of the artefactual evidence present
to determine the potential range, quantity, quality and nature of any paleoenvironmental evidence present
to identify research potential or questions that could be addressed at the mitigation stage

The site specific objectives are

to identify and record the extent and layout of apparent archaeological features within the road corridor
on site 2 to seek evidence for the existence of a medieval precursor to the post-medieval mill shown on the first edition Ordnance Survey map and to examine the water management system.

3 Methodology

Documentary research

No further documentary research was done at this stage of the project.

Fieldwork

At site 1, Bryn-du Farm, two trenches were excavated, each measuring 12 metres long by 2 metres wide. Two other trenches of the same size were excavated at site 2, Pantyffynnon. The trenches were located as indicated in the Specification. The upper deposits were excavated by

a mechanical excavator with a toothless bucket to a level determined to comprise deposits, features or horizons of archaeological significance. Further excavation was by hand, with the mechanical excavator used to test deeper stratification, the level of natural deposits or other information required for the fulfilment of the aims and objectives of the Specification. Features considered to be of value to the understanding and interpretation of the site were selectively excavated. All artefactual and ecofactual material recovered from hand excavation was initially retained.

The recording system included written, drawn and photographic data. Context numbers were allocated and context record sheets completed. Where features were located plans were drawn of these at a scale of 1:20. Trenches containing no archaeological information were located on the total station survey of each site, and not planned at a larger scale. Appropriate sections of the trenches and features were also drawn at scale 1:10 or 1:20. The photographic record was made using black and white negative and colour transparency film. Samples were to be taken of deposits considered to have environmental, technological or scientific dating potential, but as no suitable deposits were located such samples were not collected.

On completion of the fieldwork the trenches were backfilled and the ground reinstated.

Office work

On completion of fieldwork a site archive was prepared. The written, drawn and photographic data was catalogued and cross-referenced and a summary produced. The artefactual and ecofactual data was processed, catalogued and cross-referenced and summaries produced. Further dispersal of artefacts and ecofacts will be in line with the collection policy of the recipient repository and will be documented in the archive. A specialist report was obtained on the pottery (see appendix I), and charcoal samples were identified to tree species (see appendix II). Roundwood from the charcoal sample from pit [08] was sent to Beta Analytic, Florida, for radiocarbon dating, the results of which are currently awaited (see appendix III).

The present report details the aims, methods and results of the project. A non-technical summary and details of the location and size of the archive have been included. Copyright of this report is vested in Marches Archaeology.

4 Description of the sites and geological background

Ammanford is located at the confluence of the Rivers Amman and Llwchwr, which rise in the Black Mountains and flow south to the sea between Swansea and Llanelli. The geology consists of Carboniferous Middle Coal measures over-lain by alluvium and boulder clay. The river valleys cut across the northern edge of the South Wales coalfield syncline, and coal measures outcrop in the valleys, exposing anthracitic type coal (Babtie 2002).

The route of the proposed Distributor Road runs from a junction with the A483, near Cooper's House, south of Tycroes and along the eastern side of Ammanford to the present Tesco's roundabout (Fig. 1). The altitude along the route varies between 20m OD and 90m OD. Site 1 at Bryn-du (now known as Frongelli Stables), to the south of Tycroes, lies at a height of 79m OD on the north-west facing slope of a low hill. The site identified in the

Specification is located just below a natural plateau or false crest, and overlooks a small, steep stream valley.
Site 2 is located south of Pantyffynnon on the flood plain of the River Llwchwr, close to its confluence with the Amman. Its altitude is 19m OD, and the area is susceptible to flooding.

5 Archaeological and historical background

The archaeological and historical background is discussed in the Specification (Babtie 2002), and will only be briefly summarised here. No prehistoric or Roman remains are known from the river valley, although there are numerous prehistoric monuments on the hills to the south-east. There are traces of medieval settlement in the area, most notably the motte and bailey castle in Ammanford (CM067 CAM, PRN 831). In the late 19th century the farming economy of the Ammanford area changed towards mining and related industries. There was a colliery to the north of Pantyffynnon, served by tramroads linked to the Llanelli, Llandeilo and Llandovery Railway. Iron working also expanded in the 19th century, and a tinplate industry developed. The Dynevor Tinplate Works was located next to the Pantyffynnon railway station, which opened around 1840 at the junction of the Valley Branchline to Brynamman and to the Mid Wales Central Line.

Site 1 was initially noticed for its previous name of Pen y Garn (top of the cairn), suggesting potential prehistoric activity in the area (Figs. 2 and 3). Aerial photographs dating from 1947 show cropmarks to the east of the farm, though no earthworks are visible on the ground. A geophysical survey carried out by EAS (Brooks and Laws 2002) revealed faint linear anomalies, some of which apparently formed a sub-rectangular enclosure. The geophysics report is inconclusive as to whether these anomalies are archaeological or not, but it was possible to interpret them as the remains of a late prehistoric field system. The natural plateau on the southern side of the investigated field appears to be a suitable location for a prehistoric settlement. Unfortunately the presence of an electricity pylon in this location masked any geophysical readings here.

At site 2 a mill is shown on the maps from the tithe map of 1841 onwards (Figs. 2, 3 and 4). This had a mill race taking water from the River Llwchwr at a point about 300m north of the mill. A stream running south-east from the mill carried the water away again, back into the river. Two buildings are shown in 1841 (fig. 4), although only one seems to have survived in 1891 (Fig. 2). The smaller building is also located on a stream immediately south of the main mill building, presenting the possibility that this also contained a waterwheel, was perhaps the original mill on the site. The desk-based assessment did not establish whether the mill ground corn or was used for industrial purposes. The mill building appears to have been demolished in the 1950s.

6 Results of the evaluation

Site 1

Trench 1
This trench was located to investigate linear anomalies revealed in the geophysical survey (Fig. 5 and 6). Trench 1 ran down the slope of the hill from south to north. The topsoil [01]

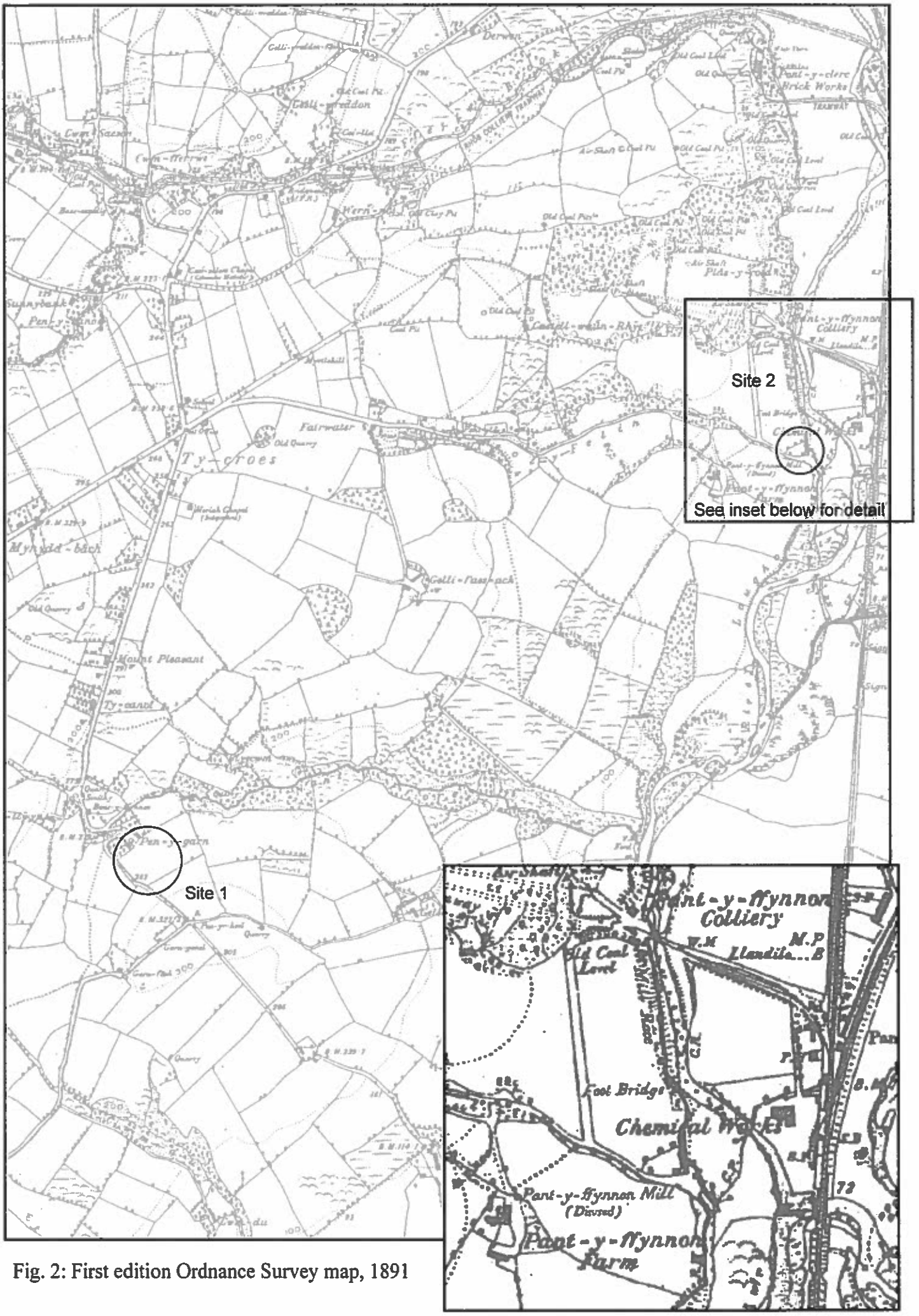

Fig. 2: First edition Ordnance Survey map, 1891

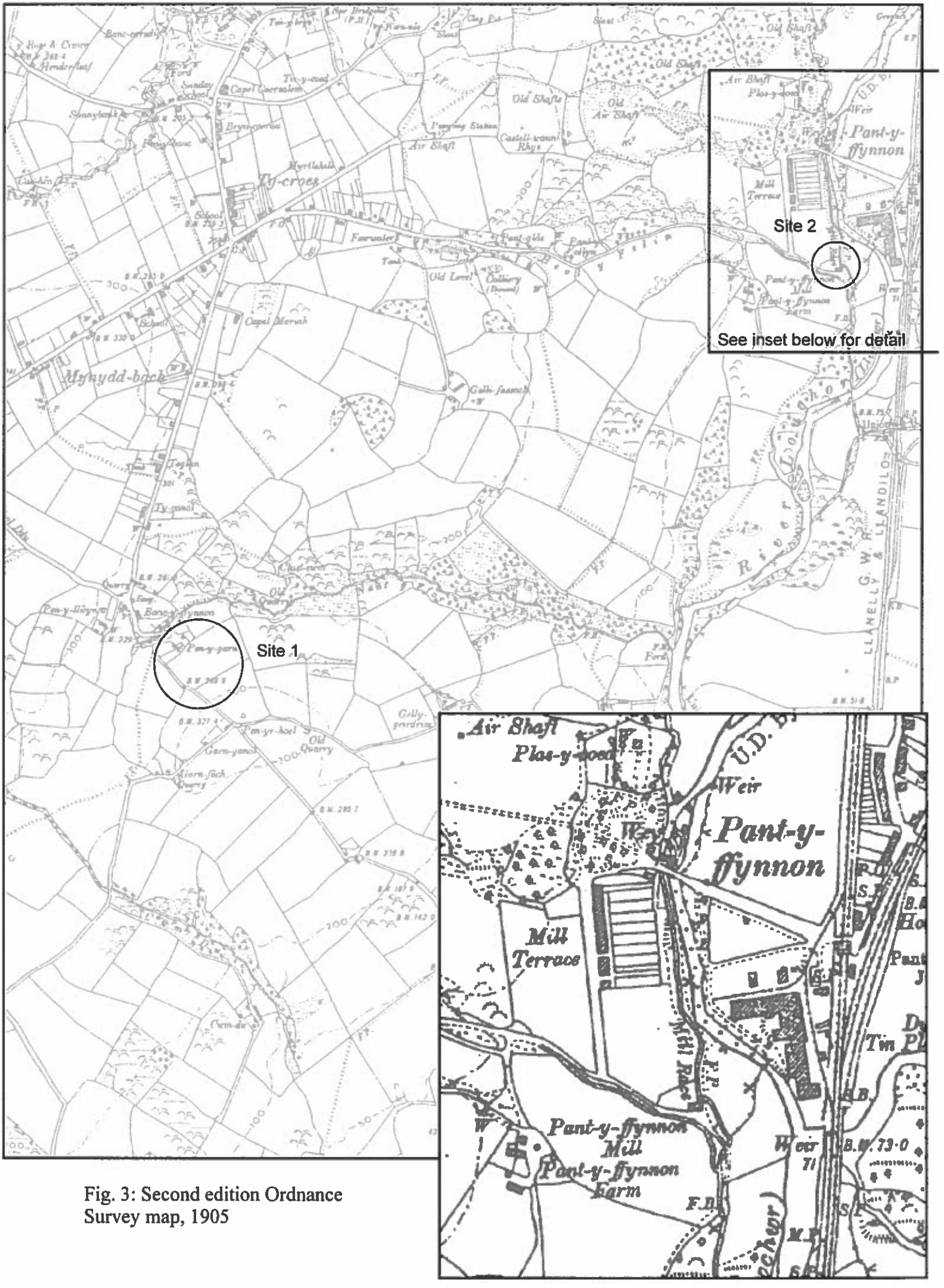

Fig. 3: Second edition Ordnance Survey map, 1905

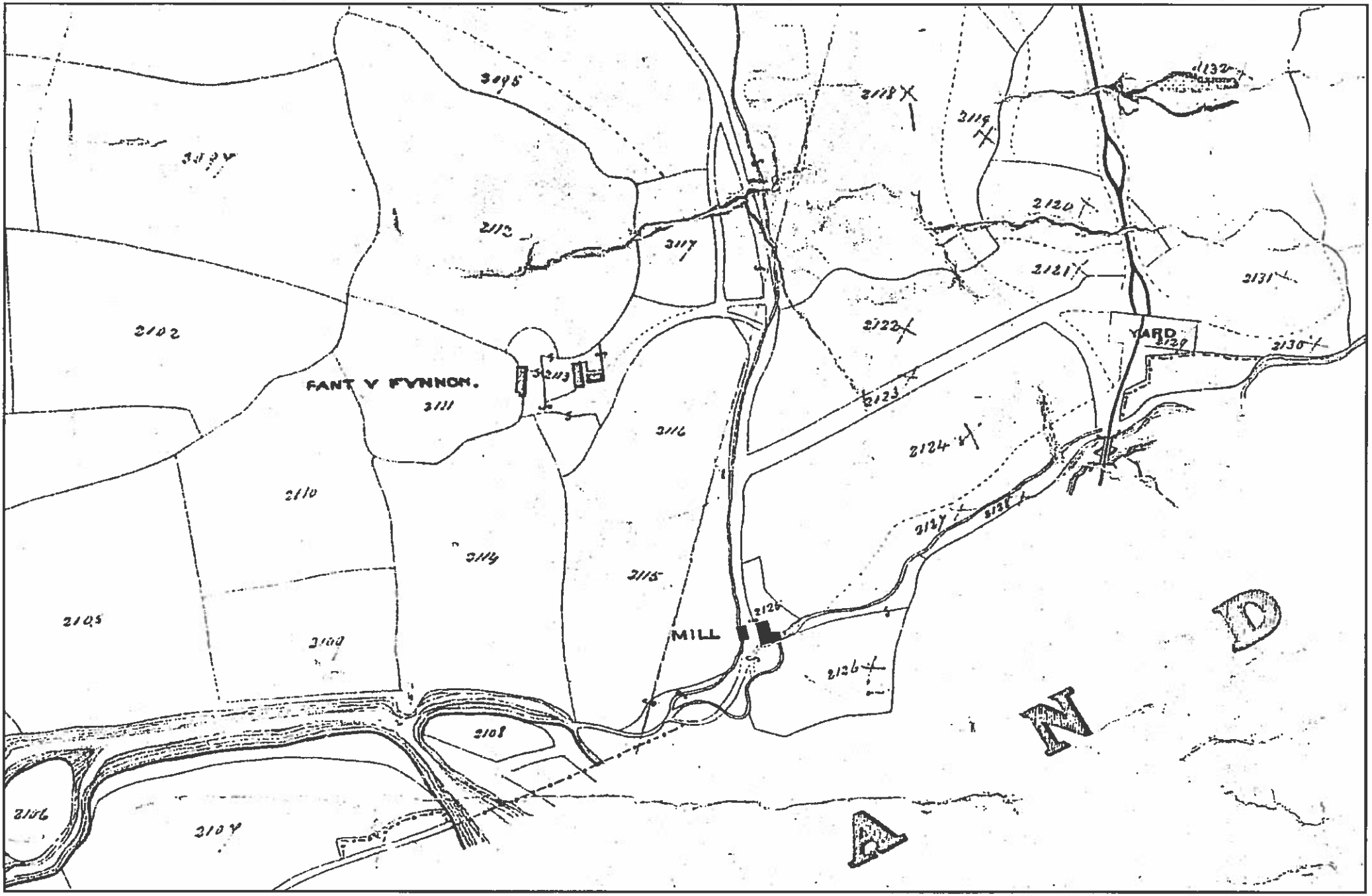

Fig. 4: Tithe map for Llanedi parish, 1841
(mill buildings shaded in black)

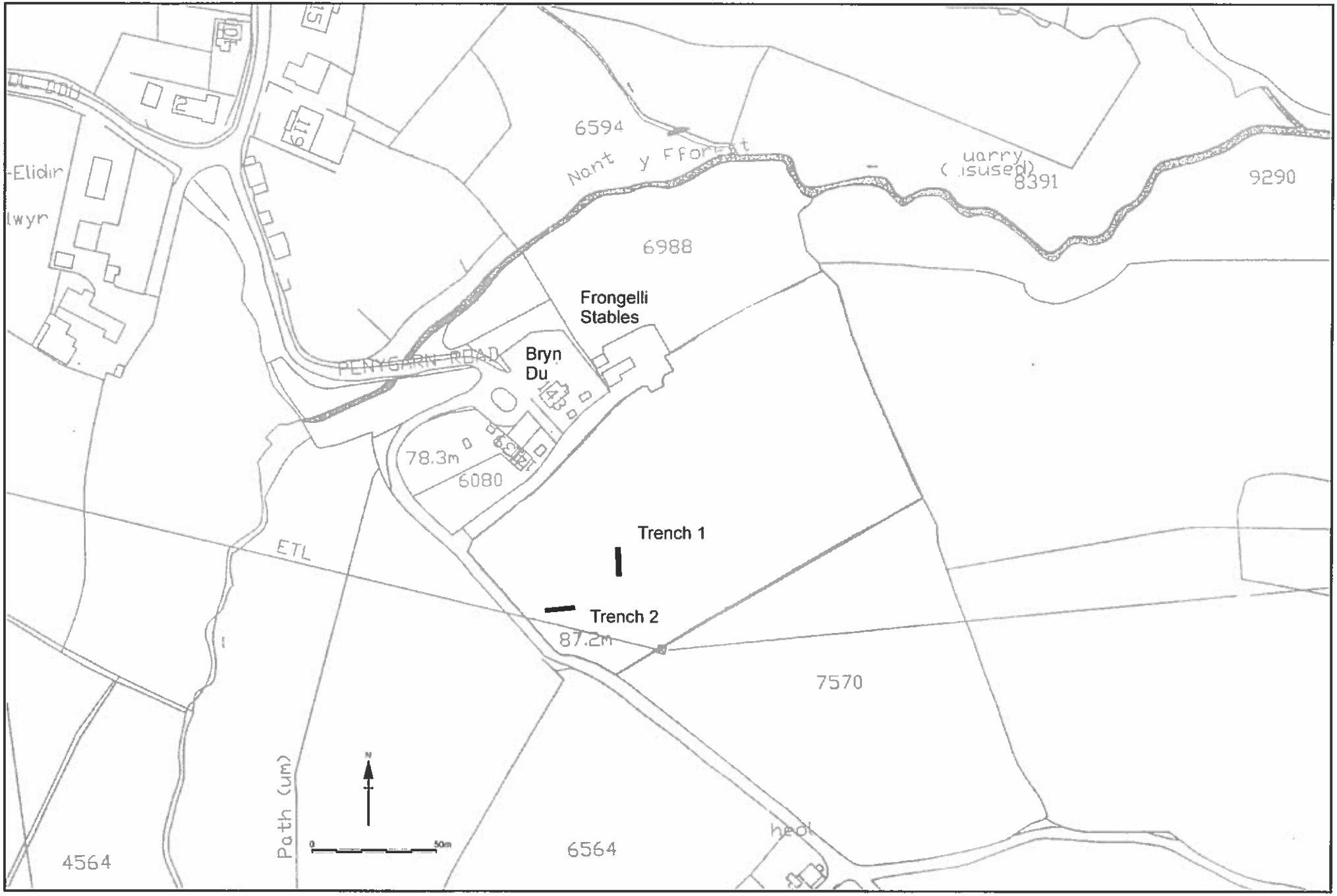

Fig. 5: Site 1, location of trenches
(based on plan provided by Babtie, 409549/03)

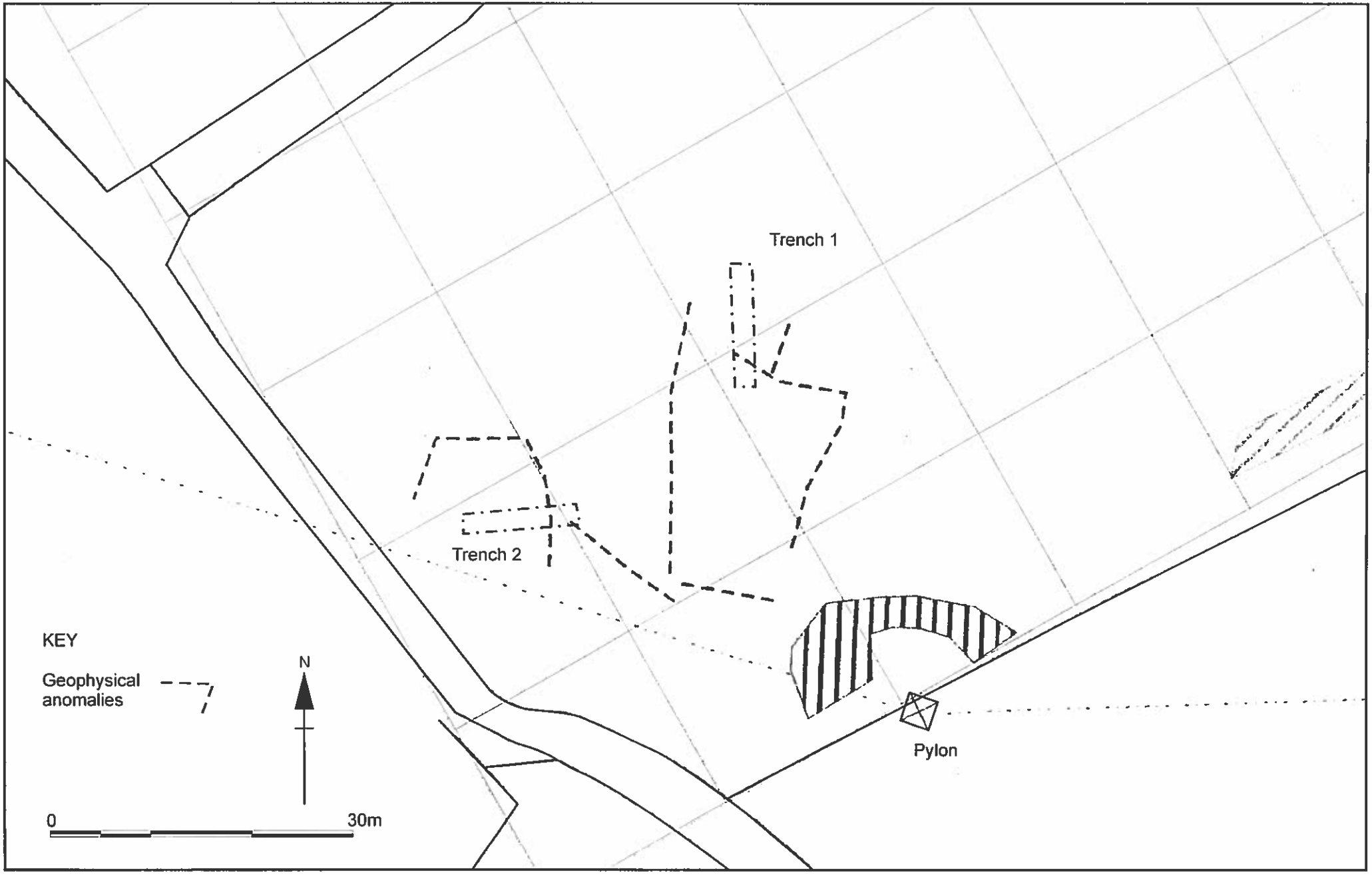

Fig.6: Trenches 1 and 2 in relation to geophysics plot

was up to 0.25m deep over a layer of brown silt with frequent angular mudstone fragments, containing rare pieces of charcoal [02]. This layer was rarely more than 0.2m thick and appeared to be a B horizon, which had probably occasionally been subjected to ploughing. The subsoil below this was essentially altered bedrock composed of fragments of mudstone in a brown silt matrix. There were also patches of orange silt, again containing mudstone fragments, which may be the result of periglacial action on the fragmented bedrock. At a depth of *c*0.8m below the soil surface relatively unaltered bedrock could be found, but this too was fragmented and friable.

When the deposits were reduced to the top of the subsoil various patches of brown and reddish silt could be seen. On investigation most of these proved to be small mammal burrows, root holes or other natural features. One, rather amorphous patch of reddish-brown gritty silt [09] proved on excavation to be within a regular circular cut [08] measuring 0.8m in diameter and 0.33m deep (Figs. 7, 8, 9). The sides were steep and curved into a fairly flat base. The top break of slope was very sharp suggesting that the feature had been truncated. The regular, even shape of this cut suggest that it may be a heavily truncated pit. The fill [09] contained pieces of charcoal up to 30mm in length and reddish silt and mudstone fragments which may have been burnt. However, there were no artefacts, and the burnt material might be intrusive as there were small mammal burrows within the fill.

Adjacent to cut [08] was another circular feature [10] with a very similar fill [11], but this was so severely truncated that it was only 0.1m in depth, and impossible to interpret with any confidence (Figs. 7 and 10).

When the trench was cleaned by hoeing a linear patch of brown silt could be seen running down the western side of the trench then turning in the middle of the trench, at an approximate right angle, to run across it (Figs. 7 and 11). During excavation the brown silt [05] was removed, but it merged with a loose stony deposit [06] below it. Context [06] was a brown clayey silt with *c*80% fragments of mudstone. This was loose and the looseness increased with depth, where there were voids between the stone fragments with very little matrix. Occasionally a larger piece of fine sandstone, up to 150mm in length, was encountered. These pieces usually sloped down, as if tipping into a cut. This deposit appeared to be the fill of a feature and an edge [07] was found on the southern side. However, there were problems in tracing this edge across the width of the trench and no convincing northern edge could be found.

After all the visible anomalies had been investigated the mechanical excavator was brought in the dig a large section through this area. This sondage was 1.4m deep and extended into the relatively unaltered bedrock. The inspection of the resulting sections showed that there was a fairly convincing edge along the southern side of this area, but no northern edge could be found. Although individual stones might slope at quite steep angles there was little in the way of consistent tip lines, as would be expected in ditch fill. The size, shape and position of the mudstone fragments in [06] was remarkably similar to that of fragments of severely altered but clearly *in situ* bedrock. It was concluded that the hollow in the bedrock [07] and the deposits filling it [06] were of natural origin. Whether this was due to chemical weathering of *in situ* bedrock, periglacial effects such as frost action and solifluction, or some other process was not firmly established, but it could be said with some confidence that the feature was not anthropogenic. It remained possible that the brown silt in the top of this area did fill a real cut feature. A section of the silt [05] was excavated to reveal a linear cut [12] with gently sloping

sides and a rounded southern terminal, but there was no clear evidence that this was anthropogenic and not an artefact of erosion in the top of the natural depression.

Whatever the origin of this feature is it is almost certainly the cause of the anomaly on the geophysical survey. The voided mudstone deposits would give a sufficiently different signal to the surrounding bedrock to be distinguished in the survey.

Charcoal was recovered from features [04], [08] and [10]. This was all identified as oak heartwood (see appendix II), except for some pieces of oak roundwood from the fill of [08]. Feature [08] is the most convincing of the possible anthropogenic features, and so the most suitable choice for dating. Roundwood, i.e. pieces of twigs or small branches only a few years old, gives a more accurate date than heartwood, potentially several hundred years older than the felling of the tree, so this part of the sample was sent to Beta Analytic, Florida, for radiocarbon dating. The results are awaited (see appendix III for results and discussion).

Trench 2

Trench 2 was aligned roughly along the slope, orientated approximately east to west, and located to investigate another geophysical anomaly (Figs. 5 and 6). It was stripped by machine down to the top of the subsoil and anomalous patches were investigated. As little of significance could be seen, the trench was stripped again into the subsoil in an attempt to recognise any ditches or other large features. The geophysics showed possible linear features in this area, but nothing, either anthropogenic or natural, could be seen to account for them.

Only one possible feature was identified in the western end of the trench (Figs. 12, 13, 14). This initially appeared to be a linear cut [04] 0.85m wide and 0.4m deep, with fairly steep well defined sides filled by a reddish brown silt containing stones and pieces of charcoal. When the trench was stripped the second time much of cut [04] was removed because its base sloped up towards the south, rather than continuing at an even depth. The feature could be recognised in the north facing section of the trench, which demonstrated that instead of running straight the feature curved sharply round to the south. Cut [04] could also be seen in the east facing section of the trench, where it was only 0.2m wide and resembled a periglacial ice-wedge. Full investigation of this feature showed it to be less regular than initially believed, indicating the probability that it is of a natural origin, possibly initially a periglacial feature with disturbance by tree roots or burrowing causing the introduction of the charcoal. However, the possibility that it is anthropogenic, though slight, does remain.

From the top soil in trench 1 were 2 pot sherds and one sherd from trench 2. All the sherds were North Devon ware dating from the 16th to 18th centuries (appendix I), and probably represent post-medieval manuring of the field.

Site 2

Trench 1

Trench 1 was located immediately to the north of the east-west field boundary, close to the ditch that defines the boundary (Fig. 15). The trench was aligned east-west, and its position placed it between the remains of the mill building and the field boundary. Earthworks in the field to the north were well preserved and clearly defined the mill race running south into a low, flat mound near where the mill had stood. Although not required by the Specification it

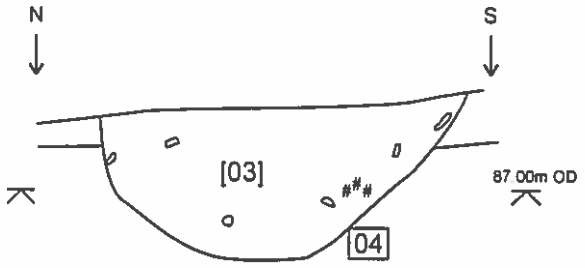

Fig. 12: West facing section through [04]

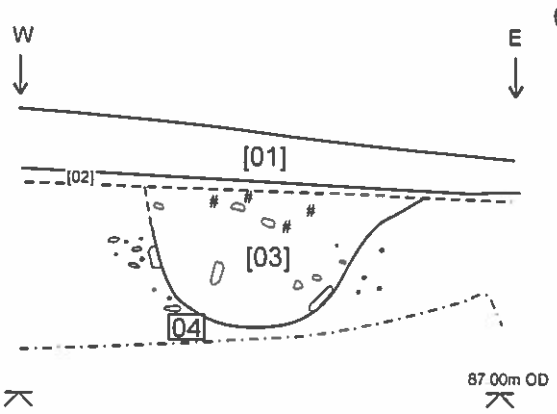

Fig. 13: North facing section through [04]

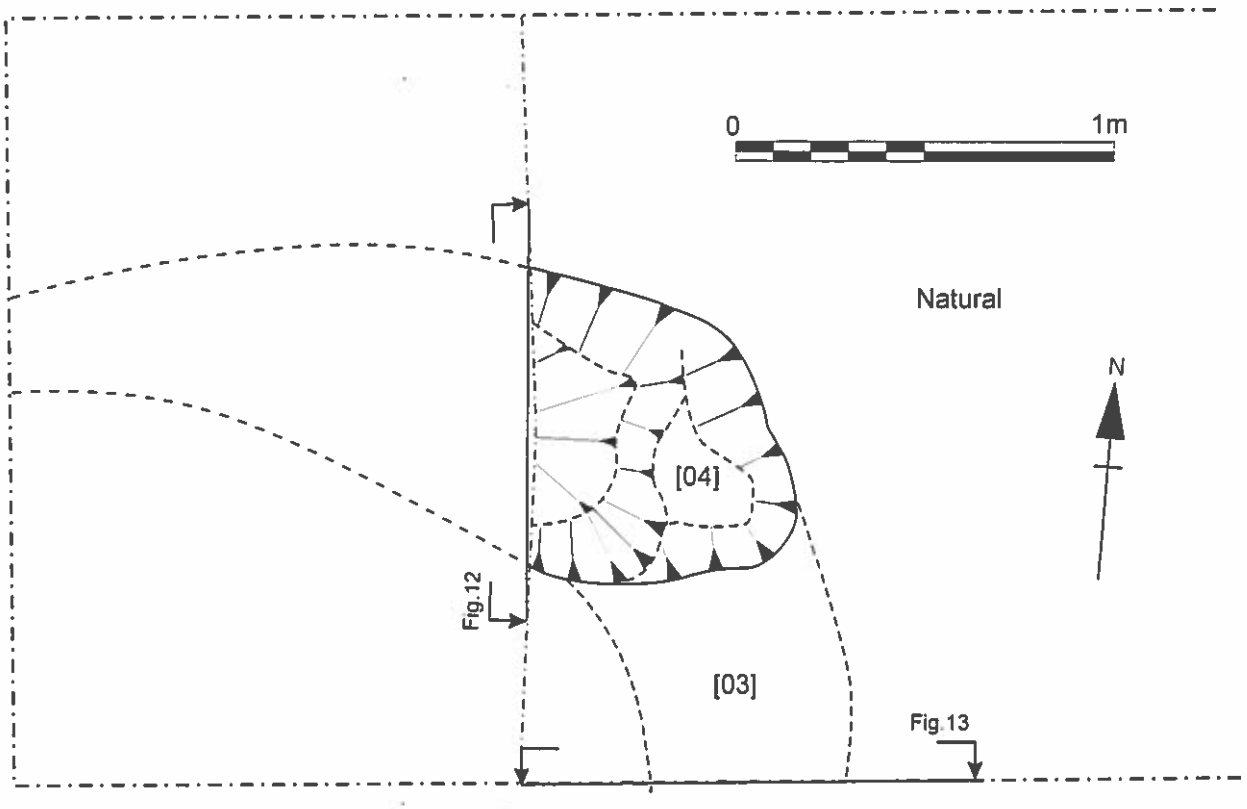

Fig. 14: Plan of western end of trench 2, site 1

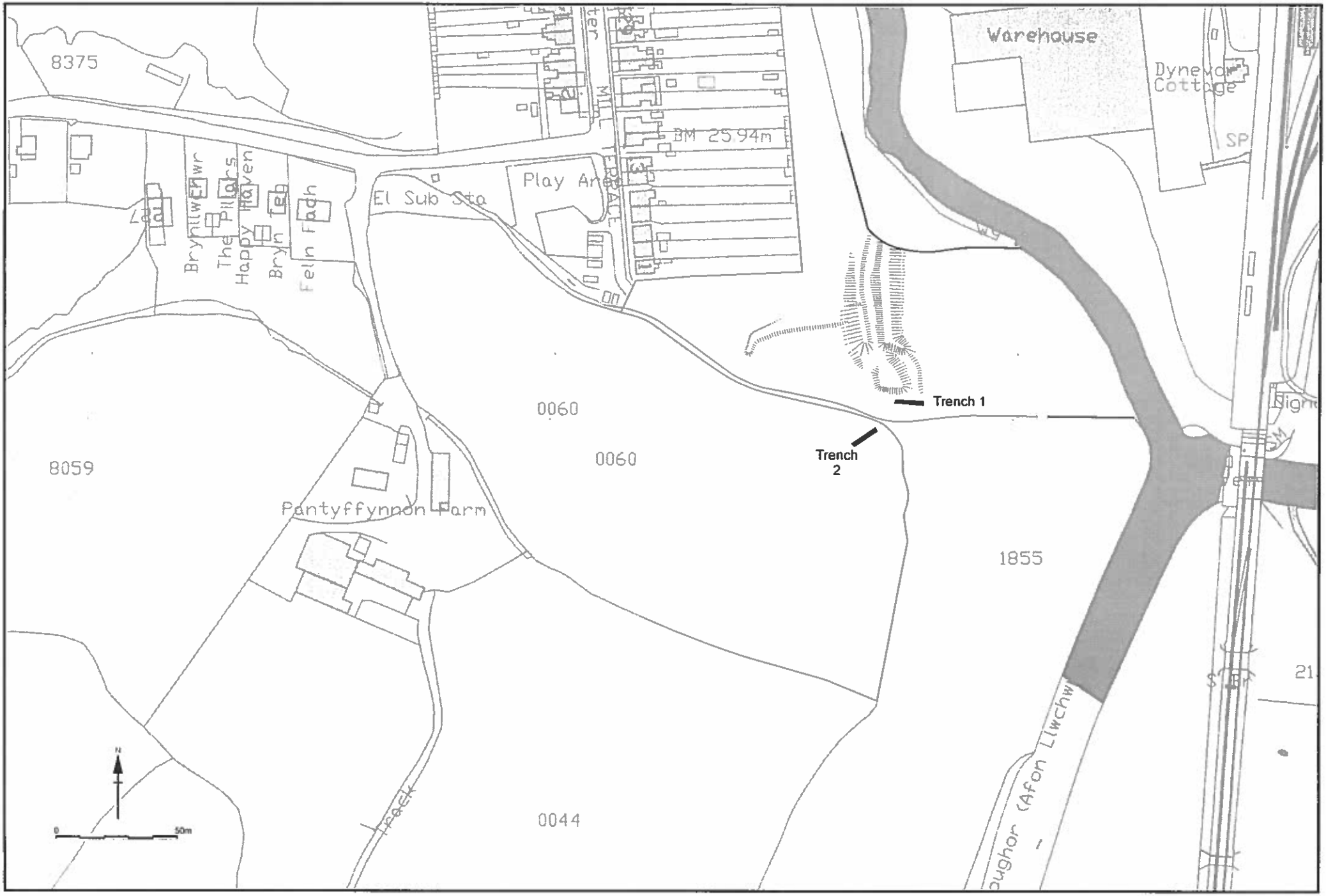

Fig. 15: Site 2, location of trenches

was considered important to the interpretation of the site to have a survey of the earthworks enabling features found in the trench to be related to the known mill structures. A rapid total station survey was carried out, which was converted into a hachured interpretative plan (Fig. 16).

Topsoil over the area of the trench was about 0.45m thick. Beneath this were various layers, which were clearly demonstrated to be modern by the artefacts within them. These layers were rapidly machined through, but recording the sections of the trench revealed the detail within these deposits (Figs. 17 to 19). Part of the eastern end of the trench was confused by a shallow hollow [13], which appeared only in the north facing section and contained within its fill [12] modern material such as polythene and a paint tin. This had truncated the top of a steep sided linear cut [16] running north-west to south east across the western end of the trench. This was filled with a deposit of reddish ash and cinders [15] over a brown silt containing lumps of mortar [09]. Fill [09] produced 2 pot sherds of 16th to 18th century date, and one dating from the late 18th century onwards. There was also a fragment of an air or fire brick (appendix I). The base of the cut exposed the capstones of a stone culvert [03] (discussed below). Cut [16] did not expose the full width of the capstones and there was no evidence of repair or alteration of the culvert, so it is assumed that the feature was cut merely to trace the line of the culvert. Cut [16] was proved to be a late feature as it cut a layer of grey-brown sandy silt containing *c*30% mortar fragments and *c*40% stones [02]. This layer was attributed to the demolition of the mill building in the 1950s, which would have caused building rubble to be spread around the area.

Beneath layer [02] was the buried mid twentieth century ground surface [17]. This was a dark grey-brown clayey silt containing occasional stones and lumps of coal. Along its surface was a very thin (30mm thick) layer of coal fragments [14]. For at least a short time before the mill was demolished the ground in this area was covered in coal; perhaps coal had been stored here or it was used to consolidate the surface.

The eastern end of the trench proved to cut through a hollow up to 1.3m deep [19]. The gently sloping sides of this hollow cut through the natural alluvium [10], which had originally covered the area. The alluvium produced one post-medieval pot sherd. The western side of the hollow could be seen clearly where it cut through the alluvium, the eastern side did not appear within the trench. The hollow [19] was filled by a dark grey clayey silt [18] containing up to 80% stones. The stones were mostly rounded and the largest (up to 300mm in length) were concentrated towards the base of the hollow. Sherds of 19th and 20th century pottery and tile were found throughout this deposit. The infilling of the hollow pre-dates the demolition of the mill as the ground surface [17] extended over fill [18], but the finds show that it occurred during the 20th century.

It appeared that most of the western half of the trench had originally been covered by a fairly thick layer of mid brown silt [04] containing up to 65% rounded cobbles. Context [04] contained 2 joining sherds of North Devon ware, dating from the 16th to 18th centuries (appendix I). Much of this deposit was cut away by [16]. Layer [04] appeared to be a mixture of alluvial silt and river cobbles. A river sorts material by particle size and would not deposit silt and stones at same time, suggesting that the deposit is anthropogenic. The most likely origin for [04] is that as cut [19] was being dug through the alluvium and into the river gravels below the resultant material was deposited over the area to the west of the channel. This dumping covered a massive stone culvert [03]. The culvert ran north-west to south-east

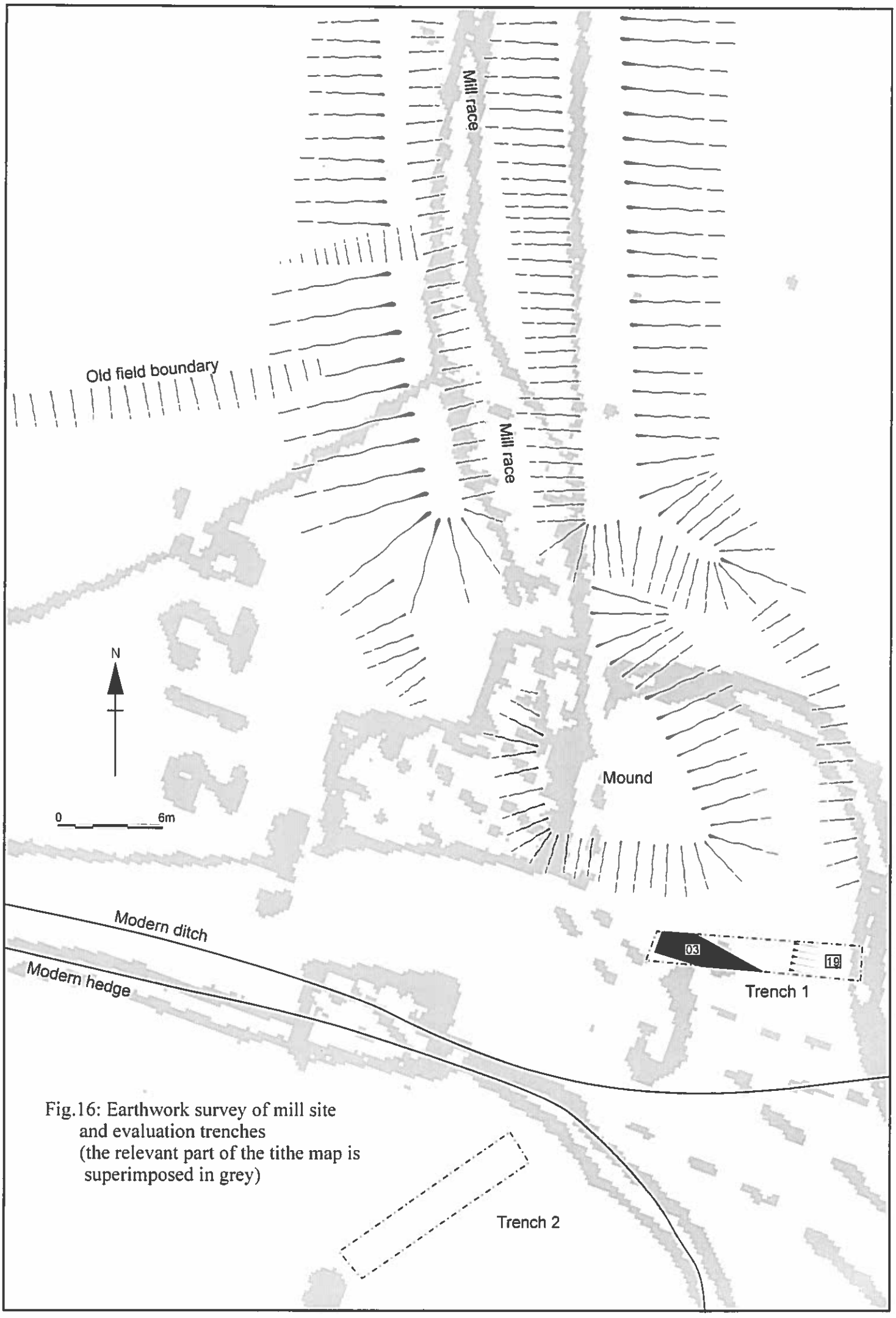

Fig.16: Earthwork survey of mill site and evaluation trenches (the relevant part of the tithe map is superimposed in grey)

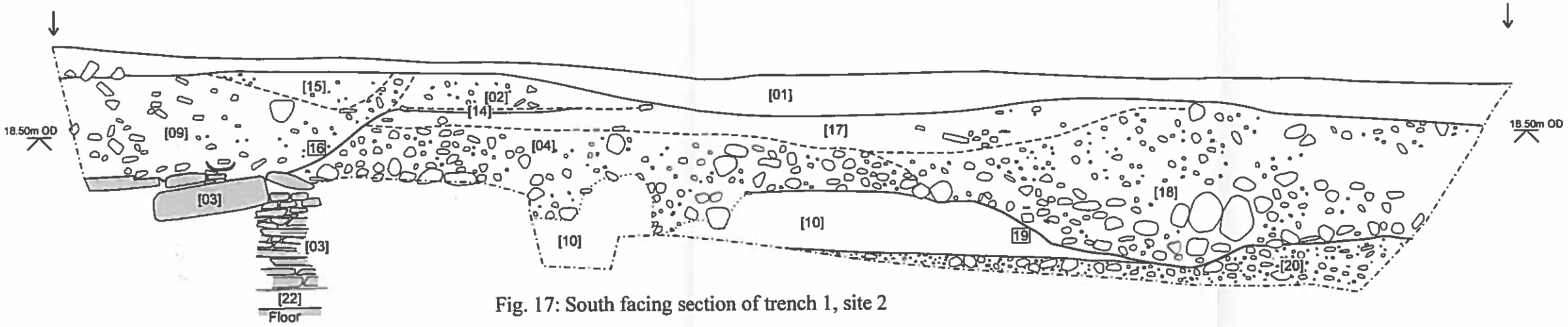

Fig. 17: South facing section of trench 1, site 2

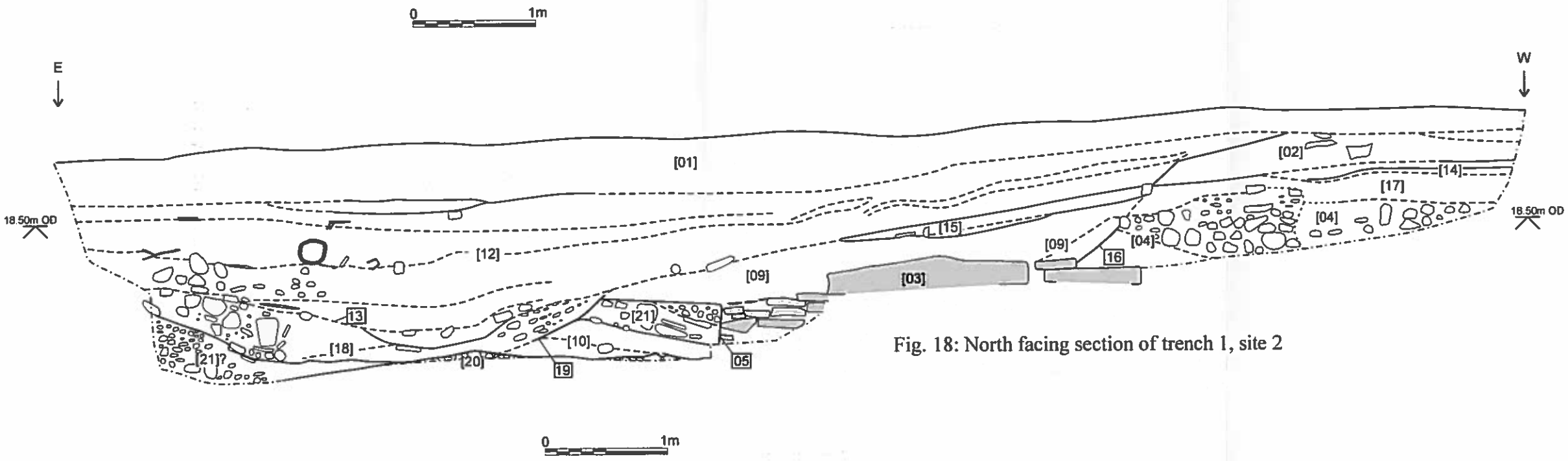

Fig. 18: North facing section of trench 1, site 2

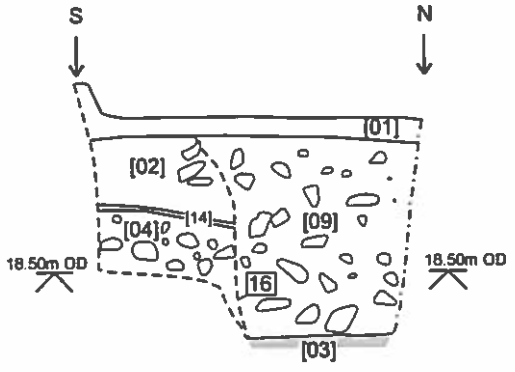

Fig. 19: East facing section of trench 1, site 2

Figs. 17 to 19

across the western end of the trench (Fig. 20). It was constructed of local sandstone, with small stones built into drystone sides and capped with huge slabs measuring up to 1.6m by 1.2m, and 0.23m thick. The structure was still in very good condition and most of the interior was empty, although a deposit of dark brown gritty silt [22] covered the bottom of the culvert. By peering through the gaps between the capstones it was possible to see up the culvert to the west, where, a couple of metres beyond the end of the trench, a capstone had collapsed in causing a partial blocking. A sherd of china, dating from the late 18th century onward (appendix I) was recovered from the clayey silt [11] forming the bonding matrix between the stones of the side wall of the culvert. This was presumably deposited as the culvert was constructed.

The cut [05] into which the culvert had been constructed was very difficult to recognise. It must have cut through the alluvium [10], a yellow brown fine, slightly clayey silt, but the sides were built against the edge of the cut and seem to have been partially embedded in the soft alluvium. The relationship of the culvert to layer [04] was not clear, but in places [04] overlapped considerably on top of the capstones, where not removed by [16], suggesting that it did cover the culvert. The latter, therefore, probably stood slightly proud of the contemporary ground surface, with the capstones exposed, allowing access to the culvert for repair and maintenance.

At some time the river had meandered over this area as beneath the alluvium was a deposit of river gravels [20]. These were orange-brown clayey gravels containing rounded stones up to 200mm in length.

Trench 2
The Specification placed trench 2 in the north-eastern corner of the field to the south of the mill site (Fig. 15). Here the topsoil [06] was 0.3 to 0.4m deep covering an old cultivation soil or B horizon [07], which was a light yellow-brown gritty clayey silt with frequent gravel, especially at the south-western end of the trench. Layer [07] was 0.1m deep at the north-eastern end, increasing to 0.35m deep at the south-western end. The natural subsoil [08] was a medium gravel composed of fine ochreous sandstone and hard rounded cobbles in a fine sandy silt, varying in colour from grey to yellow and orange. This appeared to be a late glacial gravel.

No archaeological features were found in this trench, and the only artefact was a single post-medieval pot sherd from the topsoil.

7 Discussion

Site 1

The results from this site were inconclusive. Cut [08] would be perfectly acceptable as a pit on a site with other archaeological activity, and is not easily explained as a natural feature. Other cuts such as [04], [10] and [12] could, possibly, be anthropogenic. Apart from post-medieval pottery from the topsoil no artefacts were recovered, but if the site were of a late prehistoric date then very few artefacts would be expected. The anomalies detected by the geophysical survey were natural, but there may have been some low level human activity on this site.

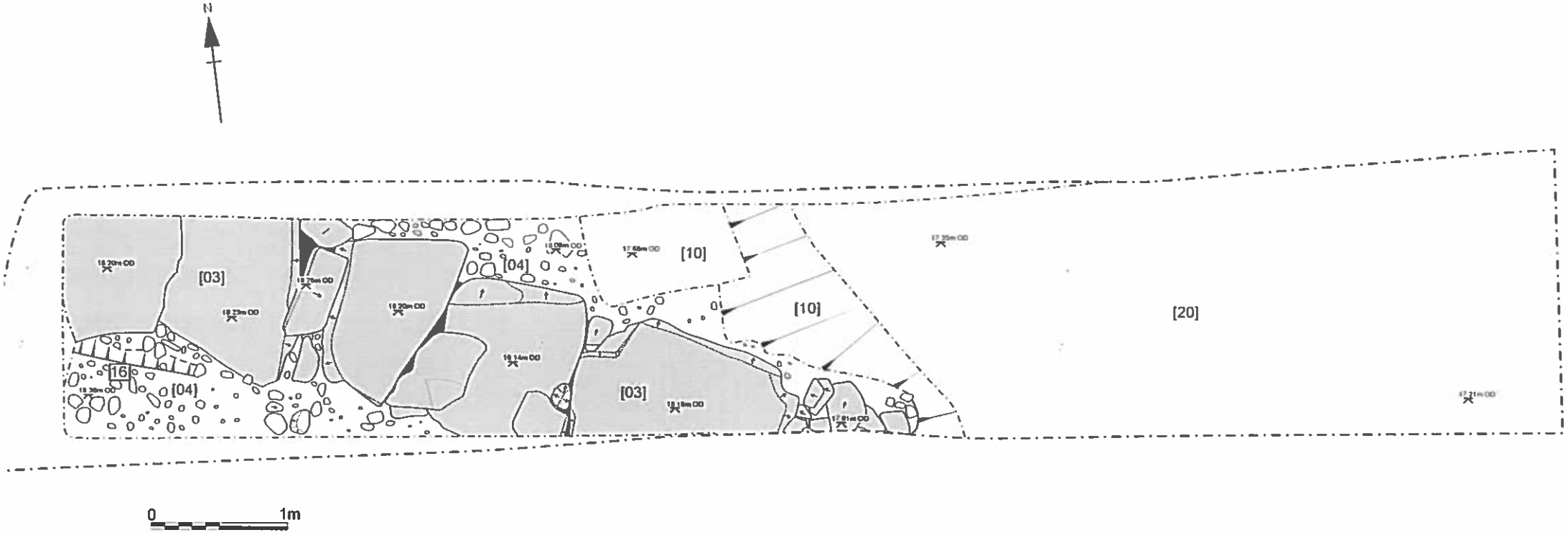

Fig. 20: Plan of trench 1, site 2

Site 2

The massive size of the culvert [03] indicates that it was not merely a field drain, and it is almost certainly related to the mill. Its position (see Fig. 16) would suggest that it is the exit from the wheel pit, carrying the water away after it has been used to power the wheel. In the surviving earthworks there is a mound initially interpreted as the platform on which the mill was built. However, comparison of the tithe map and the earthwork survey (Fig. 16) shows that the mill is located in the hollow to the west of this mound. The mill race, as seen in the earthworks, appears to run into the eastern side of the mill. The culvert [03] is aligned on the south-eastern corner of the mill, suggesting that the wheel was on the eastern side of the mill building. The earthworks show the mill race was at a fairly low level in relation to the mill, so the wheel must have been undershot, rather than overshot.

The linear hollow [19] in the eastern part of the trench is probably also a feature related to the mill, however, if the interpretation of layer [04] is correct, the hollow was dug after the culvert was built. The tithe map and 1st edition OS map show a channel leading south-east from the mill to the river, presumably carrying excess water not diverted into the wheel pit. A very shallow linear hollow can just be detected on the ground surface leading from the junction between the mill race and the mill platform away to the south-east. This hollow is probably the same as feature [19] and its position is very similar to that of the channel shown on the tithe map (Fig. 16). This interpretation is not conclusive as the sides of the hollow seem too gradual for a deliberately excavated water channel, and there were no traces of silting in the base of the channel. The latter may be explained by the force of the water preventing much silt deposition, and the mixing of any existing silt with the deposits that were backfilled into the hollow [18]. To provide a more definitive interpretation of the features a larger area of the site would have to be excavated.

No artefacts earlier than the 16th century were recovered; even a sherd from the alluvium is dated to the period of the 16th to 18th centuries. The linear cut [16] is presumably a twentieth century feature, as argued above, and the post-medieval pottery from its fill must be residual. The deposit [04] covering the culvert contained pottery from the 16th to 18th centuries, but a sherd from between the stones of the culvert sided dated to the late 18th century onwards. This latter sherd can be taken as suggesting a date for the construction of the culvert, and presumably the mill itself, of at earliest the late 18th century.

8 Conclusions

At site 1 the geophysical anomalies were demonstrated to be natural features. Despite the absence of stratified artefacts feature [08] at least may be evidence of human activity on the site. The radiocarbon date should help clarify whether this feature is anthropogenic and at what date it was created.

On site 2 the evaluation trenches were not positioned to investigate the mill building itself, but it was possible to investigate features related to water management, an objective defined by the Specification. Dating evidence was slight, but sufficient to confirm the post-medieval date of the main mill building; probably constructed in the late 18th century. No traces were found of an earlier, possibly medieval mill on the site.

The evaluation trenches failed to locate the second, smaller building shown on the Tithe map. Any surviving remains of this are probably hidden under the present hedge, or partially destroyed by the modern drainage ditch. A local resident reported having seen masonry in the side of the ditch in winter. It is possible that this structure was an earlier mill, as the tithe map shows it located on a stream roughly following the line of the present ditch. A thorough search for the remains of this structure may represent the best chance of locating medieval activity on this site.

No evidence was found to establish the function of the mill, which would be best established by further documentary research. Although the earthwork survey revealed the basic layout of the mill complex, a plan of the mill building and adjacent channels can only be achieved by stripping a much larger area of the site. The deposits in trench 1 demonstrate that on the abandonment and demolition of the mill hollows were filled in, rather than upstanding areas being reduced. This and the clarity of the earthworks suggests that, although the superstructure of the mill building has been removed its foundations are likely to be well preserved. The mill race also seems to be undisturbed and the existence of the culvert implies the other low level stone structures, such as the base of the wheel pit are likely to survive.

9 Sources

Maps

Tithe map for Llanedy parish, 1841

OS first and second edition 6" map, Camarthenshire sheet XLVIII.SE, 1891 and 1905

Unpublished sources

Babtie Group, 2002, Ammanford Distributor Road. Archaeological evaluation works: specification for sample excavation.

Brooks, IP and Laws, K, 2002, Bryn-du Farm, Geophysical Survey, Engineering Archaeological Services Ltd. Client Report 2002/24

10 The archive

The archive is currently held by Marches Archaeology awaiting transfer to an appropriate museum.

The archive for site 1 consists of:

1	context index sheet		
13	context recording sheets		
1	index of drawings		
1	sheet site notes		
10	field drawings on 2 sheets		
1	sheet of levels for plans and sections		
1	film of black and white photographic negatives		
1	film of colour photographic transparencies		
1	boxes of finds:		
	Trench 1		
	Unstratified	post-medieval	2 pot sherds
	Trench 2		
	Unstratified	post-medieval	1 pot sherd
3	charcoal samples sent for radiocarbon dating		

The Marches Archaeology site code is ADR02B

The archive for site 2 consists of:

1	context index sheet		
22	context recording sheets		
1	index of drawings		
2	sheets site notes		
4	field drawings on 2 sheets		
1	film of black and white photographic negatives		
1	film of colour photographic transparencies		
1	boxes of finds:		
	Trench 1		
	Unstratified	post-medieval	1 pot sherd
	context 04	post-medieval	2 pot sherds, glass sherd
	context 09	post-medieval	3 pot sherds, 1 frag. flue brick
	context 10	post-medieval	1 pot sherd
	context 11	post-medieval	1 pot sherd
	Trench 2		
	Unstratified	post-medieval	1 pot sherd

The Marches Archaeology site code is ADR02A

APPENDIX I

Report on the pottery
by Catherine Freeman

Pottery from the Ammanford Distributor Road Evaluation

Most of these sherds are of standard North Devon wares, dating from the 16th to 18th centuries, common throughout South Wales. There is no medieval or earlier pottery.

Site 1 (ADR02B)

Tr 4 U/S	North Devon gravel-tempered pancheon rim, heavily abraded and with broken surfaces. There is a horizontal groove in the top of the rim and remains of glaze internally. Diameter approximately 45cm. 16th-18th century.
Tr 3 U/S	1 b/sh North Devon gravel-tempered ware, internally glazed. 1 base sherd North Devon gravel-free ware, internally glazed.

Site 2 (ADR02A)

Tr 1 U/S	Fragments of North Devon gravel-free ware with internal glaze. The exterior surface is broken off.
Context 04	2 joining body-sherds of a North Devon gravel-tempered pancheon with internal glaze.
Context 09	1 fragment of brick fabric with shallow walls (4.2cm high) forming small compartments approx 2cm square, each having 5 holes pierced through to the exterior flat surface, which is smooth and sooted. This is possibly part of an air or fire brick, although it may have been used in some industrial process associated with the watermill. 1 rim and handle of North Devon gravel-free slipware jug. Diameter 9cm. The slip is applied to the exterior and upper part of the handle only, extending over the top of the interior; glaze covers both surfaces. 17th-18th century. 1 body sherd of internally glazed redware, possibly Somerset, 16th-18th century. 1 body sherd china, late 18th onwards.
Context 10	1 body sherd North Devon gravel-tempered ware, interior surface missing, with splash of glaze on the exterior.
Context 11	1 body sherd china, late 18th onwards.
Tr 2 U/S	1 body sherd of North Devon gravel-tempered ware with internal glaze.

APPENDIX III

Archaeological Evaluation on the Line of the Ammanford Distributor Road Site 1 (ADR02B)

Note on a radiocarbon date on the charcoal sample from pit [08]

Feature [08] was a regular circular cut, measuring 0.8m in diameter and 0.33m deep, with a fill of reddish-brown gritty silt [09]. The sides were steep and curved into a fairly flat base. The top break of slope was very sharp suggesting that the feature had been truncated. The regular, even shape of this cut suggests that it may be a heavily truncated pit. The fill [09] contained pieces of charcoal up to 30mm in length and reddish silt and mudstone fragments, which may have been burnt. However, there were no artefacts.

The charcoal recovered from feature [08] was identified as oak heartwood with some pieces of oak roundwood. The latter, i.e. pieces of twigs or small branches only a few years old, gives a more accurate date than heartwood, potentially several hundred years older than the felling of the tree, so this part of the sample was sent to Beta Analytic, Florida, for radiocarbon dating.

The results were received on 18th November 2002, and were as follows:

Lab. No.: Beta-172052
Conventional radiocarbon age: 5510+/-40 BP
2 sigma calibrated results: **Cal BC 4440 to 4320** (Cal BP 6390 to 6270)
(95% probability)

Discussion

This date falls at the transition between the Mesolithic and Neolithic periods. Questions about the nature, exact date and causes of this transition, when farming practices were first adopted and significant cultural changes occurred, have resulted in extensive discussion and the publication of large numbers of books and papers. One of the main reasons for the prolonged argument is that very few sites dating to the transitional period itself have been found. Any new information from this period has the potential to contribute significantly to its understanding.

Most excavated Mesolithic sites are flint scatters, which are usually associated with shelters of a fairly temporary nature. These are occasionally associated with small pits. Pits of various sizes and functions are common on Neolithic sites, so the date would be consistent with the interpretation of the feature as a man-made pit. As there were no artefacts recovered from the feature it is not possible to assign it to either cultural tradition.

With radiocarbon dating it is always important to consider the origin of the dated charcoal sample. It is feasible that the charcoal in fill [09] was introduced from above by animal

burrowing, but the evidence is weighted against this interpretation. The dated pieces were small, fragile twigs, which would soon be broken up by any disturbance. The other charcoal from this context included large pieces, again unlikely to survive as such if the deposit had been extensively disturbed. Also there were numerous flecks of red heat-altered silt and mudstone distributed evenly throughout the deposit. This suggests that the burnt material was an integral part of the matrix, rather than introduced in odd patches by burrowing.

It seems probable that the remains of a fire, the charcoal and some of the burnt earth from beneath it, were scraped up and dumped in the pit. The radiocarbon date places this activity in the third quarter of the 5th millennium BC.

Feature [10] appeared to be the very truncated remains of a similar pit, and feature [04] could have been a contemporary man-made feature later confused by animal burrowing. However, with only one convincing man-made feature and no artefacts it is difficult to determine the nature of the site. It could be the remains of a single fire buried after a hunting trip, or the dated feature may be an outlier to a more extensive site, possibly representing a settlement. The topography of the field suggests that any occupation, even of a temporary nature, is likely to be located on the level plateau near the pylon at the southern edge of the field. The presence of the pylon made this area unsuitable for geophysical survey, and no evaluation trenches were dug here, so its archaeological potential is completely unknown.

Summary

The radiocarbon date places this feature within the third quarter of the 5th millennium BC during the transition from the Mesolithic period to the Neolithic. Sites of this period are rare and any potential finds would be of the greatest importance for both Welsh and British archaeology.

CONTENTS

Bryn-du, Geophysical Survey - Introduction:

NGR

Centred on SN 60684 09787

Location and Topography

The site lies to the south of a farm shown as "Bryn-du" on the Ordnance Survey maps, and named Frongelli Stables on the ground. The stables are to the south of Tycroes, Carmarthenshire, off Penygarn Road. The south western edge of the survey area is bounded by Penygarn Road, the north-western by the access road to Frongelli Stables and the stable complex itself. The other two boundaries are with agricultural land. The plot is shown as field 7079 on the Ordnance Survey maps. The size of the field proved to be slightly reduced as some of the stable buildings have been built along the north eastern edge of the survey area and the field had been subdivided with a post and rail fence.

The field sloped gently from a narrow plateau to the north west and to the east. The south west corner of the survey area was under electric power cables, indeed one of the pylons impinged on the southern edge of the survey area. At the time of survey the field was under pasture with horses within the field.

Archaeological Background

Carmarthenshire County Council are in the process of planning the new Ammanford Distributor Road, for which the Babtie Group have been appointed to design and manage the programme of archaeological evaluations.

The farm was shown as 'Pen-y-garn' on the AD 1891 Ordnance Survey map suggesting, on place name evidence alone, the possible existence of a round barrow. Aerial photography (CPE/UK/2079) suggested the presence of crop marks within the survey area which may indicate the presence of an earlier field system. (Babtie 2002, 4)

Aims of Survey

To gather sufficient information to establish the location and extent of any archaeological features within the development area and, if possible, to characterise the archaeology located.

SUMMARY OF RESULTS

No indisputable anomalies of archaeological origin were located. There are, however a few feint anomalies within the south western section of the survey area which represent archaeological activity.

Areas of modern disturbance were restricted to the immediate vicinity of large metal structures such as the electricity pylon and the stable buildings.

One broad anomaly along the southern boundary of the survey area is assumed to relate to a cattle trough also on this boundary.

Bryn-du, Geophysical Survey - Conclusions:

Magnetic Susceptibility

It was possible to take soil samples in order to assess the magnetic susceptibility of the soils. It was not possible, however, to obtain a subsoil sample for comparison. The presence of horses within the field confined the samples to those places where samples could be obtained without digging holes. All samples were surface scrapes where the field surface had already been disturbed by the horses.

Sample	Volume susceptibility χ_v	Mass susceptibility χ_m
Grid 4	27	36.5
Grid 6	20	26.3
Grid 11	27	37.0
Grid 13	29	47.5
Grid 15	34	35.4
Grid 17	32	50.8
Grid 19	23	24.0
Grid 21	10	16.7
Grid 24	15	20.3
Grid 26	11	16.4
Grid 28	23	31.9
Grid 32	17	22.7
Grid 34	16	22.9
Grid 37	18	24.0

The susceptibilities as measured are consistent and moderately low suggesting that conditions were not ideal for magnetic survey.

Conclusions

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

The magnetic susceptibility samples would suggest that the conditions were not ideal for magnetic survey. Indeed no unequivocal anomalies of archaeological origins were located. A group of possible anomalies were located in the south western corner of the survey area, but these were feint and not very clear. They did, however occupy a slight plateau within the field where any archaeological features may be expected.

One broad anomaly along the southern edge of the survey area is assumed to relate to a modern cattle trough.

References

Babtie 2002 Ammanford Distributor Road. Archaeological evaluation works: specification for geophysical survey.

Bryn-du, Geophysical Survey -Technical Information:

Techniques of Geophysical Survey:

Magnetometry:

This relies on variations in soil magnetic susceptibility and magnetic remenance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

Resistivity:

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

Resistance Tomography

Builds up a vertical profile or pseudosection through deposits by taking resistivity readings along a transect using a range of different probe spacings

Magnetic Susceptibility:

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

Instrumentation:

1. Fluxgate Gradiometer - Geoscan FM36

2. Resistance Meter - Geoscan RM4/DL10

3. Magnetic Susceptibility Meter - Bartington MS2

4. Geopulse Imager 25 - Campus

Methodology:

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals along traverses 1m apart. Resistance meter readings are logged at 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

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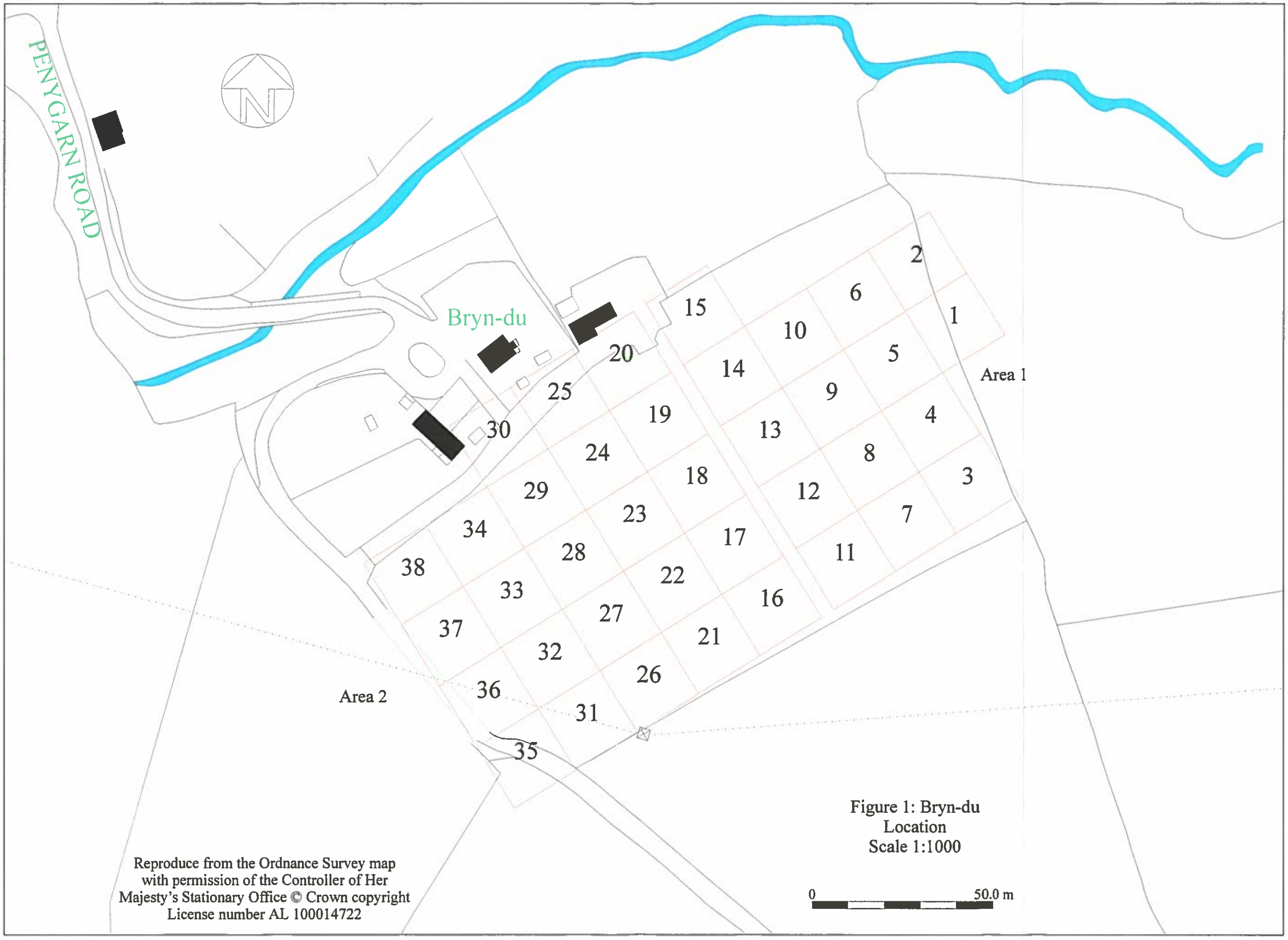

Figure 1: Bryn-du
Location
Scale 1:1000

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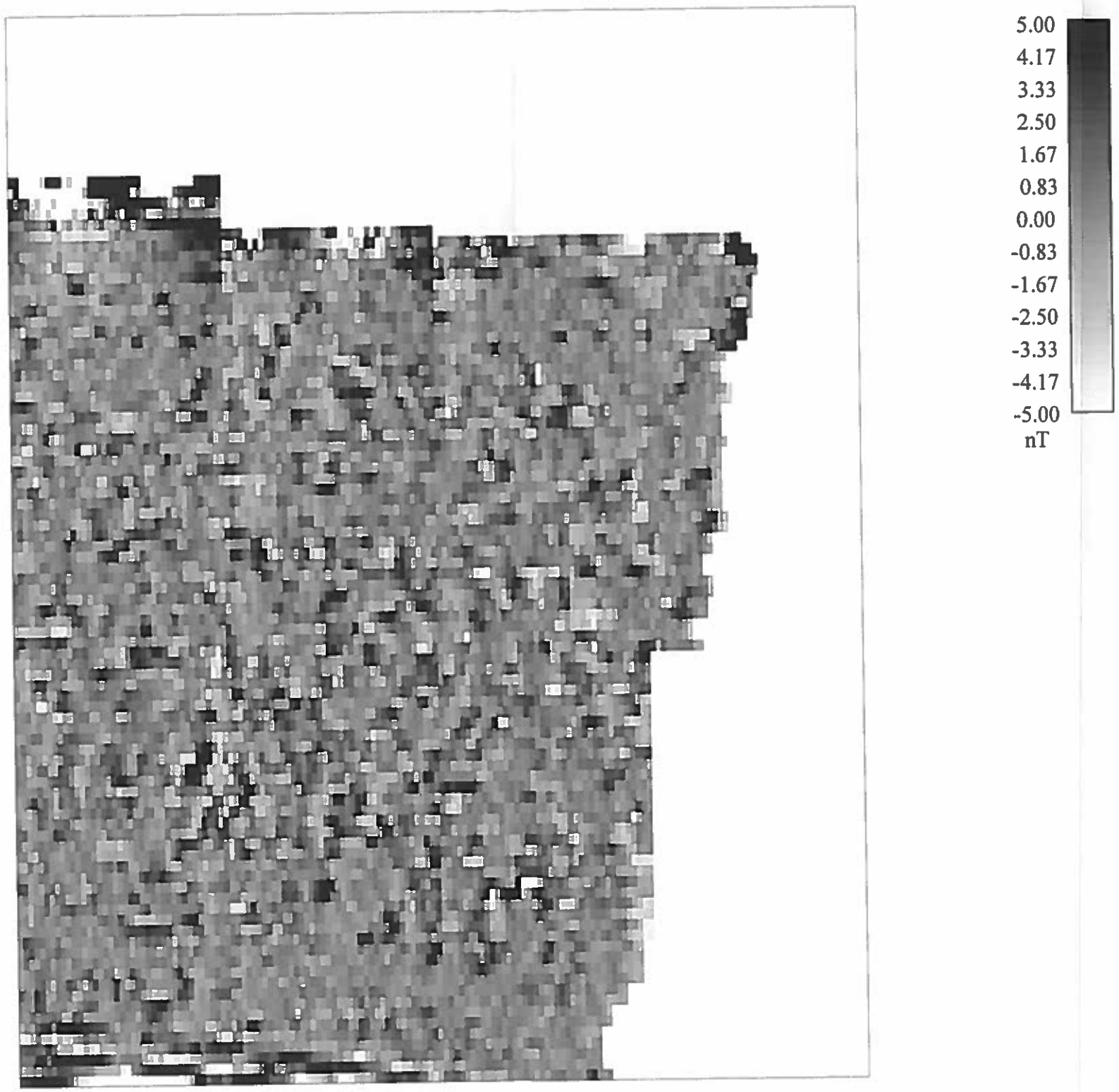

Figure 2: Bryn-du
Area 1, Grey Scale Plot
Scale 1:500

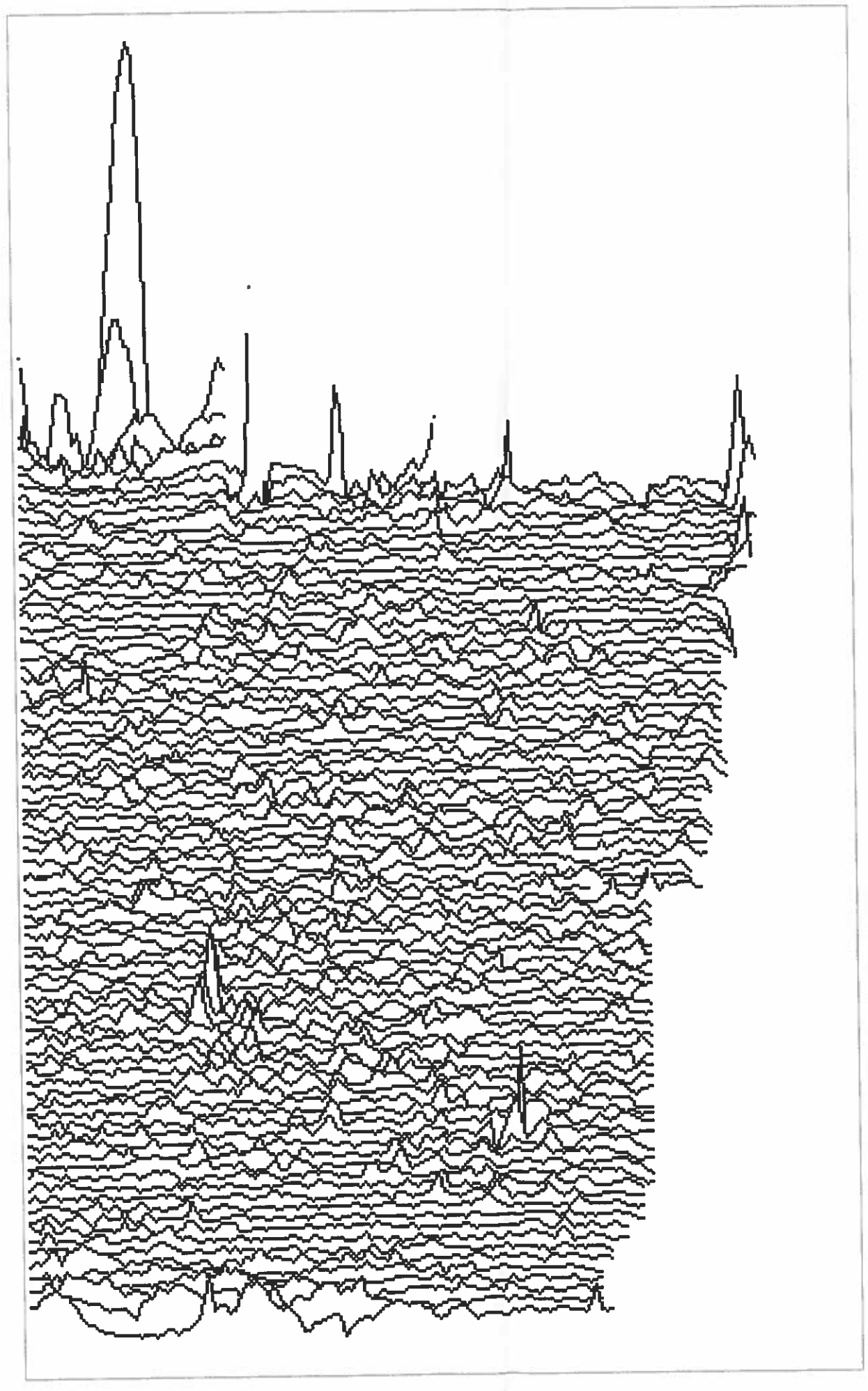

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Figure 3: Bryn-du
Area 1, X - Y Plot
Scale 1:500

Figure 4: Bryn-du
Area 2, Grey Scale Plot
Scale 1:500

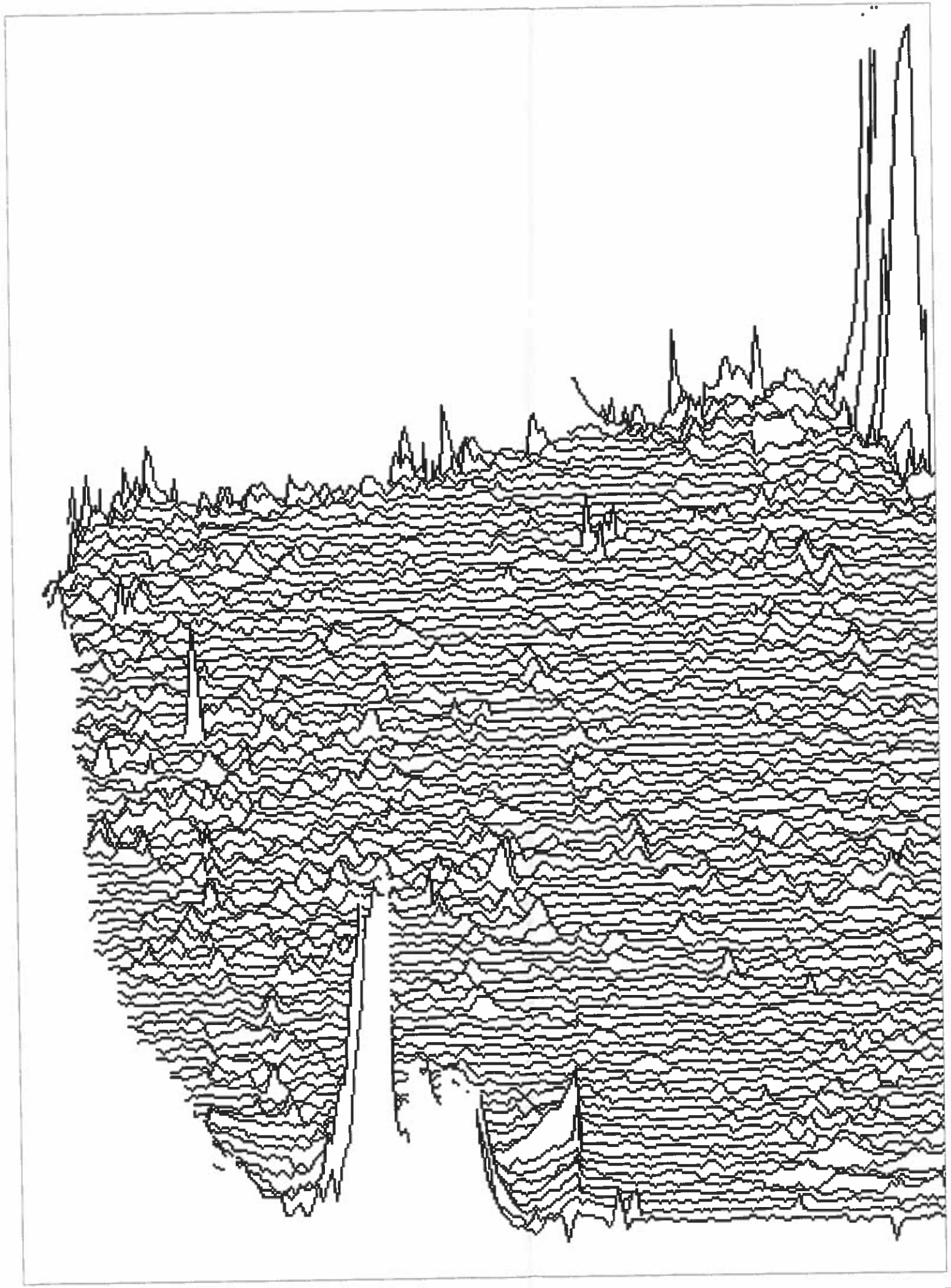

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Figure 5: Bryn-du
Area 2, X - Y Plot
Scale 1:500

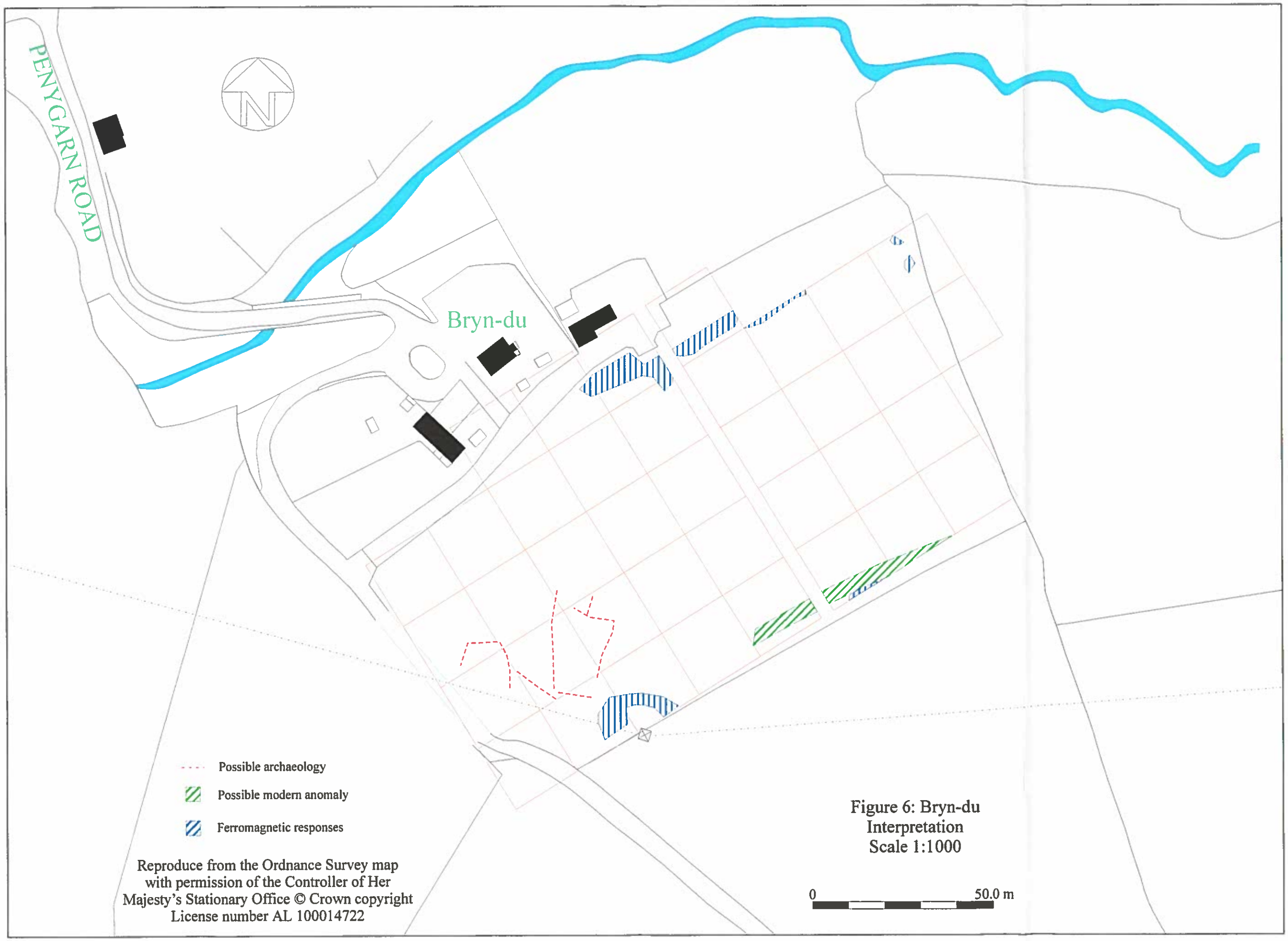

Figure 6: Bryn-du
Interpretation
Scale 1:1000