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Engineering Archaeological Services Ltd.

**Pandy Mill/Aberneint Complex
Standing Building Recording**

I.P. Brooks

EAS Client report 2023/08

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Standing Building Recording

Survey Commissioned
by
Grwp y Aran

Surveyed
by
I.P. Brooks

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registered in England

No 2869678

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Introduction

NGR:

Aberneint Factory: SH 72995 17117

Eastern Building of “Pandy”: SH 73023 17064

Western Building of “Pandy”: SH 73014 17064

Idris Factory: SH 73066 17030

Building on the 1888 Ordnance Survey Mapping: SH 72992 17045

Possible Dam: SH 72951 17029

Status: PRN 36715, 36713, 36714

NPRN 40937, 40919

Location and Topography: (Figures 1 and 2)

The complex of ruined mill buildings occupies a bend of the Afon Aran where the Nant y Ceunant joins the main river, approximately 700 m south of the centre of Dolgellau. Three main buildings were recorded together with a dam crossing the river. In the north of the complex is the remains of Aberneint Factory and its associated dam; and to the east of the junction with the Nant y Ceunant are the remains of two building, simply labelled “Pandy” on historic mapping, one of which has a wheel pit. All of the buildings are within mature woodland.

The remains of two other buildings were also photographed, but not surveyed. The remains of the Idris Factory are approximately 50 m north east of the “Pandy” within private grounds that were not accessible at the time of the survey. They sit within a large area that has clearly been flattened and built up with modern dumping. Approximately 30 m to the south east is the remains of a structure shown on the First Edition Ordnance Survey map published in 1888. This is adjacent to South Street on the western bank of the Nant y Ceunant on a small flat platform in the steeply sided valley. Further up the Nant y Ceunant (approximately 45 m) is the possible remains of a dam.

Aims of the Survey

To record and interpret the remaining buildings.

SUMMARY

Grwp yr Aran commissioned Engineering Archaeological Services Ltd to provide training and technical support to record the remains of the Pandy Mill/Aberneint complex of buildings with the fieldwork taking place between 6th and 7th July 2023. Aberneint Factory clearly developed over time, but in its final phase included a dam across the Afon Aran, stone cut leat, building and a wheel pit for a breast shot wheel. There is also evidence for a later building having built on the platform.

At Pandy, two buildings were recorded, a building with a wide doorway, set away from the river and the remains of the main mill building with its wheel pit. The rest of the main mill building has been buried in the make-up for the plot associated with the Idris Factory site.

Only photographs taken from outside the plot of the Idris Factory were possible, but these show a stone built building that was heightened using brick. There was also a rock cut leat leading to this building.

Fragmentary remains of a building shown on the 1888 Ordnance Survey map were also photographed adjacent to South Street on the banks of the Nant y Ceunant. It is possible that this building was associated with a possible boulder dam approximately 45 m further up the stream.

Comisiynwyd Engineering Archaeological Services Ltd gan Grwp yr Aran i ddarparu hyfforddiant a chymorth technegol i gofnodi gweddillion adeiladau Melin y Pandy/Aberneint gyda'r gwaith maes yn digwydd rhwng 6ed a 7fed Gorffennaf 2023. Mae Ffatri Aberneint yn amlwg wedi datblygu dros amser, ond yn ei gyfnod derfynol roedd o'n cynnwys argae ar draws Afon Aran, dyfrffos wedi'i thorri o gerrig, adeilad a phwll olwyn ar gyfer olwyn ergyd fron. Mae tystiolaeth hefyd fod adeilad diweddarach wedi ei adeiladu ar y platfform.

Yn y Pandy, cofnodwyd dwy adeilad, adeilad gyda drws llydan, wedi'i gosod i ffwrdd o'r afon ac olion prif adeilad y felin gyda'i bwl olwyn. Mae gweddill prif adeilad y felin wedi'i gladdu yng ngwneuthuriad y llain sy'n gysylltiedig â safle Ffatri Idris.

Dim ond ffotograffau a dynnwyd o'r tu allan i lain Ffatri Idris oedd yn bosibl, ond mae'r rhain yn dangos adeilad carreg a godwyd gan ddefnyddio brics. Roedd dyfrffos wedi'i thorri o'r graig yn arwain at yr adeilad hwn hefyd.

Tynnwyd llun hefyd o weddillion darniog adeilad a ddangosir ar fap Arolwg Ordnans 1888 gerllaw South Street ar lan Nant y Ceunant. Mae'n bosibl bod yr adeilad hon yn gysylltiedig ag argae clogfeini posibl tua 45 m ymhellach i fyny'r nant.

Methodology

Gwrp yr Aran, a local history society based in Dolgellau, commissioned Engineering Archaeological Services Ltd to provide training and technical support to record a set of building remains associated with the Pandy Mill/Aberneint complex of buildings. The group is currently carrying out a desked based survey of the site to establish the history of the site, however this is not part of the current report.

The buildings were surveyed using a Leica TS-06 total station with the collected data being processed using NRG Engineering Surveying System V2016.00. Photographs were also taken with a Nikon D5300 Digital SLR Camera at a resolution of 24.2 MP to illustrate the location and form of architectural and other features associated with site.

Tree cover prevented any attempt at producing a photogrammetric model of the complex, however a series of overlapping photographs were taken with a Panasonic Lumix DC-FT7 camera at a resolution of 20 MP of the western elevation of the Aberneint Factory building. These were processed using Agisoft Metashape v. 2.0.2 to produce a photographic elevation (Figure 6).

Background

The full documentary study of the buildings is being carried out by Grwp y Aran. The 1842 Tithe Map (Figure 3.1) is not particularly clear (or accurate), but shows a single building on the eastern bank of the Afon Aran (Plot 107) which is called Felinuchaf on the schedule (<https://places.library.wales/viewer/4539686#?cv=9&h=107&xywh=-659%2C-70%2C2845%2C1384>). It was owned by Sir Robert Williams Vaughan Bart. and occupied by John Mills. This building is marked on the wrong side of the river, but there are no other buildings shown within the area, so it might be Aberneint Factory site. More reliable, the First Edition of the Ordnance map, published in 1888 (Figure 3.2) shows a building in the position occupied by the remains of the Aberneint Factory which it labels “Upper Neint Factory (Woolen)”. It also shows the two building to the east of the confluence with the Nant y Ceunant which it simply labels “Pandy”. The “Idris Factory” is also shown, although in a different position to the current remains. Also shown is a small building on the northern banks of Nant y Ceunant, adjacent to the point where it is crossed by South Street. To the south west of this building a set of stepping stones are marked, approximately where a possible boulder dam has been recorded in the current work.

By the Ordnance Survey map published in 1902 (Figure 3.3), Aberneint Factory is shown as dis-used, but still retained its roof, whilst the eastern of the buildings labelled as “Pandy” in 1888 has been extended considerably to link with the Idris Factory. Also, the building on the banks of Nant y Ceunant has disappeared.

There is little or no difference shown on the Ordnance Survey maps published in 1948 and 1953 (Figures 4.1 and 4.2) with all of the buildings retaining their roofs. However, by 1963 (Figure 4.3), the buildings of Aberneint Factory are missing, as is the long range linking “Pandy” to the Idris Factory site. Whilst the western of the building of “Pandy” retains its roof the Idris Factory building has moved and is roofless. This would suggest a late attempt to revive the factory that lasted less than ten years.

Jenkins (1969, 174) suggests that Pandy Aberneint was established in 1760 (Jenkins, 1969, 174) and that carding and spinning engines were added between 1798 and 1825 (Jenkins 1969, 196). A newspaper article of the death of a thirteen-year-old boy, John Abraham, in 1873 from an industrial accident when he caught his arm in the “willow” of the machinery (The Cambrian News and Merionethshire Standard 24th January 1873) also suggest that disentangling of wool, prior to carding was also taking place (Jenkins, 1981, 8). It is possible that the mill was not working by 1892 as the site was visited by the Committee investigating the possibility of using hydroelectric power to light the streets of Dolgellau, who found there was sufficient water but no wheel (The Cambrian News and Merionethshire Standard 19th August 1892).

Building Survey (Figure 5)

The water for Aberneint Factory was taken from a large, stone-built dam crossing the Afon Aran (Plate 1) which raises the water level by approximately 3.5 m. The dam appears to have at least two phases of construction with an original boulder-built dam having been repaired, in its central section, with a concrete. It is also likely that the sluice at the base of the dam was constructed at this point. The water was carried to the mill by a rock cut leat (Plate 2) running along the western side of the valley. This runs for approximately 13.4 m before

meeting the platform on which the mill buildings sit. It is likely that the leat was then carried, in a wooden launder, around the eastern side of the building to the wheel pit.

The mill itself was built on a platform that had partly been cut into the valley side and partly built up adjacent to the river. The revetting wall is up to 2.77 m high and has three, rough, shallow, buttresses along its length (Plate 3, Figure 6). On the platform are the remains of two buildings. At the southern end is a small structure, 6.58 x 3.52 m in size with a single doorway in its south western corner (Plate 4). It stands to a height of 1.76 m in places and is constructed of relatively small, roughly coursed stones with some lime mortar surviving between the stones. The exception of this general pattern is the northern wall of the structure which included some large boulders, particularly on the eastern side (Plate 5). It is probable that this wall was originally part of the main mill building which was standing when this structure was built. The function of this structure is unknown and it is clearly of a later construction than the main building on the platform and may, therefore, not be related to the use of the site as a woollen factory. The main building was 13.63 x 8.03 m in size, sitting on the northern end of the platform. It only survives to a low level, except in the wall that was later incorporated into the small structure on the southern end of the platform.

In the north east corner of the complex, the wheel pit (Plate 6) is defined by a length of walling, 6.44 m long and 0.86 m wide, standing to a height of 2.65 m, running parallel to the main building. The pit, itself, was 1.47 m wide, suggesting the water wheel was probably 4 ½ feet (1.37m) wide. The presence of a cast iron bearing block (Plate 7) in the western wall of the wheel pit allows the diameter of the wheel to be estimated at 13 ½ feet (4.11 m). Given the relative levels of the top of the dam, the leat and the bearing block the wheel must have been a breast shot wheel. An historic photograph, assumed to be of the Aberniet Factory, shows an overshot wheel (Plate 8), however the evidence on the ground does not support this unless a smaller wheel was mounted at a lower level in the wheel pit at some time. Another image titled “Glen of Arran” (Plate 9) appears to show the building with a larger, breast shot, wheel which conforms more to the surviving remains.

The second complex of buildings is simply labelled as “Pandy” on the historic mapping (Figures 3 and 4) it consists of the remains of two buildings (Figure 5), one (to the west) standing slightly away from the river and one to the east with a wheel pit. The western building (Plate 10) is 9.22 x 6.35 m in size with a wide (2.81 m) doorway (Plate 11) in its eastern face. There is no sign of any other opening in the wall, although the southern gable has totally collapsed. The wide doorway and lack of openings would suggest an industrial, or storage, use of the building. The eastern building, is more difficult to define as much of the southern and eastern sides of the building have been buried in the material used to level the area of the Idris Factory. However, the building was at least 9.56 x 4.81 m in size with a wheel pit on its northern side (Plate 12). The wheel pit is defined by an “L” shaped wall 6.03 x 3.25 m in size. The internal area of the wheel pit is 1.88 m wide suggesting a wheel up to 6 feet (1.83 m) wide was used. There is a rectangular hole in the southern wall of the wheel pit (Plate 13), approximately 0.6 m square, which is presumably where the wheel shaft entered the building. If so, this would mean that the wheel was probably about 13 feet (3.96 m) in diameter. No obvious sign of the head race was recorded, but historic images of the building (for example Plate 14) suggest it was an overshot wheel.

Although not part of the survey, photographs were also taken of the remains of Idris Factory and a possible building seen on the 1888 Ordnance Survey mapping with its possibly associated dam. The Idris Factory is within private land; thus, it was not possible to inspect the remains in detail, however from the public footpath it is possible to see that the building has stonework in the bottom half of the wall with brickwork above (Plates 15 – 17) which is assumed to be a late re-building of the building. There is, however; a well-defined, rock cut leat (Plate 18), running to the east from the south eastern corner of the building which presumably carried the water to the wheel pit which was on the northern side of the building.

The Ordnance Survey Merionethshire XXXVII NE map, published in 1888, appears to show a building adjacent to the Nant y Ceunant where it is crossed by South Street (Figure 3.2). A brief inspection of the location showed a short length of stone walling (Plate 19) which was probably part of the western side of the building. This has a vertical section replaced with a culvert at its base (Plate 20). Although now containing a ceramic pipe the cut for this possible culvert appears to have been original suggesting there may have been a leat or culvert running through, or under, the building. The southern side is less well defined having been disturbed by the stream (Plate 21) and the eastern end of the possible building has been damaged by the construction of the abutment for the current road bridge (Plate 22).

Probably associated with this building is a probable dam crossing the Nant y Ceunant (Plates 23 and 24). This sits at the top of a natural weir formed by a band of harder rock crossing the stream and is constructed of a series of large boulder. The Ordnance survey mapping labels it as “stepping stones”, but it appears to be too massive to have simply been a crossing point over this minor stream and it seems more likely that it is the remains of a dam.

Conclusions

The complex of mills and associated structures show a concentration of activity on the bend of the Afon Aran where it is joined by the Nant y Ceunant with at least three mills or factories associated with the woollen industry having been located nearby. The smallest, and possibly the earliest, is the possible building on the banks of the Nant y Ceunant near to where it is crossed by South Street. The building is only shown on the Ordnance Survey mapping published in 1888 and has totally disappeared by the 1902 mapping. It is possible that this was a small mill, probably associated with the remains of the dam further up the Nant y Ceunant, although given its current condition only excavation will reveal more details. Conditions were not ideal for the survey as the tree cover was in full leaf and the undergrowth well developed, however, it was possible to record the size and form of the complex and suggest how it may have worked.

Aberneint Factory shows a significant level of investment in the woollen industry of the area, probably in the late eighteenth century. Considerable investment would have been necessary to prepare the site prior to building the factory. A massive dam was constructed over the Afon Aran, raising the water levels by approximately 3.5 m. Although not visible, on site, it is likely that a natural waterfall was adapted as the river bed is quite shallow upstream from the dam. The building site required the quarrying into the river bank and the construction of a platform with a revetted eastern face. This face had at least three shallow buttresses supporting the wall. Only once the platform had been constructed could the mill building be constructed. The mill building was 13.63 x 8.03 m in size with a water wheel on the northern end of the eastern wall of the wheel. The best estimate suggests the wheel was 4 ½ feet

(1.37m) wide and 13 ½ feet (4.11 m) in diameter and was a breast shot wheel. This is difficult to correlate with some of the historic images thought to be of the factory, but fits the physical remains. The water supply between the dam and the mill building was partially by means of a rock cut leat and then probably via a wooden launder along the eastern face of the factory building. At a later phase a small building, 6.58 x 3.52 m in size, was built at the southern end of the platform.

The “Pandy” complex consisted of at least two building, which at one stage were probably part of the Idris Factory complex judging from the 1902 Ordnance Survey map (Figure 3.3). The western building would appear to be an industrial, or storage, building with a wide doorway in its eastern face. Whilst the eastern building extends under the make-up of the plot containing the surviving remains of the Idris Factory, it was at least 9.56 x 4.81 m in size. The Ordnance Survey mapping suggests that the original building was extended, after 1888 but before 1902, to produce a range about 38 m long which was part of the Idris Factory complex. It had a water wheel on its northern gable which was probably 6 feet (1.83 m) wide and 13 feet (3.96 m) in diameter which historic photographs suggest was probably an overshot wheel. The source of the water is unknown, but two possible options occur. Firstly, there could have been a wooden launder along the valley side from the weir shown on the Ordnance Survey mapping. Alternatively, it is possible that the rock cut leat recorded to the east of the surviving remains of the Idris Factory was used.

Although there are some, brief records of the Pandy/Aberneint complex within the regional Historic Environment Record, there appears to be some confusion in the Gwynedd Archaeological Report on medieval and post-medieval mills which could be recommended for scheduling (Evans and Burnett 2013) which describes the Aberneint Factory site from the Ordnance Survey mapping, but photographs and describes the physical remains of the Pandy site.

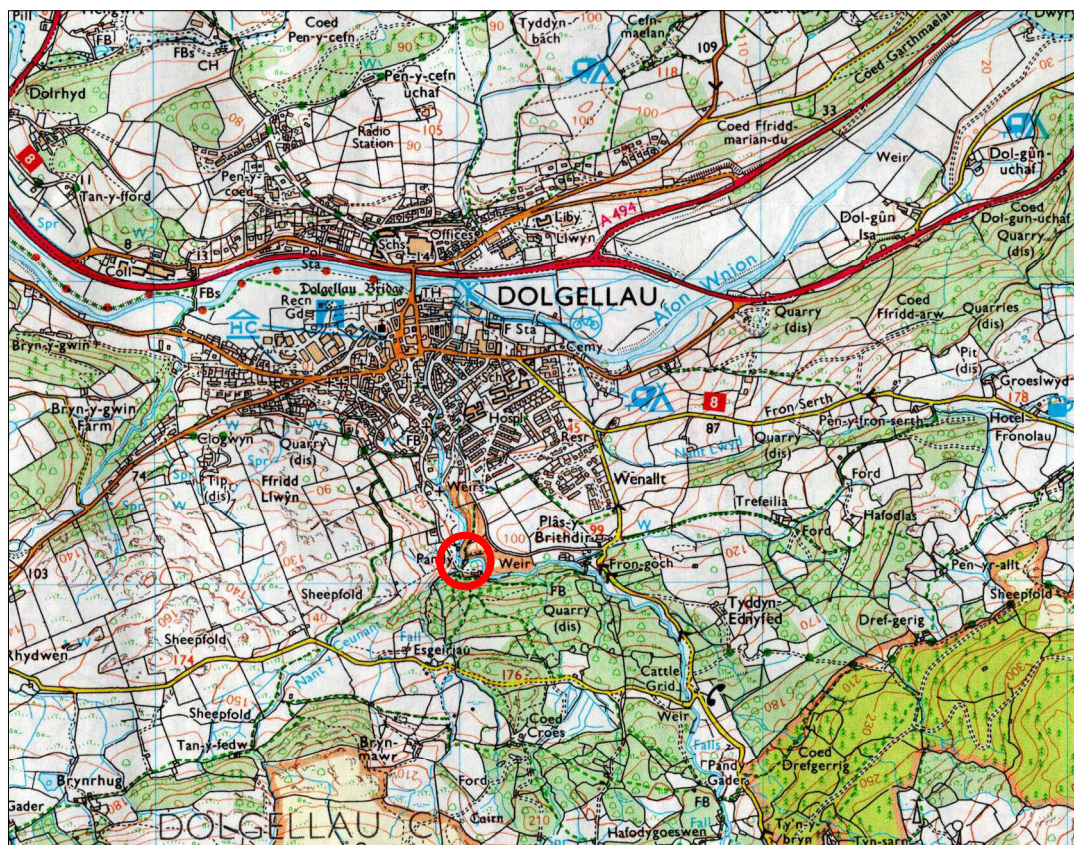
The two other sites, photographed, are only an indication of what might be available for study. The Idris Factory site is within private grounds and would require the owner permission to visit, but from an inspection from the public footpath it is clear that some of the building survive and that it is likely to have had at least two phases of construction. There also appears to have been a wheel pit on the eastern end of the building which was fed by a rock-cut leat. The building seen on the 1888 Ordnance Survey map is more problematic, clearly heavily disturbed only excavation, or possibly geophysical survey might give more details of the structure and function of the building. The presence of a possible dam further upstream suggests it may have been a mill, but this remains to be confirmed.

Acknowledgements

Many thanks are due to Linda Tomos, Jessica John, Elen Thomas, Ywain Myfyr, Huw Edwards and Merfyn Tomos, who carried out then survey work at Pandy/Aberneint Factory Complex. The survey was made possible by a grant from the Snowdonia National Park Authority

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Figure 1: Location
Scale 1:25,000



Figure 2: Location of the Features
Scale 1:1,000



Figure 3.1: 1842 Tithe Map of Dolgellau



Figure 3.2: 1888 Merionethshire XXXVII NE



Figure 3.3: 1902 Merionethshire XXXVII NE

Figure 3: Historic Mapping
Re-scaled to approximately 1:5000

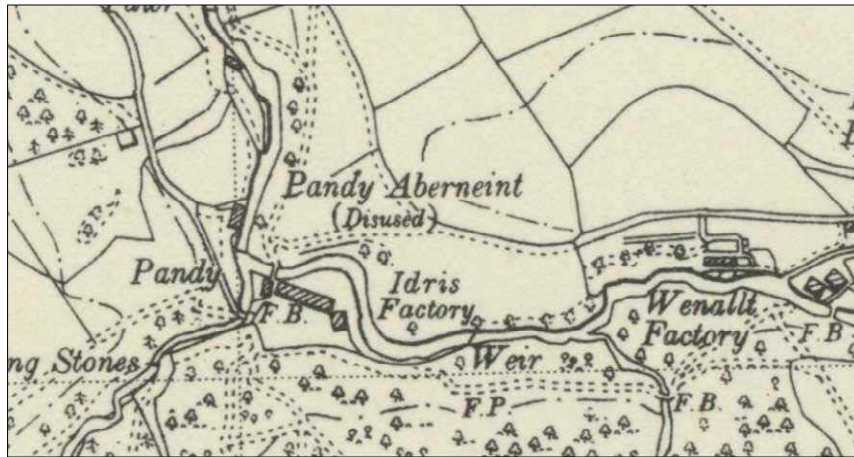


Figure 4.1: 1948 Merionethshire XXXVII NE



Figure 4.2: 1954 Merionethshire XXXVII NE

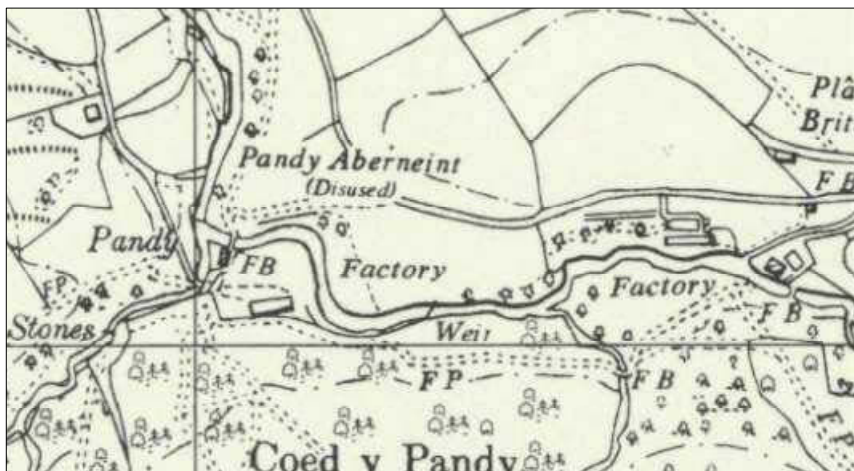


Figure 4.3: 1963 SH71 NW

Figure 4: Historic Mapping
Re-scaled to approximately 1:5000



Figure 5: Plan of the Complex
Scale 1:200

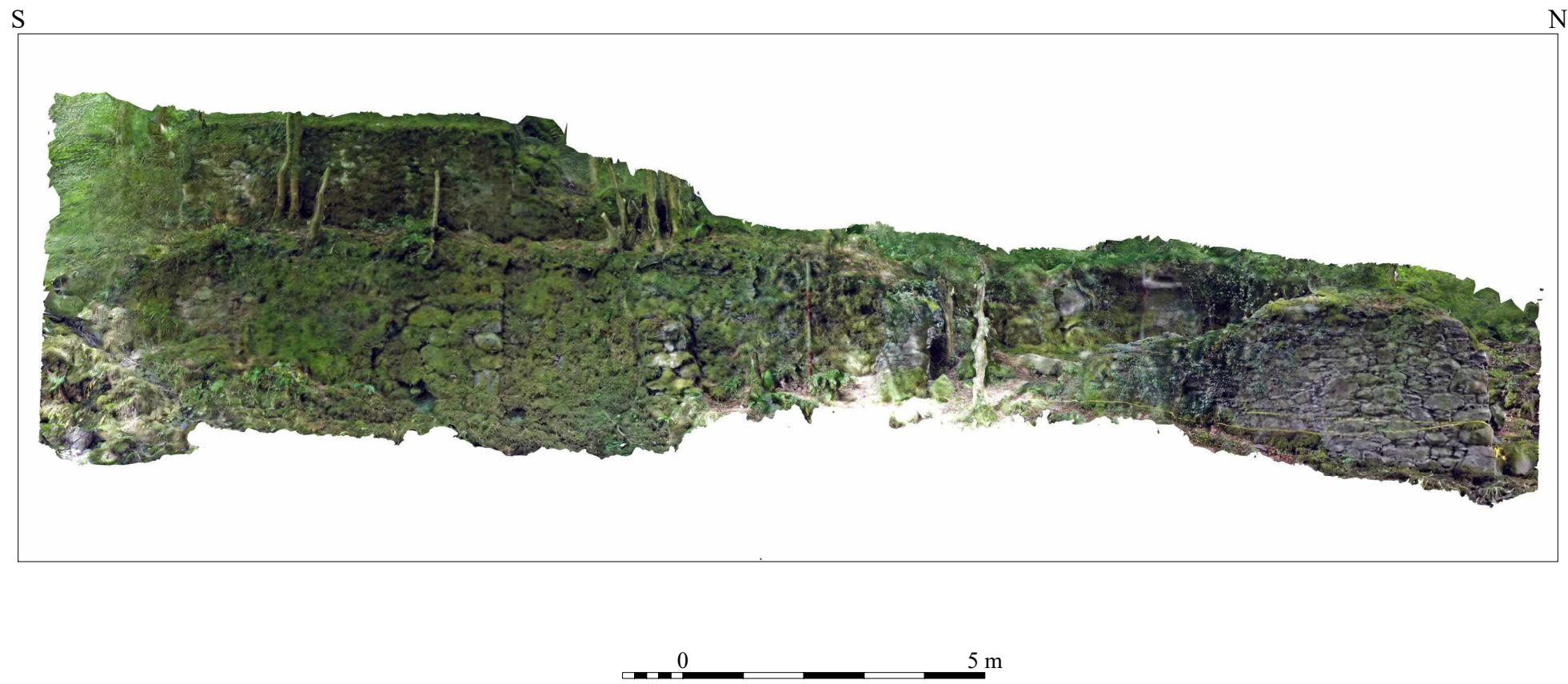


Figure 6: Photogrammetric elevation of the platform and wheel pit
Scale 1:100

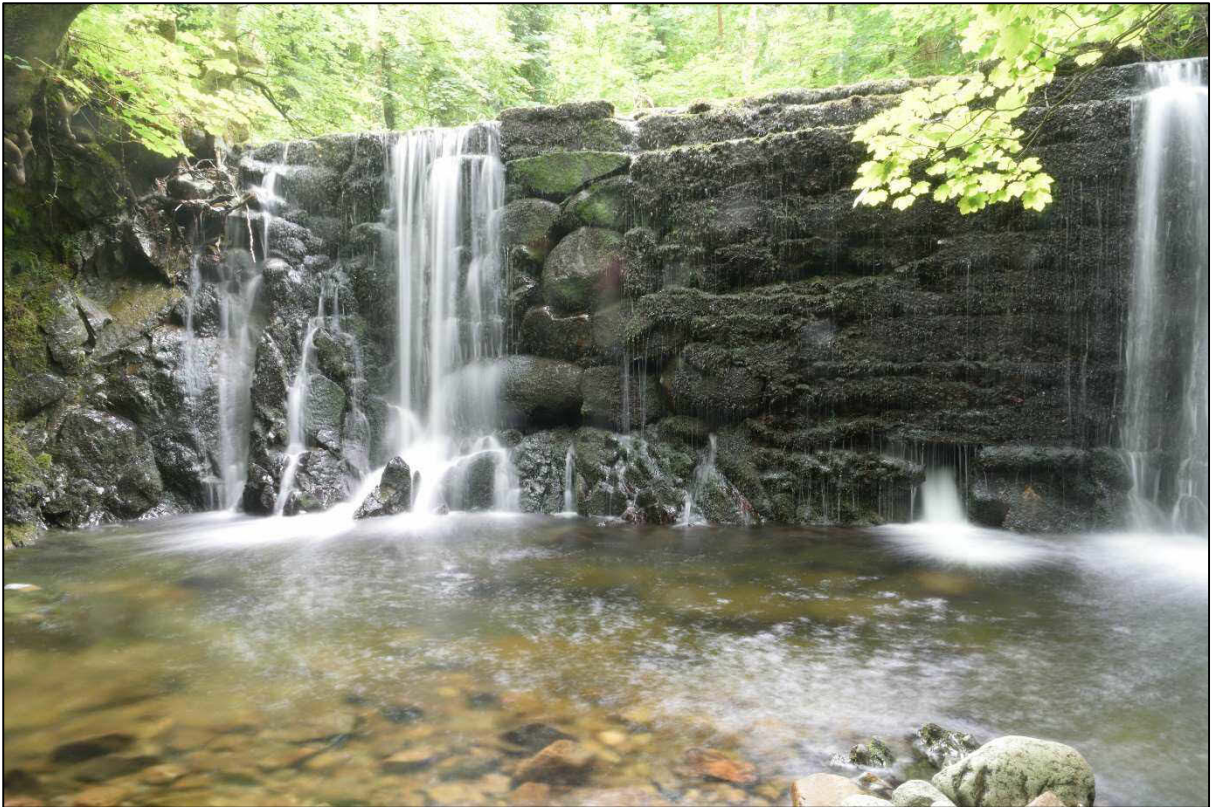


Plate 1: The dam



Plate 2: Rock cut leat leading to Aberneint Factory



Plate 3: Platform on which Aberneint Factory was built



Plate 4: Later building on the platform



Plate 5: Northern wall of the later building



Plate 6: Outer wall of the wheel pit



Plate 7: Bearing for the wheel



Plate 8: Historic photograph of thought to be of Aberniet Factory



Plate 9: Glen of Arran postcard

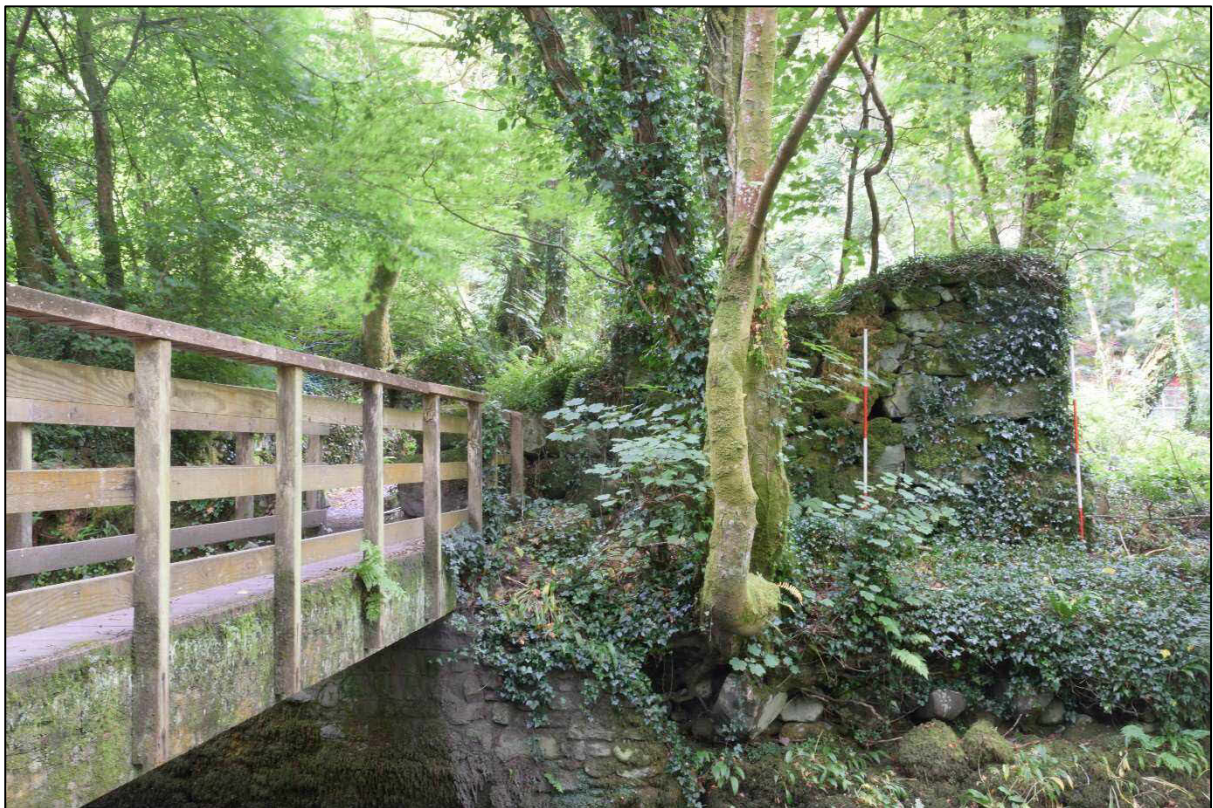


Plate 10: The western "Pandy" building



Plate 11: The doorway of the western “Pandy” building



Plate 12: The wheel pit of the eastern “Pandy” building



Plate 13: Hole for the wheel shaft in the wheel pit of the eastern "Pandy" Building



Plate 14: Historic photograph of the eastern "Pandy" building

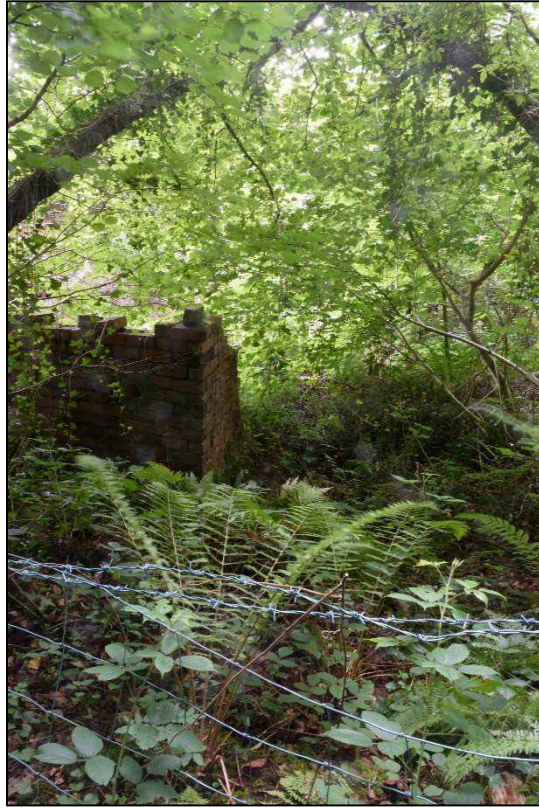


Plate 15: North eastern corner of the Idris Factory



Plate 16: Part of the Idris Factory



Plate 17: Detail of the construction of the Idris Factory



Plate 18: Rock cut leat leading to the Idris Factory



Plate 19: Possible remains of the building seen on the 1888 Ordnance Survey mapping

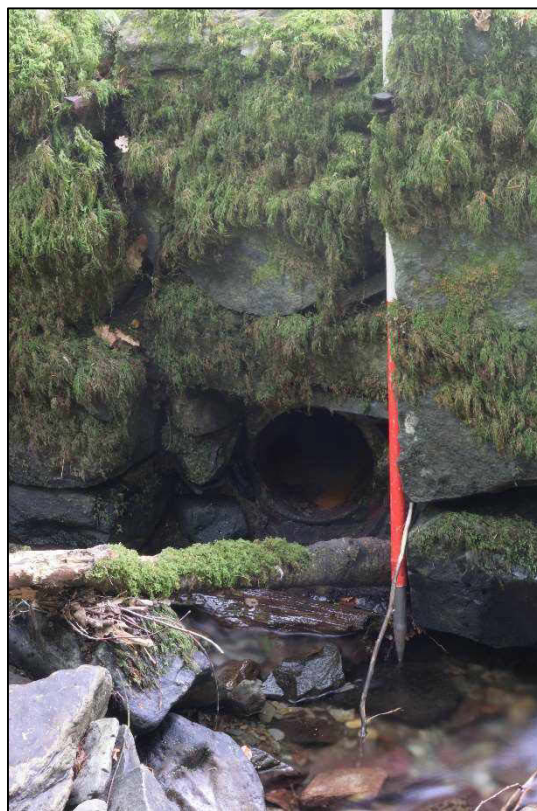


Plate 20: Details of the culvert under the building seen on the 1888 mapping

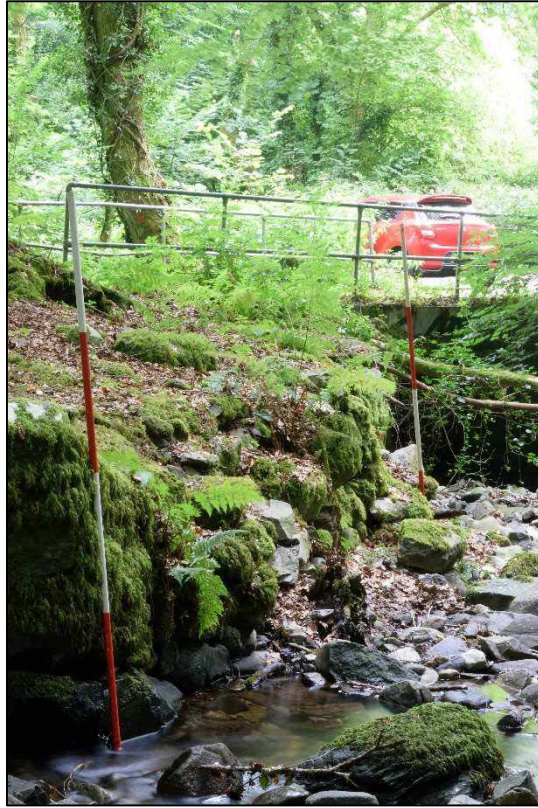


Plate 21: Eastern side of the possible building on the 1888 mapping



Plate 22: Disturbance by the bridge abutment of the possible building on the 1888 mapping

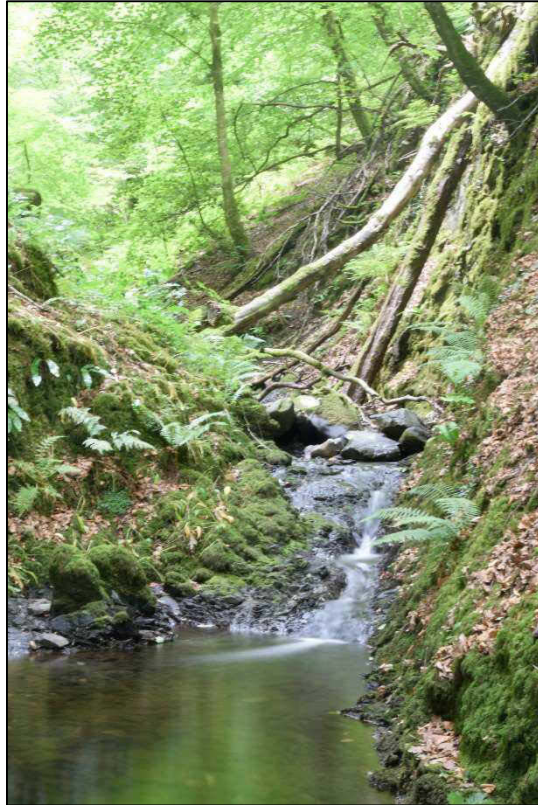


Plate 23: Possible dam



Plate 24: Detail of the possible dam