

Pandora Reservoir, Llyn Fuches Las, Trefriw, Conwy

Briff Gwylio Archaeolegol/
Archaeological Watching Brief



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Pandora Reservoir, Llyn Fuches Las, Trefriw, Conwy

BRIFF GWYLIO ARCHAEOLEGOL / ARCHAEOLOGICAL WATCHING BRIEF

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CRYNHODEB ANHECHNEGOL

Yn 2022, comisiynwyd Ymddiriedolaeth Archeolegol Gwynedd (GAT) gan BINNIES ar ran Cyfoeth Naturiol Cymru i gynnal rhaglen o liniaru archeolegol yng Nghronfa Ddŵr Pandora a Llyn Fuches Las yn ystod gwaith archwilio tir. Cynhaliwyd dau arolwg ffotograffig ynghyd ag ymchwil desg ar y cyd â briff gwyllo yn ystod y gwaith archwilio tir.

Datgelodd y gwaith yng nghronfa ddŵr Pandora safle nad oedd wedi newid fawr ddim ers ei adeiladu'n wreiddiol ym 1872 gyda'r argloddiau pridd a'r wal gynnal wal gerrig sychion yn dal yn gyfan ar wahân i ddau gorlifiad bwriadol yng nghanol pob arglawdd a allai o bosibl gydfynd â lleoliad yr hen arglawdd. Ilifddorau. Datgelodd y gwaith archwilio tir fod yr argloddiau wedi'u hadeiladu o bridd mawnaidd brown du tywyll sy'n ffurfio craidd yr argae.

Mewn cyferbyniad, mae Llyn Fuches Las wedi gweld llawer o newidiadau dros amser, yn ystod ac ar ôl ei ddefnyddio fel cronfa ddŵr ar gyfer gweithgareddau mwynloddio Parc Mwynglawdd. Wedi'i adeiladu tua 1872, cafodd ôl troed y gronfa ddŵr ei ymestyn o leiaf ddwywaith fel y dangosir gan y dystiolaeth fapio. Mae gwaith carreg gwreiddiol y llifddor yn dal i fod yn helaeth gyda bagiau concrit a bagiau tywod wedi'u hychwanegu i atgyfnerthu rhediad y llifddor. Mae coed mawr yn bresennol ar hyd crib yr argloddiau gwreiddiol y datgelodd y gwaith archwilio tir eu bod wedi'u hadeiladu o silt tywodlyd brown canol-tywyll yn gorchuddio clai naturiol. Mae arglawdd mawr newydd yn rhedeg o'r gogledd-ddwyrain i'r de-orllewin wedi'i adeiladu o dywod brown du wedi'i atgyfnerthu o bryd i'w gilydd gyda therram a rhwydi. Mae'n ymddangos nad oes gan yr un o'r argloddiau wal gynnal carreg.

NON-TECHNICAL SUMMARY

In 2022, Gwynedd Archaeological Trust (GAT) was commissioned by BINNIES on behalf of Natural Resources Wales to undertake a programme of archaeological mitigation at Pandora Reservoir and Llyn Fuches Las during ground investigation works. Two photographic surveys complimented by desk based research were undertaken in conjunction with a watching brief during the ground investigation works.

The work at Pandora reservoir revealed a site that had changed little since its original construction in 1872 with the earth embankments and dry stone wall revetment still intact apart from two deliberate breeches in the centre of each embankment. The ground investigation works revealed that the embankments were constructed from dark blackish brown peaty soil which forms the core of the dam.

Llyn Fuches Las in contrast has undergone many changes over time, both during and after its use as a reservoir for the mining activities at Parc Mine. Built around 1872, the reservoir footprint was extended at least twice as shown by the mapping evidence. The original stonework of the sluice gate is still extent with concrete bags and sand bags added to reinforce the sluice run. Large trees are present along the crest of the original embankments which the ground investigation works revealed to be constructed from a mid-dark brown sandy silt overlying natural clay. A large new embankment running NE – SW has been constructed from blackish brown sand reinforced periodically with terram and netting. None of the embankments appear to have any stone revetment.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by BINNIES on behalf of Natural Resources Wales to undertake a programme of archaeological mitigation at Pandora Reservoir and Llyn Fuches Las during ground investigation works.

Pandora Reservoir is located approximately 3.1 km west of Llanwrst, Conwy in the Snowdonia National Park, within Gwydir Forest (NGR SH76966007; postcode LL27 0YX; Figure 01). The site consists of two reservoirs, Pandora Upper and Lower, with the upper being the western of the two, and is accessed via a number of unclassified roads off the B5106, with forestry tracks run up to the southwestern corner of the site. Approximately 160m to the west of the site, beyond a wooded area, lies the former Pandora mine site, which the reservoirs were built to serve as a water retention and water source. Improvements to the reservoirs were identified as potentially being required, which would have likely included alterations to the existing spillway, an existing breach and raising of the embankments. The exact extent of works that were required were dependent upon the results of the ground investigation. The purpose of this ground investigation works was to provide the main investigation with contaminated land information to assist in progressing the overall projects design and included:

- 12 Hand excavated trial pits (maximum depth of 1.2m)
- 18 hand augers to refusal
- In-situ testing of pits (hand vanes and infiltration tests in selected hand dug pits)
- 8 surface water and silt/sediment samples across the study area

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3312-DR-GE-00002 (cf. Figure 02).

Llyn Fuches Las is located approximately 2km southwest of Llanwrst and 1.6km due east of Pandora Reservoir (NGR SH78565994; postcode LL27 0JB; Figure 01). The site consists of a large, vegetated reservoir approximately 8.4Ha in size and consists of two earth embankments. The embankments form an L shaped in plan. The reservoir has a capacity in excess of 11,000m³ and a surface area of more than 18,000m² when water is at top water level. The surrounding site is predominantly woodland, with a grassed field to the north east and a residential property 90m away. To the north, beyond an area of woodland and mine features, lies open areas covered in mine spoil. The main dam (eastern) embankment has a maximum height of 4m, width of 1.5m and a length of 30m. The secondary (northern) dam, is at right angle to the main dam, and has a maximum height of some 2m and a length of 70m. Both are covered in grass. The site is accessed via a number of unclassified roads off the

B5106. Access to the Main Dam is along existing forestry roads leading off an unclassified road to the north of the reservoir. Access to the site itself will be from the forestry road dropping down onto the reservoir or via a farm over a field and potentially fencing. As with Pandora Reservoir, the purpose of this ground investigation works was to provide the main investigation with contaminated land information to assist in progressing the overall projects design. The ground investigation included:

- 10 Hand excavated trial pits (maximum depth of 1.2m)
- 12 Dynamic sampling probes to refusal via handheld windowless sampling
- 12 Dynamic probes to refusal
- In situ testing (hand vanes and infiltration tests in pits)
- 6 Samples of surface water and silt/sediment across the site.

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3311-DR-GE-00002_1 (cf. Figure 03).

The ground investigation works at Pandora Reservoir and Llyn Fuchus Las were undertaken concurrently in March 2022. They were monitored as one watching brief in accordance with the following guidance:

- Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) Version 1.1 (The Welsh Archaeological Trusts, 2018);
- Guidelines for digital archives (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015);
- Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 2014);
- Standard and Guidance for Desk Based Assessment (Chartered Institute for Archaeologists, 2020);
- Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures (Chartered Institute for Archaeologists, 2014); and
- Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives (Chartered Institute for Archaeologists, 2020).

Gwynedd Archaeological Trust is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists.

In line with the Gwynedd Historic Environment Record (HER) requirements, the HER was contacted at the onset of the project to ensure that any data arising was formatted in a manner suitable for accession to the HER and follows the guidance set out in Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) (The Welsh Archaeological Trusts, 2018). The HER Enquiry Number is GATHER1491 and the Event Primary Reference Number is 46127.

1.1 Aims and Objectives

The key aims and objectives of the archaeological watching brief were to:

- Complete an archaeological record of Pandora Reservoir and Llyn Fuchel Las Reservoir embankments, supported by desk-based research;
- identify and record any archaeological activity identified during the watching brief. Archaeological activity within the local area includes extensive industrial archaeology associated with lead and zinc mining, and the objective would be to establish the date and nature of any archaeological remains identified within the watching brief area and assess their implications for understanding local historical development, in conjunction with the known archaeological record.

2 HISTORIC BACKGROUND

2.1 Pandora Reservoir

The location of the GI works (Figure 02) comprises two reservoirs: Pandora Reservoir I (PRN 9038; NGR SH77056011) and Pandora Reservoir II (PRN 9037; NGR SH76936009). Both reservoirs are associated with Pandora Mine and are located at the southwestern end of the mine complex. Pandora Mine is located to the south east of Llyn Geirionydd and has a recorded history from the 1840s and was last worked in the 1920s. Pandora initially started as a lead mine, but around the end of the 19th century became a zinc producer. Peripheral remains include tramways, reservoirs and leats. During its history the mine has been referred to as Foel Ddu, Willoughby, Pandora, Welsh-Foxdale and the Eagle. However, the name Pandora is in general usage for this mine site (Dutton, Roberts & Vernon, 1995). In March 2021 Gwynedd Archaeological Trust was commissioned by BINNIES to undertake an archaeological assessment of Pandora Mine, ahead of the construction of a flow monitoring structure at Pandora Pontifex Level towards the centre of the mine complex (Ryan Young, 2021). The assessment focused on updating the records previously compiled in the 1990s and recorded 20 features within the mine complex, including the Pandora Reservoir I and II. The report concluded that none of the mine features would be adversely affected by the construction of a flow monitoring structure downstream of the Pontifex Adit as the area was altered during the construction of a public car park in 1983. Pandora Reservoir I and II were not visited as part of the walkover survey completed for the assessment..

2.2 Llyn Fuches Las

The location of Llyn Fuches Las is not listed on the Historic Environment Record, but it forms part of the Parc Mine complex, located at the southern end of a clearing within the complex. Mineral exploitation at Parc Mine was noted to have taken place from the mid-19th century in a concerted manner, even though there is evidence for earlier activity based on the mineral exploitation activities of the landowning Wynn's of the Gwydir estate, dating back to at least the early 17th century (Evans and Ryan Young, 2021). It was the only lead mine within the wider Gwydir Forest mining landscape that continued to operate after the Second World War, not closing until 1956. Much of the mine complex is now covered in thick forestry, the area having been increasingly afforested since the mine closed; much of the surface of the operations area of the mine is therefore not visible with Llyn Fuches Las being one of the exceptions. Gwynedd Archaeological Trust has completed an archaeological assessment of Parc Mine (Evans and Ryan Young, 2021). A total of 13 features were recorded and the mine itself is considered to be of regional importance as representing the significant lead mining industry in the Gwydir Forest. Llyn Fuches Las was not visited as part of the walkover survey.

3 METHODOLOGY

3.1 Introduction

The archaeological mitigation comprised the following:

- A photographic record of the reservoir embankments supported by desk-based research for context; and
- a watching brief during ground investigation work.

3.2 Photographic Record

The photographic record was undertaken on the 16th March 2022 prior to the ground investigation works. This included a record of all embankments, reservoir elements and the local environs. The photographic record was supported by desk-based research to provide context for the results.

Photographic images were taken using a digital SLR (Nikon D3100) camera set to maximum resolution (4608 x 3072) in RAW format and converted to TIFF format for archiving using Adobe Photoshop. A photographic record was maintained on site using GAT pro-formas and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. A total of 40 images were taken in relation to the photographic record (archive numbering system G2697_001 to G2697_040; cf. Appendix II).

A basic written record using GAT pro-formas was completed; which summarised the visible form and structure of the embankments and recorded the location and orientation of the photographic images taken.

The desk-based assessment involved a study of the following resources:

1. The regional Historic Environment Register ((HER) Gwynedd Archaeological Trust, Craig Beuno, Ffordd y Garth, Bangor, Gwynedd LL57 2RT) was examined for information concerning the mitigation area. Examination of the core HER will be undertaken, including the 6-inch and 25-inch County Series Ordnance Survey maps and any secondary information held within the HER, including Bennett, J. & Vernon, R., 1995, Mines of the Gwydyr Forest Parts 3 & 6, Gwyn, D., 1998, Gwynedd Metal Mines Survey and Frost, P. & Thomas, D., 1998, Forest Enterprise Welsh Heritage Assets Survey.
2. The National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for sites additional to the HER;

3. Aerial photographs from the National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) was examined for potential features. This will include 1946 RAF vertical aerial photographs;
4. The online catalogue search of the National Library of Wales (Penglais Rd, Aberystwyth SY23 3BU); and
5. Archive data, including primary and secondary sources, historic maps and estate maps was examined at the regional archives, if open and accessible. Archive data included historic mapping such as the local tithe map and schedule.

3.3 Watching Brief

An archaeological watching brief is defined by the Chartered Institute for Archaeologists as a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme results in the preparation of a report and ordered archive (CiFA, 2014).

3.3.1 Pandora Reservoir

The watching brief at Pandora Reservoir monitored the geotechnical ground investigations detailed on Binnies Drawing no. 123498-BUK-ZZ-3312-DR-GE-00002 (cf. Figure 02). The ground investigations were undertaken between the 14th and 16th March 2022 and included:

- 12 Hand excavated trial pits (maximum depth of 1.2m)
- 18 hand augers to refusal
- In-situ testing of pits (hand vanes and infiltration tests in selected hand dug pits)
- 8 surface water and silt/sediment samples across the study area

The watching brief monitored the excavation of the 12 hand excavated trial pits, conducted by a team of two, to the maximum depth when viable to do so. The other aspects of the ground investigation works were not monitored as they either did not have a physical impact on the reservoir (the surface water and silt sediment samples and in-situ testing) or it was not viable to do so (the auger samples). This was agreed in advance with GAPS.

Photographic images were taken using a digital SLR (Nikon D3100) camera set to maximum resolution (4608 x 3072) in RAW format and converted to TIFF format for archiving using Adobe Photoshop. A photographic record was maintained on site using GAT pro-formas and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. A total of 25 images were taken in relation to the photographic record (archive numbering system G2697_041 to G2697_065; cf. Appendix II).

3.3.2 *Llyn Fuches Las*

The watching brief at Llyn Fuches Las monitored the geotechnical ground investigations detailed on Binnies drawing no. 123498-BUK-ZZ-3311-DR-GE-00002_1 (cf. Figure 03). The ground investigations were undertaken on the 23rd and 24th March 2022 and included:

- 10 Hand excavated trial pits (maximum depth of 1.2m)
- 12 Dynamic sampling probes to refusal via handheld windowless sampling
- 12 Dynamic probes to refusal
- In situ testing (hand vanes and infiltration tests in pits)
- 6 Samples of surface water and silt/sediment across the site.

The watching brief monitored the excavation of the 10 hand excavated trial pits, conducted by a team of two, to the maximum depth when viable to do so. Hand excavated pits to 1.2m depth were also excavated in advance of the dynamic probes. In total 22 hand excavated pits were monitored. The other aspects of the ground investigation works were not monitored as they did not have a physical impact on the reservoir (the surface water and silt sediment samples and in-situ testing). This was agreed in advance with GAPS.

Photographic images were taken using a digital SLR (Nikon D3100) camera set to maximum resolution (4608 x 3072) in RAW format and converted to TIFF format for archiving using Adobe Photoshop. A photographic record was maintained on site using GAT pro-formas and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. A total of 45 images were taken in relation to the photographic record (archive numbering system G2697_066 to G2697_110; cf. Appendix II).

4 RESULTS

4.1 Photographic Record & Desk-based Research

4.1.1 Introduction

The photographic record of both reservoirs was undertaken on the 16th March 2022 in advance of the geotechnical ground investigations. The record was conducted on a dry, overcast day. The reservoirs were easily accessible via established forestry plantation roads.

4.1.2 Pandora Reservoir

Pandora Mine is located to the south east of Llyn Geirionydd near Trefriw. There are no known records relating to the beginnings of Pandora mine although it is suspected that John Harker may have begun mining at the site around 1800 and by 1843 Pandora was regarded as an old mine (Dutton, Roberts & Vernon, 1995). Initial works at Pandora (then known as Foel Ddu) between 1843 and 1868 focused on clearing out the old workings, with small quantities of lead ore raised and a few tons of blende washed from the surrounding hills (Bennett & Vernon, 1995). A 3 year lease on Foel Ddu Mine was obtained by Goddard & Co. in 1868 which led to an increase in productivity on the site, 119 tons of ore were raised in 1870 with 18 men being employed by the company (Ibid). Successful mining attracted investment and the Willoughby Mining Company Ltd. took over the lease in 1871, constructing a mine office, waterwheel pits and sinking an engine shaft (Pyne's Shaft) on the Goddards Lode (Dutton, Roberts & Vernon, 1995).

It was the Willoughby Mining Company that first significantly invested in storing a sufficient amount of water at Pandora. At the general meeting in September 1872 it was reported that work had been completed on the construction of four reservoirs in addition to the company having water rights at nearby Bod lake (Dutton, Roberts & Vernon, 1995). The reservoirs were described as having 'embankments faced on one side with a thick stone wall' (Ibid). Unfortunately, insufficient water to work the machinery in summer and high winds and frozen leats in the winter made it difficult to make the mine profitable.

The reservoirs are clearly visible on the First to Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series Map Sheet XVIII.8 (published 1889, 1900 and 1913 respectively) and do not appear to have changed significantly since construction (Figure 04).

The photographic survey (Figure 05) revealed the reservoir embankments to be relatively unchanged since construction. Both Pandora I and Pandora II embankments appear to be an earth core faced on the lower side with a large uncoursed dry stone wall (Plates 01 & 02). The most obvious change to the structure of the embankments are two large deliberate breaches

(Per Comms, NRW), which are currently covered in plastic sheeting (Plates 03 & 04). From the mapping evidence these breeches appear to be in the same location as the sluices though this is not confirmed. Pandora I is currently the only reservoir holding a substantial amount of water at the site (Plate 05) though the area adjacent to the breach in the embankment of Pandora II is also waterlogged (Plate 06).

4.1.3 Llyn Fuchus Las

Parc Mine was located near Nant Gwydyr, about one mile south-west of Llanrwst. Estate records date the first output from the mine from 1860, the mine being operated by the D'Ersby and Gwydyr Co. though there is some evidence of much earlier exploitation of the lodes, with the Kneebone Cutting possibly dating back to the 17th century. There were also minor workings on the pipe of galena on the Gors Lode before 1860. Between 1860 and 1888 working was confined to the Gors pipe, with at least 10 adit levels off it (*Bennet & Vernon, 1991*). The mine and others in the surrounding area were run by a number of companies, often with similar names, that were formed and re-formed throughout the 19th century; these include Gwydyr Park Consols from 1853-1874, Clementina Mining Company 1876-1883, The D'Eresby Consols Lead Mining Company 1878-1881, Gwydyr Amalgamated Mining Company 1881-1883, D'Eresby Mountain Mining Company 1877-1884, D'Eresby Mining Company 1884-1889; D'Eresby and Gwydir Mines Limited 1890-1891 and The Parc Lead and Zinc Mining Company 1893-1897 (*ibid*). These repeated re-incorporations, all during the time of Gwydir/Ancaster Estate ownership suggest that the mines were frequently not profitable, and that regular restructurings were required.

The construction of a reservoir at Parc Mine was suggested by the Mine Captain for Gwydyr Park Consols in 1873 as a way of reducing costs and the reliance on expensive steam power (*Bennet & Vernon, 1991*). The reservoir is clearly visible on the First to Third Edition 1-inch to 25-mile Ordnance Survey Caernarvonshire County Series Map Sheet XIX.5 (published 1889, 1900 and 1913 respectively) and its expansion over time can clearly be seen (Figure 06-08).

The photographic survey (Figure 09) revealed the original NW-SE earth embankment to still be extent though with large trees growing along the crest and black reinforcement netting along its length (Plate 07). There does not appear to be any substantial stone revetment to the embankment. The original stonework on for the sluice appears to be intact (Plate 08) with the sluice run reinforced to the NE by concreted sandbags (Plate 09). A brick structure that appears to allow water to flow under the embankment to a stream is still extent and presumed to be a later addition (Plate 10).

The NE – SW embankment is a very regular earth bank with no stone revetment and appears to be a relatively modern addition to the site (Plate 11), the mapping evidence suggested the original bank to be far less regularly aligned. Parts of the original NE – SW embankment can be seen adjacent to the new embankment and is covered in trees (Plates 12 & 13).

4.2 Watching Brief

4.2.1 Introduction

The watching brief monitored the excavation of the hand excavated trial pits, conducted by a team of two, to the maximum depth (1.2m) when viable to do so. At Llyn Fuchus Las hand dug pits were also excavated in advance of the window sampling to ensure there were no services present. The other aspects of the ground investigation works were not monitored as they either did not have a physical impact on the reservoir (the surface water and silt sediment samples and in-situ testing). This was agreed in advance with GAPS.

4.2.2 Pandora Reservoir

4.2.2.1 HDP 01 (Plate 14)

Hand dug pit 01 was located in the lower reservoir dam. It was excavated to a depth of 1.2m through a dark blackish brown peaty soil which forms the core of the dam. No sizeable stones were encountered suggesting an earthen core to the reservoir dam.

4.2.2.2 HDP 02 (Plate 15)

Hand dug pit 02 was located to the NW of the lower dam revetment. It was excavated to a depth of 0.7m. Dark blackish brown peaty soil to a depth of 0.33m overlaid a grey/orange clayey sand natural.

4.2.2.3 HDP 03 (Plate 16)

Hand dug pit 03 was located to the NW of the lower dam revetment adjacent to the breach. It was excavated to a depth of 1.2m. Dark blackish brown peaty soil, which was waterlogged, to a depth of 0.7m overlaid a grey clayey sand natural.

4.2.2.4 HDP 04 (Plate 17)

Hand dug pit 04 was located in the lower reservoir dam. It was excavated to a depth of 1.2m through a dark blackish brown peaty soil which forms the core of the dam. No sizeable stones were encountered suggesting an earthen core to the reservoir dam.

4.2.2.5 HDP 05 (Plate 18)

Hand dug pit 05 was located to the NW of the lower dam revetment. It was excavated to a depth of 0.4m. Dark blackish brown peaty soil to a depth of 0.22m overlaid a concrete sandy clay natural with frequent stone inclusions.

4.2.2.6 HDP 06 (Plate 19)

Hand dug pit 06 was located to the south of the upper reservoir dam. It was excavated to a depth of 0.15m through a dark blackish brown peaty soil onto rock.

4.2.2.7 HDP 07 (Plate 20)

Hand dug pit 07 was located to the NW of the upper dam revetment. It was excavated to a depth of 1.2m. Dark blackish brown peaty soil to a depth of 0.8m overlaid grey clay natural with frequent stone inclusions.

4.2.2.8 HDP 08 (Plate 21)

Hand dug pit 08 was located in the upper reservoir dam. It was excavated to a depth of 1.3m. Mid brown sandy clay soil to a depth of 0.6m overlaid dark blackish brown peaty soil forming the core of the dam.

4.2.2.9 HDP 09 (Plate 22)

Hand dug pit 09 was located to the NW of the upper dam revetment. It was excavated to a depth of 0.9m. Dark blackish brown peaty soil to a depth of 0.4m overlaid grey clay natural with frequent stone inclusions.

4.2.2.10 HDP 10 (Plate 23)

Hand dug pit 10 was located in the upper reservoir dam. It was excavated to a depth of 1.2m. Mid brown sandy clay soil to a depth of 0.6m overlaid dark blackish brown peaty soil forming the core of the dam.

4.2.2.11 HDP 11 (Plate 24)

Hand dug pit 11 was located to the NW of the upper dam revetment. It was excavated to a depth of 0.8m. Dark blackish brown peaty soil to a depth of 0.5m overlaid grey clay natural with frequent stone inclusions. The pit was filling with water on excavation.

4.2.2.12 HDP 12 (Plate 25)

Hand dug pit 12 was located to the NE of the upper dam revetment in a heavily wooded area. It was excavated to a depth of 0.6m. Dark blackish brown peaty soil to a depth of 0.4m overlaid grey clay natural with frequent stone inclusions. A rock was encountered at a depth of 0.6m.

4.2.3 Llyn Fuches Las

4.2.3.1 HDP 01 (Plate 26)

Hand dug pit 01 was located on the NE side of the NW to SE aligned reservoir dam. It was excavated to a depth of 1.2m. Mid brown silty sand with frequent angular stone inclusions to a depth of 0.25m overlaid brown/grey clay natural.

4.2.3.2 HDP 02 (Plate 27)

Hand dug pit 02 was located on the NE side of the NW to SE aligned reservoir dam adjacent to the sluice run. It was excavated to a depth of 0.7m. Dark brown silty sand with frequent angular stone inclusions and cobble to a depth of 0.7m.

4.2.3.3 HDP 03 (Plate 28)

Hand dug pit 03 was located on top of the NW to SE aligned reservoir dam. It was excavated to a depth of 1.1m. Mid brown silty sand to a depth of 0.15m overlaid a yellowish grey sandy clay with frequent stones and cobbles.

4.2.3.4 HDP 04 (Plate 29)

Hand dug pit 04 was located on the NE side of the NW to SE aligned reservoir dam and was converted to a window sample location. It was excavated to a depth of 1.2m. Dark brown sandy silt with frequent cobbles to a depth of 0.4m overlaid grey clayey silt natural with frequent angular stone inclusions.

4.2.3.5 HDP 05 (Plate 30)

Hand dug pit 05 was located to the NE side of the NW to SE aligned reservoir dam. It was excavated to a depth of 1.1m. Mid brown silty sand to a depth of 0.15m overlaid a yellowish grey sandy clay with frequent stones and cobbles.

4.2.3.6 HDP 06 (Plate 31)

Hand dug pit 06 was located on the NW side of the NE to SW aligned reservoir dam. It was excavated to a depth of 1.2. Blackish brown sand to a depth of 1.2m with terram and netting located at 0.5m and 0.25m respectively.

4.2.3.7 HDP 07 (Plate 32)

Hand dug pit 07 was located on top of the NE to SW aligned reservoir dam. It was excavated to a depth of 1.2. Blackish brown sand to a depth of 1.2m with terram located at 0.4m

4.2.3.8 HDP 08 (Plate 33)

Hand dug pit 08 was located on the NW side of the NE to SW aligned reservoir dam. It was excavated to a depth of 1.2. Blackish brown sand to a depth of 1.2m with netting located at 0.2m.

4.2.3.9 HDP 09 (Plate 34)

Hand dug pit 09 was located on top of the NE to SW aligned reservoir dam. It was excavated to a depth of 1.2. Blackish brown sand to a depth of 1.1m, with netting located at 0.15m, overlaid a grey clay between 1.1 and 1.2m.

4.2.3.10 HDP 10 (Plate 35)

Hand dug pit 10 was located on the NW side of the NE to SW aligned reservoir dam. It was excavated to a depth of 1.2. Blackish brown sand to a depth of 1.2m with terram located at 0.4m.

4.2.3.11 WS 01 (Plate 36)

Window sample 01 was located to the NE of the NW to SE aligned reservoir dam. It was hand excavated in advance of the handheld window sampling to a depth of 1.2m. Dark brown silty sand to a depth of 0.7m overlaid grey clay with frequent stone inclusions.

4.2.3.12 WS 02 (Plate 37)

Window sample 02 was located to the NE of the NW to SE aligned reservoir dam. It was hand excavated in advance of the handheld window sampling to a depth of 1.2m. Dark brown sandy silt with moderate stone inclusions to a depth of 1.2m.

4.2.3.13 WS 03 (Plate 38)

Window sample 03 was located at the SE end of the NW to SE aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.2m. Dark brown sandy silt to a depth of 0.9m overlaid grey clay with frequent stone inclusions.

4.2.3.14 WS 04 (Plate 39)

Window sample 04 was located to the NE of the NW to SE aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.2m. Dark brown sandy silt with cobbles to a depth of 0.4m overlaid a grey clayey silt with frequent stones.

4.2.3.15 WS 05 (Plate 40)

Window sample 05 was located on the NE side of the NW to SE aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 0.8m. Dark brown silty sand

with moderate stone inclusions to a depth of 0.1m overlaid a large amount of stone in a dark brown silty sand matrix.

4.2.3.16 WS 06 (Plate 41 and 42)

Window sample 06 was located on the SW side of the NW to SE aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 0.25m when water ingress and medium/large stones halted excavation. These stone possibly represent some internal revetment to the reservoir. A new location further up the dam slope was excavated to a depth of 1.2m. Black sand to a depth of 0.2m overlaid and orangey brown clay to a depth of 0.7m where there was a layer of terram. Under the terram was a black sand with frequent cobbles and angular stone inclusions to a depth of 1.1m where a layer of brown clay was encountered.

4.2.3.17 WS 07 (Plate 43)

Window sample 07 was located to the NE of the NW to SE aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.1m. Dark brown sandy silt with cobbles to a depth of 0.5m overlaid a orangey grey clay with frequent angular stone inclusions.

4.2.3.18 WS 08 (Plate 44)

Window sample 08 was located on top of the NE to SW aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.2m. Blackish brown sand to a depth of 0.9m, with a layer of netting at 0.2m, overlaid a grey clay.

4.2.3.19 WS 09 (Plate 45)

Window sample 09 was located to the NW of the NE to SW aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.25m. Blackish brown sand to a depth of 1.25m with netting at 0.10m.

4.2.3.20 WS 10 (Plate 46)

Window sample 10 was located on top of the NE to SW aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.2m. Blackish brown sand to a depth of 1.2m with netting at 0.15m and terram at 0.4m.

4.2.3.21 WS 11 (Plate 47)

Window sample 11 was located to the NW of the NE to SW aligned reservoir dam. It was hand excavated in advance of the window sampling to a depth of 1.2m. Blackish brown sand to a depth of 1.25m with netting at 0.2m and terram at 0.40m.

4.2.3.22 WS 12 (Plate 48)

Window sample location 12 was excavated as a hand dug pit to a depth of 1.2m Blackish brown sand to a depth of 1.2m with netting at 0.5m.

5 CONCLUSION

The two photographic surveys, complimented by desk based research, were undertaken in conjunction with a watching brief during the ground investigation works.

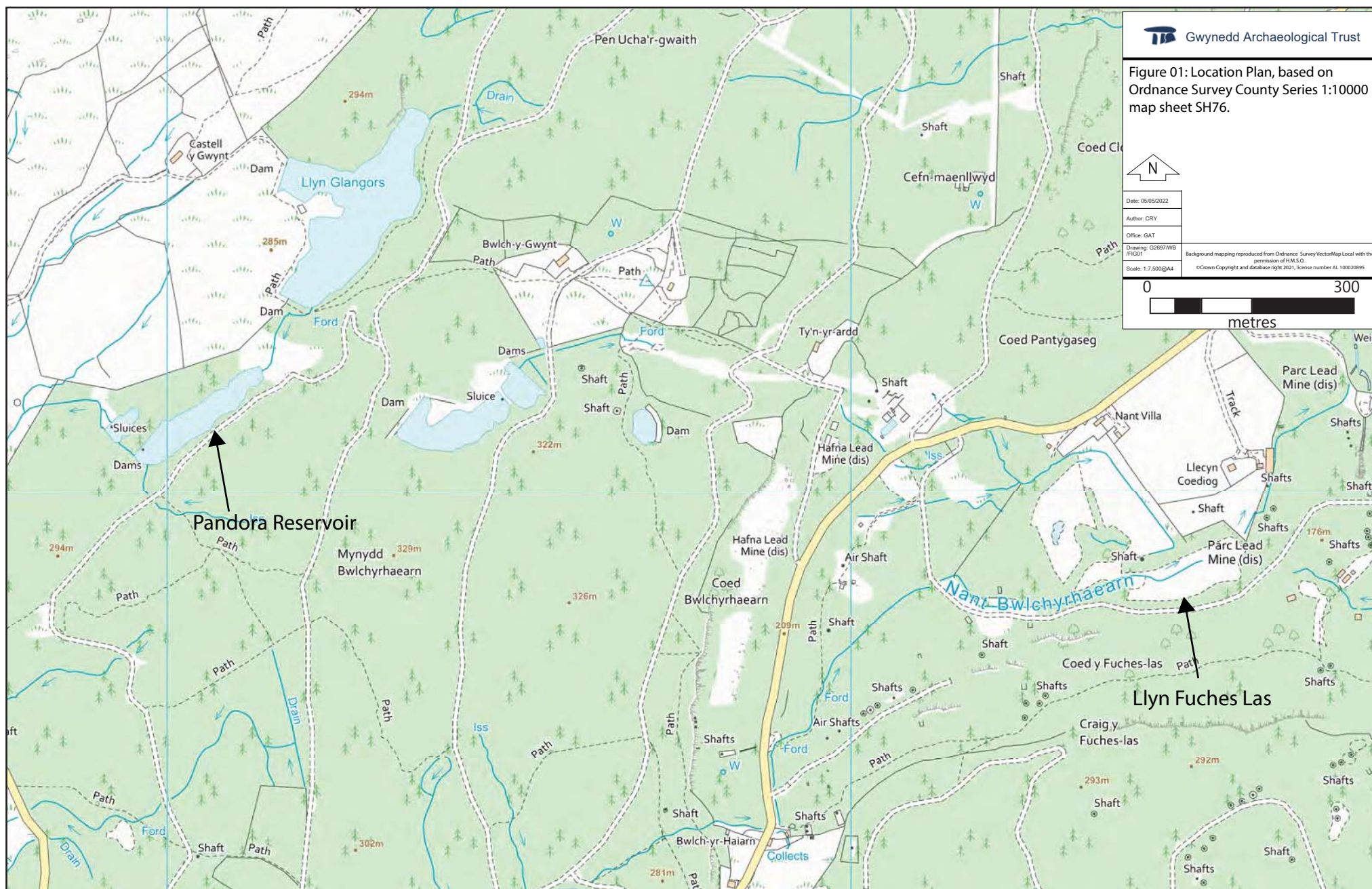
The work at Pandora reservoir revealed a site that had changed little since its original construction in 1872 with the earth embankments and dry stone wall revetment still intact apart from two deliberate breeches in the centre of each embankment which could possibly correspond with the location of the old sluice gates. The ground investigation works revealed that the embankments were constructed from dark blackish brown peaty soil which forms the core of the dam.

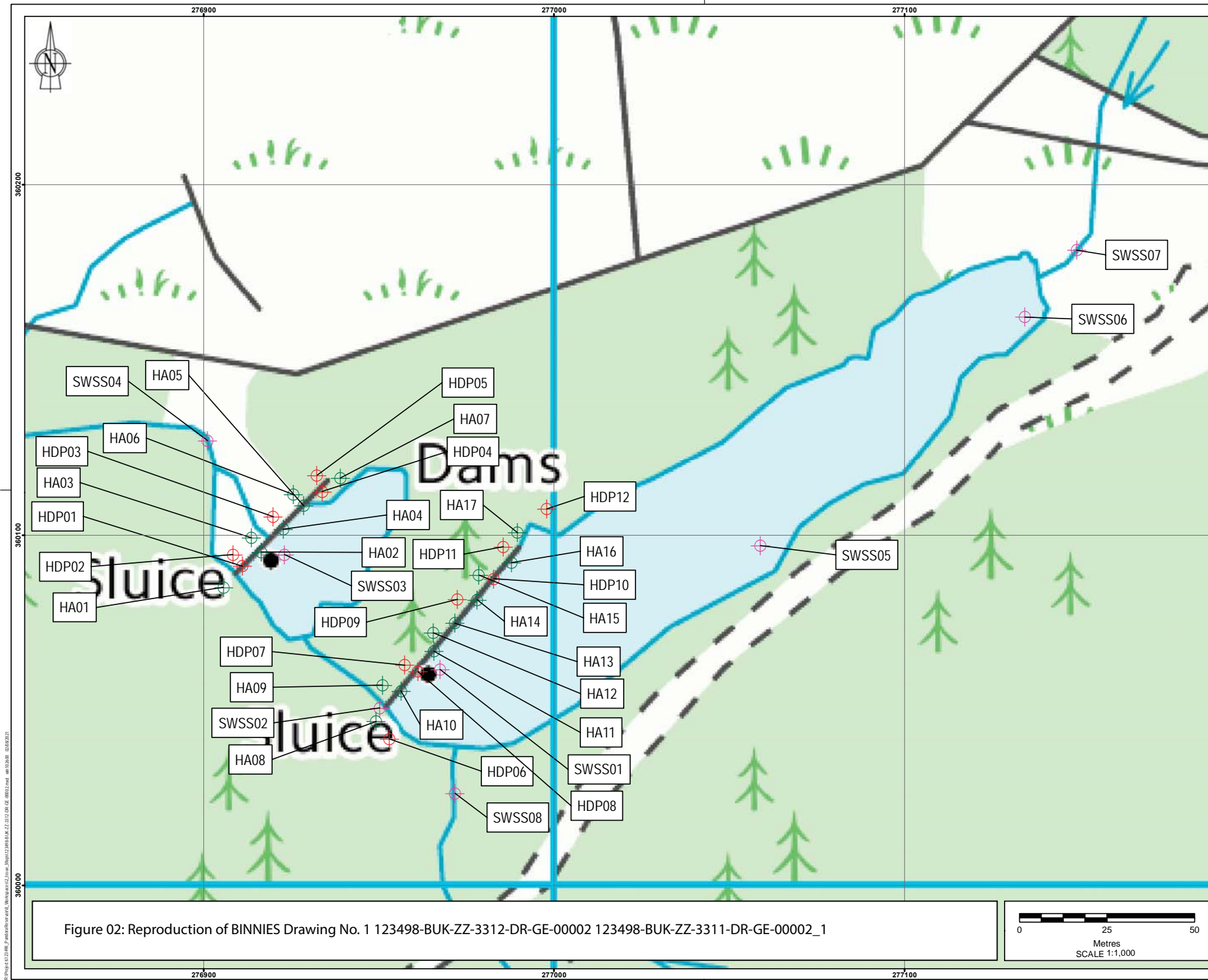
Llyn Fuchus Las in contrast has undergone many changes over time, both during and after its use as a reservoir for the mining activities at Parc Mine. Built around 1872, the reservoir footprint was extended at least twice as shown by the mapping evidence. The original stonework of the sluice gate is still extent with concrete bags and sand bags added to reinforce the sluice run. Large trees are present along the crest of the original embankments which the ground investigation works revealed to be constructed from a mid-dark brown sandy silt overlying natural clay. A large new embankment running NE – SW has been constructed from blackish brown sand reinforced periodically with terram and netting. None of the embankments appear to have and stone revetment.

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Legend:

SAMPLE TYPE

- HAND AUGER
- HAND DUG PIT
- SURFACE WATER AND SEDIMENT/SILT SAMPLES

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CONSTRUCTION

MAINTENANCE / CLEARING / OPERATION

DECOMMISSIONING / DEMOLITION

Rev	Drawn	Chkd	Rwd	Apprv	Date	Description
P01	TW	RC	AL	LM	02/08/2021	INITIAL DRAWING

Designed by: TW
Status: SI
Client: Cyfoeth Naturiol Cymru Natural Resources Wales

Client Project No. _____ Revision _____

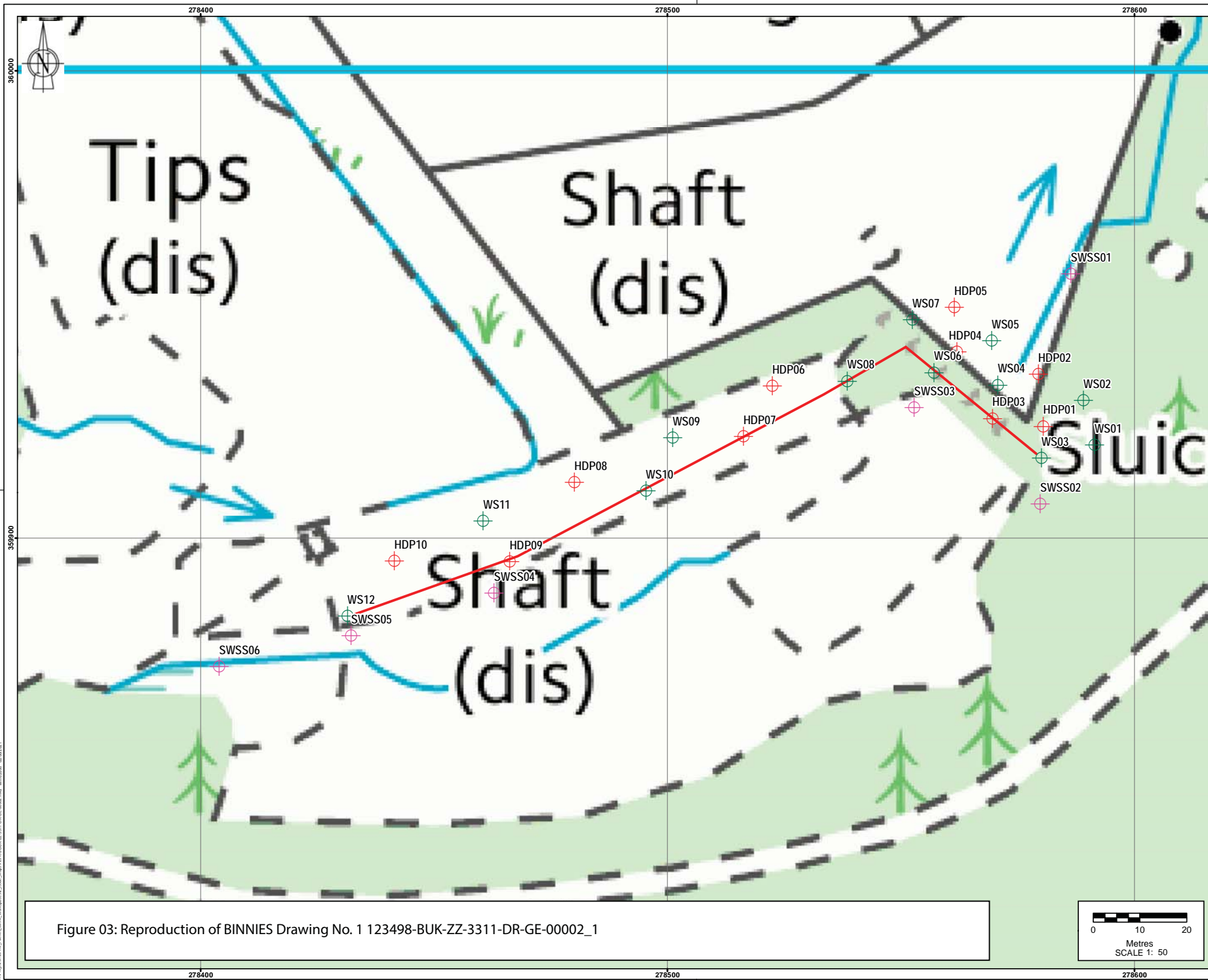
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Registered Office
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Tel: +44(0)1773 774159

Project: NRW PANDORA RESERVOIR PROJECT

Drawing title: PANDORA RESERVOIR SAMPLING LOCATIONS

Drawing scale: 1:1,000 Sheet size: A3
Drawing no: 123498-BUK-ZZ-3312-DR-GE-00002 Revision: P01

Figure 02: Reproduction of BINNIES Drawing No. 1 123498-BUK-ZZ-3312-DR-GE-00002 123498-BUK-ZZ-3311-DR-GE-00002_1



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- WINDOW SAMPLE
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CONSTRUCTION	

MAINTENANCE / CLEARING / OPERATION	

DECOMMISSIONING / DEMOLITION	

Rev	Drawn	Chkd	Rwd	Apprv	Date	Description
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Designed by: TW Date: 08/2021

Status: SI

Client:

Client Project No. Revision

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Registered Office
Spring Lodge, 172 Chester Road, Bishopton, Cheshire, W40 0AR UK
Tel: +44(0) 1757 774100

Project: NRW FUCHES LAS PROJECT

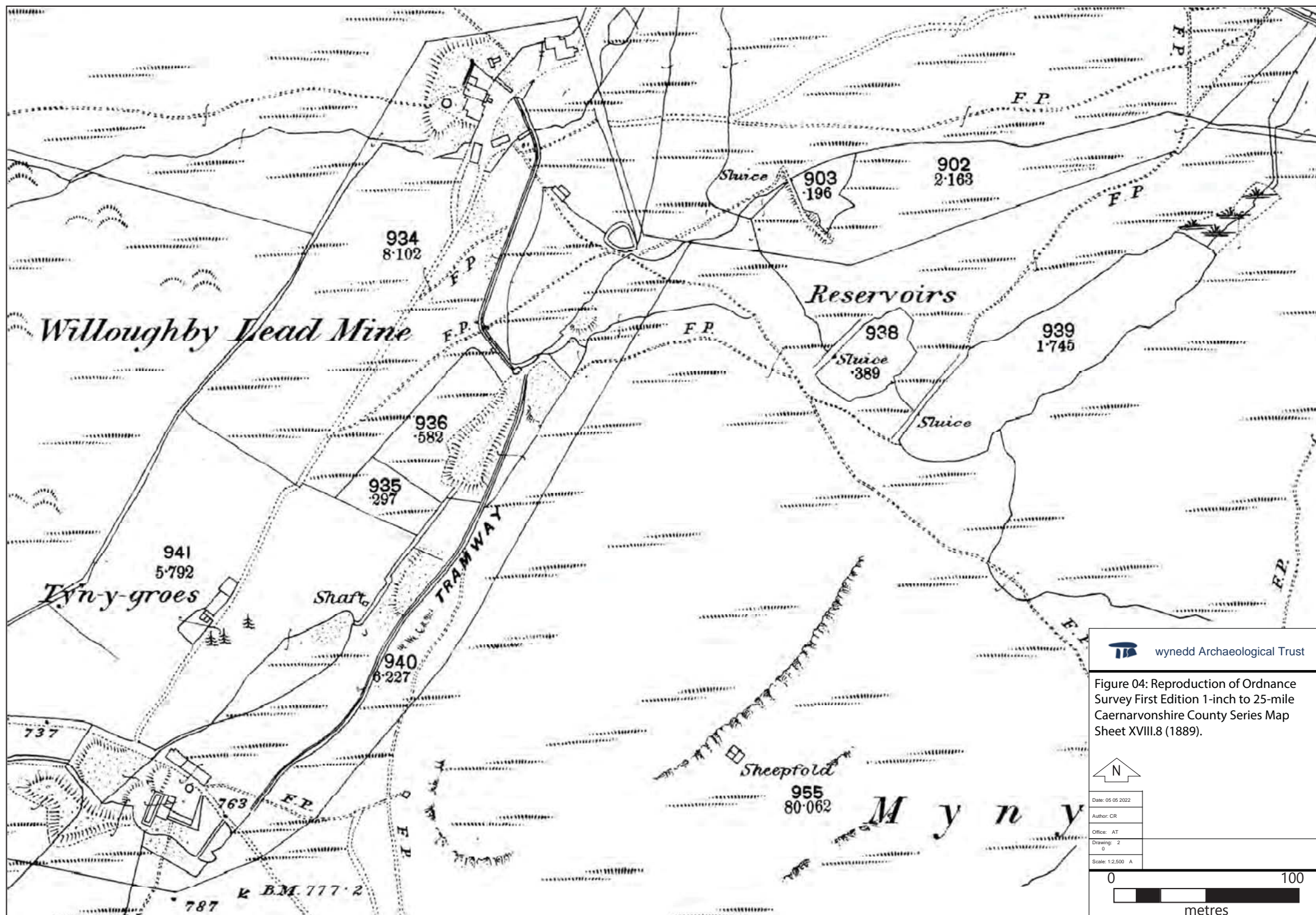
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Figure 03: Reproduction of BINNIES Drawing No. 1 123498-BUK-ZZ-3311-DR-GE-00002_1

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Figure 04: Reproduction of Ordnance Survey First Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XVIII.8 (1889).



Date: 05 05 2022

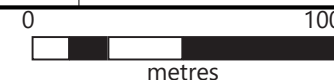
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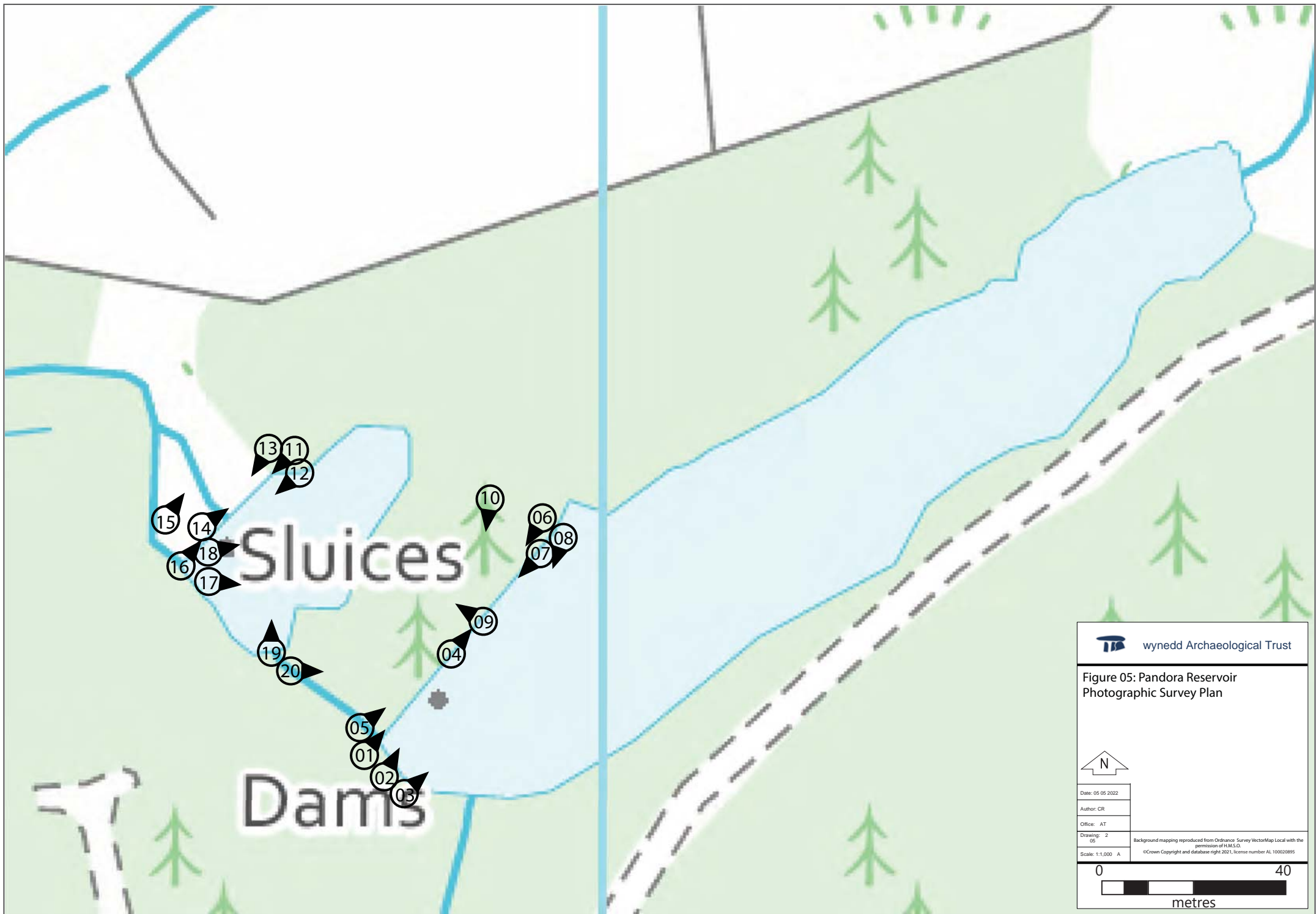
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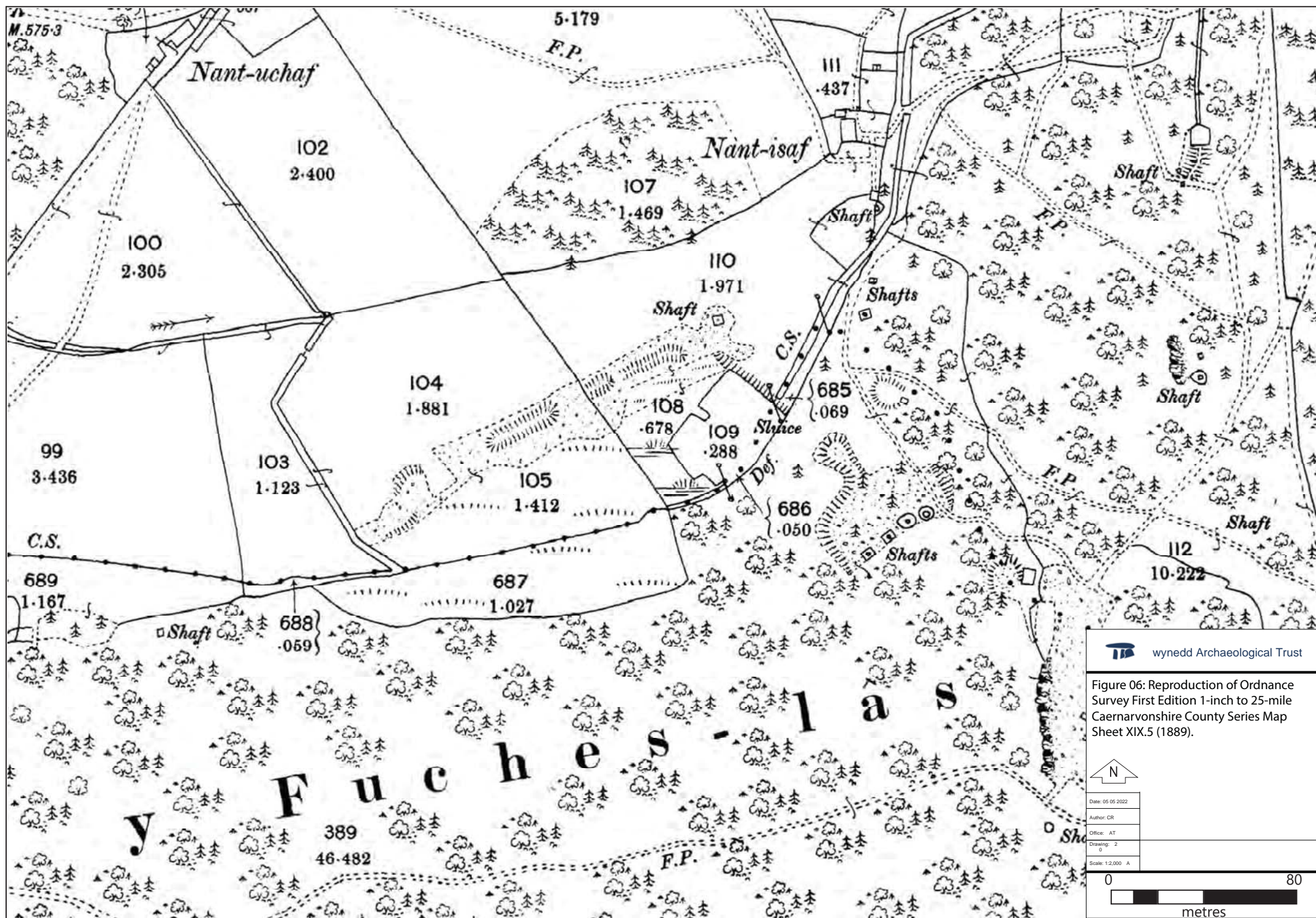
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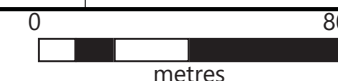


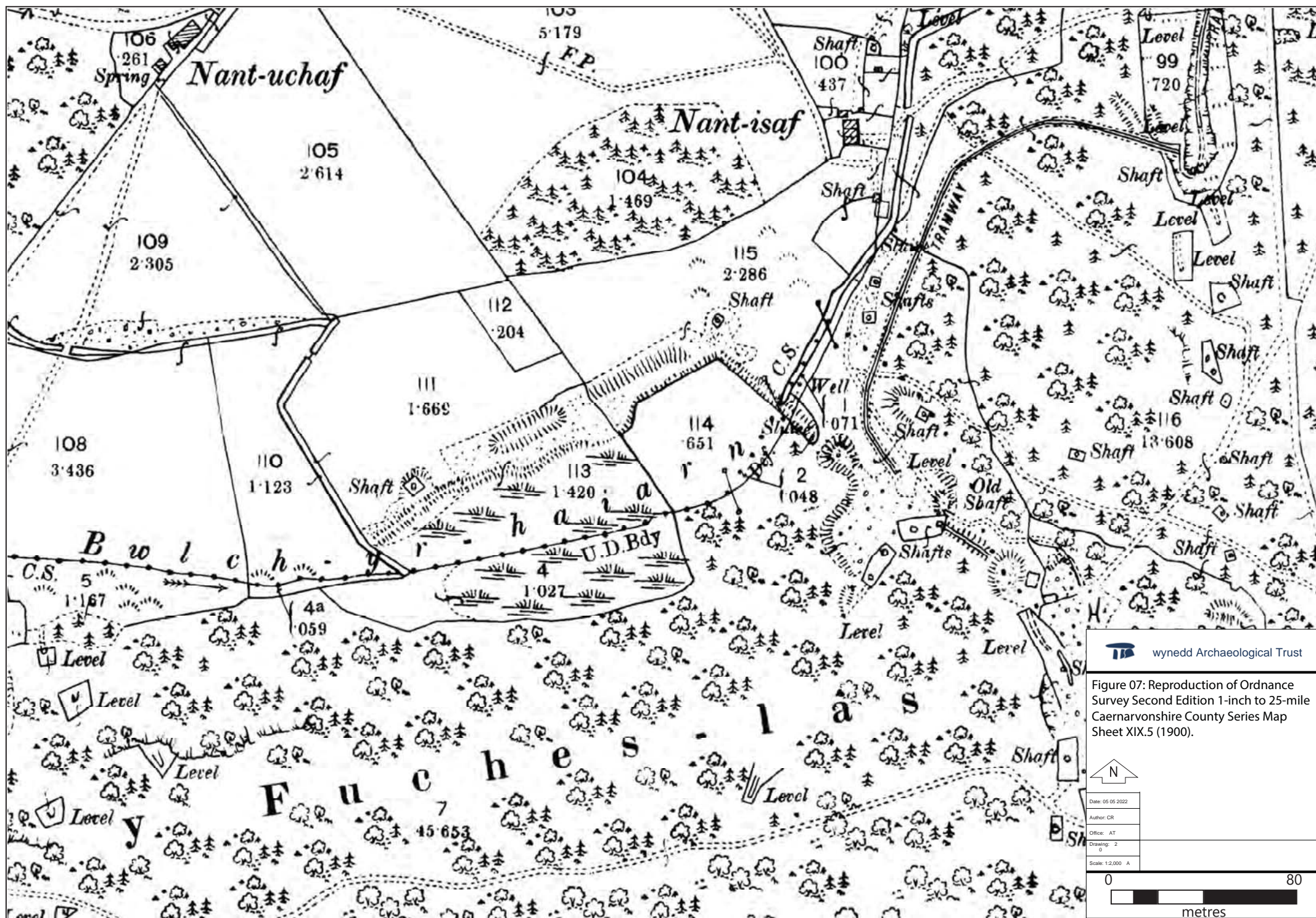
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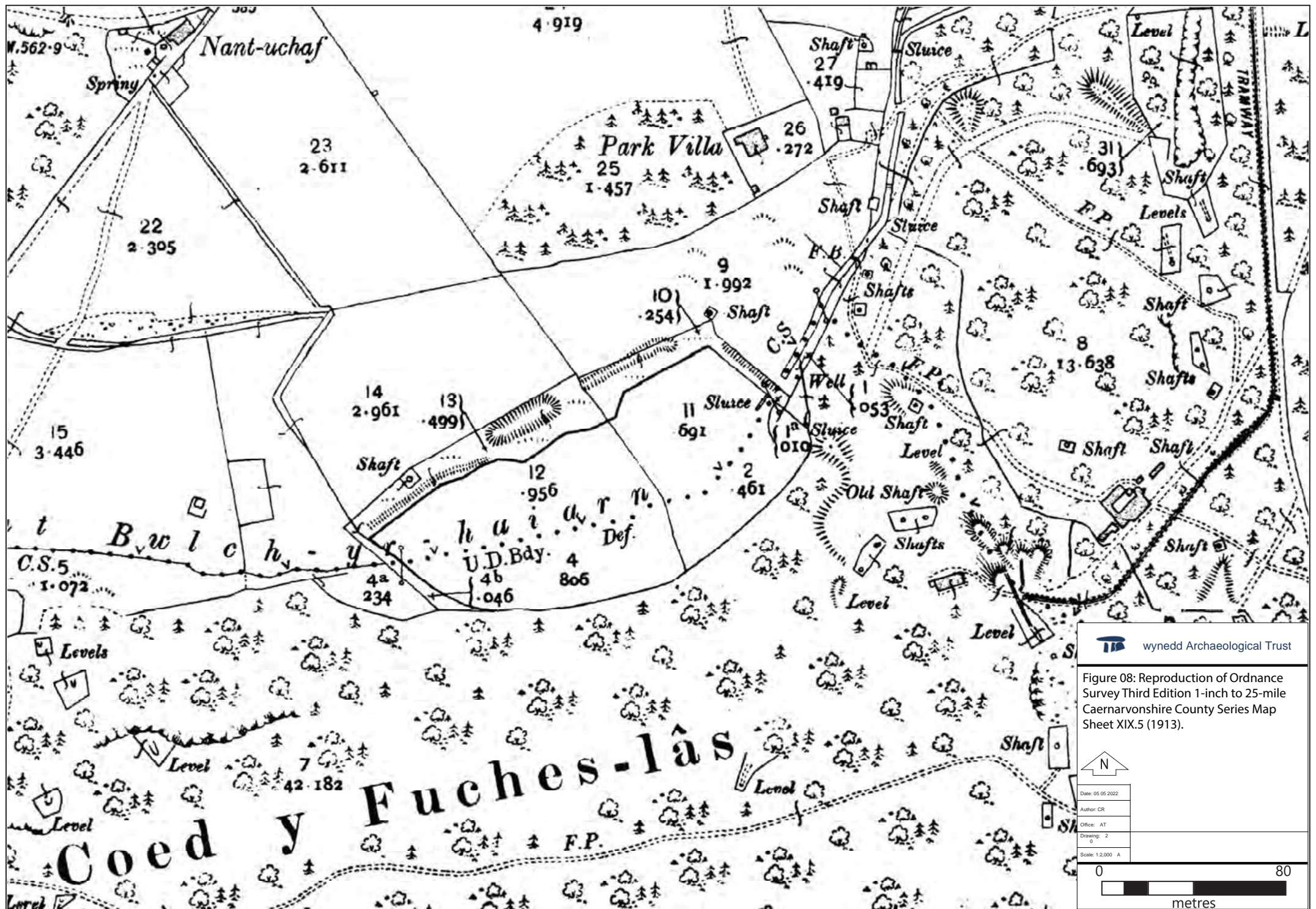
Figure 06: Reproduction of Ordnance Survey First Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XIX.5 (1889).



Date: 05.05.2022
 Author: CR
 Office: AT
 Drawing: 2
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 Scale: 1:2,000 A







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Figure 08: Reproduction of Ordnance Survey Third Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XIX.5 (1913).



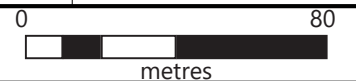
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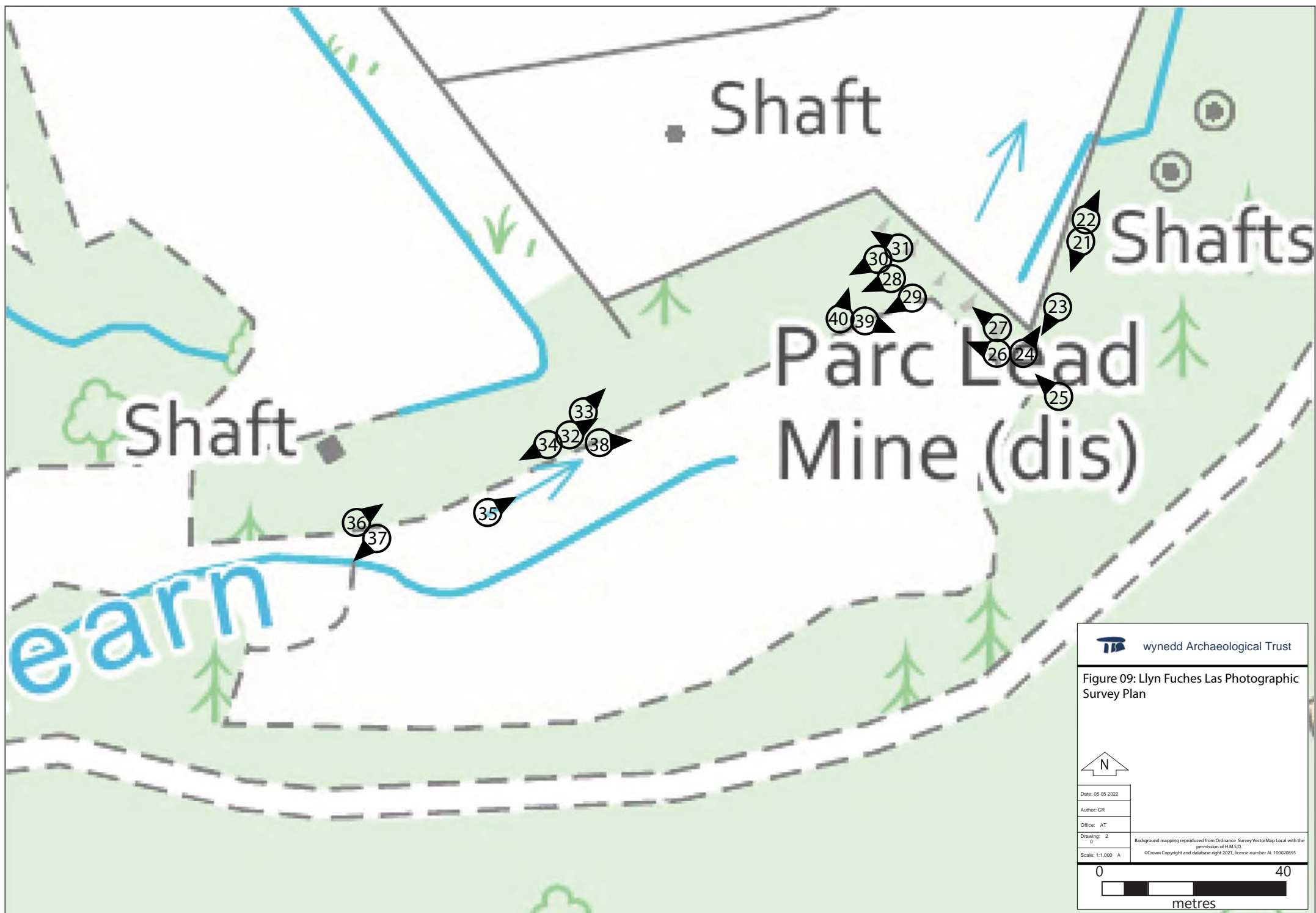
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Figure 09: Llyn Fuchel Las Photographic Survey Plan



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Scale: 1:1,000 A

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Plate 1: Upper Dam facing; scale 1x1m; view from WSW (archive reference: G2697_005).



Plate 2: Lower dam revetment; scale 1x1m; view from NNE (archive reference: G2697_013).



Plate 3: Breach in upper reservoir; scale 1x1m; view from SW (archive reference: G2697_004).



Plate 4: Lower dam revetment and breach; scale 1x1m; view from WSW (archive reference: G2697_014).



Plate 5: View along upper dam; scale -; view from SSW (archive reference: G2697_002).



Plate 6: Area between Dams; scale -; view from SW (archive reference: G2697_018).



Plate 7: View along bank; scale 1x1m; view from SE (archive reference: G2697_025).



Plate 8: Old sluice gate; scale 1x1m; view from NNE (archive reference: G2697_023).



Plate 9: View along spillway; scale 1x1m; view from NNE (archive reference: G2697_021).



Plate 10: Brick structure for water flow under dam; scale -; view from ESE (archive reference: G2697_026).



Plate 11: View along bank; scale 1x1m; view from NE (archive reference: G2697_028).



Plate 12: Other bank and pond area; scale -; view from E (archive reference: G2697_031).



Plate 13: View along bank; scale 1x1m; view from SSW (archive reference: G2697_033).



Plate 14: HDP 01 - Close up; scale -; view from ESE (archive reference: G2697_051).



Plate 15: HDP 02 Plan; scale 1x1m; view from S (archive reference: G2697_042).



Plate 16: HDP 03 - Plan; scale 1x1m; view from SSE (archive reference: G2697_045).



Plate 17: HDP 04 Post-ex; scale 1x1m; view from NW (archive reference: G2697_049).



Plate 18: HDP 05 Section; scale -; view from SSW (archive reference: G2697_048).



Plate 19: HDP 06 Plan; scale 1x1m; view from N (archive reference: G2697_064).



Plate 20: HDP 07 Plan; scale 1x1m; view from SW (archive reference: G2697_054).



Plate 21: HDP 08 Section; scale -; view from NNE (archive reference: G2697_063).



Plate 22: HDP 09 Plan; scale 1x1m; view from NE (archive reference: G2697_052).



Plate 23: HDP 10 Plan; scale -; view from NW (archive reference: G2697_061).



Plate 24: HDP 11 Section; scale -; view from NNW (archive reference: G2697_057).



Plate 25: HDP 12 Plan; scale 1x1m; view from NE (archive reference: G2697_058).



Plate 26: HDP 01 Section; scale -; view from NE (archive reference: G2697_110).



Plate 27: HDP 02 Section; scale -; view from SE (archive reference: G2697_108).



Plate 28: HDP 03 Section; scale -; view from SE (archive reference: G2697_106).



Plate 29: WS 04 Section; scale -; view from W (archive reference: G2697_094).



Plate 30: HDP 05 Section; scale -; view from SE (archive reference: G2697_104).



Plate 31: HDP 06 Section; scale -; view from NNW (archive reference: G2697_090).



Plate 32: HDP 07 Section; scale -; view from SE (archive reference: G2697_088).



Plate 33: HDP 08 Section; scale -; view from NW (archive reference: G2697_084).



Plate 34: HDP 09 Section; scale -; view from WSW (archive reference: G2697_073).



Plate 35: HDP 10 Section; scale -; view from E (archive reference: G2697_071).



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Plate 47: WS 11 Section; scale -; view from W (archive reference: G2697_069).



Plate 48: HDP 12 Plan; scale 1x1m; view from E (archive reference: G2697_066).

APPENDIX I

Gwynedd Archaeological Trust Written Scheme of Investigation

PANDORA RESERVOIR & LLYN FUCHES LAS
GROUND INVESTIGATION WORKS (G2697)

WRITTEN SCHEME OF INVESTIGATION FOR
ARCHAEOLOGICAL WATCHING BRIEF

Prepared for

BINNIES

August 2021



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author			
Reviewed by	Document Reviewer			
Approved by	Principal Archaeologist			

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue

All GAT staff should sign their copy to confirm the project specification is read and understood and retain a copy of the specification for the duration of their involvement with the project. On completion, the specification should be retained with the project archive:

Name

Signature

Date

**PANDORA RESERVOIR & LLYN FUCHES LAS GROUND INVESTIGATION WORKS
(G2697)**

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL WATCHING BRIEF

Prepared for *BINNIES*, August 2021

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1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been commissioned by BINNIES on behalf of Natural Resources Wales to undertake an archaeological watching brief at Pandora Reservoir and Llyn Fuchas Las during ground investigation works.

Pandora Reservoir is located approximately 3.1 km west of Llanwrst, Conwy in the Snowdonia National Park, within Gwydir Forest (NGR SH76966007; postcode LL27 0YX; [Figure 01](#)). The site consists of two reservoirs, Pandora Upper and Lower, with the upper being the western of the two, and is accessed via a number of unclassified roads off the B5106, with forestry tracks run up to the southwestern corner of the site. Approximately 160m to the west of the site, beyond a wooded area, lies the former Pandora mine site, which the reservoirs were built to serve as a water retention and water source. Improvements to the reservoirs have been identified as potentially being required. This will likely include alterations to the existing spillway, an existing breach and raising of the embankments. The exact extent of works that may be required will be dependent upon the results of the ground investigation. The purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall projects design and include:

- 12 Hand excavated trial pits (maximum depth of 1.2m)
- 18 hand augers to refusal
- In-situ testing of pits (hand vanes and infiltration tests in selected hand dug pits)
- 8 surface water and silt/sediment samples across the study area

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3312-DR-GE-00002 (cf. [Figure 02](#)).

Llyn Fuchas Las is located approximately 2km southwest of Llanwrst and 1.6km due east of Pandora Reservoir (NGR SH78565994; postcode LL27 0JB; [Figure 01](#)). The site consists of a large vegetated reservoir approximately 8.4 Ha in size and consists of two earth embankments. The embankments form an L shaped in plan. The reservoir has a capacity in excess of 11,000m³ and a surface area of more than 18,000m² when water is at top water level. The surrounding site is predominantly woodland, with a grassed field to the north east and a residential property 90m away. To the north, beyond an area of woodland and mine features, lies open areas covered in mine spoil. The main dam (eastern) embankment has a maximum height of 4m, width of 1.5m and a length of 30m. The secondary (northern) dam, is at right angle to the main dam, and has a maximum height of some 2m and a length of 70m.

Both are covered in grass. The site is accessed via a number of unclassified roads off the B5106. Access to the Main Dam is along existing forestry roads leading off an unclassified road to the north of the reservoir. Access to the site itself will be from the forestry road dropping down onto the reservoir or via a farm over a field and potentially fencing. As with Pandora Reservoir, the purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall projects design. The ground investigation will include:

- 10 Hand excavated trial pits (maximum depth of 1.2m)
- 12 Dynamic sampling probes to refusal via handheld windowless sampling
- 12 Dynamic probes to refusal
- In situ testing (hand vanes and infiltration tests in pits)
- 6 Samples of surface water and silt/sediment across the site.

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3311-DR-GE-00002_1 (cf. [Figure 03](#)).

The ground investigation works at Pandora Reservoir and Llyn Fuchel Las are currently scheduled mid to late September 2021 and will be undertaken concurrently. They will be monitored as one watching brief in accordance with the following guidance:

- *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) Version 1.1* (The Welsh Archaeological Trusts, 2018);
- *Guidelines for digital archives* (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- *Management of Archaeological Projects* (English Heritage, 1991);
- *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Historic England, 2015);
- *Standard and Guidance for Archaeological Watching Brief* (Chartered Institute for Archaeologists, 2014);
- *Standard and Guidance for Desk Based Assessment* (Chartered Institute for Archaeologists, 2020);
- *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (Chartered Institute for Archaeologists, 2014); and

- Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives (Chartered Institute for Archaeologists, 2020).

Gwynedd Archaeological Trust is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists.

1.1 Fieldwork Aims and Objectives

The key aims and objectives of the archaeological watching brief are to:

- identify and record any archaeological activity identified during the watching brief. Archaeological activity within the local area includes extensive industrial archaeology associated with lead and zinc mining, and the objective would be to establish the date and nature of any archaeological remains identified within the watching brief area and assess their implications for understanding local historical development, in conjunction with the known archaeological record.

1.2 Monitoring Arrangements

The watching brief will be monitored by the Gwynedd archaeological Planning Service (GAPS); the content of this written scheme of investigation (WSI) and all subsequent reporting by GAT must be approved by GAPS prior to final issue.

The GAPS Archaeologist will need to be informed of the project timetable and of the subsequent progress and findings. This will allow the GAPS Archaeologist time to arrange monitoring visits and attend site meetings (if required) and enable discussion about the need or otherwise for further archaeological works (if required) as features of potential archaeological significance are encountered. GAPS' contact details are:

- Jenny Emmett 07824481052
- Tom Fildes 07920264232

1.3 Historic Environment Record

In line with the Gwynedd Historic Environment Record (HER) requirements, the HER will be contacted at the onset of the project to ensure that any data arising is formatted in a manner suitable for accession to the HER and follows the guidance set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (The Welsh Archaeological Trusts, 2018). The HER will be informed of the project start date, location including grid reference, estimated timescale for the work, and further relevant information associated with the project.

The HER Enquiry Number is GATHER1491 and the Event Primary Reference Number is 46127.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Pandora Reservoir

The location of the GI works (Figure 02) comprises two reservoirs: Pandora Reservoir I (PRN 9038; NGR SH77056011) and Pandora Reservoir II (PRN 9037; NGR SH76936009). Both reservoirs are associated with Pandora Mine and are located at the southwestern end of the mine complex. Pandora Mine is located to the south east of Llyn Geirionydd and has a recorded history from the 1840s and was last worked in the 1920s. Pandora initially started as a lead mine, but around the end of the 19th century became a zinc producer. Peripheral remains include tramways, reservoirs and leats. During its history the mine has been referred to as Foel Ddu, Willoughby, Pandora, Welsh-Foxdale and the Eagle. However, the name Pandora is in general usage for this mine site (Dutton, Roberts & Vernon, 1995). In March 2021 Gwynedd Archaeological Trust was commissioned by BINNIES to undertake an archaeological assessment of Pandora Mine, ahead of the construction of a flow monitoring structure at Pandora Pontifex Level towards the centre of the mine complex (Ryan Young, C., 2021). The assessment focused on updating the records previously compiled in the 1990s and recorded 20 features within the mine complex, including the Pandora Reservoir I and II. The report concluded that none of the mine features would be adversely affected by the construction of a flow monitoring structure downstream of the Pontifex Adit as the area was altered during the construction of a public car park in 1983. Pandora Reservoir I and II were not visited as part of the walkover survey completed for the assessment. The first, second and third edition 25-inch to 1-mile Ordnance Survey County Series maps of the area (Caernarvonshire Sheet XVIII.8 & XIX.5), published in 1889, 1900 and 1913 respectively (cf. [Figures 04](#), [05](#) and [06](#)), show the reservoirs with a similar layout to the present day and there is no apparent change between the three editions; a sluice is highlighted on the western side of both reservoirs.

2.2 Llyn Fuches Las

The location of Llyn Fuches Las is not listed on the Historic Environment Record, but it forms part of the Parc Mine complex, located at the southern end of a clearing within the complex. Mineral exploitation at Parc Mine was noted to have taken place from the mid-19th century in a concerted manner, even though there is evidence for earlier activity based on the mineral exploitation activities of the landowning Wynn's of the Gwydir estate, dating back to at least the early 17th century (Evans and Ryan Young, 2021). It was the only lead mine within the wider Gwydir Forest mining landscape that continued to operate after the Second World War, not closing until 1956. Much of the mine complex is now covered in thick forestry, the area having been increasingly afforested since the mine closed; much of the surface of the operations area of the mine is therefore not visible with Llyn Fuches Las being one of the exceptions. Gwynedd Archaeological Trust has completed an archaeological assessment of Parc Mine (Evans and Ryan Young, 2021). A total of 13 features were recorded and the mine itself is considered to be of regional importance as representing the significant lead mining industry in the Gwydir Forest. Llyn Fuches Las was not visited as part of the walkover survey. The first, second and third edition 25-inch to 1-mile Ordnance Survey County Series maps of the area (Caernarvonshire Sheet XVIII.8 & XIX.5), published in 1889, 1900 and 1913 respectively (cf. [Figures 04](#), [05](#) and [06](#)), show the area as characterised by localised mining activity, including embankments, shafts and a sluice; there is no demonstrable difference between the three editions.

3 METHODOLOGY

3.1 Introduction

An archaeological watching brief is defined by the Chartered Institute for Archaeologists as a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive (CIfA, 2014).

3.1.1 Pandora Reservoir

The purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall project design and include:

- 12 Hand excavated trial pits (maximum depth of 1.2m)
- 18 hand augers to refusal
- In-situ testing of pits (hand vanes and infiltration tests in selected hand dug pits)
- 8 surface water and silt/sediment samples across the study area

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3312-DR-GE-00002 (cf. [Figure 02](#)). The watching brief will be limited to the hand excavated trial pits.

3.1.2 Llyn Fuches Las

The purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall projects design. The ground investigation will include:

- 10 Hand excavated trial pits (maximum depth of 1.2m)
- 12 Dynamic sampling probes to refusal via handheld windowless sampling
- 12 Dynamic probes to refusal
- In situ testing (hand vanes and infiltration tests in pits)
- 6 Samples of surface water and silt/sediment across the site.

The location of the ground investigation works are detailed in Binnies drawing no. 123498-BUK-ZZ-3311-DR-GE-00002_1 (cf. [Figure 03](#)). The watching brief will be limited to the hand excavated trial pits.

3.2 Fieldwork Methodology

- All attendances and any identified features will be recorded using GAT watching brief pro-formas ([Appendix III](#));
- The ground investigation works will be monitored as far as the glacial horizon, any archaeological horizon or the limit of excavation, whichever is encountered first. The project archaeologist will be afforded sufficient time and opportunity to investigate any archaeological activity, or suspected archaeological activity, encountered.
- Photographic images will be taken using a digital SLR camera set to maximum resolution in RAW format; a photographic record will be maintained on site using GAT pro-formas ([Appendix II](#)) and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. Photographic images will be archived in TIFF format using Adobe Photoshop; the archive numbering system will start from the next archive number following from the photographic record. When practical, a photographic ID board will be used during the watching brief to record site code, image orientation and any relevant context numbers;
- Any subsurface features will be recorded photographically, with detailed notations and a measured survey (completed using a *Trimble R8* GPS unit);
- Any archaeological features/deposits/structures encountered will be manually cleaned and examined to determine extent, function, date and relationship to adjacent activity. It is expected that the archaeology encountered will be associated with lead and zinc mining, but the following excavation strategy will generally apply: 50% sample of each sub-circular feature, 10% sample of each linear feature (terminal ends and intersection points with other features will be prioritised). However, if discrete features are identified these will be 100% excavated as will any exposed segments of linear features. *In the event of the identification of extensive/complex remains (for example burials, structures or preserved wooden or organic artefacts), additional time, resourcing and costs may be required for GAT to complete an appropriate programme of works;*
- Any required plans or sections to be drawn at a minimum 1:10 scale using GAT A4, A3 or A2 pro-forma permatrace;

- Should dateable artefacts, human remains and/or ecofacts be recovered, an **interim report** will be submitted summarising the results of the watching brief, along with an assessment of potential for analysis post-excavation project design (in line with the MAP2 process). *Additional time, resourcing and costs will be required to undertake any post-excavation programme of works.*
- The watching brief will be preceded by a tool box talk from GAT to the GI contractor, defining the scope and procedures of the archaeological works.
- *BINNIES* will kept informed by GAT of the general results and any significant observations, during the course of the watching brief; this will be communicated primarily via email.

3.3 Human Remains

Whilst it is not expected that human remains are to be encountered, if any human remains identified are to be excavated, and cannot be preserved in situ this will take place under appropriate regulations and with due regard for health and safety issues. In order to excavate human remains, a Ministry of Justice licence is required under Section 25 of the Burials Act 1857 for the removal of any body or remains of any body from any place of burial. In accordance with the Ministry of Justice licence, recovered remains will be reburied once the investigation and/or assessment/analysis are complete.

Non-fragmented skeletal remains will be excavated using wooden tools and collected and stored in polyethylene bags (with appropriate references for context, grave number, et al) and placed in a lidded cardboard archive box (note: separate boxes for each grave) and stored in a suitable manner within GAT premises. If significant quantities of human remains are encountered, a human osteologist should be contacted and appointed to advise the team during the fieldwork. The osteologist will be an external appointment: Dr. Genevieve Tellier | Tel: 01286 238827 | email: northwalesosteology@outlook.com who will assist in devising the excavation, recording and sampling strategy for features containing human remains. The osteologist should also help to ensure that adequate post-excavation processing of human remains is carried out so that the material is in a fit state for assessment during the post-excavation stage. For inhumations, this will involve washing, drying, marking and packing.

If human remains are recovered that are deemed suitable for further assessment/analysis, this will be completed in accordance with the osteologist's requirements and with *Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports* (Chartered Institute for Archaeologists, 2017).

3.4 Ecofacts

Due to the existing ground conditions and the depth of the proposed works it is unlikely that suitable deposits will be encountered. If they are however, bulk samples will be taken by the GAT archaeologist for further assessment and analysis. If any waterlogged/organic deposits are encountered, the GAT archaeologist will monitor and record the depth and context of the deposit or deposits but will not recover samples. Based on potential, e.g., an extensive depth of waterlogged deposits, recourse may be made to a specialist (via Lucy Whittingham | Project Manager (post-excavation) | AOC Archaeology | telephone: 0208 843 7380 | email: lucy.whittingham@aocarchaeology.com) for advice on a palaeoenvironmental assessment and analysis strategy.

For any ecofact samples taken from human burials, this will be completed in accordance with an appointed osteologist's guidance.

3.5 Artefacts

Diagnostic artefacts will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on site and the context from which they were retrieved noted but the sherds will not be retained. Retained artefacts will be treated according to guidelines issued by the UK Institute of Conservation, in particular the advice provided within First Aid for Finds (Watkinson and Neal 2001).

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and Historic England (2012) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy via Jackeline Robertson (AOC Archaeology | telephone: 0208 843 7380).

All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum (in this case Conwy Archive Service, Old Board School, Lloyd Street, Llandudno LL30 2YG) where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff.

All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the Portable Antiquities Scheme acts as advisor on technical matters, and may be the recipient body for the objects.

The Treasure Valuation Committee, based at the British Museum, and informed by the Portable Antiquities Scheme, will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled.

GAT will contact the landowner for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Conwy Archive Service). A GAT produced pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. Artefacts to be donated will then be transferred to Conwy Archive Service in accordance with their guidelines.

3.6 Working Project Archive & Data Management Plan

Following the completion of the fieldwork, a programme of fieldwork archiving will be completed based on following task list:

1. Pro-formas: all cross referenced and complete;
2. Photographic Metadata: completed in *Microsoft Access* and cross-referenced with all pro-formas;

This data will then be used as the basis for the physical and digital dataset archives. Information from these will be used to compile the project report. The physical archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink. External datasets for the HER and RCAHMW are as defined in the dissemination strategy below. De-selected digital data will be confirmed in an updated digital management plan appended to the final report.

A draft report will be submitted within one month of fieldwork completion and a final report will be submitted to the regional Historic Environment Record within six months of project completion. The report will include the following:

1. Non-technical summary (Welsh and English)
2. Introduction
3. Background
4. Methodology
5. Results
6. Conclusion
7. List of sources consulted.
8. Appendix I – approved GAT project specification
9. Appendix II – photographic metadata

On final approval, the following dissemination and archiving of the report and digital dataset will apply:

- A digital report(s) will be provided to the client and GAPS (draft report then final report);
- A digital report will be provided to the regional Historic Environment Record; this will be submitted within six months of project completion (final report only), along with a

digital dataset comprising an Event PRN summary. The report and dataset will be submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and

- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset will be prepared in the format required by RCAHMW and will include:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).

3.7 Selection Strategy

As defined in *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020) section 3.3.1, a project specific selection strategy and data management plan should be prepared. In support of this, the Chartered Institute for Archaeologist (CIfA), have stated that it is “widely accepted that not all the records and materials collected or created during the course of an Archaeological Project require preservation in perpetuity. These records and materials constitute the Working Project Archive which will be subject to Selection, in order to establish what will be retained for long-term curation”. The aim of selection is to ensure that all the elements retained from the Working Project Archive for inclusion in the Archaeological Archive are appropriate to establish the significance of the project and support “future research, outreach, engagement, display and learning activities”. Selection should be “focused on selecting what is to be retained to support these future needs, rather than deciding what can be dispersed” and can be qualified by a selection strategy, which details the project-specific selection process, agreed by all parties (including CPAT, client and/or landowner), which will be applied to a Working Project Archive prior to its transfer into curatorial care as the Archaeological Archive.

The selection strategy is summarised in [Appendix III](#) will be confirmed in the Level 3 report and will take into account:

- The aims and objectives of the project.
- The brief and/or Written Scheme of Investigation (WSI)).
- The Collecting Institution’s collection policy and/or deposition guidelines.
- Local and regional research frameworks.
- Relevant thematic or period specific research frameworks.
- The project’s Data Management Plan (DMP).
- Internal recording and reporting policies.
- Material-specific guidance documents.

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section with attendances on-site undertaken by a GAT Project Archaeologist. The Project Archaeologist will be responsible for the following:

- All archaeological watching brief duties on site;
- Client/contractor liaison;
- GAPS liaison, with regular updates;
- specialist liaison (if relevant);
- completing all on site pro-formas and the fieldwork archive;
- sourcing Primary Reference Numbers (PRN) from the GAT HER for any new features identified;
- completing an event summary and creating or updating PRN data, dependent on results; and
- for submitting a draft final report (or interim report) for project manager review and approval, to then be submitted as per the arrangements defined above.

5 HEALTH AND SAFETY

The GAT Project Archaeologist(s) will be CSCS certified. Copies of the site specific risk assessment will be supplied to the client and site contractor prior to the start of fieldwork. Any risks and hazards will be indicated prior to the start of work via a submitted risk assessment. All staff will be issued with required personal safety equipment, including high visibility jacket, steel toe-capped boots and hard hat. GAT staff will abide by Trust Covid-19 guidelines and site contractor guidelines.

6 SOCIAL MEDIA

One of the key aims in the GAT mission statement is to improve the understanding, conservation and promotion of the historic environment in our area and inform and educate the wider public. To help achieve this, GAT maintains an active social media presence and seeks all opportunities to promote our projects and results. With permission, GAT would like the opportunity to promote our work on this scheme through our social media platforms. This could include social media postings during our attendance on site as well as any postings to highlight results. In all instances, approval will be sought from client prior to any postings.

7 INSURANCE

7.1 Public/Products Liability

Limit of Indemnity- £5,000,000 any one event in respect of Public Liability

INSURER Aviva Insurance Limited

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/UN/000375

EXPIRY DATE 21/06/2022

7.2 Employers Liability

Limit of Indemnity- £10,000,000 any one occurrence.

The cover has been issued on the insurers standard policy form and is subject to their usual terms and conditions. A copy of the policy wording is available on request.

INSURER Aviva Insurance Limited

POLICY TYPE Employers Liability

POLICY NUMBER 24765101 CHC / UN/000375

EXPIRY DATE 21/06/2022

7.3 Professional Indemnity

Limit of Indemnity- £5,000,000 in respect of each and every claim

INSURER Hiscox Insurance Company Limited

POLICY TYPE Professional Indemnity

POLICY NUMBER PL-PSC10002389775/00

EXPIRY DATE 22/07/2022

8 SOURCES CONSULTED

1. Bennett, J. & Vernon, R., 1995 , Mines of the Gwydyr Forest Part 6
2. Brunning, R and Watson, J 2010, *Waterlogged Wood: Guidelines on the Recording*,
3. Chartered Institute for Archaeologists, 2014, *Standard and Guidance for Archaeological Watching Brief*
4. Chartered Institute for Archaeologists, 2014, *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*
5. Chartered Institute for Archaeologists, 2014. *Standard and Guidance for Archaeological Watching Brief*;
6. Chartered Institute for Archaeologists, 2017, *Updated Guidelines to the Standards for Recording Human Remains*
7. Chartered Institute for Archaeologists, 2020, *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives*
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Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5
18. Ordnance Survey 1900. Second Edition Ordnance Survey 1-inch to 25-mile
Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5
19. Ordnance Survey 1913. Third Edition Ordnance Survey 1-inch to 25-mile
Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5
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21. Ryan Young, C., 2021, Pandora Mine, Trefriw, Conwy: Asesiad Archeolegol / Archaeological Assessment. Gwynedd Archaeological Trust report 1589
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FIGURE 01:

Location Plan, based on Ordnance Survey County Series 1:10000 map sheet SH76. Scale 1:7500@A4 © Crown Copyright. All Rights Reserved. License Number AI100020895

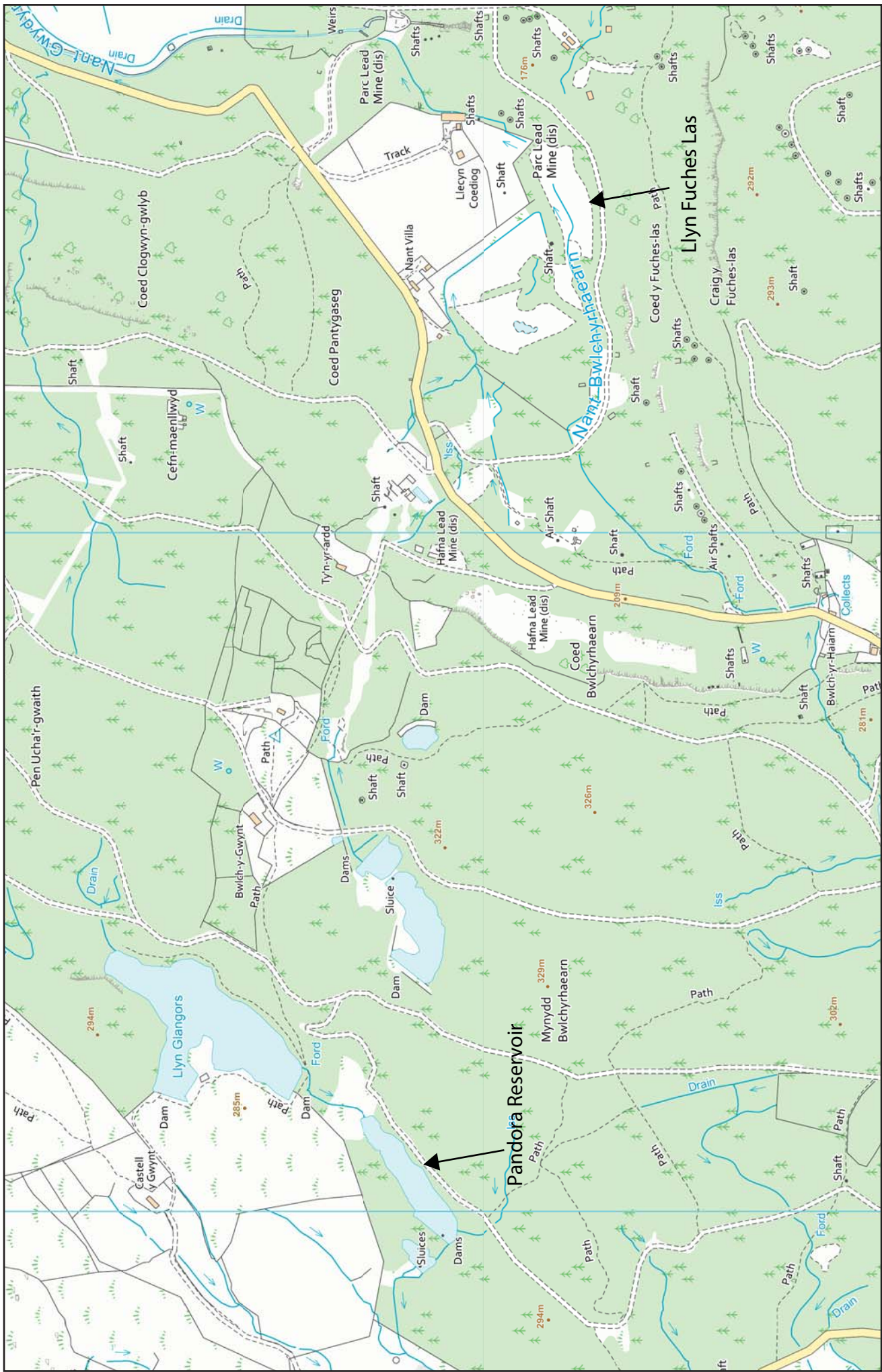


FIGURE 01: Location Plan, based on Ordnance Survey County Series 1:10000 map sheet SH76. Scale 1:7500@A4

FIGURE 02:

Reproduction of BINNIES Drawing No. 1 123498-BUK-ZZ-3312-DR-GE-00002 123498-BUK-ZZ-3311-DR-GE-00002_1

Map: This map has been distributed as a layered pdf. Layer selection for printing is at the discretion of the client.

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Legend:

SAMPLE TYPE

HAND AUGER

HAND DUG PIT

SURFACE WATER AND SEDIMENT/SILT SAMPLES

NOTE: This map has been distributed as a layered pdf. Layer selection for printing is at the discretion of the client.

SAFETY HEALTH AND ENVIRONMENT INFORMATION

THIS DRAWING IS FOR INFORMATION ONLY AND IS NOT TO BE USED FOR ANY PURPOSES OTHER THAN THAT FOR WHICH IT WAS ASSIGNED. THE CLIENT IS RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ANY WORK BASED ON THIS DRAWING. THE FOLLOWING SIGNIFICANT RESIDUAL RISKS SHOULD BE NOTED. MANAGEMENT ACTIONS ARE INCLUDED IN THE CONSTRUCTION RISK REGISTER.

CONSTRUCTION

MANTENANCE / CLEARING / OPERATION

EUCOMMS SKINNING / DEMOLITION

Rev	Drawn	Check	Revised	Approved	Date	Description
P01	TM	RC	AL	LM	02/08/2021	INITIAL DRAWING

Drawn by: TM
Checked by: RC
Revised by: AL
Approved by: LM
Client:

Cyfoeth Natural Resources Wales

Client Project No.

Revision

binnies

Binnies UK Limited
Wynod Lodge, 172 Church Road, Llanwrtydion, Wrexham, Wylfa A.I.R.
Tel: 01492 127 790

Project

NRW PANDORA RESERVOIR PROJECT

Drawing title

PANDORA RESERVOIR SAMPLING LOCATIONS

Drawing scale: 1:1,000

Sheet size: A3

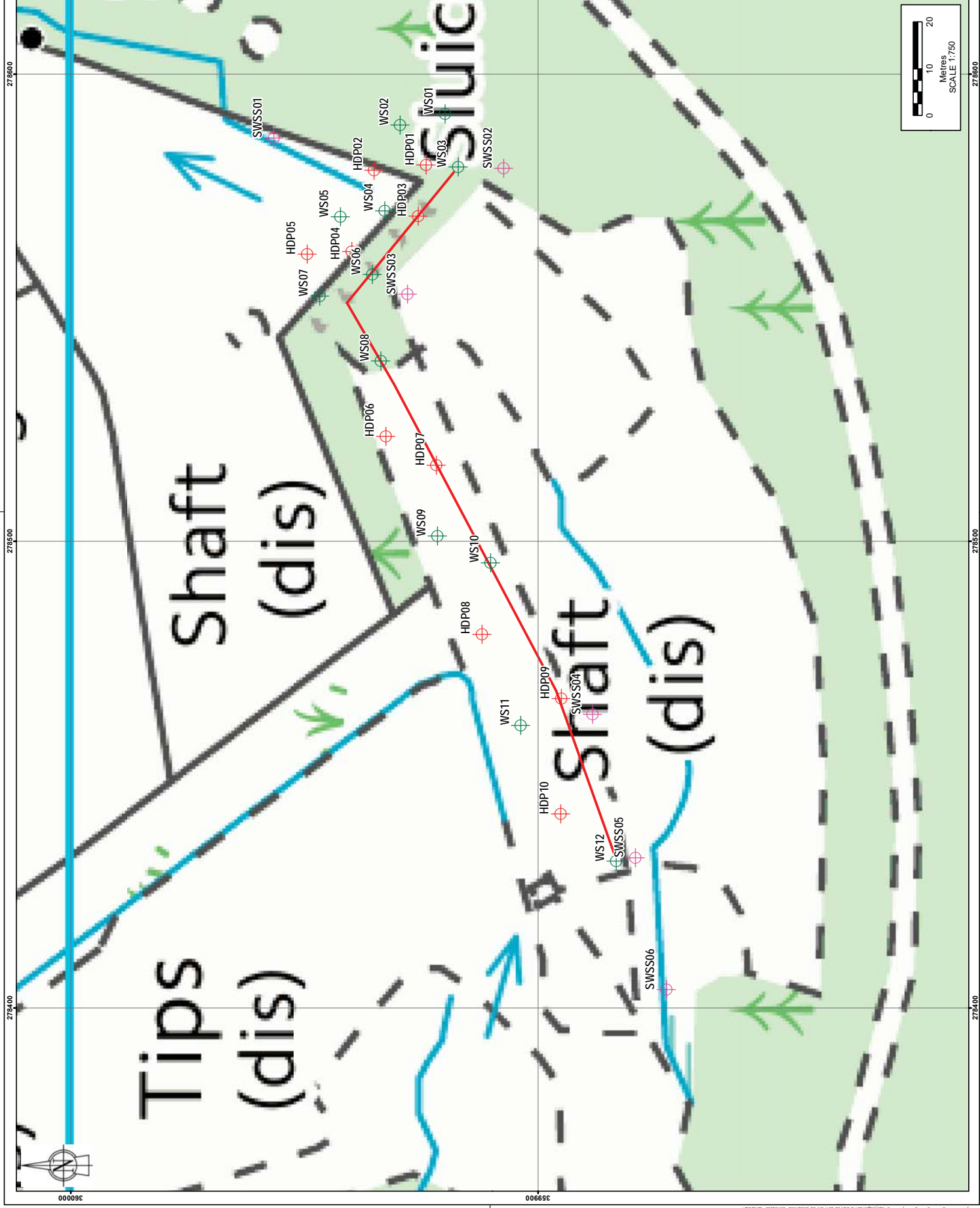
Drawing no: 123456-BUW-ZZ-3312-BR-GE-00002

Revision: P01



FIGURE 03:

Reproduction of BINNIES Drawing No. 1 123498-BUK-ZZ-3311-DR-GE-00002_1



<small>Note: This map is created by digitising the original maps and plans of the area shown above. The drawing and/or its contents are hereby acknowledged as being the intellectual property of the copyright owner and shall remain the sole property of the copyright owner. Reproduced by permission of Ordnance Survey on behalf of HMOS. © Crown copyright and database rights, 2021 Ordnance Survey Licence number 100019741</small>	<p>Legend:</p> <ul style="list-style-type: none"> SAMPLE TYPE HAND DUG PIT SURFACE WATER AND SEDIMENT/SILT SAMPLES WINDOW SAMPLE RESERVOIR EMBANKMENTS 	<p>NOTE: This map has been distributed as a layered pdf. Layer selection for printing is at the discretion of the client.</p>	<p>SAFETY HEALTH & ENVIRONMENT INFORMATION</p> <p>IN ADDITION TO THE HAZARDS OR RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILLED ON THIS DRAWING, THE FOLLOWING HAVE BEEN IDENTIFIED AS BEING PRESENT AND RELEVANT. FURTHER DETAILS ARE INCLUDED IN THE CONCLUSION RISK MANAGEMENT REGISTER</p> <p>CONSTRUCTION</p> <hr/> <p>MAINTENANCE / CLEARING / OPERATION</p> <hr/> <p>DECOMMISSIONING / DEMOLITION</p>	<table border="1"> <thead> <tr> <th>POT</th> <th>TW</th> <th>RZ</th> <th>LAI</th> <th>DRAWNOVERLAY DATE</th> <th>APPROVED DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td>02/08/2021</td> <td></td> <td>RITUAL DRAWING</td> </tr> </tbody> </table>	POT	TW	RZ	LAI	DRAWNOVERLAY DATE	APPROVED DATE	DESCRIPTION					02/08/2021		RITUAL DRAWING	<p>Drawn by TW Date 08/02/21</p> <p>Issued S3</p> <p>Client Cymru</p>	<p>Cyfoeth Naturiol Cymru Natural Resources Wales</p>	<p>Client Project No. Random</p>	 binnies UK Limited Spring Valley, 171 - 181, Market Street, Newport, South Wales NP23 5LH Tel: +44(0)1792 375911	<p>Project NRW FUCHES LAS PROJECT</p>	<p>Drawing title FUCHES LAS SAMPLING LOCATIONS</p>	<p>Drawing scale 1:750 Drawing size A3</p>	<p>Drawing no 123-08-BUK-ZZ-3811-DR-GC-00002 Revision P001</p>
POT	TW	RZ	LAI	DRAWNOVERLAY DATE	APPROVED DATE	DESCRIPTION																				
				02/08/2021		RITUAL DRAWING																				

FIGURE 04:

**Reproduction of Ordnance Survey First Edition 1-inch to 25-mile
Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1889). Scale
1:7500@A4.**

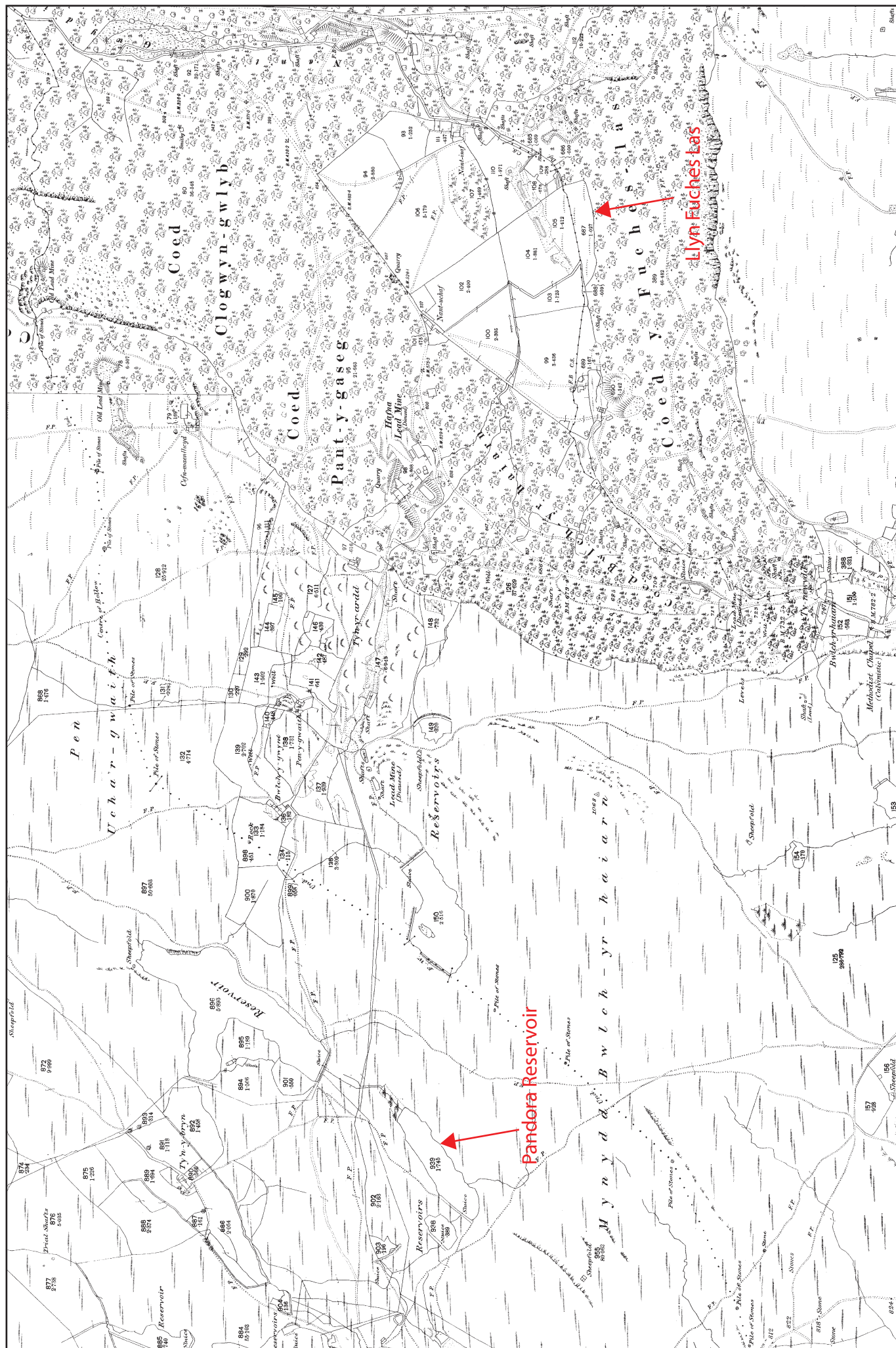


FIGURE 04: Reproduction of Ordnance Survey First Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1889).
Scale 1:7500@A4.

FIGURE 05:

**Reproduction of Ordnance Survey Second Edition 1-inch to 25-mile
Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1900) Scale
1:7500@A4.**

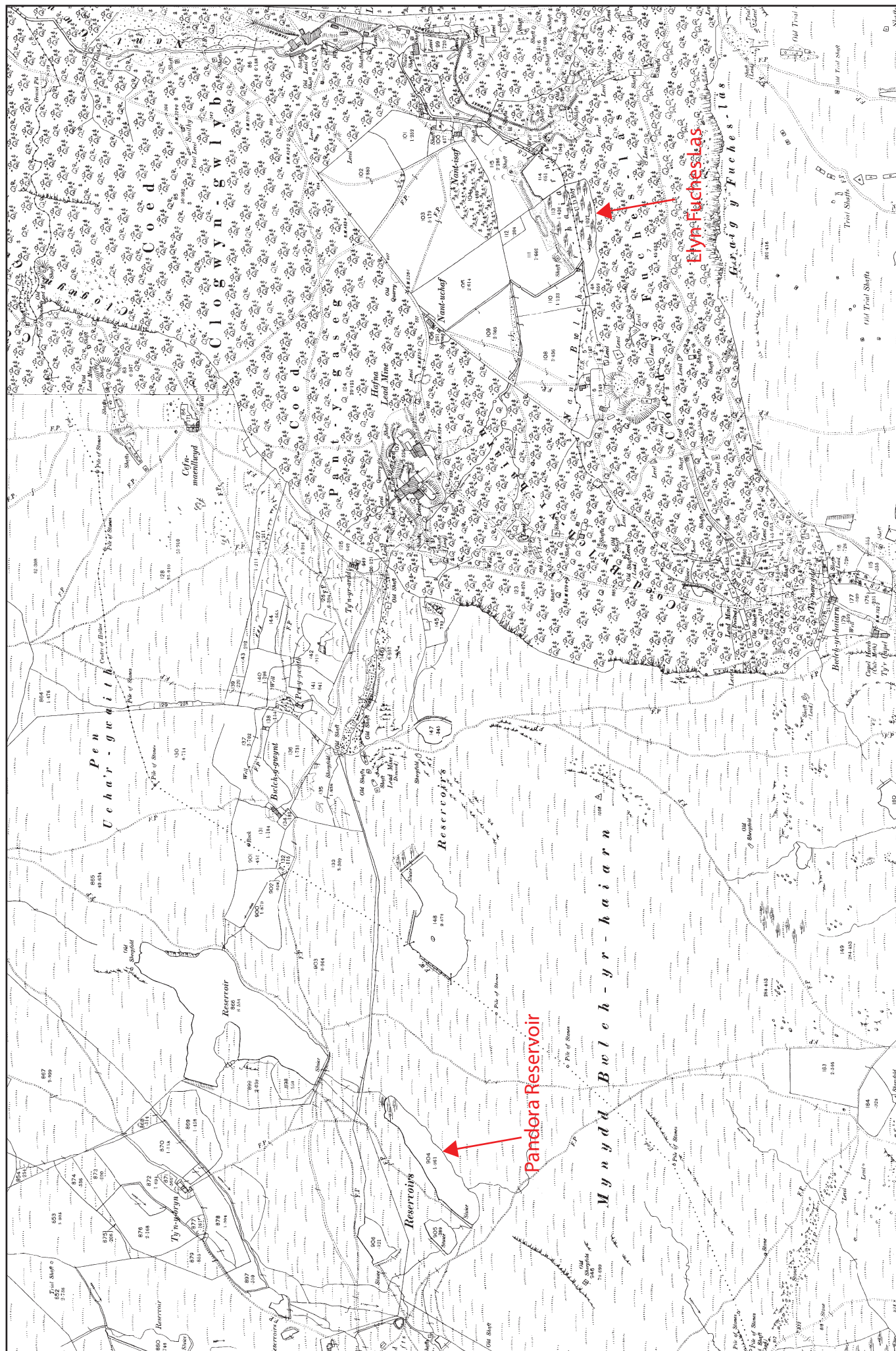


FIGURE 05: Reproduction of Ordnance Survey Second Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1900)
Scale 1:7500@A4.

FIGURE 06:

**Reproduction of Ordnance Survey Third Edition 1-inch to 25-mile
Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1913) Scale
1:7500@A4.**

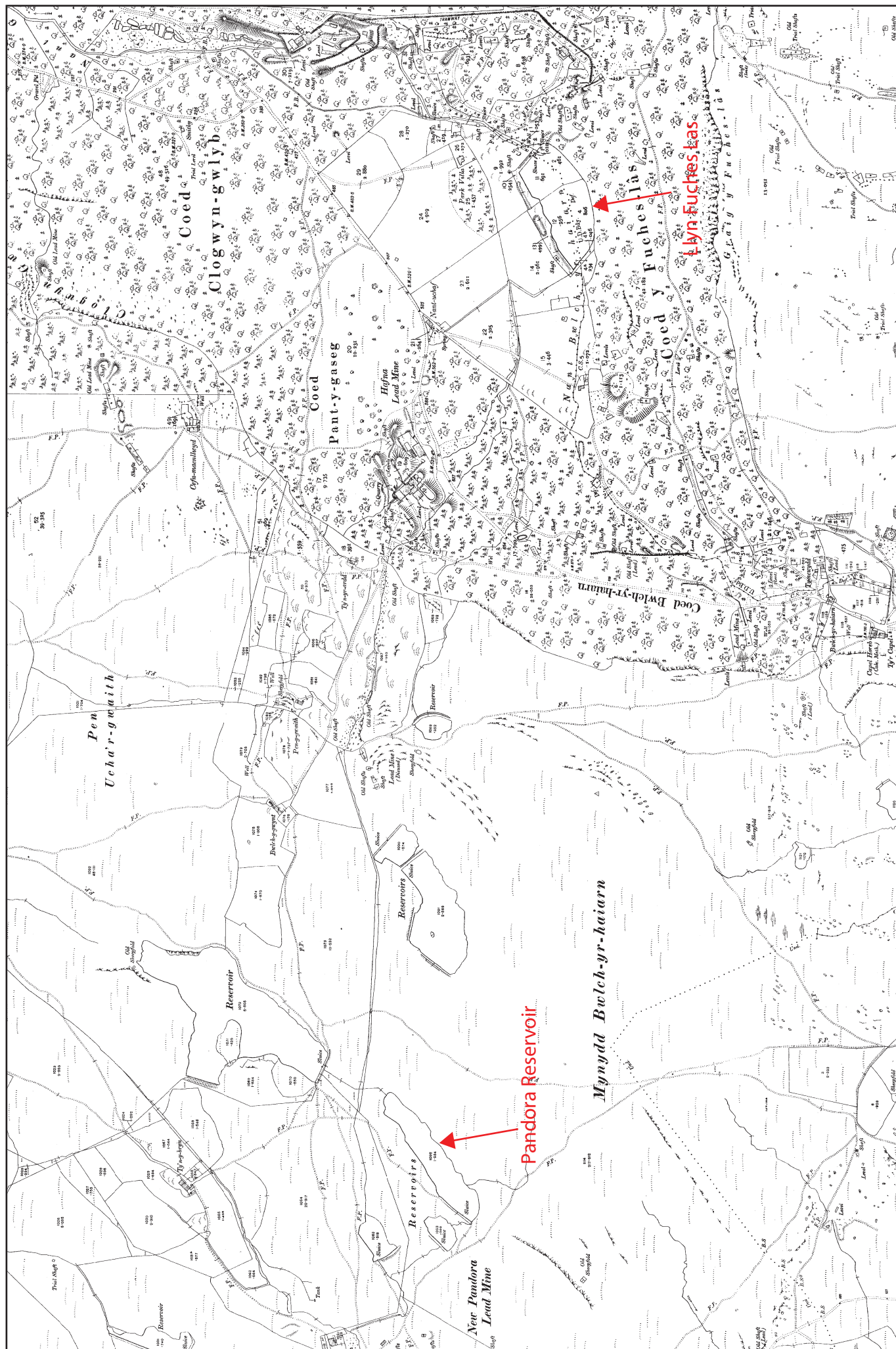


FIGURE 06: Reproduction of Ordnance Survey Third Edition 1-inch to 25-mile Caernarvonshire County Series Map Sheet XVIII.8 & XIX.5 (1913).
Scale 1:7500@A4.

APPENDIX I

Gwynedd Archaeological Trust Photographic Metadata pro-forma

Include main context numbers for each shot, drawing numbers for sections and any other relevant numbers for cross referencing. Delete any unwanted photos **immediately** from the camera. Regularly upload photographs to computer.

[illegible]

APPENDIX II

Gwynedd Archaeological Trust Watching Brief pro-forma

YMDDIRIEDOLAETH ARCHAEOLEGOL GWYNEDD ARCHAEOLOGICAL TRUST		
WATCHING BRIEF DAY RECORD		Date
Project name	Project number	Compiler
Location		
Description		
Times of travelling and on-site		
Drawn record details		
Photographic record details		

APPENDIX III

Gwynedd Archaeological Trust Selection Strategy

G2697_Pandora_Reservoir_Llyn_Fuches_Las_Gl

27/08/2021 v1.0

Selection Strategy

Project Information

Project Management

Project Manager	John Roberts john.roberts@heneb.co.uk	
Archaeological Archive Manager	John Roberts john.roberts@heneb.co.uk	
Organisation	Gwynedd Archaeological Trust	
Stakeholders		Date Contacted
Collecting Institution(s)	GAT Historic Environment Record	26/08/2021
	RCAHMW	On completion of Project Archive
Project Lead / Project Assurance	Jenny Emmett Gwynedd archaeological Planning Service	25/08/2021
Landowner / Developer	NRW	tbc
Other	BINNIES	n/a

Resources

Resources required Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.	No unusual resources required outside of GAT normal operating equipment and personnel.
--	--

Context

Describe below the context of this Selection Strategy. You should refer to:

- The aims and objectives of the project;
- Local Authority guidance (including the brief);
- Research Frameworks;

- The repository collection development policy and/or deposition policy;
- Material-specific guidance documents.

Note: This section may be copied from your Project Design/WSI to ensure all Stakeholders receive this context information.

The full aims and objectives of this project are detailed in the project specific WSI.

Gwynedd Archaeological Trust has been commissioned by BINNIES on behalf of Natural Resources Wales to undertake an archaeological watching brief at Pandora Reservoir and Llyn Fuchas Las during ground investigation works. Pandora Reservoir is located approximately 3.1 km west of Llanwrst, Conwy in the Snowdonia National Park, within Gwydir Forest and consists of two reservoirs, Pandora Upper and Lower. Improvements to the reservoirs have been identified as potentially being required, including alterations to the existing spillway, an existing breach and raising of the embankments. The exact extent of works that may be required will be dependent upon the results of the ground investigation. Llyn Fuchas Las is located approximately 2km southwest of Llanwrst and 1.6km due east of Pandora Reservoir. The site consists of a large vegetated reservoir approximately 8.4 Ha in size and consists of two earth embankments. As with Pandora Reservoir, the purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall projects design.

Gwynedd Archaeological Trust. 2021. *Pont Faen, Llangernyw: Written Scheme of Investigation*. Project G2693.

1 – Digital Data

Stakeholders

Name the individual(s) responsible for the Digital Data Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Collections Curator).

John Roberts (GAT Principal Archaeologist)

Selection

Location of Data Management Plan (DMP)

Selection of digital data elements should be considered in your project's DMP. For the purpose of the Selection Strategy, you can either copy the selection section of your DMP below, or attach it as an appendix to this document. Please indicate here if the DMP is attached.

All digital data will be collected and stored in line with the Gwynedd Archaeological Trust (GAT) Data Management Plan located on GAT's servers (available on request).

The selection strategy in your DMP should:

- 1.1 Define what digital data will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have digital data that should be included in the archaeological archive.
- 1.2 Identify the selection review points during the project (i.e. project planning, data gathering, analysis and reporting and archive compilation).
- 1.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 1.4 Identify any selection decisions that differ from standard guidelines and explain why.

Archiving will be completed based on following task list;

- Pro-formas: all cross referenced and scanned for digital archiving;
- Photographic Metadata: cross-referenced with all pro-formas and completed in *Microsoft Excel*.

This data will be used as the basis for the physical and digital dataset archives and to compile the project report.

The physical paper archive will be stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset will be stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink.

External datasets for the regional HER and RCAHMW have been prepared and submitted.

Archiving will be undertaken in accordance with the following standards and guidance:

- *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* Version 1.1 (The Welsh Archaeological Trusts, 2018);
- *Guidelines for digital archives* (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (Chartered Institute for Archaeologists, 2020); and
- *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020).

A selection review point will be completed during processing of the working project archive and again during final project archiving. There are no selection decisions that differ from standard guidelines.

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

De-selected digital data to be confirmed on project completion.

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Dr Gary Duckers – Historic Environment Record, Clwyd Powys Archaeological Trust;
Gareth Edwards, *Head of Knowledge and Understanding, RCAHMW*

Selection

Describe your Selection Strategy for the Documents elements of the archaeological archive. To do this you must:

- 2.1 Define which documents will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have documents that should be included in the archaeological archive.
- 2.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 2.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 2.4 Identify any selection decisions that differ from standard guidelines and explain why.

- A digital report will be provided to the regional Historic Environment Record; along with a digital dataset comprising an Event PRN summary. The report and dataset have been submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset was prepared in the format required by RCAHMW and included:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).
 - A selection review point will be completed during processing of the working project archive and again during final project archiving. There are no selection decisions that differ from standard guidelines.

De-Selected Documents

Describe the procedure for dealing with De-selected material and what specialist advice has informed this procedure.

Material de-selected from inclusion in the preserved archive are likely to be duplicates and reproductions created during the project. De-selected material will be retained to supplement GAT's research files or recycled.

3 – Materials

Note: This step should be completed for each material component of the archaeological archive. Copy this table for the various materials as required, providing the 'Material Type' and a section identifier (eg. '3.1') for each.

Material type	TBC	Section 3.	
----------------------	-----	-------------------	--

Stakeholders

Name the individual(s) responsible for the Materials Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Conwy Archive Service, Old Board School, Lloyd Street, Llandudno LL30 2YG

Selection

Describe your Selection Strategy for each material type and or object type. To do this you must:

- 3.1 State the Selection Strategy you are applying to each category of material, how this will be done, and why.
- 3.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 3.3 Reference all relevant standards, policies or guidelines (e.g. thematic, period, and regional, Research Frameworks, repository deposition policies) and specialist advice sought.
- 3.4 Identify any selection decisions that differ from standard guidelines and explain why.

The Materials Selection Template may be useful in structuring this section.

The artefacts will be treated according to guidelines issued by the UK Institute of Conservation (Watkinson and Neal 2001) in particular the advice provided within *First Aid for Finds* (Rescue 1999) and Historic England.

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and Historic England (2012) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy.

All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum (in this case Conwy Archive Service, Old Board School, Lloyd Street, Llandudno LL30 2YG), where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff.

All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the Portable Antiquities Scheme acts as advisor on technical matters, and may be the recipient body for the objects.

The Treasure Valuation Committee, based at the British Museum, and informed by the Portable Antiquities Scheme, will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been

settled.

GAT will contact the landowner (via client) for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Conwy Archive Service). A GAT produced pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. Artefacts will be transferred to the Conwy Archive Service in accordance with their guidelines.

The following selection review points during the project will be undertaken:

- Working project archive processing;
- Reporting; and
- archive compilation

Uncollected Material

If you are practising selection in the field, describe the process that will be applied. To do this you must:

- Detail how you will characterise, quantify and record all uncollected material on site.
- Explain how you will dispose of, or re-distribute, uncollected material.

Diagnostic artefacts will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on site and the context from which they were retrieved noted but the sherds will not be retained.

De-Selected Material

Describe what you will do with the de-selected material. All processed material should have been adequately recorded before de-selection.

All processed material will be recorded before de-selection and identified in an amended Materials Selection table. Artefacts de-selected for museum accessioning will be retained at GAT as research and diagnostic tools..

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

Materials Selection Template

This table may be inserted into Section 3 of the main [Selection Strategy Template](#) to help present differing selection strategies for different material types

Find Type	Selection Strategy	Stakeholders	Review Points

APPENDIX II

Gwynedd Archaeological Trust Photographic Metadata

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_001	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along upper dam	SW	1x1m	Carol Ryan Young	09/03/2022	
G2697_002	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along upper dam	SSW	-	Carol Ryan Young	09/03/2022	5
G2697_003	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Upper Reservoir	SW	-	Carol Ryan Young	09/03/2022	
G2697_004	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Breach in upper reservoir	SW	1x1m	Carol Ryan Young	09/03/2022	3
G2697_005	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Upper Dam facing	WSW	1x1m	Carol Ryan Young	09/03/2022	1
G2697_006	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Upper Dam facing	NNE	1x1m	Carol Ryan Young	09/03/2022	
G2697_007	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along upper dam	NE	1x1m	Carol Ryan Young	09/03/2022	
G2697_008	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Upper Reservoir	NNE	1x1m	Carol Ryan Young	09/03/2022	
G2697_009	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View to lower Dam from Upper	SE	-	Carol Ryan Young	09/03/2022	

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_010	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along upper dam	N	-	Carol Ryan Young	09/03/2022	
G2697_011	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along lower dam	NE	1x1m	Carol Ryan Young	09/03/2022	
G2697_012	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along lower dam	ENE	1x1m	Carol Ryan Young	09/03/2022	
G2697_013	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Lower dam revetment	NNE	1x1m	Carol Ryan Young	09/03/2022	2
G2697_014	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Lower dam revetment and breach	WSW	1x1m	Carol Ryan Young	09/03/2022	4
G2697_015	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View beyond lower dam	SSW	-	Carol Ryan Young	09/03/2022	
G2697_016	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View along lower dam	SW	1x1m	Carol Ryan Young	09/03/2022	
G2697_017	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	View from lower dam to upper dam	W	-	Carol Ryan Young	09/03/2022	
G2697_018	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Area between Dams	SW	-	Carol Ryan Young	09/03/2022	6

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_019	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Lower Dam	S	-	Carol Ryan Young	09/03/2022	
G2697_020	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	Upper Dam	W	-	Carol Ryan Young	09/03/2022	
G2697_021	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View along spillway	NNE	1x1m	Carol Ryan Young	09/03/2022	9
G2697_022	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View along spillway	SSW	1x1m	Carol Ryan Young	09/03/2022	
G2697_023	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	Old sluice gate	NNE	1x1m	Carol Ryan Young	09/03/2022	8
G2697_024	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	Old sluice gate	SSW	1x1m	Carol Ryan Young	09/03/2022	
G2697_025	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View along bank	SE	1x1m	Carol Ryan Young	09/03/2022	7
G2697_026	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	Brick structure for water flow under dam	ESE	-	Carol Ryan Young	09/03/2022	10
G2697_027	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View along bank	SE	1x1m	Carol Ryan Young	09/03/2022	

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_028	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	NE	1x1m	Carol Ryan Young	09/03/2022	11
G2697_029	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	NE	-	Carol Ryan Young	09/03/2022	
G2697_030	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	NE	1x1m	Carol Ryan Young	09/03/2022	
G2697_031	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	Other bank and pond area	E	-	Carol Ryan Young	09/03/2022	12
G2697_032	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	SW	1x1m	Carol Ryan Young	09/03/2022	
G2697_033	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	SSW	1x1m	Carol Ryan Young	09/03/2022	13
G2697_034	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	NE	1x1m	Carol Ryan Young	09/03/2022	
G2697_035	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	Concrete structure	SW	1x1m	Carol Ryan Young	09/03/2022	
G2697_036	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	View along bank	WSW	1x1m	Carol Ryan Young	09/03/2022	

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_037	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View along bank	ENE	1x1m	Carol Ryan Young	09/03/2022	
G2697_038	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	View across Llyn Fuchas Las	W	-	Carol Ryan Young	09/03/2022	
G2697_039	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	Bank and brick structure	W	-	Carol Ryan Young	09/03/2022	
G2697_040	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	Pond and other bank	S	-	Carol Ryan Young	09/03/2022	
G2697_041	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 02 Pre-ex	S	-	Carol Ryan Young	15/03/2022	
G2697_042	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 02 Plan	S	1x1m	Carol Ryan Young	15/03/2022	15
G2697_043	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 02 - Section	S	-	Carol Ryan Young	15/03/2022	
G2697_044	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 03 - Pre-ex	WNW	-	Carol Ryan Young	15/03/2022	
G2697_045	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 03 - Plan	SSE	1x1m	Carol Ryan Young	15/03/2022	16

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_046	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 03 - Section	SSE	-	Carol Ryan Young	15/03/2022	
G2697_047	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 05 Plan	SSW	1x1m	Carol Ryan Young	15/03/2022	
G2697_048	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 05 Section	SSW	-	Carol Ryan Young	15/03/2022	18
G2697_049	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 04 Post-ex	NW	1x1m	Carol Ryan Young	15/03/2022	17
G2697_050	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 01 - Post-ex	ESE	1x1m	Carol Ryan Young	15/03/2022	
G2697_051	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 01 - Close up	ESE	-	Carol Ryan Young	15/03/2022	14
G2697_052	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 09 Plan	NE	1x1m	Carol Ryan Young	15/03/2022	22
G2697_053	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 09 Section	NE	-	Carol Ryan Young	15/03/2022	
G2697_054	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 07 Plan	SW	1x1m	Carol Ryan Young	15/03/2022	20

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_055	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 07 Section	SW	-	Carol Ryan Young	15/03/2022	
G2697_056	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 11 Plan	NNW	-	Carol Ryan Young	15/03/2022	
G2697_057	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 11 Section	NNW	-	Carol Ryan Young	15/03/2022	24
G2697_058	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 12 Plan	NE	1x1m	Carol Ryan Young	16/03/2022	25
G2697_059	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 12 Section	NE	-	Carol Ryan Young	16/03/2022	
G2697_060	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 10 Plan	NW	1x1m	Carol Ryan Young	16/03/2022	
G2697_061	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 10 Plan	NW	-	Carol Ryan Young	16/03/2022	23
G2697_062	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 08 Plan	NNE	1x1m	Carol Ryan Young	16/03/2022	
G2697_063	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 08 Section	NNE	-	Carol Ryan Young	16/03/2022	21

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_064	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 06 Plan	N	1x1m	Carol Ryan Young	16/03/2022	19
G2697_065	G2697 Pandora Reservoir Llyn Fuches Las GI	Pandora Reservoir	HDP 06 Section	N	-	Carol Ryan Young	16/03/2022	
G2697_066	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 12 Plan	E	1x1m	Carol Ryan Young	23/03/2022	48
G2697_067	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 12 Section	E	-	Carol Ryan Young	23/03/2022	
G2697_068	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 11 Plan	W	1x1m	Carol Ryan Young	23/03/2022	
G2697_069	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 11 Section	W	-	Carol Ryan Young	23/03/2022	47
G2697_070	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 10 Plan	E	1x1m	Carol Ryan Young	23/03/2022	
G2697_071	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 10 Section	E	-	Carol Ryan Young	23/03/2022	35
G2697_072	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 09 Plan	WSW	1x1m	Carol Ryan Young	23/03/2022	

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_073	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 09 Section	WSW	-	Carol Ryan Young	23/03/2022	34
G2697_074	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 10 Plan	SW	1x1m	Carol Ryan Young	23/03/2022	
G2697_075	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 10 Section	SW	-	Carol Ryan Young	23/03/2022	46
G2697_076	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 08 Plan	NNW	1x1m	Carol Ryan Young	23/03/2022	44
G2697_077	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 08 Section	NNW	-	Carol Ryan Young	23/03/2022	
G2697_078	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 07 Plan	WNW	1x1m	Carol Ryan Young	23/03/2022	43
G2697_079	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 07 Section	WNW	-	Carol Ryan Young	23/03/2022	
G2697_080	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 06 Plan	SE	1x1m	Carol Ryan Young	23/03/2022	41
G2697_081	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 05 Plan	NE	1x1m	Carol Ryan Young	23/03/2022	

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_082	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 05 Section	NE	-	Carol Ryan Young	23/03/2022	40
G2697_083	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 08 Plan	NW	1x1m	Carol Ryan Young	24/03/2022	
G2697_084	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 08 Section	NW	-	Carol Ryan Young	24/03/2022	33
G2697_085	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 09 Plan	NW	1x1m	Carol Ryan Young	24/03/2022	
G2697_086	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	WS 09 Section	NW	-	Carol Ryan Young	24/03/2022	45
G2697_087	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 07 Plan	SE	1x1m	Carol Ryan Young	24/03/2022	
G2697_088	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 07 Section	SE	-	Carol Ryan Young	24/03/2022	32
G2697_089	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 06 Plan	NNW	1x1m	Carol Ryan Young	24/03/2022	
G2697_090	G2697 Pandora Reservoir Llyn Fuchas Las GI	Llyn Fuchas Las	HDP 06 Section	NNW	-	Carol Ryan Young	24/03/2022	31

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_091	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 06 (new location) Plan	NW	1x1m	Carol Ryan Young	24/03/2022	
G2697_092	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 06 (new location) Section	NW	-	Carol Ryan Young	24/03/2022	42
G2697_093	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 04 Plan	W	1x1m	Carol Ryan Young	24/03/2022	39
G2697_094	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 04 Section	W	-	Carol Ryan Young	24/03/2022	29
G2697_095	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 03 Plan	N	1x1m	Carol Ryan Young	24/03/2022	
G2697_096	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 03 Section	N	-	Carol Ryan Young	24/03/2022	38
G2697_097	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 01 Plan	NE	1x1m	Carol Ryan Young	24/03/2022	36
G2697_098	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 01 Section	NE	-	Carol Ryan Young	24/03/2022	
G2697_099	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 02 Plan	SE	1x1m	Carol Ryan Young	24/03/2022	37

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_100	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 02 Section	SE	-	Carol Ryan Young	24/03/2022	
G2697_101	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 05 Plan	NNE	1x1m	Carol Ryan Young	24/03/2022	
G2697_102	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	WS 05 Section	NNE	-	Carol Ryan Young	24/03/2022	
G2697_103	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 05 Plan	SE	1x1m	Carol Ryan Young	24/03/2022	
G2697_104	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 05 Section	SE	-	Carol Ryan Young	24/03/2022	30
G2697_105	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 03 Plan	SE	1x1m	Carol Ryan Young	24/03/2022	
G2697_106	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 03 Section	SE	-	Carol Ryan Young	24/03/2022	28
G2697_107	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 02 Plan	SE	1x1m	Carol Ryan Young	24/03/2022	
G2697_108	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 02 Section	SE	-	Carol Ryan Young	24/03/2022	27

PHOTO RECORD NUMBER	PROJECT NAME	SITE SUB- DIVISION	DESCRIPTION	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO	DATE OF CREATION OF DIGITAL PHOTO	PLATES
G2697_109	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 01 Plan	NE	1x1m	Carol Ryan Young	24/03/2022	
G2697_110	G2697 Pandora Reservoir Llyn Fuches Las GI	Llyn Fuchas Las	HDP 01 Section	NE	-	Carol Ryan Young	24/03/2022	26

APPENDIX III

Selection Strategy

G2697_Pandora_Reservoir_Llyn_Fuches_Las_Gl

19/07/2022 v1.1

Selection Strategy

Project Information

Project Management

Project Manager	John Roberts john.roberts @heneb.co.uk
Archaeological Archive Manager	John Roberts john.roberts @heneb.co.uk
Organisation	Gwynedd Archaeological Trust

Stakeholders		Date Contacted
Collecting Institution(s)	GAT Historic Environment Record	26/08/2021
	RCAHMW	On completion of Project Archive
Project Lead / Project Assurance	Jenny Emmett Gwynedd archaeological Planning Service	25/08/2021
Landowner / Developer	NRW	tbc
Other	BINNIES	n/a

Resources

Resources required

Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.

No unusual resources required outside of GAT normal operating equipment and personnel.

Context

Describe below the context of this Selection Strategy. You should refer to:

- The aims and objectives of the project;
- Local Authority guidance (including the brief);
- Research Frameworks;

- The repository collection development policy and/or deposition policy;
- Material-specific guidance documents.

Note: This section may be copied from your Project Design/WSI to ensure all Stakeholders receive this context information.

The full aims and objectives of this project are detailed in the project specific WSI.

Gwynedd Archaeological Trust was commissioned by BINNIES on behalf of Natural Resources Wales to undertake an archaeological watching brief at Pandora Reservoir and Llyn Fuchas Las during ground investigation works. Pandora Reservoir is located approximately 3.1 km west of Llanwrst, Conwy in the Snowdonia National Park, within Gwydir Forest and consists of two reservoirs, Pandora Upper and Lower. Improvements to the reservoirs have been identified as potentially being required, including alterations to the existing spillway, an existing breach and raising of the embankments. The exact extent of works that may be required was dependent upon the results of the ground investigation. Llyn Fuchas Las is located approximately 2km southwest of Llanwrst and 1.6km due east of Pandora Reservoir. The site consists of a large vegetated reservoir approximately 8.4 Ha in size and consists of two earth embankments. As with Pandora Reservoir, the purpose of this ground investigation works is to provide the main investigation with contaminated land information to assist in progressing the overall projects design.

Gwynedd Archaeological Trust. 2021. Pandora Reservoir Llyn Fuchas Las GI: *Written Scheme of Investigation*. Project G2697.

1 – Digital Data

Stakeholders

Name the individual(s) responsible for the Digital Data Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Collections Curator).

John Roberts (GAT Principal Archaeologist)

Selection

Location of Data Management Plan (DMP)

Selection of digital data elements should be considered in your project's DMP. For the purpose of the Selection Strategy, you can either copy the selection section of your DMP below, or attach it as an appendix to this document. Please indicate here if the DMP is attached.

All digital data was collected and stored in line with the Gwynedd Archaeological Trust (GAT) Data Management Plan located on GAT's servers (available on request).

The selection strategy in your DMP should:

- 1.1 Define what digital data was selected for inclusion in the archaeological archive, how this was done, and why. Do not forget to consider that specialists may have digital data that should be included in the archaeological archive.
- 1.2 Identify the selection review points during the project (i.e. project planning, data gathering, analysis and reporting and archive compilation).
- 1.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 1.4 Identify any selection decisions that differ from standard guidelines and explain why.

Archiving was completed based on following task list;

- Pro-formas: all cross referenced and scanned for digital archiving;
- Photographic Metadata: cross-referenced with all pro-formas and completed in *Microsoft Excel*.

This data was used as the basis for the physical and digital dataset archives and to compile the project report.

The physical paper archive was stored in a designated project folder and the location confirmed in the Trust project database; the digital dataset was stored on a dedicated Trust server, with the location confirmed in the Trust project database via a specific hyperlink.

External datasets for the regional HER and RCAHMW have been prepared and submitted.

Archiving was undertaken in accordance with the following standards and guidance:

- *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* Version 1.1 (The Welsh Archaeological Trusts, 2018);
- *Guidelines for digital archives* (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (Chartered Institute for Archaeologists, 2020); and
- *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (Chartered Institute for Archaeologists, 2020).

A selection review point was completed during processing of the working project archive and again during final project archiving. There are no selection decisions that differ from standard guidelines.

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

There is no de-selected digital data

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

John Roberts – Principal Archaeologist, Gwynedd Archaeological Trust;
Dr Gary Duckers – Historic Environment Record, Clwyd Powys Archaeological Trust;
Gareth Edwards, *Head of Knowledge and Understanding, RCAHMW*

Selection

Describe your Selection Strategy for the Documents elements of the archaeological archive. To do this you must:

- 2.1 Define which documents was selected for inclusion in the archaeological archive, how this was done, and why. Do not forget to consider that specialists may have documents that should be included in the archaeological archive.
- 2.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 2.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
- 2.4 Identify any selection decisions that differ from standard guidelines and explain why.

- A digital report was sent to the regional Historic Environment Record; along with a digital dataset comprising an Event PRN summary. The report and dataset have been submitted in accordance with the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1); and
- A digital report and digital archive dataset were sent to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. The dataset was prepared in the format required by RCAHMW and included:
 - Photographic metadata (Microsoft Access);
 - Photographic archive (TIFF format);
 - Project Information form (Excel);
 - File Information form (Excel) – Microsoft Word report text final;
 - File Information form (Excel) – Photographic metadata (general);
 - File Information form (Excel) – Adobe PDF report final; and
 - File Information form (Excel) - Photographic metadata (detail).
 - A selection review point was completed during processing of the working project archive and again during final project archiving. There are no selection decisions that differ from standard guidelines.

De-Selected Documents

Describe the procedure for dealing with De-selected material and what specialist advice has informed this procedure.

Material de-selected from inclusion in the preserved archive are likely to be duplicates and reproductions created during the project. De-selected material was retained to supplement GAT's research files or recycled.

3 – Materials

Note: This step should be completed for each material component of the archaeological archive. Copy this table for the various materials as required, providing the 'Material Type' and a section identifier (eg. '3.1') for each.

Material type

None

Section 3.

Stakeholders

Name the individual(s) responsible for the Materials Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

Selection

Describe your Selection Strategy for each material type and or object type. To do this you must:

- 3.1 State the Selection Strategy you are applying to each category of material, how this was done, and why.
- 3.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
- 3.3 Reference all relevant standards, policies or guidelines (e.g. thematic, period, and regional, Research Frameworks, repository deposition policies) and specialist advice sought.
- 3.4 Identify any selection decisions that differ from standard guidelines and explain why.

The Materials Selection Template may be useful in structuring this section.

Uncollected Material

If you are practising selection in the field, describe the process that was applied. To do this you must:

- Detail how you will characterise, quantify and record all uncollected material on site.
- Explain how you will dispose of, or re-distribute, uncollected material.

None

De-Selected Material

Describe what you will do with the de-selected material. All processed material should have been adequately recorded before de-selection.

N/A

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

Materials Selection Template

This table may be inserted into Section 3 of the main [Selection Strategy Template](#) to help present differing selection strategies for different material types

Find Type	Selection Strategy	Stakeholders	Review Points



Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
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