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Llyn y Fan Fach Reservoir Llangadog Bannau Brycheiniog National Park Wales

Archaeological Watching Brief Report No. Y623/22

Planning App No. 22/21137/LBC

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# Llyn y Fan Fach Reservoir Llangagod Bannau Brycheiniog National Park Wales

# **Archaeological Watching Brief**

# Report No. Y623/22

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## **SUMMARY**

An archaeological watching brief was carried out by CFA Archaeology Ltd on the following dates: 8<sup>th</sup> and 9<sup>th</sup> August, 26<sup>th</sup> – 30<sup>th</sup> September, 3<sup>rd</sup> October 2022, and 30<sup>th</sup> May – 1<sup>st</sup> June 2023 at Llyn y Fan Fach Reservoir, Llanadog. The watching brief was undertaken during multiple phases of groundworks associated with the renovation of the Reservoir Dam and surrounding infrastructure (Planning App No. 22/21137/LBC). No archaeological deposits were encountered.

Cyflawnwyd briff gwylio archaeolegol gan CFA Archaeology Ltd ar y dyddiadau canlynol: 26ain - 30ain Medi, 3ydd Hydref a 30ain Mai - 1af Mehefin 2023 yng Nghronfa Ddŵr Llyn Fan Fach, Llanadog. Ymgymerwyd â'r briff gwylio yn ystod sawl cam o'r gwrthgloddiau sy'n gysylltiedig ag adnewyddu argae'r gronfa ddŵr a'r seilwaith o'i amgylch (Ap Cynllunio Rhif. 22/21137/LBC). Ni ddaethpwyd ar draws unrhyw ddyddodion archeolegol.

# 1. INTRODUCTION

This report presents the results of an archaeological watching brief undertaken by CFA Archaeology Ltd (CFA) on 8<sup>th</sup> and 9<sup>th</sup> August, 26<sup>th</sup> – 30<sup>th</sup> September, 3<sup>rd</sup> October 2022, and 30<sup>th</sup> May – 1<sup>st</sup> June 2023 at Llyn y Fan Fach Reservoir, Llanadog, Bannau Brycheiniog National Park, Wales. The work was commissioned by Morgan Sindall and the Welsh Water Capital Delivery Alliance. This archaeological watching brief was carried out in accordance with a written scheme of investigation (WSI) produced by CFA Archaeology Ltd (2023; Appendix 1). The planning condition stipulated by the Bannau Brycheniog National Park Authority Heritage Officer stated:

'A professionally qualified archaeological contractor shall be present during the undertaking of any ground works in the development area, so that an archaeological watching brief can be maintained. To maintain a watching brief the following must be undertaken:

a) Prior to commencement of any groundworks an archaeological written scheme of investigation (WSI) shall be submitted and approved in writing by the Local Planning Authority. The submitted WSI must meet the standards laid down by the Chartered Institute for Archaeologists in their Standard and Guidance for an Archaeological Watching Brief.

b) The archaeological fieldwork shall be carried out in accordance with the approved written scheme of investigation (WSI). Following the fieldwork and in accordance with a time frame set out in the approved WSI, a copy of the Watching Brief report produced in accordance with the WSI shall be submitted to the Local Planning Authority for written approval. Following approval, the report will be submitted by the applicant to the local Welsh Archaeological Trust for inclusion in the Regional Historic Environment Record (HER)'.

As a result, all ground works associated with the renovation of the Reservoir Dam and the surrounding infrastructure with the potential to disturb remains of archaeological origin were monitored.

# 1.1 Site Location and Description

The site is located on the north-east side of Llyn y Fan Fach Reservoir, just south of the unmade road of Beacons Way, within the Bannau Brycheiniog National Park. The site is centred on National Grid Reference SN 80329 21991. The area was mountainous with a steep incline down the valley to the north following the route of the Afon Sawdde. The Reservoir sits within the northern margin of the Black Mountain where a glacier gouged out the cwm in which Llyn y Fan Fach now lies (Fig. 1).

The underlying geology of the site at the dam wall was classified as that of the Brownstones Formation – sandstone and argillaceous rocks, interbedded. Sedimentary bedrock formed between 419.2 and 393.3 million years ago during the Devonian period. Superficial deposits are recorded as: Hummocky (moundy) Glacial Deposits, Devensian – Diamicton, sand and gravel. Sedimentary superficial deposits formed between 116 and 11.8 thousand years ago during the Quaternary (British Geological Survey 2023). The soils around the site could be classified as very acid loamy upland soils with a wet peaty surface and slowly permeable wet very acid upland soils with a peaty surface (LandIS 2023).

# 1.2 Archaeological and Historical Background

The archaeological and historical background has previously been reported on in a Design and Access Statement, Heritage Statement and Impact Assessment (Mellen 2022) and an archaeological desk-based assessment (Poucher 2021) which accompanied the planning application. A summary of the archaeological and historical background is presented below.

# Archaeological Background

### Palaeolithic, Mesolithic & Neolithic

There are no sites of a Palaeolithic date within the search area, or the wider landscape.

#### Bronze Age

There are four recorded sites of Bronze Age date within the search area. Three of these refer to round barrows (PRNs 6190, 8905 & 8171), burial mounds containing multiple burials or cremations, and potential sites of ritual significance as well. Within this landscape such sites are generally positioned in prominent locations with wide-ranging views, as such two are sited on the Picws Du ridge overlooking the lake, the third site on north-facing slopes to the northwest of the lake.

The fourth site relates to a Bronze Age flint arrowhead (PRN 11747), which, like the Mesolithic flints, was recovered from the shores of Llyn y Fan Fach during a period of low water in the 1970s. This cluster of activity around the lake would suggest the site was one of some importance as a focal point during the Bronze Age.

#### Iron Age

There are no recorded sites of Iron Age date within the search area, and relatively few are recorded within the wider landscape in this area.

#### Roman

There are no recorded sites of Roman date within the search area. A roman road, and marching camp, lie on Mynydd y Llan approximately 4km to the north, but there is no indication of associated activity spreading southwards towards Llyn y Fan Fach.

### Early Medieval

There are no Early Medieval sites recorded in the search area. The church within Llanddeusant may have early medieval origins, with suggestions that it may linked to the 6th century cult of St Paulinus, although this is uncertain. A similar distance to the east lies the possible early medieval chapel of Capel y Fynwent, although general activity in the area appears sparse.

#### Medieval & Post-Medieval

There are a number of longhut, shelters, sheep folds and abandoned field boundaries recorded across this landscape. These features are hard to date on typology alone, but these particular examples are believed to be broadly medieval to post-medieval in date.

#### Modern Period

The HER records several features that relate to the construction of the reservoir.

# Historical

Llyn y Fan Fach is a lake within a glacial 'cwm' that was converted to a reservoir by Llanelli Rural District Council to supply clean water to Llanelli via water works at Llannon. Industrial development saw rapid growth at Llanelli in the 19th century and lead to suffering appalling sanitary conditions. Llyn y Fan Fach was identified as the most suitable site in the area to become a water supply for the town.

An Act of Parliament in 1912 requested the original lake Llyn y Fan Fach be converted into a reservoir requiring a concrete and stone dam to be constructed. Works initially began in 1914 and employed 175 Irish workman who were accommodated by two temporary on-site wooden barracks at a camp near what is now the car park (Dyfed Archaeological Trust, 2020 and n.d.). The challenging and isolated upland environment caused difficulty in retaining the original workforce.

All men between the ages of 18 and 41 were conscripted into military service under 'The Military Service Act' of 1916. Schemes released Conscientious Objectors from prison to undertake civilian work, mostly hard manual labour at specified work camps (Pyper and Shiner 2017). Four such sites existed in Wales. The Llyn y Fan Fach reservoir and dam project was

completed by 150 to 200 Conscientious Objectors after September 1916. The bulk of the hard manual labour was completed at the site by 1918, but it is likely the works were actually finished in 1921 by newly demobbed soldiers.

The original works consisted of the main dam wall, the draw-off tower, spillway, as well as surrounding structures (British Listed Buildings 2022). The immediate surrounding structures were constructed in 1920 as indicated on a keystone and the extant shed was added in the 1930s.

The site is now managed by Dŵr Cymru as a reserve water supply. The integrated system of water management is comprised of a variety of structures and engineering works to capture, hold, and release water. The glacial lake has a natural source of flower water from leat channels flowing ground water from the dammed Afon Sychlwch and the lake level is controlled by a separate header dam.

# **1.3 Previous Archaeological Works**

There have been no previous invasive archaeological works on the site. Prior to the commencement of the watching brief a Level 3 Historic Building Recording Survey was carried out by CFA Archaeology Ltd (2022) and reference to this should be made for a detailed review of the surviving structural remains of the Reservoir.

### 1.4 **Project Aims**

The aim of the watching brief was to determine and record the location, extent, date, character, condition, significance, and quality of any structural or archaeological deposits located within works carried out during the renovation of the reservoir dam and surrounding infrastructure and on the installation of gabions to repair the access track towards the dam.

# 2. WORKING METHODS

CFA Archaeology Ltd is a registered organisation (RO) with the Chartered Institute for Archaeologists (CIfA). CFA Archaeology follows all relevant CIfA and Historic England Standards and Guidance (CIfA 2019 and Historic England 2015).

Archaeological remains were to be recorded by means of photographs, drawings and written records conforming to CIfA standards (CIfA 2020a-c) and CFA's quality manuals. The area of excavation was surveyed using an industry standard Trimble GPS. The same equipment was used to establish levels above Ordnance Datum for the areas of archaeological investigation.

The project archive, comprising all CFA record sheets, finds, plans and reports will be prepared to current guidelines (CIfA 2020b) ensuring the proper transfer of ownership.

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Table	1:	Contents	of	the	Watching	Brief	Archive
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The construction and remediation work on the site that involved potential ground disturbance included the following (Fig. 1):

- Removal of existing concrete surface across area of current spillway (WB Area 1).
- Topsoil strip and ground reduction to between 200-400mm in depth in preparation for construction of crane pad and laydown area (WB Area 2).
- Topsoil strip to 100mm depth in preparation for construction of crane pad and laydown area (WB Area 3).
- Topsoil strip to max. 100mm depth for access track laydown area (WB Area.4).
- Topsoil strip to max. 100mm depth for laydown area (WB Area 5).
- Topsoil strip to max. 100mm depth to area and formation of Type 1 access ramp to reservoir (WB Area 6).
- Topsoil strip to max. 100mm depth for crane pad (WB Area 7).
- Excavation for works on valve tower (reservoir side) to max. 1.3m from current ground level. Planned excavation will be 3m off the face of the structure and approx. 7m in width (WB Area 8).
- Excavations for installation of gabion baskets to east of access track leading to reservoir. Excavations will be max. 200mm below lowest level required for installation (WB Area 9).
- Ground disturbance to remove natural large boulders and ground levelling for the placement of scaffolding (WB Areas 10 and 11).

In addition to the above, the exposure of the lake side edges brought about by the temporary draining of the lake to enable to above works provided a unique opportunity to identify and record any exposed features that may have been present in these locations. In addition to the watching brief works above, a visual inspection of the lake side edges, supplemented by metal detecting survey where deemed appropriate was carried out, with an aim to identifying any features present, with a particular interest in any potential funerary activity or areas of flintwork that may have survived.

All areas of ground disturbance were monitored under watching brief conditions and machine excavation was carried out with a 9-tonne excavator with a smooth-bladed bucket.

A summary of the results of archaeological works will be submitted for inclusion in OASIS. The OASIS reference is cfaarcha1-508485.

# 3. **RESULTS**

During the archaeological watching brief, Areas 3, 4, 5, 6 and 7 were not stripped of topsoil as originally planned and were instead stoned up with aggregate therefore negating the need for watching brief on these areas. In addition, removal of large boulders and ground levelling did not take place in Area 11.

The following results detail the watching brief monitoring of the remaining Areas: 1, 2, 8, 9 & 10, and the walkover and metal detecting survey along the lake side edge.

WB Area	Context	Length (m)	Width (m)	Depth (m)	Description
	101	~17	0.28	0.90	Spillway retaining walls comprised of worked sandstone and gritstone with irregular courses to 4/5 in height with a set of capstones. Mortar bonded with the utilisation of large boulders in its foundation.
	102	~17	3.75	0.12	First phase of the spillway floor comprising of small to medium sized sandstones arranged so the long axis of the stones run along the spillway.
	103	1<	1<	0.40	Mid pinkish brown firm silty clay with small to large sandstone. Redeposited natural and construction material.
1	104	1<	1<	0.10	Dark brownish black firm sandy silt buried topsoil with a high organic content.
	105	1<	1<	0.40	Natural mid brownish red compact silty clay.
	106	~17	4.5	0.80	Vertical cut for the spillway orientated N-S with a flat base.
	107	~14	4	0.08	Modern concrete floor of the spillway overlying the first phase 102.
	108	4.5	5	0.90	Culvert bridge over the spillway E-W comprising of the central stone pier, six concrete pipes (3m in length), concrete filled sandbags, concreted cast iron I-beams with stone rubble infill forming the surface.
	201	1<	1<	0.60	Mid pinkish brown firm silty clay with small to large sandstone. Redeposited natural and construction material.
2	202	1<	1<	0.25	Partially buried topsoil dark brownish black firm sandy silt with a highly organic content.
	203	1<	1<	0.40	Buried subsoil light brownish yellow loose silty sand with small to large stones.
	204	1<	1<	0.70	Natural mid brownish red firm silty clay with large stones and boulders.

Table 2, below, presents the recorded contexts discussed in the following sections.

WB Area	Context	Length (m)	Width (m)	Depth (m)	Description
	801	1<	1<	0.24	Brownish red loose silty sand with small sandstone boulders forming a reservoir sediment deposit.
	802	1<	1<	0.33	Light yellowish brown loose silty sand with fine seasonal sedimentation forming a reservoir deposit.
8	803	1<	1<	0.64	Dark brownish black firm sandy silt of high organic matter deposited due to washed in topsoil and silts.
	804	1<	1<	1.40	Mid brownish pink firm silty clay with gravels and small to medium stones forming the base layer representing a construction deposit for the dam wall.
	901	1<	1<	0.25	Topsoil mid greyish brown loose silty clay adjacent to the trackway.
9	902	1<	1<	2.25	Natural mid brownish red firm silty clay with small to large sized stones formed from glacial deposits.
10	1001	1<	1<	0.10	Topsoil mid greyish brown loose silty clay with surface stones and boulders,

#### **Table 2: Context Summary**

# 3.1 WB Area 1 (Figs. 2.01 – 2.21)

The spillway channel runs northwards from the northern extent of the stilling basins, beneath a bridge culvert, to the outlet headwall. The archaeological watching brief observed and recorded the removal of the spillway and associated walls, measuring approximately 17m in length and 5m in width narrowing to 4m towards the northern end.

The eastern and western spillway retaining walls (101) comprised of irregular shaped yellowish dark grey sandstones and quarried gritstones in uneven courses measuring up to 0.90m in height and 0.28m wide. The foundations of the walls in some areas had utilised some of the surrounding sandstone boulders to avert subsidence. Behind the spillway walls was a layer of re-deposited natural and construction material (103) comprising a mid pink-brown firm silty clay with small to large sandstones varying in depth to 0.60m. 103 overlaid a buried topsoil layer (104) comprising black dark brown firm sandy silt with a high organic content and measured 0.10m in depth.

The spillway walls were built prior to the concrete flooring (107) of the spillway which measured 0.08m in depth. Underlying 108 was found to be the first phase of the stone spillway floor (102) comprising irregular shaped yellowish dark grey sandstones arranged roughly so the long axis of the stones run along the length of the spillway and measured the width of the spillway floor and 0.12m in depth. The cut for the spillway (106) was linear with vertical cut sides to a flat base roughly orientated N-S and measured approximately 17m in length from the stilling basins to the outlet headwall and up to 5m at its widest with a maximum

depth of 0.90m. The underlying observed natural (105) comprised a mid brown-red firm silty clay with large sandstone boulders.

The culvert bridge and the outlet headwall (108) are located north of the spillway channel and the principal access to the site runs via the unmade road that crosses the culvert bridge. A temporary access bridge was put in place to facilitate the removal of the culvert bridge under watching brief conditions. The Level 3 Building Survey Report (CFA Archaeology Ltd 2022) details the structural elements.

108 was comprised of a deck of concrete and east-west cast iron I-beams packed with rubble stones sat over the spillway walls, measuring approximately 4.5m in length. A central stone pier, sharp nosed in shape, spanned the full width of the bridge (approximately 5m in length and 0.75m wide) at its base and was constructed from rectangular shaped sandstone and bound with mortar (heavily deteriorated), the centre infill consisted of stone rubble. Under the culvert bridge at the northern (behind the headwall dressed stone) and southern end above the concrete pipes lay concrete filled sandbag packing (not hessian made, nylon or other more modern material). The six concrete pipes (3 either side of the central pier on the southern side) were 0.38m in diameter and approximately 3m in length and carried the reservoir water to the northern headwall. These lay over the heavily deteriorated concrete spillway base (102).

# 3.2 WB Area 2 (Figs. 2.22 – 2.24)

To the west of Area 1, Area 2 observed ground reduction to a maximum depth of 1.10m over an area approximately 9.5m wide and 14m in length. Below the surface layer of scrub and grass was a layer of re-deposited natural and construction material (201, same as 103) comprising a mid pink-brown firm silty clay with small to large sandstones varying in depth to 0.60m and which formed the bank up to the dam wall to the south. This partially overlaid a buried topsoil layer (202, same as 104) comprising a dark brown-black firm sandy silt with a high organic content up to 0.25m in depth. Beneath 202, the original subsoil (203) layer was observed as a light brown loose silty sand with common small to large pebbles and sandstones up to 0.40m in depth. The underlying observed natural (204) was the same as 105.

# 3.3 WB Area 8 (Figs. 2.25 – 2.32)

The reservoir sediments and deposits around the valve tower were reduced under watching brief conditions to a maximum of 1.80m to facilitate associated works on the tower. The first layer of sediment (801) comprised a mid brown-red loose silty sand with small sandstone boulders and measured 0.24m in depth. The second deposit (802) comprised a light yellowish brown loose silty sand with fine seasonal deposition and measured 0.33m in depth.

Underlying 802 was 803, a layer of dark brown-black firm sandy silt with a high organic content and which measured 0.64m in depth. Non-retained finds included wooden planks, a metal bolt, and a glass bottle. 801, 802 and 803 filled a channel from the deeper part of the reservoir to the valve tower. The remaining deposit encountered (804) comprised a mid brown-pink firm silty clay with gravels and small to medium stones and measured greater

than 1.30m in depth. This deposit contained the head of a shovel (Fig. 2.32) likely used in the early construction work.

# 3.4 WB Area 9 (Figs. 2.33 – 2.37)

Approximately 1km downstream from the reservoir dam, ground reduction adjacent to the existing access track was required for the installation of gabion baskets to reinforce the eroding bank supporting the trackway for plant and vehicle access to the dam wall.

This area observed the removal of a banked area approximately 3m in length along the trackway, 2.2m from the eastern trackway edge and to a depth of 2.5m. Topsoil (901) comprised a mid-greyish brown loose silty clay with small to medium sized stones and measured 0.25m in depth. Below this was the natural glacial till deposits (902) comprising a mid-brownish red friable silty clay with small to large sized stones and boulders towards the base of excavation.

# 3.5 WB Area 10 (Fig. 2.38)

The watching brief in this area observed the removal of surface stone and boulders along the far western side of the south facing dam wall with ground excavation comprising 0.10m in depth of the mid greyish brown loose silty clay topsoil (1001).

# 3.6 Llyn y Fan Fach Walkover Survey (Figs. 2.39 – 2.45)

The reservoir lake was drained to considerably low levels due to the renovation works at the dam wall which offered the opportunity to perform a walkover and metal detecting survey along the shore edge to identify any surviving archaeological remains. During the survey works no archaeological finds or structures were identified.

# 4. DISCUSSION

The watching brief identified no early archaeological deposits and no additional structural remains other than those associated with the existing reservoir dam infrastructure. The removal of the spillway allowed the original spillway surface to be recorded and elements of the culvert bridge suggest that it was completed in the late 1930s due to the presence of nylon sandbags utilised in its construction complementing the Level 3 Building Survey.

The works around the dam wall allowed the deep surviving stratigraphy here to be investigated in relation to the construction of the dam itself beneath the build-up of reservoir sediments. The walkover survey along Llyn y Fan Fach did not reveal any signs of archaeology with large boulders and build-up of beach stone likely occurring as a result of erosion along the Black Mountain.

# 5. CONCLUSION

The watching brief carried out at Llyn y Fan Fach Reservoir by CFA Archaeology to satisfy the stipulated planning requirements successfully monitored groundworks associated with the renovation of the existing reservoir dam and surrounding infrastructure and on the installation of gabions to repair the access track towards the dam.

The watching brief successfully identified and recorded the first phase of the spillway floor constructed from tightly packed sandstone which underlaid the cracked concrete. Despite the history of archaeological finds along the shore edge of Llyn y Fan Fach no finds or signs of previous human activity were identified during the walkover survey. No other archaeological or structural remains where located during the course of the monitoring.

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Figures



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Fig. 2.01: WB Area 1, general view of spillway prior to removal, facing S



Fig. 2.02: WB Area 1, exposed original spillway base 102, facing E





Fig. 2.03: WB Area 1, exposed original spillway base 102 southern end, facing S



Fig. 2.04: WB Area 1, oblique of spillway wall 101 and base 102 prior to removal, facing SE



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Fig. 2.05: WB Area 1, centre of spillway wall 101 and 102, facing E



Fig. 2.06: WB Area 1, detailed image of spillway base 102, facing E



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Fig. 2.07: WB Area 1, working shot of 102 removal to natural, facing SW



Fig. 2.08: WB Area 1, working shot of rubble clearing from spillway, facing N



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Fig. 2.09: WB Area 1, working shot of spillway wall removal, facing SW



Fig. 2.10: WB Area 1, working shot of spillway wall removal, facing NE





Fig. 2.11: WB Area 1, south facing section of spillway retaining wall, facing N



Fig. 2.12: WB Area 1, detailed image of spillway wall, facing W





Fig. 2.13: WB Area 1, working shot of spillway wall removal, facing SW



Fig. 2.14: WB Area 1, working shot of bridge removal, facing N





Fig. 2.15: WB Area 1, oblique of south facing side of 108, facing NE



Fig. 2.16: WB Area 1, south facing side of 108, facing N



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Fig. 2.17: WB Area 1, working shot of headwall removal, facing SE



Fig. 2.18: WB Area 1, working shot of headwall removal and concrete filled sandbags behind, facing SE



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Fig. 2.19: WB Area 1, working shot of breaking concrete surface of the bridge, facing NE



Fig. 2.20: WB Area 1, spillway and associated walls removed, facing N





Fig. 2.21: WB Area 1, spillway and associated walls removed, facing S



Fig. 2.22: WB Area 2, working shot of machine excavation, facing SW





Fig. 2.23: WB Area 2, working shot of machine excavation, facing SW



Fig. 2.24: WB Area 2, north facing section of machine excavated area, facing S



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Fig. 2.25: WB Area 8, general shot of dam wall and draw off tower, facing N



Fig. 2.26: WB Area 8, working shot of machine excavation, facing W



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Fig. 2.27: WB Area 8, oblique of exposed stratigraphy, facing SW



Fig. 2.28: WB Area 8, exposed stratigraphy against the draw off tower, facing N



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Fig. 2.29: WB Area 8, working shot of machine excavation, facing SE



Fig. 2.30: WB Area 8, north facing exposed stratigraphy, facing N





Fig. 2.31: WB Area 8, depth reached around the draw off tower, facing E



Fig. 2.32: WB Area 9, working shot of bank erosion, facing SW





Fig. 2.33: WB Area 9, working shot of bank erosion, facing SW



Fig. 2.34: WB Area 9, working shot of machine excavation, facing W

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Fig. 2.35: WB Area 9, overview shot of machine excavating area, facing W



Fig. 2.36: WB Area 9, limit of machine excavation, facing W



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Fig. 2.37: WB Area 9, limit of machine excavation, facing SW



Fig. 2.38: WB Area 10, working shot of machine removing stones and topsoil, facing W



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Llyn y Fan Fach Reservoir, Llanadog, Bannau Brycheiniog National Park, Wales	SH	Y623/22



Fig. 2.39: Walkover survey around Llyn y Fan Fach shore edge, facing NE



Fig. 2.40: Walkover survey around Llyn y Fan Fach shore edge, facing NE





Fig. 2.41: Walkover survey around Llyn y Fan Fach shore edge, facing SW



Fig. 2.42: Walkover survey around Llyn y Fan Fach shore edge, facing N



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Fig. 2.43: Walkover survey around Llyn y Fan Fach shore edge, facing NW



Fig. 2.44: Walkover survey around Llyn y Fan Fach shore edge, facing SW





Fig. 2.45: Walkover survey around Llyn y Fan Fach shore edge, facing NE



Client:	Drawn by:	Date:
Morgan Sindall and Welsh Water Capital Delivery Alliance	SB	08/06/2023
<sup>Project:</sup> Llyn y Fan Fach Reservoir, Llanadog, Bannau Brycheiniog National Park, Wales	Checked:	Report No: Y623/22

# Appendix 1: Written Scheme of Investigation







Llyn y Fan Fach Reservoir Dam, Llangadog, Brecon Beacons National Park

Archaeological Watching Brief Planning Refs. 22/20939/CPL & 22/21137/LBC

Author: Carley Noga BA MA ACIfA



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Commissioned by	Morgan Sindall, Welsh Water Capital Delivery Alliance
Date issued	April 2023
Version	3.0
Planning Ref No	22/20939/CPL; 22/21137/LBC
National Grid Ref	SN 80329 21991

This document has been prepared in accordance with CFA Archaeology Ltd quality procedures.

# Llyn y Fan Fach Reservoir Dam Llangadog Brecon Beacons National Park Wales

**Archaeological Watching Brief** 

Written Scheme of Investigation

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Figure 1. Site Location and Watching Brief Areas Plan

# **Appendix 1. Data Management Plan**

## CFA Archaeology Ltd

# Llyn y Fan Fach Reservoir Dam, Llangadog, Wales – Archaeological Watching Brief

# Written Scheme of Investigation (WSI)

### 1. Introduction

- 1.0.1 This Written Scheme of Investigation (WSI) has been produced by CFA Archaeology (CFA) on behalf of Morgan Sindall and the Welsh Water Capital Delivery Alliance. It details a programme of archaeological watching brief to be undertaken during groundworks associated with the renovation of the Llyn y Fan Fach Reservoir Dam and surrounding infrastructure.
- 1.0.2 The planning application concerns proposed remedial, and upgrade works to the reservoir wall, draw off tower, and spillway (Planning Application Nos: 22/20939/CPL and 22/21137/LBC). The site lies within the Brecon Beacons National Park (BBNP).
- 1.0.3 The structures are located on the north-east side of Llyn y Fan Fach Reservoir, just south of the unmade road of Beacons Way, within the Brecon Beacons National Park. The site is centred on National Grid Reference SN 80329 21991.
- 1.0.4 A programme of archaeological monitoring (watching brief) is required to satisfy a planning condition stipulated by the Brecon Beacons National Park Authority Heritage Officer. The proposed planning condition has been provided through pre-application consultation, and is outlined below:

'A professionally qualified archaeological contractor shall be present during the undertaking of any ground works in the development area, so that an archaeological watching brief can be maintained. To maintain a watching brief the following must be undertaken:

a) Prior to commencement of any groundworks an archaeological written scheme of investigation (WSI) shall be submitted and approved in writing by the Local Planning Authority. The submitted WSI must meet the standards laid down by the Chartered Institute for Archaeologists in their Standard and Guidance for an Archaeological Watching Brief.

b) The archaeological fieldwork shall be carried out in accordance with the approved written scheme of investigation (WSI). Following the fieldwork and in accordance with a time frame set out in the approved WSI, a copy of the Watching Brief report produced in accordance with the WSI shall be submitted to the Local Planning Authority for written approval. Following approval, the report will be submitted by the applicant to the local Welsh Archaeological Trust for inclusion in the Regional Historic Environment Record (HER).'

1.0.5 A WSI is required to define the scope and methodology of the archaeological watching brief to be undertaken during the proposed groundworks. The watching brief will monitor those groundworks where there is a potential to encounter surviving archaeology (see Section 4 and

Fig. 1). The scope of this WSI has been produced in line with Section 3.38 and Section 6 of Cadw's '*Planning Policy Wales*' (Welsh Government 2021).

## 2. Archaeological and Historical Background

2.0.1 The development of the Llyn y Fan Fach Reservoir Dam has been documented in a Design and Access Statement, Heritage Statement and Impact Assessment (Mellen 2022) and an archaeological desk-based assessment (Poucher 2021) which accompanied the planning application. A summary of the archaeological and historical background is presented below from those documents.

## 2.1 Archaeological Background

- 2.1.1 *Palaeolithic, Mesolithic & Neolithic* There are no sites of a Palaeolithic date within the search area, or the wider landscape.
- 2.1.2 *Bronze Age* There are four recorded sites of Bronze Age date within the search area. Three of these refer to round barrows (PRNs 6190, 8905 & 8171), burial mounds containing multiple burials or cremations, and potential sites of ritual significance as well. Within this landscape such sites are generally positioned in prominent locations with wide-ranging views, as such two are sited on the Picws Du ridge overlooking the lake, the third site on north-facing slopes to the northwest of the lake.
- 2.1.3 The fourth site relates to a Bronze Age flint arrowhead (PRN 11747), which, like the Mesolithic flints, was recovered from the shores of Llyn y Fan Fach during a period of low water in the 1970s. This cluster of activity around the lake would suggest the site was one of some importance as a focal point during the Bronze Age.
- 2.1.4 *Iron Age* There are no recorded sites of Iron Age date within the search area, and relatively few are recorded within the wider landscape in this area.
- 2.1.5 *Roman* There are no recorded sites of Roman date within the search area. A roman road, and marching camp, lie on Mynydd y Llan approximately 4km to the north, but there is no indication of associated activity spreading southwards towards Llyn y Fan Fach.
- 2.1.6 *Early Medieval* There are no Early Medieval sites recorded in the search area. The church within Llanddeusant may have early medieval origins, with suggestions that it may linked to the 6th century cult of St Paulinus, although this is uncertain. A similar distance to the east lies the possible early medieval chapel of Capel y Fynwent, although general activity in the area appears sparse.
- 2.1.7 *Medieval & Post-Medieval* There are a number of longhut, shelters, sheep folds and abandoned field boundaries recorded across this landscape. These features are hard to date on typology alone, but these particular examples are believed to be broadly medieval to post-medieval in date.
- 2.1.8 *Modern Period* The HER records several features that relate to the construction of the reservoir outlined in Table 1 below and shown on Figure 1. An impact assessment of HER

features is included in Section 8.3 and 9 of the archaeological desk-based assessment (Poucher 2021). The planned works will affect the following features:

PRN	HER Summary	Site Area
DAT111186	Base for buildings for the construction of the reservoir PRN 111183. (H. Pritchard, 2017)	Areas 4 and 5
DAT112069	Stone building located next to the dam at Llyn Y Fan Fach	Area 9
DAT111182	Two elongated spoil heaps from building Llyn Y Fan reservoir. (H. Pritchard, 2017)	
DAT112072	Natural pond on the Afon Sychlwch modified to act as a stillage basin. The north lip has been damned to create a wide trackway across the stream to spoil tip PRN 111271	

Table 1. Select PRNs associated with Llyn y Fan Fach

#### 2.2 Historical Background

- 2.2.1 Llyn y Fan Fach is a lake within a glacial 'cwm' that was converted to a reservoir by Llanelli Rural District Council to supply clean water to Llanelli via water works at Llannon. Industrial development saw rapid growth at Llanelli in the 19th century and lead to suffering appalling sanitary conditions. Llyn y Fan Fach was identified as the most suitable site in the area to become a water supply for the town.
- 2.2.2 An Act of Parliament in 1912 requested the original lake Llyn y Fan Fach be converted into a reservoir requiring a concrete and stone dam to be constructed. Works initially began in 1914 and employed 175 Irish workman who were accommodated by two temporary on-site wooden barracks at a camp near what is now the car park (Dyfed Archaeological Trust, 2020 and n.d.). The challenging and isolated upland environment caused difficulty in retaining the original workforce.
- 2.2.3 All men between the ages of 18 and 41 were conscripted into military service under 'The Military Service Act' of 1916. Schemes released Conscientious Objectors from prison to undertake civilian work, mostly hard manual labour at specified work camps (Pyper and Shiner 2017). Four such sites existed in Wales. The Llyn y Fan Fach reservoir and dam project was completed by 150 to 200 Conscientious Objectors after September 1916. The bulk of the hard manual labour was completed at the site by 1918, but it is likely the works were actually finished in 1921 by newly demobbed soldiers.
- 2.2.4 The original works consisted of the main dam wall, the draw-off tower, spillway, as well as surrounding structures (British Listed Buildings 2022). The immediate surrounding structures were constructed in 1920 as indicated on a keystone and the extant shed was added in the 1930s.
- 2.2.5 The site is now managed by Dŵr Cymru as a reserve water supply. The integrated system of water management is comprised of a variety of structures and engineering works to capture, hold, and release water. The glacial lake has a natural source of flower water from leat channels flowing ground water from the dammed Afon Sychlwch and the lake level is controlled by a separate header dam.

# **3. Project Objectives**

3.1 The aim of the watching brief is to determine and record the location, extent, date, character, condition, significance and quality of any structural or archaeological deposits located within works carried out during the renovation of the reservoir dam and surrounding infrastructure and on the installation of gabions to repair the access track towards the dam.

### 4. Archaeological Methods

- 4.0.1 CFA Archaeology is a registered organisation with the Chartered Institute for Archaeologists (CIfA). Work will be conducted with regard to the Institute's Standards documents (CIfA 2020a-c), relevant Historic England guidance documents (Campbell et al. 2011 and Historic England 2015), and this WSI. Recording of all elements will be done following established CFA procedures.
- 4.0.2 Proposed construction and remediation work on the site that involve ground disturbance includes:
  - Removal of existing concrete surface across area of current spillway (WB Area 1, Fig.1);
  - Topsoil strip and ground reduction to between 200-400mm in depth in preparation for construction of crane pad and laydown area (WB Area 2, Fig. 1);
  - Topsoil strip to 100mm depth in preparation for construction of crane pad and laydown area (WB Area 3, Fig. 1);
  - Topsoil strip to max. 100mm depth for access track laydown area (WB Area.4, Fig. 1);
  - Topsoil strip to max. 100mm depth for laydown area (WB Area 5, Fig. 1);
  - Topsoil strip to max. 100mm depth to area and formation of Type 1 access ramp to reservoir (WB Area 6, Fig. 1);
  - Topsoil strip to max. 100mm depth for crane pad (WB Area 7, Fig. 1);
  - Excavation for works on valve tower (reservoir side) to max. 1.3m from current ground level. Planned excavation will be 3m off the face of the structure and approx. 7m in width (WB Area 8, Fig. 1);
  - Excavations for installation of gabion baskets to east of access track leading to reservoir. Excavations will be max. 200mm below lowest level required for installation (WB Area 9, Fig. 1); and
  - Ground disturbance to remove natural large boulders and ground levelling for the placement of scaffolding (WB Areas 10 and 11, Fig. 1).
- 4.0.3 In addition to the above, the exposure of the lake side edges brought about by the temporary draining of the lake to enable to above works, has provided a unique opportunity to identify and record any exposed features that may be present in these locations. As part of the watching brief works above, it is therefore proposed to carry out a visual inspection of the lake side edges, supplemented by metal detecting survey where appropriate, with an aim to identifying any features present, with a particular interest in any potential funerary activity or areas of flintwork that may survive. Recording of any identified features will be carried out as described in the following paragraphs.

- 4.0.4 All groundworks with the potential to encounter surviving archaeology or structural remains associated with the above will be monitored by a qualified archaeologist. Any areas of significant ground disturbance undertaken during these activities will be done by a toothless grading/ditching bucket under direct archaeological supervision.
- 4.0.5 If archaeological deposits are encountered, then machining will temporarily cease in that area to allow the supervising archaeologist time to investigate the exposed deposits. Any further excavation required to fulfil the objectives of the watching brief will be carried out by hand.
- 4.0.6 Samples of all features of archaeological interest will be excavated in order to establish their likely date, nature, extent and condition. All such sample excavation will be conducted by hand. The samples will be limited to remove only such deposits as necessary to achieve the watching brief objectives.
- 4.0.7 All excavation and on-site recording will be carried out according to standard CFA procedures, principally by drawing, photography and by completing standard CFA site record forms. The stratification will be recorded even if no deposits of archaeological significance are discovered. The location of the groundworks will be recorded using industry standard surveying equipment and tied to the National Grid. Vertical survey control will be tied to the Ordnance Survey Datum.
- 4.0.8 Sections will be recorded by means of a measured drawing at an appropriate scale. Sections will normally be drawn at 1:10. The height of a datum on the drawing will be calculated and recorded. The locations of sections will be recorded on the site plans, relative to the site grid. Cut features will be recorded in profile, planned at an appropriate scale, and their location accurately identified on the appropriate plan.
- 4.0.9 Photographs will include an appropriate scale. All photographs will be recorded on a photographic register detailing subject, location, and direction of shot.
- 4.0.10 Any human remains encountered will be reported to the appropriate authorities and left *in situ*. If removal is necessary, this will comply with the relevant Government licence regulations and guidance.
- 4.0.11 Relevant artefacts affiliated with the site are anticipated to date from the early to mid-20th century. All artefacts, including faunal remains, will be retained for analysis, unless it is clear that are of very recent origin. Post-excavation storage requirements will be assessed. Collection and post-excavation work on artefacts will follow current guidance (CIfA 2020b).
- 4.0.12 The terms of the Treasure Act 1996 will be followed with regard to any finds which might fall within its purview. Any such finds will be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the "Code of Practice". Where removal cannot be completed on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.
- 4.0.13 If required, CFA's Palaeoenvironmental Scientist will assess the environmental potential of the site and will provide advice to allow consideration of whether deposits have potential for conducting palaeobotanical or other soils analyses, and to allow a sieving programme to be

undertaken if appropriate. He will advise on the potential for the preservation of faunal remains. Sampling will be carried out in accordance with current guidelines (Campbell et al. 2011).

## 5. Analysis, Reporting and Archiving

- 5.0.1 All finds, if appropriate, will be retained washed and assessed in accordance to accepted professional standards (National Panel for Archaeological Archives in Wales 2019, CIfA 2020b).
- 5.0.2 Any variations to the agreed WSI must be agreed in prior writing with the BBNPA Heritage Officer for Archaeology.
- 5.0.3 The report will contain:
  - A concise non-technical summary of the project results in English and Welsh;
  - The site location given as an 8 figure grid reference;
  - A front cover/frontispiece which includes the planning application number and the national grid reference of the site;
  - The dates on which the work was undertaken;
  - A description of the site location and geology;
  - An explanation of any agreed variations from the WSI, including justification for any work not undertaken (which would be agreed in writing with the BBNPA Heritage Officer for Archaeology);
  - A description of the methodology employed, work undertaken and the results obtained;
  - Contexts and feature descriptions;
  - Maps and other illustrations at an appropriate scale;
  - A list of, and spot dates for, any finds recovered;
  - A description of any environmental or other specialist work undertaken and outline of the results obtained;
  - A discussion of how the work contributed to the aims and objectives set out in the WSI;
  - A bibliography.
- 5.0.4 A summary report of the work will be submitted for publication in a national journal (e.g. Archaeology in Wales, Post-Medieval Archaeology) no later than one year after the completion of the work. If requested, a full report of the findings can be produced and ready for publication within an appropriate regional or national archaeological journal within six months of the completion of the project fieldwork.
- 5.0.5 The online OASIS form will be completed as part of the archaeological work. A copy of the project report and any additional digital images will be archived with OASIS. The OASIS project code is: cfaarcha1-508485.
- 5.06 CFA are ISO 9001 accredited, and all our internal archiving and digital record systems are fully compliant with CIfA Standards and Guidance, namely guidance on *Planning and Data Management Plans for Archaeological Projects* (CIfA 2020c). The digital archive will be subject to a selection process, depending on the results of the works, and the resulting digital

archive will be deposited with the Archaeological Data Service (ADS) in line with guidance from ADS (2022) and CIfA (2022).

- 5.0.7 The Digital Management Plan (DMP) is appended to this report with guidance by the National Panel for Archaeological Archives in Wales (2019). The DMP document (Appendix 1) describes how the gathered digital data will be managed through the delivery of the project and what will happen with the archaeological data once the project is completed.
- 5.0.8 An archive will be prepared in accordance with the current guidelines (CIfA 2020b) and arrangements made for its deposit with the designated museum. A copy of the report (a single bound copy with PDF/A on CD) and accompanying data will be submitted to the Dyfed Archaeological Trust (DAT) in accordance with the '*Guidance for the Submission of Data to the Welsh Historic Environment Records*' and *Archaeological Archives: Selection, Retention and Disposal Guideline for Wales* (Welsh Archaeological Trust 2018; National Panel for Archaeological Archives in Wales 2019).
- 5.0.9 The landowner will be encouraged to transfer the ownership of finds to a local or relevant museum, anticipated to be the Llandovery Museum or Swansea Museum. The requirements of the depositing museum will be adhered to, and the BBNPA Heritage Officer for Archaeology will be notified in advance.

## 6. Monitoring

6.0.1 Close contact will be maintained with the client and the BBNPA Heritage Officer for Archaeology for the purposes of monitoring the project. Report approval will be undertaken by the BBNPA Heritage Officer as the archaeological advisor to the NP planning department. Important or unexpected discoveries will be communicated to them through the client and their agents.

### 7. Quality Assurance

- 7.0.1 CFA works to the highest achievable standards across the range of its archaeological activities and employs best archaeological practices. CFA operates according to the appropriate codes and standards of the Chartered Institute for Archaeologists (CIfA).
- 7.0.2 An ISO9001:2015 quality system has been produced to fulfil the requirements of best archaeological practice. This system comprises the Quality Policy, Quality Manual, and a series of Standard Operating Procedures, copies all of which may be supplied on request.
- 7.0.3 CFA staff are instructed in the requirements of the quality system. All staff working on projects are inducted in CFA working practices, including quality responsibilities. Every member of staff is made aware of their individual responsibilities within the project and within the Quality Plan. CFA ensures that all staff are qualified, experienced archaeologists, and that training is conducted in appropriate areas of CFA work procedures and in developing uses of new technologies. All staff are encouraged to apply for membership of the CIfA, the recognised professional body for field archaeology, at an appropriate level and are encouraged and assisted through an appraisal system to maintain continuing professional development documentation.

## 8. Key Personnel

- 8.0.1 **Phil Mann** (BA ACIfA) is a Project Manager for CFA. Phil has project managed numerous archaeological projects of all periods throughout the country including those undertaken for large infrastructure projects.
- 8.0.2 **Sam Harris** (BA, MSc) is a field archaeologist for CFA with ten years of archaeological experience. His CV can be forwarded prior to the start of the project.
- 8.0.3 **Shelley Werner** (BSc MPhil PhD MCIfA) is CFA's Graphics Manager, responsible for the organisation and management of all GIS, CAD and Illustrative material. She is an experienced illustrator with specialist knowledge in GIS consultancy and standing building survey and has worked on a variety of projects in Scotland and England.
- 8.0.4 Post-excavation will be managed by CFAs post-excavation manager **Melanie Johnson** (MA PhD FSA Scot MCIfA); CV's for CFA's 'in house' specialists or external consultants can be supplied on request.

### 9. Health and Safety

9.0.1 All CFA staff have been inducted into CFA's Health and Safety Policy, which can be supplied on request. All site staff have current relevant CSCS cards. All work carried out will be subject to a Risk Assessment, and any concerns over health and safety will be given priority over the recording.

### 10. Copyright

10.0.1 Copyright of this written scheme of investigation and the final report will be held by CFA, although the client will have rights to reproduce as appropriate.

#### 11. References

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# Figure 1. Site Location and Watching Brief Areas Plan



# Appendix 2: OASIS Summary

# **OASIS Summary for cfaarcha1-508485**

OASIS ID (UID)	cfaarcha1-508485		
Project Name	Watching Brief at Llyn Y Fan Fach Reservoir Dam Llangadog		
Sitename	Llyn Y Fan Fach Reservoir Dam Llangadog		
Sitecode			
Project Identifier(s)	Llyn Y Fan Fach Reservoir Dam Llangadog, Brecon Beacons National Park		
Activity type	Watching Brief		
Planning Id	22/20939/CPL, 22/21137/LBC		
Reason For Investigation	Planning: Listed Building Consent		
Organisation Responsible for work	CFA Archaeology Ltd		
Project Dates	07-Jul-2022 - 01-Jun-2023		
Location	Llyn Y Fan Fach Reservoir Dam Llangadog		
	NGR : SN 80329 21991		
	LL : 51.8835965471017, -3.74010322464653		
	12 Fig : 280329,221991		
Administrative Areas	Country : Wales		
	County : Dyfed		
	District : Carmarthenshire		
	Parish : Llanddeusant		
Project Methodology	Worked involved monitoring groundworks to alter site to make safe for future use, including the removal of original features. Any archaeological features uncovered were recorded using pro-forma recording technique and photography. Further investigation, where deemed necessary were undertaken by hand.		
Project Results			
Keywords	Reservoir - FISH Thesaurus of Monument Types		
	Dam - FISH Thesaurus of Monument Types		
	Shaft - FISH Thesaurus of Monument Types		
	Weir - FISH Thesaurus of Monument Types		
Funder	Private or public corporation Morgan Sindall		
HER			
Person Responsible for work	Phil Mann		
HER Identifiers	HER Monument No - 111183. HER Monument No - 87839		
Archives			

Report generated on: 18 Jul 2023, 11:42

# Appendix 1. Data Management Plan

# Project ID / OASIS ID

Internal CFA ID: RDWA2/2708

OASIS ID: cfaarcha1-508485

#### Project Name

Llyn y Fan Fach Reservoir Dam, Llangadog, Brecon Beacons National Park, Wales

Project Description

A Watching Brief of the area associated with the development the Llyn y Fan Fach Reservoir Dam is to be carried out on the repair and groundworks on the site including, but not limited to, the removal of existing concrete surface across area of current spillway, topsoil and a ground reduction 100-400mm in depth throughout the site, as well as excavation to the max of 1.3m from current ground level (Section 4.0.2 of WSI).

Project Funder

Morgan Sindall, Welsh Water Capital Delivery Alliance

Project Manager

Mr Phil Mann BA ACIfA, Project Manager, CFA Archaeology, pmann@cfa-arch.co.uk , 0113 271 6060

### Principal Investigator / Researcher

CFA Archaeology Ltd

#### Data Contact Person

- 1. Mr Jamie Walker, BSc ACIfA, Project and Post-excavation Officer, jwalker@cfa-arch.co.uk, (0113 271 6060)
- 2. Ms Christina Hills, BA ACIfA, Post Excavation and Archives Manager, chills@cfa-arch.co.uk, (0131 273 4380)

## Date DMP created

03/08/2022

Date DMP last updated

03/08/2022

Version 1

# Related data management policies

CFA Quality Management Systems ISO 9001 Accreditation

#### Section 2: Data Collection

#### What data will you collect or create?

The following archaeological data will be collected to achieve the aims and objectives of the watching brief as set out in the Written Scheme of Investigation.

It is envisaged that the resultant digital archive will comprise, but not be limited to data collected during the watching and created in post-excavation:

Туре	Format	Estimated Volume (Data Archive)
Digital Photographs	.jpg, .tiff	Volume tbc
Spreadsheets	Excel .xlsx	i.e., typed up registers etc
Text/ documents	Word .docx, PDF .pdf	To include at minimum the WSI, Project Report and
	_	scans of onsite record sheets

#### How will the data be collected or created?

CFA Archaeology is a registered organisation with the Chartered Institute for Archaeologists (CIfA). Work will be conducted with regard to the Institute's Standards documents (CIfA 2020a-c), relevant Historic England guidance documents (Historic England 2015). Details are set out in the WSI. Recording of all elements will be done following established CFA procedures.

Data Standards/ Methods

- Paper records, digital photos and survey data is collected on site
- Data collected on site is downloaded or scanned and stored in an appropriate folder.
- On site records are typed up as part of report preparation.
- Reports are created once the onsite works are completed and records checked, by an appropriate member of staff
- Project folders are named and ordered following the CFA Quality Management System (QMS)
- CFA Data storage is described in Section 5.

### Section 3: Documentation and Metadata

What documentation and metadata will accompany the data?

Full documentation and metadata will be supplied with the archive, in line with our own archiving requirements, as well as those from ADS. This will include, but is not limited to, metadata forms for each data type as well as overarching site metadata forms (above). Any relevant selection forms will be included with the archive.

### Section 4: Ethics and Legal Compliance

#### How will you manage any ethical, copyright and Intellectual Property Rights (IPR) issues?

- The WSI outlines the names and details of contractors and staff who are proposed to work on the project. CFA have a GDPR compliant Privacy Policy which dictates the management of personal data, available upon request
- CFA is a Registered Organisation with CIfA and a minimum of 80% our staff have CIfA membership. All of our work practises are therefore in line with CIfA's ethical requirements.
- Copyright for all data collected by the project team belongs to the organisation.
- The requirement of consent for the full transfer of title of finds regarding the landowner and recipient museum is set out in the WSI

## Section 5: Data Security: Storage and Backup

### How will the data be stored, accessed and backed up during the research?

In addition to our Data Protection Policy and Privacy Notice, CFA has in place the following policies (and associated notes) which outline and instruct procedures relating to IT and data management: CFA Data Management Plan, CFA IT Policy, CFA Data Breach Response Plan, CFA IT Procedures. At our Musselburgh office, digital data is stored on two primary servers with a back-up cycle controlled via a separate dedicated backups server. Back-ups are configured to provide daily, weekly, and monthly redundancy across all offices. We also back up incrementally to external devices weekly. At our Yorkshire and Milton Keynes offices, digital data is stored on primary servers using multiple virtual configurations. All network data from these offices is mirrored nightly to the Musselburgh network and is included in the Musselburgh back up. All digital files are protected both at server level using Linux proprietary protection, and by ESET Anti-Virus software on all desktops and portable devices where possible. Access to all CFA business networks is restricted, with variable user-level access to folders and password-protected files as appropriate.

Digital site records such as survey data and digital photographs are stored digitally on our network in compliance with our Security Copies Policy. Hard copy site records are scanned regularly throughout site works and stored digitally on our network in compliance with our Security Copies Policy.

### Section 6: Selection and Preservation

#### Which data should be retained, shared, and/or preserved?

The digital archive will be subject to a selection process, dependant on the results of the works and in line with CIfA, ADS, National Panel for Archaeological Archives in Wales, and Welsh Archaeological Trust guidance.

The selection will be fully recorded and resulting selection forms will be retained and included with the archive.

### What is the long-term preservation plan for the dataset?

An online OASIS form will be completed as part of the archaeological work within three months of the completion of the work. An appropriately formatted copy of the report will also be uploaded to OASIS within three months of the completion of the work.

A digital copy of the project report will be deposited with the Dyfed Archaeological Trust (DAT) within a suitable timescale. This ensures that the report will be made available as a public document as part of the Historic Environment Record.

A summary report of the work will be submitted for publication in a national journal (e.g. Archaeology in Wales, Post-Medieval Archaeology) no later than one year after the completion of the work.

The resulting digital archive will be deposited with the Archaeological Data Service (ADS) in line with guidance from ADS (2022), CIfA (2020c; 2022), National Panel for Archaeological Archives in Wales (2019), and Welsh Archaeological Trust (2018).

This includes:

- A concise non-technical summary of the project results in English and Welsh
- A fully ordered and consistent digital data archive, with files named and structured in a logical and formalised manner, accompanied by relevant documentation and meta-data.

Have you contacted the data repository?

The requirements of the receiving archive will be adhered to, and the BBNPA Heritage Officer for Archaeology will be notified in advance of works.

BBNPA Heritage Officer for Archaeology will be notified at set stages of the project, including at project initiation (comprising a project initiation form), a mid-point review, and completion stages to discuss archaeological archiving requirements

Have the costs of archiving been fully considered?

The estimated costs for the archiving of the project, including preparation and creation of the archive, have been included in the project budget.

# Section 7: Data Sharing

How will you share the data and make it accessible?

- An appropriately formatted copy of the report will be uploaded to OASIS within three months of the completion of the work.
- A digital copy of the final report will be deposited with the DAT within a suitable timescale following the completion of fieldwork. This will ensure that the report be made available as a public document as part of the Historic Environment Record
- The paper records will be deposited with DAT, along with the selected digital archive and any finds recovered on site.
- The selected digital archive will be uploaded to ADS and be accessible through their portal.

## Are any restrictions on data sharing required?

Consent for full transfer of title of finds to the recipient museum will be agreed in principle with the landowner at the outset. Confirmation of transfer of title from the landowner and confirmation of assignment of copyright, along with a full archive inventory, will be submitted with a project completion form to the recipient museum, anticipated to be Llandovery Museum or Swansea Museum. DAT will be provided with a copy of the completion form, including the assigned accession number.

# Section 8: Responsibilities

Who will be responsible for implementing the data management plan?

The Project Manager will have overall responsibility for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.

- Data capture and data quality is the responsibility of the Field Director, assured by the Project Manager.
- Storage and backup of data in the field is the responsibility of the Field staff.
- Once data is incorporated into the organisations project server, storage and backup is managed as described in section 5.
- Data archiving is undertaken by the post excavation team under the guidance of the Post-Excavation Officer and Post-Excavation and Archives Manager, who are responsible for the transfer of the Archaeological Project Archive to the agreed repositories.
- Details of the core project team can be found in the WSI.



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