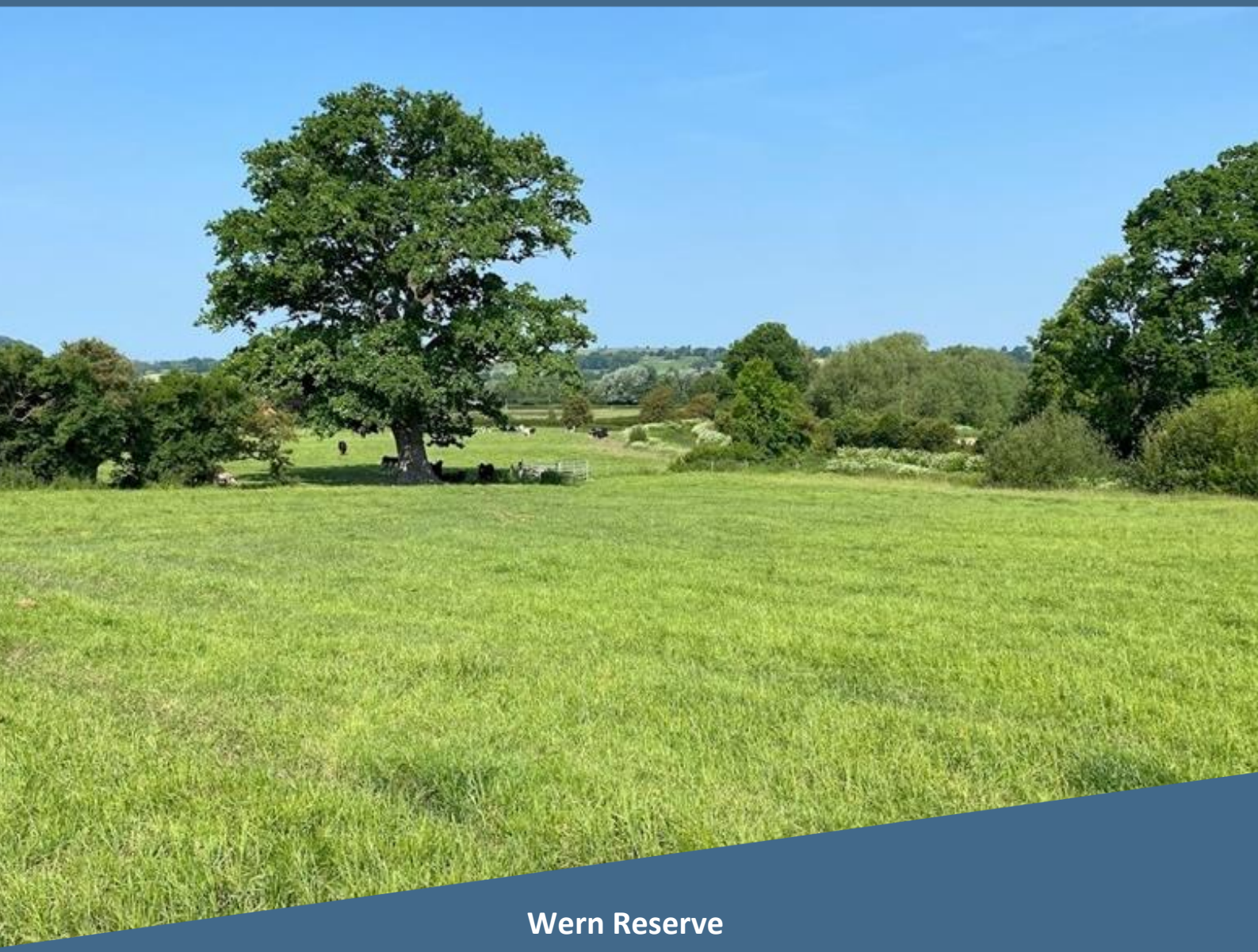
border archaeology

Written Scheme of Investigation for Archaeological Observation



Wern Reserve
Llandrinio
Powys
SY21 9JX

On behalf of

Glandŵr Cymru
Canal & River Trust in Wales

April 2024

border archaeology

archaeology & built heritage
working throughout the UK

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Cover: View looking northwest across the eastern end of the site

ISO 9001 | ISO 14001 | ISO 45001

Contents:

1 Introduction

Border Archaeology Ltd (BA) has been instructed by Glandŵr Cymru: Canal & River Trust in Wales to undertake a programme of archaeological observation (or watching brief) with regard to the proposed creation of a nature reserve (Wern Reserve) on land adjacent to the Montgomery Canal off Coppice Lane Llandrinio Powys SY21 9JX (*Fig. 1*).

This proposal to establish a nature reserve on land adjacent to the Montgomery Canal forms part of the canal restoration project.

The following brief description of works is based on details supplied by Arcadis:

1. Establish temporary access route across farmland (Route A – preferred route option) - to be laid on top of the existing ground surface (*Fig. 2*).
2. Decommission existing water mains.
3. Excavate existing ground to form new reserve profile to a depth of 64.0m AOD (*Fig. 4*).
4. Install diverted water mains and associated connection chambers.
5. Excavate 0.4m of topsoil in locations of three landscaping bunds offset from the reserve edge (*Fig. 3*): Bund 1 in the NW corner of the site (vol. topsoil excavated 980m^3), Bund 2 to the S (vol. topsoil excavated 1770m^3) and Bund 3 to E (vol. topsoil excavated 3395m^3).
6. Form three landscaping bunds irregular in plan using excavated material: Bund 1 in the NW corner (vol. spoil reused 4075m^3), Bund 2 (vol. spoil reused 8215m^3) and Bund 3 (vol. spoil reused 14830m^3) The profile of these bunds is shown in (*Fig. 3*).
7. Construct reinforced concrete (RC) channel to connect reserve and canal *(Figs. 4 & 5*).
8. Allow reserve to fill with water from canal to 65.5m AOD (canal water level 65.5m AOD (*Fig. 4*).

Based upon plans produced by Arcadis and provided by the Canal & River Trust on April 2nd 2024, the proposals mainly consist of the making of a large body of water over an area of 0.93ha to a maximum depth of 1.5m within a reserve area of 1.2ha. It will be located to the N of the main body of the site and mirror the curve of the canal with a U-shaped indentation in its S side. The excavated soil will be placed in the NW body of the site and therefore raise the ground level in this area.

The RC channel will be constructed on the W side of the reservoir (c. NGR: SJ 25596 13109) to release water from the canal. This will necessitate cutting a trench with 30^o angled sides and inserting a concrete trough of 300mm thickness and internal dimensions of 2200mm × 910mm onto a bed of concrete blinding with a minimum thickness of 75mm. Backfill consisting of selected excavated material will make good the ground either side of the channel to the top of the concrete.

No intrusive archaeological investigation has occurred within the site boundary but it is likely that excavations to these depths would disturb potential remains.

Archaeoleg Clwyd-Powys /Clwyd-Powys Archaeology (CPA) made the following observation:

The archaeological potential of this plot is generally low with some poorly preserved ridge and furrow field system earthworks in the eastern half (better preserved examples lie elsewhere outside the site boundary) which are effectively recorded by the high resolution lidar here (a 50cm DTM also exists for this area). The small quarry is very late in date, is unlikely to reveal any significant archaeology, and is in any case avoided by the pond creation works and should be left preserved within the scheme as a landscape feature. The hollow way track will be cut through by the western half of the pond and a watching brief should be maintained by an archaeological contractor here and a vertical section across the hollow way should be cut and recorded.

An archaeological contractor will need to be engaged to complete the watching brief and section recording on the former hollow way in accordance with the appropriate CIFA standards and guidance. A prior written scheme of investigation document (WSI) from the chosen archaeological contractor will need to be approved by the planning services section in advance of commencement of the archaeological works.

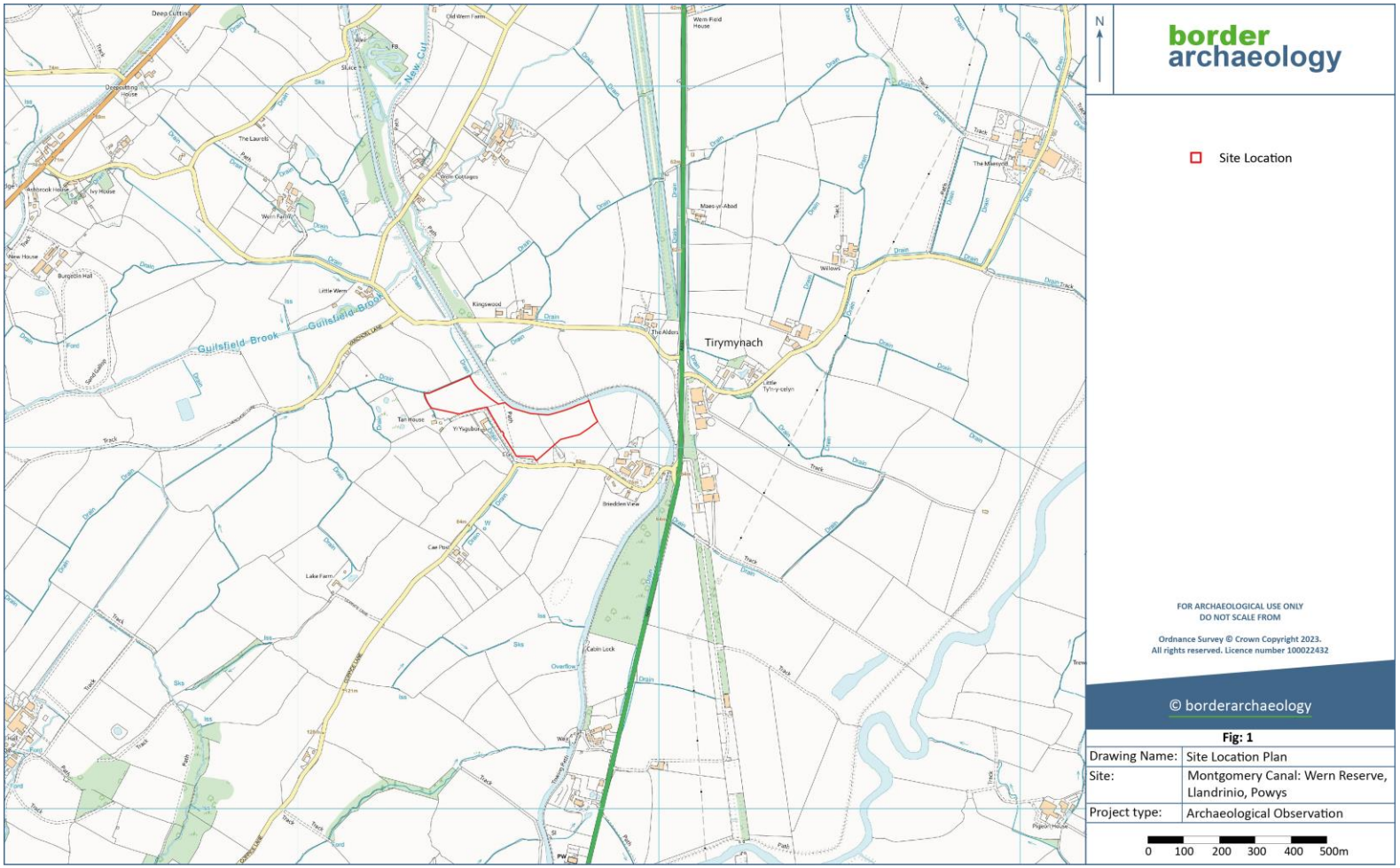
This Written Scheme of Investigation (WSI) has been compiled by George Children MA MCI*f*A in compliance with procedures for watching brief for submission to Neil Bayliss BA PCI*f*A Assistant Planning Officer CPA for his approval as an appropriate methodology for the proposed programme of work.

2 Site Description

This site covers an area of approximately 5.4ha and is situated off Coppice Lane, just W of the A483 and to the N of Welshpool (centered on NGR: SJ 25734 13068). The land is currently undeveloped pasture for livestock, with some areas of trees and established hedgerow. The proposed development site is bound to the N and in some part to the E by the Montgomery Canal, to its S by Coppice Lane and a farm track, and in other areas by established hedgerows and trees.

There is also a hedgerow dividing the E section of the site, though it is not continuous. Generally, the site slopes from S to N towards the canal, except in its NW part where it slopes W to E, again towards the canal. At the S border of the E end, a large depression exists that is lined with low trees. This depression takes the form of a rough horseshoe shape, and at the time of the visit, had a low level of water within it (the weather prior to the visit had been largely hot and dry). It was impossible to access the whole of the site during the visit due to livestock occupying the site, particularly the area to the W of the dividing hedgerow; however, photographs were taken and features identified which were visible on aerial photography and LIDAR coverage of the site.

The site is not located within a Conservation Area and does not contain any designated (protected) heritage assets, such as Scheduled Ancient Monuments (SAMs), listed buildings or registered parks and gardens.


N
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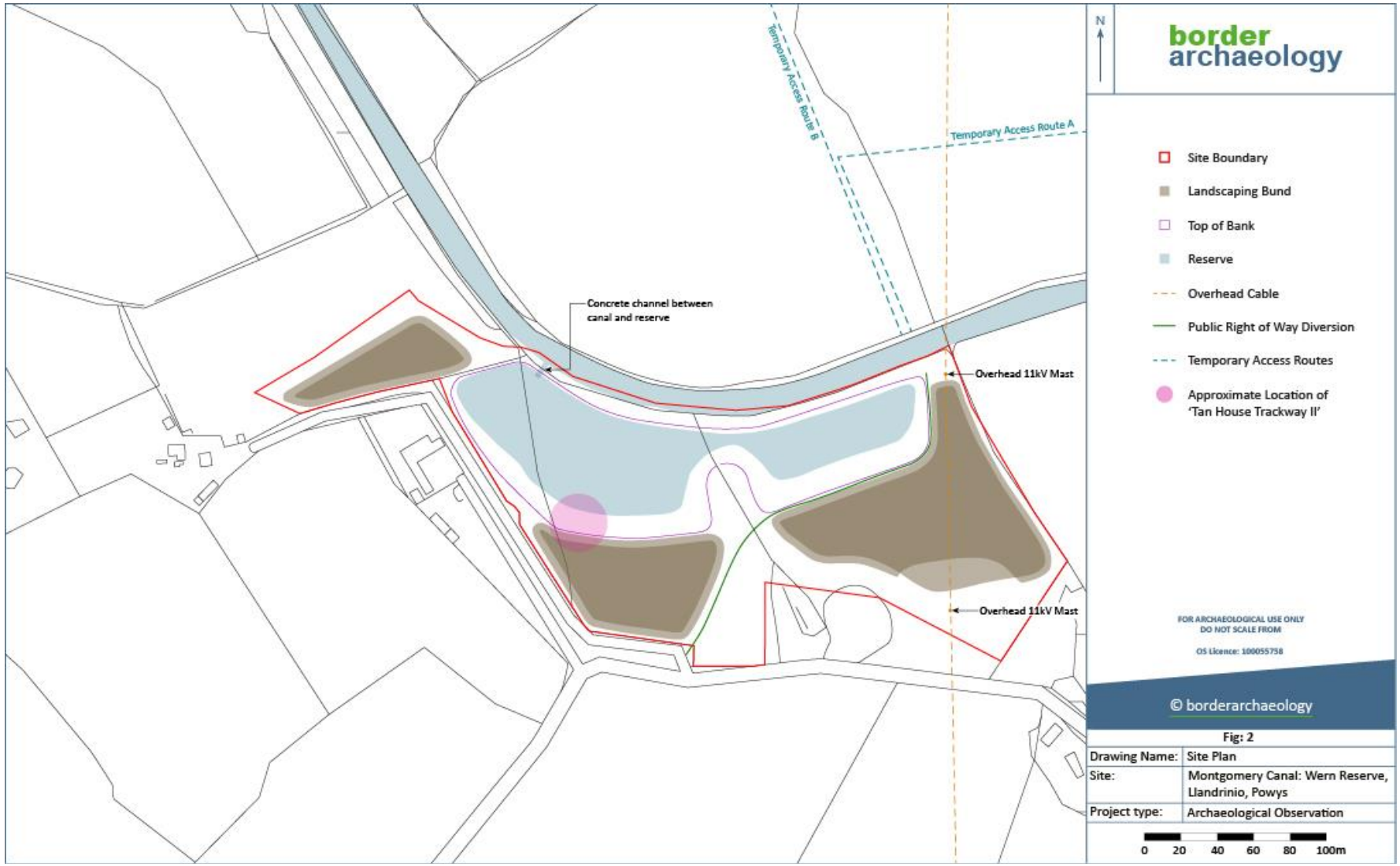
Site Location
Tirymynach
Guilsfield Brook
FOR ARCHAEOLOGICAL USE ONLY
DO NOT SCALE FROM
Ordnance Survey © Crown Copyright 2023.
All rights reserved. Licence number 100022432
© borderarchaeology
Fig: 1
Drawing Name: Site Location Plan
Site: Montgomery Canal: Wern Reserve, Llandrinio, Powys
Project type: Archaeological Observation
0 100 200 300 400 500m


Temporary Access Route B
Temporary Access Route A
Concrete channel between canal and reserve
Overhead 11kV Mast
Overhead 11kV Mast
N
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Site Boundary
Landscaping Bund
Top of Bank
Reserve
Overhead Cable
Public Right of Way Diversion
Temporary Access Routes
Approximate Location of 'Tan House Trackway II'
FOR ARCHAEOLOGICAL USE ONLY
DO NOT SCALE FROM
OS Licence: 100055758
© borderarchaeology
Fig: 2
Drawing Name: Site Plan
Site: Montgomery Canal: Wern Reserve, Llandrinio, Powys
Project type: Archaeological Observation
0 20 40 60 80 100m

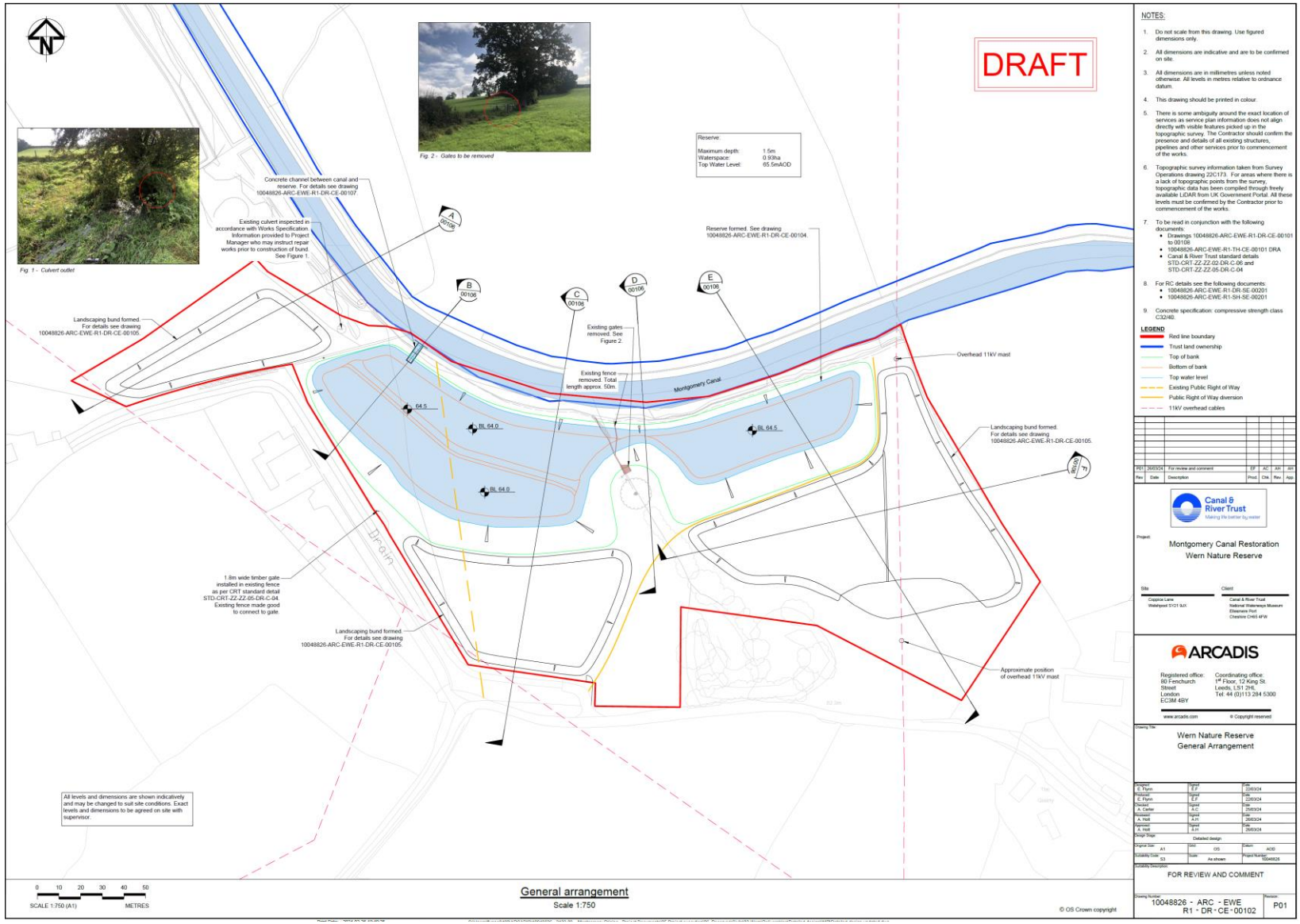

Fig. 3: Wern Nature Reserve: General Arrangement (as supplied by the client)

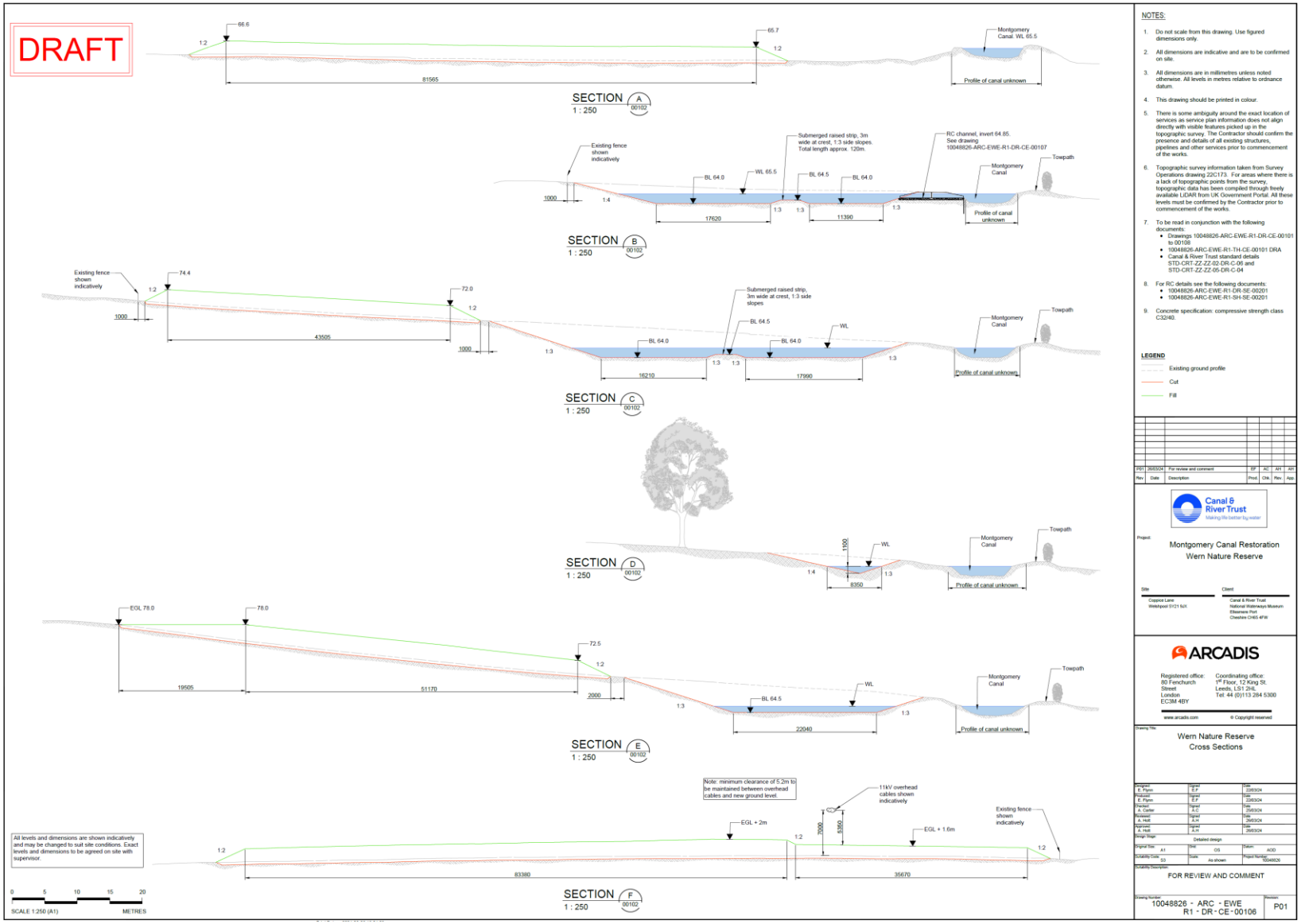

Fig. 4: Wern Nature Reserve: Cross-sections (as supplied by the client)

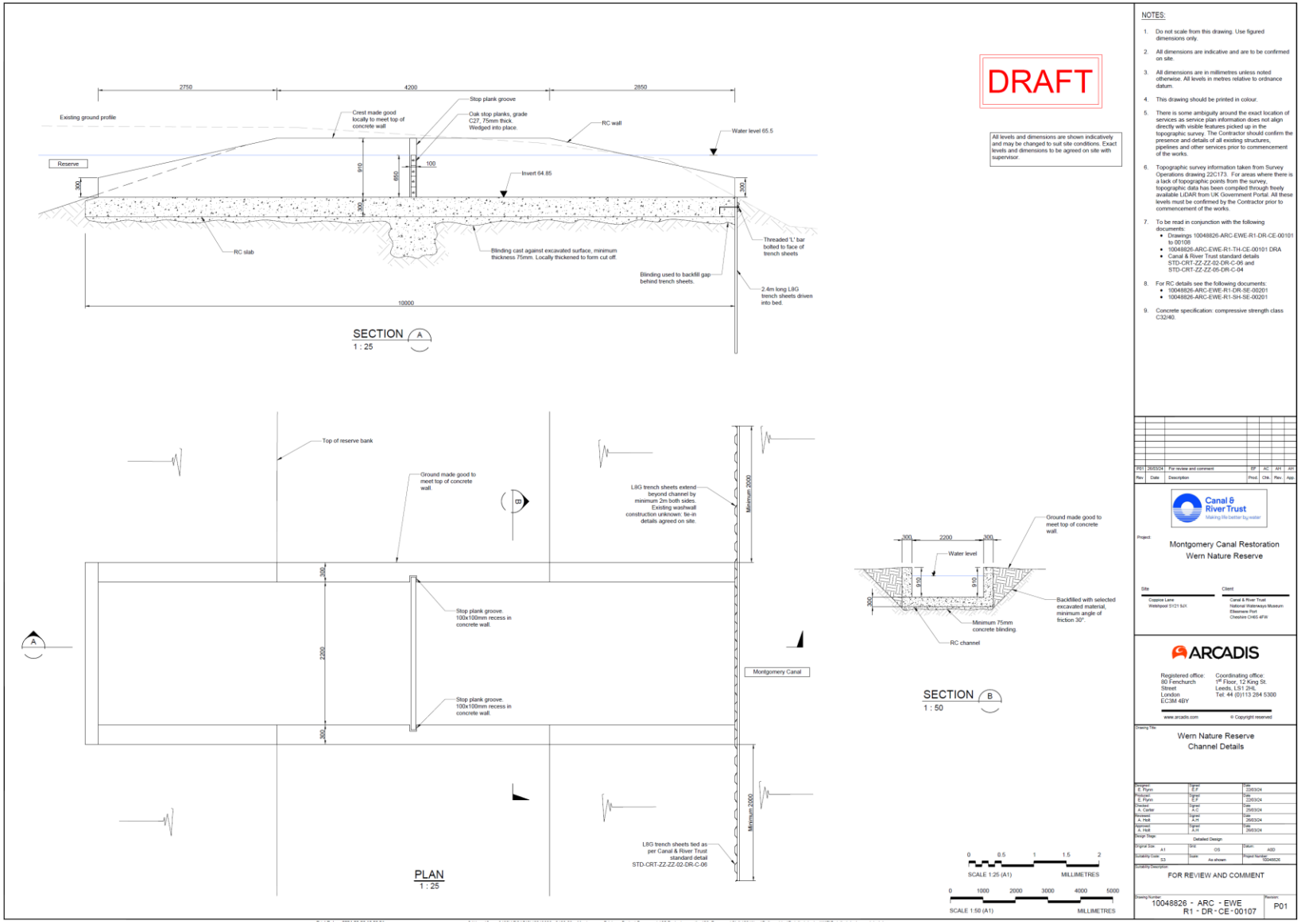

Fig. 5: Wern Nature Reserve: Channel details (as supplied by the client)

2.1 Soils & Geology

The British Geological Survey (BGS) records sedimentary bedrock geology of the Nant-Ysgollon Mudstone Formation, laid down between 433.4 -427.4 million years ago during the Silurian period. Most of the site is overlaid by superficial deposits of Devensian Till, with the extreme NW having a cover of post-glacial alluvium.

There are no borehole records within the bounds of the site and a record some 200m NE of the site (NGR: SJ 259 133) contained no detailed description of the sequence of deposits revealed.

3 Project Aim

The aim of the archaeological observation is to locate and record any archaeological finds, features or deposits within the groundworks area and to confirm that no impact on the archaeological resource occurs without the implementation of this proposed programme of archaeological work.

Additionally, any significant new evidence will be integrated into the wider historic and archaeological context of the landscape and address, where applicable, the research aims set out in *A Research Framework for the Archaeology of Wales* (https://www.archaeoleg.org.uk/index.html). The framework concerns include an assessment of … *the significance, form and archaeological survival of transport corridors – turnpikes, government-sponsored roads,* ***canals****, railways – their engineering, the industries they served and the settlements they sustained,* canals being an active research area.

4 Summary Historical & Archaeological Background

An archaeological desk-based assessment was previously submitted in connection with this proposal based on a search of the HER database for records of sites, monuments archaeological events identified within a 1km search radius of the site centre (the study area) and discusses the implications regarding the nature and significance of the archaeological resource within the site and potential impact on archaeological features and deposits (BA 2023b). The following summarises the results of the assessment.

4.1 Previous Archaeological Investigations

A fieldwalking survey was undertaken around 860m S of the site (NGR: SJ 2587 1208) in 1995 (HER: 70569) as part of a series of road improvements on the A483 around Pool Quay (Owen 1995). The report emphasises the importance of the Strata Marcella Abbey within the area in the medieval period and its influence on the surrounding area in terms of agriculture.

Six previously unknown sites were identified, as follows:

- Former millwheel and millrace at Crowther Hall (NGR: SJ 2580 1222) that was probably fed by the Montgomery Canal.
- Site of malting building containing drying kilns and a form of engine (NGR: SJ 25557 1154).
- Rectangular warehouse building (NGR: 2557 1132).
- Site of former cider mill (NGR: 2507 1105). No structural remains present but eight fragments of the press recorded.
- Building platform (NGR: SJ 2561 1154) possibly relating to Dyers Farm Cottage (HER: 8904), which is recorded in maps until 1904.
- Possible track (centred NGR: SJ 2568 1173) not shown on historic maps.
- Pond site (NGR: SJ 255 1139).
- Ridge and furrow (NGR: SJ 2575 1164) and lynchet (NGR: 2571 1187).

An ADBA and fieldwalking survey was carried out in 1997 (centred NGR: SJ 2536 1351) at the New Cut Argae, a flood defence bank close to the Montgomery Canal (Hawkinson & Jones 1997). The report suggested it probably arose following the passage of the 1788 Act of Parliament and in 1800-1. The report also states that the New Cut most likely related to have been a product of the moves to enclose common land; this is evidenced in the surveyor's drawings in 1788 and 1794, before being implemented by the building of the Montgomery Canal (1794-7). The report notes area of ridge and furrow characterising the pre-enclosure landscape.

4.2 Prehistoric & Romano-British

Little evidence of prehistoric or Romano-British activity is recorded within the study and nothing to indicate any such activity within the site boundary. The archaeological potential for these periods was therefore assessed as low.

4.3 Medieval

A trackway (HER: 64652) running along the W of the main part of the site was identified from RAF aerial photographs from 1948. A holloway probably directly associated with another nearby (HER: 38160) is also recorded but with the junction between the two lost was lost when the canal was driven through the landscape.

Ridge and furrow (HER: 38145) was also recorded within the site boundary at this time and is now more clearly visible as a result of LIDAR survey. Medieval and early post-medieval cultivation features are also recoded to the immediate N, E and SE of the site.

These medieval open field systems were probably managed from Strata Marcella Abbey (NGR: SJ 25145 10405) located c 2.6km SSW of the proposed development site. The abbey owned much land in the area and the home manor of Tir-y-mynach (NGR: SJ 246 156), which included several parishes, is recorded as having ploughland of 534ha in 1291.

A possible mill/windmill site associated with Strata Marcella Abbey is located (HER: 23116; 37532) around 550m SW of the proposed development site and is related to the evidence of an (extant) leat. The mill is mentioned in a 1406 charter as being in the ownership of Strata Marcella Abbey. Although a Welsh foundation, the abbey came under English influence following Edward I's campaign and the surviving ridge and furrow points to a medieval open field system more readily identifiable with England than Wales. A small lead *ampulla* (HER: 120747), a receptacle for holy water, was found to the S of the site, which had probably been lost by someone associated with the abbey.

4.4 Post-medieval

Canal construction began in 1794 and, by 1797, the section which including the stretch adjacent to the site had been completed. Consistent with the prevailing pattern of land use in the Upper Severn Valley, the canal was specifically built to carry agricultural lime used to condition the soils and increase crop yields, large amounts of lime being extracted from a quarry near Llanymynech.

Strata Marcella Abbey was dissolved in 1536 and the area came under the control of the barons of Powys (later marquesses, then earls). The proposed development site remained in agricultural production and farmhouses began to appear which included the late 17th/early 18thcentury Tan House (HER: 8424) and Crowther Hall (HER: 36483), built around 1550.

The area's history was dominated by the building of the canal. The influence of the earls of Powys remained strong in the area and the family are recorded in the 1845 tithe survey as owning all the fields comprising the site. The site itself contains two archaeological remnants of the construction of the canal. Wern Linear Earthwork I (HER: 38161) was identified in 1948 RAF aerial photography as a bank or scarp following the line of the canal and is probably connected with its construction.

The site boundary also contains a quarry (HER: 64551) shown on the Ordnance Survey 1st Edition 6-inch map and was seen during a site visit as a large depression cut into the slope with a sheer face on its S side. Wthin the search radius are several locks, bridges, weirs and other associated structures, including cottages for canal workers. Several of these are Grade II Listed Buildings considered to be important survivals of later 18th and 19th century canal engineering.

The 1829 Ordnance Survey Meifod map shows an alignment of trees on the bend of the canal, just to the E of the site. The map also shows the quarry feature N of Coppice Lane, which may have been dug as part of the canal construction works or to extract limestone for delivery to one of the nearby limekilns along the canal.

The 1845 Guilsfield Parish tithe map additionally identifies the trees to the immediate E of the site as orchards owned by Edward Herbert, 2nd Earl of Powys. The field boundaries shown on the map remain in place. The 1885 Ordnance Survey 6-inch map indicates possible osier beds which are mentioned in the tithe appointments of 1840 (HER: 36456).

The footpath running NW-SE past Tan House seems to be identifiable with the possible medieval track seen on the aerial photographs (HER: 64652). This map also shows the line of the Oswestry to Newton Railway completed in 1861 which now follows the line of the A843 today.

By 1885, Bank Farm has its lock (Cadw listing: 16737) labelled, and Tan House Bridge is also shown (Cadw listing: 15439). No further major changes are depicted subsequent editions of the Ordnance Survey.

In view of the location of the site adjacent to the canal, the proposed groundworks may encounter evidence relating to the period of construction and subsequent use.

5 Methodology

All archaeological site works will be undertaken in accordance with BA's *Archaeological Field Recording Manual* (2023a) and the *Ymddiriedolaeth Archaeolegol Clwyd-Powys/Clwyd-Powys Archaeological Trust Archaeological Watching Brief* guidance, together with accepted professional standards, including *Standard for archaeological monitoring and recording* and *Universal guidance for archaeological monitoring and recording* (CI*f*A 2023a&b) and *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CI*f*A 2020a). BA abides by the requirements of the CI*f*A *Code of conduct: Professional ethics in archaeology* (2022) and is cognisant of project management advice set out in *Management of Research Projects in the Historic Environment* (MORPHE): *The Project Managers' Guide* (Historic England 2015).

CI*f*A (2023a) gives the following definition:

Archaeological monitoring and recording [archaeological observation] *is a formal programme of observation, investigation and recording conducted during works carried out for non-archaeological reasons, where there is a possibility that archaeological deposits may be disturbed or destroyed. This will be within a specified area or site on land, in an inter-tidal zone or under water.*

5.1 Site Specific

As specified by CPA, AO will be undertaken in the area of the hollow way track to be impacted by the western half of the pond and a vertical section across the hollow way will be cut and recorded (*Fig. 2*). Groundworks excavations in this area will be carried out under archaeologically-controlled machine excavation using a toothless bucket on a tracked or wheeled excavator.

All stripped/excavated material will be routinely checked for finds (including unstratified finds from the original trench backfill) and, where necessary, work will be halted to define, examine and record any areas of archaeological interest; these will be recorded both in plan and section - provided such deposits are safely accessible -with adequate time being allowed for the supervising archaeologist to do so.

Should significant archaeological remains of high value are identified, BA will inform the Assistant Planning Officer and the Client immediately and any such areas of identified archaeology will be cordoned-off from plant movement pending archaeological investigation.

Where archaeological deposits are identified for further investigation, exposed surfaces will be cleaned by hand and planned using a Survey Grade Global Positioning System (GPS) and/or Total Station (TS), where appropriate and practicable, prior to investigation and recording.

Within significant archaeological levels, excavation would proceed by hand wherever possible to establish the date and character of any archaeological deposits or features and to undertake palaeoenvironmental sampling. The full excavation and/or removal of deposits will only be by agreement with the Development Control Archaeologist, as will the treatment of any archaeological deposits considered worthy of preservation in-situ, to agree a strategy for preserving or recording them.

Naturally occurring layers and features, such as peat, alluvium, geoarchaeological deposits and palaeochannels, will be investigated, where possible. This is particularly likely when the deposits contain well-preserved biological remains and/or were laid down during periods of archaeological interest. Deposits potentially containing palaeoenvironmental/ palaeoeconomic data will be sampled according to the strategy detailed herein. Samples will be assigned numbers, and these will be entered into a sample register, cross-referenced with context sheets. Samples of mortars, renders, stone and CBM may also be taken to assist in the analysis of building palaeotechnology.

A metal detector may be used throughout the programme as considered necessary. No unauthorised metal detecting will be permitted anywhere within the site area and all such activity will be carried out in accordance with BA's *Metal Detecting Policy* (2018) incorporating Historic England and Portable Antiquities Scheme guidance.

All BA staff are suitably qualified and experienced to discharge their project roles effectively, are fully cognisant of aims and methodologies and are suitably equipped to undertake the work.

5.2 Recording

Full written, graphic and photographic records will be made in accordance with BA's *Archaeological Field Recording Manual* (2023a) and with accepted professional standards including *Universal guidance for archaeological monitoring and recording* (CI*f*A 2023b).

Records will include:

- A pro-forma context record for each stratigraphic unit examined.
- A full graphic record, where safe and practicable, of all excavated areas, with the primary record consisting, where practicable and strictly within established safety parameters, of hand-drawn plans and sections (produced on gridded, archive-stable polyester film), to show the extent of the area, the extent of all

stratigraphic units and appropriate detail within stratigraphic units at scales of 1:50, 1:20 and 1:10, or as appropriate depending on the complexity to be recorded. All levels will relate to Ordnance Datum. Drawings will be numbered and listed in a drawing register cross-referenced to the written record.

- Temporary Benchmarks (TBMs), which will be established as required.
- Survey using a GPS and/or TS where appropriate.
- A detailed photographic record of all stratigraphic units and representative photographs showing the progress of archaeological work. The record will be made using a high-resolution digital SLR camera (20 MPX) and comprise photographs of archaeological features and appropriate groups of features and structures. The initial photograph of each recorded feature will include a board showing context information, N arrows and scales. All photographic records will be indexed and cross-referenced to written site records. Details concerning subject and direction of view will be maintained in a photographic register, indexed by frame number.

The progress of the works will be recorded and assessed using the Company's ISO 9001 procedures.

5.3 Recovery, processing & curation of artefactual data

Finds are herein defined as…

…all artefacts, building materials, industrial residues, environmental material, biological remains (including human remains) and decay products (CI*f*A 2020a, 3).

In accordance with CI*f*A *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (2020a) and *First Aid for Finds* (Watkinson & Neal 2001), all such materials will be labelled with the site code and context number before being removed off-site; they will be stored in accordance with *First Aid for Finds* (*ibid*.) and with Historic England technical standards and other relevant sources of information, including standards for data-gathering set out by Brown (2011a, 18-20). Each retained assemblage will be examined according to typological or chronological criteria and conservation needs identified, with all ceramics referenced to the county type fabric series.

Kate Smith MA ACI*f*A, Director: Performance Delivery, will contact the nominated museum for any specific guidance requirements in respect of the collection and subsequent archiving of finds. Decisions regarding selection and retention of archaeological materials are generally made at the pre-analysis stage and informed by principles set out by Brown (2011a, 23), which in essence specify that the process should be sufficient…

…to produce a project archive that allows a full re-examination and interpretation of all the results of the project whilst avoiding replication, repetition or the retention of materials not germane to future analysis.

Additionally, BA references *Selection, Retention and Dispersal of Archaeological Collections: Guidelines for use in England, Wales and Northern Ireland* (Society of Museum Archaeologists 1993) and the CI*f*A *Toolkit for Selecting Archaeological Archives* (https://www.archaeologists.net/selection-toolkit/).

5.3.1 Conservation requirements

Janice McLeish MA (Hons.) ACI*f*A, Director: Post Excavation Services, will supervise on-site conservation for the lifting and treatment of fragile objects.

Post-excavation conservation work, including cleaning sensitive finds, will be carried out by BA's conservator and/or York Archaeological Trust (YAT).

Finds will be appropriately packaged and stored under the direction of BA's on-site conservation specialist only where significant preserved organic artefactual material is discovered. X-ray photographs of archaeological metalwork will be produced off-site by YAT.

5.3.2 Treasure

All finds identified in the Treasure Act (1996) and the Treasure (Designation) Order (2002) as being treasure will be recorded, removed to a safe place and reported to the Client, the Development Control Archaeologist, the Finds Liaison Officer (FLO) and Coroner. If the finds cannot be removed from Site the same day as discovery, provision against theft will be taken. A Treasure Receipt will be completed and a report submitted to the Coroner's Office and the FLO within 14 days of understanding the find is Treasure. The Treasure Receipt and Report will include the date and circumstances of the discovery, the identity of the finder (put as unit/contractor) and (as exactly as possible) the location of the find.

5.4 Recovery & Assessment of Palaeoenvironmental/Palaeoeconomic Data

Samples for palaeoenvironmental/palaeoeconomic purposes will be collected, where appropriate and practicable, according to guidance set out by Historic England in *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (2nd Edition; Campbell, Moffett & Straker 2011), with any additional advice on sampling strategies, if required in the event that significant environmental or industrial deposits are encountered, available from Jane Corcoran Historic England Regional Science Advisor for the South East.

Samples of at least 40ℓ will be taken wherever possible and practicable using numbered sample buckets of 10ℓ capacity.

Processing will be undertaken by BA at its Palaeoenvironmental Processing Facility under the supervision and direction of Amy Bunce BSc MA MCI*f*A, Director: UK Operations & Palaeoenvironmental Sciences. This assists on-site guidance for sampling purposes and the ability to 'rush' samples to quickly determine their archaeoenvironmental potential whilst still under excavation; this will inform whether additional samples are taken.

Wherever practicable, at least 40ℓ or 100% of each sample (both dry and waterlogged) will be processed by flotation using Siraf-style tanks with a 500µm retent mesh and 250µm flot sieve as standard, with smaller retent

meshes to 250µm considered where carbonised material is less likely to float. Heavily waterlogged samples will be considered for analysis without prior processing by flotation.

Retents will be initially scanned by magnet to retrieve archaeometallurgical debris such as flake and/or spheroidical hammerscale. A sieve bank will be used to facilitate visual sorting with the smaller fractions sorted by means of magnifying lamp and/or illuminated stereo zoom microscopy. Non-archaeological, -archaeobotanical, -archaeoosteological and -archaeometallurgical material will be disposed of on site. Retents that are particularly rich in carbonised material may be re-floated once dry to assist the separation of archaeobotanical material.

Flots will be sorted using an illuminated stereo zoom microscope, which will have a trinocular head for digital microscopic photography where necessary. Charcoal will only be subjected to species identification where the contextual information suggests it would be advantageous in addressing aims set out in *A Research Framework for the Archaeology of Wales* or in terms of national research strategies. Archaeological, archaeobotanical, archaeoosteological and archaeometallurgical material from flot and retent will be retained as part of the site assemblage.

Sorting and identification of macro-botanical remains will use an in-house reference collection of botanical material, in conjunction with the consultation of academic, specialist reference books.

5.4.1 Other environmental sampling

Other environmental sampling, eg. coring and monoliths for pollen, foraminifera, testate amoeba, diatoms etc., will be undertaken under the guidance of the specialist carrying out the further analysis.

Residue analysis on materials such as ceramics will be advised by the finds department.

Potential further investigation of environmental material, eg. isotope analysis on bone or teeth, will be dependent upon discovery and will only be considered following discussion with the Assistant Planning Officer as part of the post-excavation analysis stage.

5.4.2 Sampling for scientific purposes

A range of scientific dating methods may be employed, as appropriate. In addition to techniques such as C^{14} and dendrochronology, dating methods applied to inorganic materials exposed to firing or burning may be used, eg. thermo-luminescence for ceramics, flint artefacts and hearth stones, and archaeomagnetic dating for fired structural remains, such as furnaces and kilns and possibly domestic hearths and ovens.

As luminescence and archaeomagnetic dating will require a specialist Site visit, this will be arranged by BA at the earliest possible opportunity when suitable features are encountered. Provision for other types of scientific analysis will be discussed with the Assistant Planning Officershould unexpected remains be encountered.

5.4.3 Waterlogged wood

Waterlogged wood will be treated in accordance with *Guidelines on the recording, sampling, conservation and curation of waterlogged woo*d (Brunning & Watson 2010) and left in-situ where this is practical and its long-term preservation is achievable.

5.4.4 Building materials

Samples of construction materials including masonry, brick, roof tile, floor tile, wall-tile and hypocaust elements will be recovered for assessment of their potential to assist in the analysis of building palaeo-technology.

5.4.5 Geoarchaeology

Buried soils and sediment sequences considered to reflect the pedology of the site will be analysed for information on site formation processes. Highly significant, well-preserved remains, when encountered, will be investigated in a considered manner in order to assess the archaeological stratigraphy. Geoarchaeological works will in general aim to understand how deposits were initially laid down and subsequently modified through time (Canti & Corcoran 2015).

5.5 Human Remains

Should human remains be discovered, BA will inform the Assistant Planning Officerand Client, the remains being covered, protected and left *in-situ* in the first instance. Graves will be scanned by metal detector to assess whether any grave objects are likely to be present.

BA is cognisant of the deliberations by the Ministry of Justice (MoJ) in 2011 in respect of Section 25 of the Burial Act 1857 (Amended 2018).and any arrangements regarding the discovery of human remains will be at the discretion of HM Coroner, whose instructions/permission will be sought.

Any recording of such remains will be in accordance with *Updated Guidelines to the Standards for Recording Human Remains* (Mitchell & Brickley 2017) using BA's pro-forma Skeleton Recording Sheet and Coffin Recording Sheet.

Should removal of remains be required, this would be carried out under the supervision of BA's osteology specialist Dr. Catherine Sinnott MA PhD ACI*f*A, subject to the appropriate Ministry of Justice licence, environmental health regulations and coroner information, with adequate security provided. Assessment and analysis, where required, will be undertaken by the osteology specialist and will include a statement for the final deposition of the assemblage, together with options for reburial.
Human bone assemblages are treated at all times with due reverence and in accordance with the following guidelines:

- *Excavation and post-excavation treatment of cremated and inhumed human remains*, IFA Technical Paper No. **13** (McKinley & Roberts 1993);

- *Guidelines to the Standards for Recording Human Remains*, IFA Technical Paper No. **7** (Brickley & McKinley 2004);
- *Human Bones from Archaeological Sites: Guidelines for producing assessment documents and analytical reports* (Mays, Brickley & Dodwell 2004);
- *Science and the Dead: A guideline for the destructive sampling of archaeological human remains for scientific analysis* (APABE; Mays *et al*. 2013);
- *Updated Guidelines to the Standards for Recording Human Remains* (Mitchell & Brickley 2017);
- *The Role of the Human Osteologist in an Archaeological Fieldwork Project* (Mays, Brickley, Dodwell & Sidell, 2018);
- *Burial Law and Policy in the 21st Century: The way forward* (Ministry of Justice 2007);
- *Statement on the exhumation of human remains for archaeological purposes* (Ministry of Justice 2011).

Where analysis of remains is undertaken, arrangements will be made for re-interment in full consultation with all relevant parties. Health and safety measures with regard to disease are strictly adhered to.

Where appropriate, the results of any osteological analysis may be submitted to Historic England for inclusion on the database of human skeletal remains.

6 Archive Review & Post-Excavation Assessment

A review will be carried out by the site manager upon completion of site works to comprise an audit of all archaeological materials recovered. Dependent upon the fieldwork results, assessment of the nature, date and significance of the stratigraphic, artefactual and palaeoenvironmental evidence may be undertaken by BA's nominated specialists, as detailed in the Appendix to this document. This will be consistent with *Universal guidance for archaeological monitoring and recording* (CI*f*A 2023b).

Where it has been agreed in consultation with the CPA, materials identified at assessment as appropriate for further analysis will be processed by the relevant specialists and the resultant research archive will be checked and ordered according to MoRPHE criteria (Historic England 2015). Any such additional analysis will be undertaken as part of an Updated Project Design (UPD) to inform eventual publication.

7 Archive Preparation

The archive will be assembled in accordance with specific deposition guidelines set out in *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017* (National Panel for Archaeological Archives in Wales 2017), *Archaeological Archives: Selection, Retention and Disposal guidelines for Wales* (NPAAW 2019) and with guidance contained in *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives* (CI*f*A 2020b). Archiving will be consistent with advice detailed in *Guidelines for the preparation of excavation archives for long-term storage* (Walker 1990), *Standards in the museum care of archaeological collections* (Paine 1993), *Archaeological Archives: A guide to best practice in*

creation, compilation, transfer and curation (Brown 2011a) and *Safeguarding Archaeological Information: Procedures for minimizing risk to undeposited archaeological archives* (Brown 2011b).

BA is also cognisant of the CIfA online *Toolkit for Selecting Archaeological Archives* (https://www.archaeologists.net/selection-toolkit/toolkit/), the aim being to create an archive that is *…fit for purpose and contains well organised records and materials that have the potential for re-use, further research, and/or other curatorial use, that will add to our archaeological understanding.*

NPAAW (2017) contains the following definitions:

An archaeological archive comprises all records and objects recovered during an archaeological project and identified for long-term preservation, including artefacts, ecofacts and other environmental remains, waste products, scientific samples and the associated written and visual documentation in paper, film and digital form.

An archaeological project is any programme of work that involves the collection and/or production of information about an archaeological site, assemblage or object in any environment, including in the field, under water, at a desk or in a laboratory. Examples of an archaeological project include… non-intrusive projects such as landscape or building survey… and off-site research such as desk-based assessment and the recording of objects or object assemblages. The re-investigation of archives in curatorial care also constitutes an archaeological project.

The archiving process will adhere as appropriate to the Checklist of Archaeological Archiving Tasks and Roles within an Archaeological Project (NPAAW 2017).

All records created during fieldwork will be checked for consistency and accuracy and will form part of the site archive. This Archive will contain all data collected and other specialist materials and will be ordered, indexed, adequately documented, internally consistent, secure, quantified, conforming to standards required by the archive repository and signposted appropriately to ensure future use in research, as detailed in the *Management of Research Projects in the Historic Environment* (Lee 2015). Indexing will include a plan showing the location and reference number of sections, with photograph locations and directions of view.

BA will obtain copies of the Historic Environment Record (HER) Deposition Guidance and HER Depositor Licence from the HER Officer before any reports or archives are submitted to the CPA HER.

7.1 Deposition

The paper and digital archive will be deposited with the National Monuments Record (NMR), RCAHMW to include a copy of the final report. This archive will include all written, drawn, survey and photographic records relating directly to the investigations undertaken. NMR Digital archives will follow the standard required by the RCAHMW (RCAHMW 2015). A copy of the digital archive only will also be lodged with the CPA HER.

Artefacts recovered during the recording process will be deposited with the nearest regional or county museum and the museum will be contacted in advance for their archiving and deposition guidelines. The artefacts will be

deposited together with a copy of the site report to include a detailed list of all artefacts recovered. Where no regional deposition location exists, BA will retain the artefactual archive until it can be transferred to an approved deposition location.

8 The Report

The specific requirements of the report will necessarily vary according to the scope of works, the nature of the results and/or other factors. However, the report will as a minimum contain the following elements:

- Non-technical summary in both Welsh and English;
- Introduction;
- Site location;
- Archaeological Background;
- Watching brief;
- Conclusions;
- Archive content list and archive deposition location and timing statement;
- Data Management Plan and Archive Selection Strategy Statement;
- References;
- Plan, elevation and section figures;
- Appropriate appendices on archives and finds.

A digital copy of the report (in PDF format) will be sent initially to the applicant, Local Planning Authority and the Planning Archaeologist at Clwyd-Powys Archaeological Trust (Neil Bayliss neil.bayliss@cpat.org.uk). On approval Project data will be submitted and approved for inclusion in the Clwyd-Powys Historic Environment Record (HER), The Offices Coed y Dinas Welshpool SY21 8RP for inclusion. The full digital archive will additionally be sent and accepted by the National Monuments Record, RCAHMW or the Archaeology Data Service (ADS).

Copies of the report will be deposited with the client and the HER within one month of the completion of on-site works, provided circumstances permit. If appropriate, a short report will be published in *Archaeology in Wales* and a summary report offered to the Editor of *The Transactions of The Radnorshire Society* for wider dissemination.

9 Staff and Timescales

A start date for the main phase of groundworks will be advised in due course.

Archaeological observation will be undertaken by BA's qualified site staff, with named individuals to be specified once a firm commencement date has been received from the client.

Amy Bunce BSc MA MCI*f*A (Director: UK Operations & Palaeoenvironmental Sciences) or Lyndsey Clark BSc MCI*f*A (Director: Archaeological Operations and Reporting) of BA will provide overall technical and editorial guidance to all constituent aspects of the works programme.

Overall project management remains the responsibility of Neil Shurety.

10 Border Archaeology Operating Standards & Arrangements

All projects are carried out in accordance with CI*f*A *Standard and guidance* as detailed within the Company's *Archaeological Field Recording Manual* (2023a) and CPA guidance. A pre-works risk assessment (RA) will be completed on site at the outset to allow accurate contemporary identification of risk and lodged in the site Health & Safety File.

Border Archaeology holds public liability and professional indemnity insurance as supplied by Towry Law Insurance Brokers, Leominster.

11 Monitoring

The site will be subject to monitoring by Clwyd-Powys Archaeological Trust at an agreed date and time. All issues of a technical nature should be addressed in the first instance to either Amy Bunce BSc MA MCI*f*A (Director: UK Operations & Palaeoenvironmental Sciences) or George Children MA MCI*f*A (Director: Quality & Compliance).

12 Copyright

13 References

Border Archaeology, 2018, *Metal Detecting Policy*.

Border Archaeology, 2023a, *Archaeological Field Manual.*

Border Archaeology, 2023b, *Archaeological Desk-Based Assessment: Wern Reserve Llandrinio Powys SY21 9JX,* BA Report Ref. BA2370WRL.

British Geological Survey, *Geology of Britain Viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home [accessed 27 March 2024].

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CIfA, *Toolkit for Selecting Archaeological Archives* (https://www.archaeologists.net/selection-toolkit/toolkit/) [accessed 27 March 2024].
CIfA, 2020a, *Standard and guidance for the collection, documentation, conservation and research of archaeological materials*.

CIfA, 2020b, *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives.*

CIfA, 2022, *Code of conduct: Professional ethics in archaeology.*

CIfA, 2023a, *Standard for archaeological monitoring and recording.*

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Fframwaith Ymchwil ar Gyfer Archaeoleg Cymru/A Research Framework for the Archaeology of Wales, https://www.archaeoleg.org.uk/ [accessed 28 March 2024].

Hawkinson, R. & Jones, N.W., 1997. *New Cut Argae, Arddleen, Powys: Archaeological Assessment*, Clwyd-Powys Archaeological Trust.

Hughes, Stephen, 1981. *The Archaeology of the Montgomeryshire Canal*, The Royal Commission on Ancient and Historical Monuments in Wales.

Jones, G. D. B., 1979. 'Aerial Photography in North Wales: 1976-77', *Aerial Archaeology* Vol. **4**.

Lee, E., 2015, *Management of Research Projects in the Historic Environment: The Project Managers' Guide*, Historic England.

National Heritage List for Wales.

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Owen, W.G., 1995. *A483 Pool Quay Improvement, Powys: Archaeological Assessment*, Clwyd-Powys Archaeological Trust.

Paine, S., 1993, *Standards in the museum care of archaeological collections*, Museums & Galleries Commission.

Silvester, R.J., and Hankinson, R., 2015. *The Monastic Granges of East Wales*. The Scheduling Enhancement Programme: Welshpool. Clwyd-Powys Archaeological Trust.

Society of Museum Archaeologists, 1993, *Selection, Retention and Dispersal of Archaeological Collections: Guidelines for use in England, Wales and Northern Ireland*.

The Welsh Archaeological Trusts, 2022, *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs).*

Walker, K., 1990, *Guidelines for the preparation of excavation archives for long-term storage*, UKIC Archaeology Section.

Williams, D. H. 2001. *The Welsh Cistercians*, Leominster: Gracewing.

Ymddiriedolaeth Archaeolegol Clwyd-Powys/Clwyd-Powys Archaeological Trust, n.d., 'Archaeological Watching Brief'.

13.1 Cartography

(All maps were obtained from Llyfrgell Genedlaethol Cymru/National Library of Wales unless otherwise stated):

1829: OS Surveyor's Drawing of Meifod.

1845: Guilsfield Tithe Survey.

1885: OS 1st Edition 6-Inch map.

1903: OS 2nd Edition 6-inch map.

1954: OS 1:10,000 map.

14 Appendix: Border Archaeology Digital Data Management Plan (DMP) v.3.3

Date DMP initiated:	***Insert date***	***Initials of the editor***
Version: 1.0		*GC*
Updated Version:	*20/10/23*	*GC*
Updated Version	*20/10/23*	*GC*

- **Section 1: PROJECT ADMINISTRATION**

Project BA Number:	BA223123LAM
Site Code:	LAM23
OASIS ID:	N/A
HER event number:	TBC
Accession number:	TBC
Project Brief:	None supplied
Planning Ref:	
Additional Unique Identifiers: (e.g. DOI number for ADS Grey Literature Library)	
Project Name/Location/Scheme number: Land adjacent to Montgomery Canal	
Project Description: (nature of the project / key techniques)	
Investigation Techniques: (purpose of the investigation)	
Project Funder/Client:	Glandŵr Cymru: Canal & River Trust in Wales

Project Manager:	Amy Bunce BSc MA MCI*f*A Director: Director: UK Operations & Palaeoenvironmental Sciences, Border Archaeology Ltd.
Site Manager:	Glandŵr Cymru: Canal & River Trust in Wales
Data Contact Person:	Kate Smith MA, ACI*f*A Director: Performance Delivery Border Archaeology Ltd.

Section 2: DATA COLLECTION

What data will you collect and create? How will the data be collected or created?

Methods of data collection are specified within the Written Scheme of Investigation (WSI) and will meet the requirement set out in the Project Brief; the organisation's *Archaeological Field Recording Manual* (August 2023) (BAFM21/REV5); relevant CI*f*A Standards and guidance; and are defined against ADS Guides to Good Practice.

The table below provides a summary of anticipated data types, formats and estimated volume for this project. This table will be updated as the project progresses.

Documents and Reports	Word (.doc); pdf; pdf/a	1 pdf 2411KB
Photographs and images	Our baseline standard is jpeg but we are guided by CA's etc. and then use tif or raw accordingly	e.g.75 images (381 MB (399,744,694 bytes)
Maps and Plans	AutoCAD (.Dwg); Illustrator (.ai);	Final export: Jpeg for inclusion in report
Spreadsheets	Excel (.xls); (.xlsx)	
GIS	QGIS; ArcGis	
GIS (Research data)	NB GIS data "bought in" for research reports will not be deposited as it is not our data.	n/a
Geophysics	We outsource all geophysics	

Please note: that this reflects the total digital data for the Working Project Archive, **not** the archived selection of project (Preserved Archive).

Where will the working project archive be stored?

The Working Project Archive will be stored in a project specific folder on the internal organisational server. The server is backed-up by our professional IT provider.

File naming conventions

File naming conventions follow established organisational procedures.

Quality assurance

Instruments and cameras used in the collection of data are calibrated prior to use and checked to ensure that are in full working order.

All site records and data collected will be checked during Project Delivery.

Section 3: DOCUMENTATION AND METADATA

What documentation and metadata will accompany the data?

Total station data/Digital location data is used for most projects (excluding AOs). The data is exported and transferred to our Illustrations Department.

Digital images captured during an archaeological programme of work are downloaded as soon as practicable from the camera memory card onto our internal server.

This is especially important for those sites that:

- Are large ongoing sites with multiple cameras
- Stop/start sites where more than one site manager may be involved

The paper Photographic Record form is completed every time a photograph is taken. This register will include the make and model of the camera, the initials of the individual(s) who took the image, date and details of the area photographed.

Post-Fieldwork Summary

As soon as fieldwork is completed the site manager completes an Archive Review Form (ARF) which provides an initial "snapshot" of the results of fieldwork. It quantifies the site paperwork, the unprocessed finds and samples collected and the number of digital images taken.

The site archive then undergoes a review by the field staff. The finds and samples are delivered to our Post Ex department. Digital images are uploaded to the internal server, if not already within the job folder. We retain the SD card until the archive is deposited.

The paperwork will be checked/audited prior to writing the report. The site manager will review the digital images and make an initial selection of those that warrant inclusion in the report and/or inclusion within the Preserved Archive. No images will be deleted at this stage.

Section 4: ETHICS AND LEGAL COMPLIANCE

How will you manage and Ethical, Copyright and Intellectual Property Rights (IPS) Issues?

Copyright for all data collected by the Project Team belong to Border Archaeology.

Formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.

Personal data will be removed from the archaeological project archive and permission to include individual's names in any report is obtained prior to use.

Section 5: STORAGE AND BACKUP

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

The **Working Project Archive**:-

Site specific SD cards will be retained until the site archive has been deposited, at which point they will be recycled.

Downloaded data will be stored in a project specific folder on the internal organisation server.

- The server operates on permission-based access.
- The server is accessible by permitted staff on and offsite through secure log in.

Where internet access for data backup is not possible, the raw data will be backed up to a separate media device (such as a laptop and portable external hard drive).

Organisational Server

Organisational IT is managed by an external data management provider (who is also responsible for the management and verification of our daily back-ups and who support access to security copies as required.

The internal organisation server is backed up daily by our external data management provider. They ensure that there is sufficient storage space for our digital collection.

Any “archived” data removed from the server is kept in two locations away from the main office.

Section 6: SELECTION AND PRESERVATION

What should be retained, shared and/or preserved?

The Selection Strategy and DMP are reviewed and updated during the PEX Archiving process and with results from specialist reporting.

Prior to deposition, the Selection Strategy and DMP will be updated and finalised in agreement with all project stakeholders (including the Local Planning Archaeologist, Client, Museum, ADS).

Selection will be informed by the WSI, defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results.

The data archive will be ordered, with files named and structured in a logical manner, and accompanied by relevant documentation and metadata, as outlined in Sections 2 and 3 of this DMP.

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

It is understood that the reasons for selection of particular digital components will vary from project to project and will take into consideration the project aims as stated within the WSI, the significance of the results, research potential of the results, research framework requirements and relevant museum guidelines.

As with other aspects of an archaeological archive, it is unlikely that all digital files generated during an archaeological project will be retained as part of the deposited digital archive (Preserved Archive).

Consequently, a project specific Selection Strategy will be implemented:-

External dissemination of the digital archive will be with a CoreTrustSeal certified online depository (most likely the Archaeology Data Service (ADS)) if specified by Museum, Development Control Officer/HER, etc., guidance, the components of which will be determined by the relevant museum deposition guidelines and correspondence with the necessary stakeholders.

- Therefore all final reports generated from interventive programmes of work will be uploaded to **OASIS V** following approval by principal project stakeholders- client and Development Control Officer /HER.
- If appropriate digital images and supporting documentation will be uploaded to **ADS-Easy** complement grey literature reports.
- Research reports *may* be deposited on OASIS but only under the direction of the Development Control Officer /HER, museum curator, etc.

BA will not preserve all digital files from the Working Project Archive on their internal company servers indefinitely.

- Internal preservation of selected digital data on BA's internal server will conform to internal Selection and Deselection standards[1],

Have you contacted the data repository?

The relevant museum will be contacted in the early stages of the project to request an accession number; to confirm current deposition guidelines (unless already contacted within the previous 3 months) and to establish current deposition costs.

The deposition guidelines will be consulted to confirm the situation with regard to the digital archive component and whether this should be deposited with a trusted digital repository.

If the investigation establishes that the site is negative, the Development Control Officer and Museum etc. will be contacted to establish whether this can be an OASIS only deposition.

Have the costs of archiving been fully considered?

Sufficient resources to allow for the preparation of the archive, and the cost of deposition of the physical and digital archive have been included in the project budget. A costing estimate may be produced for more complex sites, using the ADS Costing Calculator.

[1] BA Selection and De-selection Guidance 2021

Section 7: DATA SHARING AND ACCESSIBILITY

How will you share the data and make it accessible?

A summary of the project will be included on the OASIS Index of Archaeological Investigation and the museum and digital archive repository, and will be updated as the project progresses.

The investigations are likely to result in a number of documents: Project Brief; Written Scheme of Investigation; Final Report; Journal Submission

A final version of the project report will be supplied to the Historic Environment Record via OASIS, and any data which they request can also be provided directly.

The location(s) of the final Archaeological Archive will be added to OASIS when appropriate.

The ADS will disseminate the digital elements of the Archaeological Archive online under a creative commons licence and the dataset will receive a unique identifier (DOI).

Any restrictions of data sharing required?

In certain situations a temporary embargo may be required on the sharing of the project results. If this is the case, specific details once agreed will be included in the updated version of this DMP and will be documented in the overarching Project Collection Metadata.

Section 8: RESPONSIBILITIES

Who will be responsible for data management?

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

Data capture, metadata production and data quality are the responsibility of the Project Team, assured by the Project Manager.

Storage and backup of data in the field is the responsibility of the field team.

Once data is incorporated into the organisations project server, storage and backup is managed by an external company

Data archiving is undertaken by the project team under the guidance of the Archives Officer, who is responsible for the transfer of the Archaeological Project Archive to the agreed repository.

Details of the core Project Team can be found in the WSI.

Document Title		Document Reference	
Written Scheme of Investigation for Archaeological Observation: Wern Reserve Llandrinio Powys SY21 9JX.		BA2370WRL/WSI	
Compilation	George Children MA MCI*f*A		
Artwork	Holly Litherland BA (Hons.)		
Editing	Kate Smith MA ACI*f*A		
Issue No.	**Status**	**Date**	**Approved for issue**
1	Final	April 2024	George Children MA MCI*f*A