

Cilcain Reservoir Discontinuance, Flintshire

Archaeological Assessment



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Historic Environment Record Event Primary Reference Number E6441

Prosiect Rhif / Project No. G2597

Adroddiad Rhif / Report No.1476

Prepared for: Stillwater Associates Limited

March 2019

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Front cover image: View over Cilcain 1 & 2 from the South West (archive reference: G2597_029)

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Published by Gwynedd Archaeological Trust
Gwynedd Archaeological Trust
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Bangor, Gwynedd, LL57 2RT

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Mae Ymddiriedolaeth Archaeolegol Gwynedd yn Gwmni Cyfyngedig (Ref Cof. 1180515) ac yn Elusen (Rhif Cof. 508849)
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Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue
1	Minor text changes	Non-Tech Summary, 1, 4., Appendix I	Client Approval

Figures

Figure 01: Location map based on Ordnance Survey 1:10000 County Series Map Sheet SJ16NW; Scale 1:7500 @ A4. © Crown Copyright. All Right Reserved; licence number 100022432.

Figure 02: Section of the Tithe Map for the parish of Cilcain, 1841; Scale 1:5000@A4.

Figure 03: Ordnance Survey 1st Edition 6 inch Flintshire County Series Map Sheet XIII; published in 1878. Scale: 1 to 5000@A4.

Figure 04: Ordnance Survey 2nd Edition 6 inch Flintshire County Series Map Sheet XIII.NW; published in 1900. Scale: 1 to 5000@A4.

Figure 05: Reproduction of RAF CPE/UK/1996 frame 1402 taken 14th April 1947

Figure 06: Photographic Survey location map; Scale 1 to 1000 @A4

Figure 07: Gazetteer of Features, based on Ordnance Survey 1:10000 County Series Map Sheet SJ16NW; Scale 1:10000 @ A4. © Crown Copyright. All Right Reserved; licence number 100022432.

Plates

Plate 01: Access gate to the reservoirs; scale 1x1m (archive reference: G2597_001)

Plate 02: North East embankment of Cilcain 2; scale 1x1m (archive reference: G2597_005)

Plate 03: Fields to the east of Cilcain 2; no scale (archive reference: G2597_006)

Plate 04: Footbridge over spillway access from Cilcain 2; 1x1m (archive reference: G2597_008)

Plate 05: Brick and concrete construction of spillway access; scale 1x1m (archive reference: G2597_009)

Plate 06: Concrete spillway leading to Nant Gain; no scale (archive reference: G2597_010)

Plate 07: Embankment running to the north of both reservoirs; scale 1x1m (archive reference: G2597_013)

Plate 08: Nant Gain routed alongside bank to spillway; scale 1x1m (archive reference: G2597_012)

Plate 09: Secondary overflow near to central dividing bank; no scale (archive reference: G2597_014)

Plate 10: Concrete reinforcement to embankments; scale 1x1m (archive reference: G2597_015)

Plate 11: Obsolete sluice gate, Cilcain 1; scale 1x1m (archive reference: G2597_021)

Plate 12: Southern most bank of the reservoirs; scale 1x1m (archive reference: G2597_030)

Plate 13: Ruins of Greenland House from tree line (PRN 55395); no scale (archive reference: G2597_028)

Plate 14: Ruins of Greenland House (PRN 55395); 1x1m (archive reference: G2597_024)

Plate 15: Slump of stones to the north of Greenland House (PRN 55395); 1x1m (archive reference: G2597_027)

Plate 16: Old entrance to Greenland House (PRN 55395); 1x1m (archive reference: G2597_026)

CONTENTS

CRYNODEB ANNHECHNEGOL	3
NON-TECHNICAL SUMMARY	3
1 INTRODUCTION	4
2 METHODOLOGY	6
2.1 Assessment (Desktop Study).....	6
2.2 Walkover Survey	7
2.3 Gazetteer	8
3 RESULTS	9
3.1 Location and Geological Summary	9
3.2 Statutory and Non-Statutory Designations	10
3.3 Environmental Remains and Soil Morphology	11
3.4 Historical and Archaeological Background	12
3.4.1 Introduction	12
3.4.2 Prehistoric and Roman Background	12
3.4.3 Medieval Background.....	12
3.4.4 Post Medieval and Modern.....	13
3.5 Cartographic Evidence	14
3.6 Artefact Potential	16
3.7 Aerial Photographs and Lidar	17
3.8 The Walkover Survey	18
3.9 Gazetteer of Features.....	19
4 CONCLUSION	38
4.1 Table of Features and Recommendations	39
5 ACKNOWLEDGEMENTS	41
6 SOURCES CONSULTED	42
6.1 Primary Sources	42
6.2 Secondary Sources	42
APPENDIX I	44
Reproduction of Gwynedd Archaeological Trust written scheme of investigation.....	44
APPENDIX II	45
Gwynedd Archaeological Trust photographic metadata.....	45
APPENDIX III	46
Categories of importance	46

CRYNODEB ANNHECHNEGOL

Gofynnwyd Ymddiriedolaeth Archeolegol Gwynedd oddi wrth Stillwater Associates Limited ar ran Dŵr Cymru i ymgymryd asesiad archeolegol fel rhan o astudiaeth dichonoldeb yn edrych tu fewn y posibilrwydd symudiad o'r argae sy'n bodoli (terfyniad cronfa) yng Nghilcain, Sir y Fflint.

Cilcain, Sir y Fflint, ei lleoli yn droedfryniau dwyrain o'r Clwydian, rhwng Loggerheads ac Afon-wen, ardal sy'n gymeriadol gan gyfundrefn caeau yn dyddio o'r cyfnod ganoloesoedd hyd at y diwedd o'r 18fed a 19eg ganrif. Mae'r gronfa yn rhyw 1.5km i'r de orllewin o bentref Cilcain a 3.3km gorllewin o Pantymwyn.

Nid oedd yna nodweddion newydd dynodedig yn ystod yr asesiad seiliedig ddesg ac roedd cofnod ysgrifenedig a ffotograffiaeth o'r coronaf ei chwblhau.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust was asked by Stillwater Associates Limited on behalf of Dŵr Cymru to undertake an archaeological assessment as part of a feasibility study looking into the possible removal of an existing dam (reservoir discontinuance) at Cilcain, Flintshire.

Cilcain, Flintshire, is situated in the eastern foothills of the Clwydians, between Loggerheads and Afon-wen, an area characterised by field systems dating from the medieval period through to the late 18th and 19th centuries. The reservoir is approximately 1.5km to the South West of Cilcain village and 3.3km West of Pantymwyn.

No new features were identified during the desk based assessment and a written and photographic record of the reservoir infrastructure was completed.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was asked by Stillwater Associates Limited on behalf of Dŵr Cymru to undertake an archaeological assessment as part of a feasibility study looking into the possible removal of an existing dam (reservoir discontinuance) at Cilcain, near the A541 and A494 roads southwest of Cilcain, Flintshire (NGR SJ16206450; Figure 01).

As specified in data supplied by Stillwater Associates Limited, Cilcain reservoir consists of two separate pools and was constructed in 1896. Cilcain no:1 has an earthfill embankment dam which is 55m in length, whilst Cilcain no:2 has an earthfill embankment with a puddle clay core which is 100m long and 8m high. The inlet for Cilcain no:1 is uncontrolled from the Nant Gain which then feeds Cilcain no:2 via a channel. Cilcain no:2 has a 3m wide spillway and 12" diameter overflow pipe in addition to two other low level outlets which are described as inoperable. The preferred removal strategy includes the complete removal of the embankment, whilst retaining all or most of the appurtenant structures, and the re-use of embankment material within the reservoir basin where possible. Access to the reservoir would be via the A494 and a 4.9km long unclassified road to the East (Figure 01).

The assessment conforms to the guidelines specified in the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014) and requirements of section 2.3 of MoRPHE (English Heritage 2015) and MAP2 (English Heritage, 1991, *Management of Archaeological Projects*). Submission of digital archive information to the Royal Commission on the Ancient and Historical Monuments of Wales will be undertaken in accordance with the RCAHMW Guidelines for Digital Archives Version 1 (2015). Digital information will include the photographic archive and associated metadata. Information submitted to the regional Historic Environment Record will be in accordance with the required standards set out in Gwynedd Archaeological Trust's *Historic Environment Record (HER) Guidelines for Archaeological Contractors* (Version 1.3; draft)

The assessment was monitored by the Development Control Archaeologist, Clwyd-Powys Archaeological Trust (CPAT) and a written scheme of investigation was prepared by GAT and approved by CPAT prior to undertaking the assessment ([Appendix I](#)).

The Clwyd-Powys Archaeological Trust Historic Environment Record Enquiry Reference Number for this project is E6441.

GAT is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists and a member of the Federation of Archaeological Managers and Employers (FAME).

2 METHODOLOGY

2.1 Assessment (Desktop Study)

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014, 4).

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

1. The regional Historic Environment Register ((HER) Clwyd-Powys Archaeological Trust, 41 Broad St, Welshpool SY21 7RR) was examined for information concerning the study area. This included an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER. All identified assets were mapped, described and added to a gazetteer of sites and the relative importance of any assets defined;
2. The National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for assets additional to the HER;
3. Aerial photographs from the National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) were examined for potential assets;
4. An on-line catalogue search of the National Library of Wales (Penglais Rd, Aberystwyth SY23 3BU) will be completed;
5. The regional archives (The Old Rectory, Rectory Ln, Hawarden, Deeside CH5 3NN) were consulted for information on any archive data, including primary and secondary sources, historic maps and estate maps. The examination of the archive data included historic mapping including the local tithe map and schedule;
6. Light Detection and Ranging (LiDAR) data was examined from the Lle Geo-Portal at <http://lle.gov.wales/home> for information on potential surface features using digital terrain modelling and digital surface modelling.

2.2 Walkover Survey

A walkover survey was undertaken on 12/02/2019 and examined the reservoir area as detailed on Figure 01. The aim of the walkover survey was to identify all known and new archaeological features on the ground and accurately map and describe them on GAT proformas. The features were then added to the overall gazetteer and their relative importance defined. A photographic record was maintained in RAW format using a digital SLR set to maximum resolution (Nikon D5100; resolution: 4928 x 3264 [16.2 effective megapixels]) and a photographic metadata archive completed (G2597_001 to G2600_034; cf. [Appendix II](#)), with images archived in TIFF format.

2.3 Gazetteer

A gazetteer has been compiled for all known and new sites within and within proximity to the specified route; the gazetteer includes the following:

1. Feature Number
2. Site name
3. PRN number
4. Grid reference
5. Period
6. Site type
7. Assessment category
8. Description
9. Impact
10. Recommendation for further assessment/evaluation
11. Recommendation for mitigatory measures

3 RESULTS

3.1 Location and Geological Summary

Cilcain, Flintshire, is situated in the eastern foothills of the Clwydians, between Loggerheads and Afon-wen, an area characterised by field systems dating from the medieval period through to the late 18th and 19th centuries. The reservoir is approximately 1.5km to the South West of Cilcain village and 3.3km West of Pantymwyn.

The bedrock geology in the study area is Elwy Formation – Mudstone, Siltstone and Sandstone. This is a sedimentary bedrock formed during the Silurian Period and suggests the local environment was once dominated by deep seas. This is overlain by a Devensian Till – Diamicton which is a superficial deposit formed by the ice age conditions during the Quaternary Period (British Geological Survey, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>).

3.2 Statutory and Non-Statutory Designations

There are no Scheduled Monuments (SM) within a 1km radius of the Cilcain reservoir. The nearest SM is situated to the north west of the study area and is Moel Arthur Camp (PRN 102278, NGR SJ1452066030, SM FL010) which is a univallate (bivallate on the north side) hillfort dating to the Iron Age period.

There are two Listed Buildings located within a 1km radius of the Cilcain reservoir. The first of these is the post-medieval Garth farmhouse which was built in the 17th or early 18th century (Cadw Listed Building, 16436). In close proximity to the rear of Garth Farmhouse is a vaulted structure (Cadw Listed Building, 16437), probably a farm store dating to the 19th century with is the other listed building in the study area.

Ref Number	Name	PRN	Easting	Northing	Grade
FL010	Moel Arthur Camp	102278	314520	366030	SM
16436	Garth	36180	315714	364483	II
16437	Garth, vaulted structure immediately to rear	36182	315706	364490	II

The study area lies just outside the border of the of the Vale of Clwyd *Landscape of Outstanding Historic Interest in Wales* (Cadw/ICOMOS 1998), more specifically Historic Landscape Character Area 1038, Moel Famau, Llandymog, Nannerch, Cilcain and Llanbedr Dyffryn Clwyd, Denbighshire (CPAT, <http://www.cpat.org.uk/projects/longer/histland/clwyd/1038.htm>). This area is characterised by the steep-sided upland of the Clwydian hills.

3.3 Environmental Remains and Soil Morphology

The potential for the recovery of environmental remains is thought to be **low** as the discontinuance scheme only includes the removal of the reservoir structures and not large scale disturbance to otherwise untouched ground.

Full detail of the soil morphology is unknown at this stage but it is likely to consist of a sandy, silty clay typical of glacial deposits.

3.4 Historical and Archaeological Background

3.4.1 Introduction

Cilcain is partially located within the Vale of Clywd Registered Landscape of Historic Interest and is situated in the eastern foothills of the Clwydians, between Loggerheads and Afonwen. This area is characterised by field systems dating from the medieval period through to the late 18th and 19th centuries. Remnant strip fields with hedged boundaries associated with the settlement at Cilcain represent the enclosure of former Medieval open fields. Whilst straight sided fields, some hedged some bounded by drystone walls, predominate the higher slopes show the late 18th and 19th century enclosure of former common grazing and moorland (source: https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=7695).

3.4.2 Prehistoric and Roman Background

The Clwydians mountains are rich in archaeology dating to the prehistoric period. There are a number of Bronze Age burial mounds/cairns located in the Clwydian hills to the east and south east of Moel y Gaer hillfort and at the summit of Foel Fenlli hillfort. There have also been a number of Bronze Age flat axes found on the slopes of Moel Arthur hillfort which is the closest Scheduled Monument to the study area. In a field to the southwest of the study area a retouched flint flake (PRN 81688; Feature 04) was found that dates to the Bronze Age period which had been evidently exposed by erosion in the area. (CPAT, HLCA 1038)

The most dominant prehistoric sites in the area are the Iron Age hillforts themselves with their univallate and bivallate earthworks. Roman activity in the area is represented by the hoard of Roman coins found in the Cefn Goleu Cairn (PRN102303). (Ibid)

3.4.3 Medieval Background

There are two settlements of medieval origin close to the study area, Cilcain and Nannerch where there is evidence of the enclosure of former medieval open fields into strips fields with hedged boundaries. Closer to the study area the fields are larger, more irregularly shaped field systems with hedged boundaries representative of farmland of the medieval period. (https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=7695).

3.4.4 Post Medieval and Modern

Approximately 490m to the W of the Cilcain reservoir is the Garth Post Medieval Farmhouse (PRN 36180; NGR SJ1571464471) which is a Grade II listed Building dating to the late 17th or early 18th centuries.

Located immediately to the SW (c.40m) of the assessment area is a small post-medieval building named Greenland house (PRN 55395; NGR SJ1618264463). It appears on the historic mapping but only as an outline on the modern mapping which suggests it may be in a severely dilapidated state. In 1841 the property, along with Plasnewydd, was owned by John Richard Pickmere, a successful wine merchant from Warrington. Various deeds are located in the Flintshire archive details the conveyancing and settlement of this property. He paid off his mortgage on the property on 17th May 1828 (Flintshire Archives DP/B/1/1/1/24) and the property was finally sold by him to Robert Davies of Warrington on 31st August 1878 for £1,125 (Flintshire Archives DP/B/1/1/1/66). Little further information about this property is known, and the owners appear to have been from outside the local area during much of the 19th century.

Charles Potts, who owned Ty Mawr in 1841, on which much of the former land on which the reservoir now stands was a Chester landowner of whom little is known.

3.5 Cartographic Evidence

The Tithe Map of the parish of Cilcain of 1841 (Figure 02) shows that the reservoir and access track lies within land that was formerly part of the property of Ty Mawr, owned by Charles Potts Esquire and occupied by William Griffiths (Fields 837, 840 and 841), with a small section part of the land of Plasnewydd, attached to which and forming part of the holding was Greenland House (Field 852). The table below details the apportionment and names of these and surrounding fields, detailing also the agricultural use to which they were put in 1841, with the numbers corresponding to those shown on the map (Figure 02).

Landowners	Occupiers	Numbers referring to the Plan	Name and Description of Lands and Premises	State of Cultivation	Quantities in Statute Measure A R P
Charles Potts Esquire	William Griffiths		Ty Mawr		
		837	Cae Llydiart	Pasture	12 2 2
		840	Cae Canol Isa	Pasture	7 2 3
		841	Cae Greenland	Pasture	10 - 30
John Richard Pickmore Esquire	John Williams		Plasnewydd		
		852	Part of Goisa	Arable	5 3 2
		852a	Greenland House &c		- 1 24

The regular pattern of rectangular fields noted on the tithe map is suggestive of a late enclosure of formerly more open land carried out as a planned event, possibly in the late 18th or early 19th centuries. This suggestion is further reinforced by the fact that many of the fields in the wider area are described as 'part of' somewhere, indicating former larger areas.

An examination of the 6-inch to 1 mile Ordnance Survey maps of the area (Sheets Flintshire XIII, Flintshire XIII.NW) show the establishment of the reservoir. The First edition Flintshire map (Flintshire XIII, published 1878; Figure 03) shows fields within the assessment area the Nant Gain running through them NE-SW. The second edition map (Flintshire XIII.NW

published 1900; Figure 04) show the reservoir with the annotation 'Hawarden & District Water Works'. The footprint of the reservoir sits over the old route of the Nant Gain and has not changed since construction. Whilst minor modifications to the field system can be seen the same regular pattern of rectangular fields is noted.

3.6 Artefact Potential

The potential for the recovery of artefacts is thought to be **low** as the discontinuance scheme only includes the removal of the reservoir structures and not large scale disturbance to otherwise untouched ground. However, there are two find spots located within a 1km radius of the reservoir. A Bronze Age Palstave (PRN 101304) was found during test boring for the Hawarden reservoir in 1907 and a Bronze Age flint flake (PRN 81688) was found on a track to the south east of Cilcain reservoir evidently exposed by erosion.

3.7 Aerial Photographs and Lidar

Four aerial photographs were examined dating from 1946 to 1984. The first two of these, RAF 3G/TUD/UK192 Part I frame 6008 taken on the 9th May 1946 and RAF CPE/UK/1996 frame 1402 taken on the 14th April 1947 (Figure 05) show the reservoir in its current form which is unchanged since construction in 1897. Greenland house is clearly visible on the photograph from 1947 although its condition cannot be determined. It is clear, however, that the footprint of the house is a lot smaller than that shown on the historic mapping of the area. The area directly to the north of the reservoirs is clear of woodland on these photographs.

The third aerial photograph OS 65 181 frame 40 taken on the 16th August 1965 again shows that the reservoir is unchanged from its original design. The area to the north is still clear of woodland although it appears that the trees are encroaching on the location of Greenland House by this time. The final photograph ADAS 196 frame 061 taken on the 9th June 1984 shows the location of Greenland House completely covered in woodland and the planting of trees to the north of the reservoir.

No new features of interest were noted on any of the aerial photographs examined as part of this assessment.

Light Detection and Ranging (LiDAR) data was examined, obtained from the Lle Geo-Portal at <http://lle.gov.wales/home>, for information on potential surface features using digital terrain modelling and digital surface modelling at 1m interval. No new or existing archaeological features were identified on the images.

3.8 The Walkover Survey

The walkover survey was undertaken on the 12th February 2019. A photograph location plan has been completed and is included as Figure 06.

The reservoir at Cilcain consists of two pools of water, Cilcain 1 to the west and Cilcain 2 to the east. Access to the reservoirs is through a locked gate c.15m to the East of Cilcain 2 (Plate 01). The north east earthfill embankment of Cilcain 2 is c.8m in height and c.100m long (Plate 02) and slopes steeply to the fields to the east in which small streams are visible which possibly represent the pre reservoir route of the Nant Gain (Plate 03). The internal sides of the reservoir appear to be stone lined and there are some metal workings set into the north east bank. At the northern most point of Cilcain 2 is a footbridge connecting the banks over the spillway access (Plate 04) which is constructed from a concrete base and brick retaining walls on the bank sections (Plate 05). This section of the concrete spillway is c.2m wide and runs for c.50m to the Nant Gain in the adjoining field to the East (Plate 06).

The northernmost embankment runs the length of both reservoir pools which is a distance of approximately 200m (Plate 07). Adjacent to this bank the Nant Gain has been re-routed past the reservoir and leads directly to the spillway (Plate 08). There is a secondary overflow routed through this bank, near to the central dividing bank, which flows into the Nant Gain (Plate 09). The central dividing bank has c.4m wide gap for water to run unrestricted from Cilcain 1 into Cilcain 2 and large concrete slabs have been placed here presumably to reinforce the embankments (Plate 10). At the most westerly point of Cilcain 1 there is an obsolete sluice gate which used to control the flow from the Nant Gain into Cilcain 1 (Plate 11). The southernmost bank of the reservoir echoes the local topography and is moderately sloping from the boundary to the reservoir pools (Plate 12).

Situated in the woodland approximately 40m to the south west of Cilcain 1 are the ruins of Greenland house (Feature 14; PRN 55395; Plate 13 & 14). There are very few upstanding remains visible amongst the undergrowth and there are trees growing in the central area. A slump of stones can be discerned covered in moss and ivy down the slope to the north of the remaining walls (Plate 15). The old access to Greenland is still visible in the boundary wall of the reservoir site, approximately 10m south east of the ruins (Plate 16).

3.9 Gazetteer of Features

A 1km radius search of the CPAT HER centred on the reservoir (NGR SJ1626964541) was undertaken for this assessment which returned 25 results in total. 6 results have been excluded from the gazetteer as they represent sites only known from documentary evidence or place names. All the features noted below are shown on Figure 07 with green stars numbered (gazetteer of features). All the recommendations are based on the current understanding of the scheme proposals and their impact on the features. In the event of alterations to the scheme, the recommendations might have to be revisited.

Feature Number	01
Site Name	Cae Newydd
PRN Number	99267
Grid Reference	SJ1681164517
Period	Post Medieval
Site Type	House
Assessment Category	B
Description	Inhabited house. Features on the 1 st edition 6 inch Ordnance Survey map. (Clwyd County Council 1979 - Flintshire SMR)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	02
Site Name	Castell
PRN Number	18032
Grid Reference	SJ1640063700
Period	Post Medieval
Site Type	Gold Mine
Assessment Category	C
Description	A single level or shaft associated with a 19th century gold trial.
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	03
Site Name	Cefn Gadfa structure
PRN Number	99262
Grid Reference	SJ1631963634
Period	Post Medieval
Site Type	Structure
Assessment Category	C
Description	Structure shown on 1840 Tithe Map. (Clwyd County Council 1979 - Flintshire SMR)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	04
Site Name	Cefn-Y-Grug flint
PRN Number	81688
Grid Reference	SJ16146432
Period	Bronze Age
Site Type	Findspot
Assessment Category	B
Description	Single large flake with some retouch found on track and evidently exposed by erosion. Date of find 11/12/2001, by R Hankinson, CPAT.
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	None

Feature Number	05
Site Name	Garth
PRN Number	36180
Grid Reference	SJ1571464471
Period	Post Medieval
Site Type	Farmhouse
Assessment Category	B
Description	A 17th/early 18th century building constructed as a two unit house with end chimney with service rooms built and extended to the right when a single unit cottage was added, attached barn (prn54198) may have been added at this time too. (Cadw, 2016).
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	06
Site Name	Garth Barn
PRN Number	54198
Grid Reference	SJ1573164477
Period	Post Medieval
Site Type	Barn
Assessment Category	B
Description	Late 18 th /19 th century single storey barn attached to the listed house at Garth (PRN 36180) (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	07
Site Name	Garth Boundary Stone I
PRN Number	54195
Grid Reference	SJ1612663970
Period	Post Medieval
Site Type	Boundary Stone
Assessment Category	C
Description	A possible boundary stone associated with another stone to the west (PRN 54196)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	08
Site Name	Garth Boundary Stone II
PRN Number	54196
Grid Reference	SJ1574664465
Period	Post Medieval
Site Type	Boundary Stone
Assessment Category	C
Description	A possible boundary stone associated with another stone 30m to the east (PRN 54195)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	09
Site Name	Garth Building
PRN Number	54201
Grid Reference	SJ1574664465
Period	Post Medieval
Site Type	Building
Assessment Category	C
Description	A small single storey single pitched corrugated iron roofed 19th century building with a single north facing entrance. The building is in poor condition with some sections of the outer skin of the building having collapsed. (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	10
Site Name	Garth Kiln
PRN Number	104058
Grid Reference	SJ15584964332
Period	Post Medieval
Site Type	Kiln
Assessment Category	C
Description	Small kiln lined by bricks and partially blocked. (Clwyd Archaeology Service visit, 1979)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	11
Site Name	Garth Level
PRN Number	54214
Grid Reference	SJ1557764639
Period	Post Medieval
Site Type	Level
Assessment Category	C
Description	A possible level or quarry cut above the farmstead at Garth. (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	12
Site Name	Garth Pigsty
PRN Number	54200
Grid Reference	SJ1572864458
Period	Post Medieval
Site Type	Pigsty
Assessment Category	C
Description	A single storey gabled 19th century building with a corrugated iron roof and a modern brick pigsty built onto its eastern end Two entrances, now used as a store and kennels. (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	13
Site Name	Garth, vaulted structure immediately to rear
PRN Number	36182
Grid Reference	SJ1570664478
Period	Post Medieval
Site Type	Root Vegetable Store
Assessment Category	B
Description	A long rectangular rubble-built and tunnel-vaulted structure situated to the rear of the farmhouse (prn36180), partially set into a grassed bank. Probably of C19 date and built as a type of root store. (Cadw, 2016)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	14
Site Name	Greenland House
PRN Number	55395
Grid Reference	SJ1618264463
Period	Post Medieval
Site Type	House
Assessment Category	C
Description	<p>Small building named Green land depicted on 1st edition (1872) and later OS maps. Ruins of building lie within a wooded area and are mostly covered in vegetation and trees. Visible remains appear smaller than the footprint seen from the mapping evidence though may remain under vegetation. Two gate post remain in the wall nearby.</p> <p>This site was visited during the walkover survey.</p>
Impact	Unlikely
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	15
Site Name	Hawarden Reservoir Palstave
PRN Number	101304
Grid Reference	SJ155642
Period	Bronze Age
Site Type	Findspot
Assessment Category	B
Description	Looped palstave found during test boring for reservoir in 1907. Find in St Asaph Cathedral Museum.
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	None

Feature Number	16
Site Name	Moel Dywyll Mining Area
PRN Number	106095
Grid Reference	SJ1560063900
Period	Roman
Site Type	Mine
Assessment Category	B
Description	Series of open-casts served by small aqueduct from a tank fed from a nearby stream. These works seem earlier than nearby 19 century workings and are possibly for gold. Open cast mine found but overgrown. No evidence of tank or aqueduct. (Clwyd County Council, 1988)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	17
Site Name	Tyddyn Reservoir
PRN Number	99269
Grid Reference	SJ1722464794
Period	Post Medieval
Site Type	Mill Pond
Assessment Category	C
Description	Mill Pond shown on 1914 6" OS Map. Occupied in 1979 by a large modern, concrete lined pond modern sluice on its south side. (Clwyd County Council - Flintshire SMR, 1979)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	18
Site Name	Tyddyn-Y-Foel Building
PRN Number	55396
Grid Reference	SJ1719164451
Period	Post Medieval
Site Type	Field Barn
Assessment Category	C
Description	A small two-storey gabled early 19th century house or more likely field barn constructed of rubble stone and a corrugated asbestos roof. The building is in reasonable condition. (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

Feature Number	19
Site Name	Tyddyn-Y-Foel, Building Platform
PRN Number	54215
Grid Reference	SJ1701163958
Period	Medieval
Site Type	Building Platform
Assessment Category	B
Description	Three platforms cut into a south-facing slope on the edge of the improved enclosed farmland and the valley farmland forming a group of possible building platforms. (CPAT Tir Gofal assessment, 2005)
Impact	None
Recommendation for further assessment/evaluation	None
Recommendation for mitigatory measures	Avoidance

4 CONCLUSION

An archaeological assessment was carried out on land adjacent to the reservoir at Cilcain, Flintshire. The wider study area is rich in archaeology dating to the prehistoric to post-medieval periods. There are a number of Bronze Age burial mounds/cairns located in the Clwydian hills to the east and south east of Moel y Gaer hillfort and at the summit of Foel Fenlli hillfort. There have also been a number of Bronze Age flat axes found on the slopes of Moel Arthur hillfort, which is the closest Scheduled Monument to the study area. In a field to the southwest of the study area a retouched flint flake (Feature 04) was found that dates to the Bronze Age period which had been evidently exposed by erosion in the area. (CPAT, HLCA 1038). Roman activity in the area is represented by the hoard of Roman coins found in the Cefn Goleu Cairn.

There are two settlements of medieval origin close to the study area, Cilcain and Nannerch where there is evidence of the enclosure of former medieval open fields into strips fields with hedged boundaries. However the field systems in the vicinity of the reservoir itself can be seen to be of a regular rectangular pattern and seem to represent a late 18th or early 19th century division of larger land parcels.

Located immediately to the south west (c.40m) of the assessment area is a small post-medieval building named Greenland house. In 1841 the property, along with Plasnewydd, was owned by John Richard Pickmere, a successful wine merchant from Warrington. Approximately 490m to the west of the Cilcain reservoir is the Garth Post Medieval Farmhouse which is a Grade II listed Building.

The archaeological assessment noted that there are 19 features within a 1km radius of the reservoir, two of which date to the Bronze Age, one Roman, one medieval with the rest all of post-medieval date. These indicate a landscape significantly exploited from the prehistoric through to modern times. Only one of these, Greenland House (Feature 14) is within close proximity of the study area. The ruins of the house are set back within the trees and are therefore unlikely to be adversely affected by any discontinuance work at Cilcain. A full written and photographic survey of the existing reservoir structures has been completed as part of this assessment.

4.1 Table of Features and Recommendations

Asset_No	PRN	Site_Name	Period	NGR	Recommendations for Further Assessment	Mitigation Recommendations
01	99267	Cae Newydd	Post-Medieval	SJ1681164517	None	Avoidance
02	18032	Castell	Post-Medieval	SJ1640063700	None	Avoidance
03	99262	Cefn Gadfa structure	Post-Medieval	SJ1631963634	None	Avoidance
04	81688	Cefn-Y-Grug flint	Bronze Age	SJ16146432	None	None
05	36180	Garth	Post-Medieval	SJ1571464471	None	Avoidance
06	54198	Garth Barn	Post-Medieval	SJ1573164477	None	Avoidance
07	54195	Garth Boundary Stone I	Post-Medieval	SJ1612663970	None	Avoidance
08	54196	Garth Boundary Stone II	Post-Medieval	SJ1574664465	None	Avoidance
09	54201	Garth Building	Post-Medieval	SJ1574664465	None	Avoidance
10	104058	Garth Kiln	Post-Medieval	SJ15584964332	None	Avoidance
11	54214	Garth Level	Post-Medieval	SJ1557764639	None	Avoidance
12	54200	Garth Pigsty	Post-Medieval	SJ1572864458	None	Avoidance
13	36182	Garth, vaulted structure immediately to rear	Post-Medieval	SJ1570664478	None	Avoidance
14	55395	Greenland House	Post-Medieval	SJ1618264463	None	Avoidance
15	101304	Hawarden Reservoir Palstave	Bronze Age	SJ155642	None	None
16	106095	Moel Dywyll Mining Area	Roman	SJ1560063900	None	Avoidance

Asset_No	PRN	Site_Name	Period	NGR	Recommendations for Further Assessment	Mitigation Recommendations
17	99269	Tyddyn Reservoir	Post Medieval	SJ1722464794	None	Avoidance
18	55396	Tyddyn-Y-Foel Building	Post Medieval	SJ1719164451	None	Avoidance
19	54215	Tyddyn-Y-Foel, Building Platform	Medieval	SJ1701163958	None	Avoidance

5 ACKNOWLEDGEMENTS

Thanks must go to Roby Pugh from DCWW for his assistance in accessing the reservoir site. Also to the staff at the Air Photo Unit, Welsh Government and the Flintshire Archive Service for providing the archive cartographic and aerial photography material in support of this project.

6 SOURCES CONSULTED

6.1 Primary Sources

National Archives

Tithe Map of Cilcain, 1841

Conwy Archives, Llandudno

Ordnance Survey 1st edition 6 inch Flintshire County Series map of 1878. Sheet XIII

Ordnance Survey 2nd edition 6 inch Flintshire County Series map of 1900. Sheet XIII.NW

Flintshire Archives, Harwarden

DP/B/1/1/1/24, 33, 53, 60, 66 Settlement and Conveyancing papers for Plasnewydd and Greenland 1828-1878

Register of Aerial Photography, Welsh Assembly Government, Cardiff

Vertical Images

RAF 3G/TUD/UK192 Part I frame 6008 taken 9th May 1946

RAF CPE/UK/1996 frame 1402 taken 14th April 1947

OS 65 181 frame 40 taken 16th August 1965

ADAS 196 frame 061 taken 9th June 1984

6.2 Secondary Sources

Baxter, C.L., 2005, Tir Gofal Management Plan: Heritage Management Information (HE1).
Penbedw - NE/06/5088, CPAT Report

British Geological Survey, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>.

Cadw/ICOMOS 1998 *Register of Landscapes of Outstanding Historic Interest in Wales*

Cadw, 2016. Database of Listed Buildings in Wales. Online

CPAT, HLCA 1038, Moel Famau, Llandymog, Nannerch, Cilcain and Llanbedr Dyffryn Clwyd, Denbighshire. Online <http://www.cpat.org.uk/projects/longer/histland/clwyd/1038.htm>

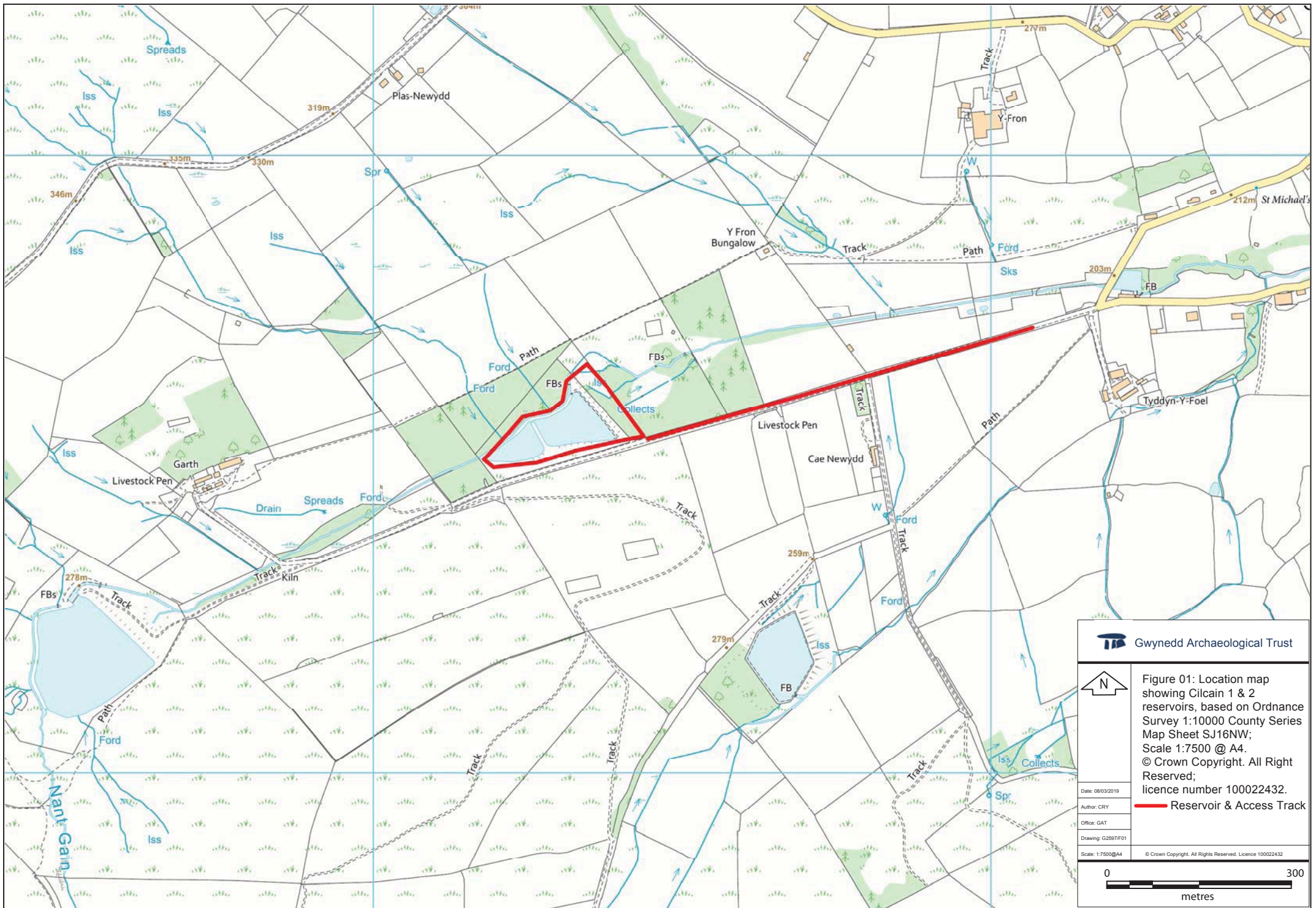
English Heritage, 1991, Management of Archaeological Projects

English Heritage, 2015, Management of Research Projects in the Historic Environment (MoRPHE). *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1.1)

Moel Arthur Camp (FN010), Cadw Scheduled Monument Report, accessed online - <http://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=3084>

Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*

Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2014).




 Gwynedd Archaeological Trust




Figure 01: Location map showing Cilcain 1 & 2 reservoirs, based on Ordnance Survey 1:10000 County Series Map Sheet SJ16NW; Scale 1:7500 @ A4. © Crown Copyright. All Rights Reserved; licence number 100022432.


Date: 08/03/2019
 Author: CRY
 Office: GAT
 Drawing: G2597/F01
 Scale: 1:7500@A4

 Reservoir & Access Track






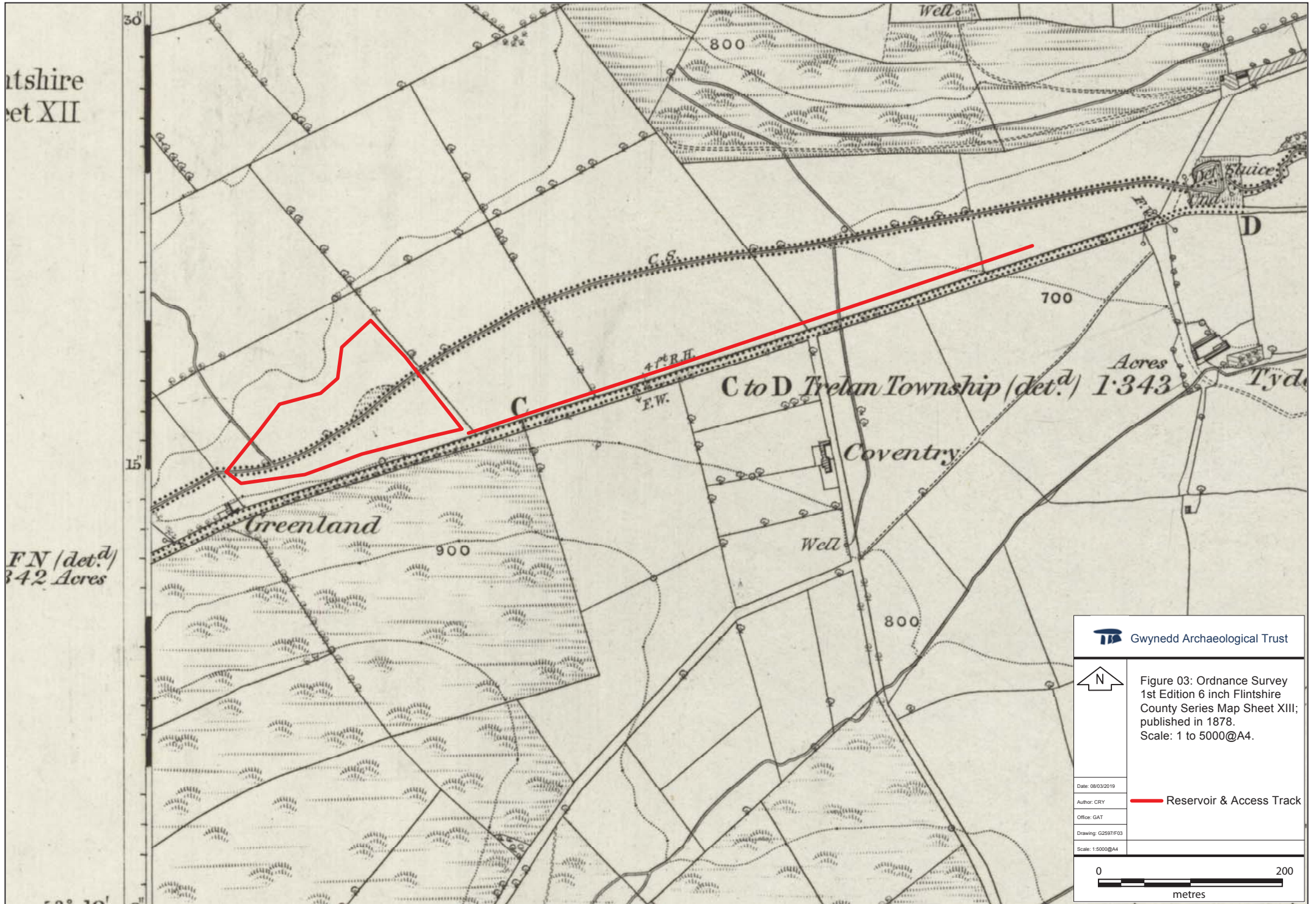
 Gwynedd Archaeological Trust


 Figure 02: Section of the Tithe Map for the parish of Cilcain, 1841.

Date: 08/03/2019
 Author: CRY
 Office: GAT
 Drawing: G2597/F02
 Scale: 1:5000@A4

 Reservoir & Access Track

0 200
 metres



 Gwynedd Archaeological Trust


 N

Figure 03: Ordnance Survey
1st Edition 6 inch Flintshire
County Series Map Sheet XIII;
published in 1878.
Scale: 1 to 5000@A4.


Date: 08/03/2019

Author: CRY

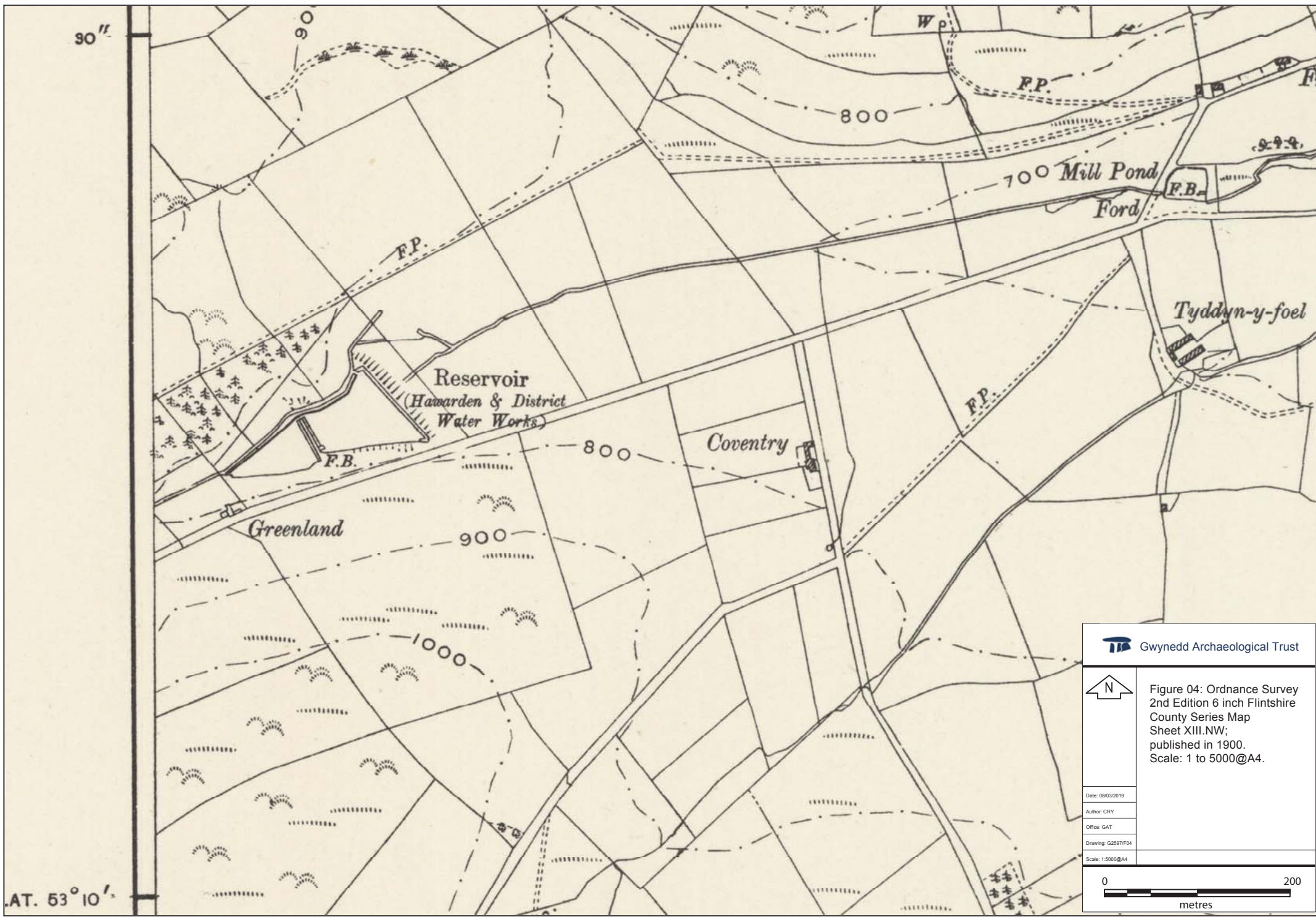
Office: GAT

Drawing: G2597/F03

Scale: 1:5000@A4

 Reservoir & Access Track

0 200
metres



 Gwynedd Archaeological Trust



Figure 04: Ordnance Survey
2nd Edition 6 inch Flintshire
County Series Map
Sheet XIII.NW;
published in 1900.
Scale: 1 to 5000@A4.

Date: 08/03/2019

Author: CRY

Office: GAT

Drawing: G2597/F04

Scale: 1:5000@A4



AT. 53° 10'

C.P.E./U.K./1996.13 APR. 47 F20//MULTI 4.16,400.58500M

1402



4048

 Gwynedd Archaeological Trust

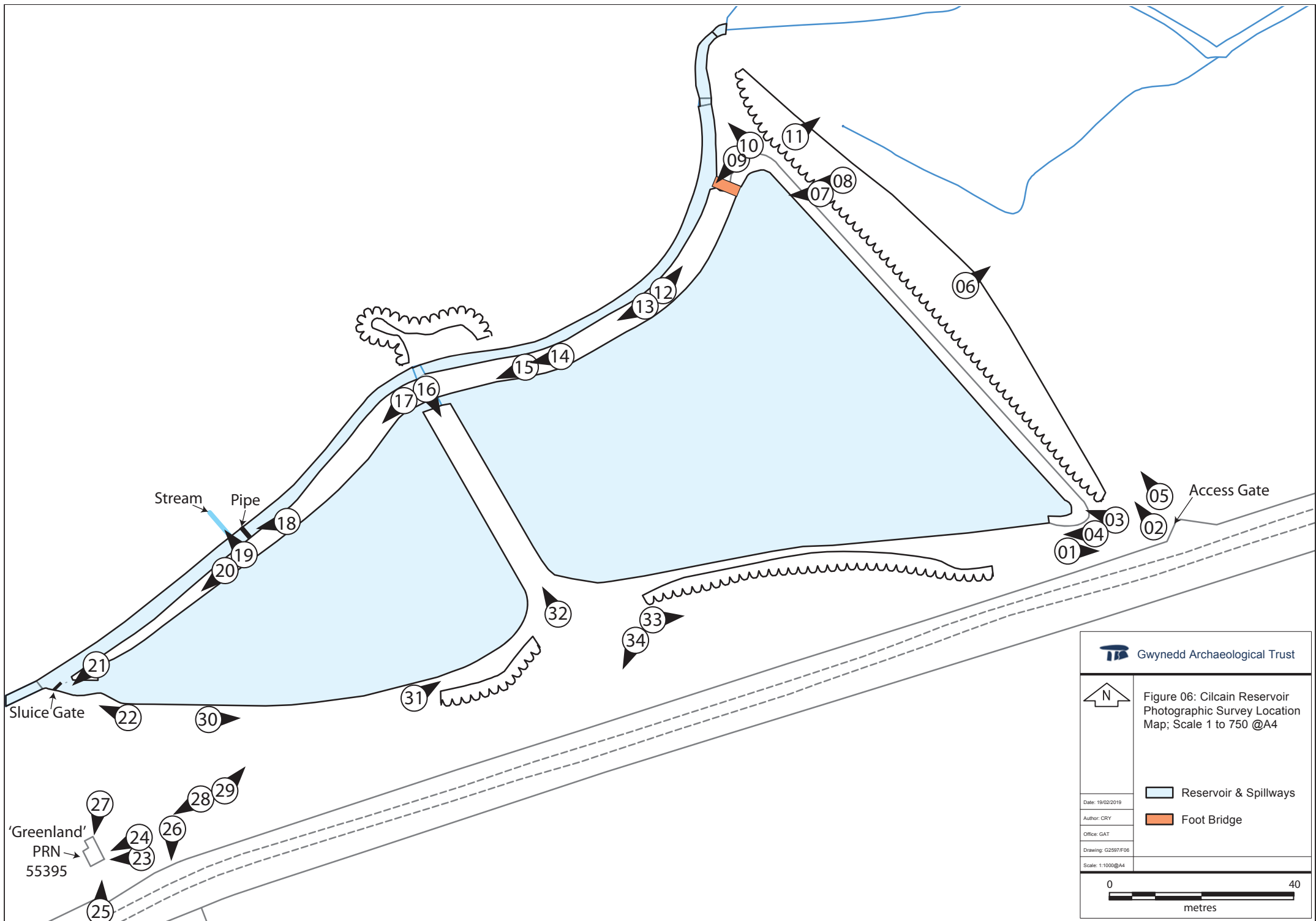
Figure 05: Reproduction of
aerial photo RAF
CPE/UK/1996 frame 4048
taken 13th April 1947

Date: 11/03/2019

Author: CRY

Office: GAT



Drawing: G2697/F05



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Figure 06: Cilcain Reservoir
Photographic Survey Location
Map; Scale 1 to 750 @A4

-  Reservoir & Spillways
-  Foot Bridge

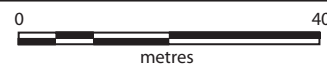
Date: 19/02/2019

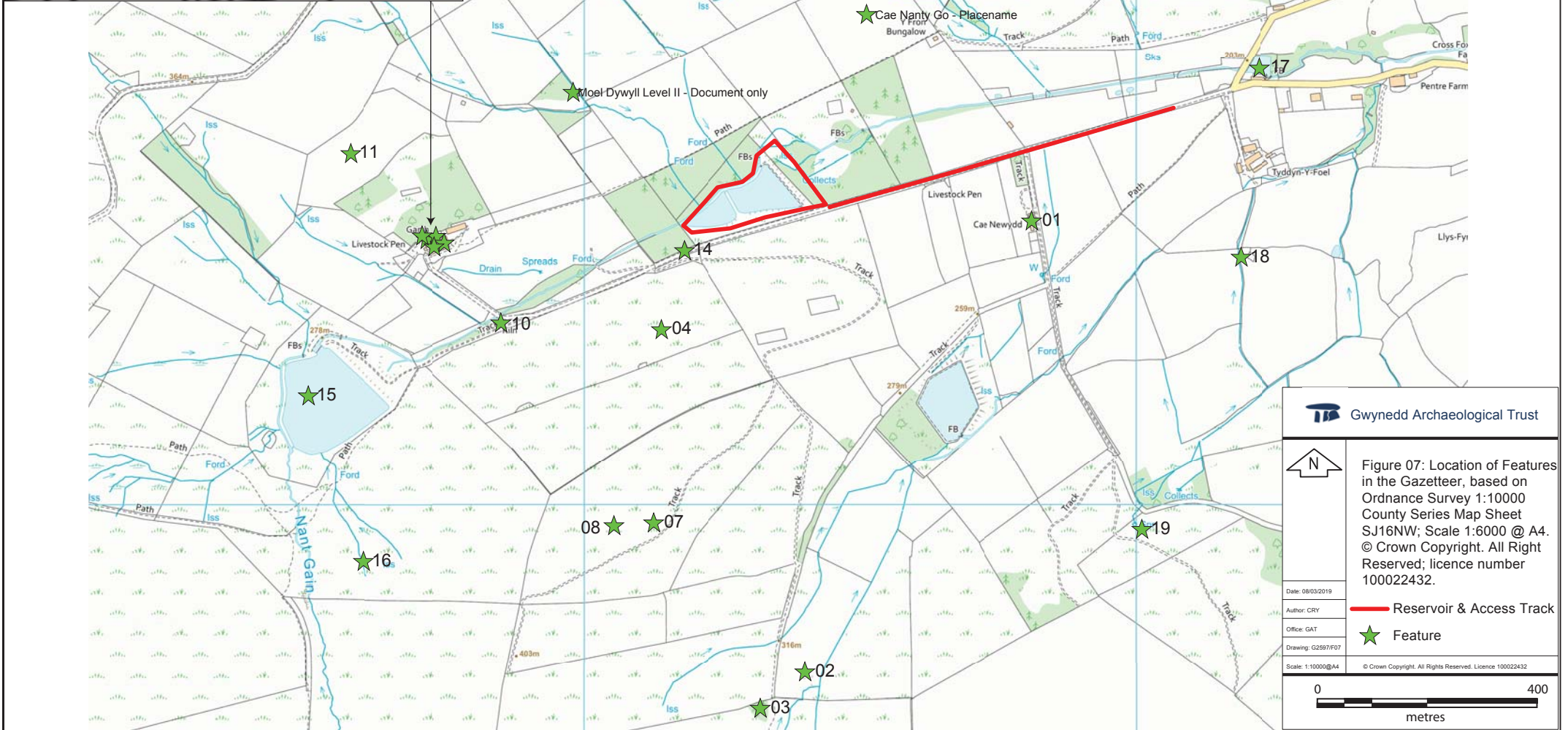
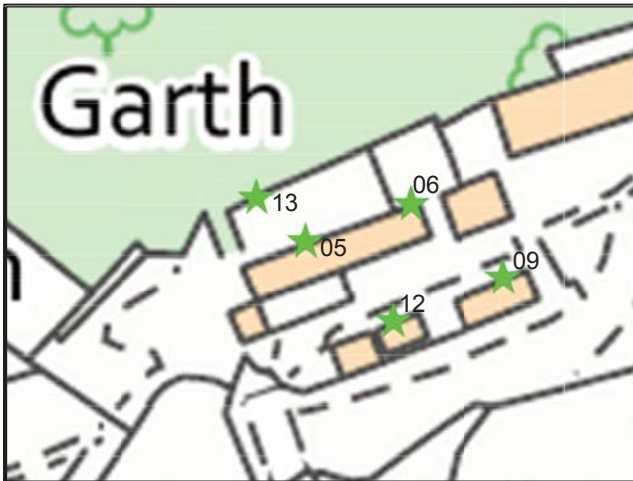
Author: CRY

Office: GAT

Drawing: G2597/F06

Scale: 1:1000@A4





Gwynedd Archaeological Trust

Figure 07: Location of Features in the Gazetteer, based on Ordnance Survey 1:10000 County Series Map Sheet SJ16NW; Scale 1:6000 @ A4. © Crown Copyright. All Right Reserved; licence number 100022432.

Date: 08/03/2019
 Author: CRY
 Office: GAT
 Drawing: G299/F07
 Scale: 1:10000@A4

Reservoir & Access Track (Red line)
Feature (Green star)

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0 400 metres



Plate 01: Access gate to the reservoirs; scale 1x1m (archive reference: G2597_001)



Plate 02: North East embankment of Cilcain 2; scale 1x1m (archive reference: G2597_005)



Plate 03: Fields to the east of Cilcain 2; no scale (archive reference: G2597_006)



Plate 04: Footbridge over spillway access from Cilcain 2; 1x1m (archive reference: G2597_008)



Plate 05: Brick and concrete construction of spillway access; scale 1x1m (archive reference: G2597_009)



Plate 06: Concrete spillway leading to Nant Gain; no scale (archive reference: G2597_010)



Plate 07: Embankment running to the north of both reservoirs; scale 1x1 m (archive reference: G2597_013)



Plate 08: Nant Gain routed alongside bank to spillway; scale 1x1m (archive reference: G2597_012)



Plate 09: Secondary overflow near to central dividing bank; no scale (archive reference: G2597_014)



Plate 10: Concrete reinforcement to embankments; scale 1x1m (archive reference: G2597_015)



Plate 11: Obsolete sluice gate, Cilcain 1; scale 1x1m (archive reference: G2597_021)



Plate 12: Southern most bank of the reservoirs; scale 1x1m (archive reference: G2597_030)



Plate 13: Ruins of Greenland House from tree line (PRN 55395); no scale (archive reference: G2597_028)



Plate 14: Ruins of Greenland House (PRN 55395); 1x1m (archive reference: G2597_024)



Plate 15: Slump of stones to the north of Greenland House (PRN 55395); 1x1 m
(archive reference: G2597_027)



Plate 16: Old entrance to Greenland House (PRN 55395); 1x1 m (archive reference: G2597_026)

APPENDIX I

Reproduction of Gwynedd Archaeological Trust written scheme of investigation

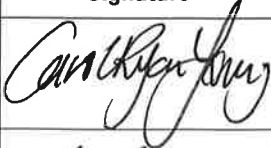


CILCAIN RESERVOIR
(G2597)

WRITTEN SCHEME OF INVESTIGATION FOR
ARCHAEOLOGICAL ASSESSMENT

Prepared for Stillwater Associates Limited
February 2019



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author	Caralynn Jung		11/02/19
Reviewed by	Document Reviewer	JOHN ROBERTS		11/04/19
Approved by	Principal Archaeologist	JOHN ROBERTS		11/02/19

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

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

Name

Signature

Date

CILCAIN RESRVOIR (G2597)

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL ASSESSMENT

Prepared for *Stillwater Associates Limited*, February 2019

CONTENTS

1 INTRODUCTION 5

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND 7

3 METHODOLOGY..... 8

 3.1 Assessment (Desktop Study)..... 8

 3.2 Photographic and Descriptive Survey 9

 3.3 Gazetteer10

 3.4 Data processing and report compilation.....13

4 PERSONNEL.....15

5 INSURANCE.....16

 5.1 Public/Products Liability.....16

 5.2 Employers Liability.....16

 5.3 Professional Indemnity16

6 SOURCES CONSULTED17

FIGURE 01.....18

 Location Map (Stillwater Associates Limited Drawing number SE439-004, January 2019).
.....18

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by Stillwater Associates Limited on behalf of Dŵr Cymru to prepare a written scheme of investigation for an archaeological assessment as part of a feasibility study looking into the possible removal of an existing dam (reservoir discontinuance) at Cilcain, near the A541 and A494 roads southwest of Cilcain, Denbighshire (NGR SJ16206450; Figure 01).

As specified in data supplied by Stillwater Associates Limited, Cilcain reservoir consists of two separate pools and was constructed in 1896. Cilcain no:1 has an earthfill embankment dam which is 55m in length, whilst Cilcain no:2 has an earthfill embankment with a puddle clay core which is 100m long and 8m high. The inlet for Cilcain no:1 is uncontrolled from Nant Gain which then feeds Cilcain no:2 via a channel. Cilcain no:2 has a 3m wide spillway and 12" clay overflow in addition to two other outlets which are described as inoperable. The preferred removal strategy includes the complete removal of the embankment, all appurtenant structures (outlet pipes, supply pipes, spillway structures etc) and the re-use of embankment material where possible within the reservoir basin area. Access to the reservoir would be via the A494 and a 4.9km long unclassified road to the East (Figure 01).

The assessment will conform to the guidelines specified in the Chartered Institute for Archaeologists *Standard and Guidance for Historic Environment Desk-Based Assessment* (Chartered Institute for Archaeologists, 2014). The format of this written scheme of investigation corresponds to the requirements of section 2.3 of MoRPHE (English Heritage 2015) and to MAP2 (English Heritage, 1991, *Management of Archaeological Projects*). The assessment is scheduled to be completed in October 2018.

The assessment will be monitored by the Development Control Archaeologist, Clwyd-Powys Archaeological Trust (CPAT); the content of this written scheme of investigation and all subsequent reporting by GAT must be approved by CPAT prior to final issue.

The Clwyd-Powys Archaeological Trust Historic Environment Record Enquiry Reference Number for this project is E6441.

GAT is certified to ISO 9001:2015 and ISO 14001:2015 (Cert. No. 74180/B/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists and a member of the Federation of Archaeological Managers and Employers (FAME).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Cilcain is partially located within the Vale of Clywd Registered Landscape of Historic Interest and is situated in the eastern foothills of the Clwydians, between Loggerheads and Afon-wen. This area is characterised by field systems dating from the medieval period through to the late 18th and 19th centuries. Remnant strip fields with hedged boundaries associated with the settlement at Cilcain represent the enclosure of former Medieval open fields. Whilst straight sided fields, some hedged some bounded by drystone walls, predominate the higher slopes show the late 18th and 19th century enclosure of former common grazing and moorland (source: https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=7695).

Located immediately to the SW (c.44m) of the assessment area is a small post-medieval building named Greenland house (PRN 55395; NGR SJ1618264463). It appears on the historic mapping but only as an outline on the modern mapping which suggests it may be in a severely dilapidated state. Approximately 490m to the W of the Cilcain reservoir is the Garth Post Medieval Farmhouse (PRN 36180; NGR SJ1571464471) which is a Grade II listed Building dating to the late 17th or early 18th centuries. In a field to the southwest a retouched flint flake (PRN 81688; NGR SJ16146432) was found that dates to the Bronze Age period which had been evidently exposed by erosion in the area.

A brief examination of the 6-inch to 1 mile Ordnance Survey maps of the area (Sheets Flintshire XIII, Flintshire XIII.NW) show the establishment of the reservoir. The First edition Flintshire map (Flintshire XIII, published 1878) shows fields within the assessment area the Nant Gain running through them NE-SW. All the later editions (Flintshire XIII.NW published 1900, 1914, 1933 and 1949) show the reservoir with the annotation 'Hawarden & District Water Works'. The footprint of the reservoir sits over the old route of the Nant Gain and has not changed since construction.

3 METHODOLOGY

3.1 Assessment (Desktop Study)

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014, 4).

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

1. The regional Historic Environment Register ((HER) Clwyd-Powys Archaeological Trust, 41 Broad St, Welshpool SY21 7RR) will be examined for information concerning the study area. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER. All identified assets will be mapped, described and added to a gazetteer of sites and the relative importance of any assets defined;
2. The National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be checked for assets additional to the HER;
3. Aerial photographs from the National Monuments Record of Wales (Royal Commission on the Ancient and Historical Monuments of Wales, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be examined for potential assets;
4. An on-line catalogue search of the National Library of Wales (Penglais Rd, Aberystwyth SY23 3BU) will be completed;
5. Archive data, including primary and secondary sources, historic maps and estate maps will be examined at the regional archives (The Old Rectory, Rectory Ln, Hawarden, Deeside CH5 3NN). The examination of the archive data will include historic mapping including the local tithe map and schedule;
6. If available for the assessment area, Light Detection and Ranging (LiDAR) data will be examined from the Lle Geo-Portal at <http://lle.gov.wales/home> for information on potential surface features using digital terrain modelling and digital surface modelling.

3.2 Photographic and Descriptive Survey

A photographic and descriptive survey will be undertaken that will incorporate the reservoir area as located on Figure 01. All known and new archaeological assets identified within close proximity to the reservoir will be located and described on GAT pro-formas and a written description and photographic record of the visible reservoir infrastructure will be completed. Any recorded assets, as well as the reservoir, will then be added to the overall gazetteer and their relative importance defined. The potential for sub-surface archaeology will be estimated and defined.

A photographic record will be maintained in RAW format using a digital SLR set to maximum resolution (Nikon D3000; resolution: 3,872 × 2,592 [10.2 effective megapixels]) and a photographic metadata table will be completed and included in the report. Photographic images will be archived in TIFF format; the archive numbering system will start from **G2597_001**. A handheld GPS unit will also be used during the photographic survey.

3.3 Gazetteer

A gazetteer will be compiled for any identified sites within and within proximity to the specified route based on information sourced from the regional HER; the gazetteer will include:

1. Feature Number
2. Site name
3. PRN number
4. Grid reference
5. Period
6. Site type
7. Assessment category
8. Description
9. Impact
10. Recommendation for further assessment/evaluation
11. Recommendation for mitigatory measures.

The following categories will be used to define the assessment category of the archaeological asset:

Category A - Sites of National Importance.

Scheduled Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both. Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

Category B - Sites of regional or county importance.

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened. Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

Category E - Sites needing further investigation.

Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation. In this report several sites of unknown potential have been allocated to this category.

The impact of the proposed works on any asset will be identified using the following impact criteria, defined either as *none*, *slight*, *unlikely*, *likely*, *significant*, *considerable* or *unknown* as follows:

None:

There is no construction impact on this asset.

Slight:

This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the asset, e.g. part of a trackway or field bank.

Unlikely:

This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

Likely:

Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.

Significant:

The partial removal of an asset affecting its overall integrity. Assets falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

Considerable:

The total removal of an asset or its partial removal which would effectively destroy the remainder of the site.

Unknown:

This is used when the location of the asset is unknown, but thought to be in the vicinity of the proposed works.

3.4 Data processing and report compilation

Following completion of the stages outlined above, a report will be produced incorporating the following:

1. Front cover;
2. Inner cover;
3. Figures and Plates List
4. Non-technical summary;
5. Introduction;
6. Methodology
 - a. Desk-based assessment
7. Results
 - a. Desk based assessment
 - i. Location and geological summary
 - ii. Statutory and non-statutory designations
 - iii. Environmental remains and soil morphology
 - iv. Historical and archaeological background
 - v. Cartographic evidence
 - vi. Artefact potential
 - vii. Aerial photographs and LiDAR;
 - b. Gazetteer of features
8. Conclusions and recommendations
 - a. Conclusion
 - b. Table of sites and recommendations
9. Acknowledgements
10. Bibliography
 - a. Primary sources
 - b. Secondary sources
11. Figures; inc.:
 - location plan;
 - historic mapping;
 - location plan with identified features
12. Appendix I (approved written scheme of investigation)
13. Appendix II (Sites listed on GAT Historic Environment Record)
14. Appendix III (Definition of mitigation terms)
15. Appendix IV Photographic metadata (walkover survey)

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included.

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. The archaeological assessment outlined in this written scheme of investigation will be submitted in draft format in February 2019; a final report will be submitted to the Historic Environment within six months of submitting the draft report (August 2019).

The following dissemination will apply:

- A paper report(s) plus digital report(s) will be provided to the client/consultant and CPAT (draft report then final report);
- A paper report plus a digital report will be provided to the regional Historic Environment Record, Clwyd-Powys Archaeological Trust; this will be submitted within six months of project completion (final report only), along with any relevant, digital information such as the project database, GIS table(s) and photographs. All digital datasets submitted will conform to the required standards set out in *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) (Version 1)*;
- A digital report and archive (including photographic and drawn) data will be provided to Royal Commission on Ancient and Historic Monuments, Wales (final report only), in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. Digital information will include the photographic archive and associated metadata;

4 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section. The assessment will be completed by a project archaeologist who will have responsibility for completing the desk based assessment, maintaining the site archive, liaising with CPAT and *Stillwater Associates Limited* and submitting the draft report and final report. The project manager will be responsible for reviewing and approving the report prior to submission.

5 INSURANCE

5.1 Public/Products Liability

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

INSURER Aviva Insurance Limited

POLICY TYPE Public Liability

POLICY NUMBER 24765101CHC/UN/000375

EXPIRY DATE 21/06/2019

5.2 Employers Liability

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

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

INSURER Aviva Insurance Limited

POLICY TYPE Employers Liability

POLICY NUMBER 24765101 CHC / UN/000375

EXPIRY DATE 21/06/2019

5.3 Professional Indemnity

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

INSURER Hiscox Insurance Company Limited

POLICY TYPE Professional Indemnity

POLICY NUMBER 9446015

EXPIRY DATE 22/07/2019

6 SOURCES CONSULTED

1. English Heritage, 1991, Management of Archaeological Projects
2. English Heritage, 2015, Management of Research Projects in the Historic Environment (MoRPHE).
3. *Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs)* (Version 1)
4. https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=7695
5. Ordnance Survey (Sheets XIII, XIII.NW, First to Fourth Edition 6-inch to 1 mile)
6. Royal Commission on Ancient and Historic Monuments of Wales 2015 *Guidelines for digital archives*
7. Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists, 2014).

FIGURE 01

Location Map (Stillwater Associates Limited Drawing number SE439-004, January 2019).



View along the downstream face of Cilcain No. 2 embankment



View of access gate to private land on downstream toe of Cilcain No. 2



View of lockable access gate and turn-off into entrance to reservoir site

Access plan for Cilcain 1&2 reservoirs



Elevation profile of access route from A494 to reservoir site.

Notes:
Refer to accompanying text description of access route.



Client:	Dŵr Cymru Welsh Water
Project:	Cilcain 1&2 Reservoir Discontinuance Feasibility Assessment
Drawing title:	Cilcain 1&2 Reservoir Site Access
Drawing number:	SE439-004
Date:	January 2019

APPENDIX II

Gwynedd Archaeological Trust photographic metadata

PHOTO RECORD NUMBER*	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2597_001	Reservoir entrance	W	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	01
G2597_002	Lower reservoir NE embankment	SE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_003	View across lower reservoir	ESE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_004	Lower Reservoir S embankment	ESE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_005	Lower reservoir NE bank	SE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	02
G2597_006	Streams below lower reservoir	SW	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	03
G2597_007	Bridge over lower reservoir - spillway to stream	ESE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_008	Bridge over lower reservoir - spillway to stream - zoom	ESE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	04
G2597_009	Stream running beside reservoir and spillway - Nant Gain	NE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	05
G2597_010	Stream and spillway - Nant Gain	SSE	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	06
G2597_011	Spillway and stream running through field below reservoir	SW	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_012	Lower reservoir NW bank to bridge and spillway	SW	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	08
G2597_013	Lower reservoir NW bank	ENE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	07
G2597_014	Lower reservoir and stream to spillway and divide	E	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	09

G2597_015	Upper reservoir to lower reservoir join	ENE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	10
G2597_016	Concrete in end dividing bank	NNW	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_017	Upper reservoir NW bank and stream	NE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_018	Stream from field to NW and pipe	E	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_019	Stream from field to NW	S	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_020	Upper reservoir NW bank	NE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_021	Old sluice gate at top of Upper reservoir (defunct)	NE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	11
G2597_022	Old sluice gate at top of Upper reservoir (defunct)	ESE	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_023	Greenland' House PRN 55395	E	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_024	Greenland' House PRN 55395	ENE	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	14
G2597_025	Greenland' House PRN 55395	S	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_026	Entrance through wall adjacent to 'Greenland'	N	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	16
G2597_027	Greenland' House PRN 55395	N	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	15
G2597_028	Greenland house from distance	NE	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	13
G2597_029	View over reservoir from upper pool	SSW	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	Cover
G2597_030	S bank of upper reservoir	W	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	12

G2597_031	S bank of upper reservoir	SW	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_032	Dividing bank	SE	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_033	S bank of lower reservoir	w	1x1m	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	
G2597_034	View up bank to wall and field	NE	-	Carol Ryan Young	12/02/2019	Gwynedd Archaeological Trust	

APPENDIX III

Categories of importance

The following categories will be used to define the assessment category of the archaeological asset:

Category A - Sites of National Importance.

Scheduled Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both. Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

Category B - Sites of regional or county importance.

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region. Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened. Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category. For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

Category E - Sites needing further investigation.

Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation. In this report several sites of unknown potential have been allocated to this category.

The impact of the proposed works on any asset will be identified using the following impact criteria, defined either as *none*, *slight*, *unlikely*, *likely*, *significant*, *considerable* or *unknown* as follows:

None:

There is no construction impact on this asset.

Slight:

This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the asset, e.g. part of a trackway or field bank.

Unlikely:

This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

Likely:

Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.

Significant:

The partial removal of an asset affecting its overall integrity. Assets falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

Considerable:

The total removal of an asset or its partial removal which would effectively destroy the remainder of the site.

Unknown:

This is used when the location of the asset is unknown, but thought to be in the vicinity of the proposed works.



Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

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