EITHINFYNYDD

Archaeological Watching Brief

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

EITHINFYNYDD

Archaeological Watching Brief

Prosiect Rhif / Project No. G522

Adroddiad Rhif / Report No.1389

Prepared for: O'Connor Utilities Limited

June 2017

Written by: Anne Marie Oattes

***front cover image: View from north-northwest to Pont Scethin from access route (GAT archive ref.: G2522_040)**

Cyhoeddwyd gan Ymddiriedolaeth Achaeolegol Gwynedd
Ymddiriedolaeth Archaeolegol Gwynedd
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Plate 10: View to the south east along the temporary route after the bog mats were removed (archive reference number: G2522_71).

CRYNHODEB DAD-TECHNEGOL

Ddarparwyd Ymddiriedolaeth Archeolegol Gwynedd gan O'Connor Utitlies Ltd. ar ran i Dŵr Cymru i gynnal briff gwylio archeolegol yn ystod gwaith ddaear yn gysylltiedig gyda'r amnewid o'r tanc pwysedd brêc (TPB) lleoledig a'r brif bibell dŵr crai rhwng Llŷn Bodlyn a gwaith Triniaeth Dŵr Eithinfynyff yng Ngwynedd. Roedd y briff gwylio archeolegol yn gynaledig ystod y mynediad ac allanfa'r peiriant turio rhwng llwybr y fferm a'r man gwaith, gan gynnwys y cloddiad o'r draen tir ar gornel gogledd ddwyrain o'r TPB. Roedd archeolegydd yn bresennol ermain sicrhau nid oedd yna nodweddion archeolegol anhysbys yn cael niwed gan y tramwyad y peiriant turio. Wnaeth yr archeolegydd asesu'r arwyneb bach a'r ochr gogledd y llwybr i'r gronfa a'i defnyddiwyd fel man diferu i'r defnyddiau gofynnol i'r gwaith.

Nid oedd yna nodweddion archeolegol wedi ei tharfu yn yr ardal sefydlog gadarn, ar hyd yr y ffordd mynediad neu ystod y cloddiad o'r draen tir ac o amgylch arwyneb y falf PRV wrth y tanc.

NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust was commissioned by O'Connor Utilities Ltd. on behalf of Dŵr Cymru to conduct an archaeological watching brief during the groundworks associated with the replacement of a break pressure tank (BPT) situated on the raw water main between Llŷn Bodlyn and Eithinfynydd Water Treatment works in Gwynedd. The archaeological watching brief was maintained during the access and egress of the excavator between the farm track and the working area, and during the excavation of a land drain at the north western corner of the BPT. The archaeologist was present to ensure that no previously unidentified archaeological features were damaged by the passage of the excavator. The archaeologist also assessed the small area on the northern side of the track to the reservoir which was used as a drop off point for the materials required for the work.

No archaeological features were disturbed by the area of hard standing, along the access route or during the excavation of the land drain and the area around the PRV valve at the tank.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by *O'Connor Utilities Ltd* on behalf of DCWW to complete an archaeological watching brief during the groundworks associated with the replacement of a plastic Break Pressure Tank (BPT) on the raw water main between Llŷn Bodlyn Reservoir and the Eithinfynydd Water Treatment Works (Figure 01) The BPT was located to the south east of Afon Ysgethin, Dyffryn Ardudwy, Gwynedd (NGR SH63522353; Figure 01) and was in close proximity to two known archaeological features: a trackway (Primary Reference Number (PRN) 3867) which leads to Pont Scethin (Scheduled Monument Me 126), both of which were avoided during the works (Figure 04).

The groundworks included the replacement of pipework, connections to the existing pipework, and the excavation of a trench for a land drain associated with the replacement of a PRV valve, as detailed in DCWW Drawing No.w2280-2103 (Figure 03). A project design defining the methodology for the watching brief was submitted to Gwynedd Archaeological Planning Services (GAPS) in May 2017 (Appendix I). The work was undertaken by *O'Connor Utilities Ltd.* and the groundworks commenced on the 24th April 2017. The archaeological watching brief was conducted between the 24th April and the 27th June 2017.

The watching brief was completed in accordance with the following guidance:

- Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 2014);
- Historic England, 2004 Historic England. Human Bones from Archaeological Sites. Guidelines for producing assessment documents and analytical reports;
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015); and
- Guidelines for digital archives Royal Commission on Ancient and Historic Monuments of Wales 2015.

The watching brief was monitored by the Gwynedd Archaeological Planning Services (GAPS).

Gwynedd Archaeological Trust is certified to ISO 9001:2008 and ISO 14001:2004 (Cert. No. 74180/A/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

The scheme was located within the Ardudwy registered landscape of outstanding historic interest (HLW (Gw) 2), which has been described as ‘a large, exceptionally archaeologically rich and well-studied landscape, containing extensive relict evidence of recurrent land use and settlement from prehistoric to recent times’ (Ardudwy which has been identified on the Register of Landscapes of Outstanding Historic Interest in Wales by Cadw, CCW and ICOMOS, HLW(Gw) 2, (Cadw: Welsh Historic Monuments, 1995, p 74).).

There are many known archaeological features in the surrounding area dating from the Prehistoric through to the Roman and Medieval periods, including Neolithic chambered tombs, Bronze Age cairns and roundhouses, Iron Age Hillforts and field systems associated with settlement and land use from the Bronze Age through to the medieval times.

There are several Scheduled Monuments in the area: Pont Scethin (Me 126) is a stone bridge adjacent to the work area, and Craig Y Dinas, an Iron Age Hillfort (Me 020) approximately one kilometre to the south west are shown on the location map (Figure 04).

Although there were no visible archaeological remains within the work area, there was potential for buried archaeological features, based on activity from the surrounding area: a programme of archaeological mitigation undertaken in advance of and during the cleansing of a raw mater main from Llyn Bodlyn to Eithinfynydd water treatment works in 2010 and 2011 identified several archaeological features, including activity associated with agriculture and landscape management and two possible collapsed burial cists. A flint Bronze Age thumbnail scraper, found on the main path leading south-east to Pont Scethin, was the only artefact discovered (GAT project G2099).

3 METHODOLOGY

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

An archaeological watching brief can divided into four categories:

- comprehensive (present during all ground disturbance)
- intensive (present during sensitive ground disturbance)
- intermittent (viewing the trenches after machining)
- partial (as and when seems appropriate).

For this scheme, the archaeological watching brief was completed on an **intensive** basis; with an archaeologist on site to accompany the excavator to and from the working area at the break pressure tank, and to monitor the excavation of the land drain at the south west side of the tank and the excavation for the PRV valve. The watching brief was carried out between the 24th April and the 27th June 2017. All attendances were recorded using GAT watching brief pro-formas; the route of the temporary access was recorded using a hand held GPS unit. Photographic images were taken using a digital SLR (Nikon D3000) camera set to maximum resolution (3008 × 2000 6.1 effective megapixels) in RAW format and were converted to TIFF format for archiving using Adobe Photoshop. A total of 85 photographs were taken (archive images G2522_01 to G2522_85; cf. Appendix II).

4 RESULTS

The Break Pressure Tank (BPT) was situated on the raw water main (installed in 1974) between Llyn Bodlyn and Eithinfynydd Water Treatment Works in a remote upland region with many known archaeological features within the surrounding area. The main aim of the archaeological watching brief was to ensure that any archaeological features within the vicinity of the BPT, specifically along the temporary access and egress route between the farm road and the works site, were identified and avoided. The excavation around the tank was limited to an open cut trench on the northwest side of the tank for a land drain.

A site walkover was conducted on the 8th May which was attended by O'Connor Utilities Ltd, DCWW, the site ecologist, GAPS and GAT. The walkover identified an access route for the plant and supplies from the track between Llandwywe and Llyn Bodlyn reservoir across open ground to the working area around the tank which was agreed by GAPS and the ecologist.

A compound was established alongside the farm track at NGR SH6116923409. The lay down area for the pipes and fittings was inspected by the archaeologist before the work commenced. A small area had previously been utilised as hard standing with stone laid down; no further groundwork was undertaken in this area. Heras panels were used to fence off the area between the farm track and the field wall to the south west of the track to create a compound (Plate 07).

On Monday 22nd May the access route for the excavator was marked out with small stakes by the ecologist and the archaeologist to the northeast of the pedestrian access (Plates 01 and 02); the location of the access route was then recorded using a hand held GPS device as detailed on DCWW Drawing No. w2280-2001 (Figure 02).

An archaeologist was present to monitor the laying of the bog mats for the temporary access track to and from the site, and during the excavation of a land drain on the north west side of the BPT.

On Tuesday 23rd May, the archaeologist accompanied the eight tonne excavator, which was fitted with wide metal tracks, along the access route over a temporary track of bog mats; the mats were "frog-hopped" by the excavator to the working area. Photographs were taken of the access route before and after the machine tracked to the site (Plates 03 to 05).

A short length of open cut trench was excavated for the land drain which ran from the northwest corner of the tank for approximately 20m towards the river (Plate 06). The location of the land drain was recorded using a hand held GPS device. The trench was 2m deep at the tank to expose the pipes which connect to the overflow chamber, and 1.2m wide. The trench reduced in depth and was approximately 0.5m deep at the northwest end. The area around the tank showed signs of previous disturbance; the topsoil (mean depth: 0.42m) was dark brown with an orange hue and comprised slightly silty clay, beneath which was grey gravelly clay close to the tank. As the trench progressed to the northwest the clay became brown. Occasional large boulders were observed in the spoil.

The archaeologist attended site on 26th and 27th June to escort the excavator from the working area at the tank back to the track along the temporary access utilising bog mats by "frog-hopping" as before (Plates 08 to 10).

No archaeological features were identified during the watching brief.

5 CONCLUSION

The archaeological watching brief focused on ensuring that no known archaeological features were affected by the temporary access route for the excavator. The machine was tracked across a temporary bog mat road to and from the working area. The bog mats were laid in front of the machine and lifted once the excavator had travelled over them, with a single journey to site and a single journey from site. The excavation of a land drain on the north west of the BPT was monitored, and a compound area located just off the farm road was examined to determine that no archaeological feature would be damaged or affected prior to pipes and fittings being stored there. No archaeological features were identified during the watching brief.

6 SOURCES CONSULTED

Cadw: Welsh Historic Monuments, 1995, *Register of Landscapes of Outstanding Historic Interest in Wales*

DCWW Drawing No. w2280-0001.

DCWW Drawing No.w2280-2001, DCWW Drawing No.w2280-2103. DCWW Drawing No. w2280-2002.

English Heritage, 1991, *Management of Archaeological Projects*

English Heritage 1995 *Guidelines for the Care of Waterlogged Archaeological Leather . Scientific and Technical Guidelines 4*. London: English Heritage

Historic England, 2004. *Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports*

Historic England, 2011, *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation*

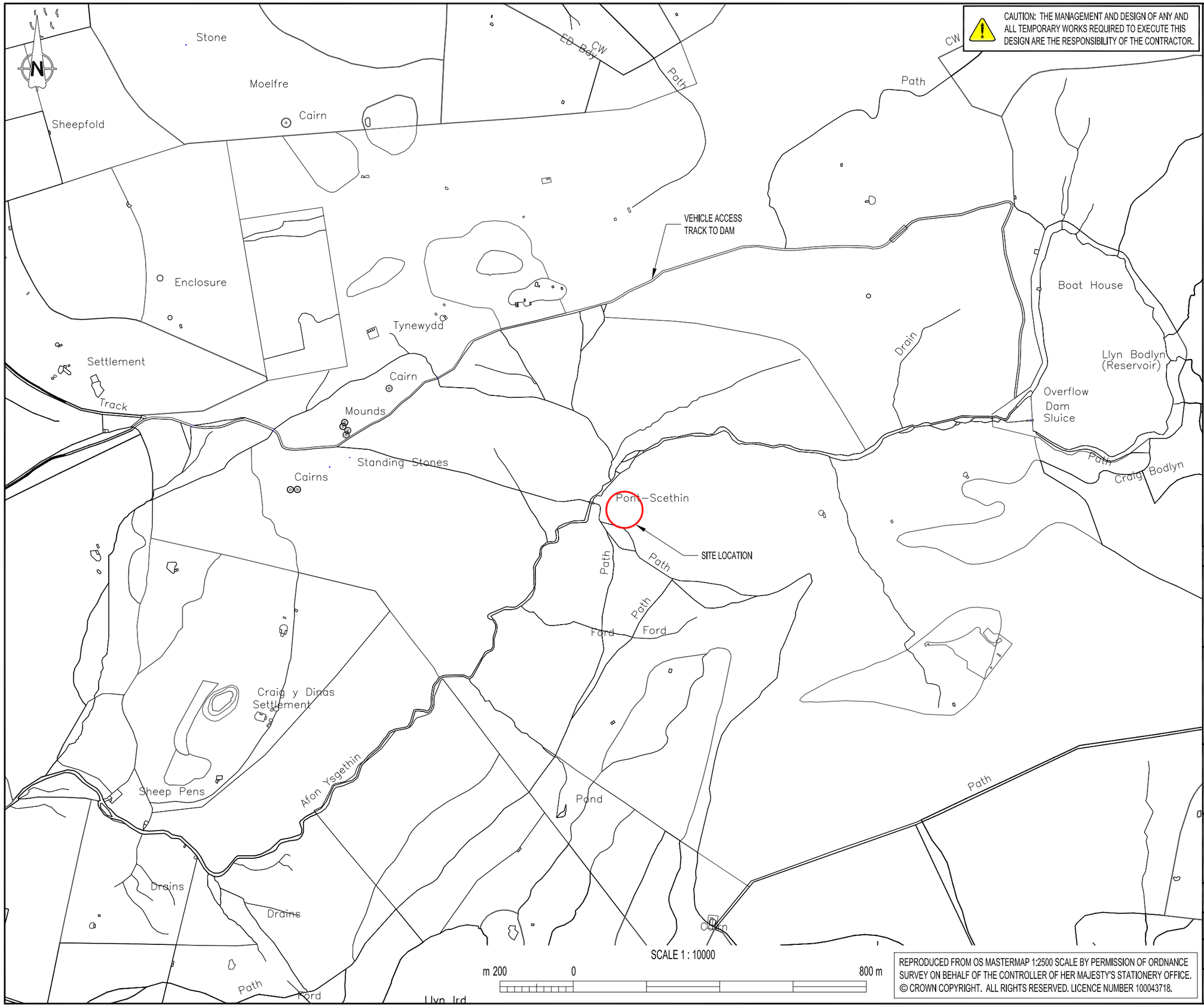
Historic England, 2015, *Management of Research Projects in the Historic Environment (MoRPHE)*.

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

Standard and Guidance for an archaeological watching brief (Chartered Institute for Archaeologists, 2014).

FIGURE 01

Location map detailing watching brief area. Based on DCWW Drawing No. w2280-0001



NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.

KEY

SITE LOCATION

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
I00	17-06-16	FIRST ISSUE	VJ	DRD	KJP

CLIENT

Dŵr Cymru
Welsh Water

Waterco Ltd., Eden Court,
Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220
www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

LOCATION PLAN

STATUS

INFORMATION

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
VJ	DRD	KJP	1 : 10000 / A3

CLIENT REFERENCE	DATE
-	17/06/2016

DRAWING NO.	REV
w2280-0001	I00

FIGURE 02

Reproduction of DCWW Drawing No.w2280-2001, detailing the watching brief area.

CAUTION: THE MANAGEMENT AND DESIGN OF ANY AND ALL TEMPORARY WORKS REQUIRED TO EXECUTE THIS DESIGN ARE THE RESPONSIBILITY OF THE CONTRACTOR.

Enclosure

Tynewydd

Cairn

Mounds

LOADING AREA / PARKING. CONTRACTOR TO ADVISE IF LARGER AREA REQUIRED ASSUME 10m x 40m, FENCED, **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

MACHINE ACCESS ROUTE - TO BE WALKED IN WITH MATS "FROG HOPPED" WITH MACHINE TO MINIMISE DAMAGE TO SURFACE.

ARCHAEOLOGIST TO BE PRESENT TO DIRECT ROUTE TO AVOID POSSIBLE HISTORIC FEATURES, AND "ONE JOURNEY IN AND ONE OUT"

NO VEHICLES OVER BRIDGE

Standing Stones

Cairns

HELICOPTER LOADING AREA APPROX 20m x 20m (OR AS AGREED WITH PROVIDER) **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

PEDESTRIAN ACCESS ROUTE - OR QUAD IF SUITABLE SURFACE EITHER LIGHT TRACK MATS OR UNDERTAKE FOOTPATH REMODELLING WITH LOCAL HARDCORE ON GEO-TEXTILE.

ARCHAEOLOGIST TO BE PRESENT

APPROX LENGTH 710m TO STREAM 80m OTHER SIDE

NO 4WD OR DUMPERS ALLOWED

Pont Scethin

12IN. uPVC 1974 ()

WORKING AREA TO BE AS SMALL AS PRACTICAL TO UNDERTAKE THE WORKS - **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

Path

Path

Ford

Ford

Craig y Dinas

Settlement

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
T01	19-06-16	REVISED HAZARDS	DRD	KJP	TM
T00	17-06-16	TENDER ISSUE	VJ	DRD	KJP

CLIENT

Dŵr Cymru Welsh Water

Waterco consultants

Waterco Ltd., Eden Court, Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220 www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

ACCESS AND WORKING AREA PLAN

STATUS

TENDER

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
VJ	DRD	KJP	N.T.S.

CLIENT REFERENCE: -

DATE: 17/06/2016

DRAWING NO.: w2280-2001

REV: T01

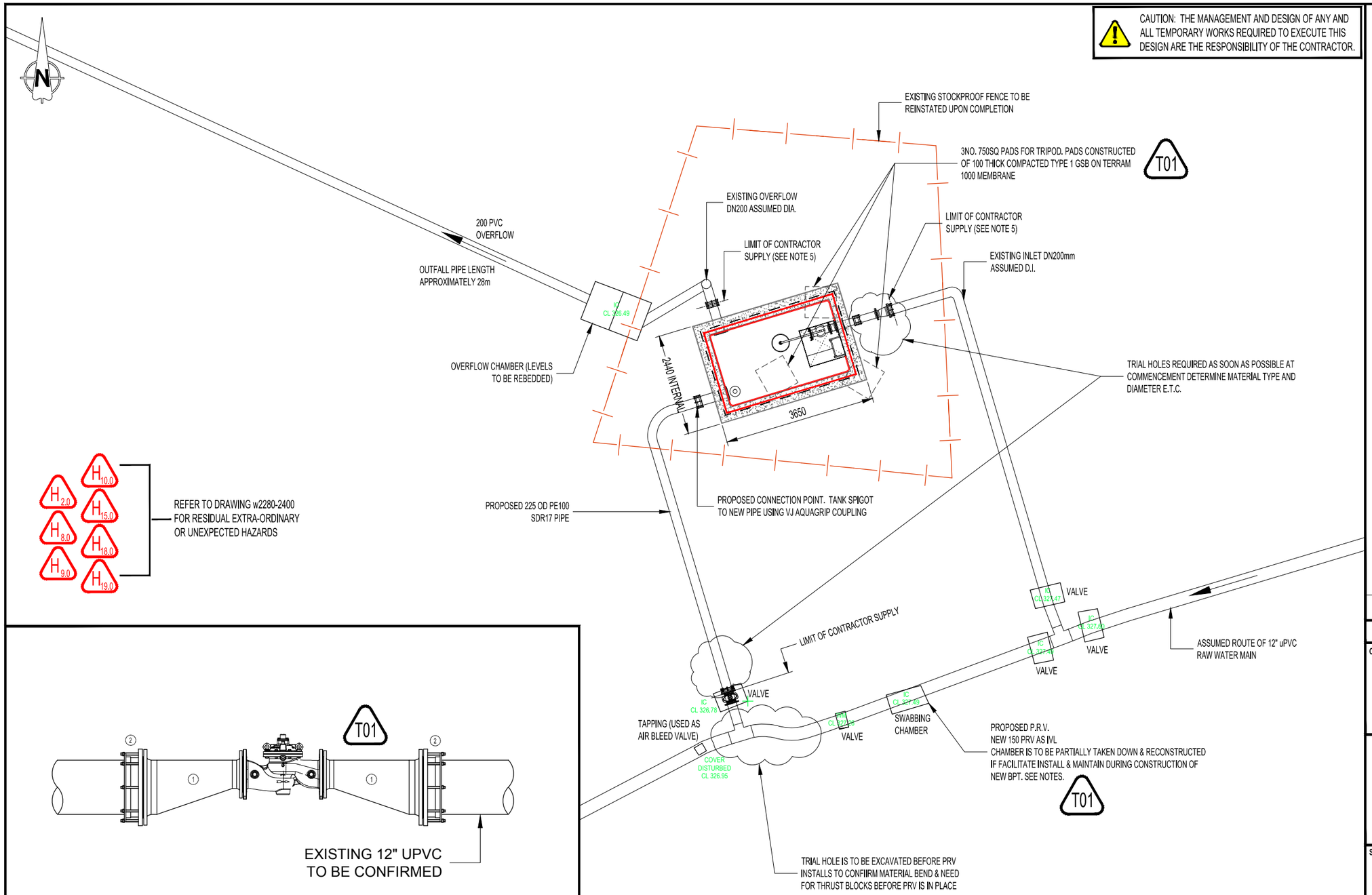
FIGURE 03

Reproduction of DCWW Drawing No.w2280-2103, detailing the Proposed GA Plan.

CAUTION: THE MANAGEMENT AND DESIGN OF ANY AND ALL TEMPORARY WORKS REQUIRED TO EXECUTE THIS DESIGN ARE THE RESPONSIBILITY OF THE CONTRACTOR.

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.
2. TRIAL HOLES ARE REQUIRED AT COMMENCEMENT ON SITE TO CONFIRM TYPE OF MATERIAL, DEPTH & DIRECTION PARTICULAR DOWNSTREAM OF THE PRV IN CASE THRUST BLOCKS ARE REQUIRED PRIOR TO PRV INSERTION.
3. PRV IS A TEMPORARY INSTALLATION TO MAINTAIN LIVE FLOW TO TREATMENT WORKS WHEN BPT IS OFF-LINE FOR REFURBISHMENT. TO BE REMOVED AND PIPE REINSTATED UPON CONNECTION OF THE BPT.
4. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH CESWI 7 ['CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (7TH EDITION')] SUPPLEMENTED BY THE 'DCWW CIVIL ENGINEERING SPECIFICATION CS501A'.
5. CONTRACTOR TO EXTEND NEW CONNECTION PIPEWORK AS SUFFICIENT TO ACHIEVE ALIGNMENT WITH EXISTING PIPES.



SCALE 1 : 100

m 1 0 10 m

SCHEDULE OF FITTINGS		
REF.	DESCRIPTION	No.
1	D300 TO D150 DF ECCENTRIC TAPER NP16	1
2	DN300 VSFA TO SUIT EXISTING PIPE (TO BE CONFIRMED PRIOR TO ORDER)	1
3	IVL 150mm PRV. AS QUOTE REFERENCE. CAS/001317/DPRV. BY INDUSTRIAL VALVE LTD. www.industrialvalve.co.uk	1

PRV INSERT DETAIL

SCALE 1 : 25

m 1 0 1m

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
T01	19-08-16	PRV INSERT AND TRIPOD PADS ADDED	DRD	KJP	TM
T00	18-06-16	TENDER ISSUE	DRD	KJP	PMJ

CLIENT

Dŵr Cymru Welsh Water

Waterco consultants

Waterco Ltd., Eden Court, Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220 www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

PROPOSED GA PLAN

STATUS

TENDER

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
DRD	KJP	PMJ	1 : 100 / A3

CLIENT REFERENCE	DATE
-	18/06/2016

DRAWING NO.	REV
w2280-2103	T01

FIGURE 04

Location map detailing information within the regional Historic Environment Record and the general watching brief area. Based on Ordnance Survey 1:10000 County Series (Sheet SH62). Scale: 1:4500@A4. Crown Copyright. All Rights Reserved. License number AL100020895.

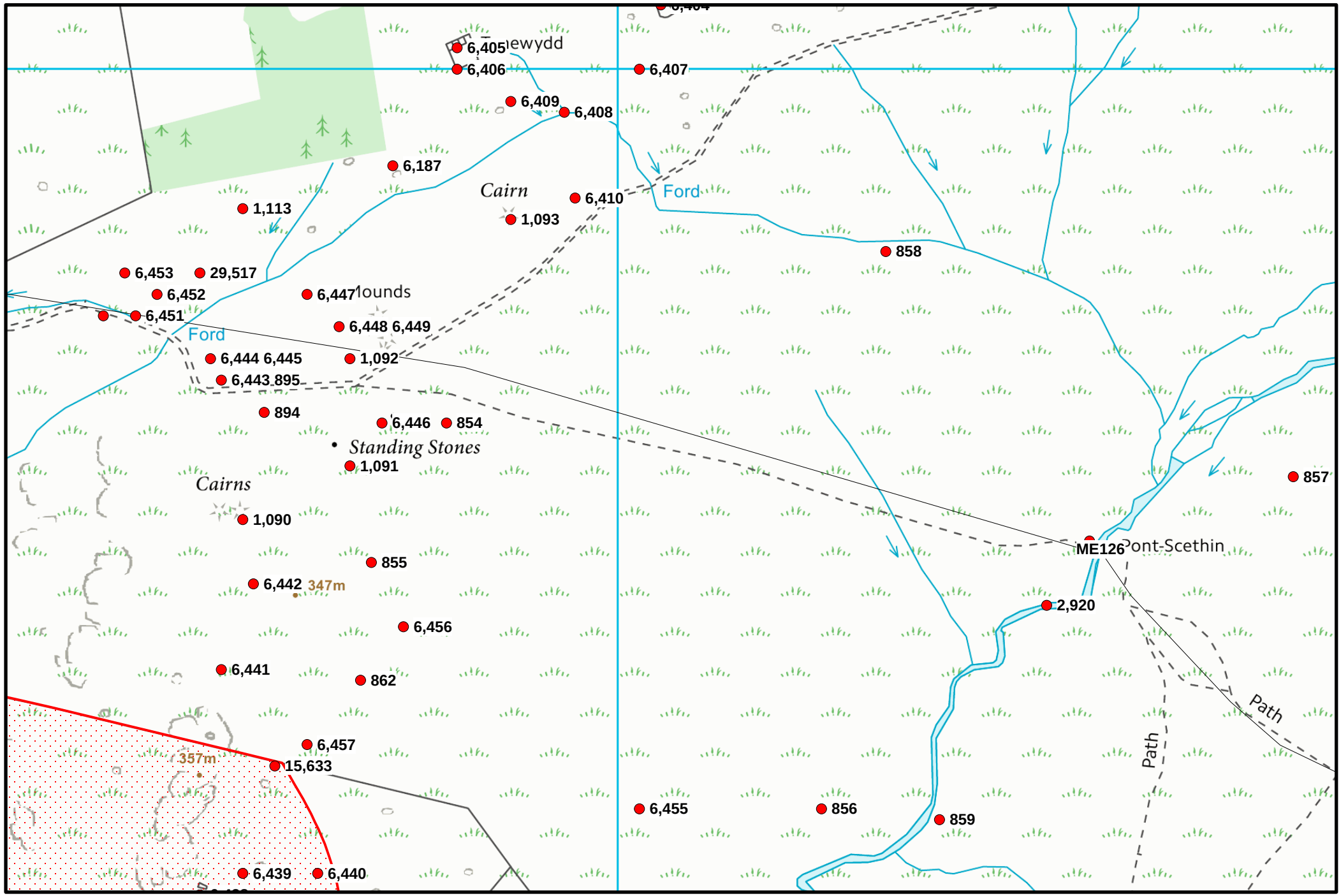


FIGURE 04: Location map detailing information within the regional Historic Environment Record and the general watching brief area.
Based on Ordnance Survey 1:10000 County Series (Sheet SH62). Scale: 1:4500@A4. Crown Copyright. All Rights Reserved. License number AL100020895.

Plate 01: Access route from road to site marked out with stakes. View from the north west (archive reference number: G2522_34).

Plate 02: View from the south east along the access route prior to machine tracking over (archive reference number: G2522_38).

Plate 03: View to north west along access route after bog mats have been lifted (archive reference number: G2522_46).

Plate 04: Working shot showing machine bringing equipment forward. View from the south east (archive reference number: G2522_50).

Plate 05: View from the north west along the access track to tank area (archive reference number: G2522_51).

Plate 06: Working shot of excavation of land drain. View from the south east (archive reference number: G2522_54).

Plate 07: Compound area for stores viewed from the south west (archive reference number: G2522_63).

Plate 08: View to south east showing temporary access route after bog mats were removed (archive reference number: G2522_68).

Plate 09: View to the north west along the route of the temporary track before the bog mats were laid down (archive reference number: G2522_69).

Plate 10: View to the south east along the temporary route after the bog mats were removed (archive reference number: G2522_71).

APPENDIX I

Reproduction of Gwynedd Archaeological Trust project design for archaeological watching brief, April 2017

EITHINFYNYDD DCWW (G2522)

PROJECT DESIGN FOR ARCHAEOLOGICAL WATCHING BRIEF

Prepared for

O'Connor Utilities Ltd

MAY 2017

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	**Printed Name**	**Signature**	**Date**
Originated by	Document Author			4/5/17
Reviewed by	Document Reviewer	JOHN ROBERTS		04/05/17
Approved by	Principal Archaeologist	JOHN ROBERTS		04/05/17

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

EITHINFYNYDD DCWW

PROJECT DESIGN FOR ARCHAEOLOGICAL WATCHING BRIEF

Prepared for *O'Connor Utilities Ltd*, January 2017

CONTENTS

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *O'Connor Utilities Ltd* on behalf of DCWW to prepare a project design for an archaeological watching brief during the groundworks associated with the replacement of a plastic Break Pressure Tank (BPT) on the raw water main between Llŷn Bodlyn Reservoir and the Eithinfynydd Water Treatment Works (Figure 01) The BPT is located to the south east of Afon Ysgethin, Dyffryn Ardudwy, Gwynedd (NGR SH63522353; Figure 01) in close proximity to two known archaeological features: a trackway (Primary Reference Number (PRN) 3867) which leads to Pont Scethin (Scheduled Monument Me 126), both of which will be avoided during the works. It is currently proposed that a temporary access track to the site will be installed using bog mats, as detailed on DCWW Drawing No. w2280-2001 (Figure 02), but this may be subject to change, with alternative route to the south used. The works will include the replacement of pipework, connections to the existing pipework, and the excavation of a trench for a land drain associated with the replacement of a PRV valve, as detailed in DCWW Drawing No.w2280-2103 (Figure 03). An archaeologist will be present to monitor the access and egress routes for the plant and supplies to the site, during the laying of the bog mats for the temporary road from the track to the site, in the working area around the BPT, and during any intrusive groundwork.

The work is to be undertaken by *O'Connor Utilities Ltd.* and will commence on the 08/05/2017, and is scheduled for four weeks.

The watching brief will be completed in accordance with the following guidance:

- Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 2014);
- Historic England, 2004 Historic England. Human Bones from Archaeological Sites. Guidelines for producing assessment documents and analytical reports;
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015); and

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

The watching brief will be monitored by the Gwynedd Archaeological Planning Services (GAPS); the content of this design and all subsequent reporting by GAT must be approved by GAPS prior to final issue.

Gwynedd Archaeological Trust is certified to ISO 9001:2008 and ISO 14001:2004 (Cert. No. 74180/A/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

The scheme lies within a registered landscape of outstanding historic interest (GW2), described as ‘a large, exceptionally archaeologically rich and well-studied landscape, containing extensive relict evidence of recurrent land use and settlement from prehistoric to recent times’ (*Register of landscapes of outstanding historic interest in Wales*, (Cadw/CCW 1998).

There are many known archaeological features in the surrounding area dating from the Prehistoric through to the Roman and Medieval periods, including Neolithic chambered tombs, Bronze Age cairns and roundhouses, Iron Age Hillforts and field systems associated with settlement and land use from the Bronze Age through to the medieval times.

There are several Scheduled Monuments in the area: Pont Scethin (Me 126) is a stone bridge adjacent to the work area, and Craig Y Dinas, an Iron Age Hillfort (Me 020) approximately one kilometre to the south west are shown on the location map (Figure 04).

Although there are no visible archaeological remains within the work area, there is a potential for buried archaeological features within the area. During work carried out in 2011/2012, several previously unknown archaeological sites were identified during the movement of machinery between Llyn Bodlyn and Pont Scethin (GAT project G2099).

3 METHODOLOGY

3.1 Watching Brief

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

An archaeological watching brief can divided into four categories:

- comprehensive (present during all ground disturbance)
- intensive (present during sensitive ground disturbance)
- intermittent (viewing the trenches after machining)
- partial (as and when seems appropriate).

For this scheme, the archaeological watching brief will be completed on an intensive basis during groundworks, specifically monitoring the excavation of all soil horizons as far as the glacial horizon or an archaeological horizon, whichever is encountered first. It is currently expected that 1No project archaeologist will be in attendance.

O'Connor Utilities Ltd. have prepared a method statement for the scheme (Appendix III), GAT fieldwork methodology is discussed in para. 3.2.

3.2 Fieldwork Methodology

- During the watching brief, all attendances and identified features will be recorded using GAT watching brief pro-formas (Appendix II);

- Photographic images will be taken using a digital SLR (Nikon D3000) camera set to maximum resolution (3008 × 2000 6.1 effective megapixels) in RAW format and will be converted to TIFF and JPEG format for archiving using Adobe Photoshop; a photographic record will maintained on site using GAT pro-formas (Appendix I) and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. Photographic images will be archived in TIFF format; the archive numbering system will start from **G2522_001**. A photographic ID board will be used during watching brief to record site code, date, image orientation and any relevant context numbers. Photographic images will also be taken for each location prior to excavation along with general shots of the area.

- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey;

- Any archaeological features/deposits/structures encountered will be manually cleaned and examined to determine extent, function, date and relationship to adjacent features. If encountered, the following minimum strategy will initially apply: 50% sample of each sub-circular feature, 10% sample of each linear feature. *In the event of the identification of extensive/complex remains (e.g. burials or structures), additional time, resourcing and costs may be required for GAT to complete an appropriate programme of works;*

- Any required sections and detailed elevations to be drawn at a minimum 1:10 scale using GAT A4 or A2 pro-forma permatrace;

- Any required plans to be at a minimum 1:20 scale. Plans will be drawn on GAT A4 or A2 pro-forma permatrace;

- Should dateable artefacts, human remains and/or ecofacts be recovered, an **interim report** will be submitted summarising the results, along with an assessment of potential for analysis post-excavation project design (in line with the MAP2 process). *To undertake a post-excavation programme of works, additional time, resourcing and costs will be required.*

3.3 Human Remains

If any human remains identified are to be excavated, and cannot be preserved in situ this will take place under appropriate regulations and with due regard for health and safety issues. In order to excavate human remains, a Ministry of Justice licence is required under Section *25* of the Burials Act 1857 for the removal of any body or remains of any body from any place of burial. In accordance with the Ministry of Justice licence, recovered remains will be reburied once the investigation and/or assessment/analysis are complete; the remains should be reburied inside the church as close as practical to their original location.

Non-fragmented skeletal remains will be excavated using wooden tools and collected and stored in polyethylene bags (with appropriate references for context, grave number, et al) and placed in a lidded cardboard archive box (note: separate boxes for each grave) and stored in a suitable manner within GAT premises. If significant quantities of human remains are encountered, a human osteologist should be contacted and appointed to advise the team during the fieldwork. The osteologist will be an external appointment (Lucy Whittingham | Project Manager (post-excavation) | AOC Archaeology | tel: 0208 843 7380 | email: lucy.whittingham@aocarchaeology.com), who will assist in devising the excavation, recording and sampling strategy for features containing human remains. The osteologist should also help to ensure that adequate post-excavation processing of human remains is carried out so that the material is in a fit state for assessment during the post-excavation stage. For inhumations, this will involve washing, drying, marking and packing.

If human remains are recovered that are deemed suitable for further assessment/analysis, this will be completed in accordance with the osteologist's requirements and with *Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports* (Historic England, 2004).

3.4 Ecofacts

Due to the existing ground conditions it is likely that waterlogged/organic deposits will be encountered, including peat deposits. Bulk samples will not be taken by GAT from any waterlogged/organic deposits/peat deposits, but the GAT archaeologist will monitor and record the depth and context of the deposit or deposits. Based on initial results and potential, e.g., an extensive depth of peat, recourse may be made to a specialist (via Lucy Whittingham | Project Manager (post-excavation) | AOC Archaeology | tel: 0208 843 7380 | email: lucy.whittingham@aocarchaeology.com) for advice on a palaeoenvironmental assessment and analysis strategy.

Should any archaeological features be identified that include sealed deposits deemed suitable for dating, samples will be taken of not less than 40 litres for bulk samples (or 100% if the feature is smaller). The sampling strategy will be undertaken in accordance with the principles set out in *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (Historic England, 2011).

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

3.5 Artefacts

Diagnostic artefacts will be retained for further examination and identification. Pottery sherds of 19th and 20th century date will be examined on site and the context from which they were retrieved noted but the sherds will not be retained. The artefacts will be treated according to guidelines issued by the UK Institute of Conservation (Watkinson and Neal 2001) in particular the advice provided within *First Aid for Finds* (Rescue 1999) and Historic England.

Any waterlogged artefacts (e.g. wood or leather) that are to be recovered for post-excavation assessment and analysis will be processed in accordance with *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage, 2011) and specifically in accordance with Brunning and Watson (2010) for waterlogged wood and English Heritage (1995) for waterlogged leather. In such cases an external specialist will be contacted to agree an appropriate sampling and recovery strategy via Lucy Whittingham | Project Manager (post-excavation) | AOC Archaeology | tel: 0208 843 7380 | email: lucy.whittingham@aocarchaeology.com).

All finds are the property of the landowner; however, it is Trust policy to recommend that all finds are donated to an appropriate museum, (in this case STORIEL, Ffordd Gwynedd, Bangor, Gwynedd LL57 1DT), where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff.

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

The National Museums and Galleries of Wales will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled.

GAT will contact the landowner (via O'Connor Utilities Ltd/DCWW) for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum

(STORIEL, Ffordd Gwynedd, Bangor, Gwynedd LL57 1DT). A GAT produced pro-forma will be issued to the landowner where they are given the option to donate the finds or to record that they want them returning to them once analysis and assessment has been completed. If artefacts are transferred to STORIEL, this must be in accordance with their current guidelines.

3.6 Fieldwork Archiving

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

1. Pro-formas: all cross referenced and complete;
2. Photographic Metadata: completed in *Microsoft Access* and cross-referenced with all pro-formas;
3. Survey data: downloaded using a Computer Aided Design package;
4. Sections: all cross referenced and complete (to include matrices);
5. Plans: all cross referenced and complete;
6. Artefacts (if relevant): quantified and identified; register completed;
7. Ecofacts (if relevant): quantified and register completed;
8. Context register (if relevant): quantified and register completed;
9. Site Matrix.

All data will be processed, final illustrations will be compiled and a report will be produced which will detail and synthesise the results.

4 REPORTING

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

1. Non-technical summary
2. Introduction
3. Background
4. Methods and techniques, including details and location of project archive
5. Watching Brief Results
6. Summary and conclusions (including any further recommendations – if relevant)
7. List of sources consulted.
8. Appendix I – approved GAT project specification

Illustrations will include plans of the location, site plans and elevations. Historical maps, when appropriate and if copyright permissions allow, will be included. A draft copy of the report will be sent to the client prior to production of the final report.

5 DISSEMINATION AND ARCHIVING

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. The archaeological mitigation outlined in this project specification will commence in May 2017. A draft report (or interim report) will be submitted within one month of fieldwork completion (end date tbc); a final report will be submitted to the Historic Environment within six months of submitting the draft report (submission date tbc).

The following dissemination will apply:

- A digital report will be provided to the client and GAPS (draft report then final report);
- A paper report plus a digital report will be provided to the regional Historic Environment Record, Gwynedd Archaeological Trust; this will be submitted within six months of report completion (final report only);
- 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);
- Submission of digital information to the Royal Commission on the Ancient and Historical Monuments of Wales shall be undertaken in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. Digital information will include the photographic archive and associated metadata;
- Dependent on the results of the watching brief a summary note or a specific article will be included in the Council for British Archaeology Wales publication *Archaeology in Wales*. This shall be agreed with GAPS, and client in advance of publication along with all publication content. GAPS involvement in the project will be acknowledged therein.

5.1 Historic Environment Record

In line with the regional Historic Environment Record (HER) requirements, the HER must be contacted at the onset of the project to ensure that any data arising is formatted in a manner suitable for accession to the HER. At the onset, the HER Enquiry Form provided by the HER, will be completed and submitted.

6 PERSONNEL

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section and attended by a project archaeologist. The project archaeologist will be responsible for the watching brief, including all field management duties, e.g., GAPS liaison, main contractor liaison, osteologist or palaeoenvironmentalist liaison (if relevant). The project archaeologist will be responsible for completing the watching brief record sheets as well as all other on site pro-formas and the fieldwork archive itemised in para. 3.9. The project archaeologist will also be responsible for submitting a draft final report (or interim report) for project manager review and approval. The report will then be submitted as per the arrangements defined in para. 5.

7 HEALTH AND SAFETY

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

8 INSURANCE

Public 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/000405

EXPIRY DATE 22/06/2017

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 24765101CHC/000405

EXPIRY DATE 22/06/2017

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

HU PI 9129989/1208

EXPIRY DATE 23/07/2017

9 SOURCES CONSULTED

Brunning, R and Watson, J 2010 *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (3rd ed). Swindon: English Heritage

DCWW Drawing No. w2280-0001. DCWW Drawing No.w2280-2001, DCWW Drawing No.w2280-2103. DCWW Drawing No. w2280-2002.

English Heritage, 1991, *Management of Archaeological Projects*

English Heritage 1995 *Guidelines for the Care of Waterlogged Archaeological Leather . Scientific and Technical Guidelines 4*. London: English Heritage

Historic England, 2004. *Human Bones from Archaeological Sites Guidelines for producing assessment documents and analytical reports*

Historic England, 2011, *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation*

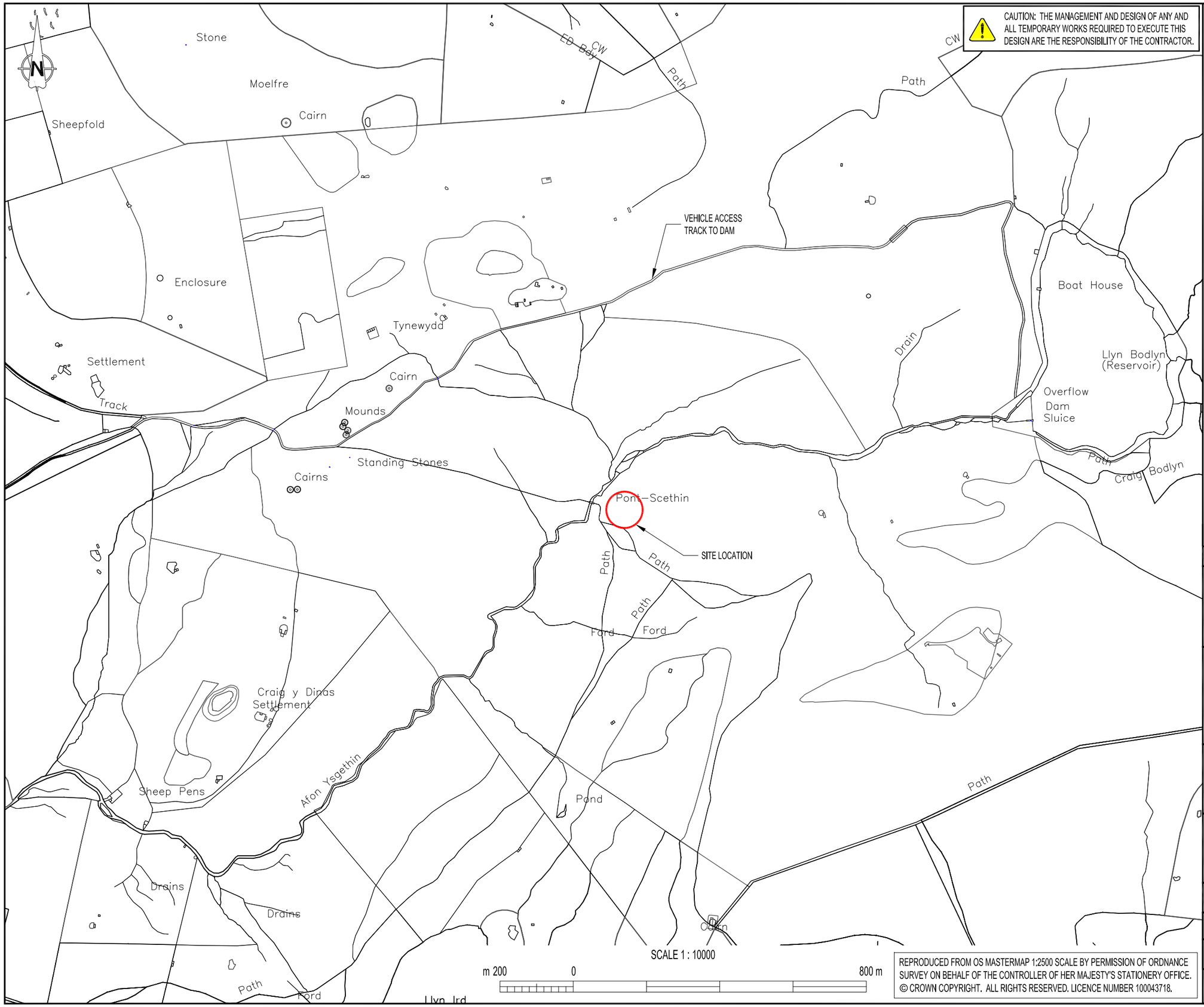
Historic England, 2015, *Management of Research Projects in the Historic Environment (MoRPHE)*.

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

Standard and Guidance for an archaeological watching brief (Chartered Institute for Archaeologists, 2014).

FIGURE 01

Location map detailing watching brief area. Based on DCWW Drawing No. w2280-0001



NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.

KEY

SITE LOCATION

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
I00	17-06-16	FIRST ISSUE	VJ	DRD	KJP

CLIENT

Dŵr Cymru
Welsh Water

Waterco Ltd., Eden Court,
Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220
www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

LOCATION PLAN

STATUS

INFORMATION

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
VJ	DRD	KJP	1 : 10000 / A3

CLIENT REFERENCE	DATE
-	17/06/2016

DRAWING NO.	REV
w2280-0001	I00

FIGURE 02

Reproduction of DCWW Drawing No.w2280-2001, detailing the watching brief area.

CAUTION: THE MANAGEMENT AND DESIGN OF ANY AND ALL TEMPORARY WORKS REQUIRED TO EXECUTE THIS DESIGN ARE THE RESPONSIBILITY OF THE CONTRACTOR.

Enclosure

Tynewydd

Cairn

Mounds

LOADING AREA / PARKING. CONTRACTOR TO ADVISE IF LARGER AREA REQUIRED ASSUME 10m x 40m, FENCED, **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

MACHINE ACCESS ROUTE - TO BE WALKED IN WITH MATS "FROG HOPPED" WITH MACHINE TO MINIMISE DAMAGE TO SURFACE.

ARCHAEOLOGIST TO BE PRESENT TO DIRECT ROUTE TO AVOID POSSIBLE HISTORIC FEATURES, AND "ONE JOURNEY IN AND ONE OUT"

NO VEHICLES OVER BRIDGE

Standing Stones

Cairns

HELICOPTER LOADING AREA APPROX 20m x 20m (OR AS AGREED WITH PROVIDER) **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

PEDESTRIAN ACCESS ROUTE - OR QUAD IF SUITABLE SURFACE EITHER LIGHT TRACK MATS OR UNDERTAKE FOOTPATH REMODELLING WITH LOCAL HARDCORE ON GEO-TEXTILE.

ARCHAEOLOGIST TO BE PRESENT

APPROX LENGTH 710m TO STREAM 80m OTHER SIDE

NO 4WD OR DUMPERS ALLOWED

Pont Scethin

12IN. uPVC 1974 ()

WORKING AREA TO BE AS SMALL AS PRACTICAL TO UNDERTAKE THE WORKS - **ARCHAEOLOGIST TO BE PRESENT** WHEN ESTABLISHING AND UTILISE BOG MATS TO PREVENT SURFACE DAMAGE.

Path

Path

Ford

Ford

Craig y Dinas

Settlement

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
T01	19-06-16	REVISED HAZARDS	DRD	KJP	TM
T00	17-06-16	TENDER ISSUE	VJ	DRD	KJP

CLIENT

Dŵr Cymru Welsh Water

Waterco consultants

Waterco Ltd., Eden Court, Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220 www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

ACCESS AND WORKING AREA PLAN

STATUS

TENDER

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
VJ	DRD	KJP	N.T.S.

CLIENT REFERENCE	DATE
-	17/06/2016

DRAWING NO.	REV
w2280-2001	T01

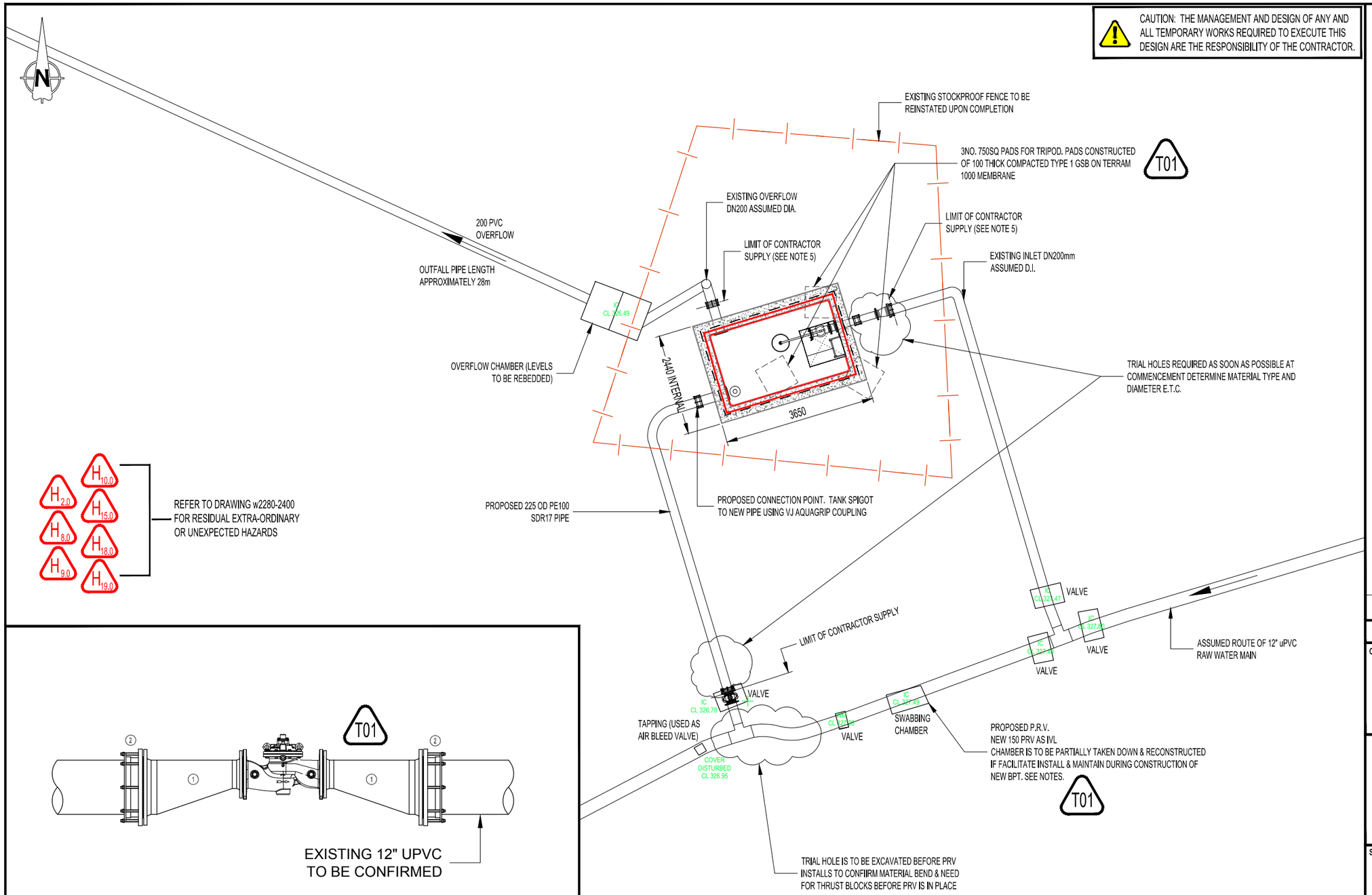
FIGURE 03

Reproduction of DCWW Drawing No.w2280-2103, detailing the Proposed GA Plan.

CAUTION: THE MANAGEMENT AND DESIGN OF ANY AND ALL TEMPORARY WORKS REQUIRED TO EXECUTE THIS DESIGN ARE THE RESPONSIBILITY OF THE CONTRACTOR.

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.
2. TRIAL HOLES ARE REQUIRED AT COMMENCEMENT ON SITE TO CONFIRM TYPE OF MATERIAL, DEPTH & DIRECTION PARTICULAR DOWNSTREAM OF THE PRV IN CASE THRUST BLOCKS ARE REQUIRED PRIOR TO PRV INSERTION.
3. PRV IS A TEMPORARY INSTALLATION TO MAINTAIN LIVE FLOW TO TREATMENT WORKS WHEN BPT IS OFF-LINE FOR REFURBISHMENT. TO BE REMOVED AND PIPE REINSTATED UPON CONNECTION OF THE BPT.
4. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH CESWI 7 ['CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (7TH EDITION')] SUPPLEMENTED BY THE 'DCWW CIVIL ENGINEERING SPECIFICATION CS501A'.
5. CONTRACTOR TO EXTEND NEW CONNECTION PIPEWORK AS SUFFICIENT TO ACHIEVE ALIGNMENT WITH EXISTING PIPES.



SCALE 1 : 100

m 1 0 10 m

SCHEDULE OF FITTINGS		
REF.	DESCRIPTION	No.
1	D300 TO D150 DF ECCENTRIC TAPER NP16	1
2	DN300 VSFA TO SUIT EXISTING PIPE (TO BE CONFIRMED PRIOR TO ORDER)	1
3	IVL 150mm PRV. AS QUOTE REFERENCE. CAS/001317/DPRV. BY INDUSTRIAL VALVE LTD. www.industrialvalve.co.uk	1

PRV INSERT DETAIL

SCALE 1 : 25

m 1 0 1m

REFERENCES

GRID REFERENCE: 263520 , 323530

REV.	DATE	DESCRIPTION	DRAWN	CHK'D	APP'D
T01	19-08-16	PRV INSERT AND TRIPOD PADS ADDED	DRD	KJP	TM
T00	18-06-16	TENDER ISSUE	DRD	KJP	PMJ

CLIENT

Dŵr Cymru Welsh Water

Waterco consultants

Waterco Ltd., Eden Court, Lon Parcwr Business Park, Ruthin LL15 1NJ
tel 01824 702220 www.waterco.co.uk

SCHEME

EITHINFYNYDD RAW WATER

TITLE

PROPOSED GA PLAN

STATUS

TENDER

DRAWN (ORIG.)	CHECKED	APPROVED	SCALE / SHEET SIZE
DRD	KJP	PMJ	1 : 100 / A3

CLIENT REFERENCE	DATE
-	18/06/2016

DRAWING NO.	REV
w2280-2103	T01

FIGURE 04

Location map detailing watching brief area. Based on Ordnance Survey 1:10000 County Series (Sheet SH62). Scale: 1:4500@A4. Crown Copyright. All Rights Reserved. License number AL100020895.

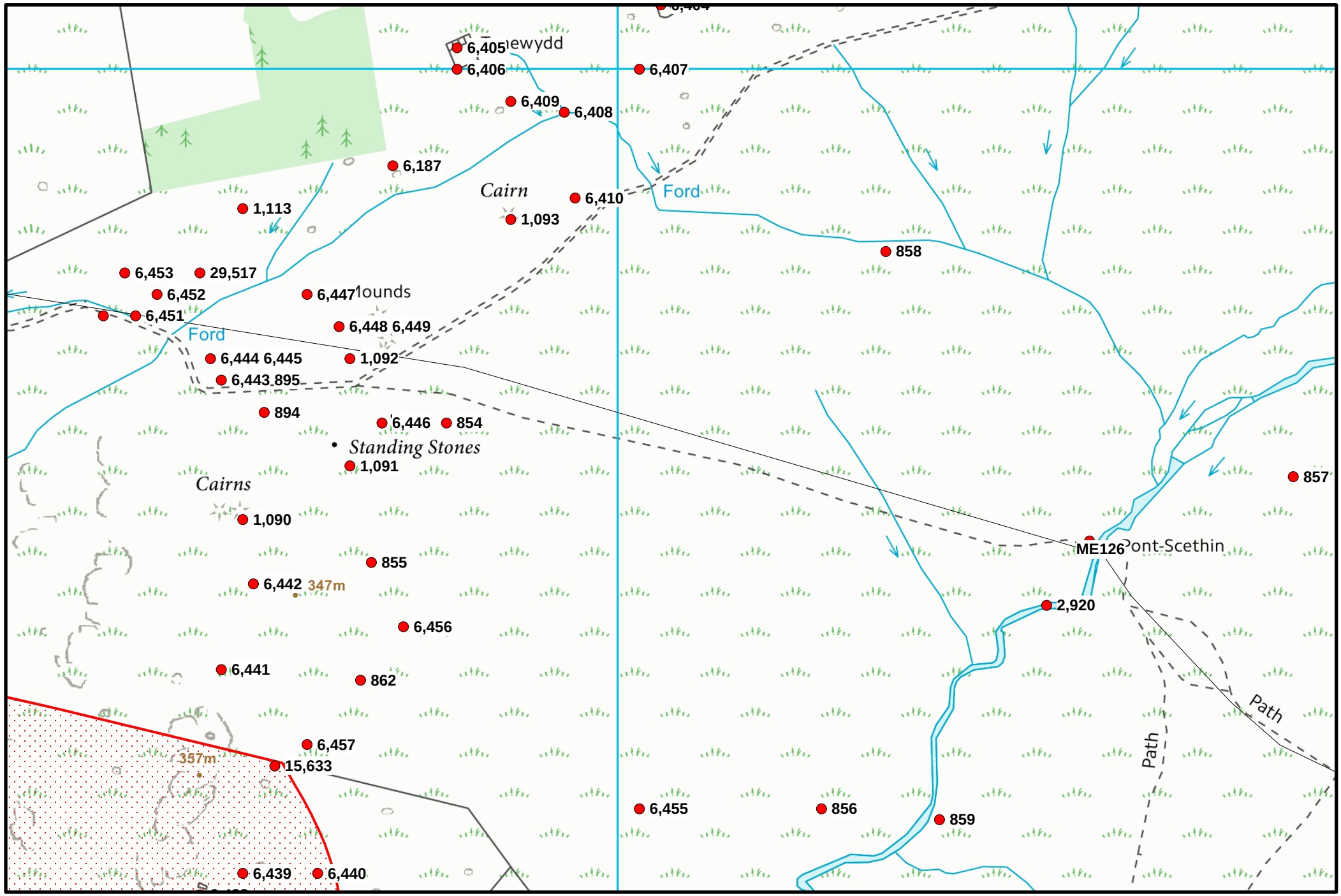


FIGURE 04: Location map detailing watching brief area. Based on Ordnance Survey 1:10000 County Series (Sheet SH62). Scale: 1:4500@A4.

APPENDIX I

Gwynedd Archaeological Trust photographic metadata pro-forma

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Digital Photographic Record

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

Project Name:			Project Number:				
Photo No.	**Trench**	**Description**	**Contexts**	**Scales**	**View From**	**Initials**	**Date**

APPENDIX II

Gwynedd Archaeological Trust watching brief pro-forma

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

APPENDIX III

O’Connor Utilities Limited Method Statement

O'CONNOR UTILITIES LTD

Eithynfynydd Break Pressure Tank Replacement

METHOD STATEMENT & RISK ASSESSMENT

Reference:	OCU/ RAMS

Date of 1st Issue:	27/04/17

Produced by:	Rachel Watkinson		Designation:	HSEQ

Checked by:	Mike O' Farrell		Designation:	Project Manager

Authorised by:	Neil Jones		Designation	DCWW

REVISION HISTORY

Rev	Date	Description	Approved
1	27/04/16	First issue	

REGISTERING, AUTHORISING & IDENTIFYING AMENDMENTS

Any change in working methods, conditions or additional risks identified whilst work is in progress will need to be brought to the attention of the Site Manager who will need to discuss the implications with client. Where applicable, a request to amend the Method Statement should be made to its' Originator. Any revisions will then need to be approved and communicated back to copy holders.

Amendments should be clearly identified within the text by a mark in the page border and a brief description above.

CONTENTS

1.0 DESCRIPTION OF WORKS

The purpose of the works is to replace a plastic break pressure tank on the raw water main from the Llyn Bodlyn Resevoir that supplies the Eithynfynyff WTW. An external load that has resulted in the failure of a panel flange has structurally compromised the old tank; temporary propping currently supports the roof. The base of the tank and the float valves also fail on a regular basis.
The works comprise of the installation of a prefabricated polypropylene tank within the existing plastic tank and surrounding it in concrete. It also includes replacement pipework, connections to the existing pipework, and provision of a new float valve and ancillaries.

2.0 ROLES & RESPONSIBILITIES

The Site Manager shall be responsible for monitoring compliance to ensure that all works are carried out to statutory requirements, standards and rules and that risk assessment control measures are implemented and method statements followed by the work teams.

It is the responsibility of all persons working or visiting the site to ensure that:

They are aware of the site Hazards and Control Measures.
They work in a safe manner that does not endanger themselves or others who may be affected by their actions.
They are aware of the Site Rules
Raise awareness of any unsafe acts or unsafe conditions on site to Site Management.
Report Accidents, Incidents & Near Misses
Participate in any Safety Initiatives
Participate in Safety Meetings
Participate in any relevant training

3.0 METHOD OF WORK

Detailed information in regards to construction is included on Client's Construction Drawings:

Drawing Number	**Drawing Title**	**Designer**
W2280-2001	Access and working area plan	Waterco
W2280-2002	Existing GA plan	Waterco
W2280-2101	New break pressure tank	Waterco
W2280-2102	Proposed downstream connection detail	Waterco
W2280-2103	Proposed GA plan	

Specific Tasks will include:

- Site set up and mobilisation
- Transporting excavator, tracked dumper and temporary trackway to site
- Laying temporary trackway from stream to site location
- Shut off and Installation of PRV
- Remove roof of tank and install mesh and new tank
- Install concrete around tank utilising a helicopter
- Valve and pipework installations
- Backfill and reinstatement
- Testing and Commissioning
- Site clearance and de-mobilisation

A daily site specific risk assessment and brief will be carried out by the Site Foreman and communicated to all the work teams and any person visiting the work area each morning to ensure any hazards for the days activities and work environment have been addressed.

A programme of works activities has been prepared for this scheme

Mandatory PPE for all Sites is as follows:
Safety Boots,
Hi visibility jacket or vest
Hard Hat,
Gloves.

(Note- High impact safety goggles must be worn when cutting or grinding operations are being undertaken, safety glasses are not suitable for this operation)

All of the above must be worn at all times when on site.

Site Set Up

On Arrival to site signage and guarding will be erected as described in the Code of practice – safety at street works and road works, by trained and competent operatives only (NRSWA trained operatives)

The welfare unit will be established halfway up the trackway on the left hand side and will be secured using double clipped heras style fencing.

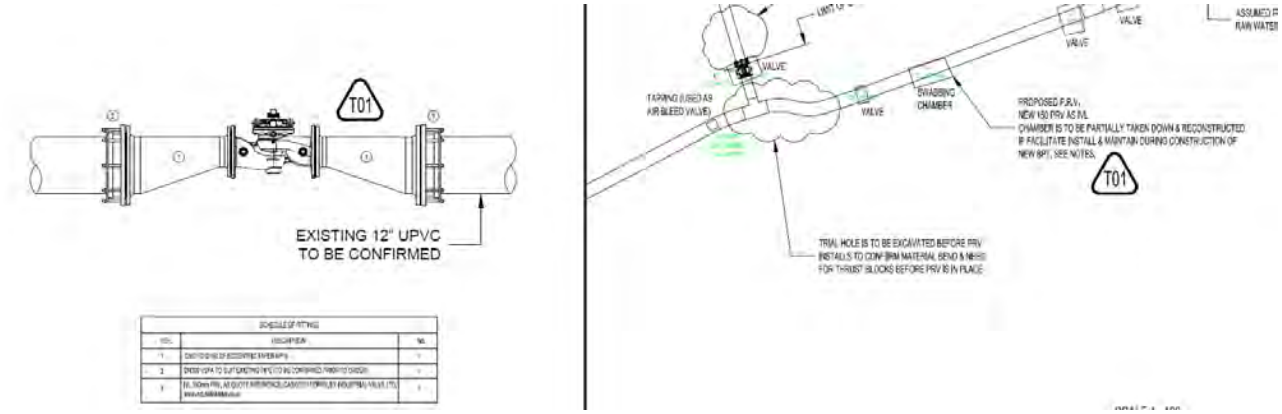
Material and plant will be mainly stored at the same location in a 20 foot container.

Access and laying bogmats

The work areas is accessible via a trackway between Llanddwywe village and Llyn Bodlyn resevoir. The break pressure tank (site location) is then 700 metres off the trackway. Access to the site is parallel to a Roman road, through a river, and then through some wet ground. The wet bog ground will be covered in temporary trackway to allow access to the site. No access is permitted on the Roman road or the Roman Bridge by vehicles or machines. The 8 tonne excavator and the tracked dumper will travel bewtween the trackway and the river on the right hand side of the Roman Road on an existing trackway used by farmers and quad bike. Once through the river a temporary trackway will be installed to gain access to the

break pressure tank. The temporary trackway will be transported from the access track to the site location by utilising a 5 tonne tracked dumper. The trackway will be laid on the wet ground by utilising an 8 tonne excavator. Once the trackway is laid to the break pressure tank the excavator and dumper can gain access to the site location.
An archaeologist is to be present whilst gaining access to the site and laying the bog mats. The archaeologist will be present for any intrusive works on the scheme.

Excavation and installion of the PRV



A shut off will be required prior to installing the PRV. A land drain is to be dug and a roll of perforated pipe to be installed to alleviate the water ingress into the excavation at the PRV location. Once the land drain is installed, excavations around the pipework can take place. A 3 inch pump will also be available on site. A shut off will be required to gain access to the pipework. The existing pipework will be drained down before the pipes are cut into. Once the PRV is installed the main will be made live and the old break pressure tank will be isolated and safe to work on.

Information on all known existing utilities and underground services will be marked on site, all statutory authorities will have been contacted for copies of their drawings which will identify the position of each of their apparatus – it must be noted that the drawings are indicative only, and actual positions must be identified precisely on site. Multiple sweeps of the area are to be carried out with a calibrated Cable Avoidance Tool and identified locations marked out with marker spray paint / marker posts.
NOTE: Utility drawings shall only be used for guidance and never assumed to be a true record.

Any existing services identified must be exposed by hand excavation prior to mechanical excavation commencing. No mechanical excavation is permitted within 500mm of a known service or within 1m of a HV cable.

There must be a minimum of two people present before any excavation commences.

Checks to plant and equipment will be carried out prior to any excavation and defects reported back to the Site Agent. Defective plant and equipment should then be quarantined to prevent its use until it has been repaired or made safe.

Plant/Vehicles must be parked in a suitable area and keys removed when not in use or unattended.

Trench and Excavation Support

Deeper excavations may require temporary works to support the sides of the excavations.

Excavations require regular assessment as they progress and decisions will be required as to the best method for support and safe access whether it is the use of supports or steps battering back/stepping the trench.

Trench support for deeper trenches are to be designed by a competent person in accordance with GD07, the design will include the length, type and spacing of trench sheets and the number, size, type and positioning of relevant support frames.

Where trench support items are used they are to be checked on delivery to ensure their condition is suitable. The temporary works must be installed by trained and competent persons, in line with the temporary works design, with particular attention to the installation procedure ensuring that the temporary condition of the temporary works is installed as shown on the construction sequence drawings. A written inspection of trench support must be carried out weekly.

All temporary works designs must be forwarded to the CDM coordinator before works commence for approval.

Installation of Tank and Pipework

Once the PRV is operational the existing tank is isolated and safe to work on.
The roof of the existing tank will be removed using an 8 tonne excavator and will be transported back to the compound by the 5 tonne tracked dumper. Any excess water to be pumped out of the existing tank utilising the 3" pump.

The existing inlet into the tank is to remain intact, however an additional valve and hydrant is to be installed before the pipe work enters the new tank. A new section of 225mm pipe with valves and hydrants are to be installed on the outlet from the tank and will be connected onto the existing pipework. This pipework to be installed during the second shut off whilst removing the existing PRV and reinstalling the swabbing chamber.

A single layer of A393 mesh to be installed on floor of existing tank and on the uprights in the space between the new and old tank. The new tank (600kg) will be lifted using the 8 tonne excavator and appropriate lifting chains and shackles into position. Once the new tank is in position the pipework is to be connected and secured into position.

C35 concrete is to be transported to site utilising a helicopter (seperate rams) and small skips. The concrete wagon will park on the loading bay area of the trackway where it will fill each skip/container of concrete and will be transported to site via helicopter. The helicopter will hover over the tank where the concrete will be directed into the cavity between the old tank and the new tank. This will take several trips to fill the cavity between both tanks.

To avoid the tank rising/floating whilst the concrete is being installed, the tank needs to be partially filled with water to weight it down. The tank is to be chlorinated before water is fed into the tank. The tank will be constantly filled with water whilst the concrete is being installed to avoid any movement of the tank. No poker to be used on the concrete works, as this may damage the tank or encourage movement.

Once the concrete has set and the tank is secure an additional shut off will be required to remove the PRV and reinstall the swabbing chamber. The flow of water can then be fed through the new break pressure tank. All excavations to be backfilled and a new stockproof ence to be installed around the new tank.

Thrust Blocks

Except where self anchoring joints are used, thrusts from bends and branches in pressure pipelines shall be resisted by concrete thrust blocks cast in contact with undisturbed ground.

All concrete thrust blocks shall be medium workability, cement in accordance with BS EN 12620 and BS 8110 and an aggregate size of 20mm. Thrust blocks shall be allowed to develop sufficient strength before any internal pressure is applied to the pipeline.

Rapid hardening cement shall not be used in concrete for thrust blocks to plastic pipes.

Plastic pipes shall be wrapped with a minimum of 3mm thick layer of protective membrane to BS 6076 before being surrounded in concrete.

Anchorage will not normally be necessary where a fully fusion welded PE pipe system is in place.

Connection of Pipework and Backfill and Reinstatement

Prior to making any connections live appropriate permission must be obtained from DCWW to ensure that the water supply has been either tested as fit for consumption or that properties have been informed to boil their water. Either way STRICTLY NO RECONNECTION IS PERMITTED UNLESS WE HAVE BEEN INFORMED TO DO SO BY DCWW.

Fusion Welding

Works shall be completed in accordance with the O'Connor Utilities Ltd, Fusion Welding Safe Working Methods document, which is appended to this document.

Keep all Electrofusion fittings in the original plastic bag until required.

Do not take an electrofusion control box in to the trench or use in a gaseous area. Where possible the equipment should be placed on a clean, dry base board or ground sheet inside a tent/shelter.

Select compatible pipe and fittings. (check PN & SDR rating marked on fitting and compare with pipe)

Select correct tools and clamps.

Visually check the control box, leads and scraper before use.

Always cut Pipe ends square.

Mark and scrape pipe ends. Do not touch the pipe end or allow surface to get damp or contaminated prior to continuing.

Place prepared pipe in restraining clamp.

Open one end of the fitting bag and check the fitting is clean. Place over the pipe end immediately and push up to the centre stops leaving bag over fitting for temporary protection

Mark the penetration depth

Prepare the second pipe as above and remove the bag from the fitting and push the pipe home.

Mark the depth on the pipe and tighten the restraining clamp.

Check fitting penetration and alignment using previously marked lines on pipe. Rotate fitting to ensure no excessive forces are present.

Where contamination has settled on the pipe after scraping or is observed on the fitting bore prior to assembly then a lint free ‘wet wipe’ pre-impregnated with isopropanol shall be used to remove contamination.

When contamination cannot be removed the fitting or prepared pipe end shall be discarded.

Making the Weld

Check generator and fuel levels. Start Generator and plug in control box input lead into generator output.

Connect control box output leads to the terminals on the fitting.

Check that the weld time on the fitting is the same as the weld time displayed on the control box. For manual fittings check the time marked on the fitting and enter this figure into the control box. For Bar Coded fittings scan the bar code with the barcode scanner.

Press the start button and hold down until the display begins to countdown.

Stand clear of the fitting whilst fusion is in progress.

The weld cycle is complete when the timer reached zero and ‘Cycle finish’ indicator shows.

Joint Checks

Check fusion melt indicators have risen.

Check the insertion marks on the pipe to ensure excessive movement has not occurred.

Check for signs of melt movement outside the confines of the fitting.

Allow weld to cool for the correct time indicated on fitting.

In the case of an unsuccessful weld, cut out the fitting and repeat the whole procedure with a new fitting. Never attempt to carry out a second fusion cycle on any fitting.

Configure and install new Ductile Iron pipework, fittings and valves, Connect fittings and valve arrangements to the network

It may become apparent that DI pipework and valve arrangements are required during the works, if so the following procedure will be followed.

Excavate and expose the main in the working area.

Cut out all necessary existing pipework, fittings, valves and meters.

Pipes, fittings and valves are to be carefully lifted, placed and connected up in accordance with manufacturer's instructions, securely tighten all bolts.

Wrap any required fittings in Denso tape.

When the whole scheme has been completed and the main is recharged and re-commissioned re-inspect all installations for evidence of any leaks and tighten up any bolts to resolve the situation.

Testing and commissioning (including connection of new to the existing main)

When all other pipework and valves have been completed the system should be pressure tested in accordance with DCWW requirements.

Signs should be displayed during testing to identify the Mains are Under Pressure Test.

When this has been completed, the connections to the existing main at each end of the new main can be made in accordance with the specification and detailed drawing.

These connections can only be undertaken with the DCWW Network team who will arrange for isolation of and dealing with the flow while the connections are made.

The new main can then be commissioned.

All excess materials and rubbish to be removed from site whilst demobilising. All bog mats to be removed by the excavator and dumper and the surrounding area to be reinstated to a standard as good as possible.

4.0 WORK SPECIFIC CONTROLS

4.1 Competencies

Plant operators to be accredited in accordance with a nationally recognised competence scheme either NPORS or CPCS and available for inspection at all times.

At least one person must in the Team to be trained in Emergency First Aid.

Site Operatives and Supervisor to be qualified in accordance with Section 67 of the New Roads & Streetworks Act.

Any works in confined spaces should only be undertaken by appropriately trained personnel.

4.2 PPE

The issue and monitoring of PPE shall be the responsibility of the Site Manager.

Site Rules dictate that, safety helmet, safety footwear, hi-vis vest and gloves shall be the minimum standard.

4.3 Health Issue

During the course of construction, the workforce may work in areas where they may come in contact with the Leptospirosis (Weils Disease) virus, all operatives should carry

Leptospirosis (Weils Disease) information cards and they should be aware of the risks, basic precautions such as the points listed below should be followed at all times.

- Any wounds or scratches should be kept clean and covered with waterproof plasters
- Gloves must be worn at all times
- Hands and arms must be washed with soap and hot water before eating or drinking
- Report any flu like symptoms to your GP immediately and show them the Leptospirosis information card.

Any person suffering from jaundice, hepatitis, persistent diarrhea, persistent vomiting, typhoid or has come in to contact with a close friend or family who has typhoid must notify their Supervisor and remain off the Water Network until their GP has confirm that they are fit to work again.

5.0 REFERENCE TO ASSOCIATED INFORMATION

Site construction drawings including all detailed drawings and service location drawings.
All pre construction information supplied with the Tender documents.

OCU Health, Safety, Quality & Environmental Policies, Procedures & Arrangements.
Construction, Design & Management Regulations 2007
Construction Phase Health & Safety Plan
The Programme of Works for the Scheme.

WRc Civil Engineering Spec for the Water Industry 6th Edition
WRc Polyethylene Pipe Systems Manual
WRC and IGN Water Hygiene Requirements and Procedures

OCU Guidance document GD 07 – Shoring
OCU Guidance document GD 08 – Excavators used as Cranes
OCU HDD Operations Fusion Welding Safe Working Methods (HDD OPS 03)

Environment Agency Pollution Prevention Guidelines PPG5 Works and Maintenance in or near wate

6.0 RESOURCES

6.1 Labour / Manpower

Visiting project manager
On Site Manager
4 man site team
Delivery wagon with driver

6.2 Plant & Equipment

8 tonne Excavator
5 tonne tracked excavator
Temporary works equipment (when required)
Stihl saw
Cable location equipment
Appropriate sized ladder

Various small tools
Signs & Barriers
Electrofusion welding equipment

6.3 Materials

Specified pipe bed, haunch and surround materials
Pipes, fittings, valves and meters
Chamber sections, bases, covers, and frames.
Specified reinstatement material
Concrete

7.0 ENVIRONMENTAL ISSUES

These works are within the National Parks and will be closely monitored by Natural Resources Wales. A visiting archaeologist will also be on site for the duration of the works.

7.1 Pollution Prevention

Plant and machinery items are to be checked before use and be switched off when not in use. Drip trays and spill kits to be available on site.

Plant and machinery items are to be fuelled up at designated hard standing area from a bunded and lockable fuel bowser away from grass verges and drains. Spill kits are to be available on site at all times.

All spillages shall be dealt with in accordance with the Pollution Prevention Procedure ENVP-003. Spent absorbent pads / materials used to absorb spillages are to be double bagged and identified as Hazardous Waste.

When working adjacent to the river ensure that all aspects of the Environment Agency Guidelines are followed

8.0 EMERGENCY ARRANGEMENTS

Welfare facilities will be provided in accordance with Schedule 2 of the CDM Regulations. This welfare unit will be located at the left hand side of the trackway.

A 10 person First Aid Kit will be held in the site office.

First aid kits will also be located in all Company vehicles

Welfare facilities are to be kept clean and tidy during and after use.

Site First Aiders:

In the event of any emergency, all operations to cease immediately and shut down all plant to minimise further risk to persons present.

In the event of a UTILITY DAMAGE
Do not put yourself or others at risk.

Do not attempt to repair it.
Only remove plant & equipment from the area if safe to do so.
Secure the area and move away to a safe distance.
Contact your Site Supervisor who will then report it and arrange for the relevant utility to attend the site.

In the event of FIRE
Do not put yourself or others at risk. Raise the alarm with 3 blast of the Air Horn or by shouting "Fire, Fire, Fire" to warn others
Evacuate the area
Go to the Assembly point. Inform the Site Supervisor

In the event of PHYSICAL INJURY
Do not put yourself or others at risk
Attempt to isolate the hazard.
Protect the casualty from further injury or danger
Apply or summon Emergency Aid.
Inform the Site Supervisor

Minor injuries that can be dealt with by Site First Aiders:
First Aid Boxes in OCU Vehicles.

Report all accidents/incidents to the Site Supervisor as soon as practicable who will in turn inform any relevant parties.
All accident, incidents and near misses are to be reported as soon as practicable, in accordance with RIDDOR and the client's requirements.

OCU Project Staff

OCU Project Manager	Mike O Farrell	07712772570
OCU SHEQ Manager	Sam Rawcliffe	07717 660 411
OCU SHEQ advisor	Rachel Watkinson	07979032632
OCU Site Manager	Craig Jewitt	07799861740
OCU Site Foreman	Kevin Williams	07831584598

Utilities

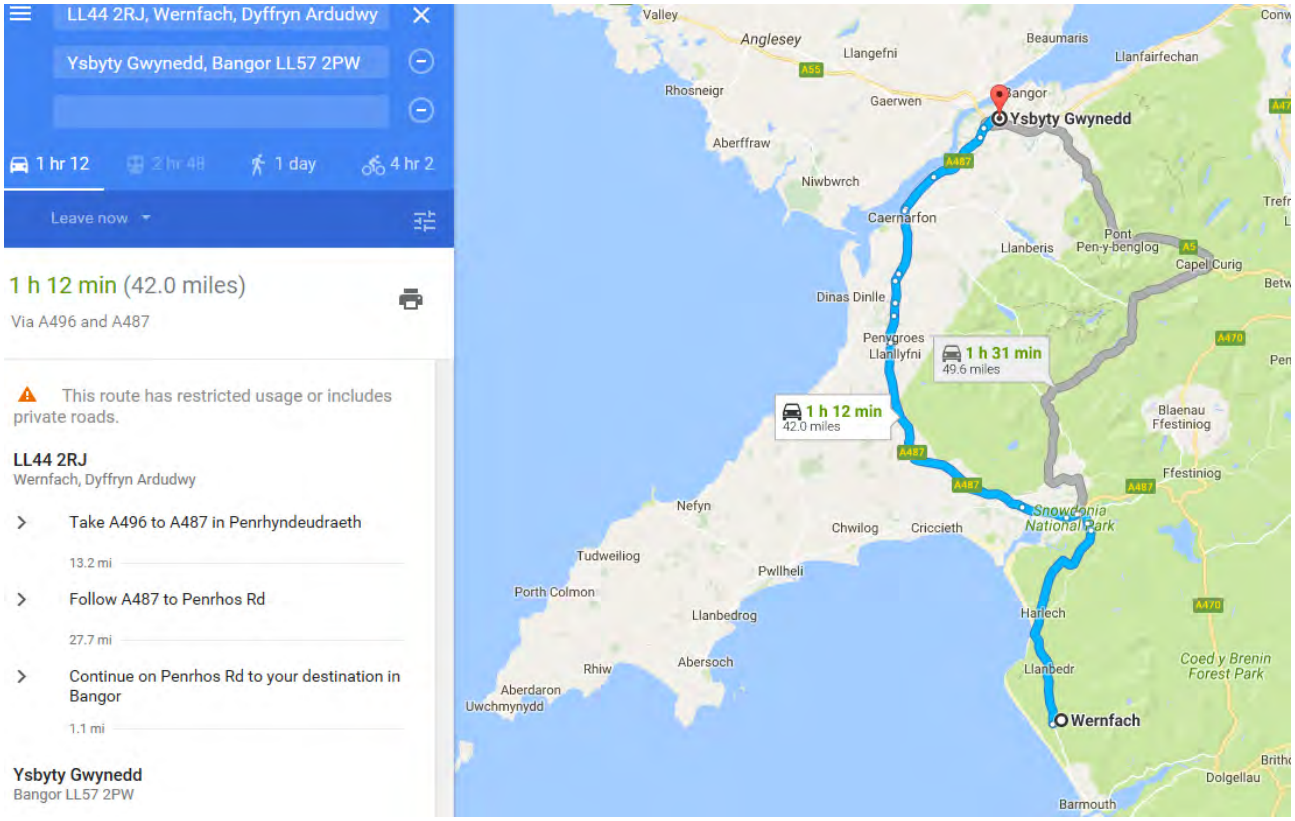
In the event that plant or underground services are damaged in any way then work must cease at that point, the site made safe and Site Manager contacted.

Other Contacts

Natural Resources Wales (Incident line)	Tel: 0800 807 060
Natural Resources Wales (Flood line)	Tel: 0845 988 1188
Scottish Power	Tel: 0845 272 2424
Welsh Water	Tel: 0800 052 0130
Welsh Water (Sewers)	Tel: 0800 085 3968
Wales and West Utilities Emergency Line	Tel: 0800 111 999
British Telecom	Tel: 0800 216 927
Health & Safety Executive	Tel: 0845 345 0055
NHS Direct (Medical advice Service)	Tel: 0845 4647

Bangor Hospital Tel: 01248 384384

Nearest Accident & Emergency Department : Penrhosgarnedd, Bangor, LL57 2PW



9.0 RISK ASSESSMENT

Client:	DCWW	Contract:	Eithinfynydd Break water tank replacement
Assessor:	Mike O Farrell	Location:	Eithinfynydd, Wernfach, Mid Wales, LL44 2RJ

Activity / Element	Potential Hazards	Population at Risk	Risk Rating	Control Measures	Final Risk Rating
Excavation in soft ground					
	Underground and above ground utilities	Site Operative General Public	High	Safe working practice in accordance with HSG47 (underground services and GS6 (avoiding danger from overhead lines) Site Utility Plans to be examined and available on site. CAT to be used and Utilities marked out. Trial Holes to be dug using Hand Excavation techniques. Exposed utilities to be supported. Exposed utilities not to be used as steps or hand holds.	Low
	Ingress of water into excavation	Site operatives	High	Perforated pipe and drainage to be installed to alleviate the flow of water into the excavation. A 3" pump to be available for pumping out the excavation	Low
	Machinery working on soft ground	Operator and site operatives	High	Extra wide tracks installed on 8 tonne excavator and tracked dumper utilized to transport materials to site. Temporary trackway also to be used to gain access to the site location.	low
	Noise & Vibration	Site Operatives Structures	High	Plant and equipment to be regularly maintained. Noise levels to be provided for safe operation. Hearing protection to be provided where noise is in excess of 80dBA. Hearing protection zones to be established where noise is in excess of 85dBA. Attenuating barriers to be used where noise is likely to extend beyond the work area and exceed environmental levels of 70dBA at residential properties.	Low

	Public Rights of Way	Public	High	Banksman to be present during any plant movement across or in vicinity of Public rights of way (Roman Road). Work Areas secured prior to commencement with heras fencing. All works must be undertaken within the secured area. Works cease and pedestrians guided through/around works where applicable due to road closure.	Low
Open Excavations	Falls Trench Collapse	Site Operatives	High	Ground conditions to be assessed Daily by Site Supervisor. Trench support to be provided where assessment indicates. Open excavations to be barriered off. No spoil to be stored near the excavation. All works must be undertaken within a fenced off work area. Excavations to be closed as soon as practicable	Low
Lifting Operations	Overturning Impact & crushing by load	Site Operatives General Public	High	On/Off loading by Grab to be planned and Supervised at a designated set down area. All lifting accessories to be inspected before use and have an in date certificate of Inspection. Excavators not to be used for lifting unless fitted with appropriate lifting attachments, appropriately tested and certified to do so. Max lift capacity of any certified machine not to exceed 1ton unless fitted with check valves and warning devices and lifting chart available to operator. Lift plan must be in place for all lifting operations.	Low
Movement of Plant & Vehicles	Impact & crushing	Site Operatives General Public	High	Plant operators to hold competencies either under the NPORS or CPCS schemes. Daily & weekly checks to be carried out and defects reported to Site Supervisor. Banskman to be present during excavation and visible to operator at all times. Operator must have visibility of the banksman before moving. All reversing operations shall be controlled by an assistant where 360° visibility can not be achieved by the operator. Site vehicles to be parked in designated parking areas.	Low

Weather Conditions	Reduced visibility Poor ground Conditions Instability of lifting loads Flooding	Site Operatives General Public	High	Site supervisor to assess weather conditions daily and decide on whether works should progress or stop. Utilise site welfare facilities for work breaks and storage of clothes / PPE. Trenches/Trench supports to be inspected daily and record of inspection completed. No person to enter a water filled trench. Sump and Pump required. Silt to prevented from entering surface ware drainage	Low
Handling Hazardous Substances Diesel, Petrol, Concrete, Resin, Chlorus, Sodium Bisulphate	Various Bodily Harms	Site Operatives	High	CoSHH Information sheets to be provided on site Appropriate PPE to be available. Spill kits and spill Plan to be in place to minimize likelihood of pollution.	Low
Manual Handling	Muscoskeletal Disorders	Site Operatives	Med	Mechanical means where reasonably practicable. Transport materials with Dumper Lift loads with Hiab, Excavator, etc. Provided materials close to point of use For small loads such as marker tiles use wheelbarrows. Two person techniques where appropriate: two persons to carry 2 ducts under control rather than one each.	Low
Electro Fusion Welding	Damage to Pipes	General Public	High	Only Trained and competent persons to carry out Fusion Welding. Operative to be familiar with operation of equipment.	Low
Bog/poor land Operations	Land Damage Poor Ground Conditions	Site Operatives	High	Contingencies are in place in the event of heavy rain fall. This would effect the safe operation of plant on the work area and Bog mats will need to be put in place to access the work area. These bog mats will be on site. Areas of land accommodation to be fenced off in accordance with any access agreements Condition of public trackways to be checked at Vehicles access points Excavations to be stepped, battered back or supported in poor ground conditions. De watering equipment to be available to remove water from trenches.	Low

				Operatives to be provided with Safety Wellingtons where deemed appropriate.	

DECLARATION

I confirm that I have read, or been instructed on, the contents of this Risk Assessment & Method Statement. I have been made aware of the risks involved and agree to abide by the control measures and method of work. I will inform my site supervisor immediately of any changes which may affect the health and safety of me/us or others likely to be affected by the works

Print Name	Signed	Date

APPENDIX II

Gwynedd Archaeological Trust photographic metadata

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
G2522_Eithinfynydd_001.jpg	Eithinfynydd	Watching Brief	Quad bike ruts on the mountain	-	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_002.jpg	Eithinfynydd	Watching Brief	View to mountain road from track to Pont Scethin	SE	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_003.jpg	Eithinfynydd	Watching Brief	Pont Scethin Bridge	SW	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_004.jpg	Eithinfynydd	Watching Brief	Pont Scethin Bridge	NW	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_005.jpg	Eithinfynydd	Watching Brief	View to NE showing ditch and Afon Scethin	SW	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_006.jpg	Eithinfynydd	Watching Brief	Afon Scethin	SW	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_007.jpg	Eithinfynydd	Watching Brief	Afon Scethin	NE	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_008.jpg	Eithinfynydd	Watching Brief	View to SW from site of BPT	NE	28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_009.jpg	Eithinfynydd	Watching Brief	View to NW along proposed access route for excavator		28/04/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
G2522_Eithinfynydd_010.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin from proposed access route	NW	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_011.jpg	Eithinfynydd	Watching Brief	View to North	S	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_012.jpg	Eithinfynydd	Watching Brief	View to the NW	SE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_013.jpg	Eithinfynydd	Watching Brief	View to NE along Afon Ysgethin	SW	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_014.jpg	Eithinfynydd	Watching Brief	Pont Scethin	NNE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_015.jpg	Eithinfynydd	Watching Brief	View to WSW from NW bank of Afon Ysgethin	ENE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_016.jpg	Eithinfynydd	Watching Brief	View to NE from NW bank of Afon Ysgethin	SW	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_017.jpg	Eithinfynydd	Watching Brief	Pont Scethin from NW bank of river	NNE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_018.jpg	Eithinfynydd	Watching Brief	View along Afon Ysgethin to NE	SW	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_019.jpg	Eithinfynydd	Watching Brief	View along Afon Ysgethin to SW	NE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
G2522_Eithinfynydd_020.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin	E	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_021.jpg	Eithinfynydd	Watching Brief	View to N from SE of Afon Yscethin en route to work area	S	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_022.jpg	Eithinfynydd	Watching Brief	View to NW from SE of Afon Yscethin en route to work area	SE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_023.jpg	Eithinfynydd	Watching Brief	View to E from SE of Afon Yscethin en route to work area	W	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_024.jpg	Eithinfynydd	Watching Brief	View to NNE from SE of Afon Yscethin	SSW	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_025.jpg	Eithinfynydd	Watching Brief	View to N from site	S	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_026.jpg	Eithinfynydd	Watching Brief	View to NNW from site	SSE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_027.jpg	Eithinfynydd	Watching Brief	View to NW from site		08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
G2522_Eithinfynydd_028.jpg	Eithinfynydd	Watching Brief	View to WNW from site	ESE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_029.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin from site	NE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_030.jpg	Eithinfynydd	Watching Brief	View to NW showing Pont Scethin from site	SE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_031.jpg	Eithinfynydd	Watching Brief	View to W from site	E	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_032.jpg	Eithinfynydd	Watching Brief	View to SW from site	NE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_033.jpg	Eithinfynydd	Watching Brief	View to Pont scethin from site	SE	08/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_034.jpg	Eithinfynydd	Watching Brief	View to SE along access route	NW	22/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_035.jpg	Eithinfynydd	Watching Brief	Shot showing poor weather conditions (low visibility)	NW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_036.jpg	Eithinfynydd	Watching Brief	View to SE	NW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_037.jpg	Eithinfynydd	Watching Brief			23/05/2017	Anne Marie	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
						Oattes		
G2522_Eithinfynydd_038.jpg	Eithinfynydd	Watching Brief	Working shot view to machine	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_039.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin from access route	NNW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_040.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin from access route	NNW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_041.jpg	Eithinfynydd	Watching Brief		NNW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_042.jpg	Eithinfynydd	Watching Brief		NNW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_043.jpg	Eithinfynydd	Watching Brief	Working shot showing bog mats and weather conditions (low cloud)	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_044.jpg	Eithinfynydd	Watching Brief	View to Pont Scethin from the access route	NNW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_045jpg	Eithinfynydd	Watching Brief	Approach to river crossing point	NW	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
G2522_Eithinfynydd_046.jpg	Eithinfynydd	Watching Brief	View to NW showing access track after bog mats were removed	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_047.jpg	Eithinfynydd	Watching Brief	Shot showing weather conditions (poor visibility)	NE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_048.jpg	Eithinfynydd	Watching Brief	River crossinh using bog mats	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_049.jpg	Eithinfynydd	Watching Brief	View to NW showing access track after bog mats were removed	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_050.jpg	Eithinfynydd	Watching Brief	Working shot - machine bringing buckets forward	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_051.jpg	Eithinfynydd	Watching Brief	Access track after bog mats were removed	SE	23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_052.jpg	Eithinfynydd	Watching Brief	Working shot		23/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_053.jpg	Eithinfynydd	Watching Brief	SW facing section of land drain	SW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_054.jpg	Eithinfynydd	Watching	Length of	SE	24/05/2017	Anne	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
		Brief	excavated land drain mid-ex			Marie Oattes		
G2522_Eithinfynydd_055.jpg	Eithinfynydd	Watching Brief	Shot of BPT and pipes showing depth of excavation at tank	SW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_056.jpg	Eithinfynydd	Watching Brief	SW facing section of land drain	SW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_057.jpg	Eithinfynydd	Watching Brief	Length of land drain- view to the tank	NW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_058.jpg	Eithinfynydd	Watching Brief	Shot showing spoil stored on Teram	SE	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_059.jpg	Eithinfynydd	Watching Brief	Length of land drain - view to the tank after excavation completed	NW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_060.jpg	Eithinfynydd	Watching Brief	SW facing section of land drain showing depth of excavation at NW end	SW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_061.jpg	Eithinfynydd	Watching Brief	SW facing section of land drain dhowing change from	SW	24/05/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
			grey to brown clay					
G2522_Eithinfynydd_062.jpg	Eithinfynydd	Watching Brief	Compound area for stores	SW	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_063.jpg	Eithinfynydd	Watching Brief	Compound area for stores	W	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_064.jpg	Eithinfynydd	Watching Brief	Compound area for stores	SE	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_065.jpg	Eithinfynydd	Watching Brief	View to the river from the tank area	SE	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_066.jpg	Eithinfynydd	Watching Brief	View from temporary track to Pont Scethin	N	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_067.jpg	Eithinfynydd	Watching Brief	Temporary track route before bog mats were put down	SE	26/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_068.jpg	Eithinfynydd	Watching Brief	Temporary track after bog mats were removed	NW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_069.jpg	Eithinfynydd	Watching Brief	Temporary track after bog mats were removed	NW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_070.jpg	Eithinfynydd	Watching Brief	Temporary track after bog mats were removed	NW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_071.jpg	Eithinfynydd	Watching	Temporary track	NW	27/06/2017	Anne	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
		Brief	after bog mats were removed			Marie Oattes		
G2522_Eithinfynydd_072.jpg	Eithinfynydd	Watching Brief	Temporary track after bog mats were removed	NW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_073.jpg	Eithinfynydd	Watching Brief	General view to the SW	NE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_074.jpg	Eithinfynydd	Watching Brief	General view to the NE	SW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_075.jpg	Eithinfynydd	Watching Brief	General view to the WNW	ESE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_076.jpg	Eithinfynydd	Watching Brief	General view to the NW	SE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_077.jpg	Eithinfynydd	Watching Brief	General view to the NE	SW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_078.jpg	Eithinfynydd	Watching Brief	General view to the ENE	WSW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_079.jpg	Eithinfynydd	Watching Brief	General view to the E	W	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_080.jpg	Eithinfynydd	Watching Brief	General view to the SE	NW	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_081.jpg	Eithinfynydd	Watching Brief	General view to the SSE	NNW	27/06/2017	Anne Marie	Gwynedd Archaeological Trust	

File reference	Project name	Project phase	Description	View from	Date	Originating person	Originating organisation	Plate
						Oattes		
G2522_Eithinfynydd_082.jpg	Eithinfynydd	Watching Brief	General view to the S	N	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_083.jpg	Eithinfynydd	Watching Brief	Shot of walls and derelict buildings opposite entry point for temporary access track	SE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_084.jpg	Eithinfynydd	Watching Brief	View to Llyn Ird from farm track at the welfare unit	NNE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	
G2522_Eithinfynydd_085.jpg	Eithinfynydd	Watching Brief	View to Craig Y Dinas from farm track at welfare unit	NE	27/06/2017	Anne Marie Oattes	Gwynedd Archaeological Trust	

Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

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