

# BENARTH ROAD RETAINING WALL, CONWY

## Archaeological Watching Brief



Ymddiriedolaeth Archaeolegol Gwynedd  
Gwynedd Archaeological Trust

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## Archaeological Watching Brief

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Prepared for: Conwy County Borough Council

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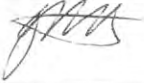

**\*front cover image:** Shot along wall from slipway NE of The Boathouse showing Conwy Castle, viewed from the ESE (scale: 1x2m, archive image ref G2527\_015).

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## **1 NON-TECHNICAL SUMMARY**

*Gwynedd Archaeological Trust undertook a watching brief during repairs to a defective portion of the river wall at Benarth Road, Conwy. The river wall and the ground behind it was noted to have been an important area for the maritime timber trade from the mid-19<sup>th</sup> century into the 20<sup>th</sup> century. This was a significant industry along the southern bank of the Afon Gyffin, prior to the construction of a bowling green on the site in 1937, when the focus of the area changed to that of leisure pursuits. The material around the wall consisted of made ground, though evidence was uncovered for an earlier revetment wall made of wooden posts and planks underneath the stone wall that probably dates to the construction of the wall between 1900 and 1910. The finding of late 19<sup>th</sup> century material within the backfilled rubble behind the stone wall, including distinctive pressed and embossed glass bottles, gives further weight to this interpretation.*

## 2 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Conwy County Borough Council* to undertake an archaeological watching brief during repairs to a 62m long defective portion of the river wall on the northern side of Benarth Road, Conwy (centred on NGR SH7839577350; Figure 01). A 34m long stretch of wall was completely dismantled and reconstructed, whilst a 28m long section of the wall to the west underwent localised repair and repointing. The proposed repair works necessitated the excavation of ground on the southern, landward side of the wall to a maximum depth of 3.2m. The ground here appears to have been formed by the tipping of waste materials in order to reclaim the land during the early twentieth century.

The repair works were undertaken by MWT Civil Engineering Ltd in June and July 2017.

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

- Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 2014);
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015);
- Historic Environment Record (HER) Guidelines for Archaeological Contractors (Version 1.3; draft) (Gwynedd Archaeological Trust, 2014); 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). A project specification was submitted by GAT to GAPS in advance of the watching brief ([Appendix I](#)).

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).

### **3 BACKGROUND**

#### **3.1 Medieval Background**

The following historic background is reproduced from GAT Report 1348, with amendments.

The section of wall to be repaired lies on the southern bank of the River Gyffin, on the opposite side of the river to the Castle at Conwy which lies 80m to the north. The first known settlement at Conwy dates from the establishment of a Cistercian monastery in c. 1192 on the west bank of the Afon Conwy and close to the confluence with the River Gyffin. The monastery had been established by monks from Strata Florida, who had first settled in north-west Caernarfonshire in 1186, but had moved to Aberconwy by 1192. The importance of the monastery grew under the patronage of Llywelyn ap Iorwerth, who was buried there in 1240, and who kept a hall there for his use. However Edward's decision to use the site for a new town and castle required the monks to move up river to Maenan, where they were granted new lands in compensation for the loss of their old ones (Hays 1963 cited in McGuinness, Evans and Reilly, 2016).

The building of the castle and town were started in March 1283, within days of the arrival of the King to the site. Construction was largely complete by 1287, although works continued into the 14th century. The borough was enclosed with a wall 1280m in length and along its course 21 half-round towers were built. Spurs at the northernmost and southernmost ends of the section facing the river gave added protection to the quay (Soulsby 1983, 113-114 cited in McGuinness, Evans and Reilly, 2016).

The town of Conwy developed rapidly from its first foundation. By 1295 112 burgage plots had been taken by 99 burgesses, and by 1312 the number of plots taken had risen to 124. This meant that Conwy was about twice the size of Caernarfon at this time

The development of the town slowed by the mid-14th century (Soulsby 1983, 110 cited in McGuinness, Evans and Reilly, 2016). The town was captured by Owain Glyndwr's supporters on Good Friday 1401, resulting in the burning of much of the town. Rebuilding started soon after this, and dendrochronology has confirmed that Aberconwy House was begun in 1420 (Haslam et al. 2009 cited in McGuinness, Evans and Reilly, 2016). By the 16th century the town had recovered sufficiently for Sir John Wynn of Gwydir to speak of 'the lawyers of Caernarfon, the merchants of Beaumaris and the gentlemen of Conwy' (Wynne 1990 cited in McGuinness, Evans and Reilly, 2016). One of the gentlemen's houses was the

iconic Plas Mawr, an elaborate Elizabethan town house with a grand street frontage, but there were a number of other gentry houses in the town, such as Parlwr Mawr and Plas Coch (Gwyn et al. 2012, 6 cited in McGuinness, Evans, and Reilly, 2016).

A medieval tidal mill on the Gyffin River (GAT PRN 29710) is recorded in historical records. It was rebuilt in 1296, probably after being destroyed during the uprising of Madoc ap Llywelyn in 1294 (GAT Report 562). Its exact location is unknown, though it is thought to lie in close proximity to Pont Pensarn (GAT PRN 66259), 50m to the north-west of the eastern end of the section of wall under repair. It is possible therefore that the remains of the mill could survive on the banks of the River Gyffin and may be encountered during the proposed works.

### **3.2 Post-medieval Background**

Gwynedd HER records no known archaeological sites in proximity to the damaged section of wall that will be impacted by the repairs. The wall itself appears to be built on ground that has been reclaimed between the production of the 1900 second edition and 1910 third edition of the Ordnance Survey County Series Maps of the area (sheet V.9).

The foreshore on the Benarth bank of the Afon Gyffin opposite the castle was historically the property of the Bodlondeb estate. The was sold between the 12<sup>th</sup> and 15<sup>th</sup> September 1865, and a timber yard is recorded as having been present on the foreshore; however, the cartographic evidence shows that it was much less extensive than it was later to become (Conwy Archives, CSC37/1). P & H Lewis of Conwy were significant industrialists with brickworks and timber yards on Conwy Quay, Deganwy and Llanrwst by 1881 (Gwynedd Archives XB2/616, Davidson *et al.* 2009, 7). Both local and imported timbers from the Baltic were being extensively traded from Conwy at this time, making it a significant industry. By 1894 the timber yard on the Benarth foreshore was occupied by P & H Lewis (Slater's Directory of 1894). In addition, the southern bank of Afon Gyffin, both sides of Pont Pensarn, was occupied by extensive timber yards, the property of both the Bodlondeb and Benarth estates (Figure 04). In the early years of the 20<sup>th</sup> century the site of Lewises timber yard at Benarth became the property of Conwy Corporation, but was still occupied by the same firm. It expanded to the north into the river estuary between 1900, and the production of the 3<sup>rd</sup> edition Ordnance Survey map of 1910 (Figure 05) and it is likely that it is around this time that the foreshore retaining wall is constructed. An image of Conwy Castle from Benarth Field shows the extensive nature of P & H Lewis' timber yard at around this time (Gwynedd Archives XS3338; Figure 07). This also shows the use of the estuary for the beaching and seasoning of the wood. The reclamation of land for the timber yard is likely to be required



both to provide both a larger storage area, and for the creation of a more stable quayside for the loading and unloading of timber from the ships. The timber yard had closed by the time that the Conwy Bowling Green was constructed on the reclaimed land behind the retaining wall in 1937 (Conwy Archives, CX4016/9/2/1), which along with the property known as The Boathouse on the site meant that by the mid- 20<sup>th</sup> century the area had changed from one of industrial use to one serving leisure pursuits.

## 4 METHODOLOGY

### 4.1 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 be 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).

Following consultation with GAPS, GAT conducted a **partial** watching brief on the following elements of the repairs to the Benarth Road river wall:

- excavations behind the existing wall along its entire 64m length;
- the dismantling of the 34m long section of the wall scheduled to be rebuilt; and
- the completion of the excavation following the dismantling of the wall.

The ground level was reduced in spits using a mechanical excavator fitted with a flat, toothless bucket and the excavations were monitored to the proposed 3.2m maximum dig depth required to carry out the repair works (Figure 01).

In addition to the monitoring works outlined above, GAPS specified a requirement for two photographic surveys of the parts of the river wall affected by the works, one prior to the commencement of repairs, and one following the completion of the works. The photographic surveys were conducted by two GAT project archaeologists.

During the watching brief, all attendances and identified features were recorded using GAT watching brief pro-formas. Photographic images were taken using a digital SLR (Nikon D3000) camera set to maximum resolution (3872 × 2592 10.0 effective megapixels) in RAW format and were converted to TIFF and JPEG format for archiving using Adobe Photoshop.; A photographic record was maintained on site using GAT pro-formas and digitised in *Microsoft Access* as part of the fieldwork archive and dissemination process. A total of 92 images were taken (photographic archive reference G2527\_001 to G2527\_092). Artefacts

Pottery sherds of 19<sup>th</sup> and 20<sup>th</sup> century date were examined on site and the context from which they were retrieved noted but the sherds not retained. The artefacts were 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.

### **4.3 Fieldwork Archiving**

Following the completion of the watching brief, a programme of field work archiving was 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. Context register: quantified and register completed;
5. Site Matrix; all cross referenced and complete.

## **5 WATCHING BRIEF RESULTS**

### **5.1 Photographic Survey**

Two photographic surveys were undertaken, one prior to the commencement of works on the 20<sup>th</sup> June 2017 and one following the completion of the works on the 18<sup>th</sup> August 2017.

The pre-commencement survey consists of 13 images (Figure 02, Plates 07-19). Two 2m ranging poles were placed 5m apart and shots were taken perpendicular to the wall running from the western end to the eastern end.

The post completion survey consists of 13 images (Figure 06, Plates 29-41). Two 2m ranging poles were placed 5m apart and shots were taken perpendicular and obliquely to the wall running from the western end to the eastern end.

### **5.2 Excavations along length of wall.**

Excavations on the scheme were undertaken using two tracked excavators and a dumper provided and operated by MWT Civil Engineering Ltd. Both excavators were fitted with toothless buckets during any ground disturbance. In areas of solid concrete a pecker attachment was used to break the material before removal.

The original wall [001] on the southern bank of the Afon Gyffin is an early 20<sup>th</sup> Century rubble built revetment wall constructed from undressed, locally quarried stone. The stones are sub-angular and vary in size with the larger stones situated towards the base of the wall (Plate 24). The stones are bonded with lime mortar. Behind this wall were various layers of made ground containing demolition material from the construction of the wall, and backfilled material. The latter contained late 19<sup>th</sup> century glass and other material (Plate 43), and was of a very loose nature. Four glass bottles were recovered, including three containing distinctive embossed markings. A green glass bottle, 200mm tall, was embossed with IND COOPE & Co LD BURTON on TRENT. This usage was current between 1886 and 1934, so the bottle must date from between these years (Artefact 1; information from [www.breweryhistory.com](http://www.breweryhistory.com)). It also had 420 embossed on the base, indicating a standardised manufacturer's reference number. A 'codd' style mineral water bottle, 230mm tall and embossed with WILLIAM HILL, LLANDUDNO Est 1876 and W HILL to the base, was also identified (Artefact 2). The William Hill works were known as the 'Perseverance Works' and operated from its site in Llandudno from 1876 well into the 20<sup>th</sup> century, with this bottle being one of their standard ones. Artefact 3 was a small relish bottle 190mm tall, embossed

around its neck YORKSHIRE RELISH and vertically GOODALL BACKHOUSE & CO. This style of bottle was in use from 1858 until 1922, and featured on many advertisements for the well-known Leeds based manufacturing chemists (Figure 8). It also had a manufacturer's reference number of 449 embossed on the base of the bottle. The blank part of the bottle sides was for a paper label as shown in the advertisement. The fourth bottle was a relish bottle with no identifying marks (Artefact 4).

An earlier wooden revetment [005] was uncovered under the section of wall that was to be reconstructed (Figure 03). This consisted of a line of four square cut wooden posts spaced 1.8m apart and linked by horizontal wooden planks (Plate 25 & 26). The posts are orientated East North East/West South West which is a slightly different alignment to the later stone revetment wall [001]. The posts are 0.25m in width and survive to 2.1m in length (Plate 27).

Towards the eastern end of the scheme there is a concrete deposit on the South side of the wall. The fact that stones are bonded into this material means the deposit post-dates the wall and was likely a remedial effort to bolster the wall, probably weakened as a result of the pressure from the voids within the rubble and its free draining character (Plate 28). The glacial horizon was not reached during any part of the excavations.

## 6 CONCLUSIONS

The foreshore on the Benarth bank of the Afon Gyffin south of Conwy Castle was historically the property of the Bodlondeb estate, with the land to the south of Benarth Road forming part of the Benarth Estate. P & H Lewis of Conwy were significant industrialists who had a timber yard adjacent to the foreshore at Benarth from the late 19<sup>th</sup> century, both as tenants of Bodlondeb and later the town corporation. Both local and imported timbers from the Baltic were being extensively traded from Conwy at this time, making it a significant industry. Part of the site was developed as a bowling green in 1937, bringing the industrial use of the area to an end.

The excavations along the river wall at Benarth Road, Conwy provided evidence that matched the cartography, showing that the ground behind the revetment wall was reclaimed from the river during the early part of the 20<sup>th</sup> century. The wooden revetment noted does not appear on the second edition Ordnance survey map of 1900 (Figure 04) though it does seem to correlate with the later third edition from 1910 (Figure 05). It is possible therefore that this wooden structure could constitute part of the construction phase of the existing stone wall. The position of the posts abutting the stone wall also supports this conclusion. This expansion of the foreshore is likely to have taken place due to both the need for more yard space and to have a more robust quay to enable loading and unloading from the ships.

Although they had a long time over which they were in use, the four glass bottles recovered were of types in use during the first decade of the 20<sup>th</sup> century. A fragment of decorative Minton style floor tiling was also noted within the backfill material behind the retaining wall. The latter is typical of the material used in the entrance hallways of late 19<sup>th</sup> century housing. Although these artefacts provide insufficient evidence to obtain a specific date for the construction of the revetment wall, this material gives additional confirmation to the cartographic evidence, in the form of a *terminus post quem* of the first decade of the 20<sup>th</sup> century for the date of the retaining wall.

## 7 LIST OF SOURCES CONSULTED.

### 7.1 Primary Sources

#### Conwy Archives, Llandudno

CSC37/1 Sale Catalogue of the Pwllcrochan and Bodlondeb Estates 1865

CX4016/9/2/1 Conwy Borough Council Scrapbook containing photographs of civic events

#### Gwynedd Archives

XB2/616 County Rates Book for 1881-2

XS3338 Photograph of Conwy Castle from Benarth Field showing P & H Lewis's timber Yard in the middle foreground

### 7.2 Secondary Sources

Brunning, R and Watson, J 2010 *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (3<sup>rd</sup> edition)

Chartered Institute for Archaeologists, 2014, *Standard and Guidance for an archaeological watching brief*

Davidson, A and Berks, T, 2005. *Billington's Bros Ltd, Llanrwst Rd Conwy: Archaeological Assessment*, GAT Report 562

Davidson, A., Roberts, J.A. and Jones, P. 2009 *Conwy Quay Redevelopment Programme*. Unpublished GAT Report 815

English Heritage, 1991, *Management of Archaeological Projects*

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

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Gwynedd Archaeological Trust, 2014, *Historic Environment Record (HER) Guidelines for Archaeological Contractors* (Version 1.3; draft)

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

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

McGuinness, N, Evans, R and Reilly, S 2016, *Land at Pentywyn Road and Marl Lane Deganwy: desk-based assessment and walkover survey*, GAT Report 1348

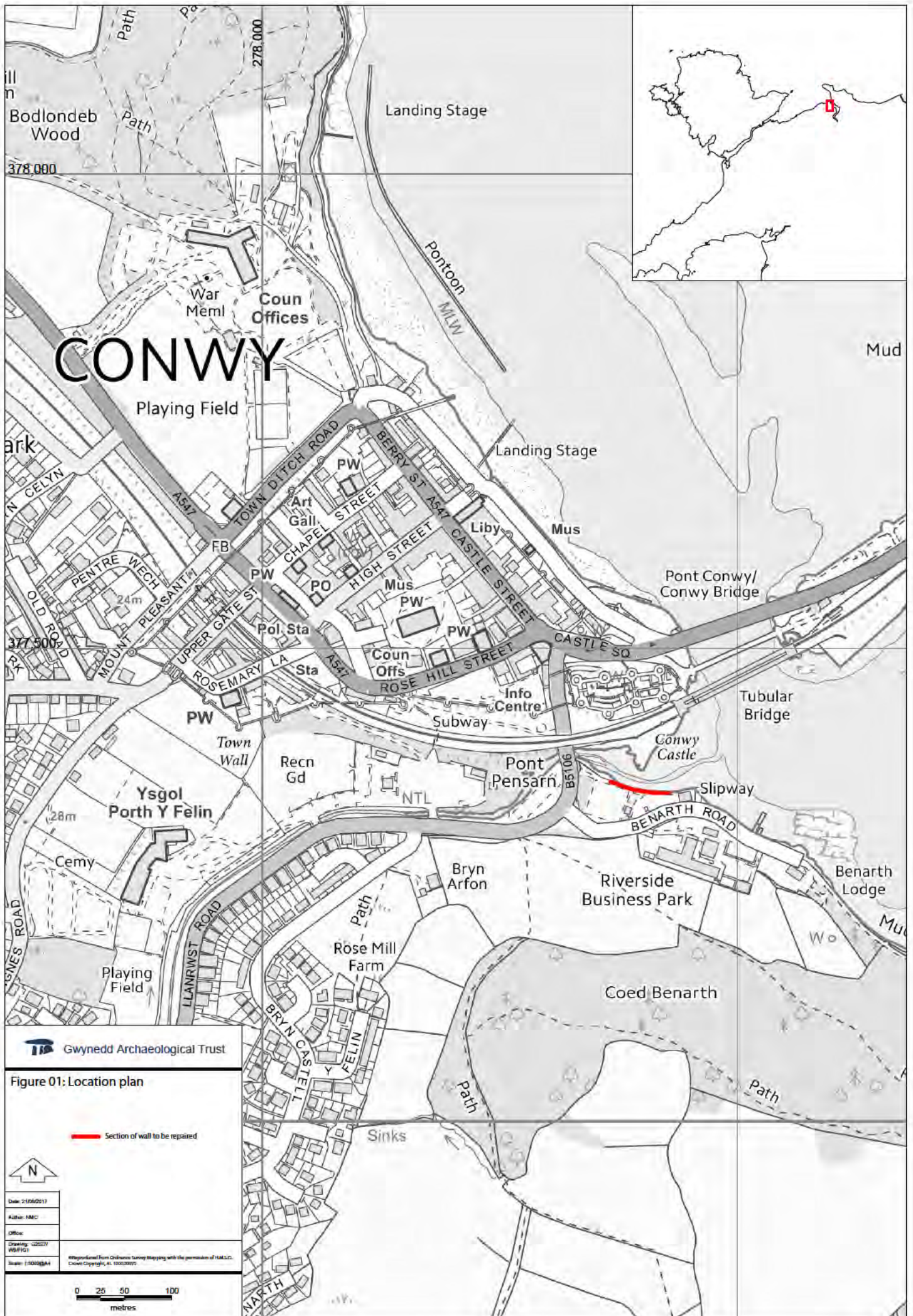
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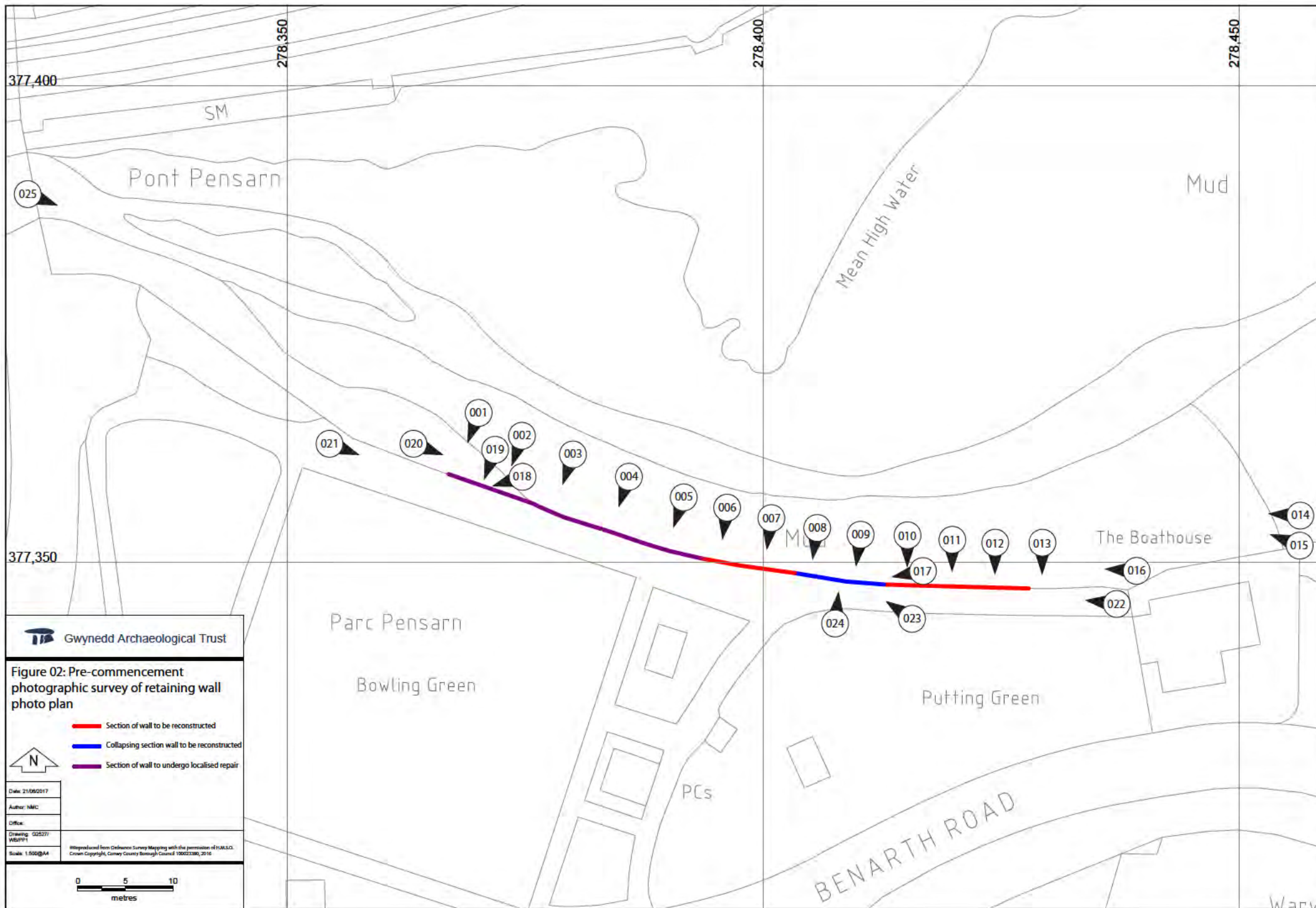
Slater's Trade Directory of 1894



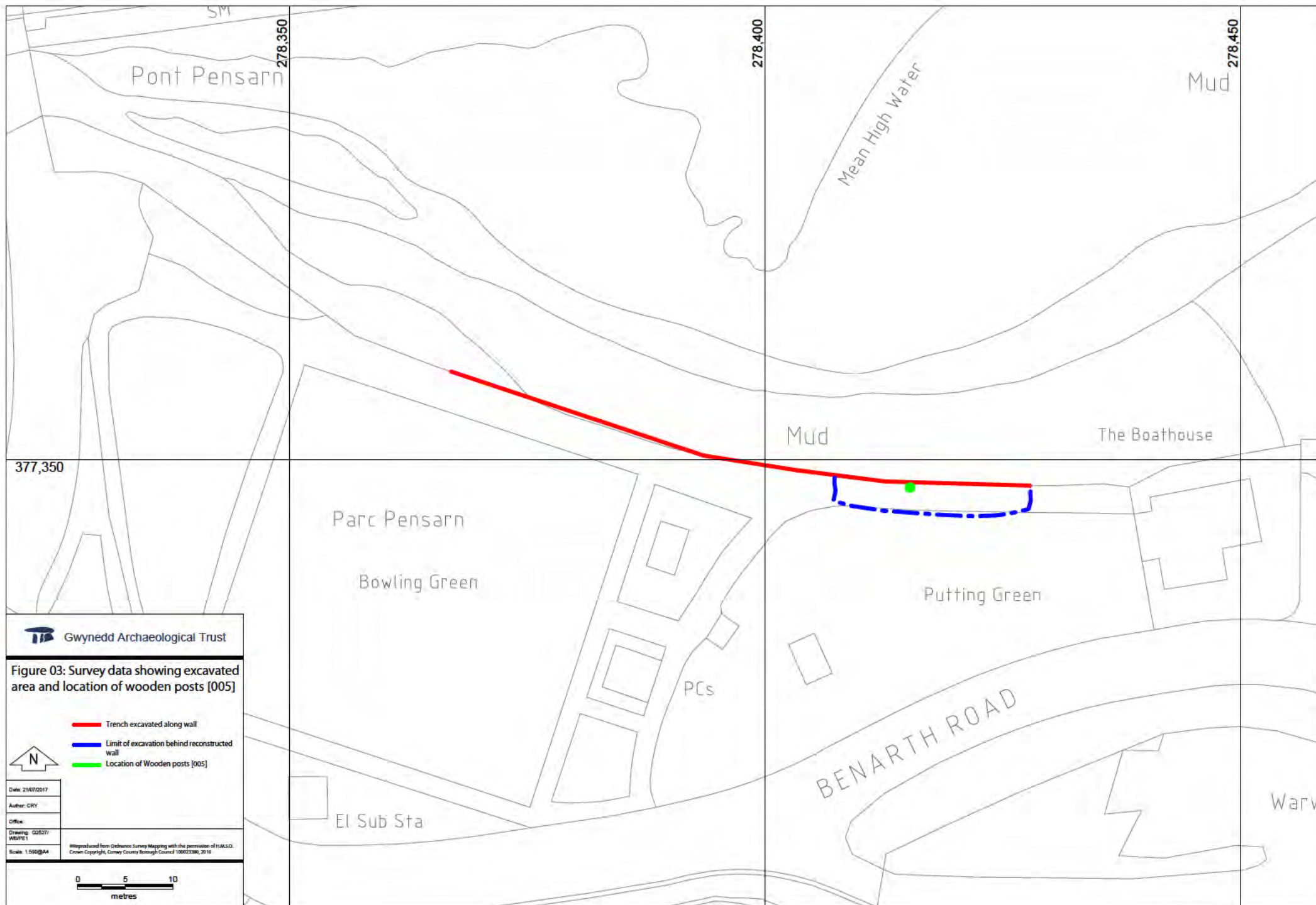
## **APPENDIX I – APPROVED GWYNEDD ARCHAEOLOGICAL TRUST PROJECT SPECIFICATION**

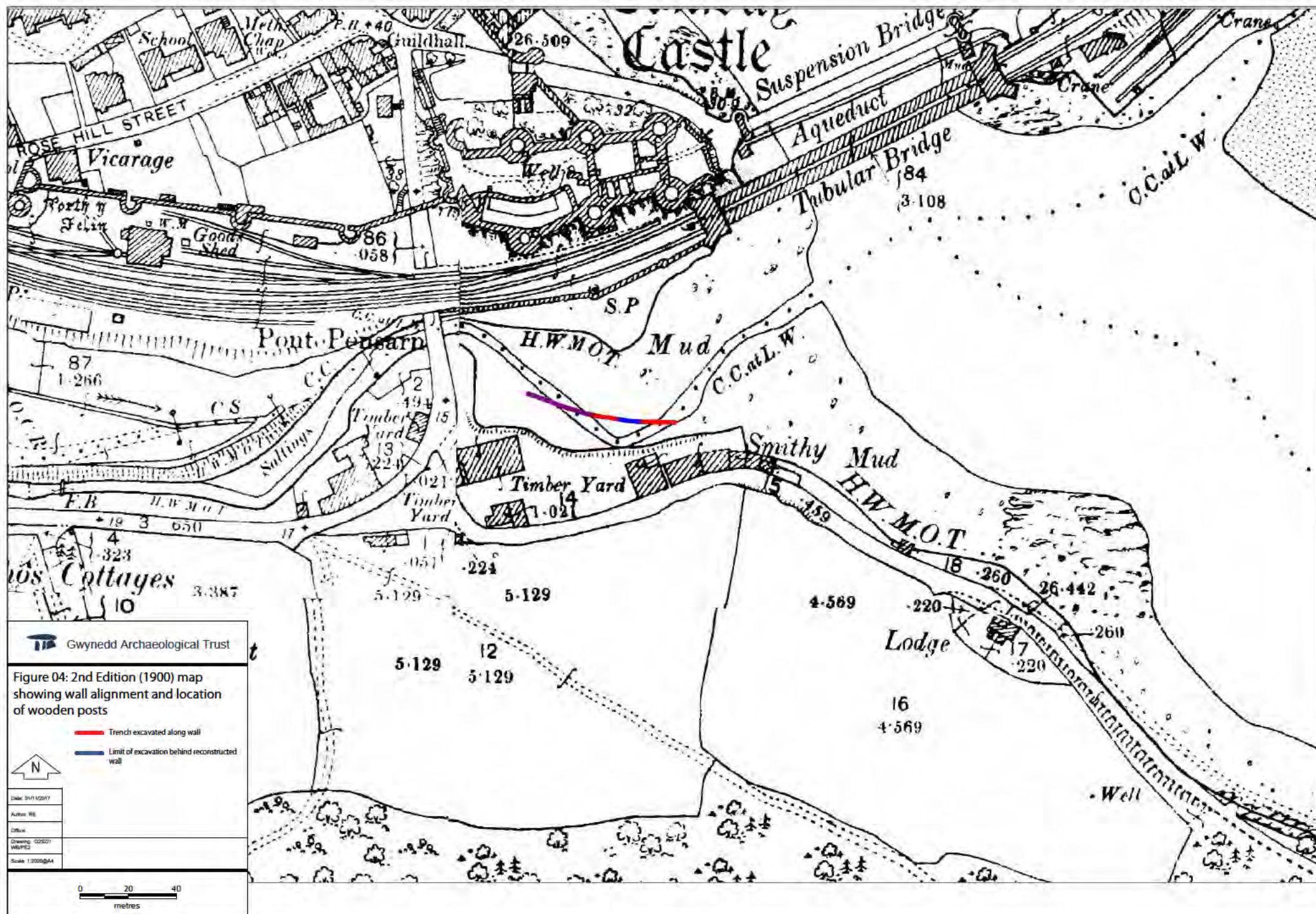
**APPENDIX II - GWYNEDD ARCHAEOLOGICAL TRUST  
PHOTOGRAPHIC METADATA ARCHIVE**



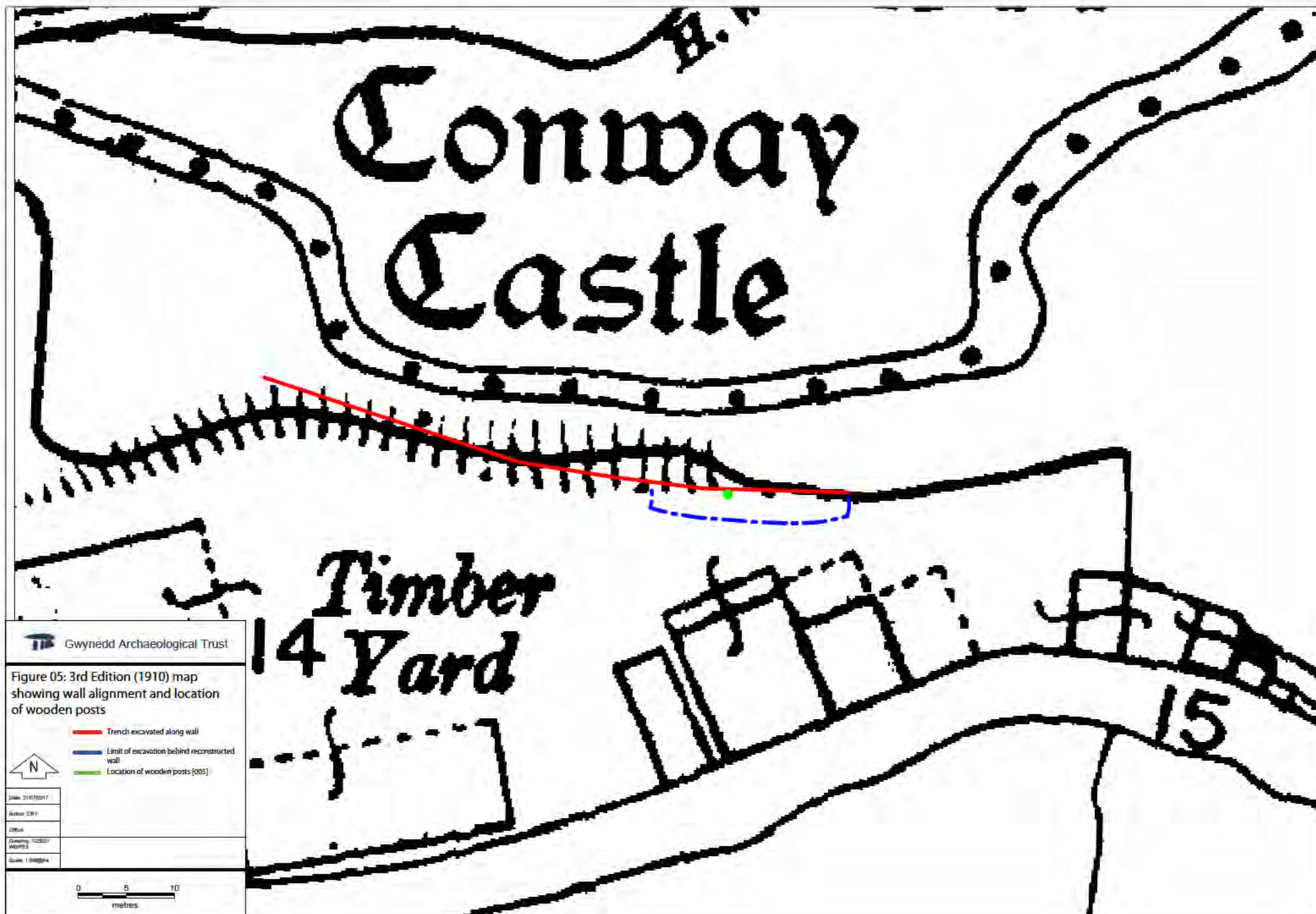






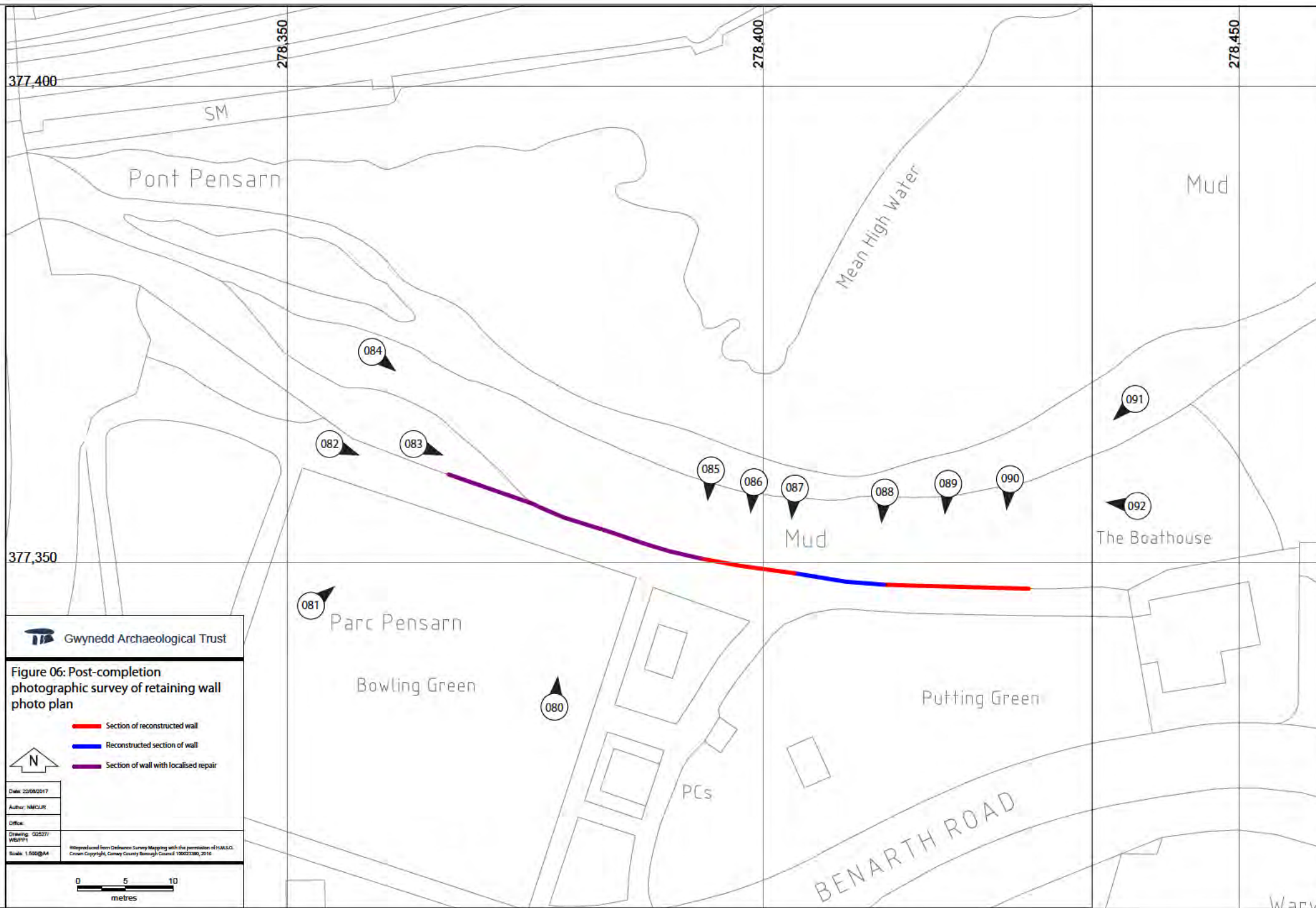






Gwynedd Archaeological Trust

Figure 05: 3rd Edition (1910) map showing wall alignment and location of wooden posts



Gwynedd Archaeological Trust

**Figure 06: Post-completion photographic survey of retaining wall photo plan**

- Section of reconstructed wall
- Reconstructed section of wall
- Section of wall with localised repair

Date: 22/09/2017

Author: NM/CUR

Office:

Drawing: 02527/

WBS/PM

Scale: 1:500@AA

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Figure 07: Conwy castle from Benarth Field showing *P & H Lewis*' timberyard in the middle foreground, in about 1910 (Gwynedd Archives XS 3338) (uneven surface of original image is due to water damage).



**EIGHT PRIZE MEDALS AWARDED**

**THE CELEBRATED YORKSHIRE RELISH**

**THE MOST DELICIOUS CHEAPEST & BEST SAUCE IN THE WORLD.**

**HAS THE LARGEST SALE OF ANY SAUCE IN THE WORLD**

**IN 6D. 1S. & 2S. BOTTLES.**

**EIGHT MILLION BOTTLES SOLD ANNUALLY**

**SOLD BY ALL CHEMISTS, GROCERS & OILMEN. GOODALL, BACKHOUSE & CO. LEEDS.**

McCORQUODALE & COY LTD LEEDS.

Figure 08: Reproduction of nineteenth century advertisement for Goodall Backhouse Co Yorkshire Relish. The advertised bottle matches bottle no. 3 recovered from the retaining wall backfill (q.v. Plate 43), minus the label (Source: Alamy stock image)





Plate 01: Shot along retaining wall from Pont Pensarn, viewed from the WNW (archive image ref G2527\_025).



Plate 02: Shot along wall from slipway NE of The Boathouse, viewed from the E (scale: 1x2m, archive image ref G2527\_014).





Plate 03: Shot along section of wall to be repaired from its western end, viewed from the WNW (scale: 1x2m, archive image ref G2527\_020).



Plate 04: Shot along southern side of section of wall to be repaired from its western end, viewed from the WNW (scale: 1x1m, archive image ref G2527\_021).





Plate 05: Shot along wall from its junction with The Boathouse retaining wall, viewed from the E (scale: 1x2m, archive image ref G2527\_016).



Plate 06: Shot along southern side of section of wall to be repaired from its eastern end, viewed from the E (scale: 1x1m, archive image ref G2527\_022).





Plate 07: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 1 of 13, eastern end, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_001).



Plate 08: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 2 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_002).





Plate 09: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 3 of 13, viewed from the NNE (scales : 2x2m (spaced at 5m), archive image ref G2527\_003).



Plate 10: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 4 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_004).





Plate 11: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 5 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_005).



Plate 12: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 6 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_006).





Plate 13: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 7 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_007).



Plate 14: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 8 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_008).





Plate 15: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 9 of 13, viewed from the NNE (scales: 2x2m (spaced at 5m), archive image ref G2527\_009).



Plate 16: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 10 of 13, viewed from the N (scales: 2x2m (spaced at 5m), archive image ref G2527\_010).





Plate 17: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 11 of 13, viewed from the N (scales: 2x2m (spaced at 5m), archive image ref G2527\_011).



Plate 18: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 12 of 13, viewed from the N (scales: 2x2m (spaced at 5m), archive image ref G2527\_012).





Plate 19: Pre-commencement photographic survey of section of retaining wall to be repaired, perpendicular shot 13 of 13, western end, viewed from the N (scales: 2x2m (spaced at 5m), archive image ref G2527\_013).



Plate 20: Collapsing section of wall, viewed from the NE (scale: 1x2m, archive image ref G2527\_017).





Plate 21: Southern side of collapsing section of wall, viewed from the SE (scale: 1x1m, archive image ref G2527\_023).



Plate 22: Southern side of collapsing section of wall, viewed from the S (scale: 1x2m, archive image ref G2527\_024).





Plate 23: Collapsed part of wall, possibly a culvert, to the north of the bowling green, viewed from the NNE (scale: 1x1m, archive image ref G2527\_019).



Plate 24: Revetment wall [001] showing the larger stones towards the bottom of the wall, viewed from the S (scales 2x1m, archive image ref G2527\_031).





Plate 25: Wooden post and planks [005], viewed from the ENE (scale 1x1m, archive image ref G2527\_038).



Plate 26: Wooden posts showing slightly different alignment to wall [001], viewed from the E (no scale, archive image G2527\_45).





Plate 27: Wooden post after removal (scale 1x1m, archive image ref G2527\_044).



Plate 28: Concrete post to S side of wall, viewed from the E (no scale, archive image ref G2527\_074).





Plate 29: South face of retaining wall (with Conwy Castle in the background)  
(scale 1x1m, archive image ref G2527\_080).



Plate 30: Length of south face of the wall (no scale, archive image ref G2527\_081).





**Plate 31: Length of the top of the wall and river channel**  
(no scale, archive image ref G2527\_082).



**Plate 32: Wide view of wall; taken from the river channel**  
(scale: 1x2m, archive image ref G2527\_083).





Plate 33: North face of wall; taken from river channel (no scale, archive image ref G2527\_084).



Plate 34: North face of wall; taken from river channel (scale: 1x2m, archive image ref G2527\_085).





Plate 35: North face of wall; taken from river channel (scale 1x2m, archive image ref G2527\_086).



Plate 36: North face of wall; taken from river channel (scale: 1x2m, archive image ref G2527\_087).





Plate 37: North face of rebuilt wall; taken from river channel (scale 1x2m, archive image ref G2527\_088).



Plate 38: North face of rebuilt wall; taken from river channel (scale: 1x2m, archive image ref G2527\_089).





Plate 39: Close-up of north face of wall (integrated with old section of wall)  
(scale 1x2m, archive image ref G2527\_090).



Plate 40: Wide view of wall from along river channel (scale: 1x2m, archive image ref G2527\_091).





Plate 41: Location shot of wall in relation to river and castle (no scale, archive image ref G2527\_092).



Plate 42: Late 19th century Minton style floor tiles fragment recycled within rubble backfill behind the retaining wall (no scale, archive image ref G2527\_077).





Plate 43: Nineteenth to early twentieth century bottles recovered from material behind the revetment wall (scale: 0.20m, archive image ref G2527\_094).

1 = Green glass beer bottle, embossed with "Ind Coope & Co Ltd Burton on Trent"

2 = Mineral water bottle with glass marble stopper, embossed with "William Hill Llandudno Est 1876"

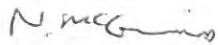

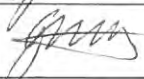
3 = Relish bottle embossed with "Yorkshire Relish Goodhall Backhouse & Co"

4 = Relish bottle of similar appearance to bottle no. 3, but not embossed

Cf. Figure 08 for a reproduction of an advertisement from the Goodhall Backhouse & Co for Yorkshire Relish that matches bottle 3 and includes the now missing label.



## **APPENDIX I – APPROVED GWYNEDD ARCHAEOLOGICAL TRUST PROJECT SPECIFICATION**

Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author	Neil McGuinness		16/06/17
Reviewed by	Document Reviewer	John Roberts		16/06/17
Approved by	Principal Archaeologist	John Roberts		16/06/17

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue
1	Addition of resourcing and archaeological works timetable	3.1	GAPS requirement

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

# **BENARTH ROAD RETAINING WALL, CONWY**

## **PROJECT DESIGN FOR ARCHAEOLOGICAL WATCHING BRIEF**

Prepared for *Conwy County Borough Council*, June 2017

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Figure 01

Reproduction of Conwy County Borough Council Drawing CD1602/01 REV A  
Appendix I - Gwynedd Archaeological Trust photographic metadata pro-forma  
Appendix II - Gwynedd Archaeological Trust watching brief pro-forma  
Appendix III – Estuary Retaining Wall at Benarth Road, Conwy, LL32 8UB: Geotechnical  
Ground Investigation Report  
Appendix IV – MWT Civil Engineering outline Tender Programme

# 1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Conwy County Borough Council* to prepare a project design for an archaeological watching brief during repairs to a 62m long defective portion of the river wall on the northern side of Benarth Road, Conwy (centred on NGR SH7839577350; Figure 01). A 34m long stretch of wall is to be completely dismantled and reconstructed, whilst a 28m long section of the wall to the west is to undergo localised repair and repointing. The proposed repair works necessitate the excavation of ground on the southern, landward side of the wall to a maximum depth of 3.2m. The ground here appears to have been formed by the tipping of waste materials in order to reclaim the land during the early twentieth century (Appendix III).

The repair works will be undertaken by MWT Civil Engineering Ltd and are scheduled to be undertaken in June and July 2017 (Appendix IV).

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

- Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 2014);
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015); and
- Historic Environment Record (HER) Guidelines for Archaeological Contractors (Version 1.3; draft) (Gwynedd Archaeological Trust, 2014); 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**

### **2.1 Historic Background**

The following historic background is reproduced from GAT Report 1348, with amendments.

The section of wall to be repaired lies on the southern bank of the River Gyffin, on the opposite side of the river to the Castle at Conwy which lies 80m to the north. The first known settlement at Conwy dates from the establishment of a Cistercian monastery in c. 1192 on the west bank of the Afon Conwy and close to the confluence with the River Gyffin. The monastery had been established by monks from Strata Florida, who had first settled in north-west Caernarfonshire in 1186, but had moved to Aberconwy by 1192. The importance of the monastery grew under the patronage of Llywelyn ap Iorwerth, who was buried there in 1240, and who kept a hall there for his use. However Edward's decision to use the site for a new town and castle required the monks to move up river to Maenan, where they were granted new lands in compensation for the loss of their old ones (Hays 1963 cited in McGuinness, Evans and Reilly, 2016).

The building of the castle and town were started in March 1283, within days of the arrival of the King to the site. Construction was largely complete by 1287, although works continued into the 14th century. The borough was enclosed with a wall 1280m in length and along its course 21 half-round towers were built. Spurs at the northernmost and southernmost ends of the section facing the river gave added protection to the quay (Soulsby 1983, 113-114 cited in McGuinness, Evans and Reilly, 2016).

The town of Conwy developed rapidly from its first foundation. By 1295 112 burgage plots had been taken by 99 burgesses, and by 1312 the number of plots taken had risen to 124. This meant that Conwy was about twice the size of Caernarfon at this time

The development of the town slowed by the mid-14th century (Soulsby 1983, 110 cited in McGuinness, Evans and Reilly, 2016). The town was captured by Owain Glyndwr's supporters on Good Friday 1401, resulting in the burning of much of the town. Rebuilding started soon after this, and dendrochronology has confirmed that Aberconwy House was begun in 1420 (Haslam et al. 2009 cited in McGuinness, Evans and Reilly, 2016). By the 16th century the town had recovered sufficiently for Sir John Wynn of Gwydir to speak of 'the lawyers of Caernarfon, the merchants of Beaumaris and the gentlemen of Conwy (Wynne 1990 cited in McGuinness, Evans and Reilly, 2016). One of the gentlemen's houses was the

iconic Plas Mawr, an elaborate Elizabethan town house with a grand street frontage, but there were a number of other gentry houses in the town, such as Parlwr Mawr and Plas Coch (Gwyn et al. 2012, 6 cited in McGuinness, Evans, and Reilly, 2016).

## **2.2 Archaeological Background**

Gwynedd HER records no known archaeological sites in proximity to the damaged section of wall that will be impacted by the repairs. The wall itself appears to be built on ground that has been reclaimed between the production of the 1900 second edition and 1910 third edition of the Ordnance Survey County Series Maps of the area (sheet V.9). It seems likely therefore that archaeological potential of the area may be limited to the any surviving wooden remains of boats that may have been wrecked on the river bank prior to the reclamation of the ground here.

A medieval tidal mill on the Gyffin River (GAT PRN 29710) is recorded in historical records. It was rebuilt in 1296, probably after being destroyed during the uprising of Madoc ap Llywelyn in 1294 (GAT Report 562). Its exact location is unknown, though it is thought to lie in close proximity to Pont Pensarn (GAT PRN 66259), 50m to the north-west of the eastern end of the section of wall under repair. It is possible therefore that the remains of the mill could survive on the banks of the River Gyffin and may be encountered during the proposed works.

## 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 be 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).

Following consultation with GAPS, GAT will conduct a **partial** watching brief on the following elements of the repairs to the Benarth Road river wall due to be undertaken by MWT Civil Engineering Ltd on behalf of Conwy County Borough Council during June and July 2017 (see Outline Tender Programme Appendix IV; Table 1; Figure 01):

- any excavations behind the existing wall along its entire 64m length;
- the dismantling of the 34m long section of the wall scheduled to be rebuilt; and
- the completion of the excavation following the dismantling of the wall.

The ground level will be reduced in spits using a mechanical excavator fitted with a flat, toothless bucket and the excavations will be monitored to the proposed 3.2m maximum dig depth required to carry out the repair works (Figure 01). It is currently expected that at least one GAT project archaeologist will be in attendance.

In addition to the monitoring works outlined above, GAPS have specified a requirement for two photographic surveys of the parts of the river wall affected by the works, one prior to the commencement of repairs, and one following the completion of the works (Table 1). The photographic surveys will be conducted by two GAT project archaeologists, and both surveys are dependent on the gaining of safe access to the river side at low tide and safe working

conditions for GAT personnel. If deemed too dangerous, the requirement for the photographic surveys may be reviewed following discussion between the GAT project archaeologists and GAPS.

<b>Date</b>	<b>GAT Staff</b>	<b>Archaeological work to be undertaken</b>
20/06/2017	2 GAT project archaeologists	Pre-commencement photographic survey
30/06/2017-03/07/2017	1 GAT project archaeologist	Monitoring of excavations behind wall
06/07/2017-07/07/2017	1 GAT project archaeologist	Monitoring of completion of excavation following dismantling of wall
27/07/2017	2 GAT project archaeologists	Post completion photographic survey

**Table 1 Resourcing and timetable for archaeological works**

GAPS will be informed of any changes to excavation methodology to those listed above.

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 D40) 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 be 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 **G2527\_001**. When possible, a photographic ID board will be used during the watching brief to record site code, image orientation and any relevant context numbers. Photographic images will also be taken for a condition survey of the wall both prior to the start of the works on the wall and following completion of the repairs.
- Any archaeologically significant 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, structures or preserved wooden or organic artefacts), additional time, resourcing and costs may be required for GAT to complete an appropriate programme of works; this may also incur a delay to the river wall repair programme;*
- 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 of the watching brief, along with an assessment of potential for analysis post-excavation project design (in line with the

MAP2 process). *Additional time, resourcing and costs will be required to undertake any post-excavation programme of works.*

### 3.3 Human Remains

If any human remains identified cannot be preserved in situ and are to be excavated, 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 individual) and stored in a suitable manner within GAT premises. If significant quantities of human remains are encountered, a human osteologist will 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](mailto:lucy.whittingham@aocarchaeology.com)

The osteologist will assist in devising the excavation, recording and sampling strategy for features containing human remains. The osteologist will 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 location of the site, it is possible that waterlogged/organic deposits will be encountered. Bulk samples will not be taken in the first instance 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 or survival of organic deposits, recourse may be made to a specialist for advice on palaeoenvironmental assessment and analysis strategy. In this instance the specialist will be:

Lucy Whittingham

Project Manager (post-excavation)

AOC Archaeology

tel: 0208 843 7380

email: [lucy.whittingham@aocarchaeology.com](mailto:lucy.whittingham@aocarchaeology.com)

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).

Any ecofact samples taken from human burials 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 19<sup>th</sup> and 20<sup>th</sup> 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 (2012) 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](mailto: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 Conwy Archive Service, Old Board School, Lloyd Street, Llandudno, Conwy, LL30 2YG) where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff.

All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the 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 MWT Civil Engineering Ltd) for agreement regarding the transfer of artefacts, initially to GAT and subsequently to the relevant museum (Conwy Archive Service, Old Board School, Lloyd Street, Llandudno, Conwy, LL30 2YG). 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 Conwy Archive Service, this must be in accordance with their current guidelines.

### 3.6 Fieldwork Archiving

Following the completion of the watching brief, 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. Sections: all cross referenced and complete with relevant site matrix completed;
4. Survey data: downloaded using a Computer Aided Design package;
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 (if relevant); all cross referenced and complete.

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

### **3.7 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.



## **7 PROCESSING DATA, ILLUSTRATION, REPORT AND ARCHIVING**

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 and feature plans where appropriate. 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.

## 8 DISSEMINATION AND ARCHIVING

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. The archaeological watching brief outlined in this project specification will commence in June 2017. A draft report (or interim report) will be submitted within one month of fieldwork completion (August 2017); a final report will be submitted to the regional Historic Environment Record within six months of project completion (date tbc). If appropriate, accompanying digital data in the form of a project database, GIS table(s) and photographs will also be submitted to the regional Historic Environment Record simultaneously.

The following dissemination will apply:

- A paper report(s) plus digital report(s) 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 project completion (final report only);
- If appropriate, digital information such as the project database, GIS table(s) and photographs, will be submitted to the regional Historic Environment Record at Gwynedd Archaeological Trust within six months of project completion. All digital datasets submitted will conform to the required standards set out in Gwynedd Archaeological Trust's *Historic Environment Record (HER) Guidelines for Archaeological Contractors* (Version 1.3; draft);
- 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.

## **9 PERSONNEL**

The project will be managed by John Roberts, Principal Archaeologist GAT Contracts Section with attendances on-site undertaken by at least one GAT Project Archaeologist during archaeological monitoring and two Project Archaeologists during the photographic survey. The Project Archaeologist(s) will be responsible for the watching brief, including all field management duties, e.g., GAPS liaison, main contractor liaison, osteologist or palaeo-environmentalist liaison (if relevant). The Project Archaeologist(s) 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. A 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.

## **10 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.



## **11 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

## 12 SOURCES CONSULTED

Brunning, R and Watson, J 2010 *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (3<sup>rd</sup> edition)

Chartered Institute for Archaeologists, 2014, *Standard and Guidance for an archaeological watching brief*

Davidson, A and Berks, T, 2005. *Billington's Bros Ltd, Llanrwst Rd Conwy: Archaeological Assessment*, GAT Report 562

English Heritage, 1991, *Management of Archaeological Projects*

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

English Heritage, 2012, *Waterlogged Organic Artefacts, Guidelines on their Recovery, Analysis and Conservation*

Gwynedd Archaeological Trust, 2014, *Historic Environment Record (HER) Guidelines for Archaeological Contractors* (Version 1.3; draft)

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

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

McGuinness, N, Evans, R and Reilly, S 2016, *Land at Pentywyn Road and Marl Lane Deganwy: desk-based assessment and walkover survey*, GAT Report 1348

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

**FIGURE 01**

**Reproduction of Conwy County Borough Council Drawing  
CDCD1602/01 REV A**





NOTES

- Reconstruct wall chainage 0m to 34m.  
Material quantities approx: -  
Import 6N material = 97m<sup>3</sup>  
Geotextile wrapped filter media 48m<sup>3</sup>  
Concrete foundation = 11m<sup>3</sup>  
Topsoil = 41m<sup>3</sup>  
Excavated material = 97m<sup>3</sup>  
Disposal off site material=100m<sup>3</sup>  
Existing wall material =41m<sup>3</sup>  
Existing coping =34m  
Allow imported sub base =20m<sup>3</sup>
- Localised repair section of wall 34-62m.  
Area of repointing 20sq.m
- Repair / Rebuild Areas to be agreed onsite

KEY First angle Projection

- Defective wall length  
Partly collapse wall area

REV	DETAIL	DRAWN	CHECKED	DATE

Repair of River Wall  
Benarth Road, Conwy

Location Plan /  
Typical Cross Section

CLIENT  
CCBC

Community Development Services

SCALE @ A3:	DRAWN:	CHECKED:	APPROVED:	DWG STATUS:
As Shown	EJH	IH	RH	Tender
DATE:	DATE:	DATE:	DATE:	
18/01/17	10/05/17	12/05/17		

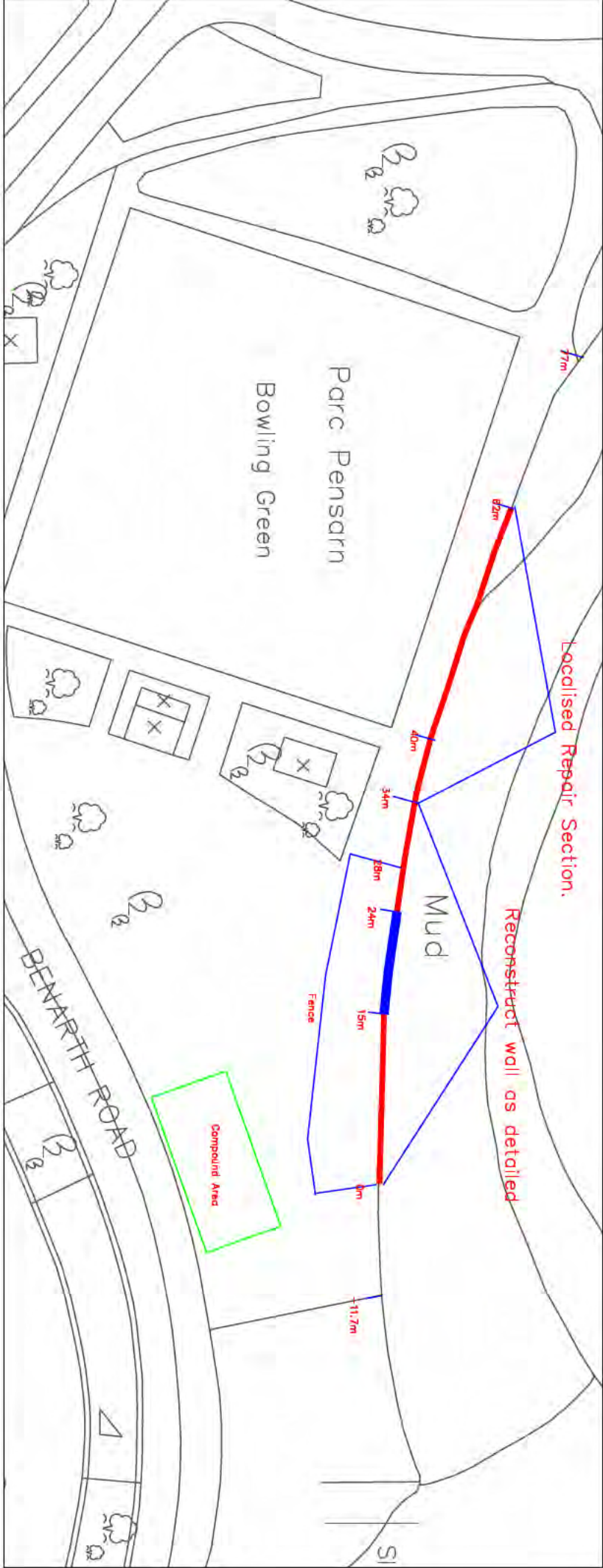


**CONVY**  
COUNCIL  
CONVY COUNTY BOROUGH COUNCIL

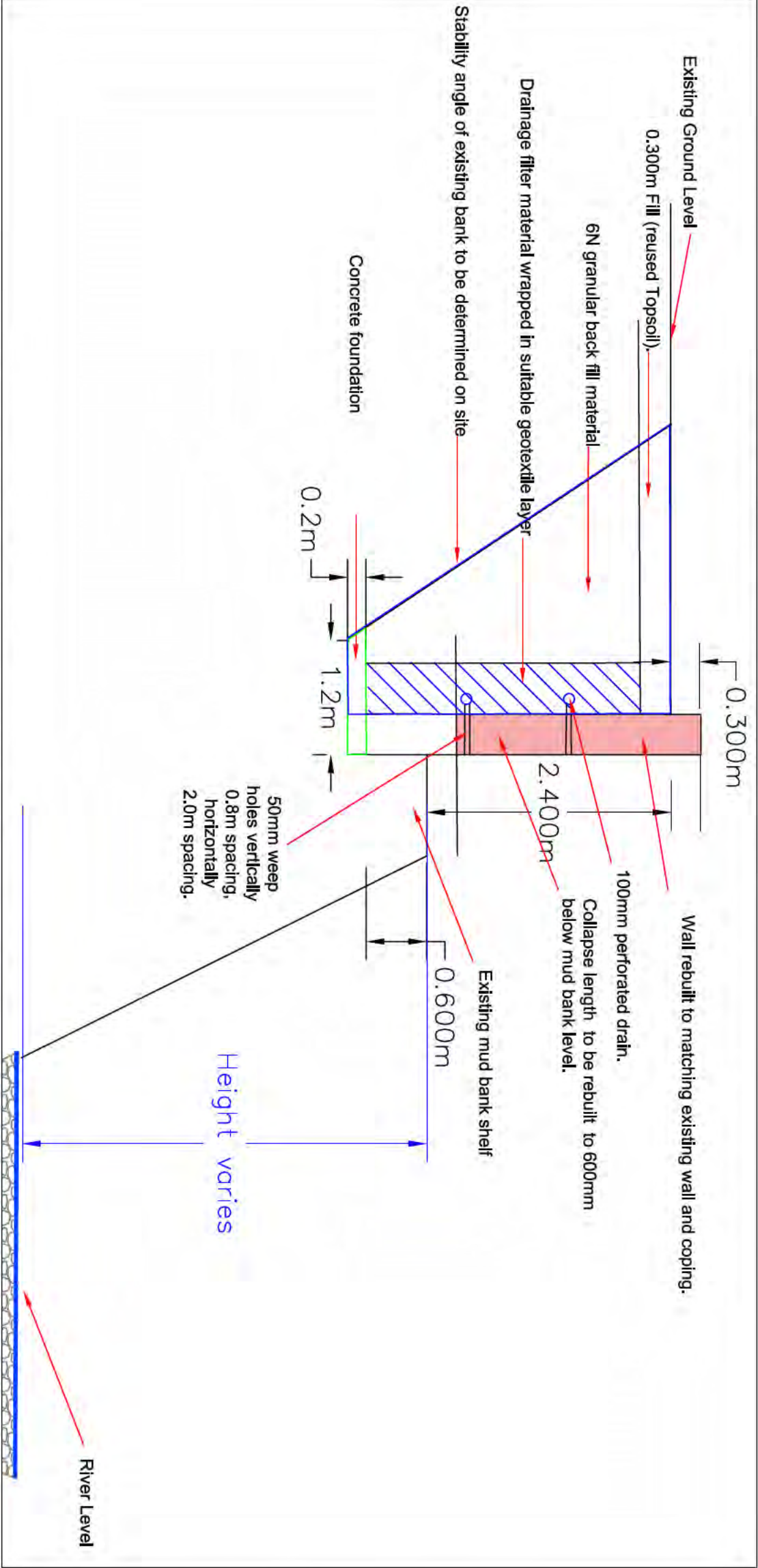
**ENVIRONMENT,  
ROADS & FACILITIES**

G.B. EDWARDS BENG (Hons) CENG FICE  
Head of Environment Roads & Facilities,  
Machirio Office, Conwy Road,  
Machirio, LL28 5AB.  
T44 (01482) 575337  
F44 (01482) 575189

PROJECT Ref:	DRAWING No:	REV
CDGD1602	/ 01	A



General layout plan / Location 1:500



Typical section through proposed wall scale 1:50

**APPENDIX I - GWYNEDD ARCHAEOLOGICAL TRUST  
PHOTOGRAPHIC METADATA PRO-FORMA**



## 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.

[illegible]



**APPENDIX II - GWYNEDD ARCHAEOLOGICAL TRUST  
WATCHING BRIEF PRO-FORMA**

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

**APPENDIX III – ESTUARY RETAINING WALL AT BENARTH  
ROAD, CONWY, LL32 8UB: GEOTECHNICAL GROUND  
INVESTIGATION REPORT**



**CONWY COUNTY BOROUGH COUNCIL**

**ESTUARY RETAINING WALL AT BENARTH ROAD, CONWY, LL32 8UB**  
**GEOTECHNICAL GROUND INVESTIGATION REPORT**


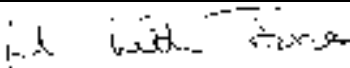
**REPORT No. E0853.GGI.R1**

**OCTOBER 2016**



**Client :** CONWY COUNTY BOROUGH COUNCIL  
**Project Title :** ESTUARY RETAINING WALL AT BENARTH ROAD, CONWY, LL32 8UB  
**Document Title:** GEOTECHNICAL GROUND INVESTIGATION REPORT  
**Project No.** e0853  
**Report No.** E0853.GGI.R1  
**Date.** OCTOBER 2016

**Distribution:** CONWY COUNTY BOROUGH COUNCIL

<b>Version:</b>	FINAL		
<b>Date:</b>	24/10/16		
<b>Prepared by:</b>	Huw Littler-Jones		
<b>Checked by:</b>			
<b>Report Ref:</b>	E0853.GGI.R1		
<b>Signed:</b>			

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## **Appendices**

Appendix 1	-	Historical Ordnance Survey Map Extracts
Appendix 2	-	Historical BGS Borehole Record
Appendix 3	-	Borehole Record
Appendix 4	-	Trial Pit Record



## **1. INTRODUCTION.**

### **1.1 Background and Terms of Reference**

- 1.1.1 In October 2016 e-geo Solutions Ltd were commissioned by Conwy County Borough Council to undertake a geotechnical ground investigation adjacent to a section of river estuary retaining wall that shows signs of failure on Benarth Road, Conwy. The objective of the investigation and assessment was to determine the nature of ground materials behind and below the retaining wall and to recommend options for remedial works.
- 1.1.2 This report presents the findings of the ground investigation comprising a single borehole and in-situ ground strength tests and a trial trench. The report provides details of the ground conditions encountered, the geotechnical properties and ground bearing capacity of the near surface strata.
- 1.1.3 The report has been prepared by e-geo Solutions Ltd for the sole use of the Client, for the purposes described and no extended duty of care applies to other parties. Any other party using this report for any purpose whatsoever do so at their own risk and any duty of care to that party is specifically excluded.
- 1.1.4 The comments given, and opinions expressed, in this report are based on the information available at the time the report was compiled, however there may be additional information and data which becomes available at a later date which has an impact on the report content. Where data supplied by others has been used it has been assumed that the information is correct. No responsibility can be accepted by e-geo Solutions Ltd for inaccuracies within the data supplied by others.
- 1.1.5 The copyright of this report and its contents prepared by e-geo Solutions Ltd is solely owned by e-geo Solutions Ltd. Neither this report nor contents prepared by e-geo Solutions Ltd may be reproduced, published or adapted without the express written approval of e-geo Solutions Ltd.

### **1.2 Report Contents**

- 1.2.1 The report includes sections on:-
- Present site description, profile and setting
  - The scope of the investigation and testing and its justification
  - The geological, geotechnical and hydro-geological conditions encountered
  - The geotechnical properties and of the ground strata
  - Recommendations for remedial works and replacement wall construction

## 2. SITE LOCATION, DESCRIPTION AND SETTING.

### 2.1 Site Location

- 2.1.1 The area of investigation is to the landward side of a section of the estuary retaining wall where the Afon Gyffin meets the River Conwy Estuary, adjacent to Conwy Bowling Club on Benarth Road, Conwy. The site location is shown on Figure 1 and is centred at Grid Reference 283063, 381347.

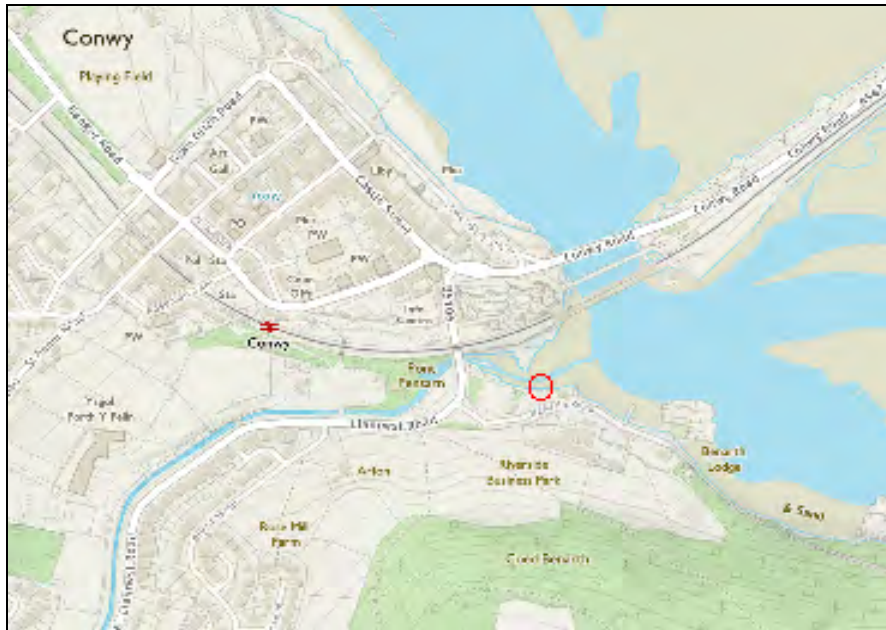


Figure 1 – Site Location

### 2.2 Site Description and Topography

- 2.2.1 The area of investigation comprises a flat grassed area on the south side of the retaining wall where there is evidence of outward and downward movement of the retaining wall. The ground immediately behind the retaining wall is approximately 250mm lower than the surrounding ground as a result of the wall and ground failure and movement. The area and extent is shown on Plate 1 below:



Plate 1 – Area of Investigation

## 2.3 Site Development History

- 2.3.1 Extracts from historical Ordnance Survey maps are presented in Appendix 1 and indicate how the line of the estuary retaining wall has varied between 1889 and the present day. The maps indicate that the area of the bowling green was previously a 'Timber Yard' and that the boundary between the land and the estuary has been moved northwards into the estuary over time. It is probable that the estuary mud was 'reclaimed' by the tipping of 'waste' materials.

## 2.4 Geology

- 2.4.1 The British Geological Survey map for the area shows that the drift deposits at the site comprise Tidal Flat Deposits of silt and clay (Figure 2). The bedrock below the site comprises mudstone of the Llandoverly Formation.



Figure 2 – Superficial Geology Map Extract (Tidal Flat Deposits shown as yellow)

- 2.4.2 A historical BGS borehole record for a borehole constructed approximately 50m west of the site in 1973 is presented in Appendix 2. The borehole record indicates that there is made ground to a depth of 4.50m, soft grey silt to 11.10m, wood to 11.60 and then mudstone.



### **3. GROUND INVESTIGATION WORKS.**

#### **3.1 Previous Investigations**

- 3.1.1 No previous ground investigations have been undertaken at the site.

#### **3.2 Scope of Work – Exploratory Holes**

- 3.2.1 A geotechnical ground investigation was undertaken to provide information on the ground conditions behind and below the retaining wall. The works were carried out by e-geo Solutions Ltd with the field work element undertaken on 18<sup>th</sup> October 2016. The investigation was designed by e-geo Solutions Ltd and supervised and administered by e-geo Solutions Ltd and undertaken in accordance with BS5930 (2015) – code of Practice for Site Investigations (Amendment 1).

- 3.2.2 The main scope of work involved:

- The construction of 1 Nr. cable percussion boreholes with in-situ standard penetration tests (SPT) at 1.0m intervals to a depth of 12.00m.
- The excavation of a trial pit to 4.00m behind the retaining wall to expose the ground strata and wall construction/foundation.
- The examination of ground strata by a geo-environmental engineer with the careful description of soil types. Detailed descriptions of the ground strata are presented in the borehole records in Appendix 1 and trial pit records in Appendix 2.

#### **3.3 Scope of Work – Testing and Analysis**

- 3.3.1 No laboratory geotechnical was undertaken but samples are retained.

#### **3.4 Trial Hole Locations**

- 3.4.1 Borehole and trial pit locations are indicated on Plate 2 and Figure 3 below.



Plate 2 – Borehole Location



Figure 3 – Borehole (BH) and Trial Pit (TP) Locations

#### 4. GROUND CONDITIONS AND GEOLOGY.

##### 4.1 General

- 4.1.1 Details of the ground strata and depths are presented on the borehole record and trial pit record in Appendix 1 and 2. A summary of the findings are presented below.

##### 4.2 Stratigraphy

- 4.2.1 The general stratigraphic sequence was:

MADE GROUND – Dark brown sandy silt with some brick gravel

MADE GROUND – Medium brown gravely sandy clayey silt/silty clay with some brick, ash gravel

MADE GROUND – Light grey brown clayey silty cobbly fine to coarse sand and gravel with some gravel of brick, glass, ash, ceramics

MADE GROUND – Black slightly silty fine to coarse sand and gravel of ash, clinker, ceramic glass

CLAY – Very soft dark grey silty CLAY

- 4.2.2 The strata and depths encountered during the investigation was:

Stratum	Description	Depth to base m range (average)
MADE GROUND	Dark brown sandy SILT with some brick gravel	0.35
MADE GROUND	Soft to firm medium brown very gravely very sandy slightly clayey SILT with low brick, siltstone cobble content and a plastic bag Gravel is coarse subangular siltstone	0.70 – 2.00
MADE GROUND	Loose light grey brown silty clayey fine to coarse SAND and GRAVEL. High cobble content of brick and siltstone. Gravel is fine to coarse of various lithologies	1.70
MADE GROUND	Loose black slightly silty fine to coarse SAND and GRAVEL of ash clinker and some glass and ceramic with very occasional glass bottle, wood post, ceramic pot	7.50
CLAY	Very soft to soft dark grey silty CLAY	12.00+

##### 4.3 Groundwater

- 4.3.1 Groundwater was encountered at the following depths:

BH No	Depth water encountered (mbgl)	Water depth (mbgl) after 20 minutes
BH1	2.75	Tidal and rising
TP1	2.70	Large inflow and tidal

##### 4.4 Contamination Observations

- 4.4.1 During the examination of the ground strata no obvious indications of contamination was noted within the borehole or trial pit but made ground containing brick and glass gravel and some ash and clinker was found to a depth of 7.50m.



#### 4.5 Geotechnical Properties

4.5.1 The following SPT N values were obtained in the various strata.

Stratum	Description	Depth (m)	SPT 'N' value
MADE GROUND	Dark brown sandy SILT with some brick gravel		
MADE GROUND	Soft to firm medium brown very gravely very sandy slightly clayey SILT with low brick, siltstone cobble content and a plastic bag Gravel is coarse subangular siltstone	1.00	2
MADE GROUND	Loose light grey brown silty clayey fine to coarse SAND and GRAVEL. High cobble content of brick and siltstone. Gravel is fine to coarse of various lithologies		
MADE GROUND	Loose black slightly silty fine to coarse SAND and GRAVEL of ash clinker and some glass and ceramic with very occasional glass bottle, wood post, ceramic pot	2.00	1
		3.00	2
		4.00	2
		5.00	2
		6.00	4
		7.00	4
CLAY	Very soft to soft dark grey silty CLAY	8.00	2
		9.00	2
		10.00	2
		11.00	3

## **5. GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS**

### **5.1 Ground Conditions Behind Retaining Wall**

- 5.1.1 From the findings of the borehole and trial pit the ground immediately behind the section of retaining wall that has moved, is made ground to a depth of 7.50m. The made ground comprises a loose fine to coarse sand and gravel with cobbles and some gravel of brick and ash and is possibly old 'tip material'. Below the made ground is a soft silty clay which extended to at least 12.0m and is the natural tidal flats deposits. Historical boreholes within 50m of the area of investigation suggest bedrock is present at a depth of approximately 11.0 to 12.0m.
- 5.1.2 Groundwater was encountered in the borehole and trial pit at 2.70m and was tidal. Within the granular made ground there will be free flow of water from the estuary into the ground behind the sea wall as tides rise and fall.
- 5.1.3 The retaining wall construction appears to be stone and mortar for the full depth. The front face is pointed but the rear face exposed in the trial pit is only partially cemented.

### **5.2 Retaining Wall Foundations**

- 5.2.1 The retaining wall foundations were not exposed in the trial pit due to the depth and presence of water.

### **5.3 Retaining Wall Failure Causes**

- 5.3.1 The retaining wall has moved out at the base and the top of the wall has moved down as a result. The cause of the outward movement is likely to be a failure of the soft silty clay ground below the foundation, movement in the loose made ground behind the wall, the movement of water through the wall near the base and below the wall foundations causing erosion, or a combination of all these.
- 5.3.2 At low tide water seepages were observed in the tidal flat deposits on the estuary side of the wall directly adjacent to the location where wall movement has occurred.
- 5.3.3 The wall movement has occurred where the erosion of the tidal flats by the River Gyffin has resulted in the narrowest bank of tidal mud along the length of the retaining wall. This has led to a steepening of tidal flats bank and a section of least resistance to failure from loading of the tidal flats silty clay by the retaining wall.

### **5.4 Remedial Options.**

- 5.4.1 For the repair and reconstruction of the retaining wall we suggest the following:

#### **Gabion Wall**

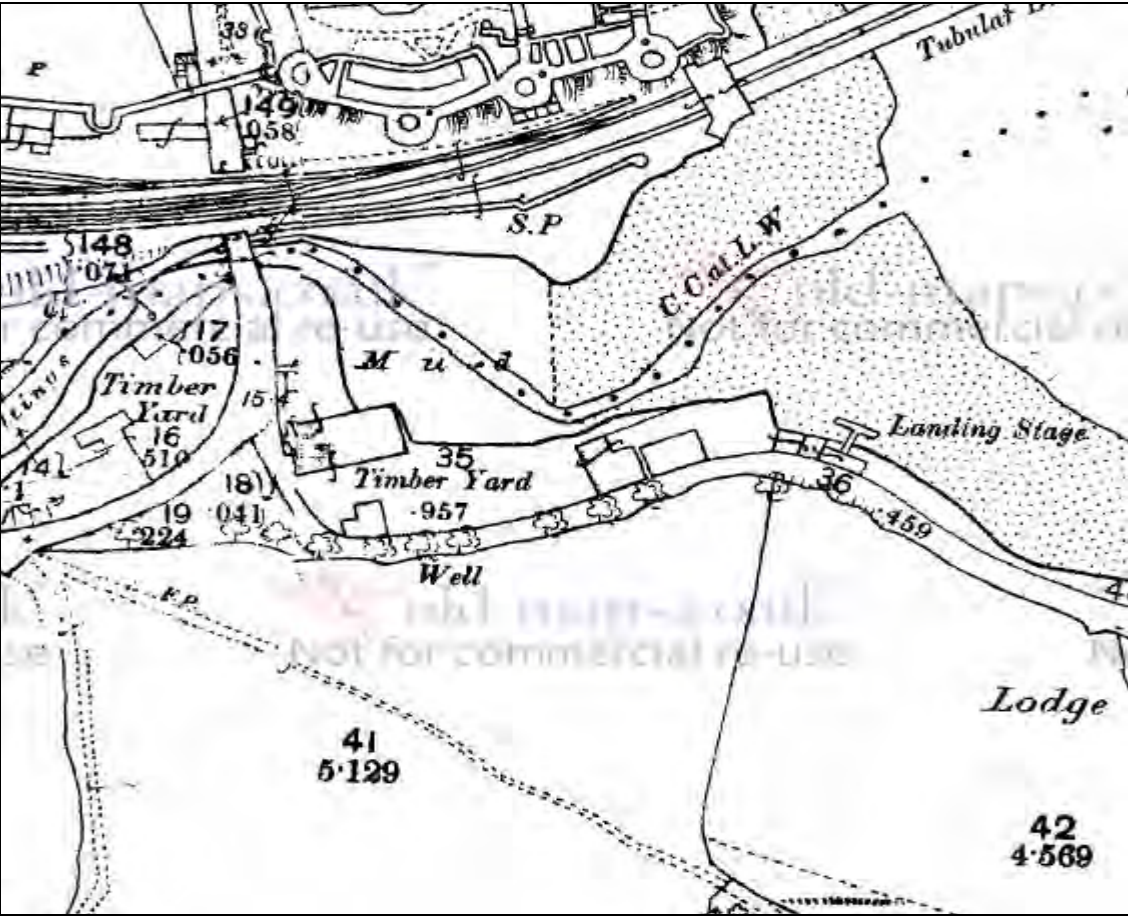
Rock filled gabion wall with forward facing stone of similar type (reused stone from existing wall) to the existing wall. Basal layer of gabions to be at a depth at least 500mm deeper than the depth of the existing wall and to found on the natural clay or to found on placed granular material following over excavation.

#### **Concrete and Block Wall**

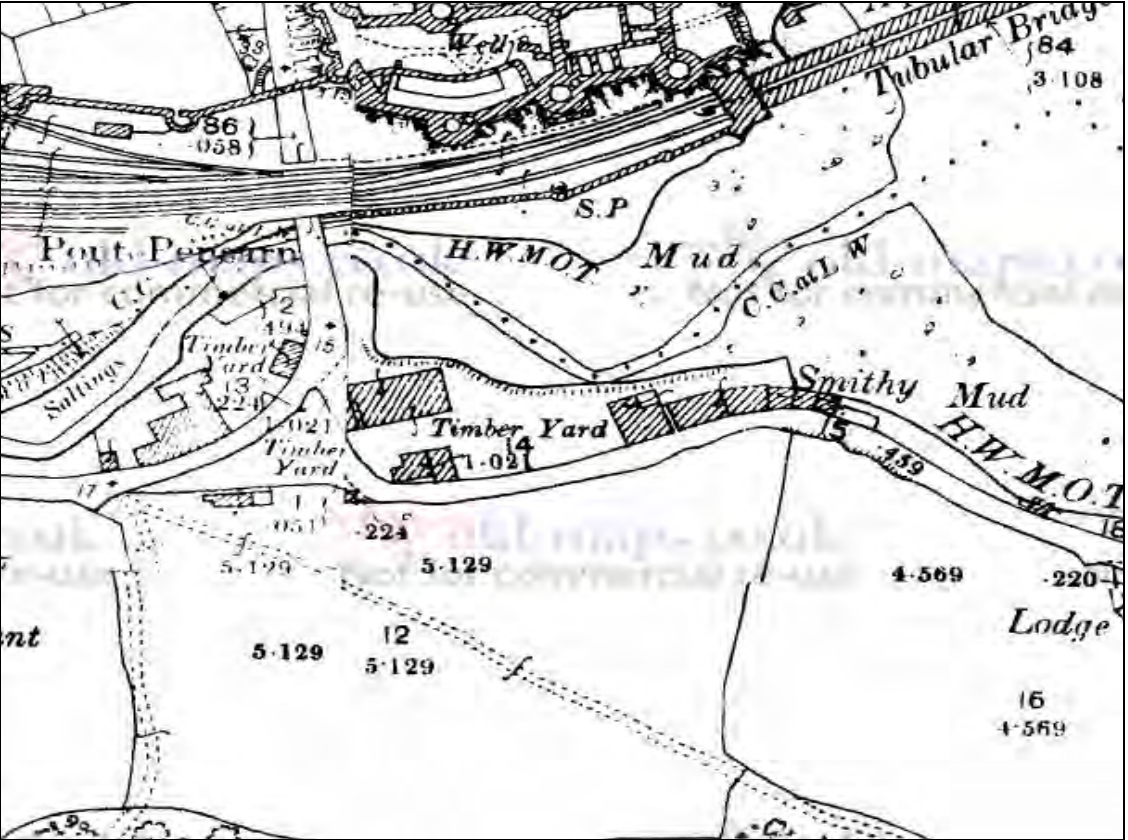
Block wall with facing of stone of similar type (reused stone from existing wall) to the existing wall with no fines concrete backfill behind the wall, built off lightly reinforced concrete slab. Concrete slab to be at least 2.2m wide and placed at a depth at least 500mm deeper than the depth of the existing wall and to found on the natural clay or to found on placed granular material following over excavation.

Appendix 1 - Historical Ordnance Survey Map Extracts



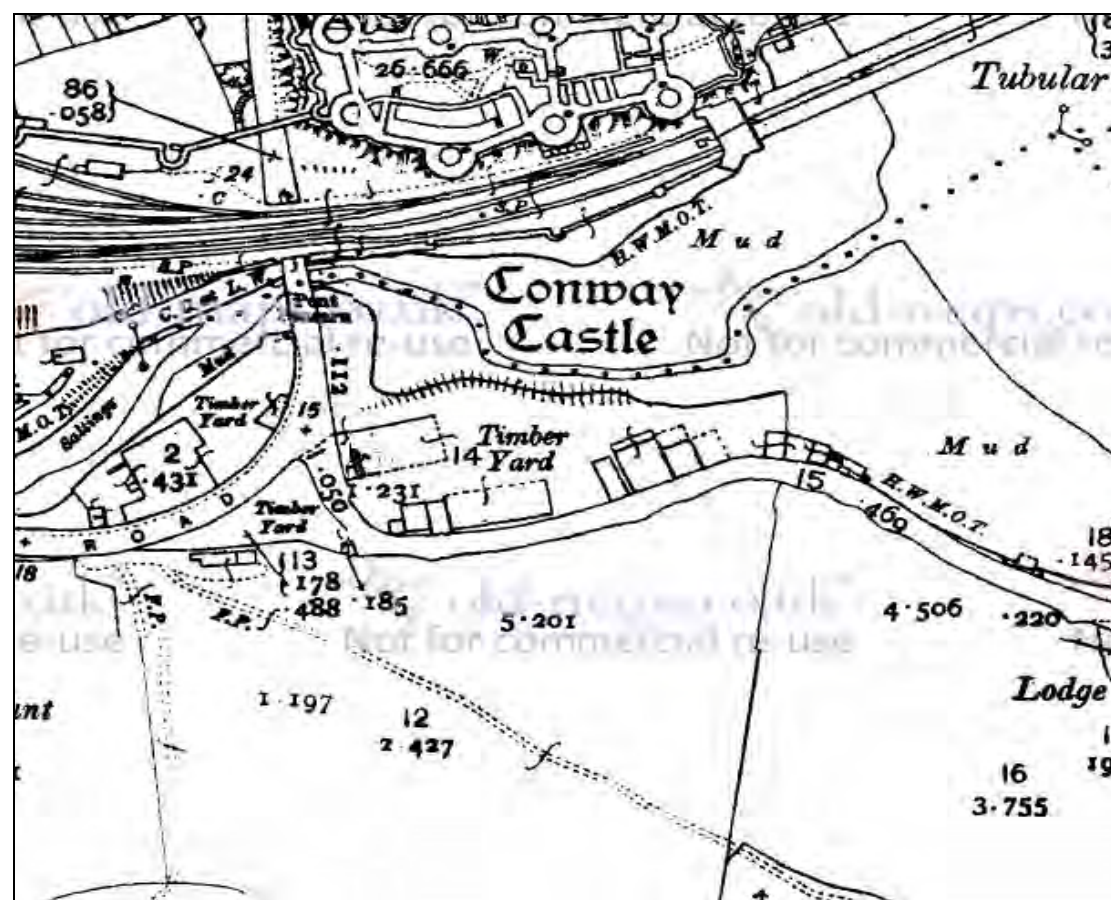


OS Map Extract 1889

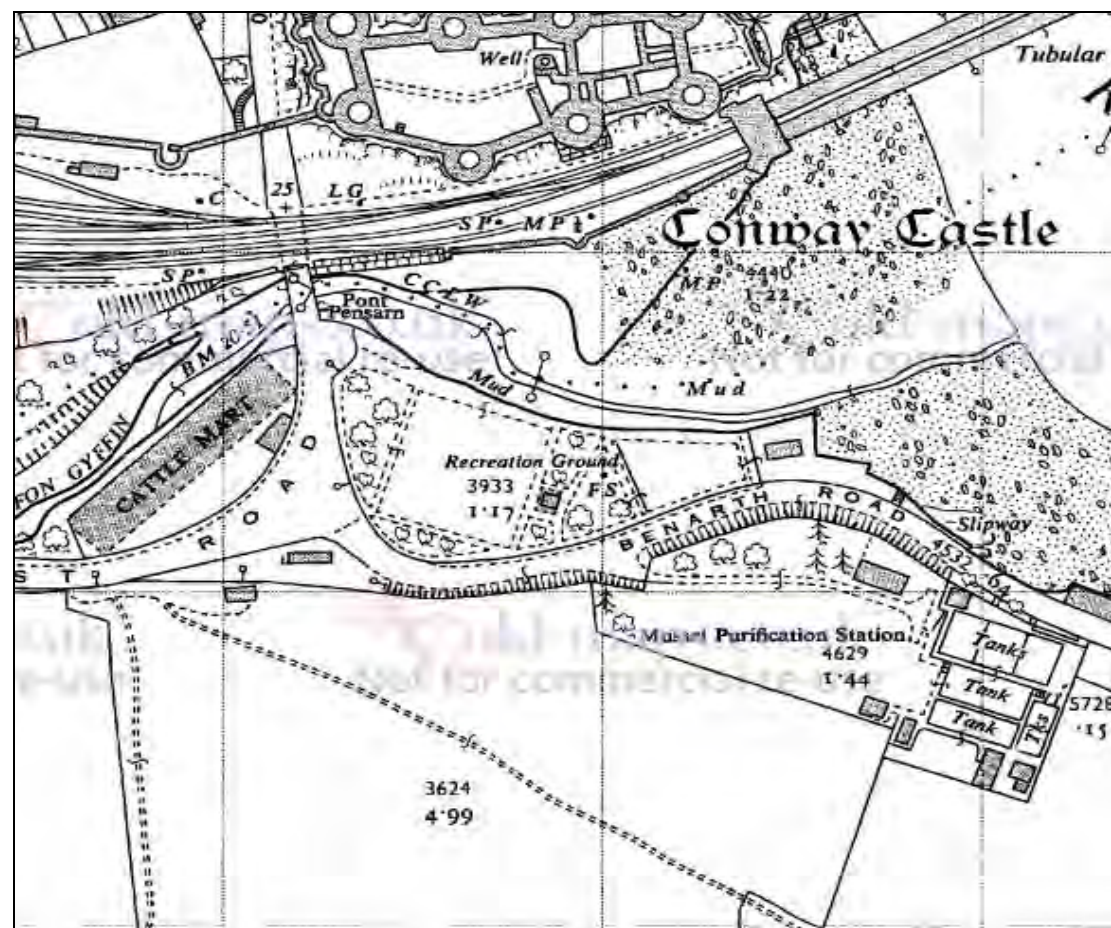


OS Map Extract 1900

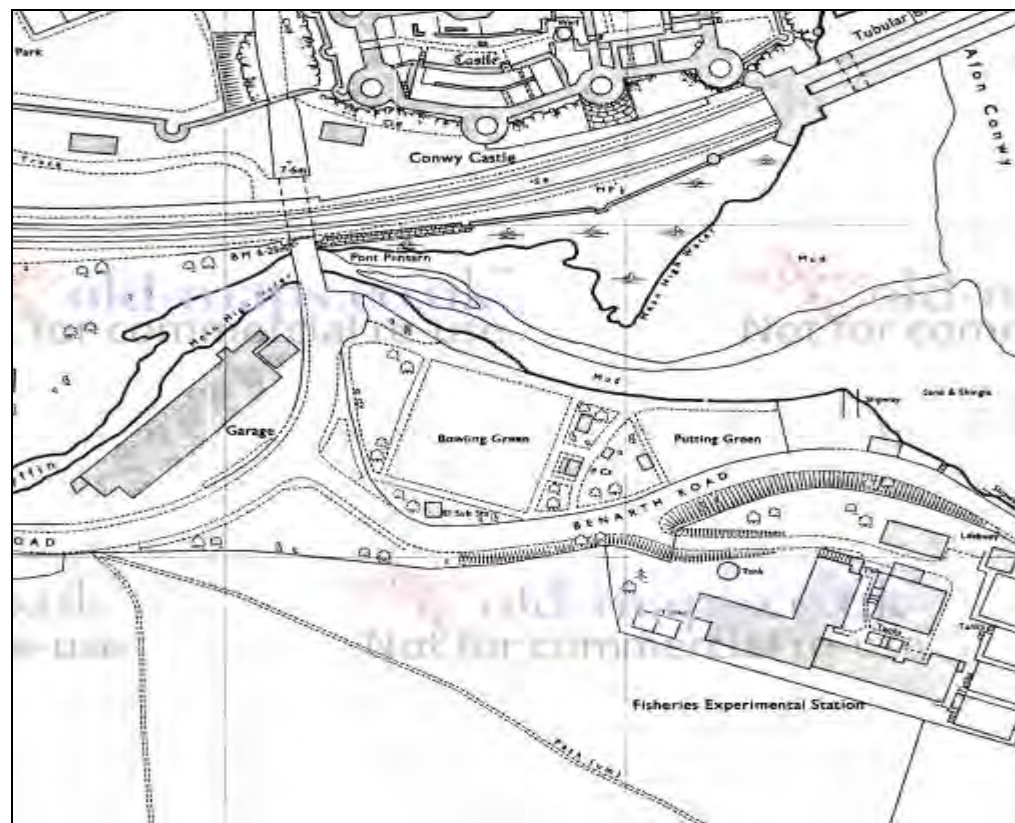




OS Map Extract 1913



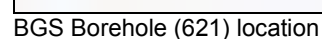
OS Map Extract 1960



OS Map Extract 1976



Appendix 2                      -                      Historical BGS Borehole Record

BGS Borehole (621) record

Appendix 3                      -                      Borehole Record





## CABLE PERCUSSION BOREHOLE RECORD

SITE: ESTUARY RETAINING WALL, BENARTH ROAD, CONWY

LOCN: CONWY BOWLING CLUB, BENARTH ROAD, CONWY

CLIENT: CONWY COUNTY BOROUGH COUNCIL

BOREHOLE No:

BH 1

Sheet 1 of 2

Dates : 18/10/2016

Elev (maOD) :

Project Ref: e0853

Casing dia :150mm to 12.0m

Engineer: HLJ

Depth (m)	Sample/ Test	Field Record	Depth (m)	Description	Casing Depth(m)	Water Depth(m)	Elevation maOD
0.50	D		0.35	Made Ground - Dark brown sandy SILT with some brick gravel			
1.00 - 1.45	SPT N = 2 D	1,0,0,1,0,1		Made Ground - Soft medium brown gravelly sandy clayey SILT. Gravel is fine to coarse subangular siltstone and brick with some ash and very occasional brick cobble (MADE GROUND SILT) (1.65)	1.00		
1.50	D						
2.00 - 2.45	SPT N = 1 D	3,1,0,1,0,0	2.00	Made Ground - Loose grey brown silty clayey fine to coarse SAND and GRAVEL. Gravel is subangular of various lithologies with some brick ash and occasional ceramic and glass (MADE GROUND SAND and GRAVEL) (5.50)	2.00		
2.50	D						
3.00 - 3.45	SPT N = 2 D	1,0,0,1,0,1			3.00		
3.50	D						
4.00 - 4.45	SPT N = 2 D	1,0,1,0,1,0			4.00		
4.50	D						
5.00 - 5.45	SPT N = 2 D	2,1,0,1,0,1			5.00		
5.50	D						
6.00 - 6.45	SPT N=4 D	1,0,2,0,1,1			6.00		
6.50	D			some wood at 6.75m possible sleepers			
7.00-7.45	SPT N=4 D	1,1,0,2,1,1			7.00		
7.50	D		7.50	Very soft to soft dark grey silty CLAY			
8.00-8.45	SPT N=2 D	1,0,0,1,0,1			8.00		
8.50	D						
9.00-9.45	SPT N=2 D	0,1,0,1,1,0			9.00		
9.50	D						
				Borehole continued			

## Remarks

Groundwater encountered at 2.75m (tidal) rising slowly

Borehole backfilled with arisings to 4.00m. Slotted pipe with gravel surround 4.00m to 1.00m. Plain pipe and bentonite 1.00 to 0.00m



## CABLE PERCUSSION BOREHOLE RECORD

SITE: ESTUARY RETAINING WALL, BENARTH ROAD, CONWY

LOCN: CONWY BOWLING CLUB, BENARTH ROAD, CONWY

CLIENT: CONWY COUNTY BOROUGH COUNCIL

BOREHOLE No:

**BH 1**

Sheet 2 of 2

Dates : 18/10/2016

Elev (maOD) :

Project Ref: e0853

Casing dia :150mm to 12.0m

Engineer: HLJ

Depth (m)	Sample/ Test	Field Record	Depth (m)	Description	Casing Depth(m)	Water Depth(m)	Elevation maOD
10.00-10.45	SPT N=2	1,0,0,0,1,1			10.00		
10.00-10.45	D			Very soft to soft dark grey silty CLAY			
10.50	D						
11.00-11.45	SPT N=3	1,0,1,0,1,1			11.00		
11.00-11.45	D						
11.50	D						
				Base of borehole at 12.00m			

## Remarks

Groundwater encountered at 2.75m (tidal) rising slowly

Borehole backfilled with arisings to 4.00m. Slotted pipe with gravel surround 4.00m to 1.00m. Plain pipe and bentonite 1.00 to 0.00m

Appendix 4 - Trial Pit Record



# TRIAL PIT RECORD

						Trial Pit No: <b>TP 1</b>		
Date : 24/10/2016						Site: Retaining Wall, Benarth Rd, Conwy		
Excavator : JCB excavator						e0853		
Pit size : 3.00x 0.70m						Depth : 3.70m		
						Elev (m aOD):		
STRATA DESCRIPTION						SAMPLE RECORD		
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Description	Depth	Type B U D W	Depth (m)	Number
TP1	0.00	0.35	0.35	Made Ground - Black to dark brown sandy SILT				
	0.35	0.70	0.35	Made Ground - Soft to firm medium brown very gravely very sandy slightly clayey SILT with low brick, siltstone cobble content and a plastic bag. Gravel is coarse subangular siltstone	0.5			
	0.70	1.70	1.00	Made Ground - Loose light grey brown silty clayey fine to coarse SAND and GRAVEL. High cobble content of brick and siltstone. Gravel is fine to coarse of various lithologies	1.0			
					1.5			
	1.70	3.70+	2.00+	Made Ground - Loose black slightly silty fine to coarse SAND and GRAVEL of ash, clinker and some glass and ceramic with very occasional glass bottle, wood post, ceramic pot	2.0			
					2.5			
				large water inflow and standing at 2.70 and rising with tide	3.0			
					3.5			
				Base of pit at 3.70m	3.7			
<b>Remarks</b> Sidewalls : Collapse of pit sides from 0.70m Groundwater : Large water inflow (tidal) at 2.70m In-situ testing : None Contaminants : None Services : None								



## **APPENDIX IV – MWT CIVIL ENGINEERING OUTLINE TENDER PROGRAMME**

(The dates for the proposed works have been postponed by 7 days and the programme moved back by one week. Site access will be established on 26/06/2017)

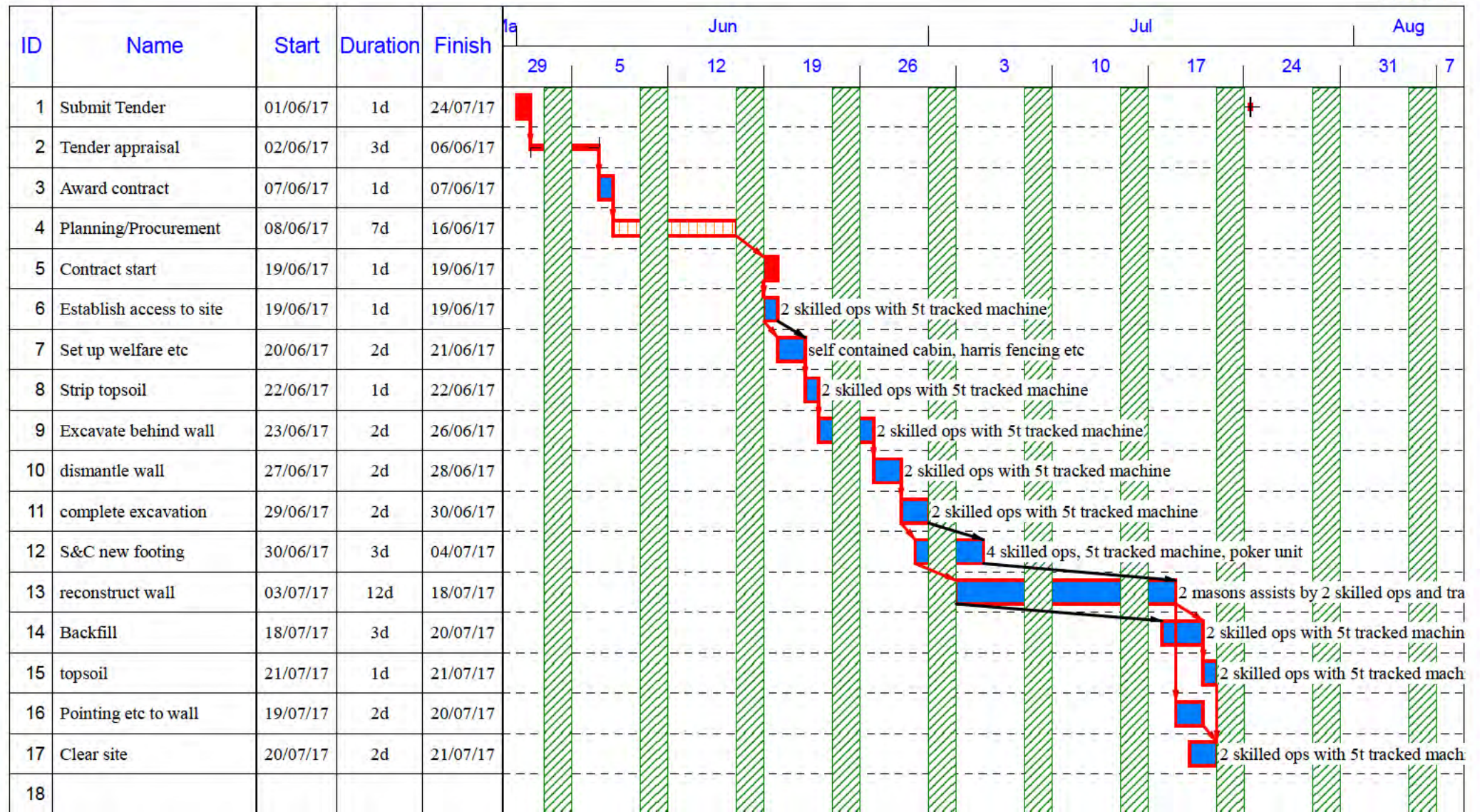




# Benarth Retaining Wall, Conwy

## Outline Tender Programme

31/05/17





**APPENDIX II - GWYNEDD ARCHAEOLOGICAL TRUST  
PHOTOGRAPHIC METADATA ARCHIVE**

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_001	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 1 of 13, estern end	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	07
G2527_002	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 2 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	08
G2527_003	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 3 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	09
G2527_004	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 4 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	10
G2527_005	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 5 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	11

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_006	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 6 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	12
G2527_007	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 7 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	13
G2527_008	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 8 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	14
G2527_009	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 9 of 13	NNE	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	15
G2527_010	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 10 of 13	N	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	16



PHOTO RECORD NUMBER*	SITE SUB-DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_011	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 11 of 13	N	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	17
G2527_012	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 12 of 13	N	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	18
G2527_013	-	Pre-commencement visit of section of retaining wall to be repaired, perpendicular shot 13 of 13, western end	N	2x2m (spaced at 5m)	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	19
G2527_014	-	Shot along wall from slipway NE of The Boathouse	E	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	02
G2527_015	-	Shot along wall from slipway NE of The Boathouse showing Conwy Castle	ESE	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	
G2527_016	-	Shot along wall from its junction with The Boathouse retaining wall	E	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	05

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_017	-	Collapsing section of wall	NE	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	20
G2527_018	-	Collapsed part of wall, possibly a culvert, to the north of the bowling green	NE	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	
G2527_019	-	Collapsed part of wall, possibly a culvert, to the north of the bowling green	NNE	1x1m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	23
G2527_020	-	Shot along section of wall to be repaired from its western end	WNW	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	03
G2527_021	-	Shot along southern side of section of wall to be repaired from its western end	WNW	1x1m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	04
G2527_022	-	Shot along southern side of section of wall to be repaired from its eastern end	E	1x1m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	06
G2527_023	-	Southern side of collapsing section of wall	SE	1x1m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	21
G2527_024	-	Southern side of collapsing section of wall	S	1x2m	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	22
G2527_025	-	Shot along wall from Pont Pensarn	WNW	-	Neil McGuinness	20/06/2017	Gwynedd Archaeological Trust	01

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_026	A	Working shot - Wall trench	E	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_027	A	Working shot - Wall trench	E	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_028	A	Working shot - Wall trench	SSE	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_029	A	Working shot - Wall trench - showing tire at the base of the trench	E	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_030	A	S facing wall section (2.6m high)	S		Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_031	A	S facing wall section (2.6m high)	S		Ken Owen	04/07/2017	Gwynedd Archaeological Trust	24
G2527_032	A	W facing trench section	SW	2x1m	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_033	A	Working shot - exposed wall	SE	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	
G2527_034	A	Wall demolition	W	-	Ken Owen	04/07/2017	Gwynedd Archaeological Trust	



PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_035	A	Start of day shot showing wall trench with remnants of the wall and an earlier wooden structure visible at the base	W	-	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_036	A	Start of day shot showing wall trench with remnants of the wall and an earlier wooden structure visible at the base	NE	-	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_037	A	Vertical wooden post	ENE	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_038	A	Vertical wooden post with associated horizontal plank	ENE	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	25
G2527_039	A	Vertical wooden post with associated horizontal plank	S	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_040	A	Working shot - excavation of wall foundation trench	E	-	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_041	A	Post revealed below the wall (E end of work area)	E	-	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_042	A	Post revealed below the wall (E end of work area)	E	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_043	A	Working shot - removal of wooden post	NE	-	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_044	A	Wooden post following removal	-	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	27
G2527_045	A	Mid-ex shot of wall foundation trench showing remnants of the wooden feature	E	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	26
G2527_046	A	End of day shot showing extent of wall foundataion trench excavated	E	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_047	A	End of day shot showing extent of wall foundataion trench excavated	E	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_048	A	End of day shot showing extent of wall foundataion trench excavated	SE	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_049	A	End of day shot showing extent of wall foundataion trench excavated	W	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	
G2527_050	A	End of day shot showing extent of wall foundataion trench excavated	NE	1x1m	Jess Davidson	06/07/2017	Gwynedd Archaeological Trust	

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_051	B	Shot of possible post 11.5 meters in from start of new wall	ENE	1x1m	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_052	B	Shot of excavated area from 11.5m to 17m from start of new revetment wall	ENE	1x1m	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_053	B	Working shot of foundation trench for cement footings 2.8 meters down from ground surface	WSW	-	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_054	B	Working shot of foundation trench for cement footings 2.8 meters down from ground surface	WSW	-	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_055	B	Working shot of foundation trench for cement footings 2.8 meters down from ground surface (Portrait)	WSW	-	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_056	B	Working shot showing max depth of foundation trench and part of new and old wall in shot	ENE	1x1m	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	



PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_057	B	Working shot showing max depth of foundation trench and part of new and old wall in shot	ENE	1x1m	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_058	B	Working shot showing max depth of foundation trench and part of new and old wall in shot	SE	1x1m	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_059	B	Working shot showing max depth of foundation trench and part of new and old wall in shot	W	-	M.S.Lynes	13/07/2017	Gwynedd Archaeological Trust	
G2527_060	B	Start of day shot showing high water level	W	-	Jess Davidson	13/07/2017	Gwynedd Archaeological Trust	
G2527_061	B	Working shot taken during the excavation of the wall foundation trench	E	-	Jess Davidson	13/07/2017	Gwynedd Archaeological Trust	
G2527_062	B	End of day shot showing a 3.9m stretch of fully excavated wall foundation trench	E	-	Jess Davidson	13/07/2017	Gwynedd Archaeological Trust	

<b>PHOTO RECORD NUMBER*</b>	<b>SITE SUB- DIVISION</b>	<b>DESCRIPTION*</b>	<b>VIEW FROM</b>	<b>SCALE(S)</b>	<b>CREATOR OF DIGITAL PHOTO*</b>	<b>DATE OF CREATION OF DIGITAL PHOTO*</b>	<b>ORIGINATING ORGANISATION</b>	<b>PLATE</b>
G2527_063	C	Wall in progress. Councrete for foundations about to be poured	W	-	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_064	C	Base of wall foundation prior to concrete pouring	W	-	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_065	C	Base of wall foundation prior to concrete pouring	W	-	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_066	C	Concrete pouring	E	1x1m	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_067	C	Lump of concrete from previous repairs visible behind wall	E	1x1m	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_068	C	Concrete vibrator in use	S	1x1m	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_069	C	Concrete vibrator in use	W	-	Spencer Gavin Smith	17/07/2017	Gwynedd Archaeological Trust	
G2527_070	C	Completion of excavation of new foundation trench	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_071	C	Completion of excavation of new foundation trench	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	

PHOTO RECORD NUMBER*	SITE SUB-DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_072	C	Old mudflat line visible below retaining wall	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_073	C	Old mudflat line visible below retaining wall	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_074	C	Concrete repair visible behind retaining wall	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	28
G2527_075	C	Concrete repair visible behind retaining wall	N	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_076	C	Concrete repair visible behind retaining wall	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_077	C	Floor tiles recycled as fill below concrete repair	E	-	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_078	C	View of made ground behind retaining wall	N	1x1m	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_079	C	View along retaining wall showing work in progress	W	1x1m	Spencer Gavin Smith	18/07/2017	Gwynedd Archaeological Trust	
G2527_080		South face of retaining wall (with Conwy Castle in the background)	S	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	29
G2527_081		Length of south face of the rebuilt wall	SW	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	30



PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_082		Length of the top of the reinstated wall and river channel	W		Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	31
G2527_083		Wide view of rebuilt wall; taken from the river channel	W	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	32
G2527_084		North face of rebuilt wall; taken from river channel	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	33
G2527_085		North face of rebuilt wall; taken from river channel	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	34
G2527_086		North face of rebuilt wall; taken from river channel	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	35
G2527_087		North face of rebuilt wall; taken from river channel	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	36
G2527_088		North face of rebuilt wall; taken from river channel	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	37
G2527_089		North face of rebuilt wall (integrated with old section of wall)	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	38
G2527_090		Close-up of north face of rebuilt wall (integrated with old section of wall)	N	2m	Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	39
G2527_091		Wide view of rebuilt wall from along river channel	E		Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	40

PHOTO RECORD NUMBER*	SITE SUB- DIVISION	DESCRIPTION*	VIEW FROM	SCALE(S)	CREATOR OF DIGITAL PHOTO*	DATE OF CREATION OF DIGITAL PHOTO*	ORIGINATING ORGANISATION	PLATE
G2527_092		Location shot of wall in relation to river and castle	E		Jessica Davidson	18/08/2017	Gwynedd Archaeological Trust	41



Gwynedd Archaeological Trust  
Ymddiriedolaeth Archaeolegol Gwynedd

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