

# Land at Ithon Road, Llandrindod Wells, Powys

## Archaeological Field Evaluation Report



Prepared  
For

**Environmental Dimension Partnership Ltd**

On behalf of

**Hale Construction  
2 Milland Road Industrial Estate,  
Milland Road, Neath, SA11 1NJ**

By



**- BLACK MOUNTAINS ARCHAEOLOGY -  
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<b>Contents</b>	<b>Page</b>
Summary .....	3
Acknowledgements and Copyright .....	3
1 Introduction.....	5
1.1 Project background .....	5
1.2 Objectives.....	5
1.3 Legislative framework .....	6
1.4 Location, topography and geology.....	7
1.5 Archaeological background .....	7
1.6 Cartographic and placename evidence .....	9
2 Methodology .....	12
3 Results .....	14
3.1 Stratigraphical evidence.....	14
3.2 Paleoenvironmental - Plant Macro by Wendy Carruthers .....	17
3.3 Radiocarbon C <sup>14</sup> Dating .....	18
3.4 Finds – Ceramics and glass by Abbi Wootten-Brooks .....	18
4 Discussion and Conclusions.....	20
5 Bibliography .....	23
6 Appendices .....	25
6.1 Appendix I Figures .....	25
6.2 Appendix II Plates.....	33
6.3 Appendix III Context Inventory .....	45
6.4 Appendix IV – Finds and Palaeoenvironmental Inventories.....	48
6.5 Appendix V – Aerial Photographs.....	50
6.6 Appendix VI - Radiocarbon Dating Results by Beta Analytic .....	51

## Figures

Figure 1: Location map showing development area in relation to Roman heritage assets. .	26
Figure 2: Location of Trenches 1-4 in relation to geophysical survey results (Stephens 2017). .....	27
Figure 3: Plan of Trench 1. ....	28
Figure 4: Southeast facing section and plan of probable Cremation Pit [103] and Ditch [105]. .....	29
Figure 5. Plan of Trench 2. ....	30
Figure 6. Plan of Trench 3. ....	31
Figure 7. Plan of Trench 4. ....	32

## Plates

Plate 1: Aerial view to S of trenching. ....	33
Plate 2: Trench 1, view to N before extension to W. Scale 2m in 0.5m sections. ....	33
Plate 3: Trench 1, view to S before extension to W. Scale 2m in 0.5m sections.....	34
Plate 4: Trench 1, view to W showing charcoal deposit (104) within ditch [105] (to left) and truncated Roman cremation pit [103] (centre). 2m scale in 0.5m sections. ....	34
Plate 5: Trench 1, view of charcoal deposit (104) (left), Roman cremation pit [103] (centre), interior oxidised clay edge (107) and surviving charcoal rich cremation upper fill (112) before excavation. ....	35



Plate 6: Trench 1, view of view of charcoal deposit (104) (left), and the exposed tabulated stone-lined base [113], interior oxidised clay edge (107) and charcoal (112) of Roman cremation [103].	35
Plate 7: Trench 1, view of half-sectioned Roman cremation [103] exposing single course of stone-lined base [113], lower charcoal rich cremation deposit (114) and concave pit cut [103].	36
Plate 8: Trench 2, view to N. 2m scale in 0.5m sections.	36
Plate 9: Trench 2, view to S. 2m scale in 0.5m sections.	37
Plate 10: Trench 2, detailed plan of possible post hole [203].	37
Plate 11: Trench 3, view to E. 2m scale in 0.5m sections.	38
Plate 12: Trench 3, view to W. 2m scale in 0.5m sections.	38
Plate 13: Trench 4, view to W. Land drain [403] in foreground. 1m scale in 0.5m sections.	39
Plate 15: Trench 4, view to N showing ditch [405] in S facing section.	40
Plate 16: Cutaway of Plate 22 showing curving D-shaped ditch found in Trench 4 [405]. 1969 Aerial Photograph (6924 OS 69_17 020) © Welsh Government.	40
Plate 17: Ceramic finds recovered from (101) in Trench 1	41
Plate 18: Glass finds recovered from (101) in Trench 1	41
Plate 19: Glass bottle and stamp from (101) in Trench 1.	42
Plate 20: Finds recovered from (201) in Trench 2.	42
Plate 21: 1969 Aerial Photograph (6924 OS 69_17 020) © Welsh Government	43
Plate 22: 1971 Aerial Photograph (71105 OS71_3800 542) © Welsh Government.	44

Front cover: View to the south of Trenches -1-4.

## Summary

*Comisiynwyd Archeoleg Mynydd Du Cyf gan Hale Construction, 2 Milland Road Industrial Estate, Milland Road, Castell-Nedd, SA11 1NJ, trwy eu hasiantau Environmental Dimension Partnership Ltd, i gwblhau gwerthusiad maes archeolegol ar tir yn Ithon Road, Llandrindod, Powys cyn datblygiad arfaethedig.*

*Cloddiwyd cyfanswm o bedair ffos yn yr ardal ddatblygu arfaethedig mewn ymateb i anghysonderau a nodwyd gan arolwg magnetomedr. Profwyd bod yr anghysonderau hyn naill ai'n ddaeareg naturiol neu'n ddraeniau caeau Ôl-ganoloesol a modern. Yr eithriad yw darganfod gweddillion pwll amlosgi Rhufeinig tebygol [103] yn Ffos 1 sy'n dyddio i AD26-210/AD66-132 (tebygolrwydd 95%/68%). Roedd y pedair ffos yn unffurf o ran stratigraffeg gyffredinol, gydag unffurfiaeth yr uwchbridd ar draws y pedair ffos yn awgrymu bod y cae wedi'i drin yn y gorffennol. Roedd draeniad caeau yn doreithiog ac wedi'i gadarnhau'n fanwl gan awyrluniau hanesyddol.*

*Mae'n annhebygol y byddai'r amlosgiad Rhufeinig [103] a ddarganfuwyd yn Ffos 1 wedi'i ddyddodi ar ei ben ei hun, gyda'r disgwyliad rhesymol y byddai claddedigaethau amlosgi pellach a / neu ddeunydd pyre gerllaw yn parchu aliniad y ffordd Rufeinig. Fodd bynnag, mae'r ymchwiliadau presennol wedi dangos bod aflonyddwch a thaflu trwm wedi digwydd ar draws y safle wrth ei drin, gan gynnwys tystiolaeth storïol ar gyfer gardd farchnad, a phresenoldeb nifer o ddraeniau tir i gyd yn cyfrannu at leihau'r tebygolrwydd o ddod o hyd i unrhyw ddyddodion archeolegol pellach yn gyfan a / neu yn y fan a'r lle yn yr ardal ddatblygu arfaethedig.*

*Byddau's werthusiad maes yn cael ei ymgymryd i'r safonau proffesiynol Safon a Chanllawiau ar gyfer Gwerthusiad Maes Archeolegol gan y Sefydliad Siartredig Archeolegwyr, (cyhoeddwyd 2014, adolygwyd 2020).*

*Black Mountains Archaeology Ltd were commissioned by Hale Construction, 2 Milland Road Industrial Estate, Milland Road, Neath, SA11 1NJ, through their agents Environmental Dimension Partnership Ltd, to carry out an archaeological field evaluation at Land at Ithon Road, Llandrindod Wells, Powys ahead of a proposed development.*

*A total of four trenches were excavated within the proposed development area in response to anomalies identified by a magnetometer survey. These anomalies proved to be either natural geology or Post-medieval and modern field drains. The exception being the discovery of the ploughed out remains of a probable Roman cremation pit [103] in Trench 1 dating to AD26-210/AD66-132 (95%/68% probability). All four trenches were uniform in terms of overall stratigraphy, with the uniformity of the topsoil across all four trenches suggesting the field had been cultivated in the past. Field drainage was prolific and corroborated in detail by historic aerial photographs.*

*It is unlikely that the probable Roman cremation [103] discovered in Trench 1 would have been deposited in isolation, with the reasonable expectation of further cremation burials and/or pyre material nearby respecting the alignment of the Roman road. However, the present investigations have demonstrated that heavy disturbance and truncation has occurred across the site with cultivation, including anecdotal evidence for a market garden, and the presence of numerous land drains all contributing to reducing the likelihood of finding any further archaeological deposits intact and/or in-situ in the proposed development area.*

*The field evaluation was undertaken to the professional standards of the Chartered Institute for Archaeologists' Standard and Guidance for Archaeological Field Evaluation (published 2014, revised 2020).*

### **Acknowledgements and Copyright**

The project was managed by Richard Lewis BA MCifA. The fieldwork was undertaken by Richard Lewis, Libby Langlands MA and Abbigail Wootten-Brooks BA. The environmental processing was carried out by Libby Langlands and Abbigail Wootten-Brooks. Environmental Analysis was carried out by Wendy Carruthers and radiocarbon dating (C<sup>14</sup>) was carried out by Beta Analytic. Finds were reported on by Abbigail Wootten-Brooks and Dr Rhys Morgan. The report was prepared by Abbigail Wootten-Brooks and Libby Langlands and edited by Richard Lewis. Illustrations were prepared by Richard Lewis and Libby Langlands. The Welsh translation was prepared by Dr Rhys Morgan.

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#### *Report reference:*

Lewis, R, Wootten-Brooks, A, Langlands, L, Morgan, R, and Carruthers, W, 2021, *Land at Ithon Road, Llandrindod Wells, Powys: Archaeological Field Evaluation Report*. BMA Report No.219.

# 1 Introduction

## 1.1 Project background

- 1.1.1 Black Mountains Archaeology Ltd/*Archeoleg Mynydd Du Cyf* were commissioned by Hale Construction, through their agents Environmental Dimension Partnership Ltd (EDP), to carry out an archaeological field evaluation at Land at Ithon Road, Llandrindod Wells, Powys to inform on the nature and extent of archaeological remains in advance of planning submission. The proposed development area was identified as having archaeological potential due to the close proximity of the site to Castell Collen Roman Fort (SMRd001, CPAT01159), the course of two sections of the Cardiff to Castell Collen Roman road (RR621/SMRd259) and Roman Practice Camps on Llandrindod Common (SMRd126 and SMRd134).
- 1.1.2 A geophysical survey (magnetic gradiometer) was undertaken in November 2017 by SUMO Services (Stephens 2017; Figure 2) and the results of the survey incorporated into the trenching strategy. Four evaluation trenches were plotted to target identified geophysical anomalies by the Environmental Dimension Partnership Ltd, in consultation with Mark Walters of CPAT (archaeological adviser to the LPA).
- 1.1.3 The trenching involved the excavation of four trenches initially totalling 280 square metres. Trenches 1 and 2 measured 40m long x 2m wide and Trenches 3 and 4 measured 30m long x 2m. Trench 1 was extended westwards by 20m square metres (4m x 5m) due to the discovery of the ploughed out remains of a probable Roman cremation pit [103] and a large field drain [105], in order to establish the full extent of these features, bringing the total area sampled (trenched) to 300 square metres.
- 1.1.4 The present report sets out the results of the archaeological field evaluation in accordance with the advice provided by Mark Walters (CPAT), archaeological advisor to the Local Planning Authority (LPA) and the professional standards of the *Chartered Institute for Archaeologists* (CIfA).

## 1.2 Objectives

- 1.2.1 The definition of an archaeological Field Evaluation as set out by the *Chartered Institute for Archaeologists* (CIfA) is a programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land, inter-tidal zone or underwater. If such archaeological remains are present the field evaluation defines their character, extent, quality and preservation, and enables an assessment of their significance in a local, regional, national or international context as appropriate.
- 1.2.2 The purpose of field evaluation is to gain information about the archaeological resource within a given area or site (including its presence or absence, character, extent, date, integrity, state of preservation and quality), in order to make an assessment of its merit in the appropriate context, leading to one or more of the following:
  - The formulation of a strategy to ensure the recording, preservation or management of the resource.
  - The formulation of a strategy to mitigate a threat to the archaeological resource.

- The formulation of a proposal for further archaeological investigation within a programme of research.

*(Chartered Institute for Archaeologists Standard and guidance for an archaeological field evaluation. Published 2014, revised 2020)*

### 1.3 Legislative framework

- 1.3.1 Planning legislation is set out in the *Town and Country Planning Act 1990. Planning Policy Wales (PPW 11<sup>th</sup> Edition)* sets out the land use planning policies of the Welsh Government. Chapter 6 sets out the Welsh Government's policy towards the historic environment. It states "*The planning system must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the general well-being of present and future generations. The historic environment is a finite, non-renewable and shared resource and a vital and integral part of the historical and cultural identity of Wales. It contributes to economic vitality and culture, civic pride, local distinctiveness and the quality of Welsh life. The historic environment can only be maintained as a resource for future generations if the individual historic assets are protected and conserved. Cadw's published Conservation Principles highlights the need to base decisions on an understanding of the impact a proposal may have on the significance of an historic asset.*" (PPW 2021, 126).
- 1.3.2 Underpinning PPW are a series of legislative powers and TANs. The *Planning (Wales) Act 2015* sets out a series of legislative changes to deliver reform of the planning system in Wales, to ensure that it is fair, resilient and enables development. The 2015 Act also introduces a mandatory requirement to undertake pre-application consultation for certain types of development. The *Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016* defines in *Schedule 4(l)* the parameters and definitions for the requirement of pre-application consultation by Welsh Ministers, particularly in response to the effect of statutory designated monuments, buildings, and parks and gardens.
- 1.3.3 Advice on archaeology and buildings in the planning process was contained in *Welsh Office Circulars 60/96, 1/98* (which updated *61/96*) and *11/99*. Following adoption of *TAN 24 Historic Environment* on 31st May 2017, *Welsh Office Circulars 60/96 Planning and the Historic Environment: Archaeology; 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas; and 1/98 Planning and the Historic Environment* have been cancelled.
- 1.3.4 Any works affecting an ancient monument and its setting are protected through implementation of the *Ancient Monument and Archaeological Areas Act 1979*. In Wales the 1979 Act has been strengthened by *The Historic Environment (Wales) Act 2016*. The 2016 Act makes important improvements for the protection and management of the Welsh historic environment. It also stands at the centre of an integrated package of secondary legislation (Annexes 1-6), new and updated planning policy and advice, and best-practice guidance on a wide range of topics (*TAN 24 Historic Environment*). Taken together, these will support and promote the careful management of change in the historic environment in accordance with current conservation philosophy and practice.

- 1.3.5 The *Ancient Monument and Archaeological Areas Act 1979* and *The Historic Environment (Wales) Act 2016* sets out a presumption in favour of preservation *in-situ* concerning sites and monuments of national importance (scheduled/listed), and there exists in the current *Planning Policy Wales (Chapter 6)* a presumption in favour of preservation *in-situ* of all types of heritage assets.
- 1.3.6 The *Civil Aviation Authority* (CAA) is the airspace controlling body for the United Kingdom (UK). The rules and regulations for the use of SUAs (drones) in UK airspace is set out in the *Air Navigation Order 2016* and its *2018* and *2019* amendments. All UAS (drone) flights were operated within the limitations and conditions of the company Operational Authorisation (OA), Operations Manual and the applicable articles of the ANO (Articles 94, 94A, 94B, 95, 239, 240 and 241).

#### **1.4 Location, topography and geology**

- 1.4.1 The proposed development is centred on NGR SO 05475 61724 and comprises an elongated stretch of land located towards the eastern edge of Ithon Road, Llandrindod Wells, Powys. It is bounded to the south by a sports field attached to the school Ysgol Canol Cymru, is bounded to the east by a large sports field formerly used for cultivation and is bounded to the north by a housing estate. The nearest church is Tabernacle Baptist Church, located approximately 0.43km to the southeast on Dyffryn Road.
- 1.4.2 Topographically, the proposed development is situated along the eastern edge of a north/south running river valley within which the River Ithon (Afon Ieithon) flows. Directly to the east of Llandrindod Wells, towards the opposite side of Tremont Road, is an area of elevated ground representing the foot of a small hill range of which Gilwern Hill is part.
- 1.4.3 The superficial geology within the proposed development comprises Devensian till (diamicton) deposited up to 2 million years ago in the Quaternary period within a local environment dominated by Ice Age conditions. The underlying bedrock comprises burrow-mottled mudstone of the Cerig Formation, formed approximately 433–441 million years ago during the Silurian period. These bedrock deposits are marine in origin and consist of both coarse- and fine-grained detrital slurries derived from the continental shelf flowing into the local deep-sea environment (BGS 2021).

#### **1.5 Archaeological background**

- 1.5.1 The prehistoric archaeology within the vicinity of the proposed development is rare and poorly understood. The site of Bwlch-y-Fedwen Stones (CPAT 2702) is situated 3.6km to the southeast of the proposed development, which contains three large orthostats or monoliths that may have originally comprised a Bronze Age (or Neolithic) funerary monument. The remains of a timber trackway (CPAT 4444) have also been recorded 1.8km north of the proposed development, which are of indeterminate prehistoric date. These remains consisted of a pair of timbers, both 10m long x 0.75m wide, laid side by side within a peat bog.
- 1.5.2 The Roman archaeology within the vicinity of the proposed development is plentiful. The auxiliary fort of Castell Collen (SMRd001, CPAT 01159) is situated 1.1km to the north, which was likely constructed in the 70s AD (Burnham and Davies 2010, 234–7). The fort lies in a tactically advantageous position overlooking the River Ithon to the east. Initially, the fort covered an area of approximately 2ha and was defended by a



pair of ditches, both 1.9m wide x 1.1m deep, along with an earthen rampart measuring 6–8m in width. Yet at a later date in the fort's use its overall size was reduced to 1.5ha. The fort was surrounded by a sizeable *vicus* (CPAT 39814). The ceramic and numismatic evidence obtained from within the area of the *vicus* indicates that both *vicus* and fort were occupied continuously until the 220s AD. However, this same evidence also suggests that both *vicus* and fort were abandoned between 259–96 AD, or at least the occupation activity within both reduced drastically in size. The numismatic assemblage associated with the *vicus*, which contains no coins belonging to the 4th century AD, indicates a *terminus ante quem* of 310 AD for the total cessation of Roman activity within the area (Walters 1996). Also associated with the fort was a series of marching and practice camps (SMRd126 and SMRd134; CPAT 1086, 50008, 50009 and 50010), situated approximately 0.2km the south of the development area within Llandrindod Common.

- 1.5.3 Castell Collen is associated with a significant number of Roman roads that radiate out from the fort to strategic locations in the wider landscape (RR623, RR621, RRX58c, RRX58d and RRX79a; Burnham and Davies 2010). Two north/south aligned lengths of Roman Road RR621 (CPAT 47033 and 14002), which ran from Castell Collen in the north to Cardiff, are thought to have been located on the western and eastern boundaries of the development area. The former under the present Ithon Road and the latter under the school playing fields. However, the precise route that this road took remains conjectural (Sherman and Evans 2004, 41–2). The most conspicuous part of this road is situated near Howey Hall, 2.9km to the south of the development area. Here, RR621 survives as a clearly defined linear earthwork stretching for approximately 60m (SMRd259), where it passes through Llandrindod Common Roman Practice Camps (SMRd134). The earthwork is visible as an agger measuring c.7m in width and up to 0.3m in height. Roman road RR623 (CPAT 14201) also exists within the vicinity of the development area, approximately 1.7km to the northwest and represents the route from Castell Collen to Carmarthen. It survives as a discontinuous series of earthworks and parchmarks running in a roughly south westerly direction for approximately 2.5km. Other roman roads associated with Castell Collen include RRX79a, which runs northwest to Cae-Gaer (SMMg057) Roman marching camp, near Llangurig, and RRX58d, which meanders northwards to the Roman fort at Caersws (SMMg001).
- 1.5.4 Evidence of Roman burial practice in the region is scarce. Roman cremation burials in particular are claimed to present one of the more difficult features to interpret (Hankinson and Silvester, 2008). A line of four Roman barrows (CPAT 5636) were claimed in a 1978 CPAT visit to line the RR621 Roman Road approximately 1.16km south of the development area, indicating the location of a Roman round barrow cemetery. However, failure to confirm its existence at subsequent visits has led to the suggestion that it may have been a Post-medieval rabbit warren. Just across the historic county border into Montgomeryshire and approximately 29km to the north of the development area, an urn with ashes was recovered near a bridge in Caersws in the 19<sup>th</sup> century (CPAT 1786). Its proximity to Caersws Roman fort (SMMg001) was indicative of a larger Roman cemetery, however, the lack of records meant that a prehistoric origin could not be ruled out. Similarly, an 'urn filled with bones' was recorded as found in the vicinity of Pen y Gaer fort (SMBR174; CPAT 5707) in 1803, approximately 41km south of the development area in the historic county of

Brecknockshire. This find was attributed a Roman origin owing to its proximity to the fort, although again this was not definitive.

- 1.5.5 Burnham and Davies (2010) note that cremation in Roman Britain was introduced by the army and was universally practiced by the military during the Flavian-Trajanic era (69-117 AD) when the military was at its peak. It remained dominant until the later 2<sup>nd</sup> century when inhumation was introduced, and which came to dominate by the 4<sup>th</sup> century.
- 1.5.6 The known medieval archaeology within the local area is relatively sparse and relates mainly to ecclesiastical activity. Several medieval churches exist within and around Llandrindod Wells. These include, most notably, the Old Trinity Church (NPRN 761), located 1.8km southeast of the development area, dating to the 13<sup>th</sup> or 14<sup>th</sup> century and Capel Maelog (NPRN 96368), located 1.1km to the southeast of the development area, dating to the late 12<sup>th</sup> or early 13<sup>th</sup> century. Within the former church a *Sheelana gig* (a stone carving of a naked woman displaying her vulva) (CPAT5960) was housed, which likely dates to the Early-medieval period (Hemp 1938). This stone carving is now found in Radnorshire Museum. Also found within the ground of the former church is a possible holy well (CPAT 81710), consisting of a wet hollow measuring approximately 15m<sup>2</sup> (Silvester and Hankinson 2004, 13). On the south-eastern outskirts of Llandrindod Wells, 1.8km southeast of the development area, are the remains of the shrunken medieval settlement of Old Llandrindod (CPAT 16094), which comprise a series of flat terraces that probably formed a corresponding series of house platforms (Silvester 1994, 96).
- 1.5.7 During the post-medieval period Llandrindod Wells developed into a significant tourist attraction and by the 19<sup>th</sup> century it was a popular spa town. The waters here are rich in sulphides and iron, which were purported to cure rheumatism and obesity (Altman 2000, 223). The popularity of Llandrindod Wells was elevated by the construction of the Heart of Wales railway line, which linked the town to the major urban centres of south Wales, the Midlands and Lancashire. The significance of Llandrindod Wells as a centre of healing is said to date as far back as the 17<sup>th</sup> century (Norwich 2002, 375).

## 1.6 Cartographic and placename evidence

- 1.6.1 The 1888 Ordnance Survey (OS) map of the local area (*Radnorshire XXIII:SW*) depicts the proposed development area occupied by a pair of neighbouring fields. The southernmost field is shown as being bounded on its southern, eastern and northern edges by hedgerow. The northernmost field is transected by a northwest/southeast running footpath leading onto Ithon Road, while another north/south running footpath runs along its eastern edge. According to subsequent OS mapping evidence, both of these footpaths remained in use until at least 1951, as demonstrated on an OS map of the area published in that year (*Ordnance Survey Sheet 32/06 – A*).
- 1.6.2 Historic OS mapping of the local area also show a north-south aligned Roman road (RR621) running along the eastern edge of the present development area. In considering its alignment and location, this road connected the fort at Castell Collen with either Cardiff in the south or Beulah in the southwest.
- 1.1.1 The name *Llandrindod* is composed of two words, the prefix *llan*, denoting the enclosed land surrounding a church (or Parish), and the noun *drindod*, meaning ‘trinity’. *Llandrindod*, therefore, translates literally to ‘Parish of Trinity Church’. A

church possessing this name still survives today and is located at 5 Temple Street (LB 9061) in the town centre of Llandrindod Wells, although as the construction of this church dates to no earlier than 1871 (Haslam 1979, 247) it cannot be the church from which the town is named. Yet this church was constructed in order to replace a far older church of the same name (briefly mentioned above), situated just over 1km to the southeast of the town centre. This church originally comprised a single chamber of 13<sup>th</sup> or 14<sup>th</sup> century date accompanied by a southern porch and western spire. It has been asserted that this church (as well as the one at Cefnlllys) was left roofless by Archdeacon De Winton during the late 19<sup>th</sup> century in order to encourage parishioners to attend the New Holy Trinity Church at 5 Temple Street instead (Clarke 1894, 3). According to records from the medieval period, this church was known as *Llandduw* or 'Parish of God', a name that is now generally spelt as *Llandow* (Cereticus 1874, 86). By 1535 the name of the church had changed to *Llandynddod* before changing again in the 1550s to its current name *Llandrindod*. However, in the early 17<sup>th</sup> century the church was briefly known as *Llanydryndott* (Richards 1970, 126). The name *Llandrindod Wells* began to be used during the Post-medieval period as a result of the town becoming a renowned spa.

- 1.1.2 Aerial photographs from the 1950s to the present day (Appendix V) shows the gradual urban expansion of Llandrindod Wells westwards towards the proposed development area. The 1952 aerial photographs clearly show east-west aligned field drains under pasture in the proposed development area. By 1957 Ysgol Canol Cymru is visible being built and the sports field laid out on the eastern boundary of the development area. Sheep can be seen grazing on pasture in the development area. In 1969 (Plate 21) drainage excavations appear underway in between the location of Trenches 2 and 4, and a considerable spread of field drains are visible in the proposed development area. A large curving D-shaped ditched feature is also visible (Plate 16) with Trench 4 serendipitously positioned across it's southern corner. This ditched feature would appear to marry well with the modern field drain found in Trench 4 [405]. A linear feature not recorded on the HER (CPAT), possibly representing the remains of the Roman road (RR621), is also visible on this historic aerial photograph 60m southwest of Trench 4, on the opposite side of Ithon Road. A parch mark 340m long and 5m wide is shown leaving Ithon Road at NGR 305397.228, 261617.784 and following a straight course to NGR 305330.469, 261279.750.
  - 1.1.3 The 1971 aerial photograph (Plate 22) shows the proposed development area divided into six strip fields under cultivation and pasture. Anecdotal evidence provided by the present landowner suggested the proposed development area had been used as a market garden (commercial vegetable growing) in the 1950s. While no evidence post 1952 of the market garden could be found, the 1971 aerial photograph may show the proposed development area under cultivation in strip fields at that time. After 1975 the fields were being grazed by sheep again. A new sports pitch is visible being built to the south of the proposed development area in 1982 and from this time a single cultivated or mown (hay/silage) strip is visible in the northern area until the 1990s. After this date the proposed development area remains under pasture.
- 1.6.3 Previous Investigations**
- 1.6.4 2017: An archaeological watching brief was conducted by Worcestershire Archaeology during geotechnical works on a site immediately north of the development area,

during which eight trial pits were excavated. A single archaeological deposit was encountered, which comprised a deposit of charcoal covering an area of 0.50m x 0.50m and which measured 0.10m deep. This deposit was discovered within Trial Pit 7 and was undated (Arnold 2017).

- 1.6.5 CPAT Event 144205, 2017: A geophysical survey was conducted by Sumo Services of the development area as well as a small parcel of land now occupied by housing estate. This survey discovered a series of linear features running through the development area along with pit-like features and two discrete areas with high magnetic responses (Figure 2).
- 1.6.6 CPAT Event 140273, 2019: A programme of building survey was undertaken by CPAT to record a former railway goods shed at Station Crescent.
- 1.6.7 CPAT Event 152933, 2019: A desk-based assessment and field evaluation were conducted by CPAT of Waterloo Road to the east of the development area in connection with a proposed mixed-use development. The evaluation comprised the excavation of two trenches, each measuring 20m in length, along with four smaller test pits. No features or deposits of archaeological significance were encountered.

## 2 Methodology

- 2.1.1 The archaeological field evaluation consisted of the excavation of four trenches. The trenches were positioned to target anomalies identified by the magnetometer survey conducted by SUMO Services in November 2017 (Stephens 2017, Figure 2). The trenching initially totalling 280 square metres. Trenches 1 and 2 measured 40m long x 2m wide and Trenches 3 and 4 measured 30m long x 2m. Trench 1 was extended westwards by 20m square metres (4m x 5m) due to the discovery of the ploughed out remains of a probable Roman cremation pit [103] and a large field drain [105], in order to establish the full extent of these features, bringing the total area sampled (trenched) to 300 square metres. The investigations were carried out in predominantly heavy rain.
- 2.1.2 The trenches were laid out using a EMLID Reach GN55/Glonass (GPS) Receiver and data logger with a <20mm tolerance. All trench areas, spoil tips and areas of archaeological potential were CAT scanned and then surveyed with a Garrett Ace 400i metal detector with a 28cm x 22cm DD PROformance search coil and Garrett Ace 200i metal detector with a 16.5 x 23cm PROformance search coil. No metallic finds were identified.
- 2.1.3 The plant was provided by Hale Construction in the form of a 14t 360 excavator with a 1.8m wide grading bucket. All trenches were machine excavated and then cleaned by hand following recording in detail. The archaeological recording techniques conformed to the best industry standard; all deposits were recorded using a single continuous context numbering system pro forma. All contexts were recorded with the trench number prefix (e.g. context 03 in Trench 1 = 103) and are summarised in Appendix III. When no archaeology was encountered during the machine excavation of the trenches then the excavations were taken down to the natural Devensian clays. Following archaeological recording, all trenches were backfilled with the excavated material.
- 2.1.4 All trenches were photographed in high resolution by UAV (drone) equipped with a Hasselblad 35mm equivalent 20mp, 1" sensor, 4k UHD camera, a 35mm equivalent (24mm) camera with a 12mp 1/2.3" CMOS sensor and a terrestrial Canon EOS 2000D DSLR camera with a 24.7mp, 22.3mm x 14.9mm CMOS sensor. The ground investigations and aerial survey were tied into the Ordnance Survey National Grid and Datum using an EMLID Reach GN55/ Glonass (GPS) Receiver and data logger with a <20mm tolerance. All 3D models of probable cremation [103] were produced using proprietary photogrammetry software and aligned using known ground control points (GCPs). Dimensional control was then applied to each model and then reprocessed using the new parameters and optimised cameras to create dense point cloud of over 4.5 million points and a high face count mesh. Models were then exported to OBJ format. Eight GCPs were used with a sub-20mm error margin to OSGB36 (National Grid) and a high-resolution Ground Sampling Distance (GSD) of 0.03cm/pixel. High resolution orthographic renders (orthoplanes and orthomosaics) were exported and scaled in georeferenced raster (TIFF and JPEG) format.
- 2.1.5 The capture, processing and output of 3D models conformed to professional industry standard and best practice guidelines as set out by Historic England's *Photogrammetric Applications for Cultural Heritage Guidance for Good Practice* (Published 2017). The full photogrammetric 3D models of the probable Roman

- cremation pit [103] during each stage of investigation can be viewed here: before excavation <https://p3d.in/v8Lg1>, stone-lined base exposed <https://p3d.in/7HhsS>, cremation pit half-sectioned <https://p3d.in/YtoIT>.
- 2.1.6 All Environmental recording and sampling followed the principles Historic England's *Guidelines for Environmental Archaeology* (2011). All deposits of high potential for the preservation of palaeoenvironmental material were sampled by bulk for subsequent analysis. The deposits (112/114) contained within the Roman cremation pit [103] were sampled at 100% and 50% respectively. All samples were subjected to macro (flora and fauna) analysis, the results of which can be found in Section 3. Charcoal from deposits (112/114) was sent to for radiocarbon dating and returned a mid-1<sup>st</sup> – 2<sup>nd</sup> Century AD date (see Section 3 below).
- 2.1.7 All classes of finds were retained (cleaned and catalogued) and arrangements for final deposition agreed as set out in the requirements of the *Chartered Institute for Archaeologists' Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2011) and *Museums and Galleries Commission Standards in the museum care of archaeological collections* (1994). The archive of archaeological records and artefacts has been prepared to the guidelines set out in Historic England's *Management of Archaeological Projects* (1991) Appendix 3. The final archive of records relating to the preparation of the report has been prepared to Historic England's guidelines set out in the *Management of Archaeological Projects* (1991), Appendix 6 and the *National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017*.
- 2.1.8 When substantial quantities of undiagnostic, residual or modern material were recovered, an on-site recording and discard policy for these classes of find was employed. However, sufficient material was retained to understand the nature, date and function of the deposit from which it was recovered. Specialist artefact advice and analysis for finds assemblages was sought and the results by fabric type can be found in Section 3. No items were recovered that are subject to *The Treasure Act 1996* (2003 as amended).
- 2.1.9 With the permission of the landowner, the site archive will be deposited with Powys Archives, Llandrindod Wells for permanent curation. An accession number will be generated on submission. The report and archive conforms to the professional standards as set out in section 3.4 of the *Chartered Institute for Archaeologists Standard and guidance for Archaeological Field Evaluations* (published 2014, revised 2020), as well as the *Guidance for the Submission of Data to the Welsh Historic Environmental Records (HERs)* (published 2018).
- 2.1.10 A digital copy of the report and archive summary will be supplied to the client and their agents, the regional HER (GGAT), the LPA and the Royal Commission on the Ancient and Historical Monuments of Wales. Submission of photogrammetric images acquired by drone to the RCAHMW will follow *RCAHMW Unmanned Aerial Vehicle (UAV) Policy*. All data has been digitally stored in appropriate formats (SHP, DXF, TIFF, RAW, JPEG, PDF etc) with the archive destination in mind. All data will be submitted to the relevant archives in accordance with the RCAHMW's *Guidelines for Digital Archaeological Archives* (2015).
- 2.1.11 The investigations were carried out to the standards of the *Chartered Institute for Archaeologists*.



## 3 Results

### 3.1 Stratigraphical evidence

- 3.1.1 The archaeological field evaluation consisted of the excavation of four trenches. The trenches were positioned to target anomalies identified by the magnetometer survey conducted by SUMO Services in November 2017 (Stephens 2017, Figure 2). The trenching initially totalling 280 square metres. Trenches 1 and 2 measured 40m long x 2m wide and Trenches 3 and 4 measured 30m long x 2m. Trench 1 was extended westwards by 20m square metres (4m x 5m) due to the discovery of the ploughed out remains of a probable Roman cremation pit [103] and a large field drain [105], in order to establish the full extent of these features, bringing the total area sampled (trenched) to 300 square metres.
- 3.1.2 All four trenches were uniform in terms of overall stratigraphy with the silt loam topsoil averaging 0.26m to 0.3m in depth overlying natural silt clay subsoils belonging to Quaternary Devensian till. The uniformity of the topsoil would suggest the field having been under cultivation. The principal discoveries in Trench 1 were a probable Roman cremation pit [103], heavily truncated and defined by an oxidised clay rim, several small spreads of charcoal (104), (108) and (111) probably related to the disturbed cremation fill (112), a modern field drain [105] and posthole [109]. A modern post hole [203] was noted in Trench 2 but was otherwise devoid of any archaeological features. Similarly, no evidence of any archaeological deposits or features was present in Trench 3. Trench 4 produced two ditched features, a narrow field drain complete with a ceramic pipe [403] and a 4.2m wide ditch [405], both of which married well with ditched features visible on historic aerial photographs (Plate 21). Finds were limited to the topsoil in all trenches (see 3.4 and 6.4 below).
- 3.1.3 The results of each evaluation trench, including figures, plates, contextual information, finds and radiocarbon dating are detailed in Appendices I to VI.
- 3.1.4 **Trench 1** (Figures 1-4, Plates 1-7 and 17-19)
- 3.1.5 Level of present ground surface: NE end 199.750mOD, SW end 199.820mOD.
- 3.1.6 Trench 1 was aligned NE/SW and positioned in the eastern area of the proposed development over a large amorphous area of high magnetic response in the geophysical survey measuring approximately 50m north/south x 70m east/west. This area has been interpreted in the geophysical survey report as uncertain, meaning that it was unlikely to be archaeological in origin. It was suggested that it may have resulted from deliberate dumping of material or landscaping activity (Stephens 2017). Historic aerial photographs and modern satellite images of this area shows evidence for cultivation in the past (see Section 1.6; Plates 21-22).
- 3.1.7 The original trench measured 40m long by 1.8m wide and with a max depth of 0.32m, which was later extended at the NE end to the W by 20m<sup>2</sup>. A small sondage was excavated (1m in depth x 0.7m long) at the NE end of the trench through the natural silt clay to act as a sump to allow for water egress during archaeological recording.
- 3.1.8 The basal deposit (102) encountered was a very plastic buff coloured silt clay, with infrequent small irregular shaped gravels, pebbles (<0.1m) and glacial boulders (<0.5m) belonging to Quaternary Devensian till. This was overlaid by a grey-brown friable silt loam topsoil (101) with a uniform depth of 0.26m to 0.3m.

- 3.1.9 The principal discoveries in Trench 1 were a probable heavily truncated Roman cremation pit [103], several small spreads of charcoal (104), (108) and (111) probably related to the disturbed cremation fill (112), a modern field drain [105] and posthole [109]. Machine excavation revealed a discrete sub-circular area of charcoal and heat affected clay located approximately 5.8m south from the northern end of the trench. Hand cleaning identified the remains of a probable Roman cremation identified as a sub-circular area of heat affected clay (107) forming the inside edge of a pit [103], which contained a mixed deposit of charcoal and heat affected clays held in a buff-coloured silt clay matrix (112). The cremation feature measured 0.58m N-S and 0.55m E-W. The red-orange heat affected clay (107) formed a c30mm wide band on the inside edge of the cut feature [103]. The heat affected clay (107) likely caused by the deposition of hot pyre material directly into pit [103] causing the silt clay pit edge to oxidise. Further hand excavation revealed a well laid stone-lined tabulated base [113]. The heat affected clay interior edge (107) of the pit continued down to the stone-lined base [113], with significant amounts of charcoal found over and between the stones of the lined base. The cremation pit was then half-sectioned revealing a single course of the stone-lined base [113]. The basal deposit was a thin (<0.05m) deposit of charcoal and heat affected clays held in a buff-coloured silt clay matrix (114). The base of the cremation pit proving to be mildly concave. The overall depth of the cremation pit was just 0.09m, having been severely truncated by the excavation of a modern land drain [105]. This in part (and ploughing) may have contributed to the isolated deposits of charcoal (104), (108) and (111) found distributed along the trench and likely originating from the cremation pit [103].
- 3.1.10 The two deposits (112 and 114) identified within the cremation pit [103] were sampled (sample \*02 = (112); sample \*03 = (114)). The upper deposit (112) was sampled at 100% and the lower deposit (below the stone-lined base), following half-sectioning, was sampled at 50%. The samples were processed by standard flotation (see below) and charcoal extracted from each deposit for dating. The radiocarbon analysis returned an identical date range for both deposits/samples (\*02 and \*03) with a 95% probability for AD26-210 and a 68% probability for AD66-132.
- 3.1.11 No finds or bone were recovered from the cremation pit, either during excavation or during standard flotation, including the microscopic inspection of processed flots.
- 3.1.12 A NW-SE aligned linear ditch [105] was also discovered at the northern end of the trench, measuring 0.75m wide at its E end, widening to 1.50m at its (shallower) western end as it continued beyond the edge of the excavated extension to the trench. The position of this feature aligned with the northern edge of the large amorphous area of high magnetic response identified in the geophysical survey. A partial profile of the ditch was observed in both the E and W facing sections of the trench showing it to have moderately sloping sides cutting into the subsoil (102) and could be seen, in the E facing section, to truncate the probable Roman cremation [103] located immediately to the north. The ditch contained a grey-brown silt clay loam with isolated orange coloured burnt clay fragments and small pebbles (<0.03m) together with redeposited material containing topsoil (101), natural silt clay (102) and charcoal rich deposits (104); the latter representing the truncated and redeposited remains of Roman cremation deposit (112). Two further small (<0.16m) discrete deposits of charcoal (108) and (111) were also recorded lying at the interface between the topsoil (101) and natural silt clay (102). Charcoal deposit (108) was located 1.5m to the NE of

- the Roman cremation pit [103] and charcoal deposit (111) was located 8.6m further away to the south. Deposition likely the result of soil movement via cultivation (ploughing).
- 3.1.13 A sub-rectangular modern post hole [109] was observed in the southern end of the trench cut into subsoil (102). The feature measured 0.20m N-S by 0.28m E-W, with a depth of c0.03m. The fill (110) consisted of a grey-brown friable silt clay with frequent small pebbles (<0.03m).
- 3.1.14 As might be expected from a cultivated field, a small collection of Post-medieval and modern glass and ceramic fragments were recovered from the topsoil (101) but do not add significantly to results.
- 3.1.15 **Trench 2** (Figures 1-2 and 5; Plates 8-10 and 20)
- 3.1.16 Level of present ground surface: NE end 200.320mOD, SW end 198.820mOD.
- 3.1.17 Trench 2 was aligned NE-SW and measured 40m long by 1.8m wide and a maximum of 0.42m deep. The trench was positioned over a broadly sub-rectangular area of high magnetic response measuring approximately 50m x 30m. No evidence of any archaeological deposits or features was present in the trench. A modern post hole [203] with a diameter of 0.11m was noted in the SW end of the trench, containing a grey-brown silt loam deposit with isolated small (<0.03m) stones (204), identical to topsoil (201).
- 3.1.18 The basal deposit (202) encountered was a very plastic buff coloured silt clay (maximum depth 0.42m), with infrequent small irregular shaped gravels, pebbles (<0.1m) and glacial boulders (<0.5m) belonging to Quaternary Devensian till. This was overlaid by a grey-brown friable silt loam topsoil (201) with a uniform depth of 0.24m to 0.27m.
- 3.1.19 **Trench 3** (Figure 1-2 and 6; Plates 11-12)
- 3.1.20 Level of present ground surface: W end 197.330mOD, E end 198.420mOD.
- 3.1.21 Trench 3 was aligned E-W, measuring 18m long by 1.8m wide with a max depth of 0.70m. The trench was positioned over three discrete areas of high magnetic response, which corresponded well with two large deposits of glacial boulders (302). The trench was shortened from 30m to 18m due to the site compound having already been constructed, with the removal of top and subsoils, and stoning up for hard standing. The remaining 20m<sup>2</sup> was repurposed to extend Trench 1 following the discovery of the probable Roman cremation [103]. No evidence of any archaeological deposits or features was present in Trench 3.
- 3.1.22 The basal deposit (302) encountered was a very plastic buff coloured silt clay (maximum depth 0.7m), with infrequent small irregular shaped gravels, pebbles (<0.1m) and two large concentrations of glacial boulders (>0.45m x 0.4m) belonging to Quaternary Devensian till. This was overlaid by a grey-brown friable silt loam topsoil (301) with a uniform depth of 0.3m.
- 3.1.23 **Trench 4** (Figures 1,2 and 7; Plates 13-16 and 21)
- 3.1.24 Level of present ground surface: E end 196.640mOD, W end 198.490mOD.
- 3.1.25 Trench 4 was aligned E-W, measuring 30m long by 1.8m wide with a max depth of 0.57m. It was positioned over an elongated but amorphous area of high magnetic response measuring approximately 30m long x 3m wide. The principal discoveries

were two field drains, [403] and [405], that married well with land drains visible on an historic aerial photograph (Plates 16 and 21).

- 3.1.26 The basal deposit (402) encountered was a very plastic buff coloured silt clay (maximum depth 0.57m), with infrequent small irregular shaped gravels, pebbles (<0.1m) and glacial boulders (<0.5m) belonging to Quaternary Devensian till. This was overlaid by a grey-brown friable silt loam topsoil (401) with a uniform depth of 0.26m to 0.54m, where it filled ditch [405].
- 3.1.27 Field drain [403] presented as a NW-SE aligned linear feature c0.20m wide, cut into the natural silt clay (402) in the eastern end of the trench. A small sondage was excavated here to 0.45m in depth to prove the field drain. The top of a small (0.06m in diameter) orange coloured ceramic pipe was noted in the base of the excavation.
- 1.1.4 A NW-SE aligned ditch measuring 4.2m wide and 0.54m in depth [405] was recorded positioned 6m from the eastern end of the trench. The ditch had shallow sloping edges and a concave base, which was cut into the subsoil (402), and filled entirely with topsoil (401). The ditched feature [405] would appear to marry well with a large curving D-shaped ditched feature visible on the 1969 aerial photograph (Plate 16 and 21), with Trench 4 serendipitously positioned across its southern corner. The large curving D-shaped ditched feature would appear at first glance to be archaeological in origin but must be modern as the excavated ditch was completely filled with a single-phase topsoil deposit (401). There was no silting to suggest that this feature was once a water course.

## 3.2 Paleoenvironmental - Plant Macro by Wendy Carruthers

- 3.2.1 The flots and residues from two environmental soil samples from a possible cremation pit were sent to the author for analysis (Appendix IV, Section 6.4.2). The samples had been processed in house using standard methods of floatation with the flots being recovered on meshes of 500 and 250 microns prior to the submission for analysis.
- 3.2.2 The dried flots and residues were sorted under an Olympus SZX7 stereoscopic microscope. Each flot and residue was first dry-sieved through a graduated stack of sieves (minimum mesh 250 microns) in order to make sorting more efficient. In the case of the flots, large charcoal in the upper 3.35mm mesh sieve was extracted and bagged separately should specialist charcoal analysis be required in the future. All identifiable charred plant macrofossils were extracted and placed in glass, labelled tubes prior to identification. Residues were discarded after being scanned for charred remains as they were very clean, showing that the in house floatation had been efficient in recovering the charred remains.
- 3.2.3 *Results and discussion*
- 3.2.4 Since very few charred plant remains were recovered from the two samples the results are both presented and discussed below. Nomenclature and habitat information follows Stace (2010). The Online Atlas of the British and Irish Flora was also consulted for habitat information ([www.brc.ac.uk/plantatlas/plant/](http://www.brc.ac.uk/plantatlas/plant/)).
- 3.2.5 Although large, chunky fragments of charcoal were frequent in the flots, very few plant macrofossils were present. The only items recovered in an identifiable state were a few weeds/wild plants of grasslands (Poaceae; grasses), heaths (*Vicia lathyroides*; spring vetch) and cultivated/disturbed ground (*Persicaria lapathifolia*; pale persicary). Because all three taxa have quite broad habitat ranges they could have

been growing together on disturbed ground (though today spring vetch is quite a scarce plant). However, pale *persicaria* prefers damper, richer soils than spring vetch so the most likely interpretation is that the upper fill contained burnt vegetation from both moist disturbed ground as well as some gathered from dry, sandy heathland. The material was probably gathered for use as kindling and/or fuel for a pyre, according to the interpretation of feature [103] as a cremation pit. No food plants were present in the samples to suggest that ritual depositions had taken place, or that cereal processing was taking place nearby.

- 3.2.6 The pit was located on soils of low fertility in the immediate area and very low fertility to the east and north-east of the site. The latter soils are shallow, very acid peaty soils over rock and these would have supported heathland, grass-moor and bogs in the wetter hollows ([www.landis.org.uk/soilscapes/](http://www.landis.org.uk/soilscapes/)). Spring vetch was probably growing amongst heathland vegetation in this area. The soils in the immediate area of the pit are more clayey acid loams which may have been waterlogged in winter. Although also of low fertility, human activity may have increased nutrient levels in some areas, creating suitable habitats for pale *persicaria*.

### 3.3 Radiocarbon C<sup>14</sup> Dating

- 3.3.1 Two deposits (112 and 114) identified within cremation pit [103] were sampled (sample \*02 = (112); sample \*03 = (114)) and the charcoal recovered from each deposit submitted to Beta Analytic for Radiocarbon dating. A full radiocarbon<sup>14</sup> laboratory report can be found in Appendix VI.
- 3.3.2 Sample \*02 was taken from upper deposit (112) of the cremation pit [103] and returned a calibrated date of AD26-210 (1924 – 1740 cal BP) with a 95% probability. Sample \*03 was taken from the lower deposit (114) returned an identical date of AD26-210 (1924 – 1740 cal BP) with a 95% probability. Interestingly, the date range for both charcoal samples (\*02 and \*03) with a 68% probability was AD66-132 (1884 – 1818 cal BP). These dates marry well with the known Roman activity in the area. The auxiliary fort of Castell Collen (SMRd001, CPAT 1159) is located 1.1km to the north of the development, constructed in the AD70s by *Legio II Augusta* during the conquest of Wales and went out of use after AD200 (Burnham and Davies 2010, 234–7).

### 3.4 Finds – Ceramics and glass by Abbi Wootten-Brooks

- 3.4.1 The finds recovered during the course of the evaluation were confined to the topsoil in Trenches 1 and 2 (Plates 17-20). The material was processed and catalogued according to fabric type. The assemblage as a whole is dateable to the Post-medieval and modern periods and consisted of a mix of glass and ceramic fragments, and a 20<sup>th</sup> century golf ball. A total of fifteen glass fragments weighing 148g and seventeen ceramic fragments weighing a total of 104g were recovered. Agricultural activity recorded on site explains the abraded nature of the collection. The full finds inventory can be found in Appendix IV.
- 3.4.2 The finds were largely domestic in function, ranging from fragments of drinking vessels to food preparation and consumption wares. A lack of bubbles in the glassware and minimal colour variation between core and margins of the ceramic fragments suggests that the majority of the assemblage dates from the late 19<sup>th</sup> or 20<sup>th</sup> centuries.
- 3.4.3 F/N 01 from Trench 1 was a fragment of blue and white transfer printed pottery in royal blue (Plate 17). The convex profile suggested it came from either a bowl or vase.

Visible foliage with water reflection and a section of bridge with person atop suggests that the pattern was oriental; most likely either the Temple-Landscape or Two Temples pattern. This fragment was most likely a Post-medieval European reproduction.

- 3.4.4 F/N 16 was an assemblage of five glass fragments including one base and one body fragment which were interpreted as potentially belonging to the same vessel. The base fragment was stamped with a maker's mark (see plate 19), which could not be identified.
- 3.4.5 A large deposit of glass and ceramic fragments recovered from the southern end of Trench 1 made up the greatest proportion of the find assemblage. Deformation and vitrification visible on a number of these finds indicate that they were exposed to heat as a collection, possibly in a bonfire.



## 4 Discussion and Conclusions

- 4.1.1 The archaeological field evaluation was successful in ground truthing the anomalies identified by the magnetometer survey (Stephens 2017, Figure 2). These proved to be either natural geology or Post-medieval and modern field drains. The exception being the discovery of the ploughed out remains of a probable Roman cremation pit [103] in Trench 1. All four trenches were uniform in terms of overall stratigraphy, with the uniformity of the topsoil across all four trenches suggesting the field had been cultivated in the past. Field drainage was prolific and corroborated in detail by historic aerial photographs (Plate 21), lending further proof to the very disturbed nature of the field. A modern posthole [203] was noted in Trench 2 but was otherwise devoid of any archaeological features. Similarly, no evidence of any archaeological deposits or features was present in Trench 3. Trench 4 produced two ditched features, a narrow field drain complete with a ceramic pipe [403] and a 4.2m wide ditch [405], both of which married well with modern ditched features visible on historic aerial photographs (Plates 16 and 21). Post-medieval and modern finds were limited to the topsoil in just two of the trenches, probably derived from material deposited by muckspreading (see 3.4 and 6.4 below).
- 4.1.2 The principal discoveries in Trench 1 were a probable Roman cremation pit [103], heavily truncated and defined by an oxidised clay rim, several small spreads of charcoal (104), (108) and (111) probably related to the disturbed cremation fill (112), a modern posthole [109] and a field drain [105]. The cremation feature [103] was defined by a c30mm wide band of red-orange coloured heat affected clay (107) on the inside edge of the cut. The heat affected clay (107) likely caused by the deposition of hot pyre material directly into pit [103] causing the silt clay pit edge to oxidise. The base of the cremation pit [103] had a well laid stone-lined tabulated base [113]. The overall depth of the cremation pit was just 0.09m, having been severely truncated by the excavation of a modern land drain [105]. This in part (and ploughing) may have contributed to the isolated deposits of charcoal (104), (108) and (111) found distributed along the trench and likely originating from the cremation pit [103]. The charcoal recovered from the two deposits (112 and 114) found within the cremation pit [103] were sampled. The radiocarbon analysis returned an identical date range for both deposits/samples (\*02 and \*03) with a 95% probability for AD26-210 and a 68% probability for AD66-132.
- 4.1.3 The auxiliary fort of Castell Collen (SMRd001) is located 1.1km to the north of the development area and was likely constructed in the 70s AD (Burnham and Davies 2010, 234–7). The ceramic and numismatic evidence suggest the fort and *vicus* were occupied continuously until the 220s AD, making it contemporary with the radiocarbon dating of the probable cremation pit [103]. A number of Roman Roads terminated at Castell Collen, one of which was RR621, the main route between the fort and Cardiff aligned on or near present day Ithon Road. Several routes are suggested for the road, one on the line of Ithon Road and the other immediately to the east of the development area (CPAT 57544/14002). The proximity of the cremation feature [103] to a Roman road, an auxiliary fort and *vicus* is suggestive of a roadside burial, which was a common practice during the Roman period in Wales, particularly in a military context in the 1<sup>st</sup> to 2<sup>nd</sup> centuries AD.

- 4.1.4 However, no finds or bone were recovered from the cremation pit [103], either during excavation or during paleoenvironmental processing, including the microscopic inspection of processed flots. Although large, chunky fragments of charcoal were frequent in the flots, very few plant macrofossils were present. The only items recovered in an identifiable state were a few weeds/wild plants of grasslands (Poaceae; grasses), heaths (*Vicia lathyroides*; spring vetch) and cultivated/disturbed ground (*Persicaria lapathifolia*; pale persicary). Because all three taxa have quite broad habitat ranges they could have been growing together on disturbed ground (though today spring vetch is quite a scarce plant). However, pale *persicaria* prefers damper, richer soils than spring vetch so the most likely interpretation is that the upper fill (112) contained burnt vegetation from both moist disturbed ground as well as some gathered from dry, sandy heathland. The material was probably gathered for use as kindling and/or fuel for a pyre.
- 4.1.5 It is difficult to find comparative early/middle Roman cremation pits of this date (AD26-210 95% probability/AD66-132 68% probability) both locally and in Wales more broadly though a similar charcoal-rich pit at an adjacent site on the line of the Roman road was excavated by Worcestershire Archaeology in December 2017 (Arnold 2017). Although the feature was undated the site lies within an area that was clearly important in the Roman period on the line of the Roman road (RR621) and near the *vicus* and fort of Castell Collen (SMRd001) to the north. The charcoal assemblage was dominated by oak, suggesting the selective use of wood for fuel. The only charred plant macrofossil to be recovered was a single hulled barley grain (Arnold 2017). A possible cremation pit at Showell Farm, Chippenham, Wilts dated to cAD 50-140/50 produced large amounts of charcoal but very few charred plant remains. The few emmer/spelt remains and several weed seeds recovered from the samples appeared to represent either redeposited background waste or traces of kindling used for the pyre (Carruthers 2006). Soils in the area were much more suitable for cereal cultivation than at Llandrindod Wells so cereal processing waste would probably have been readily available for use as kindling. Also, larger amounts of burnt processing waste were likely to be distributed around the site as background waste. The fill of an Early Roman cremation pot in a grave at Hyde Street, Winchester, also produced a similar low concentration of emmer/spelt and barley remains with a trace of hazelnut shell and a few weed seeds (Carruthers 2004). As at Showell Farm, the Hyde Street remains may have been burnt as kindling or a small offering since arable cultivation would have been an important part of the economy in Hampshire. In many parts of Wales even farmsteads produce very sparse charred cereal assemblages reflecting the small scale of arable cultivation taking place on poorer soils in comparison with more fertile soils in southern England.
- 4.1.6 As noted above, evidence of Roman burial practice in the region is scarce. Roman cremation burials in particular are claimed to present one of the more difficult features to interpret in the HER (Hankinson and Silvester, 2008). A line of four Roman barrows (CPAT 5636) were claimed in a 1978 CPAT visit to line the RR621 Roman Road approximately 1.16km south of the development area, indicating the location of a Roman round barrow cemetery. However, failure to confirm its existence at subsequent visits has led to the suggestion that it may have been a Post-medieval rabbit warren. Just across the historic county border into Montgomeryshire and approximately 29km to the north of the development area, an urn with ashes was

recovered near a bridge in Caersws in the 19<sup>th</sup> century (CPAT 1786). Its proximity to Caersws Roman fort was indicative of a larger Roman cemetery, however, the lack of records meant that a prehistoric origin could not be ruled out. Similarly, an ‘urn filled with bones’ was recorded as found in the vicinity of Pen y Gaer fort (CPAT 5707) in 1803, approximately 41km southeast of the development area in the historic county of Brecknockshire. This find was attributed a Roman origin owing to its proximity to the fort, although again this was not definitive. Pollock (2006) indicates that most cemeteries of this period in Wales were situated in fringe locations, often in close proximity to one or more approach roads, as is the case at a significant number of nearby forts. Whilst cremations are more difficult to identify, the excavation of a cremation cemetery in Caerleon provides a case for comparison. Here, half of the 122 cremations were un-urned and all appeared to be predominantly male, which was suggestive of a direct association with the garrison (Burnham and Davies 2010; Evans and Maynard 1997).

- 4.1.7 Burnham and Davies (2010) state that cremation in Roman Britain was introduced by the army and was universally practiced by the military during the *Flavian-Trajanic* era (69-117 AD) when the military was at its peak. It remained dominant until the later 2<sup>nd</sup> century when inhumation was introduced, and which came to dominate by the 4<sup>th</sup> century (Burnham and Davies 2010; Pollock 2006). They go on to describe roman cremation funerary practice:

*“Cremations were conducted on a pyre (ustrinum), occasionally over a specially dug pit (bustom burial). The cremated remains, including burnt grave goods, were placed in a shallow pit, either in a container of some kind (a pottery or glass vessel, a wooden, stone or tile ‘box’ or occasionally a lead ossuary) or without, though the presence of linen cloth in a burial at Caerleon (Wheeler 1929) indicates the wrapping of remains. They were occasionally accompanied by a beaker or jar; more rarely by a table set of a flagon, beaker and platter”* (Burnham and Davies 2010, p129).

- 4.1.8 It is unlikely that the probable Roman cremation [103] discovered at Ithon Road was situated in isolation. Whilst no associated features were found in the evaluation trenches, it would not be unreasonable to expect further cremation burials and/ or pyre structures/material to have been laid out nearby, respecting the alignment of the Roman road. However, the present investigations have demonstrated that heavy disturbance and truncation has occurred across the site with cultivation, including anecdotal evidence for a market garden, and the presence of numerous land drains all contributing to reducing the likelihood of finding any further archaeological deposits intact and/ or *in-situ* in the proposed development area.

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## **6 Appendices**

### **6.1 Appendix I Figures**

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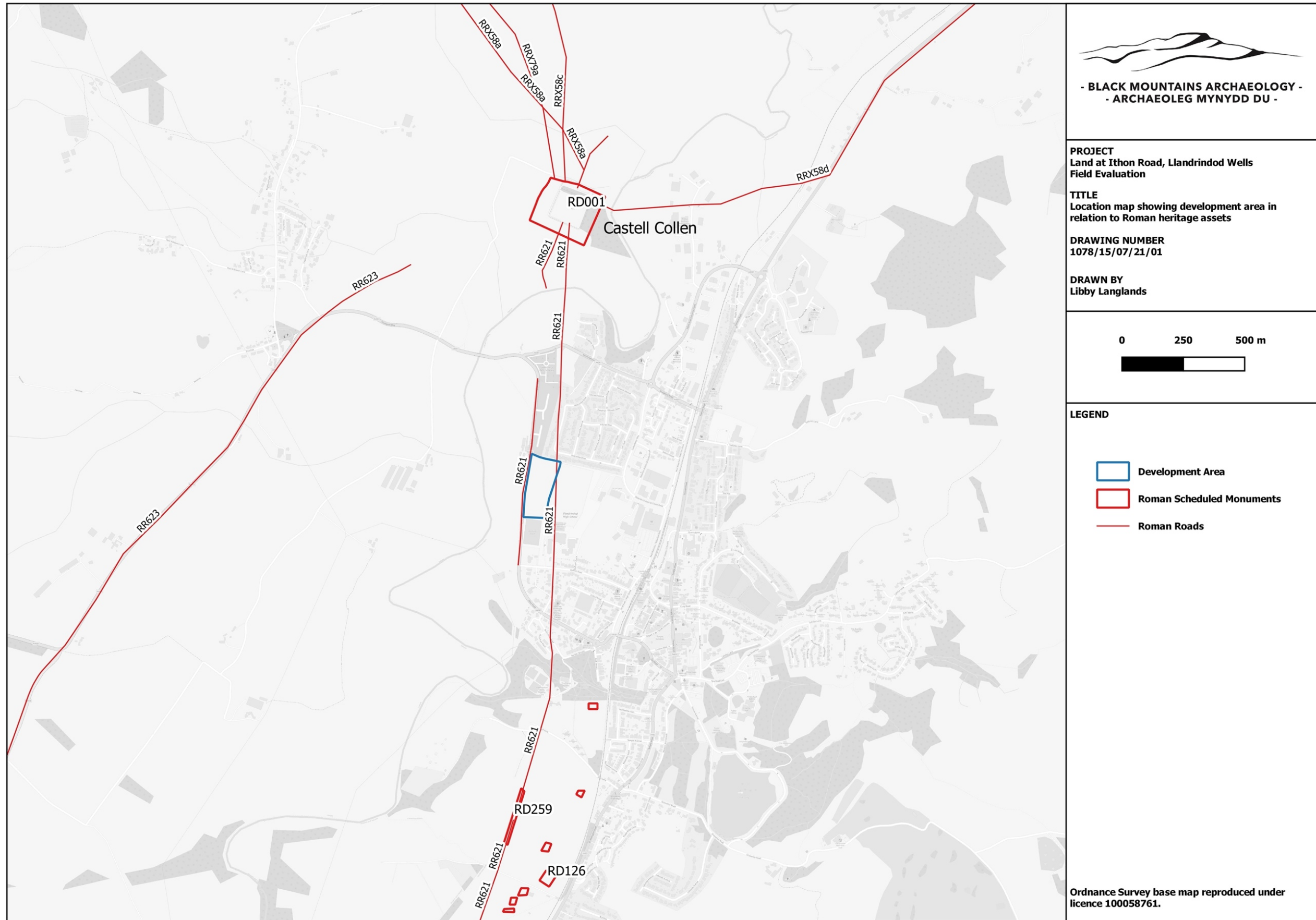


Figure 1: Location map showing development area in relation to Roman heritage assets.



Figure 2: Location of Trenches 1-4 in relation to geophysical survey results (Stephens 2017).

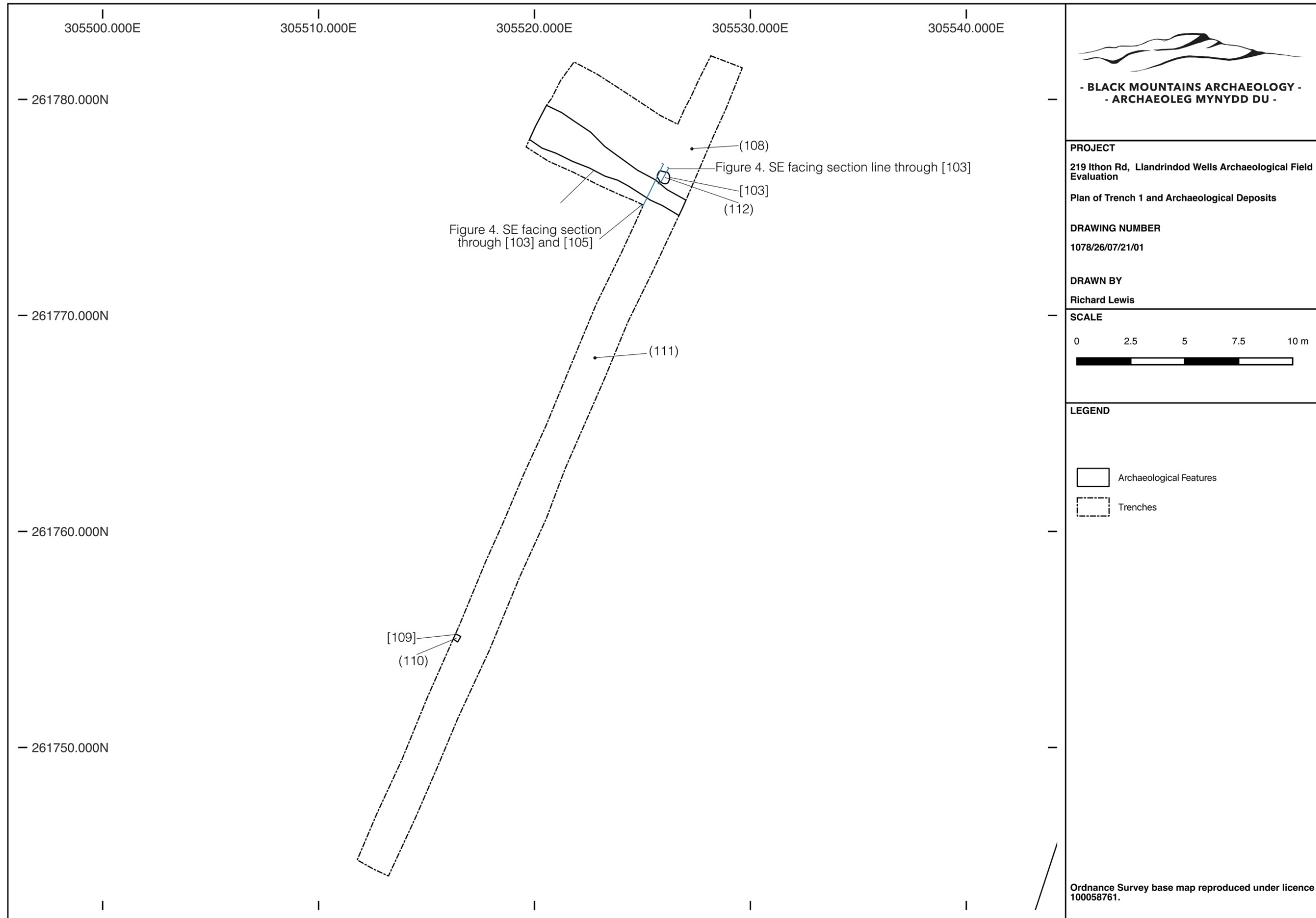


Figure 3: Plan of Trench 1.



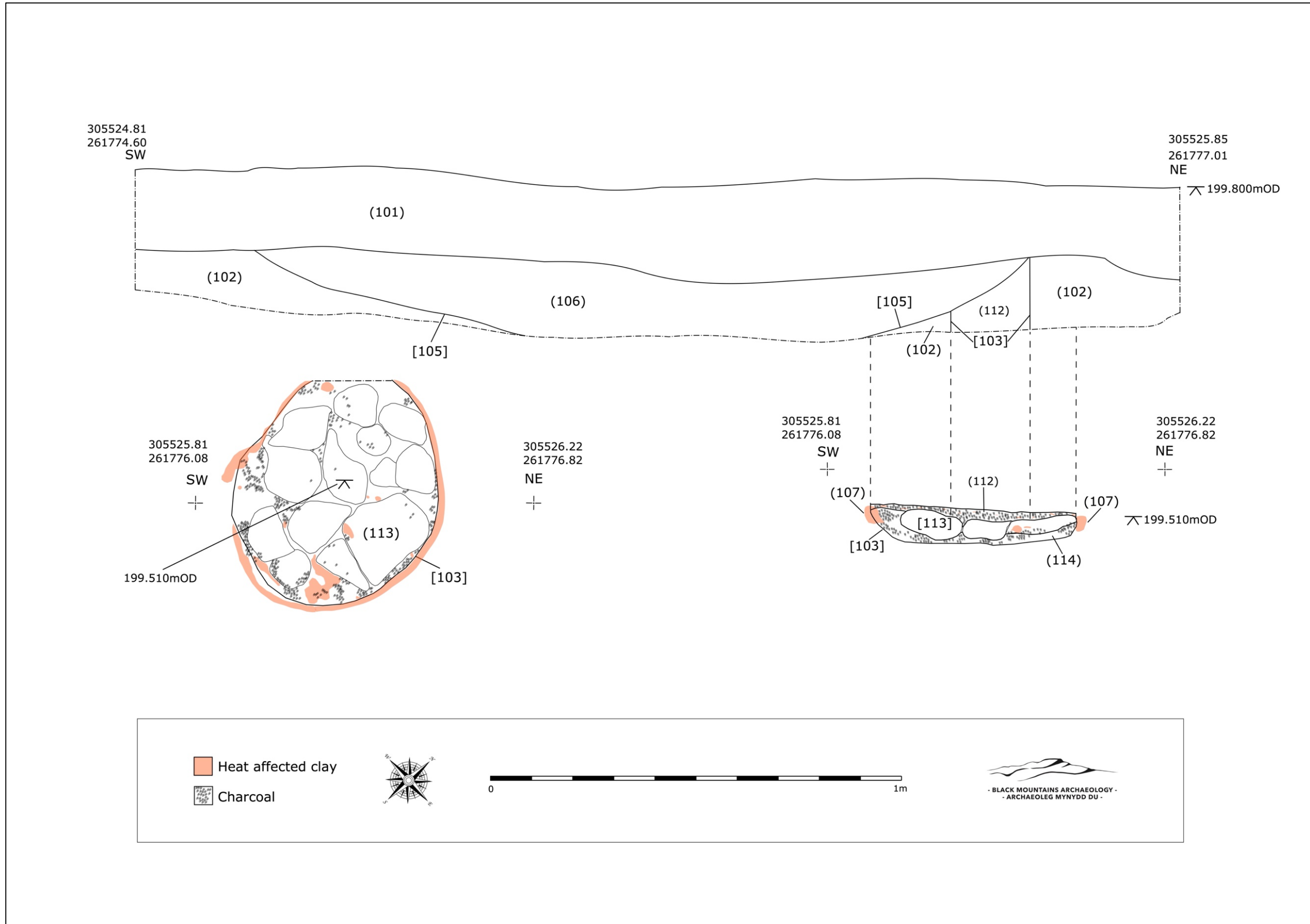


Figure 4: Southeast facing section and plan of probable Cremation Pit [103] and Ditch [105].

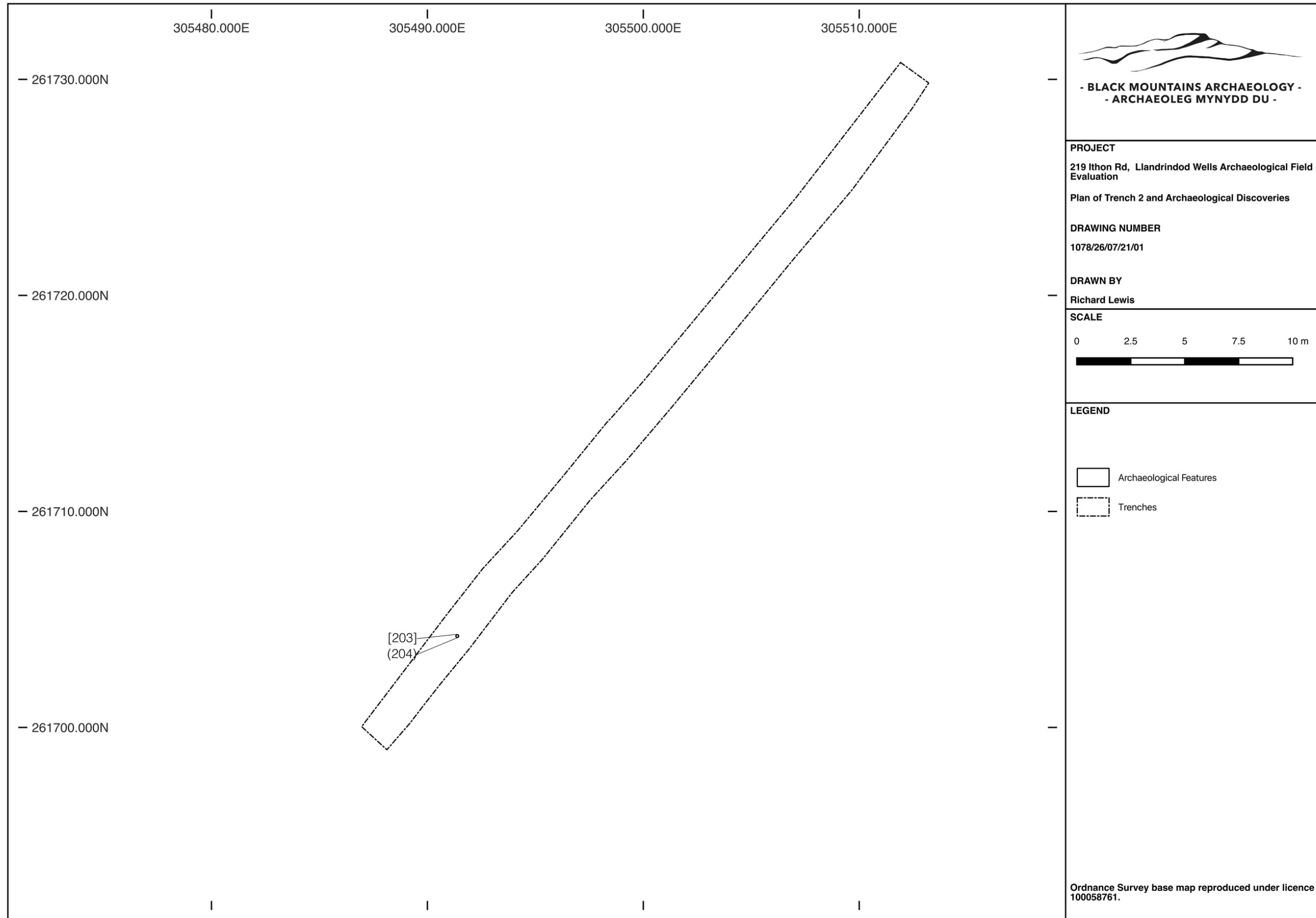


Figure 5. Plan of Trench 2.

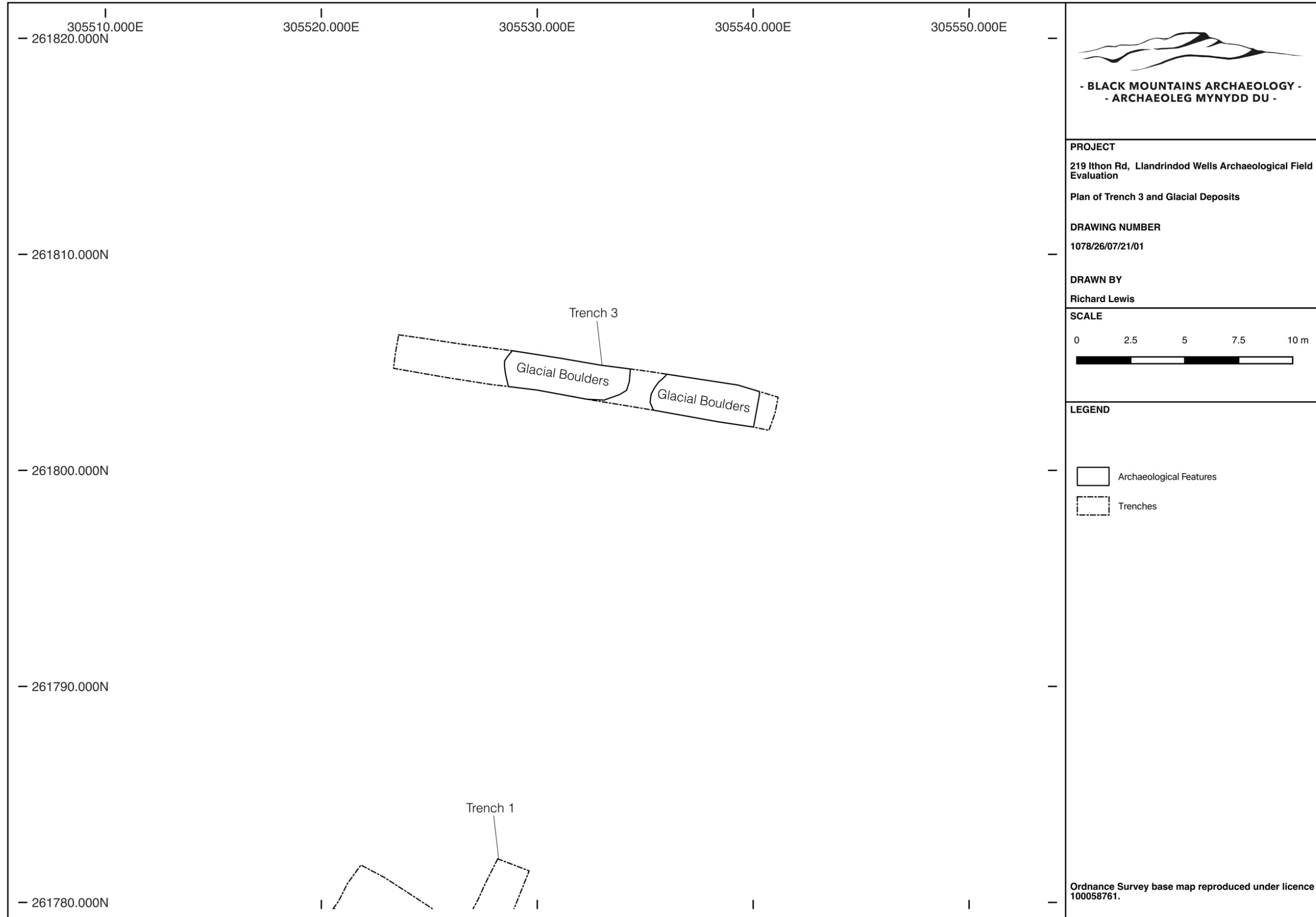


Figure 6. Plan of Trench 3.

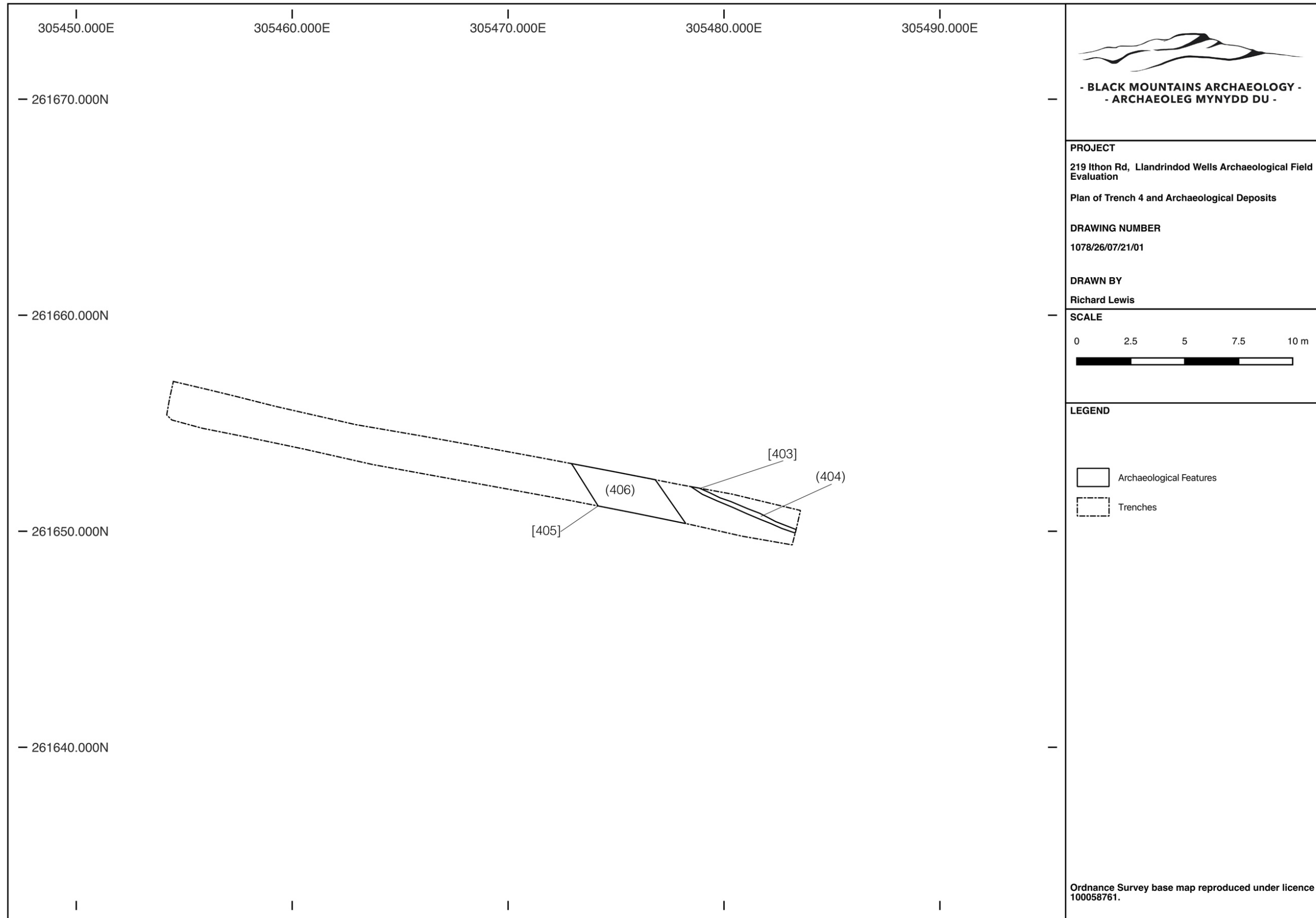


Figure 7. Plan of Trench 4.

## 6.2 Appendix II Plates



Plate 1: Aerial view to S of trenching.



Plate 2: Trench 1, view to N before extension to W. Scale 2m in 0.5m sections.





Plate 3: Trench 1, view to S before extension to W. Scale 2m in 0.5m sections.



Plate 4: Trench 1, view to W showing charcoal deposit (104) within ditch [105] (to left) and truncated Roman cremation pit [103] (centre). 2m scale in 0.5m sections.





**Plate 5: Trench 1, view of charcoal deposit (104) (left), Roman cremation pit [103] (centre), interior oxidised clay edge (107) and surviving charcoal rich cremation upper fill (112) before excavation.**



**Plate 6: Trench 1, view of view of charcoal deposit (104) (left), and the exposed tabulated stone-lined base [113], interior oxidised clay edge (107) and charcoal (112) of Roman cremation [103].**





**Plate 7: Trench 1, view of half-sectioned Roman cremation [103] exposing single course of stone-lined base [113], lower charcoal rich cremation deposit (114) and concave pit cut [103].**



**Plate 8: Trench 2, view to N. 2m scale in 0.5m sections.**





Plate 9: Trench 2, view to S. 2m scale in 0.5m sections.



Plate 10: Trench 2, detailed plan of possible post hole [203].





Plate 11: Trench 3, view to E. 2m scale in 0.5m sections.



Plate 12: Trench 3, view to W. 2m scale in 0.5m sections.





Plate 13: Trench 4, view to W. Land drain [403] in foreground. 1m scale in 0.5m sections.



Plate 14: Trench 4, view to E. 1m scale in 0.5m sections.





Plate 15: Trench 4, view to N showing ditch [405] in S facing section.



Plate 16: Cutaway of Plate 22 showing curving D-shaped ditch found in Trench 4 [405]. 1969 Aerial Photograph (6924 OS 69\_17 020) © Welsh Government





Plate 17: Ceramic finds recovered from (101) in Trench 1



Plate 18: Glass finds recovered from (101) in Trench 1





Plate 19: Glass bottle and stamp from (101) in Trench 1



Plate 20: Finds recovered from (201) in Trench 2.



Plate 21: 1969 Aerial Photograph (6924 OS 69\_17 020) © Welsh Government





6.600' 15th JULY 1971.

Plate 22: 1971 Aerial Photograph (71105 OS71\_3800 542) © Welsh Government.

### 6.3 Appendix III Context Inventory

#### 6.3.1 Trench 1

6.3.2 Level of present ground surface: NE end 199.750mOD, SW end 199.820mOD. Trench length 40m x 1.8m in width; the extension at north end on western side of trench measured 5m x 4m in area. Max depth 0.32m. Trench 1 was positioned in the eastern area of the proposed development over a large amorphous area of high magnetic response in the geophysical survey measuring approximately 50m north/south x 70m east/west. The principal discovery in Trench 1 was a probable Roman cremation pit [103], several small spreads of charcoal (104), (108) and (111) probably related to the disturbed cremation fill (112), a modern field drain [105] and posthole [109].

Context	Type	Depth	Description	Relationships	Period
101	Deposit	0m – 0.27m	Very friable grey-brown silt loam topsoil.	Overlies (102)	Modern
102	Deposit	0.27 – 0.32m+ n.b	Buff coloured silt clay, very plastic. Infrequent small irregular shaped gravel, pebbles (<0.1m) and glacial boulders (<0.5m). Quaternary Devensian till.	Underlies (101). Cut by [103], [105] and [109].	Natural
103	Negative feature	0.32-0.41m	Cut of cremation feature, sub-circular in plan measuring 0.55m E-W x 0.58m N-S. Vertical sides defined by c30mm wide band of red-orange heat affected clay with mildly concave base. Depth 76mm.	Cuts (102). Contains (112), (113) and (114). Cut by [105]. Underlies (101)	Roman
104	Deposit	0.32m+ n.b	Discrete black coloured charcoal deposit measuring 0.20-0.55m N-S x 0.24-0.56m E-W, contained within redeposited drainage ditch fill (106). Almost certainly redeposited pyre material disturbed when Roman cremation deposit (112) was truncated by field drain [105].	Contained by [105] Part of (106) Underlies (101).	Post-medieval/ modern
105	Negative feature	0.27 – 0.32m+ n.b	Cut of NW-SE aligned ditch, likely a field drain (noted on 1952, 1957 and 1969 APs), measuring 0.75m wide at E end widening to 1.50m at (shallower) W end. Visible in section with shallow cut to SW and steeper cut to NE. Here the ditch cuts (truncates) through Roman cremation [103] and (112).	Cuts (102), [103] and (112). Contains (104) and (106). Underlies (101).	Post-medieval/ modern
106	Deposit	0.27 – 0.32m	Fill of NW-SE aligned field drain [105]. Grey-brown silt clay loam with isolated orange coloured burnt clay fragments and small pebbles (<0.03m). Redeposited material containing topsoil (101), subsoil (102) and charcoal rich patches (104) representing the truncated and redeposited remains of Roman cremation deposit (112).	Contained by [105]. Comprises (104). Underlies (101).	Post-medieval/ modern

107	Deposit	0.32-0.39m	c30mm wide band of red-orange heat affected clay forming the inside edge of cremation pit [103]. Originating event almost certainly the deposition of hot pyre material directly into pit [103] causing the silt clay pit edge to oxidise.	Contemporary with (112) and (114). Later than [103] and (113). Cut by [105]. Underlies (101).	Roman
108	Deposit	0.32m + n.b	Discrete black coloured charcoal measuring 0.09-0.16m in plan. Possibly redeposited (by ploughing) pyre material disturbed from truncated Roman cremation deposit (112).	Overlies (102). Underlies (101).	Roman(?)
109	Negative feature	0.32m	Cut of modern post hole, measuring 0.20m N-S x 0.28m E-W in plan.	Cuts (102). Contains (110). Underlies (101).	Modern
110	Deposit	0.32m	Fill of post hole [109] Grey-brown friable silt clay with frequent small pebbles (<0.03m).	Contained by [109]. Underlies (101)	Modern
111	Deposit	0.32m+ n.b	Discrete black coloured charcoal measuring 0.11m N-S x 0.09m E-W in plan. Possibly redeposited (by ploughing) pyre material disturbed from truncated Roman cremation deposit (112).	Overlies (102). Underlies (101)	Roman(?)
112	Deposit	0.32 – 0.34m	Upper fill of Roman cremation pit [103] contained within a 30mm wide band of red-orange heat affected clay. Buff coloured silt clay deposit with abundant black coloured charcoal and frequent inclusions of orange coloured heat affected clays. Isolated small stones (<0.03m). Moderate bioturbation.	Underlies (101). Cut by [105]. Contained by [103]. Overlies (113).	Roman
113	Structure	0.34 – 0.39m	Deliberately placed layer of small, tabulated stones (x13) in the base of the cremation pit [103] each measuring 0.05m to 0.1m in size.	Underlies (112). Contained by [103]. Overlies (114).	Roman
114	Deposit	0.36 – 0.41m	Lower fill of Roman cremation pit [103]. Buff coloured silt clay deposit with abundant black coloured charcoal and frequent inclusions of orange coloured heat affected clays. Isolated small stones (<0.03m).	Contained by [103]. Underlies (113).	Roman

All depths below present ground surface. n.b = not bottomed.

### 6.3.3 Trench 2

6.3.4 Level of present ground surface: NE end 200.320mOD, SW end 198.820mOD. Trench length 40m x width 1.8m. Max depth 0.42m. Trench 2 was located towards the eastern edge of the proposed development (immediately south of Trench 1). It was positioned over a broadly sub-rectangular area of high magnetic response measuring approximately 50m x 30m. No evidence of any archaeological deposits or features was present in the trench. A modern post hole [203] was noted in the SW end of the trench.

Context	Type	Depth	Description	Relationships	Period
201	Deposit	0m – 0.27m	Very friable grey-brown silt loam topsoil. I	Identical to (101) Overlies (202).	Natural
202	Deposit	0.27 – 0.42m+ n.b	Buff coloured silt clay, very plastic. Infrequent small irregular shaped gravel, pebbles (<0.1m) and glacial boulders. Quaternary Devensian till.	Identical to (102). Underlies (201). Cut by [203].	Natural
203	Negative feature	0.42m	Circular cut of post hole measuring 0.11m diameter.	Underlies (201). Cuts (202). Contains (204).	Modern
204	Deposit	0 – 0.42m	Fill of cut [203]. Grey-brown silt loam deposit with isolated small (<0.03m) stones, identical to topsoil (201).	Underlies (201) Contained by [203].	Modern

All depths below present ground surface. n.b = not bottomed.

### 6.3.5 Trench 3

6.3.6 Level of present ground surface: W end 197.330mOD, E end 198.420mOD. Length 18m x width 1.8m. Max depth 0.7m. Trench 3 was located towards the northeast corner of the proposed development. The trench was positioned over three discrete areas of high magnetic response, which corresponded well with two large deposits of glacial boulders (302). This trench was shortened from 30m to 18m due to the site compound having already been constructed with the excavation of top and subsoils and stoning up for hard standing. No evidence of any archaeological deposits or features was present in the trench.

Context	Type	Depth	Description	Relationships	Period
301	Deposit	0 – 0.30m	Very friable grey-brown silt loam topsoil.	Identical to (101) and (201). Overlies (302).	Natural
302	Deposit	0.30 – 0.70m+ n.b	Buff coloured silt clay, very plastic. Infrequent small irregular shaped gravel, pebbles (<0.1m) and two significant deposits of large (>0.45m x 0.4m) glacial boulders. Quaternary Devensian till.	Identical to (102) and (202). Underlies (301).	Natural

All depths below present ground surface. n.b = not bottomed.

### 6.3.7 Trench 4

6.3.8 Level of present ground surface: E end 196.640mOD, W end 198.490mOD. Length 30m, width 1.8m. Max depth 0.57m. Trench 4 was located towards the southern end of the proposed development. It was positioned over an elongated but amorphous area of high magnetic response measuring approximately 30m long x 3m wide. The principal discoveries in Trench 4 were two field drains that married well with land drains visible on an historic aerial photograph (Plates 16 and 21).

Context	Type	Depth	Description	Relationships	Period
401	Deposit	0.00 – 0.26m to 0.54m	Very friable grey-brown silt loam topsoil. Fill of ditch [405].	Identical to (101), (201) and (301). Contained by [405]. Overlies (402).	Natural
402	Deposit	0.26 – 0.57m+ n.b	Buff coloured silt clay with orange mottling, very plastic. Infrequent small irregular shaped gravel, pebbles (<0.1m) and glacial boulders. Quaternary Devensian till.	Identical to (102), (202) and (302). Underlies (401).	Natural
403	Negative feature	0.26 – 0.45m + n.b	Field drain cut aligned NW/SE measuring 0.2 – 0.30m wide.	Underlies (401). Cuts (402). Contains (404).	Post-medieval/ Modern
404	Deposit	0.26 – 0.45m+ n.b	Fill of field drain [403]. Grey-brown silt clay containing an orange-coloured ceramic field drain.	Underlies (401). Contained by [403].	Post-medieval/ Modern
405	Negative feature	0.26 – 0.54m	NW/SE aligned ditch cut measuring 4.2m wide and 0.54m in depth.	Cuts (402). Contains (406).	Post-medieval/ Modern

All depths below present ground surface. n.b = not bottomed.

## 6.4 Appendix IV – Finds and Palaeoenvironmental Inventories

### 6.4.1 Ceramics and Glass

Context	S/F No.	Type	Description/Detail	Period	Min. Count
101	1	Ceramic	Blue and white transfer earthenware sherd, royal blue. Print on convex profile. Grey glazed interior.	Post-Medieval/Modern	1
101	2	Ceramic	Fragment of glazed cream earthenware base sherd with mid-green edging. Base is lipped with a sharp carination. Debris of a vitreous appearance is fixed to interior.	Modern	1
101	3	Ceramic	White bone china base sherd with shallow rise and visible base ring.	Modern	1
101	4	Ceramic	Four off white glazed earthenware sherds with uniform core and small inclusions	Modern	4
101	5	Ceramic	Three sherds of glazed earthenware. Two have effervescent glazing to one face. One has visible foot ring and vitreous material fused on all sides. Hues of white and grey blue.	Modern	3
101	6	Ceramic	Grey earthenware rim sherd - uniform core, no glaze. Possibly stoneware.	Modern	1
101	7	Ceramic	Base and body sherd of earthenware. Uniform core. Off white exterior, effervescent deep grey interior.	Modern	1
101	8	Ceramic	Two sherds glazed white earthenware. One is unglazed to one face.	Modern	2

101	9	Ceramic	Sherd of curved earthen ware, white interior and pale blue exterior. Glazing to both faces.	Modern	1
101	10	Glass	Green glass fragment with two raised letters visible but not discernible - possibly 'I' and 'T'. Likely drinking vessel.	Modern	1
101	11	Glass	Two pale green glass fragments, curved profile so likely vessels.	Modern	2
101	12	Glass	Three brown glass frags, curved profile so likely fragments of drinking vessel.	Modern	3
101	13	Glass	Glass fragment - brown interior and muted, dull blue grey coating. Appears to be a vitrified, deformed fragment of drinking vessel.	Modern	1
101	14	Glass	Green glass fragment, vitrified and deformed.	Modern	1
101	15	Glass	Two clear glass fragments, vitrified and deformed.	Modern	2
101	16	Glass	Five clear glass frags. One base and body fragment. One base fragment stamped with makers mark. Letter 'M' within circle in centre, with letters 'S' and 'UG' visible around perimeter. This and two other fragments likely part of same vessel.	Modern	5
201	17	Ceramic	Glazed earthenware base sherd with fluted edge. Visible glazing. Base embossed with 'NF' and possibly 'V', and edge of circular stamp visible in centre. Unable to identify. Possibly serving or cooking dish.	Modern	1
201	18	Ceramic	Porcelain base fragment, sky blue hue. Foot ring visible	Modern	1
201	19	Composite	White balata golf ball, popular through 20 <sup>th</sup> century until 1990s. Printed 'Ultra' 'Tour Balata' '2'.	Modern	1
<b>Total</b>		<b>2 contexts</b>		<b>Total</b>	<b>33</b>

#### 6.4.2 Paleoenvironmental

Sample	Context	Position	Soil Sample volume (litres)	Flot wt. (g)	Residue wt (g)	Large charcoal (>3.35mm) wt. in g.	Charred plant remains
*02	112	Upper, above laid stone base	7	101	700+	6	<i>Persicaria lapathifolia</i> (L.) Delarbre (pale persicaria achene) CD -1 <i>Vicia lathyroides</i> L. (spring vetch seed) Hs – 1 frag. Poaceae indeterminate small caryopsis G - 1
*03	114	Lower, below stone base	5	126	139	18	Poaceae indeterminate small caryopsis - 2



## 6.5 Appendix V – Aerial Photographs

6.5.1 The following is a list of the aerial photographs with coverage of the study area, and examined for the present report, held by the Central Registry of Air Photography for Wales.

Date / Sortie Number / WO No.
1952 5235 48_Meridian_52 4204.jpg
1952 5235 48_Meridian_52 4206.jpg
1952 5235 48_Meridian_52 4208.jpg
1957 5711 RAF58_2304 0087.jpg
1957 5711 RAF58_2304 0088.jpg
1969 6924 OS 69_17 020.jpg
1971 71105 OS71_380 542.jpg
1975 7542 MAL19_75 249.jpg
1978 7866 78_OS_042 380.jpg
1980 8044 SDS147_80 010089 part.jpg
1982 8225 OS82_004 018.jpg
1988 8803 ADAS388 180.jpg
1988 8803 MAFF388 180.jpg
1990 9034 CUCAP RC8_Kn_CO 265.jpg
2000 Getmapping.jpg
2009 CIR Nextperspectives.jpg
2016 Bluesky Getmapping.jpg

## **6.6 Appendix VI - Radiocarbon Dating Results by Beta Analytic**

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ISO/IEC 17025:2017-Accredited Testing Laboratory

## REPORT OF RADIOCARBON DATING ANALYSES

Richard Lewis

Report Date: June 08, 2021

Black Mountains Archaeology Ltd

Material Received: June 01, 2021

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
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Beta - 593590

Sample 02 (112)

1920 +/- 30 BP

IRMS  $\delta^{13}C$ : -24.2 o/oo

(95.4%)

26 - 210 cal AD

(1924 - 1740 cal BP)

Submitter Material: Charcoal

Pretreatment: (charred material) acid/alkali/acid

Analyzed Material: Charred material

Analysis Service: AMS-Standard delivery

Percent Modern Carbon: 78.74 +/- 0.29 pMC

Fraction Modern Carbon: 0.7874 +/- 0.0029

D14C: -212.60 +/- 2.94 o/oo

$\Delta^{14}C$ : -219.33 +/- 2.94 o/oo (1950:2021)

Measured Radiocarbon Age: (without d13C correction): 1910 +/- 30 BP

Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the <sup>14</sup>C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.



ISO/IEC 17025:2017-Accredited Testing Laboratory

## REPORT OF RADIOCARBON DATING ANALYSES

Richard Lewis

Report Date: June 08, 2021

Black Mountains Archaeology Ltd

Material Received: June 01, 2021

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
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**Beta - 593591**

**Sample 03 (114)**

**1920 +/- 30 BP**

**IRMS δ13C: -26.9 o/oo**

**(95.4%)**

**26 - 210 cal AD**

**(1924 - 1740 cal BP)**

Submitter Material: Charcoal

Pretreatment: (charred material) acid/alkali/acid

Analyzed Material: Charred material

Analysis Service: AMS-Standard delivery

Percent Modern Carbon: 78.74 +/- 0.29 pMC

Fraction Modern Carbon: 0.7874 +/- 0.0029

D14C: -212.60 +/- 2.94 o/oo

Δ14C: -219.33 +/- 2.94 o/oo (1950:2021)

Measured Radiocarbon Age: (without d13C correction): 1950 +/- 30 BP

Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB-1. References for calendar calibrations are cited at the bottom of calibration graph pages.

# Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables:  $\delta^{13}C = -24.2$  o/oo)

**Laboratory number**      **Beta-593590**

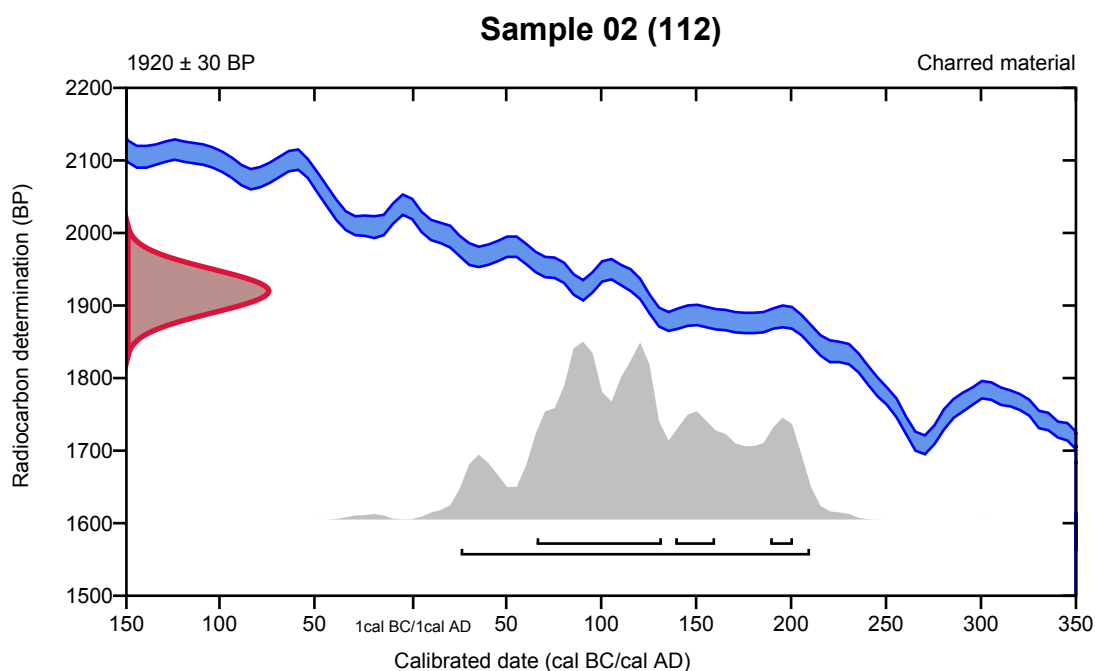
**Conventional radiocarbon age**      **1920  $\pm$  30 BP**

95.4% probability

(95.4%)    26 - 210 cal AD                      (1924 - 1740 cal BP)

68.2% probability

(50.6%)	66 - 132 cal AD	(1884 - 1818 cal BP)
(11.4%)	139 - 160 cal AD	(1811 - 1790 cal BP)
(6.3%)	189 - 201 cal AD	(1761 - 1749 cal BP)



**Database used**  
INTCAL20

## References

### References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337-360.

### References to Database INTCAL20

Reimer, et al., 2020, *Radiocarbon* 62(4):725-757.

# Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables:  $\delta^{13}C = -26.9$  o/oo)

**Laboratory number**    **Beta-593591**

**Conventional radiocarbon age**    **1920  $\pm$  30 BP**

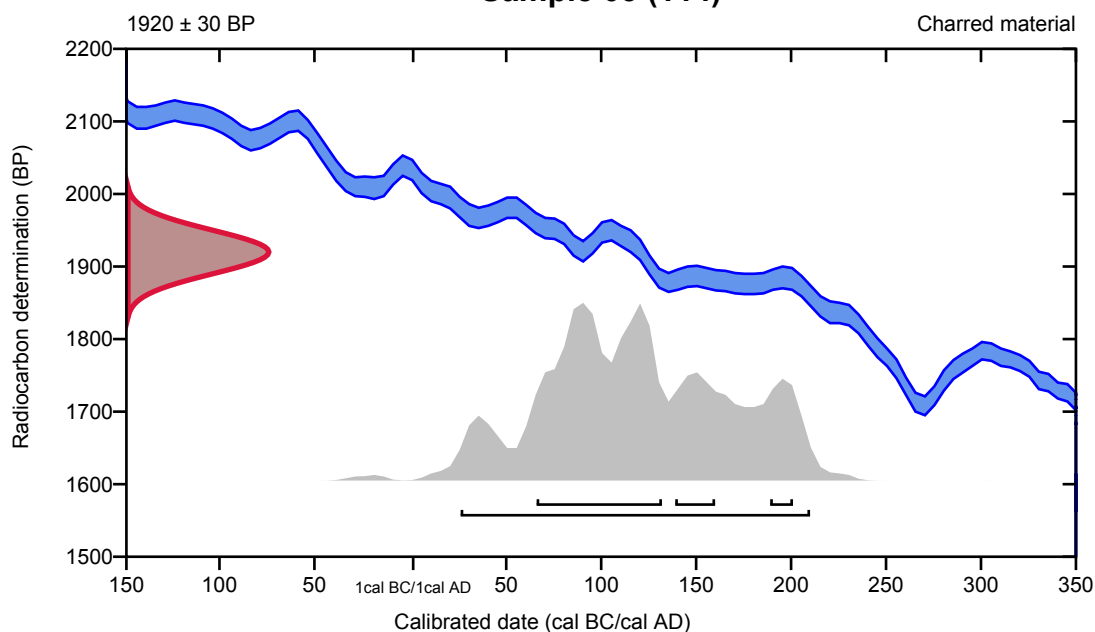
95.4% probability

(95.4%)    26 - 210 cal AD                      (1924 - 1740 cal BP)

68.2% probability

(50.6%)    66 - 132 cal AD                      (1884 - 1818 cal BP)  
(11.4%)    139 - 160 cal AD                      (1811 - 1790 cal BP)  
(6.3%)    189 - 201 cal AD                      (1761 - 1749 cal BP)

## Sample 03 (114)



**Database used**  
INTCAL20

### References

#### References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337-360.

#### References to Database INTCAL20

Reimer, et al., 2020, *Radiocarbon* 62(4):725-757.



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- ARCHAEOLEG MYNYDD DU -**

Yn rhan o'n hawydd i wella ansawdd ein gwasanaeth, rydym yn croesawu unrhyw adborth y gallwch ei ddarparu.

As part of our desire to improve our quality of service we welcome any feedback you are able to provide.

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