Llanmelin Outpost

Shirenewton, Monmouthshire

Archaeological Field Evaluation

EV/L0/22

On behalf of:

Caerwent Historic Trust

February 2023

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Gwnaed yn bosibl gan | Made possible with
Cronfa Treftadaeth
Heritage Fund

1. Summary

The following report details the findings of an Archaeological Evaluation conducted between April and May 2022, by Caerwent Historic Trust (CHT) on land adjacent to an enclosure which is part of Llanmelin Wood Camp, here called Llanmelin Outpost, Shirenewton, Monmouthshire (centred on NGR: ST 46259 92872).
The site was chosen following a geophysical survey, conducted by Bonvoisin (2019), for CHT, on agricultural land immediately southeast of Llanmelin Outpost scheduled monument (MM 0024). One of the most significant features identified on the survey was a right-angled linear group of anomalies indicative of a ditch and remnant bank, possibly aligned with a surviving earth work within the adjacent woodland (Bonvoisin 2019, 8).

CHT secured funding from the Heritage Lottery Fund to conduct a community-led archaeological evaluation across part of this feature. Scheduled monument consent was granted with a written scheme of investigation document agreed by Cadw.
A 10 x 10m trench was excavated across a section of the feature and confirmed as part of a filled 3m to 3.5m wide ditch. Cadw consented to excavating a complete section across the ditch at the northern end of the trench. The ditch was found to be 1.7m deep, rock cut and full of stone and voids that could have been a result of rapid back filling. An assemblage of pottery dating from the late-4th or early-3rd century BC onwards but ending during the mid-1st century AD, together with animal bones, primarily cattle, was discovered within the ditch infill. Two bones were ^{14}C dated and found to be Middle and Late Iron Age.
A second section was partly excavated at the southern end and contained less stone, bone and pottery at the surface but large boulders at the base of the western end.

(Cymraeg/Welsh)

Mae'r adroddiad canlynol yn manylu darganfyddiadau Gwerthusiad Archeolegol, yn ystod misoedd Ebrill a Mai 2022, gan Ymddiriedolaeth Hanes Caerwent (CHT) ar dir ger Llanmelin Outpost, Shirenewton, Sir Fynwy (CGC: ST 46259 92872). Fe ddewiswyd y safle oherwydd canlyniadau arolwg geoffisegol a oedd yn dangos anomaleddau yn debyg i olion ffos a chlawdd uniononglog, o bosib yn rhedeg i gyfeiriad ffos a chlawdd sydd wedi goroesi yn y goedwig gerllaw (Bonvoisin 2019, 8).

Fe aeth CHT ati i geisio am arian oddi wrth y Gronfa Treftadaeth er mwyn trefnu gwerthusiad archeolegol cymunedol ar y safle. Fe gytunodd Cadw i adael i'r ymddiriedolaeth gloddio tir gerllaw'r heneb gofrestredig er mwyn deall canlyniadau'r arolwg geoffisegol yn well. Fe gloddiwyd sgwâr 10m x 10m ac fe ddaethpwyd o hyd i wyneb ffos a oedd rhwng 3.0 a 3.5m o led. Fe gloddiwyd trawstoriad i waelod y ffos hynafol ar ochr ogleddol y ffos archeolegol. Fe welwyd bod y ffos yn 1.7m o ddyfnder, wedi ei dorri drwy'r graig, ar yr ochrau a'r gwaelod, a hefyd yn llawn cerrig gyda gwagfeydd yn dangos, efallai, bod y ffos wedi ei lenwi yn sydyn. Fe gasglwyd crochenwaith o'r 4^{yd} ganrif hwyr neu'r 3^{ydd} ganrif cynnar CC ymlaen, gydag esgyrn anifeiliaid, gwartheg gan fwyaf, ymysg y cerrig. Fe ddefnyddiwyd y broses o fesur ^{14}C o fewn dau asgwrn a chafwyd canlyniadau o'r Oes Haearn, canolig a hwyr.

Fe gloddiwyd ail drawstoriad, ond heb ei orffen, ar ochr ddeheuol y ffos gyda llai o gerrig, crochenwaith ac esgyrn yn y ffos, ond mwy o feini mawr i weld ar waelod gorllewinol y ffos.

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The Llanmelin Outpost project has been made possible with the help of The National Lottery Heritage Fund. Thanks to National Lottery players, we have been able to establish a date for this Scheduled Monument and engage young people with their local history.

2. Figures

3. Plates

23	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits. Slot to bedrock for full sample.
24	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits.
25	Small slot excavated by volunteers through compacted clay lying on limestone geology in the centre of trench
26	Close up of slot into compacted clay in south-eastern corner of trench. Showing bedrock with solution holes after trowelling by a volunteer

4. Introduction

This report describes the results of a Heritage Lottery funded community led archaeological evaluation carried out between April and May on land at Llanmelin Outpost, Shirenewton, Monmouthshire (centred on ST 46259 92872; Fig. 1).

Llanmelin Wood camps consist of two enclosures (MM024): the main hillfort: a multi-vallate elliptical enclosure measuring 2.2 ha, together with a rectangular annexe, and the Outpost: a smaller, multivallate oval enclosure some 260m to the northeast. Whilst both enclosures were partially excavated by Nash-Williams in 1930s no other excavation work had been carried out until the Cadw community excavation in 2012 which examined features and artefacts from the main hillfort. The pottery report from work demonstrated that most the assemblage as Middle to Late Iron Age (MIA- LIA) but with two sherds hinting at an earlier origin for the enclosure (c. 800-400 BC) (Gwilt and Webster 2016, 17).

A geophysical survey carried out on behalf of Caerwent Historic Trust (CHT), in 2019, revealed a series of anomalies (labelled as 1-11, Fig. 3) present in a field used for crop growing adjacent to the surviving earthworks of the Outpost (Bonvoisin 2019). No earthworks are visible in the field and without the survey none would have been detected without careful excavation. Whilst the surviving earthworks in the woods can be described as curvilinear (see fig. 3), the major anomaly (Group 1) can be described as a right-angled ditch-like feature. The proximity of the Group 1 anomaly to the surviving earthworks, and the angle of its axis would suggest that it is related to the Outpost and also explain the apparent truncation of earthworks on the southeastern edge of the enclosure. The apparent differences in form of the surviving earthworks and the Group 1 anomaly, together with Nash-Willams's two period pottery discoveries, may suggest an Iron Age enclosure added to, or adapted, during the medieval period.

CHT applied for funding from the Heritage Lottery Fund to carry out a targeted archaeological evaluation in order to identify and date the features visible in the survey. Cadw were consulted throughout the process and provided scheduled monument consent (Harris, 2021) following the preparation of a written scheme of investigation (WSI) on behalf of CHT (Jones 2021).

The Archaeological Evaluation was carried out by volunteers overseen by Iestyn Jones, working to the standards and guidelines of the CIfA (2014), and coordinated by Peter Bonvoisin, between April and May 2022. Post-excavation work was carried out by a range of specialists during the autumn

and winter months of 2022/2023. The field work was monitored by Cadw, periodically throughout the process.

5. Site Location and Description

Llanmelin Outpost (centred on ST 46259 92872) is located on undulating agricultural land at 92m AOD and approximately 1.3km southwest of Shirenewton and 2.4km north north-west of Caerwent, a former Roman civitas capital known as *Venta Silurum.*

The Outpost earthworks are clearly visible but, in summer months, are partly obfuscated by dense vegetation and woodland in a copse between Coombe Farm and the crop fields to the south. The survey identified features (Fig. 3) next to the woodland, features that may be the only underground surviving remnants of earthworks and ditches associated with the Outpost enclosure, whether primary or later phases.

The site is located in an irregular shaped field lying on the interface between Black Rock and Gully Oolite Carboniferous limestone bedrock with shallow silty loam forming the upper natural deposits (BGS 2021; Soilscapes 2021).

6. Archaeological and Historical Background

Prehistoric settlement in the area is attested by the presence of Bronze Age barrows located to the east and west of Caerwent at Five Lanes and Crick respectively, together with Llanmelin Hill Iron Age enclosure, to the north, suggest significant later prehistoric activity in this area long before the foundation of the Roman settlement. The Romans encountered notable resistance from the Silures, but the arrival of governor Julius Frontinus, in AD 74, and the second Augustan Legion at Caerleon signalled Roman control of this coastal region. The Silures were eventually granted a form of local government with its capital at *Venta Silurum* (Caerwent). The granting of self-government to the Silures, a process undertaken elsewhere in southern Britain, was achieved in order to delegate the responsibility of expensive and burdensome local administration to local officials.

The proximity of the Iron Age enclosure at Llanmelin, located 2.3km to the north-west of Caerwent, led, at one time, to its interpretation as a tribal capital of the Silures (Brewer 1997, 6-7). Brewer, however, suggests the enclosure's unremarkable size, makes this an unlikely prospect (Brewer 1997, 7).

The earlier excavation by Nash Williams produced artefactual evidence at the Outpost that can be described as scant and ambiguous, consisting of a single IA sherd and two twelfth-century cooking

pot sherds (Nash-Williams 1933, 287). Howell describes a narrow trench cutting through a possible round-house in the main hillfort, with little scope for examination of the structure (Howell 2022, 55) Criticisms of Nash-Williams's excessively narrow trenches, (<1m wide) at Llanmelin, include E. Evans, who blames the flawed excavation strategy for producing a report full of 'trite generalisations and guesses' (Evans, 2018). The Outpost, according to Nash Williams, was 'founded in pre-Roman times and reoccupied in the medieval period' (Nash-Williams 1933, 288).

The author of this report together with the excavation organiser for CHT were part of the Cadw community excavation that took part in the main enclosure in 2012, where evidence of Iron Age to Roman period activity was discovered, together with evidence of Nash-Williams's trenches. The ceramic evidence, examined by Gwilt and Webster (2016), suggests that occupation included the Earliest to Middle Iron Age activity together with the Latest Iron Age to Earliest Roman Transition including (but not beyond) the first half of the first century, when there is a break in occupation (Gwilt and Webster 2016). A zooarchaeological report by Jones (2013) identified cattle as being the most common species with little evidence of butchery present in the assemblage.

7. Aims and Objectives of the Evaluation

The ultimate aim was to gain a better understanding of the history of the Outpost and establish whether the possible buried earthwork feature (Group 1) was an Iron Age construction or a medieval one. It was intended that this be done by use of radiocarbon (^{14}C) sampling from secure contexts and, if present, pottery analysis. If possible, a series of environmental samples would be taken from suitable contexts in order to better understand the use of the site and the landscape during the occupation of the enclosure. The aim was also involve the local community in the excavation, and the CHT excavation director, Peter Bonvoisin, coordinated a rota of local volunteers, school visits and post-excavation talks.

Initial site preparation: Prior to the excavation Scheduled Consent permissions were sought from Cadw, the land owners (MOD) and the tenant farmer (Mr Adams). The 10m by 10m trench location was marked out by the archaeological surveyor Peter Bonvoisin following his geophysical survey. Compensation for wheat crop loss had been agreed prior to permission and the agreed area was strimmed of any growing crops and the topsoil was removed by machine under archaeological supervision (Iestyn Jones).

Recording: The site was recorded by Dr Iestyn Jones with a set of drawings at 1:20 and 1:10, as appropriate, with a photographic record with images containing a north point and suitable scales. Context sheets were prepared on site and artefacts bagged according to context. The fortuitous fly past of RCAHMW Senior Aerial Investigator, Dr Toby Driver, provided the team with an opportunity to include this report's cover photograph, whilst the ditch was being recorded. Dr Tudur Davies provided an on-site geoarchaeological service for a day towards the end of the excavation, examining the possibility of a remnant bank survival.

Post-Excavation: Digital images were uploaded daily to the archive. All site photographs are listed in Appendix VII, plates numbers are indicated where appropriate. The finds were packed and sealed in labelled bags and are described in Appendices II and III. Finds are identified in terms of context and depth from surface, where appropriate. The ceramic material was identified and examined by Rob Hedge and the animal bones by Buffy Revell, Charlotte Clark, and Richard Madgwick (Cardiff University). A fragment of a quern stone was examined by Dr Jana Horak of NMW to identify the nearest geological source for the stone.

8. Evaluation Results (Plates 1-26; figures 1-11)

The WSI had described the intention to excavate a section of the Group 1 main linear feature at the point of its right-angle turn as identified in the geophysical survey. Unfortunately, upon arrival, the 10m area had been marked out and crops strimmed slightly further north than agreed (fig. 4). This initial marking out error was communicated to Cadw but as the crops had been cut in the area it was decided to proceed with caution and reserve the right to adapt as appropriate.

The topsoil (1000) was carefully removed by a toothless bucket under supervision with the spoil located to the north of the trench (see cover image). The topsoil (1000), which can be described as a brown silty loam plough soil with rare angular limestone fragments, was between 200mm and 300mm deep throughout the trench. It was removed by a toothless bucket under supervision with the spoil located to the north of the trench. Where the machine bucket hit bedrock, it was stopped and asked to clean back onto that level from east to west.

Once the trench had been stripped of topsoil the site was trowelled and teams of 4-5 volunteers were supervised as they hand cleaned the surface down to bedrock or the next distinctive deposit, where bedrock was absent. It became clear that the northwestern corner of the trench made for challenging trowelling as the upper deposit was composed of packed 70-100mm angular limestone

stones protruding from the surface (1001) (plate 3; figs. 5 and 8). This deposit appeared, on the surface, to extend for approximately 4m from the northern terminus of the trench towards the south where it gave way in an irregular way to a mid-brown silty loam deposit with rare smaller angular limestone stones (1003) (figs. 8 and 9) which was much easier to trowel at the southwestern end of the trench (Plate 4). This deposit continued to the southwestern corner of the trench. When looked at from a distance it was possible to see that the limestone bedrock (1004), present throughout the site, 200-300mm below ground level, had been cut [1002] and that the surface of a 3.0 – 3.5m wide north to south oriented linear ditch was visible. The surface of the ditch was visible as contexts stone rich (1001) and brown silty loam (1003) seen running along the western side of the trench (Plates1, 2; fig. 5).

The eastern half of the trench was cleaned back onto cracked and degrading limestone bedrock (1004) with some irregular pockets of silty clay (1016) in certain areas (Plates 5, 6; fig. 5). Limestone bedrock was also present on the western side of the ditch cut [1002] and due to the location of the trench was between 50mm to 400mm wide (see Plate 7 top and Plate 8). Some compacted clay areas were visible around the exposed eastern bedrock, leading to initial thoughts that a possible ditch was located in this area. The pockets of clay were excavated by volunteers in small test pits or sondages in the central and south eastern sectors of the trench and it became clear that the clay had pooled in dips of the natural bedrock and obfuscated degrading rock (Plates 25, 26).

Following discussions with Cadw it was decided to first excavate a section through the northernmost section of the ditch in order to understand why it was full of stone at the northern end and how deep it may have been originally. Volunteers under supervision were tasked with methodically removing the stone in the north-western end of the trench to leave a stepped 3 m wide south-facing section.

8.1 Northern Section (Plates 15-16; fig. 6)

The stones of upper ditch deposit (1001) appeared to be loosely packed but relatively well-sorted, fine grained grey-blue limestone blocks with measurements ranging between 50mm to 150mm in length, with the majority around 100mm. There were also some reddish sandy stone of various small sizes and (rare) river-worn pebbles amongst the deposit. The type of limestone represented by the loose blocks appeared to be different from that observed on the weathering edge of the rock cut ditch as it was exposed. The limestone bedrock was a lighter, creamy-grey, coarse grained

friable limestone. The deposit was excavated in plan up against the northernmost terminus of the trench (See working shots: Plates 9,10). The width of this deposit was 2.6m wide at its uppermost extent whilst the rock cut ditch was 3.5m wide from bed rock to cut bedrock. The width of the deposit at its widest but lowest extent prior to it being labelled (1005) was 2.10m. When many stones were removed a number of voids were encountered. Some of the upper voids had filled with topsoil (1000), presumably spilling down over a period of time. There seemed to be an angular bias in the positioning of some of the limestone blocks which seemed to suggest a tip line running from west towards the east (see fig. 6, left hand side).

Finding any significant quantities of pottery sherds or other artefactual evidence was not anticipated. Not only was the excavation a relatively modest one through a small section of ditch, but also Nash-Williams's excavation has encountered very little during the 1930s Outpost excavation (Nash Williams 1933). When some of these voids under the surface stone infill were excavated one hundred and thirty-five fragmentary sherds of Middle to Late Iron Age pottery were recovered from within the upper stone deposit (1001) alone (see Hedge, appendix II). Together with the pottery sherds there were 27 identifiable fragments of animal bones, half of which were derived from cattle and a third were sheep or goat with 14% pig and 7% dog (see appendix III). A cattle radius from this deposit was dated by ^{14}C (UBA-49058) and found to be 2074 +/- 24 BP (cal BC 166-38 and 13- cal AD 3: 95.4% - 2 sigma) with a median probability date of 85 BC (Late Iron Age) (see appendix VI).

There appeared little difference in the (1001) stone rich deposit in the upper 400mm, although there were several larger blocks of stone (450 by 400mm) within the deposit below this, including some much larger boulders. For this reason, and also the fact that there was no silty deposit between these stones within the voids, a different number (1005) was allocated to this deposit (fig. 6). The width of this deposit varied between 2.10m at its upper extent and 1.3m wide at its lowest. Within this stone deposit 142 sherds of Middle to Late Iron Age pottery were recovered, including elements of at least 7 jars (Plates 11, 12) and a mid-first century AD pot base (Hedge, appendix II). Twenty animal bones were identified of which 80% were cattle bones (Appendix III).

A step was cut behind the excavators into the ditch deposits approximately 2m from the section in order to facilitate safe access for the volunteers. Towards the base of this step, in deposit (1005), a 340mm by 180mm fragment of a quartz conglomerate rotary quern stone weathered out of the step after we finished excavating (see Plates 13,14). The quern fragment was examined by Dr Jane Horak, a geologist at National Museum Wales, who reported the following:

> Although the stone has a clay mineral coating and secondary precipitate from burial, I am happy that this is a millstone made from the Devonian Quartz Conglomerate Group conglomerates (coarse sedimentary rocks with particles larger than 20 mm – gravel – pebbles etc). The better-known deposits occur at Penallt in Monmouthshire where millstones were produced in historic times. However, there is a thin band of this lithology just to the north (of Llanmelin Outpost).
> The coarse quartz pebbles provide the robust grinding surface and wear well. The rest of the rock is mainly smaller quart pebbles, cemented by quart and some iron. The cavities are where quartz pebbles have popped out during burial and weathering (Jane Horak personal communication, October 2022).

Deposit (1006) was more loose stone similar to deposit (1001) and (1005) at a level 1.10m below the ditch surface and contained 101 sherds of Middle to Late Iron Age vessels, including a mid-first-century sherd. In terms of animal bones within (1006), 22 were identified, of which 41 % were cattle and 27% were sheep or goat. This deposit contained one exceptional bone which appeared to have been adapted. The metacarpal of a caprine (sheep/goat) had been drilled, possibly to hang on a thread (Appendix III, 4- fig. 1a, b).

At the base of the stone rich upper contexts, 1.3m below the surface of the ditch, was a distinctive firm orange-brown sandy silt with some irregular angular and rounded limestone fragments (1008). This 200mm deep and 700mm wide deposit with a rounded base located below (1006) 150mm above the square cut rock cut base of the ditch. This deposit was quite unlike (1001), (1005) and (1006) and may represent a different deposition event (fig. 6). This deposit contained the most bone fragments (35) with the majority (43%) being from pigs, and 20% from both sheep/goat and cattle. A cow tibia bone from within this deposit was ^{14}C dated (UBA-49057) and found to be 2181 +/- 27 BP (cal BC 361-240 and 236-153: 95.4%- 2 sigma) with a median probability date of 283 BC (middle Iron Age) (see appendix 5). Contained within a sample <3> of this deposit, also, was a fragment of hazelnut shell and a very poorly preserved emmer/spelt glume base, typical of prehistoric domestic waste such as ‘small-scale crop cleaning’ and cooking (see Carruthers appendix III). No pottery sherds were observed within the excavated area of this lower deposit (1006).

Deposit (1009) was located on the lower portion of the western side of the ditch and can be described as a friable grey-brown silt with frequent (70%) smaller angular fragments of limestone, most of which were smaller than 50mm in diameter. Some occasional larger irregular limestone rocks (200mm by 50mm) were also observed towards the base of this deposit, above (1008). No pottery or bone fragments were observed within this deposit. This irregular deposit, together with (1008), were very different from the looser regular upper limestone deposits with voids and pottery

sherds located above. Sample <4>, taken from this deposit, contained some charcoal but no charred plant remains and can be compared with (1008) in terms of its relative sterility.

Deposit (1015) located along the western surface of the ditch and also at the base above limestone bedrock (1004) was a 100mm deep (maximum) degrading grey, sterile, fine-grained sandy silt, with occasional stones. This deposit had the appearance of water affected rock; possibly the result of water run-off, accumulation and percolation along the base and western interface of solid cut bedrock ditch [1002]. Although this had a trace of a charcoal in sample <6>, possibly washed down from upper deposits, the sample was sterile of plant remains (see Carruthers, appendix III).

The eastern equivalent of (1015) appears to be a (100mm max deep) firm orange-brown sandy silt along the eastern edge of the bedrock (1007), covering the eastern step above the 'leg breaker'. This maybe an upper version of (1008) and contained 32 sherds of pottery, including 2 rims and 2 animal bone fragments (cattle and pig) (Appendix III).

The maximum depth of ditch deposits was 1.7m as measured from the central surface to the rock cut base. The rock cut ditch [1002] was a stepped flattened V shape with a 650mm wide and 400mm deep 'leg breaker' at the base onto a flat bedrock base (see Plate 17 for base). The eastern edge seemed to be stepped in a more exaggerated way with a steep slope to depth of 1.10m and a level 550mm wide step leading to the narrower slot (see Plates 15, 16 and sides plates 19, 20; fig. 6).

8.2 Southern section (Plates 21-22; fig. 7)

A 1.4m wide section was cut into the at the southern end to examine why the deposits within ditch [1002] appeared, on a surface level, to be very different to the northern end (Plates 21, 22). The linear ditch within the excavated trench was mainly visible because of context (1003) a mid-brown silty loam with occasional angular limestone fragments visible for the southernmost 6m of the ditch within the limits of the trench. The deposit also continued along the eastern edge of stone rich deposit (1001) for most of its observed extent. Once it had been trowelled clean the contrast between the brown coloured fill (1003) and the light greyish limestone bedrock on both sides made the ditch clearly visible from the working aerial photograph taken by the RCAHMW AP team. This deposit, like the northern section was located under a 300mm deep plough soil (1000). The deposit contained 2 cattle bones and 2 unidentifiable mammal bones and 38 fragmentary sherds of Middle to Late Iron Age vessels. It was notable that the deposit's surface contained tiny fragments of bone and damaged friable pottery sherds which were observed as it was being trowelled.

It was notable that the depth varied from west to east as seen in the north-facing section. The depth of the deposit on the western edge of ditch was 200mm, whilst at approximately 1.5m from the western edge of rock cut ditch [1002] it sloped down to a depth of 550mm below the ditch surface. In the eastern side of the section there were occasional larger irregular shaped stones (maximum 100mm diameter). The sloped deposit (west to east) appeared to mirror the tip lines of some stones on the western edge of the ditch as observed in the northern slot, suggesting that the deposit was deposited or derived from the western side of the ditch. On the very edge of the western edge of [1002] there was a deposit (1010) that seemed to be subtly different to the one underlying (1003) and can be described as a firm mid-brown sandy silt, 200mm deep and 250mm wide, with small irregular stones (<20mm). It contained 2 cattle bones and 17 fragmentary pottery sherds. The main deposit underlying (1003) however, was (1011), a firm mid-orange brown sandy silt with larger stones (max 250mm by 200mm) forming approximately 50% of the fill. This deposit also dipped or sloped down from west to east with a western depth of 300mm and a maximum depth on the eastern end of 600mm (800mm below ditch surface). This deposit contained 25 sherds of pottery, some of which appear to be of Early to Early Middle Iron Age date, and 3 cattle bone fragments within the excavated slot. A sample <5> was taken from a central area of this deposit that yielded an emmer/spelt spikelet fork, some charcoal fragments, burnt bone fragments and rodents' teeth. These have been interpreted by Carruthers (Appendix IV) as 'traces of burnt domestic waste' and, together with the bone waste, would suggest that domestic activity was possibly taking place nearby (see Carruthers, appendix IV).

The final deposit encountered in this section, although not fully excavated, was (1014) a mid-brown silty loam with frequent unsorted stone (max diameter). The deposit sloped from west to east and was 500mm (minimum) deep on the 250mm (minimum) deep western side. Two sherds of calcite tempered pottery were discovered within this deposit. This was located between 550 and 800mm below the ditch surface (1.10m maximum below current ground level).

The southern slot was not fully excavated to the base for a number of reasons. Firstly, the time allocated for recording did not allow the full exploration of this area. Secondly, significant voids were exposed at a depth below 1.0m below the ditch surface (1.3m below current ground surface). Examination of a void that appeared below excavators' feet, 1.3m below ground surface, showed very large stones and voids that appeared to run along the western edge of the cut ditch bedrock. Further deeper excavation, even if time had allowed, would have destabilized the section. It remains a possibility, however, that larger quarried loose limestone blocks made up the western base of ditch [1002] at the southern end of this excavated trench.

The ditch [1002], as partially revealed in the southern slot, was roughly stepped in a similar way to that seen in the northern slot. The western edge sloped more gently, dropping 700mm in height over a 1.10m span of west to east bedrock. The eastern cut edge was steeper, however, dropping 750mm over a span of 600mm (east to west) bedrock.

8.3 Internal western bank and possible palaeosol (see Davies Appendix V)

The geophysical survey showed some anomalies showing up as negative borders on the western side of the ditch that could be interpreted as remnant bank deposits (Bonvoisin 2019, 6). It was decided to employ Dr Tudur Davies, a geoarchaeologist, in order to examine the possibly that a palaeosol existed below a possible remnant bank next to the ditch. Once the northern section had been excavated Dr Tudur Davies arrived to extend the section and take a column sample <1> on the western edge of the ditch's upper deposits. Once the sample has been sealed and examined off-site a sediment description and magnetic susceptibility analysis was conducted (See Appendix V). The analysis included the following interpretation of deposits (described from the base upwards) immediately to the west of ditch cut [1002] (Plates 23,24).

Degrading limestone bedrock with a 60mm deep dark reddish-brown sandy silt (1.7) accumulating in hollows underlying a 160mm deep dark reddish-brown silt (1.6), a probable palaeosol predating the construction of the enclosure. Over this deposit a 45mm deep brown silt loam with angular limestone fragments (1.5) possibly representing redeposited material removed during the excavation of ditch [1002]. Above this deposit (1.4), a 55mm deep silty loam with angular limestone fragments, possibly represents the remains of a stone rich bank remnant. Lying over the possible bank remains was a 60mm deep brown silt loam with angular stone fragments that may been a palaeosol that developed over the bank material (1.3). The upper most brown (1.2) and brown (1.1) silt loam with angular limestone fragments and some charcoal flecks in the plough soil were present throughout the site.

Davies's analysis reinforces the geophysical surveys interpretation of the negative border on the western side of the ditch as that of a possible bank remnant overlying an earlier pre ditch soil horizon. It is unfortunate that the limestone geology minimizes the possibility for further study of pollen and a better understanding of the early landscape prior to the construction or expansion of the Outpost ditches. The likely presence of a western bank, however, does explain the tip lines and presence of deposits within the ditch with a deeper bias on the western side of the ditch infill. It is

likely that any deliberate backfilling or bank slump would result in deposits first entering the ditch from the western edge before running downwards and across the ditch.

It is worth noting that Carruthers's analysis of sample <2> from the area close to <1> (see fig. 6), but possibly including an admixture of several of Davies's geoarchaeological sub-contexts, showed that there was evidence of contamination and disturbance, including recent contaminants (See Carruthers, appendix IV). It is likely that although a 160mm deep lens of possible former bank material survives, its presence in an unprotected zone and high up in the soil horizon precludes any further study of this deposit in this area.

8.4. Limestone bedrock (1004) (eastern half of the trench)

In areas in the eastern half of the trench the machine was stopped from digging deeper as degrading limestone bedrock (1004) was encountered. Some compacted clay areas (1016) were visible around the exposed bedrock, in the eastern half of the trench leading to initial thoughts that a possible ditch was located in this area. The pockets of clay were excavated by volunteers in small test pits or sondages in the central and south eastern sectors of the trench and it became clear that the clay had pooled in dips of the natural bedrock (Plates 25, 26). When these were examined the clay was found to be lying on top of weathering limestone bedrock with evidence of apparent water pooling. This lack of certain archaeological features seems to echo the geophysical survey (fig. 3) which also shows nothing immediately to the east of the ditch within our trench area. Some patches of charcoal within the clay can be explained by burning in the shallower topsoil, especially in the southern part of the trench.

9.0. Discussion and conclusions

The evaluation established that the Group 1 geophysical anomaly, within the 2019 survey, was a 3.0-3.5m wide and 1.7m deep rock cut ditch [1002]. The northern end of the excavated ditch appeared to be full of stone and it was firstly sectioned at this end in order to understand this anomaly.

When fully excavated the northern section of ditch appeared to show some silty build-up of deposits along the edges and base of the ditch, possibly explaining contexts (1007), (1008) and (1009). The

bone and pottery content within these lower deposits suggests that it was during an occupation phase of the enclosure. One ^{14}C date from an unfused cattle tibial shaft and it's unfused epiphysis (and therefore unlikely to be disturbed) within deposit (1008) (Appendix III, section 5) produced a date likely to be from the Middle Iron Age (median date 3rd C BC) (Appendix VI) and Hedge's context date range has a pottery *terminus post quem* of 300 BC to AD 50 (Appendix II). The environmental evidence recovered from basal deposit (1008), in the northernmost section, though 'slight', suggests domestic food preparation and cooking nearby (Carruthers, Appendix IV). Deposit (1011), similarly, from the southernmost section contained burnt waste (bone etc) indicative of the relative proximity of domestic activity in the Outpost.

Whilst the majority of southern British hillfort excavation animal bone assemblages are dominated by sheep bones (Jones 2013), the main Llanmelin hillfort 2012 animal bone collection was dominated by cattle (48%). The assemblage from the Outpost, although smaller, was also dominated by cattle (46%). Jones suggested that dairying may have been a specialization of the main hillfort and the Outpost bone data are also indicative of a similar interpretation although slight evidence was also identified for traction (Appendix III, 10-11). The lack of limb (meat) bones of pigs and sheep/goats maybe indicative that consumption was possibly occurring elsewhere, possibly in the main fort?

There is slight evidence for the use and modification of bone, but it is unclear why this was carried out. Given the location of a hole through the epiphysis, rather than the shaft, of a sheep/goat metatarsal, it is unlikely that it was used as a shuttle for weaving as other examples found during the Iron Age, for example at Rudston Springs, Yorkshire (BM 2023). The bone may well have been used as a talisman or decoration, hanging on a thread of some description. Given the modest size of the excavation it is unsurprising that this was the only example of such an object.

The upper deposits were full of well-sorted stone and voids and although numbered (1001), (1005), (1006), due to depth, they resembled a single back-fill event or a series of events with little time in-between. The tip line seen on the left of fig. 6 suggests that material appears to have entered from the main bank on the western side of the ditch. The context date range of (1001) had a *terminus post quem* (TPQ) of 100 BC to AD 50 whilst the lower part of the same deposit, (1005) and (1006), had a slightly later context date range TPQ of AD 1to 50. The pottery within the upper deposits was described by Hedge as material that may have 'lain on the surface for some time before being deposited in the upper levels of the ditch in an episode of infilling' (Appendix II).

The limestone located in the back fill also appeared to be from a different limestone source other than from the ditch itself. This may suggest that some of the stone bank material may have sourced from nearby in order to face or increase the height of the bank. Contrastingly, the weathering on the bone material was minimal, suggesting little exposure, however 4% of the material that was weathered appeared in upper deposits (1001) and (1005) which may suggest that some of this material was more recent than the pottery or derived from a different, separate midden source.

It is notable that no early Iron Age pottery (800 to 400 BC) was found in this excavation material and this modest assemblage post-dates 400 BC. If this assemblage is representative of the Outpost occupation period, it is suggested that the main hillfort predates the Outpost by approximately 400 years or so. Both enclosures, based on the pottery and bone assemblages, appear to have co-existed from the Middle to Late Iron Age. They appear to have farmed or traded mainly in cattle, with some pigs and sheep, and also grown Spelt (wheat) with some Emmer and Barley. The lack of meat bones within the Outpost assemblage is suggestive of meat consumption happening elsewhere, either in this enclosure or possibly the main hillfort.

The main hill fort and Outpost activity seems to cease in the mid-first century AD when the Roman occupation of southern Britain began. It is tempting to see the rapid back filling of this ditch section, possibly near an entrance, as part of this occupation activity, although it could be later. Whilst the main hillfort experienced later (post mid-3rd century AD) Roman activity, no further evidence was found in this ditch to suggest a similar pattern here, although a larger portion of the enclosure would need to be sampled to confirm this.

Realistic speculation about the relationship between the two enclosures, based on this one small evaluation, is hard to justify. The evidence from this modest evaluation suggests that the main hillfort was the earlier of the two and that the Outpost was built, some 300m away, during the Middle Iron Age. This period may have been when the population was thriving and there was a need for a second enclosure. The construction of the Outpost may also signal a change in social organization of the area.

This evaluation had added a modest but significant assemblage of pottery and faunal evidence which has added considerably to the scant evidence collected by Nash-Williams. Although Nash-Williams stated that the Outpost was merely occupied in the ‘pre-Roman” period, this work can now add some detail and dating to the history of the site. Further excavation within other areas of the Outpost, should they occur, may aid with further, more detailed speculation.

10. Acknowledgements

Thanks are due to Emmelia Booth (National Lottery Heritage Fund); Dr Will Davies and Dr Amelia Pannett (Cadw); Guy Salkeld and colleagues (Ministry of Defence); David Adams and family (Coombe Farm). Peter Bonvoisin for helping layout the site based on his survey, Adam Gwilt (NMW) for advice and guidance. Volunteer diggers from Caerwent Historic Trust and Shirenewton Local History Society, assembled by Alan Stealey and Dorothy Brabon; Staff and pupils of Shirenewton Primary School for their enthusiastic participation; Dr Mark Lewis (NMW) for entertaining and educating the children (and his on-site expertise with artefact identification).
Jan Bailey (Monmouthshire Antiquarian Association) for stepping in to help with the cost of the post-excavation work when the finds far exceeded expectations;
Dave Jarret (Welsh Church Act Fund); Shirenewton Community Council, and other donors and last but not least, to Peter Bonvoisin (CHT) for his leadership, energy, enthusiasm and organisational skills.

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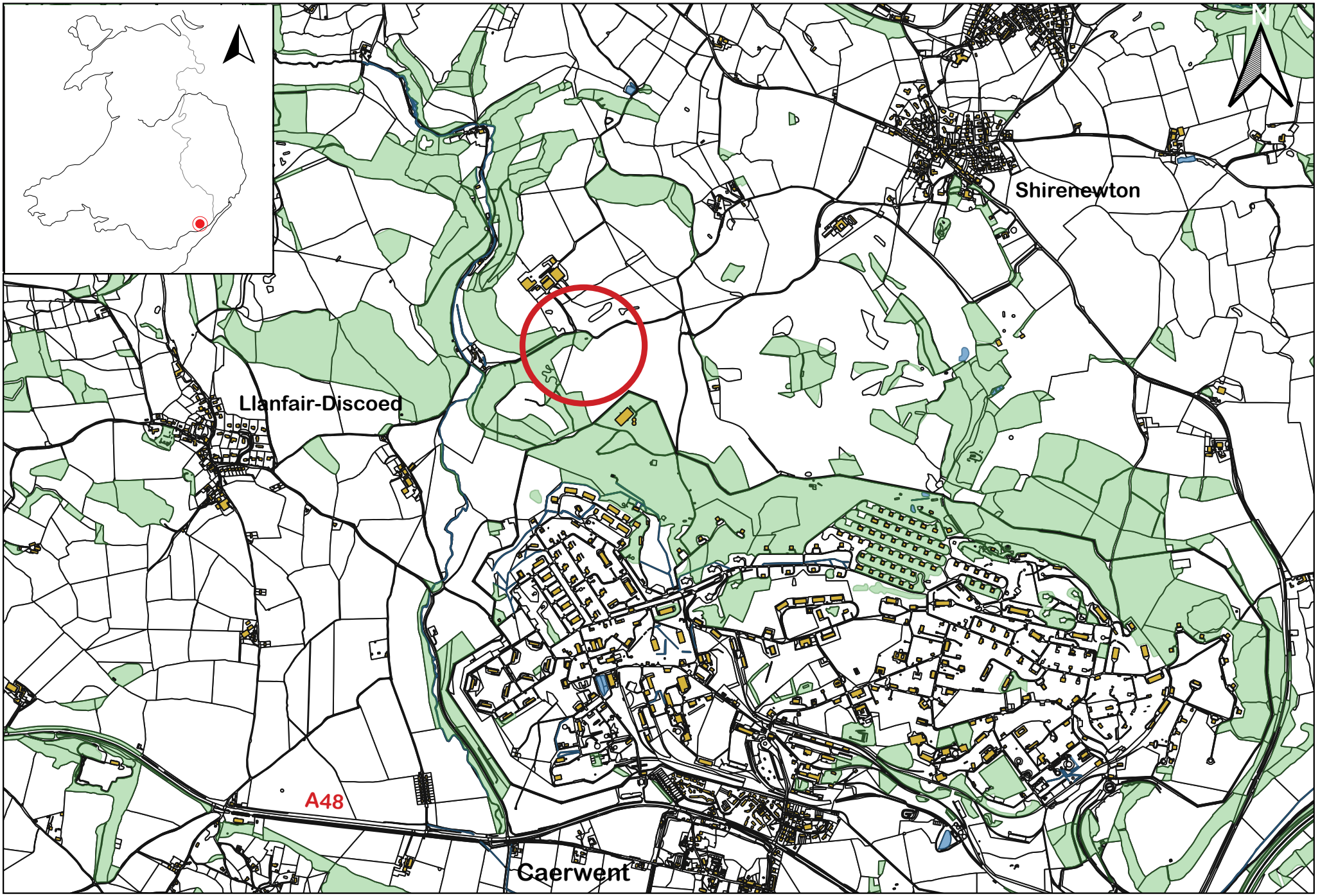
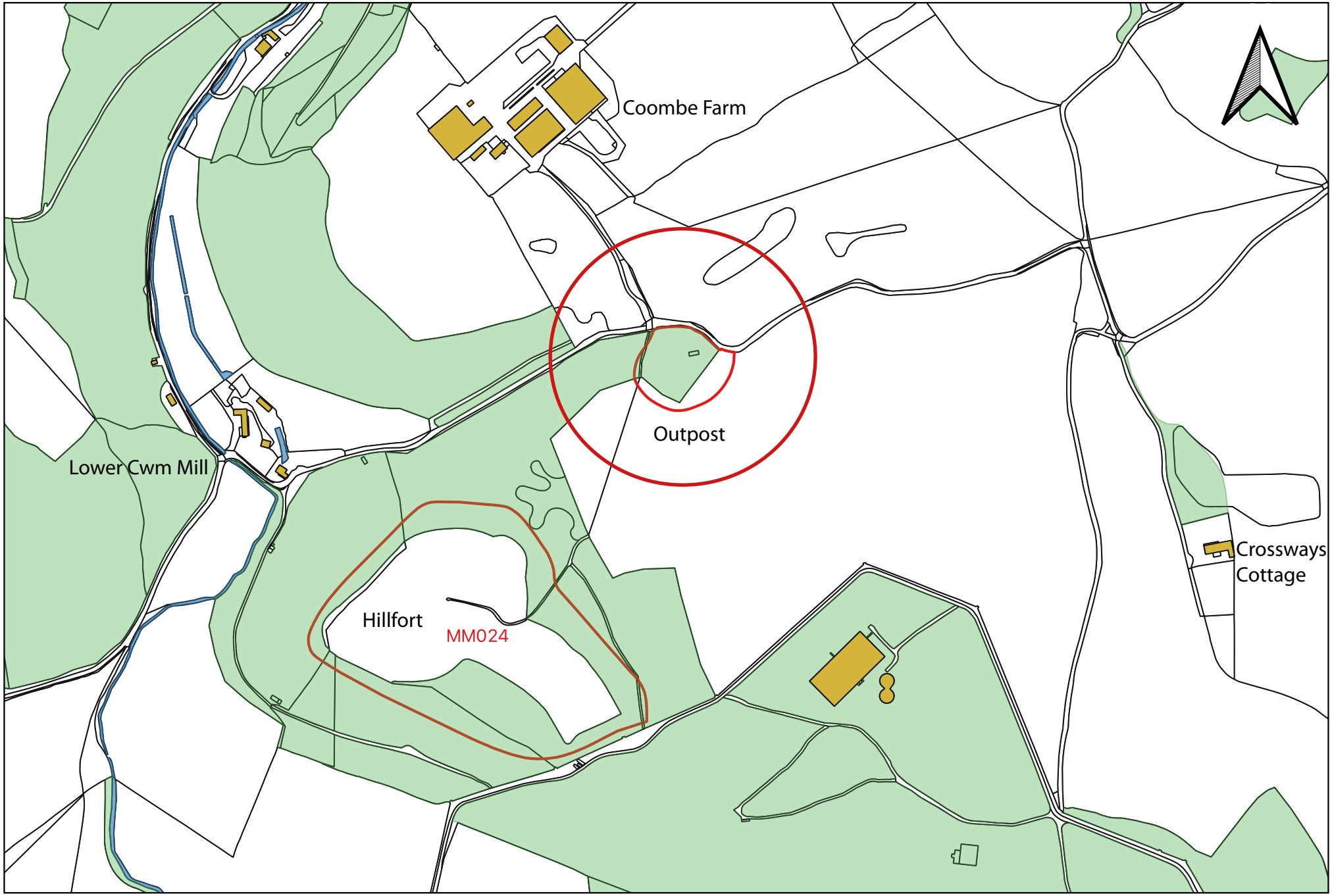


Ordnance Survey Licence 100057327

Fig.1: Site Location Map

0 500 1000 m



Ordnance Survey Licence 100057327

Fig. 2. Site area

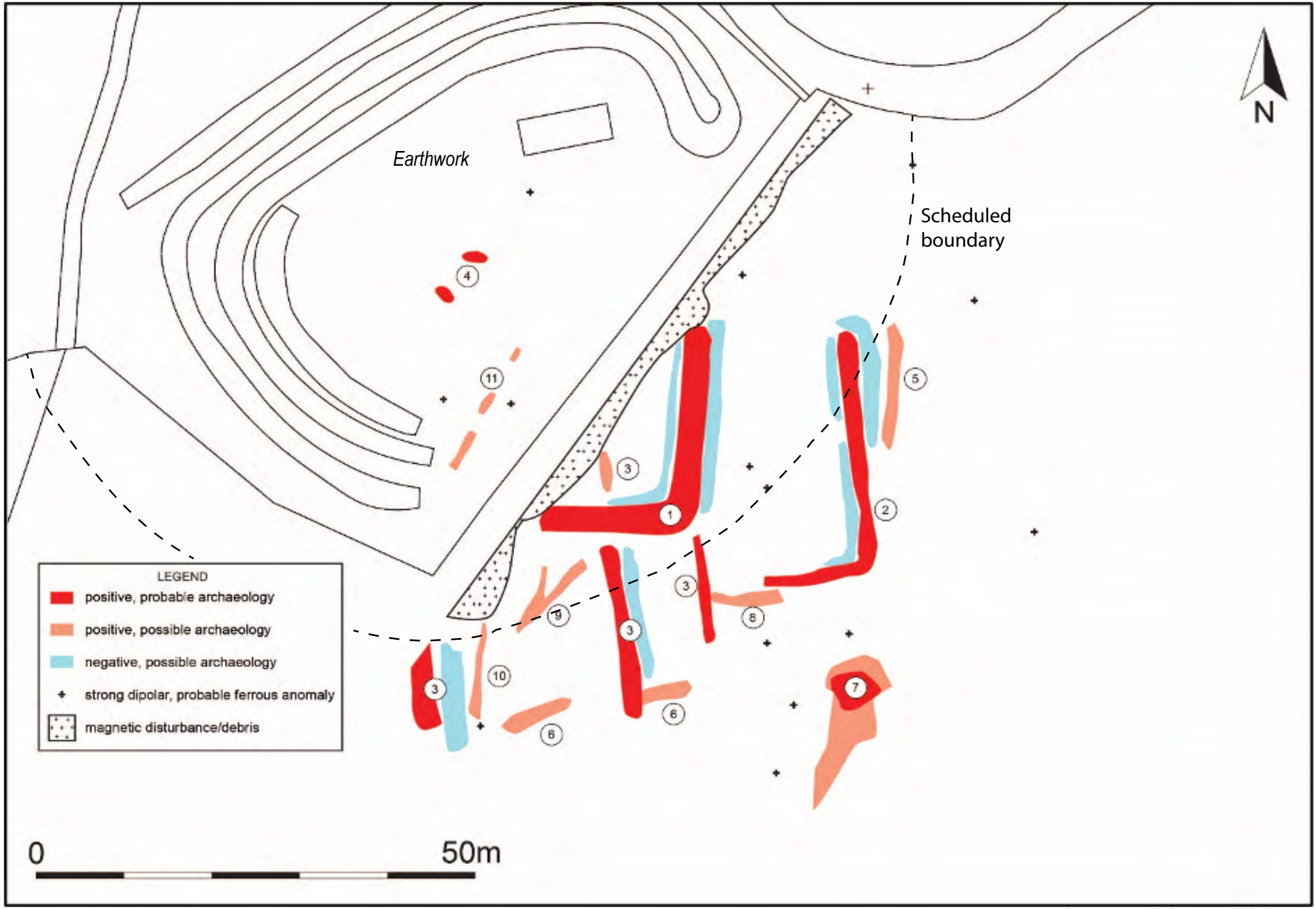


Fig. 3. Geophysics results interpretation drawing (after Bonvoisin 2019, fig.5)

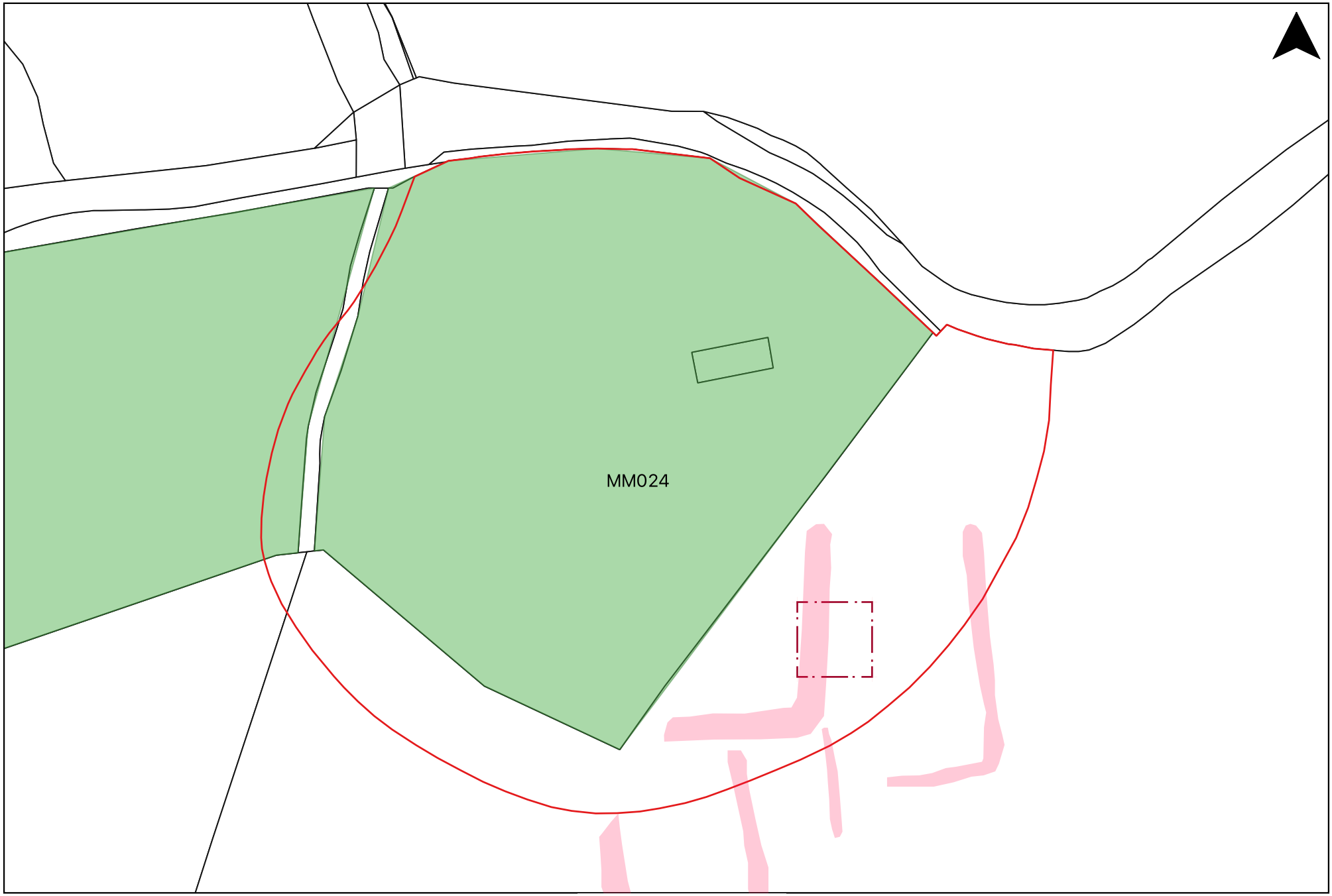


Fig. 4. Map showing trench location in relation to geophysics main anomalies

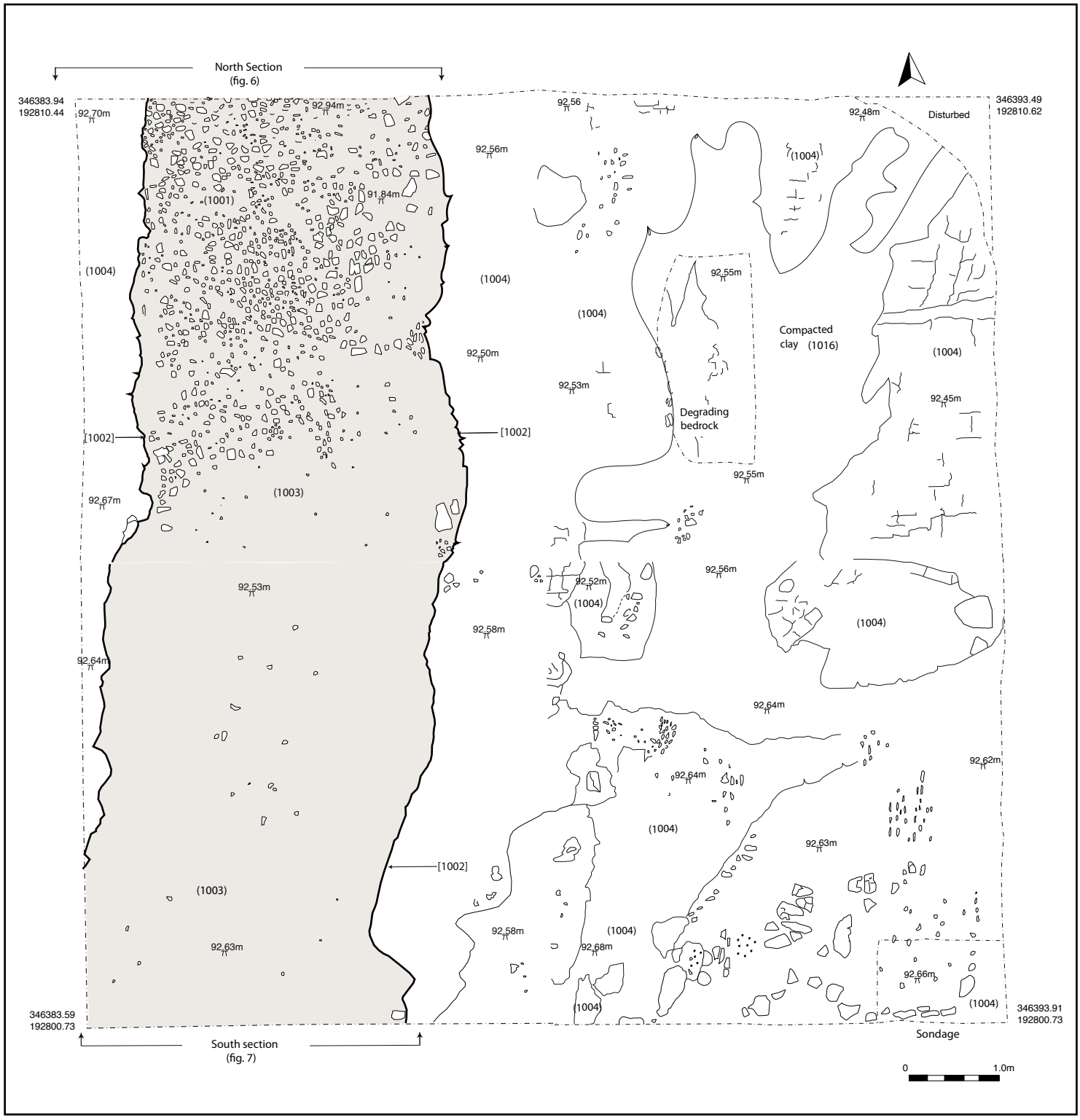


Fig. 5. Plan of the trench showing ditch [1002] and limestone bedrock

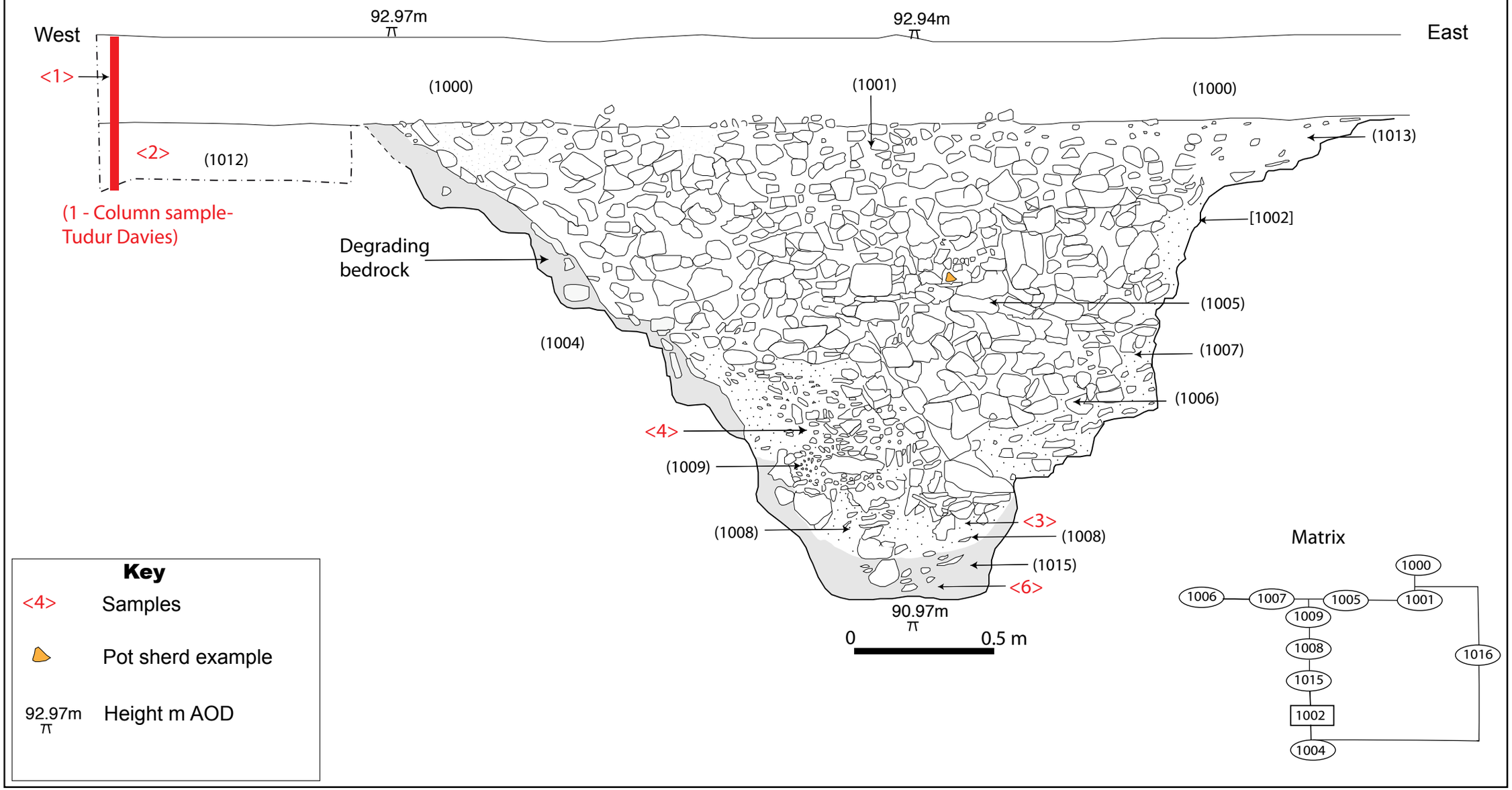


Fig. 6. South facing section of ditch [1002] at the northern end of the trench (drawn at 1:10)

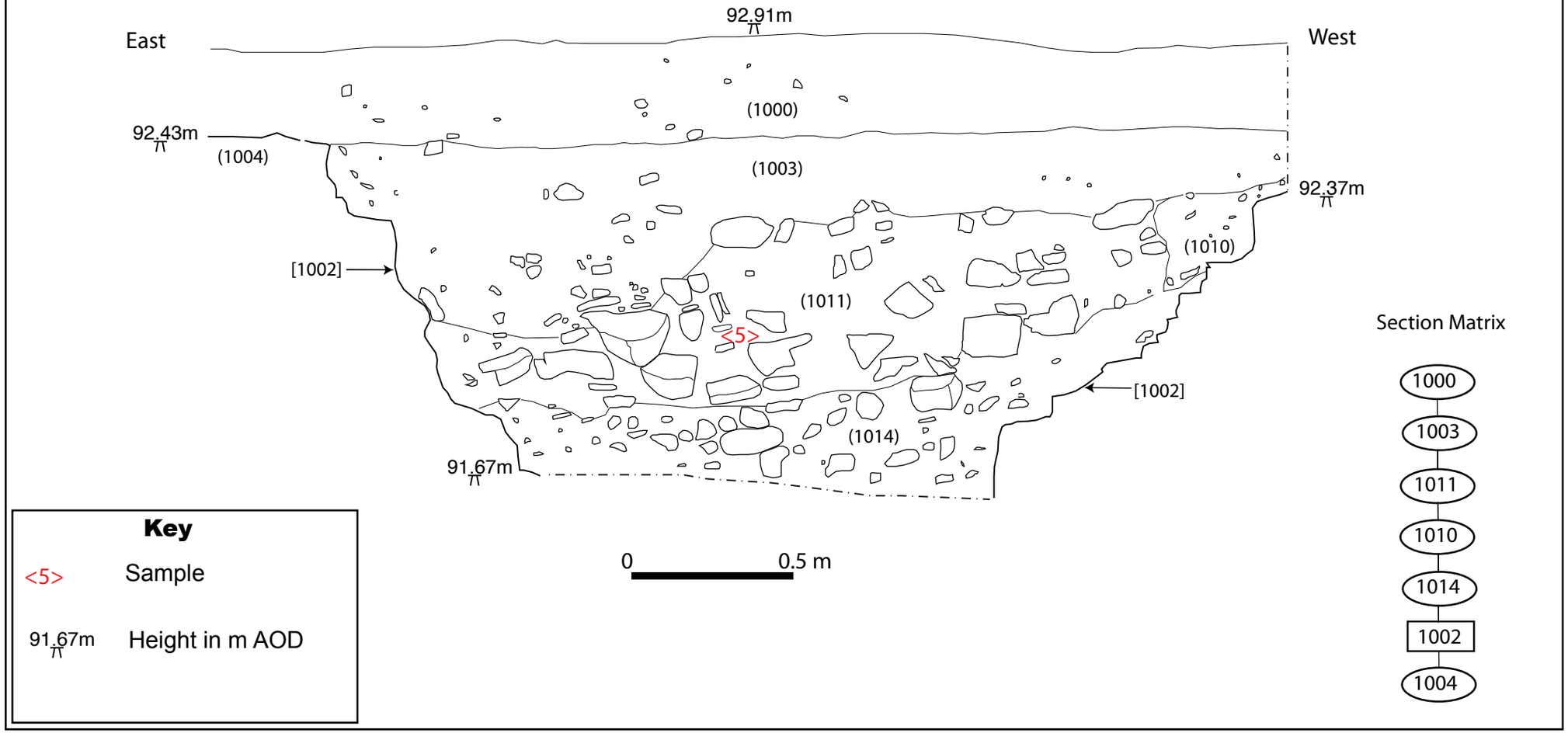


Fig. 7. North facing section of rock cut ditch [1002] at southern end of trench *ditch not fully exacated to base

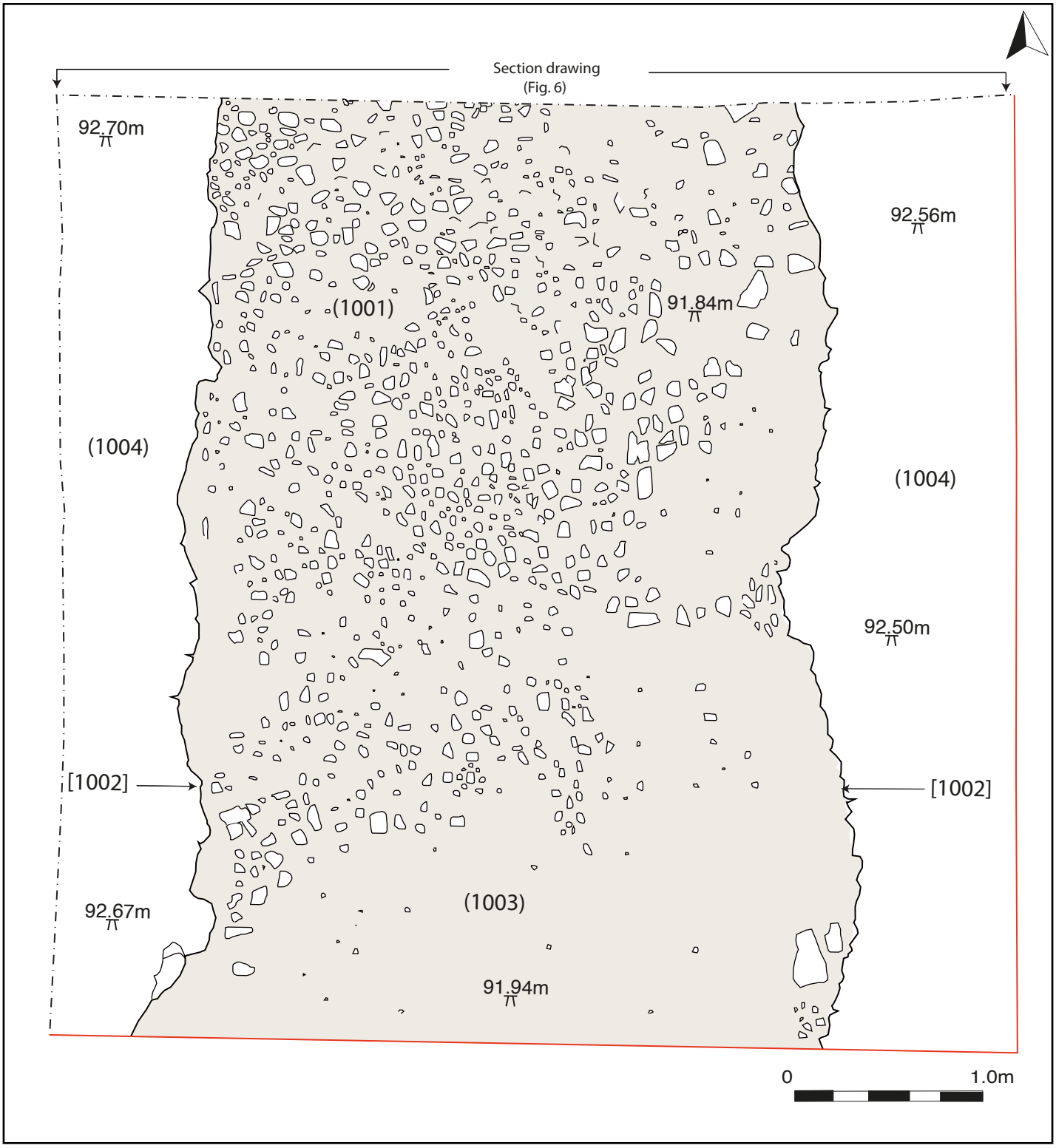


Fig. 8. Plan of north-western quadrant of the trech with ditch [1002] showing stone rich infill (1001)

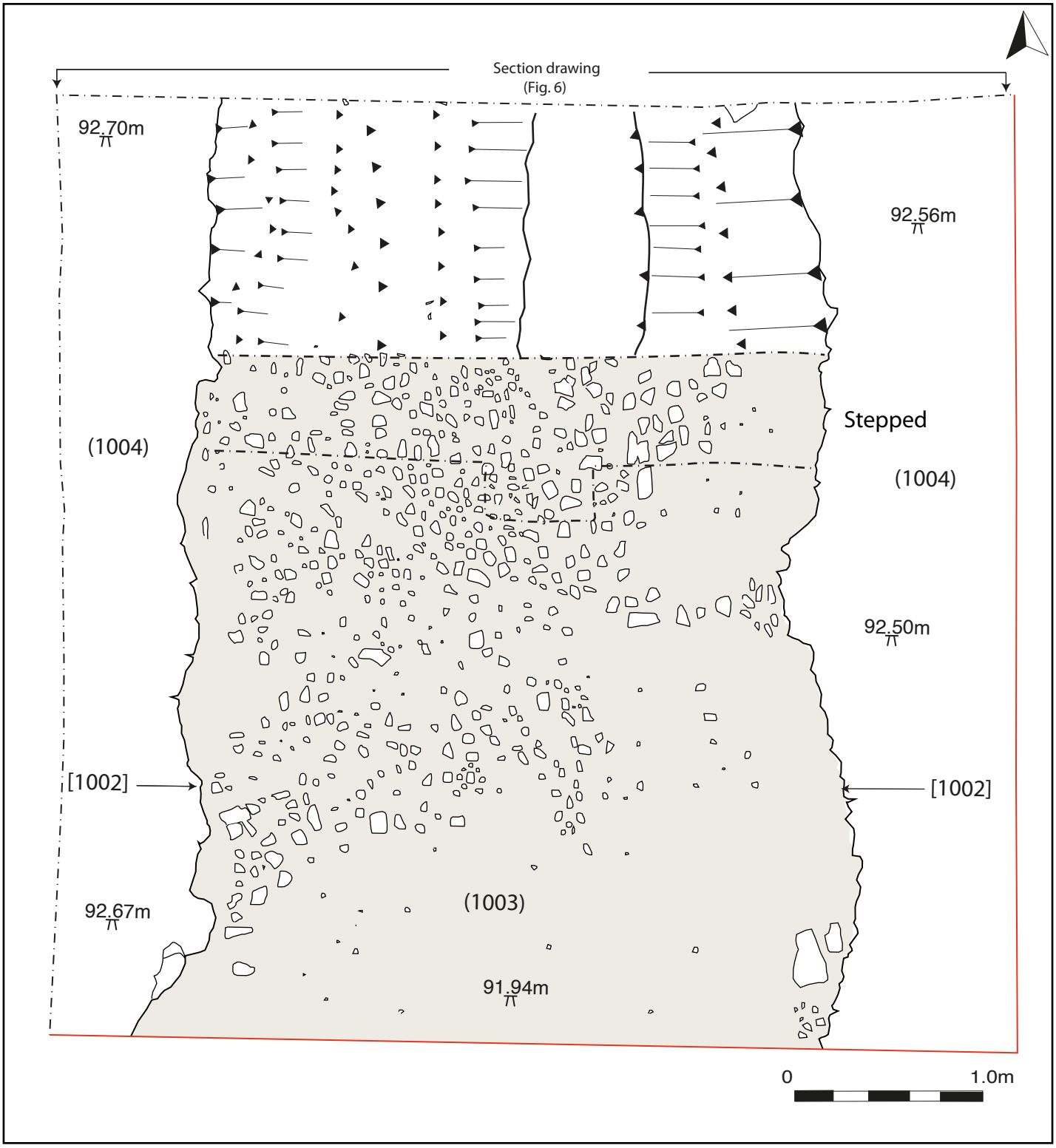


Fig. 8a. Plan of excavated north-western quadrant of the trench with ditch [1002] showing stone rich infill and stepped section

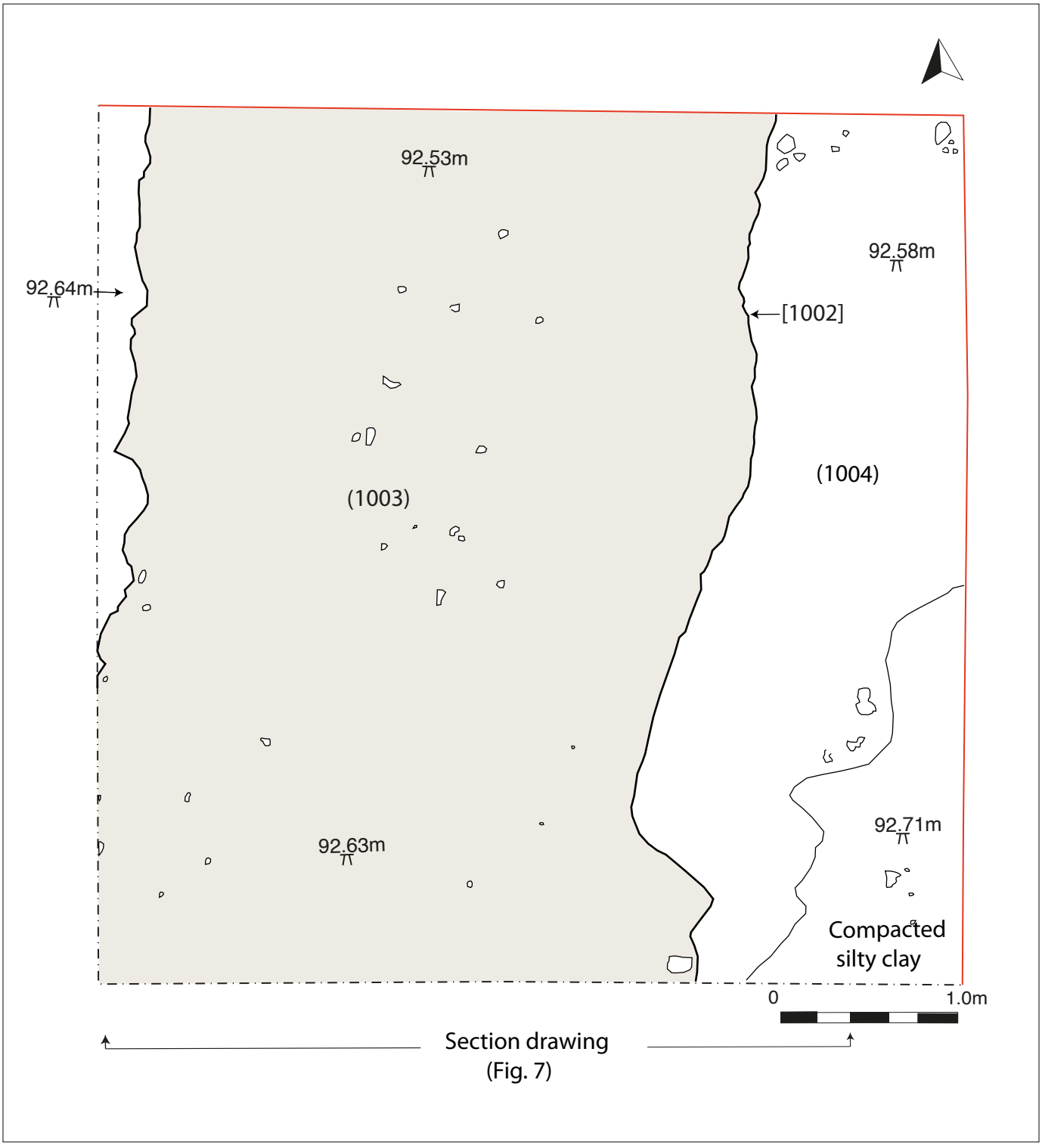


Fig. 9. Plan of south-western quadrant of trench showing ditch [1002] and upper fill (1003)

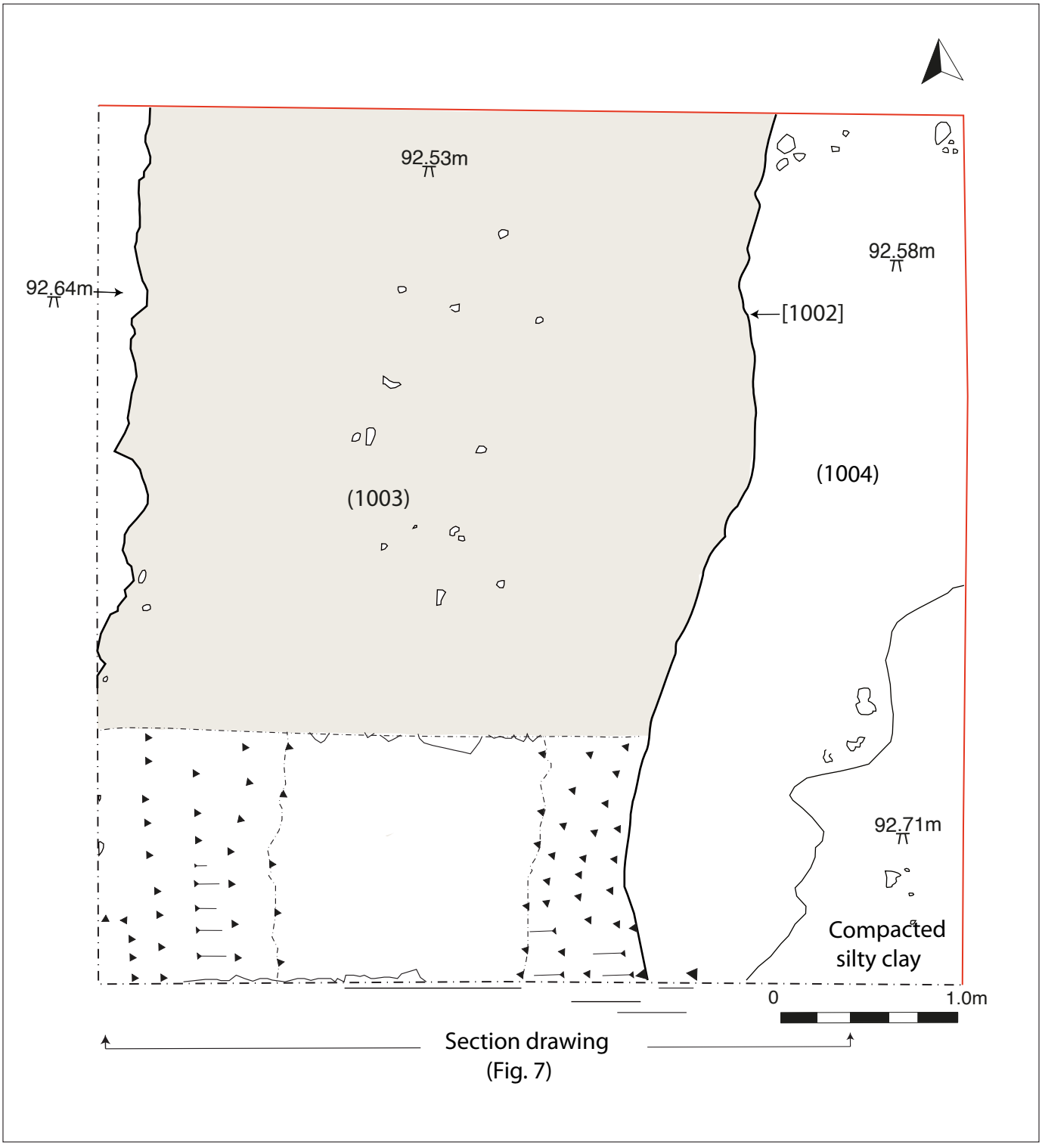


Fig. 9a. Plan of excavated south-western quadrant of trench showing ditch [1002] and upper fill (1003) with incomplete section cut at southern end

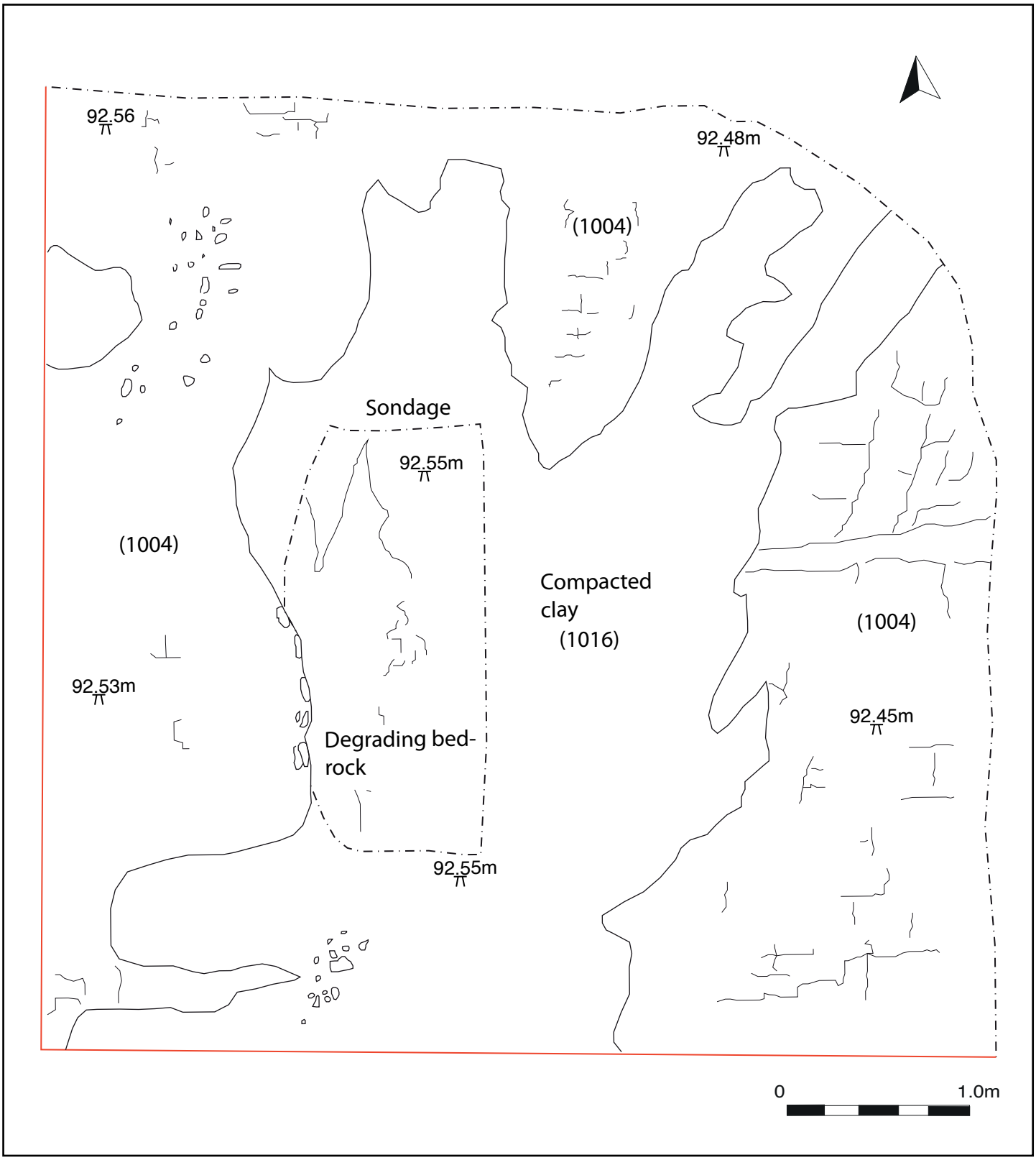


Fig. 10. Plan of north-eastern quadrant of the trench showing limestone bedrock (1004), compacted clay (1016) and central sondage

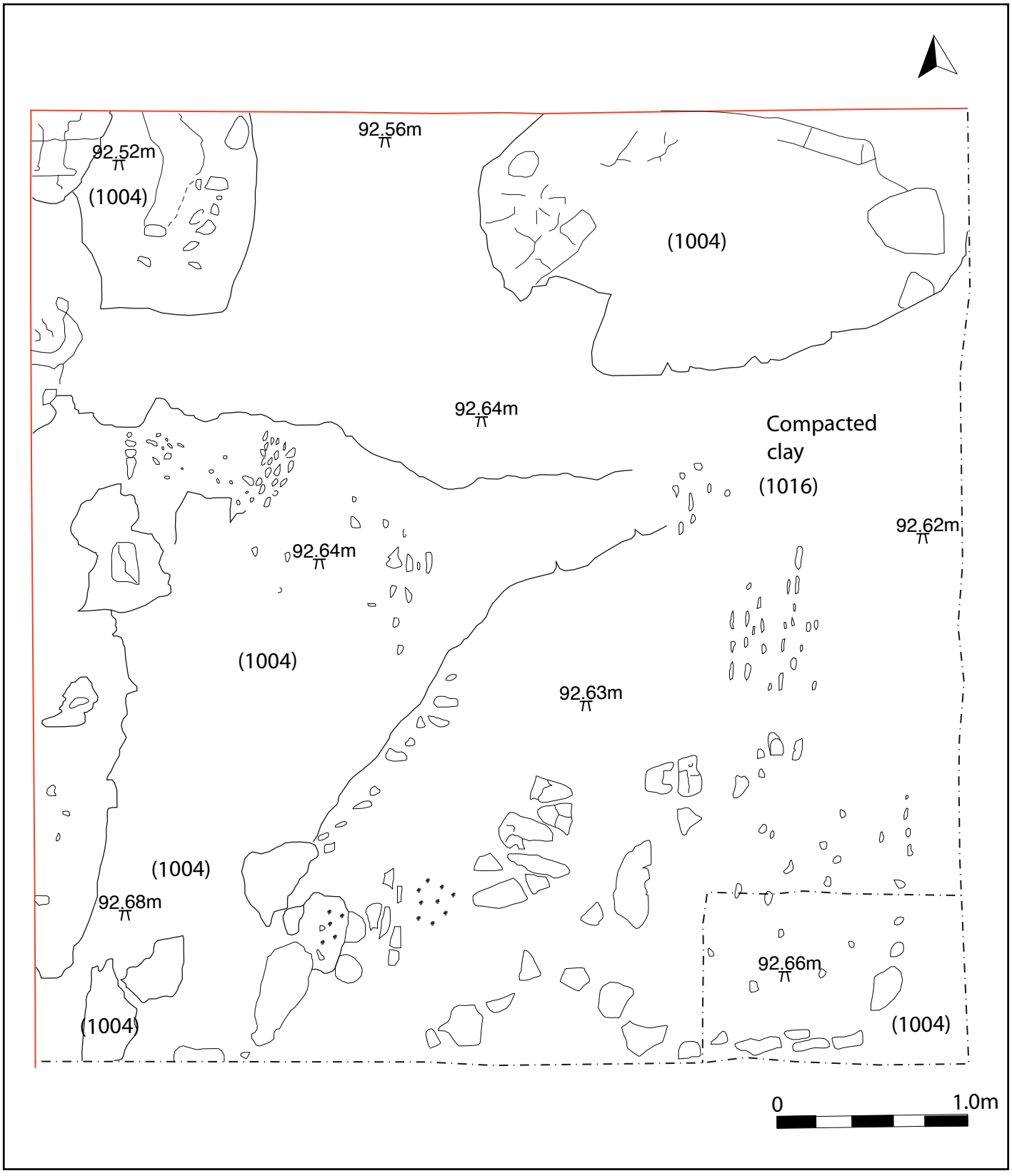


Fig. 11. Plan of the south-eastern quadrant showing limestone (1004) and compacted clay (1016) with sondage in south eastern corner.

Plate 1: View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge (looking south)

Plate 2: View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge (looking north)

Plate 3: N end of ditch showing deposit (1001) lying at surface of ditch (looking north)

Plate 4: S end of ditch [1002] showing upper surface (1003) – less stone than (1001) at N end (looking south)

Plate 5: E end of trench showing limestone bedrock (1004) and areas of compressed clay lying in depressions (looking south)

Plate 6: E end of trench showing limestone bedrock (1004) and areas of compressed clay lying in depressions (looking north)

Plate 7: Showing N-S ditch [1002] on the western edge (looking north-west)

Plate 8: W edge of ditch [1002] showing section E facing section of topsoil (1000), southern ditch surface (1003) and limestone (1004) (looking west)

Plate 9: Working picture of beginning of S facing ditch section of [1002] showing (1001) and boulder 0.5m below surface (looking north)

Plate 10: Working picture of S facing section at the N end of trench showing ditch [1002] almost bottomed (looking north)

Plate 11: Pot sherd in (1005) section (looking north)

Plate 12: Close up of pot sherd in (1005) section (looking north)

Plate 13: Quern stone fragment found in stone infill (1005)

Plate 14: Quern stone fragment found in stone infill (1005)

Plate 15: Picture of S facing section at the N end of trench showing ditch [1002]. Cleaned rock cut base and stepped excavator entrance visible (looking north)

Plate 16: Picture of S facing section at the N end of trench showing ditch [1002]. Cleaned rock cut base visible (looking north)

Plate 17: Upper section of ditch [1002] showing deposit (1001) (looking north)

Plate 18: Close up of base of S facing section at the N end of ditch [1002] (looking north)

Plate 19: E side of rock cut ditch showing stepped nature of edge (looking east)

Plate 20: W side of rock cut ditch showing stepped nature of edge and rock base (looking west)

Plate 21: North facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not excavated due to significant voids (looking south).

Plate 22: North facing section of southern partial slot through ditch [1002] and the rock cut sides (looking south east)

Plate 23: The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits. Slot to bedrock for full sample (looking north)

Plate 24: The potential bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits (lloking east)

Plate 25: Small slot excavated by volunteers through compacted clay lying on limestone geology in the centre of trench (looking east)

Plate 26: Close up of slot into compacted clay in south-eastern corner of trench. Showing bed-rock with solution holes after trowelling by a volunteer (looking east)

Appendix I

Context List

Appendix I Context Sheet Index, Samples

Site: Llanmelin Outpost		Grid Ref: ST 46259 92872	Site No: EV/LO/22		
CONTEXT	**AREA**	**FEATURE**	**DESCRIPTION**	**FINDS/ DATE**	**Samples**
(1000)	All	Deposit	Brown silty loam plough soil with rare angular limestone fragment. Between 200mm and 300mm deep.	-	Part of column sample <1>
(1001)	N area	Fill	Loosely packed medium sized (70-100mm) limestone stones protruding from the surface of ditch [1002]. Voids present and bone and pottery. Labelled as (1001) as far as 500mm deep but part of the same deposit as the underlying (1005). Seen in N section only.	Bone and pottery/ LIA	C14 sample cattle radius UB_49058
[1002]	W area of trench	Cut	3.0 - 3.4m wide N-S aligned rock cut ditch with sloping, irregularly stepped sides. 600mm wide base (ankle breaker). Maximum depth is 1.7m at the centre (2.0m below current ground level). Ditch visible for the 10 length of the excavated trench but continued beyond on both sides.	IA	-
(1003)	South ditch	Fill	Mid brown silty loam deposit with rare smaller angular limestone stones. Surface deposit for the middle, eastern and southern area of ditch [1002]. 200mm-550mm deep in southern section. Spans the full width of the ditch in the southern area of the ditch.	Bone and pottery/ IA	-
(1004)	Centre and east	Bedrock	Friable, relatively level weathered limestone bedrock, 300mm below plough-soil. Ditch [1002] was cut through this. Some dips filled with a compact clay.	-	
[1005]	N area	Fill	Same deposit as (1001) but between 500mm and 1100mm below ditch surface.	Bone and pottery/ IA	-
[1006]	N area		Lowest labelled deposit of (1001) at a depth of 1.10m and overlying finer deposit (1008) on eastern base of [1002].	Bone and pottery/ IA	-
(1007)	N area E	Fill/deposit	Firm orange-brown sandy silt along the eastern edge of the bedrock. Max 100mm deep along step above 'leg breaker'	Bone and pottery/ IA	-
(1008)	N area	Deposit	Firm orange-brown sandy silt with some irregular angular and rounded limestone fragments. 200mm deep and 700mm wide deposit with a rounded base located below (1006)	Bone only. 43% pig MIA	C14 cattle tibia frag UB_49057 Enviro sample <3>
(1009)	N area	Deposit	Friable grey-brown silt with frequent (70%) smaller angular fragments of limestone, most of which were smaller than 50mm in diameter. Some occasional larger irregular limestone rocks (200mm by 50mm) were also observed towards the base of this deposit, above (1008).	-	Enviro sample <4>
(1010)	N area W	Deposit	Firm mid-brown sandy silt ,200mm deep and 250mm wide, with small irregular stones (<20mm). Located on W edge of bedrock cut.	Bone and pottery/ IA	-
(1011)	South ditch		a firm mid-orange brown sandy silt with larger stones (max 250mm by 200mm) forming approximately 50% of the fill.	Bone and	Enviro sample <5>

			This deposit also dipped or sloped down from west to east with a western depth of 300mm and a maximum depth on the eastern end of 600mm (800mm below ditch surface).	pottery/ IA	
(1012)	N area W	Deposit	Firm dark-reddish brown silty loam with angular limestone fragments. 200mm deep. Possible sub bank palaeosol on W side of ditch [1002]	Charc/?	Enviro sample <2> and described by TD in column sample report <1> (appendix V)
(1013)	N area E	Deposit	Firm dark-reddish brown silty loam with angular limestone fragments. Possible palaeosol on E (outer) side of ditch [1002]. Underlying (1000)	-/?	-
(1014)	S ditch	Fill	Lowest excavated deposit in southern slot through ditch [1002]. A mid-brown silty loam with frequent unsorted stone (max 150mm diameter). The deposit sloped from west to east and was 500mm (minimum) deep on the 250mm (minimum) deep western side.	Pottery /IA	-
(1015)	N area	Fill/deposit	100mm deep (maximum) degrading grey, sterile, fine-grained sandy silt, with occasional stones. Weathering limestone alone w edge and base of ditch [1002].	-	Enviro sample <6> to check sterility
(1016)	E area	Deposit	Mid orange-brown compact silty clay. Filling hollows on top of weathered limestone on eastern side of ditch. Excavated in sondages only. Sterile. Some charcoal on surface from topsoil (1000). Underlying (1000) on E side.	-	-

Appendix II

Pottery report

Rob Hedge

Iron Age Pottery from Llanmelin Outpost

Rob Hedge MA(Cantab) MCIfA
63 Waterworks Road,
Worcester, WR1 3EY
29/01/2023

Background

Document Information

Type:	Pottery analysis
Version:	1
Date of analysis	November 2022 to January 2023
Date of report	29/01/2023

Site Information

Accession code:	TBC
Project code:	EV/LO/21: Llanmelin Outpost
National Grid Reference:	ST 46387 92817
Client:	Caerwent Historic Trust
County:	Monmouthshire

Overview

In May 2022, an HLF-funded community excavation examined the Outpost, an earthwork 300m to the NE of the main Llanmelin hillfort and annexe. It was the first investigation to take place on the outpost since Nash-Williams' 1930s excavations. This report comprises an analysis of the assemblage of around 500 sherds of Iron Age pottery recovered from the 2022 excavation.

Appendix II: The Pottery

By Rob Hedge MA(Cantab) MCIfA January 2023

Introduction

Summary

The assemblage comprised 508 sherds of pottery, weighing 3.36kg and largely of Middle to Late Iron Age date. Several small sherds hint at earlier or early Middle Iron Age activity, but the majority of the assemblage is likely to date from the late-4th or early-3rd century BC onwards. There was evidence for continuity of occupation into the 1st century AD with the appearance of a limited range of Latest Iron Age wares. There was no stratified evidence for activity at the Outpost beyond approximately AD 50.

Aims

This analysis aims to quantify, date and sort pottery sherds according to fabric groups, and to describe the range of fabrics therein; to discuss their range and significance; to compare the assemblage to those excavated during previous phases of work at Llanmelin; and to explore wider regional parallels.

Recovery strategy

Artefacts were hand-recovered by volunteers under the supervision of professional archaeologists.

Standards and guidance

The project conforms to standards and guidance issued by the Chartered Institute for Archaeologists[1] and CIfA's Toolkit for Specialist Reporting[2], as well as further guidance on pottery analysis, archive creation and museum deposition created by various pottery study

[1] Chartered Institute for Archaeologists, 'Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials', 2014.
[2] Chartered Institute for Archaeologists, 'Toolkit for Specialist Reporting', 2022, https://www.archaeologists.net/reporting-toolkit/checklist.

groups[3], the Archaeological Archives Forum[4], and the Society of Museum Archaeologists[5]. As a full member of the Chartered Institute for Archaeologists, I am bound to the CIfA's *Code of Conduct*, standards and guidelines.

Methodology

Reference collections and concordances

Two key assemblages for comparison are those recovered from the 1930-2 excavations at Llanmelin led by Victor Erle Nash-Williams[6], and from the 2012 Cadw excavations led by Dr Amelia Pannett and Dr Caroline Pudney. The former were analysed by Christopher Hawkes. The latter were analysed in 2016 by Adam Gwilt and Peter Webster[7]. Both assemblages are held at Amgueddfa Cymru, Cardiff, and were consulted prior to the preparation of this report. Gwilt and Webster provisionally classified the fabrics encountered in the 2012 assemblage into five broad groups. As the 2012 excavations are as yet unpublished, the fabric classifications are repeated in Table 1. Wherever possible, this analysis uses Gwilt and Webster's grouping as the basis for classification, expanding the classifications where material cannot be ascribed to the fabrics identified in the earlier assemblage.

Background

That the material from the Nash-Williams excavations was analysed by Hawkes in the early 1930s is of considerable historiographical interest, for it was at this time that Hawkes was developing his theories concerning the tripartite division of Iron Age Britain into A, B, and C cultures[8] — a paradigm that was to dominate Iron Age studies for a generation, based in no

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[3] Prehistoric Ceramics Research Group, Study Group for Roman Pottery, and Medieval Pottery Research Group, 'A Standard for Pottery Studies in Archaeology', 2016, https://romanpotterystudy.org.uk/wp-content/uploads/2016/06/Standard_for_Pottery_Studies_in_Archaeology.pdf.

[4] Archaeological Archives Forum, 'Archaeological Archives: A Guide to Best Practice in Creation , Compilation, Transfer and Curation', 2011, https://archives.archaeologyuk.org/aaf_archaeological_archives_2011.pdf.

[5] Society for Museum Archaeology, 'Selection, Retention and Dispersal of Archaeological Collections', 1993.

[6] VE Nash-Williams, 'An Early Iron Age Hill-Fort at Llanmelin, near Caerwent, Monmouthshire', *Archaeologia Cambrensis* 88 (1933): 237–346, http://hdl.handle.net/10107/4735825.

[7] Adam Gwilt and Peter Webster, 'Report on Iron Age and Roman Pottery', 4 March 2016.

[8] C. F. C. Hawkes and Gerald Clough Dunning, *The Belgae of Gaul and Britain* (Archaeolog. Inst. of Great Britain, 1931).

small part on pottery typology. Hawkes concluded that the Llanmelin material was largely within the Iron Age B tradition and dating from the second century BC through to the mid-1st century AD, with ‘some Belgic influence’ and the presence of some Romanised greywares in the assemblage placing its end date at around AD75. The Iron Age B wares were characterised by the presence of upright or slack-shouldered jars with simple or proto bead-rims, colloquially described in the report as ‘flower-pot jars’[9].

The assemblage from the 2012 works also contained a small amount of material of early to Middle Iron Age date (550-250 BC), and Gwilt and Webster were able to suggest an early origin for several form sherds from the 1930s excavations, placing the origins of the hillfort considerably earlier. They also argue for the Middle Iron Age origins of the limestone and calcite-tempered (Groups 1 and 2) wares, demonstrated at St Athan[10] to stretch back at least as far as c200 BC, pointing out that analogous traditions such as the South Western Decorated Wares are now known to have their origins in the 4th century BC[11]. Continuity with the Late Iron Age and Earliest Roman Transition is indicated by the appearance of grog-tempered (Group 4) and quartz-tempered (Group 5) vessels, and the 2012 assemblage contains a number of proto-Severn Valley wares. However, the absence of a wider range of Roman fabrics and imports leads Gwilt and Webster to suggest, contra Hawkes, that occupation likely ceased cAD50/55.

Method of analysis

All hand-retrieved finds were examined. They were identified, quantified and dated to period. This data was used for determining the broad date of ceramic phases. All information was recorded digitally. Within each context, material was separated by object type, fabric and (where diagnostic) form. Each subgroup was then assigned a record number in the catalogue; where text refers to a specific group, the relevant record number is denoted by the prefix ‘R’. Illustrations were digitised using Adobe Fresco from hand-drawn originals; the illustrations are numbered using the ‘R’ number to enable cross-reference with the text and catalogue.

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[9] Christopher Hawkes, ‘Pottery, in An Early Iron Age Hill-Fort at Llanmelin, near Caerwent, Monmouthshire’, *Archaeologia Cambrensis* 88 (1933): 291–307, http://hdl.handle.net/10107/4735825.
[10] Alistair Barber, Simon Cox, and Annette Hancocks, ‘A Late Iron Age and Roman Farmstead at RAF St Athan, Vale of Glamorgan. Evaluation and Excavation 2002–03’, *Archaeologia Cambrensis* 155 (2006): 49–115.
[11] Henrietta Quinnell, ‘A Summary of Cornish Ceramics in the 1st Millenium BC’, *Cornish Archaeology* 50 (2011): 231–40.

The pottery was examined under x20 magnification and referenced as appropriate by fabric group and number, following the provisional categories outlined by Gwilt and Webster[12]. Form, decoration, and any secondary characteristics were recorded.

Pottery sherds that could not be identified, or were too small to be identified accurately by fabric, were grouped as miscellaneous.

The following abbreviations have been used in tables and during the recording process:

- IA: Iron Age, c700 BC - AD 50
- MIA: Middle Iron Age, c400 - 100 BC
- LIA: Late Iron Age, 100 BC - AD 50
- MIA/LIA: Middle to Late Iron Age, 400 BC - AD 50
- LIA/ERT: Latest Iron Age/Earliest Roman Transition, AD 1 - 50

Pottery fabrics

Table 1 repeats the indicative fabric series outlined by Gwilt and Webster. It should be noted that the fabrics are frequently highly variable, even within a single vessel. Groups should not, therefore, be taken to indicate necessarily different sources or traditions. For example, fabrics 1.1, 1.2 and 2.1 are seen by Gwilt and Webster as a continuum. Fabrics 2.2 and 3.2 are distinguished by differing proportions of inclusions, but the principal inclusion type may vary between different sherds from the same source.

Additions in italics are fabrics not described in the 2012 report, but noted in this assemblage. Many of the distinctions may represent natural variation within the source materials rather than conscious choices on the part of the potters.

Group	*Fabric*	*Inclusions*
Group 1 – Calcite	1.1	Calcite
	1.2	Calcite & limestone (sometimes with leached vesicles)
	1.3	Calcite & quartz grains (sometimes with mica)
	1.4	Calcite, limestone and fine-grained stone inclusions
	1.5	Calcite, limestone, grog & quartz grains
	1.6	*Calcite, limestone, burnt-out organics, sometimes rare quartz,*

[12] Gwilt and Webster, 'Report on Iron Age and Roman Pottery'.

Group	*Fabric*	*Inclusions*
		sometimes micaceous
	1.7	*Calcite, rare rounded quartz grains, sparse organic black specs, rare <3mm rounded ironstone*
	1.8	*Calcite and grog*
	1.9	*Calcite, burnt-out organics, sparse limestone and grog, rare ironstone*
Group 2 - Limestone	2.1	Limestone, calcite & leached vesicles
	2.2	Limestone, grog & leached vesicles (sometimes with calcite)
	2.3	*Limestone, calcite, quartz, organic*
Group 3 – Vesicular	3.1	Leached vesicles (sometimes with calcite)
	3.2	Leached vesicles and grog (with quartz grains or limestone)
Group 4 – Grog	4.1	Grog
	4.2	Grog with leached vesicles and/or limestone or calcite
	4.3	Grog, limestone and shell
	4.4	Grog and quartz grains
	4.4	Grog and ironstone (sometimes with quartz grains)
	4.5	*Grog and calcite*
Group 5 - Quartz	5.1	Quartz grains
	5.2	Quartz grains, calcite & leached vesicles (sometimes with sandstone)
	5.3	Quartz grains and grog (sometimes with leached vesicles and calcite)
	5.4	*Quartz, highly micaceous, sparse iron-rich nodules*
	5.5	*Quartz and organic*

Table 1: pottery fabrics (after Gwilt and Webster, 2016). 2022 additions in italics

Quantification

object type	count	weight(g)
burnt stone	2	22
charcoal	3	2
flat roof tile	1	66
pot	508	3360
stone	1	3
Grand Total	**515**	**3453**

Table 2: overall quantification

Small quantities of natural stone, burnt stone, and charcoal were recorded. One piece of 15th to 18th century flat roof tile was present within the topsoil. The bulk of the assemblage comprised 508 sherds of Iron Age pottery, weighing 3.36kg. The mean sherd weight, at 6.6g, was below that of the 2012 assemblage, but masks considerable variation: sherds from contexts (1001) and (1003), for example, were fairly fragmentary and friable, but (1005) and (1006) contained groups of larger sherds in better condition, including a high number of conjoining fragments. Towards the base of the ditch sequence (e.g. 1010, 1012 and 1014), condition was poor.

Discussion

Fabrics

fabric group	*fabric number*	count	weight(g)
Group 1 (calcite)	1.1	12	136
	1.2	229	1389
	1.5	4	45
	1.6	69	607
	1.7	47	298
	1.8	2	12
	1.9	28	70
1 Total		391	2557
Group 2 (limestone)	2.1	16	89
	2.2	20	146
	2.3	24	95
2 Total		60	330
Group 1/2	misc	13	10
1/2 Total		13	10
Group 3 (vesicles)	3.1	1	3
3 Total		1	3
Group 4 (grog)	4.2	10	239
	4.5	2	28
4 Total		12	267
Group 5 (quartz)	5.1	9	34
	5.2	12	64
	5.3	4	18
	5.4	2	51
	5.5	4	26

fabric group	*fabric number*	count	weight(g)
5 Total		31	193
Grand Total		**508**	**3360**

Table 3: pottery quantification by group and fabric

Group 1: calcite

Over ¾ (77%) of the assemblage comprised sherds in group 1 fabrics, in which calcite was the predominant inclusion. This is markedly higher than the proportion of Group 1 fabrics in the 2012 assemblage[13], which may partly be due to the relative paucity of the Latest Iron Age/Earliest Roman Transition vessels — which were frequently in Group 4 or 5 fabrics — in the 2022 assemblage. Few of the Group 1 vessels were exclusively calcite-tempered (f1.1). By far the most common secondary inclusion was limestone (f1.2). Two Group 1 fabrics observed in 2012 were not encountered here: f1.3 (associated with a Latest Iron Age/Earliest Roman Transition vessel), and 1.4 (Earliest to Early Iron Age); this may likewise be due to the more restricted temporal range of the 2022 material. Given the large number of sherds from this group, it is no surprise that the range of inclusions is broad, and fabrics 1.6-1.9 have been added to characterise examples where organics inclusions, grog, quartz and ironstone also appear.

Group 1 sherds were typically from moderate to thick-walled vessels, chiefly slack-shouldered or globular jars of Middle to Late Iron Age date. These were utilitarian vessels, some of which displayed vesicular inner surfaces where the contents or use of the pot had caused the leaching-out of calcareous inclusions. However, the presence of a 'Belgic'-style jar (R41) with incised horizontal grooves in fabric 1.6 demonstrates that the tradition continued right into the 1st century AD.

The source of these wares is not fully understood: typical across the Lower Severn, a source in the Mendips has been suggested[14], but they are likely to have also been produced locally. There is no shortage of good sources nearby, including the Caerwent Quarry approx 3km to the south of Llanmelin[15].

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[13] though with the exclusion of a single large in-situ Group 4 vessel from the 2012 assemblage, Group 1 was still the most numerous.

[14] J R L Allen, 'Late Iron Age and Earliest Roman Calcite-Tempered Ware from Sites on the Severn Estuary Levels', *Studia Celtica* 32 (1999): 27–42.

[15] Amgueddfa Cymru, 'Mineral Database - Mineralogy of Wales', accessed 29 January 2023, https://museum.wales/mineralogy-of-wales/database/?mineral=172&name=Calcite.

Group 2: limestone

The distinctions between sherds belonging to Groups 1 and 2 were not always clear, as discussed above. Within larger sherds, it was sometimes possible to observe areas in which limestone dominated in sherds that would otherwise have been classed as Group 1. The additional fabric 2.3 is likely to be on a continuum with 1.6, both characterised by the presence of organics and occasional quartz alongside the dominant calcite or limestone. The dating and range of vessels was very similar to Group 1: typically slack-shouldered jars and vessels with flat-topped or proto-bead rims of Middle to Late Iron Age date.

Group 3: vesicular

Although many of the sherds from other groups displayed vesicles where inclusions had leached out, only one (R99) was sufficiently vesicular to be classed in this group. This may be a function of preservation: it is possible that the scarcity of this group simply represents different soil conditions at the outpost resulting in less post-depositional leaching of calcareous inclusions.

Group 4: grog

A small quantity of grog-tempered sherds came from vessels of the Late Iron Age and Latest Iron Age/Earliest Roman Transition, including the base and footring of a wheel-formed jar (R40), and several vessels of ‘Belgic’ appearance. Fabric 4.2 accounted for most sherds from this group; colours ranged from fully oxidised to a grey with reddish margins. Several black, burnished sherds from a LIA/ERT rim (R60) were sufficiently distinctive with large, angular calcite inclusions, to warrant attribution to a different fabric (f4.5).

Group 5: quartz

The majority of Group 5 sherds were from fine-walled, wheel-formed vessels of the Late Iron Age or Latest Iron Age/Earliest Roman Transition. Some were fully oxidised; in others a dark grey surface lay over red or reddish-brown margins. In all, the quartz inclusions were fine and rounded, typically under 0.2mm in diameter. The most common additional inclusions were calcite (f1.2), but whereas this combination was associated with Early Iron Age vessels in the 2012 assemblage, here it was present in smooth, fine-walled vessels of the LIA and LIA/ERT.

The only potentially earlier occurrence of Group 5 was a group of undiagnostic body sherds (R93) from context (1011) with quartz and organic (f5.5) inclusions, which could only be assigned a broad Iron Age date.

Forms

Given the relatively fragmentary natures of much of the material, and the considerable variation within the fabrics of conjoining sherds, extrapolation of an estimated vessel equivalent or similar quantification was considered to be of limited benefit. In total, there were rims from 38 vessels, and bases from 5. All sufficiently diagnostic rim and base sherds have been illustrated, alongside body sherds with distinctive characteristics.

The majority of vessels were relatively plain; the only vessel with the elaborate decoration that characterises the Lydney/Llanmelin style[16] was represented by two conjoining decorated sherds (R84) from a fine-walled, everted-rim jar in fabric 1.2, with incised chevrons hanging below a horizontal line on the shoulder of the vessel. This is most likely to date to the 3rd to 1st centuries BC.

Surface treatment in the form of smoothing and/or burnishing was common on vessels of all periods.

Middle to Late Iron Age vessels in Groups 1 and 2 were largely jars; slack-shouldered and globular profiles were most common. Among these, two main rim forms were observed: some were flat-topped and slightly thickened — in some cases to a T-shape (e.g. R8). Others had been gently tooled on the outer surface to form a proto-bead rim (e.g. R67). There were a few examples of ovoid jars with simple inturned rims (e.g. R57), and two everted rims (R29, R62), the latter almost certainly Late Iron Age in date. A small group of highly abraded Group 2 body sherds (R75) from (1006) appeared to have intentional, pre-firing perforations on the inner surface. Some were only partial, but on one sherd two perforations extended through the outer wall; their function is unclear, but this might hint at vessels similar to the ‘strainers’ known from southeast England[17]

[16] Barry Cunliffe, *Iron Age Communities in Britain*, 4th ed. (Oxford: Routledge, 2005), 630.
[17] Isobel Thompson, *Grog-Tempered ‘Belgic’ Pottery of South-Eastern England*, vol. 108, BAR British Series (BAR, 1982), https://www.kentarchaeology.org.uk/16/000.htm.

Among the Group 4 and 5 vessels were a wider range of fine-walled Late Iron Age and Latest Iron Age/Earliest Roman Transition forms, including wheel-formed vessels with horizontal banding (both raised and incised) and sharp carinations, typical of 'Belgic'-style bowls and beakers. Two bases belonging to this phase had defined footrings (R39-40); one of these had been trimmed for use as a weight or counter. Rims in these fabrics (e.g. R15, R26, R60, R64) were exclusively everted.

Discussion by context

The following table presents a context date range for each deposit. This is based on production dates for the range of material within each context. It represents a *terminus post quem* range: the formation of the deposit may have occurred at any time within the range, or subsequent to it, but it cannot have occurred prior to the earlier stated date.

Context	*object type*	*period*	count	weight (g)	*start date*	*end date*	*Context TPQ date range*
1000	flat roof tile	late medieval / post-medieval	1	66	1400	1800	AD 1400 - 1800
1000 Total			1	66			
1001	burnt stone	undated	2	22			100 BC - AD 50
	pot	IA	13	10	-700	50	
		LIA	8	62	-100	50	
		MIA/LIA	121	596	-400	50	
1001 Total			144	690			
1003	pot	LIA	1	15	-100	50	AD 1 - 50
		LIA/ERT	8	19	0	50	
		MIA/LIA	27	82	-400	50	
1003 Total			36	116			
1005	charcoal		3	2			AD 1 - 50
	pot	IA	9	131	-700	50	
		LIA	8	230	-100	50	
		LIA/ERT	13	97	0	50	
		MIA/LIA	120	1015	-400	50	
1005 Total			153	1475			
1006	pot	LIA	1	8	-100	50	AD 1 - 50
		LIA/ERT	3	38	0	50	
		MIA/LIA	85	570	-400	50	
			12	67	-300	0	

Context	*object type*	*period*	count	weight (g)	*start date*	*end date*	*Context TPQ date range*
	stone		1	3			
1006 Total			102	686			
1007	pot	IA	1	3	-700	50	300 BC - AD 50
		MIA/LIA	25	124	-400	50	
			7	46	-300	50	
1007 Total			33	173			
1010	pot	MIA/LIA	19	86	-400	50	400 BC - AD 50
1010 Total			19	86			
1011	pot	IA	4	26	-700	50	400 BC - AD 50
		MIA/LIA	19	113	-400	50	
1011 Total			23	139			
1012	pot	MIA/LIA	2	4	-400	50	400 BC - AD 50
1012 Total			2	4			
1014	pot	MIA/LIA	2	18	-400	50	400 BC - AD 50
1014 Total			2	18			
Grand Total			**515**	**3453**			

(1001)

Context (1001) contained 142 sherds of pot, weighing 668g. At just 4.7g, the mean sherd weight was low in relation to the overall assemblage, and many sherds were highly fragmentary. This may be due to the deleterious effects of their presence relatively close to the surface; certainly, the presence of conjoining sherds suggests relatively little post-depositional disturbance.

The majority of sherds belonged to Groups 1 and 2, and among these by far the most common fabric was a predominantly calcite-gritted ware (f1.2), also containing limestone and occasional vesicles.

A variety of rim sherds indicated that the forms were mainly slack-shouldered or slightly globular jars, with proto bead-rims or slightly-thickened upright, flat-topped rims. No decoration was observed on these vessels. These vessels have their origins in the Middle Iron Age (MIA), but continuity through to the mid-1st century AD is likely.

A small quantity of pottery dating from the Late Iron Age (LIA) to the earliest Roman Transition (ERT) (c100 BC - AD50) was present in the form of quartz-tempered vessels: a fine-walled jar

with horizontal rilling (R4) and an everted rim (R15), and a slightly-everted rim of a vessel in fabric 5.3 (R26).

(1003)

Context (1003) contained 36 sherds, weighing 116g: most were fragmentary, and mean sherd weight (3.2g) was very low. There was a mix of Middle to late Iron Age calcite-tempered vessels including a jar with a proto bead-rim (R35); Late Iron Age elements from a fine-walled, shouldered vessel in fabric 5.1; and a base sherd from a wheel-made, extremely hard-fired quartz-tempered vessel (R32) that is likely to date from the mid-1st century AD.

(1005)

Containing 150 sherds with a mean weight of 9.8g, content (1005) was both the most productive context and also the one in which the pottery was best-preserved. The vast majority of sherds belonged to Group 1, and were Middle to Late Iron Age in date. They included elements from at least seven jars, with forms ranging from simple ovoid jars with inturned rims to slack-shouldered jars with thickened or proto bead-rims. There were also several vessels supporting the hypothesis that these calcite-tempered wares continued in use alongside grog and quartz-tempered wares well into the 1st century AD. These included several shouldered, fine-walled vessels of 'Belgic' appearance, with characteristic vertical panels framed by horizontal ribs (e.g. R41). Belgic-style vessels in quartz-tempered Group 5 fabrics included 8 conjoining sherds from the rim and shoulder of a fine-walled, ribbed vessel with a slightly everted rim (R43). One grog-tempered (f4.5) Belgic-type vessel was represented by an everted rim and vertical neck (R60).

Other vessels of note included two conjoining fragments from a mid-1st century AD pot base (R39), in a hard-fired, highly micaceous fabric (f 5.4), trimmed for re-use as a lid, weight or counter,

A number of fragmentary but conjoining sherds containing grog, calcite and limestone were from the base of a large jar (R40). The interior surface was highly vesicular, likely caused by the vessel's contents. The base had a pronounced footring, c75mm in diameter, and was wheel-finished. The fabric was an approximate match to fabric 4.2: a large LIA/ERT wheel-made storage jar in this fabric was recovered from the 2012 excavations (Gwilt and Webster Cat 6); although the form differs, it is likely that this example is of similar date.

(1006)

The majority of the 101 sherds (683g) from (1006) were from plain Group 1 and Group 2 Middle to Late Iron Age jars, frequently with simple thickened, flat-topped rims (eg R63) or proto bead-rims (e.g. R68). Several were externally-burnished. This context contained the decorated Lydney/Llanmelin-style vessel (R84), probably 3rd to 1st century BC in date. Later material was also present: one small body sherd from a sharply-carinated Group 5 vessel (R74) probably dates to the first half of the 1st century AD; a similar date is proposed for an unusual squared, everted rim with a burnished neck (R64) in a grog-tempered, Group 4 fabric.

(1007)

The 33 sherds (173g) from (1007) were largely in Group 1 or Group 2 fabrics. The only form sherds were 7 rim sherds (R85) that are likely to belong to the same vessel: a slack-shouldered jar with a proto bead-rim, with a markedly vesicular inner surface: the contrast with the smooth outer is such that the internal leaching is likely to have been caused by the vessel's contents.

(1010)

A small group of 19 fragmentary Group 1 and Group 2 sherds was recovered from (1010). The only form sherd was a plain, inturned rim (R90) from an upright or slightly convex vessel. Outer edges were typically smoothed.

(1011)

The 23 sherds from (1011) included a small quantity in a soft, quartz-rich fabric (f5.5); it is possible that this represents a residual trace of Early to Early Middle Iron Age occupation, although a late Iron Age date is also possible. The remainder were in Group 1 and Group 2 fabrics; there were no form sherds.

(1012)

Context (1012) contained two very small fragments of Group 2 vessels.

(1014)

The only sherds recovered from (1014) were two body sherds of limestone-tempered fabric 2.2.

Conclusions

The range of material present within this assemblage is broadly comparable to that excavated in 2012: possible faint traces of Early to Early Middle Iron Age activity giving way to a range of calcite and limestone-tempered wares that are likely to range in date from the late-4th century BC to the mid-1st century AD; continuity throughout to the Latest Iron Age is indicated by 'Belgic' forms comprising wheelmade vessels in grog and quartz-rich fabrics. However, the proportions differ: this assemblage contains markedly fewer of the later wares, and they are in poor condition.

Precise dating is hampered by the broad range and persistent nature of many of the forms represented. It is likely that many of the Group 1 and 2 wares date from the 3rd to 1st centuries BC, although Cunliffe notes that the 'saucepan pot' tradition to which the decorated sherds (R84) belong — which fell out of favour on the south coast after 100 BC — may have continued in South Wales and the Marches into the mid-1st century AD. Nonetheless, the relative paucity of the grog and quartz-tempered wares within this assemblage is a point of difference from the Latest Iron Age/Earliest Roman Transition signature of the 2012 finds, and none of the proto-Severn Valley wares recovered in 2012 are present in this Outpost assemblage.

In summary, this assemblage suggests the Outpost was contemporary with the main phases of occupation at the hillfort, which may have had an Early or Early Middle Iron Age component but was at its peak during the Middle and Late Iron Age. It is possible that activity around the outpost began to decline towards the final decades of the site's occupation, and there is presently no clear indication that it continued in use after AD50: even the later Roman wares present on the main hillfort site were absent here. Preservation varied widely, but the poor condition and small size of material from upper levels (e.g. context 1001) might suggest that this material had lain on the surface for some time before being deposited in the upper levels of the ditch in an episode of infilling. The domestic character of the assemblage is comparable to that of the hillfort, suggesting that activity centred on the outpost was broadly similar in character.

Recommendations

The assemblage is a substantial and regionally significant addition to the corpus of later prehistoric pottery in South Wales, and should be retained.

Acknowledgements

Sincere thanks are due to: Adam Gwilt for making the 2016 report and the relevant assemblage available for study, for accommodating a study visit, and for generous assistance and advice; and to Iestyn Jones, for helpful discussions, generous assistance, and project coordination.

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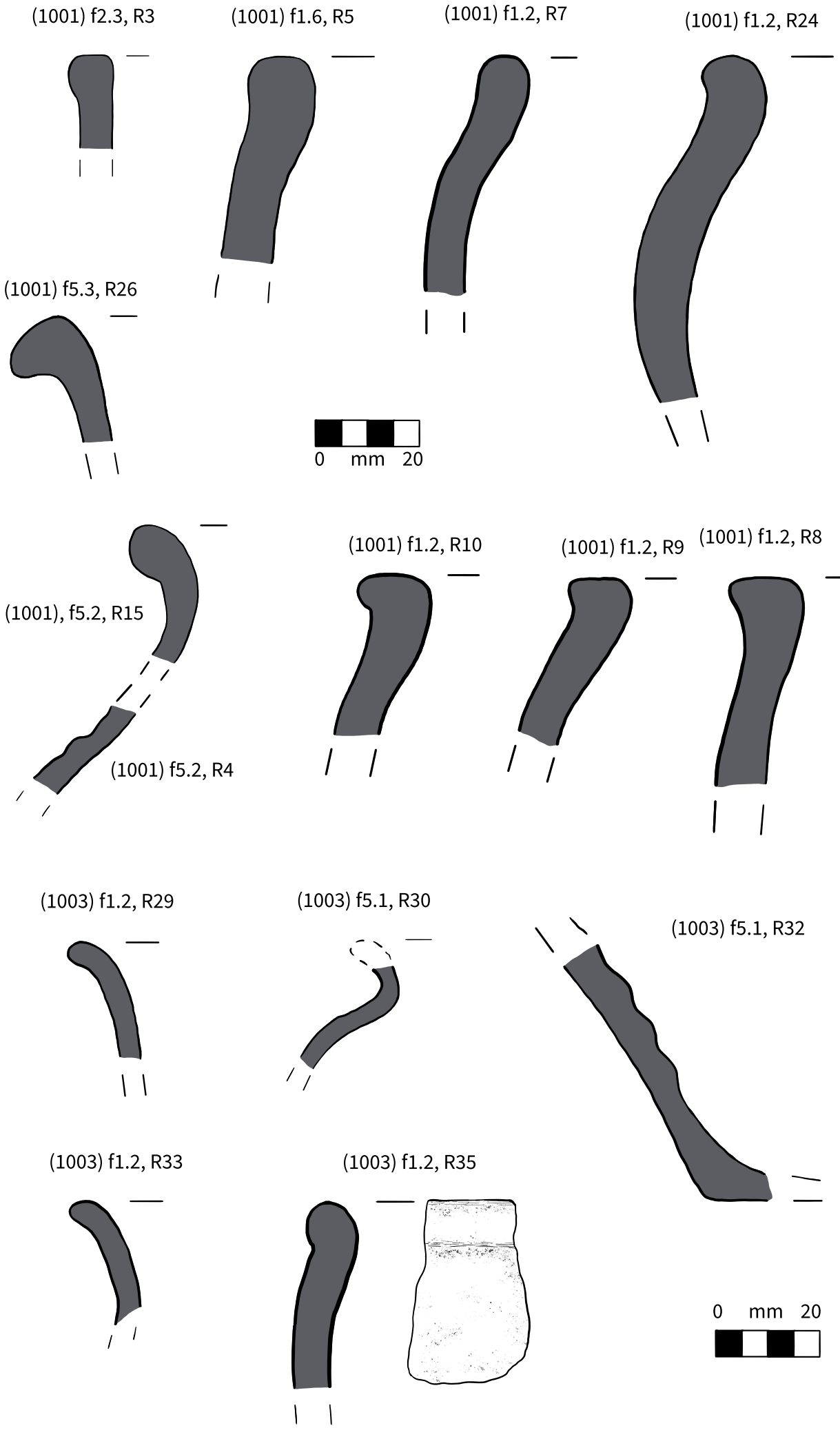
Catalogue

Rec. no.	Context	Additional context info	object type	count	weight (g)	form sherd	form	period	fabric group	fabric number	start date	end date
1	1001	30cm deep NE trench	pot	4	22			MIA/LIA	1	1.2	-400	50
2	1001	30cm deep NE trench	pot	1	8			MIA/LIA	2	2.3	-400	50
3	1001	30cm deep NE trench	pot	22	53	4 rims		MIA/LIA	2	2.3	-400	50
4	1001	30cm deep NE trench	pot	1	6			LIA	5	5.2	-100	50
5	1001	20cm	pot	1	33	1 rim	slack-shouldered jar	MIA/LIA	1	1.6	-400	50
6	1001	20cm	pot	2	8			LIA	5	5.2	-100	50
7	1001	20cm	pot	1	21	1 rim	slack-shouldered jar	MIA/LIA	1	1.2	-400	50
8	1001	20cm	pot	2	27	1 rim		MIA/LIA	1	1.2	-400	50
9	1001	20cm	pot	2	20	2 rims	globular jar	MIA/LIA	1	1.2	-400	50
10	1001	20cm	pot	2	28	2 rims	proto bead-rim	MIA/LIA	1	1.2	-400	50
11	1001	20cm	pot	10	52			MIA/LIA	1	1.2	-400	50
12	1001	20cm	pot	8	40			MIA/LIA	2	2.1	-400	50
13	1001	20cm	pot	7	8			IA	1/2	misc	-700	50
14	1001	20cm	burnt stone	2	22			undated				
15	1001	30cm deep NE	pot	1	16	1 rim	jar	LIA	5	5.2	-100	50
16	1001	30cm deep NE	pot	7	59			MIA/LIA	1	1.2	-400	50
17	1001	30cm down NE	pot	1	4			MIA/LIA	1	1.2	-400	50
18	1001	30cm down NE	pot	1	4			MIA/LIA	1	1.5	-400	50
19	1001	30cm down NE	pot	9	27			MIA/LIA	1	1.6	-400	50
20	1001	30cm deep	pot	6	2			IA	1/2	misc	-700	50
21	1001	30cm NW	pot	4	26	4 rims	jar	MIA/LIA	1	1.7	-400	50

Rec. no.	Context	Additional context info	object type	count	weight (g)	form sherd	form	period	fabric group	fabric number	start date	end date
22	1001	30cm NW	pot	26	49			MIA/LIA	1	1.7	-400	50
23	1001	30cm NW	pot	1	14			MIA/LIA	1	1.1	-400	50
24	1001	30cm deep NW corner	pot	1	25	1 rim	jar	MIA/LIA	1	1.2	-400	50
25	1001	30cm deep NW corner	pot	15	54			MIA/LIA	1	1.2	-400	50
26	1001	NE	pot	3	15	3 rim	jar	LIA	5	5.3	-100	50
27	1001	NE	pot	3	30			MIA/LIA	1	1.2	-400	50
28	1001	NE	pot	1	17			LIA	4	4.2	-100	50
29	1003	S	pot	2	6	1 rim	jar	MIA/LIA	1	1.2	-400	50
30	1003	S	pot	8	19	1 rim		LIA/ERT	5	5.1	0	50
31	1003	South	pot	1	2			MIA/LIA	1	1.2	-400	50
32	1003	South side, lily	pot	1	15	1 base		LIA	5	5.1	-100	50
33	1003	NW	pot	6	22	rim	jar	MIA/LIA	1	1.2	-400	50
34	1003	NW	pot	10	20			MIA/LIA	1	1.2	-400	50
35	1003	SE	pot	8	32	2 rims	proto bead-rim	MIA/LIA	1	1.2	-400	50
36	1005	Pot - single?	pot	25	325	2 rims	slack-shouldered jar	MIA/LIA	1	1.6	-400	50
37	1005	Pot - single?	pot	1	34	1 rim	jar	MIA/LIA	2	2.3	-400	50
38	1005		charcoal	3	2							
39	1005	pot base	pot	2	51	2 bases		LIA	5	5.4	-100	50
40	1005	pot base	pot	6	179	1 base	jar	LIA	4	4.2	-100	50
41	1005	pot - spoil nr grindstone	pot	1	22			LIA/ERT	1	1.6	0	50
42	1005	pot	pot	1	5			MIA/LIA	2	2.1	-400	50
43	1005	pot	pot	8	34	1 rim		LIA/ERT	5	5.2	0	50
44	1005	6/5/22	pot	4	29			MIA/LIA	1	1.2	-400	50
45	1005		pot	8	24	1 rim	proto bead-rim	MIA/LIA	1	1.2	-400	50
46	1005		pot	35	82			MIA/LIA	1	1.2	-400	50
47	1005		pot	1	21	1 rim	simple, thickened	MIA/LIA	1	1.7	-400	50
48	1005		pot	7	71			MIA/LIA	1	1.7	-400	50
49	1005	NE, 3/5/22	pot	6	22			IA	1	1.7	-700	50
50	1005	NE, 3/5/22	pot	2	78	2 rims	inturned, thickened	IA	1	1.7	-700	50
51	1005	NE, 3/5/22	pot	1	31	1 base		IA	1	1.7	-700	50
52	1005		pot	5	102			MIA/LIA	1	1.2	-400	50

Rec. no.	Context	Additional context info	object type	count	weight (g)	form sherd	form	period	fabric group	fabric number	start date	end date
53	1005		pot	3	41			MIA/LIA	1	1.5	-400	50
54	1005		pot	9	85			MIA/LIA	1	1.1	-400	50
55	1005		pot	9	81			MIA/LIA	1	1.6	-400	50
56	1005		pot	1	31	1 rim	inturned, T-shaped	MIA/LIA	1	1.2	-400	50
57	1005		pot	1	30	1 rim	inturned	MIA/LIA	1	1.2	-400	50
58	1005		pot	2	14	2 rims	proto bead-rim	MIA/LIA	2	2.1	-400	50
59	1005		pot	1	5	1 rim	slack-shouldered jar	MIA/LIA	2	2.1	-400	50
60	1005		pot	2	28	1 rim	Belgic jar	LIA/ERT	4	4.5	0	50
61	1005		pot	7	35			MIA/LIA	1	1.6	-400	50
62	1005		pot	2	13	2 rims	jar	LIA/ERT	1	1.6	0	50
63	1006	4/5/22	pot	1	46	1 rim	flat-topped, thickened	MIA/LIA	1	1.2	-400	50
64	1006	4/5/22	pot	2	35	2 rims	jar	LIA/ERT	4	4.2	0	50
65	1006	4/5/22	pot	1	11			MIA/LIA	1	1.1	-400	50
66	1006	4/5/22	pot	5	58			MIA/LIA	1	1.2	-400	50
67	1006	N end of ?[1002]	pot	2	88	2 rims	ovoid jar	MIA/LIA	1	1.2	-400	50
68	1006	Stone fill 5/5/22	pot	2	27	1 rim	proto bead-rim	MIA/LIA	1	1.2	-400	50
69	1006	Stone fill 5/5/22	pot	1	18	1 rim	simple, upright	MIA/LIA	1	1.2	-400	50
70	1006	Stone fill 5/5/22	pot	2	12			MIA/LIA	1	1.8	-400	50
71	1006	Stone fill 5/5/22	pot	11	59			MIA/LIA	1	1.6	-400	50
72	1006	Stone fill 5/5/22	pot	4	25			MIA/LIA	2	2.1	-400	50
73	1006	Stone fill 5/5/22	pot	1	8			LIA	4	4.2	-100	50
74	1006	Stone fill 5/5/22	pot	1	3			LIA/ERT	5	5.3	0	50
75	1006	Stone fill 5/5/22	pot	28	70	2 rims		MIA/LIA	1	1.9	-400	50
76	1006	6/5/22	pot	11	61			MIA/LIA	1	1.2	-400	50
77	1006	6/6/22	pot	1	7	1 rim		MIA/LIA	1	1.2	-400	50

Rec. no.	Context	Additional context info	object type	count	weight (g)	form sherd	form	period	fabric group	fabric number	start date	end date
78	1006	6/7/22	pot	1	7	1 rim		MIA/LIA	1	1.2	-400	50
79	1006	6/8/22	pot	1	15	1 rim	proto bead-rim	MIA/LIA	1	1.2	-400	50
80	1006	3/5/22	pot	1	26			MIA/LIA	1	1.1	-400	50
81	1006	3/5/22	pot	9	28			MIA/LIA	1	1.2	-400	50
82	1006	3/5/22 Pot inc. decoration	stone	1	3							
83	1006	3/5/22 Pot inc. decoration	pot	4	12	2 rims		MIA/LIA	1	1.6	-400	50
84	1006	3/5/22 Pot inc. decoration	pot	12	67	2 rims		MIA/LIA	1	1.2	-300	0
85	1007	5/5/22 Soil	pot	7	46	7 rims	slack-shouldered jar, proto bead-rim	MIA/LIA	1	1.2	-300	50
86	1007	5/5/22 Soil	pot	2	20			MIA/LIA	2	2.2	-400	50
87	1007	5/5/22 Soil	pot	18	91	2 bases		MIA/LIA	1	1.2	-400	50
88	1007	6/5/22 Soil at base	pot	5	13			MIA/LIA	1	1.2	-400	50
89	1010	11/5/22 SE	pot	3	17			MIA/LIA	1	1.2	-400	50
90	1010	12/5/22 S	pot	1	8			MIA/LIA	1	1.2	-400	50
91	1010	12/5/22 S	pot	15	61			MIA/LIA	1	1.2	-400	50
92	1011	12/5/22 S	pot	3	54			MIA/LIA	2	2.2	-400	50
93	1011	12/5/22 S	pot	4	26			IA	5	5.5	-700	50
94	1011	12/5/22 S	pot	11	50			MIA/LIA	2	2.2	-400	50
95	1011	12/5/22 S	pot	5	9			MIA/LIA	1	1.2	-400	50
96	1012	12/5/22 T1 NW	pot	2	4			MIA/LIA	2	2.2	-400	50
97	1014	12/5/22 S	pot	2	18			MIA/LIA	2	2.2	-400	50
98	1000	Base of (1000)	flat roof tile	1	66			late med / post-med			1400	1800
99	1007	5/5/22 SOIL	pot	1	3			IA	3	3.1	-700	50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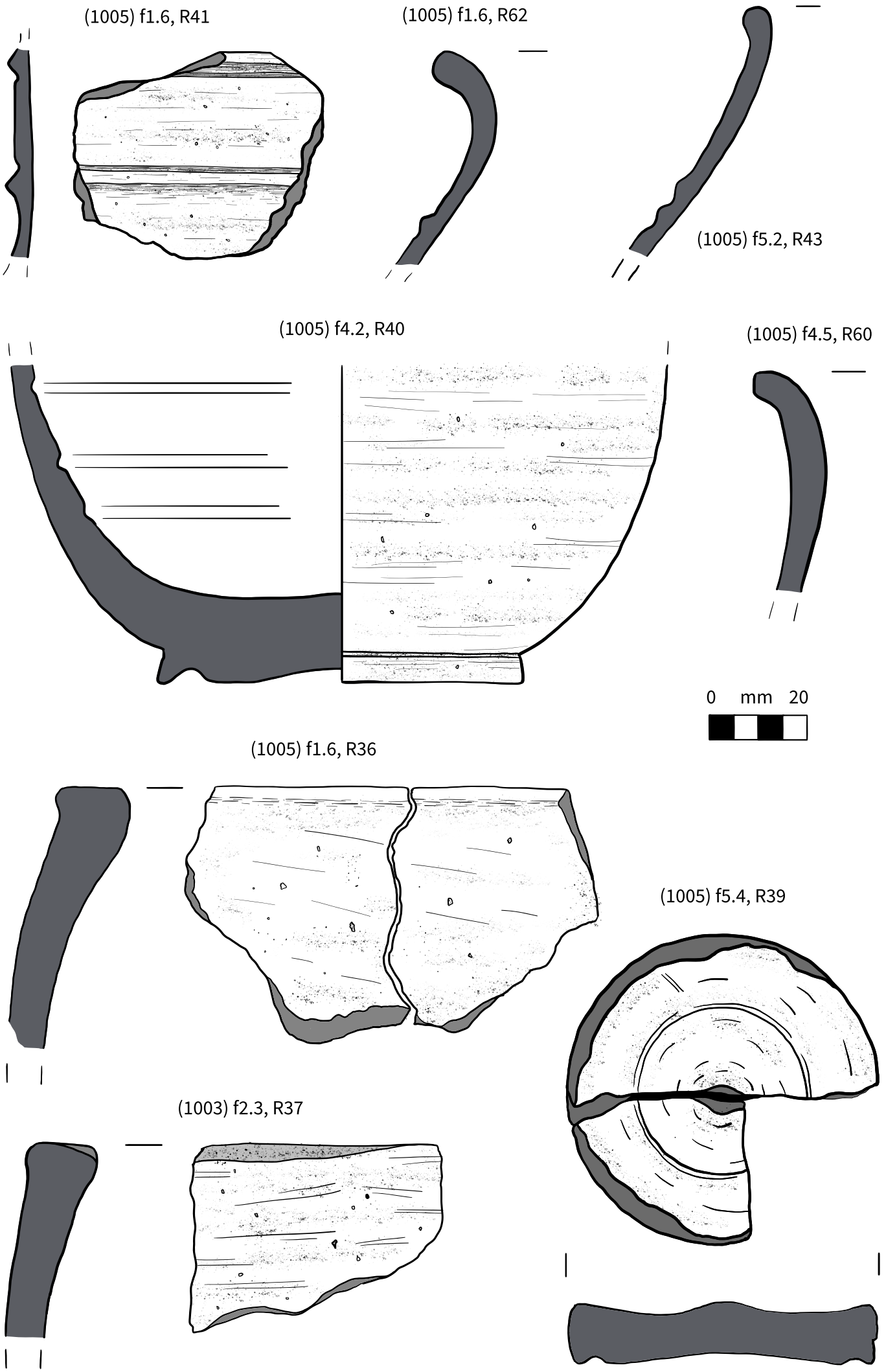
(1001) f1.2, R7
(1001) f1.2, R24
(1001) f5.3, R26
0 mm 20
(1001), f5.2, R15
(1001) f5.2, R4
(1001) f1.2, R10
(1001) f1.2, R9
(1001) f1.2, R8
(1003) f1.2, R29
(1003) f5.1, R30
(1003) f5.1, R32
(1003) f1.2, R33
(1003) f1.2, R35
0 mm 20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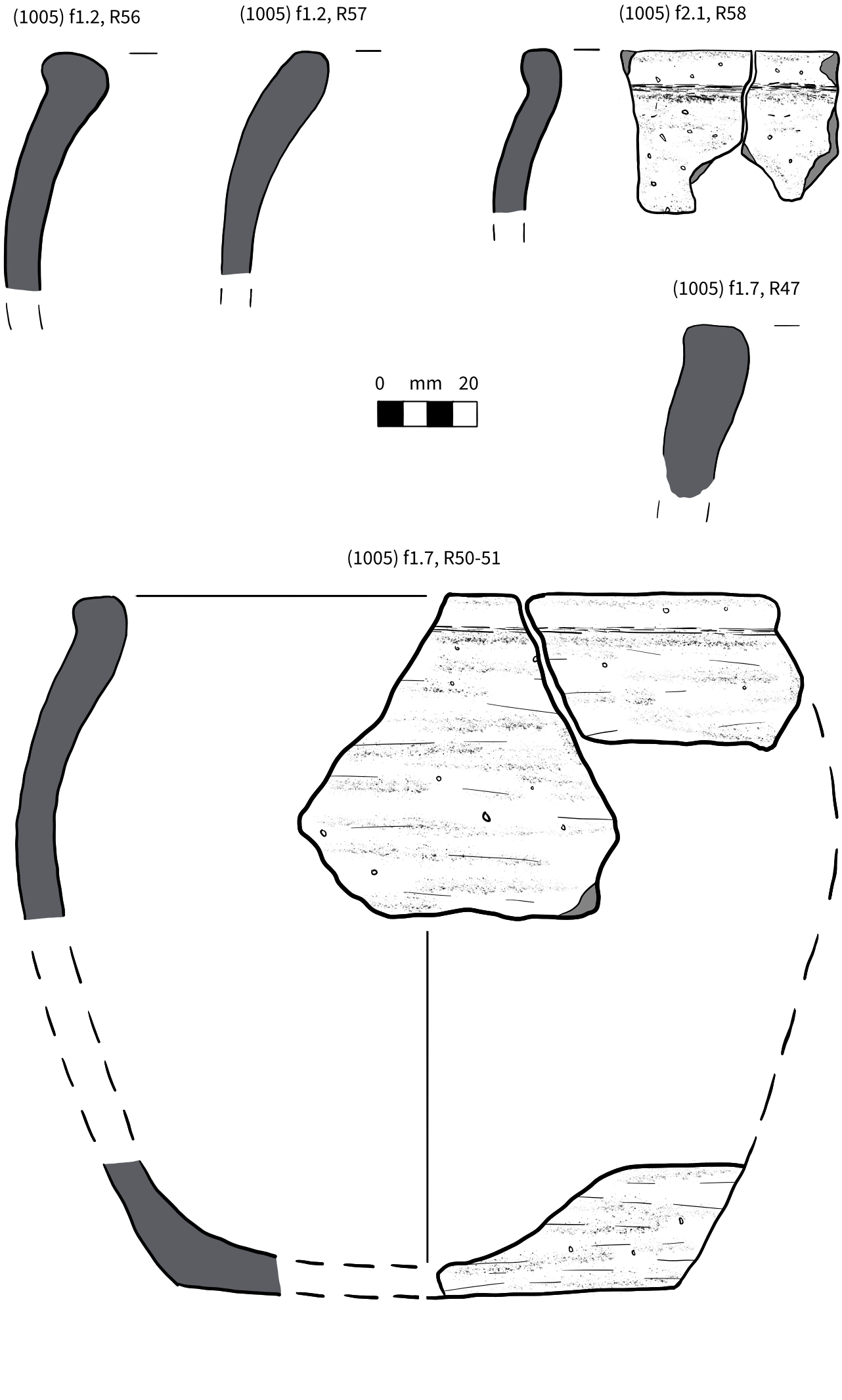
(1005) f1.6, R62
(1005) f5.2, R43
(1005) f4.2, R40
(1005) f4.5, R60
0 mm 20
(1005) f1.6, R36
(1005) f5.4, R39
(1003) f2.3, R37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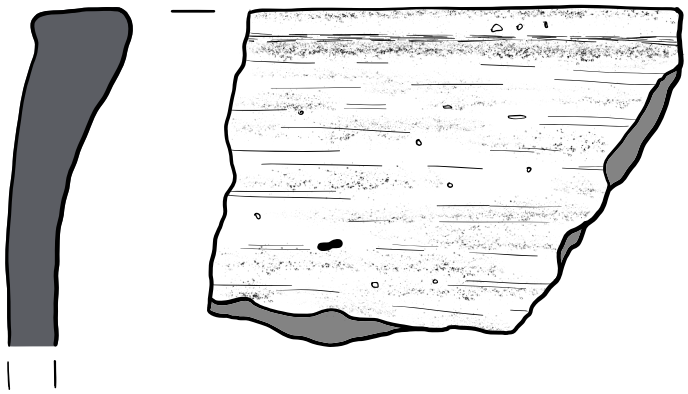
(1005) f2.1, R58
(1005) f1.7, R47
0 mm 20
(1005) f1.7, R50-51

(1006) f1.2, R63



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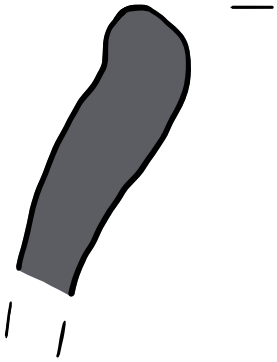

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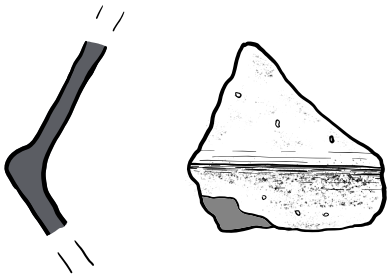

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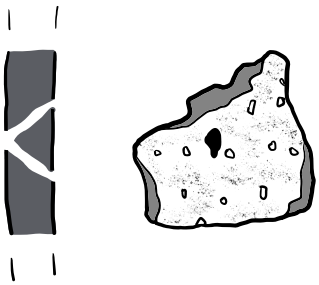

0 mm 20

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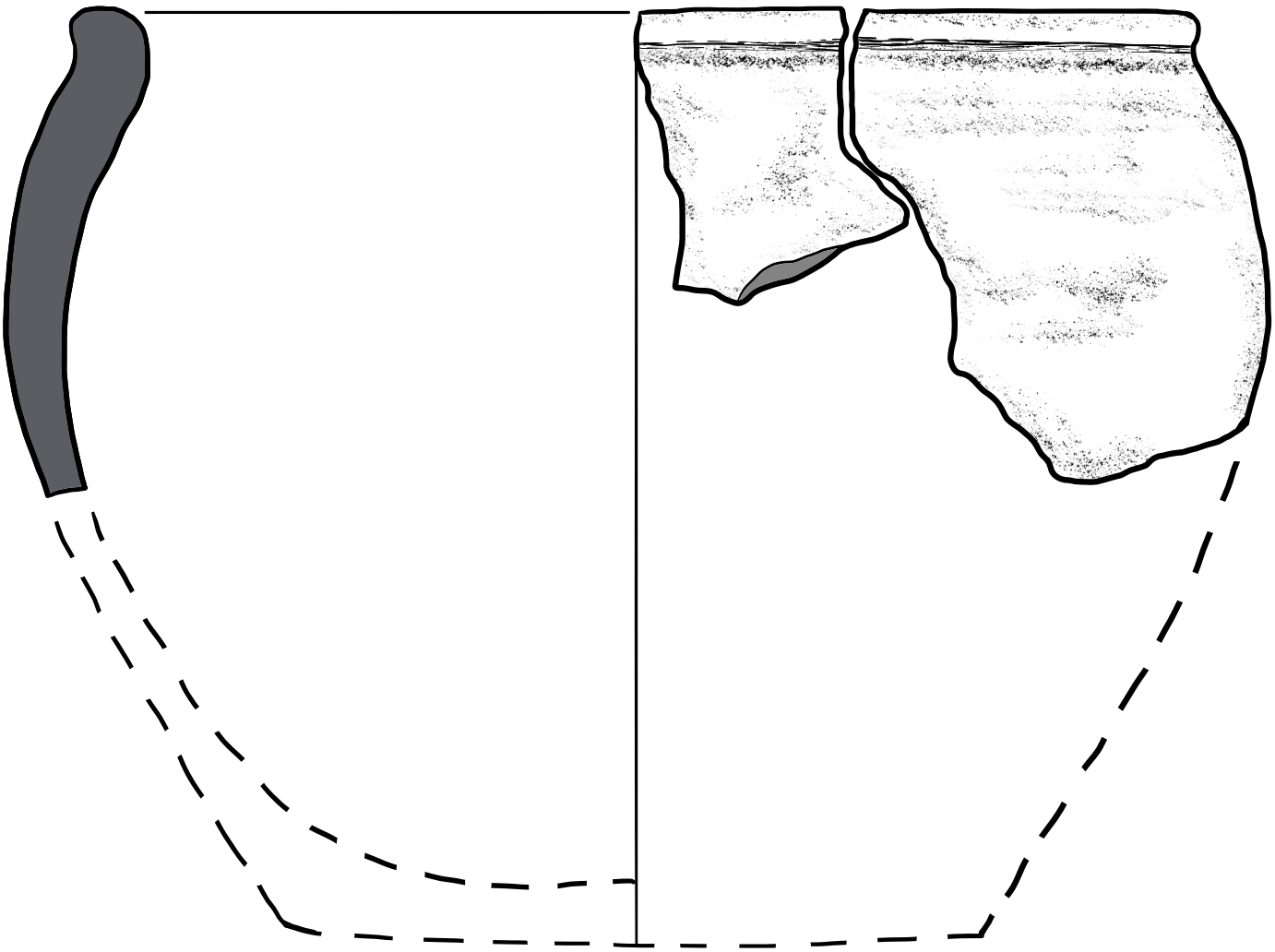
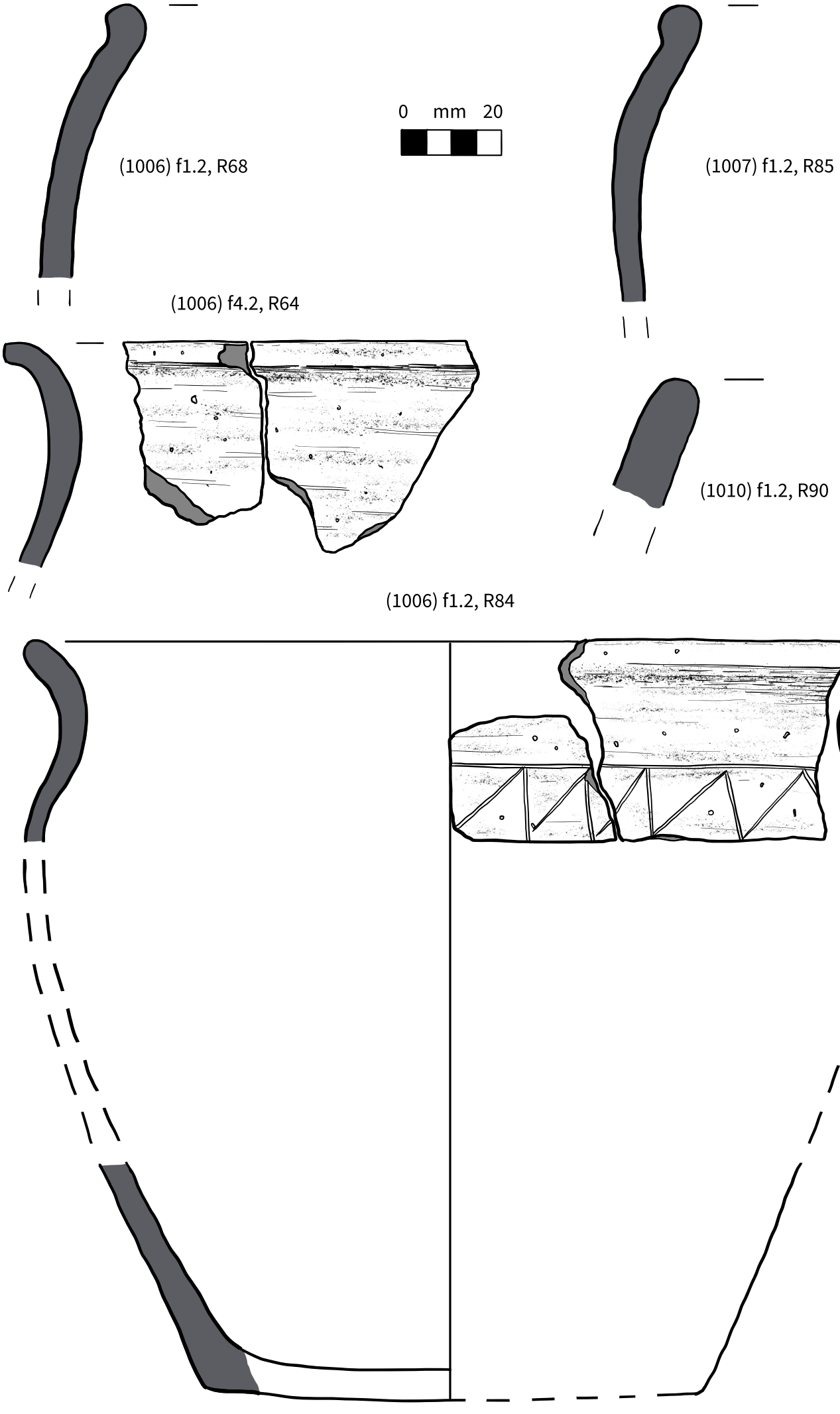



0 mm 20
(1006) f1.2, R68
(1007) f1.2, R85
(1006) f4.2, R64
(1010) f1.2, R90
(1006) f1.2, R84

Appendix III

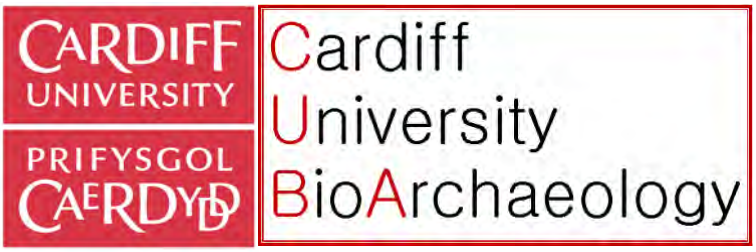
Faunal remains

Buffy Revell, Charlotte Clark, and Richard Madgwick

The Faunal Remains from Llanmelin Outpost

Full Analysis Report

Buffy Revell, Charlotte Clark, and Richard Madgwick



1.Introduction

Excavations undertaken by Caerwent Historic Trust near the Llanmelin Outpost recovered a faunal assemblage of 613 fragments from two ditch sections, of which 116 were identifiable to taxon or taxon size (for ribs and vertebrae). Previous excavations at the Llanmelin Outpost suggested a pre-Roman Iron Age date for the enclosure, with reoccupation in the medieval period (Nash-Williams 1933, 288). The ditches uncovered nearby during this excavation are believed to date to the Middle to Late Iron Age. Phasing and secure dating are ongoing and were unavailable at the time of writing. Consequently, the material will be considered by context, and no attempts will be made to identify variations in trends over time. This represents a valuable avenue for future research once phasing has been finalised.

2. Methodology

The material was analysed by the authors in the Osteoarchaeology laboratory at Cardiff University. Identification was aided by the Cardiff University BioArchaeology (CUBA) comparative collection and reference library. Every fragment was examined and recorded as identifiable to taxon, to taxon size (e.g. large [cattle-size], medium [sheep-size] or small [hare-size] mammals) or as unidentifiable. Avian specimens were not recorded beyond the level of bird. Fragments were considered identifiable if they comprised at least 50% of one zone (following Serjeantson 1996). Rib fragments with surviving vertebral articulations were recorded to taxon size, as were vertebral centra. Of cranial specimens, only the petrous, occipital, zygomatics, maxillae with at least two teeth and nasals were recorded. Non-articulating carpals and tarsals (except for the calcaneum, navicular-cuboid and astragalus) were not recorded.

Dental age of mandibles was carried out following Grant's (1982) tooth wear stages; age stage categories were then defined by Halstead (1985) for cattle, Payne (1987) for caprines and O'Connor (1988) for pigs. Epiphyseal fusion categories followed those laid out by Silver (1969). Where possible, the sex of an individual was recorded. Measurements of postcranial elements were taken according to Von den Driesch (1976). Sex of individuals was determined according to sexual dimorphism (e.g. pig canine). Butchery was recorded by the mark present (chop, cut, saw etc.) and its location on the specimen (by zone, following Serjeantson 1996). Gnawing was assessed via the appearance of the tooth mark (e.g. canid, rodent etc.). Weathering was assessed according to Behrensmeyer (1978), and fracture freshness was assessed following the protocol of Johnson et al. (2016).

3. Assemblage Summary

Excavations at this site produced a faunal assemblage of 116 identifiable specimens (Table 1). Due to the small sample size, only broad patterns have been assessed in the data. The assemblage is believed to be a single phase, therefore until further dating analysis has been conducted the analysis will be conducted as such. Discrepancies and patterns across contexts will be addressed in order to aid future analysis if radiocarbon dating reveals more than one phase at the site. The preservation of many of the bones was poor, with heavy erosion, root etching, and many fragmentary remains. Evidence of butchery was limited, with only 1% of the assemblage being affected.

Three main domestic species were identified, cattle (45%), pig (20%), and sheep/goat (18%). Additionally, one dog and one bird were identified. An investigation into the minimum number of individuals shows that the NISP of the core domestic species is an accurate representation of the taxa at this site (Table 1). As there were many loose teeth recorded, these were removed from MNI calculations as though side can be identified, 1st and 2nd molars cannot be accurately identified out of the mandible/maxilla.

	Species							
Context	Cattle	Sheep/Goat	Pig	Dog	Bird	Large Mammal	Medium Mammal	Total Identifiable
1001	13	8	4	2				27
1003	2						2	4
1005	16	1	2				1	20
1006	9	6	2		1	3	1	22
1007	1		1					2
1008	7	7	15			6		35
1010	2					1		3
1011	3							3
Total Identifiable	53 (46%)	22 (19%)	24 (21%)	2	1	10	4	116
MNI (excl. teeth)	17 (53%)	6 (19%)	7 (22%)	1	1			32

Table 1. NISP and MNI by species and context

4. Results

4.1. Bone Condition and Taphonomy

The preservation of the material was reasonable, with 19% of specimens identifiable to taxon or taxon-size, including juvenile specimens (Table 1). This is also an indication of good recovery during excavation, as large numbers of small unidentifiable fragments were recovered. Despite this, only one bird bone was identified, and there were no small mammals present in the assemblage. The most prevalent taphonomic changes to this assemblage were erosion and root etching, which affected 32% and 50% of the bones respectively. Much of the assemblage was heavily eroded, which in some instances could be mistaken for extensive carnivore activity; however, the absence of tooth marks and its presence across all elements excludes this possibility.

No burning or gnawing was observed, and only very small amounts of trampling (0.3%), mould staining (0.5%), and other dark patches of staining (1%) were recorded. Only 4% of the assemblage was weathered, with most of the affected bones belonging to contexts 1001 and 1005, which both comprised the stone backfill of the primary ditch. The weathering stage did not exceed 1 on any specimen, the lowest level of weathering. This, combined with a lack of gnawing evidence, suggests that much of this assemblage was deposited swiftly with little sub-aerial exposure.

Evidence for butchery is limited, with only 8 instances recorded (Table 2), impacting only 1% of the assemblage. Cut marks were the most prevalent, followed by chop marks, and there were two instances of gouging of the bone. The interpretative value of this evidence is limited, as it is minimal but spans a range of contexts. Both chop marks occurred on a pig scapula around the glenoid fossa, while the remainder of the marks occurred on cattle, large mammals, or unidentified specimens. Elements affected include radii, a humerus, a mandible, and a thoracic vertebrate. Both gouge marks were present on the diaphysis of two opposing radii, potentially from a single individual as both bones were porous, have similar taphonomy, and were from the same context. Only one sample, a cattle humerus from context 1006, displays cut marks near an epiphysis, which is indicative of disarticulation. Due to the limited evidence for butchery, Due to the limited evidence for butchery, instances of jointing and skinning of carcasses cannot be identified. The other specimens which display butchery marks were fragmented and may be missing further evidence of butchery which would provide further insight into the processes involved.

Context	Butchery			Total
	Cut Marks	Chop Marks	Gouge	
1001			2	2
1005	1			1
1006	2			2
1008	1	2		3
Total	4	2	2	8

Table 2. Butchery evidence by context and type.

There is one specimen which stands out in this assemblage: a caprine metacarpal from context 1006, in the main ditch. This specimen has a well-defined hole in the proximal epiphysis with slight lipping and a couple of small cut marks around the edges (Figures 1a and 1b). This is taphonomic as the rest of the bone has no indication of a reaction to an infection, however, the bone is also free of other taphonomic effects. It seems possible that this bone has been drilled, and with a fresh fracture at the opposing end (meaning a potential opposing hole is absent), there is the possibility it was hung on a thread.

Figure 1a and 1b. Caprine metacarpal from context 1006, with a hole in the proximal epiphysis.

Assessing the 'freshness' of a bone when it was fractured is a useful tool to identify the intensity of bone grease processing practices at a site (Johnson et al. 2016). While 5% of specimens had evidence of fresh fractures (which would indicate breakage shortly after death), a further 7% of fractures appear to have occurred when the specimen had dried out (Figure 2). 65% of bones with evidence of fresh fractures also appear to have been fractured a second time, once dry. This is not indicative of intense bone marrow or grease processing on site, though this practice may have been carried out at low levels.

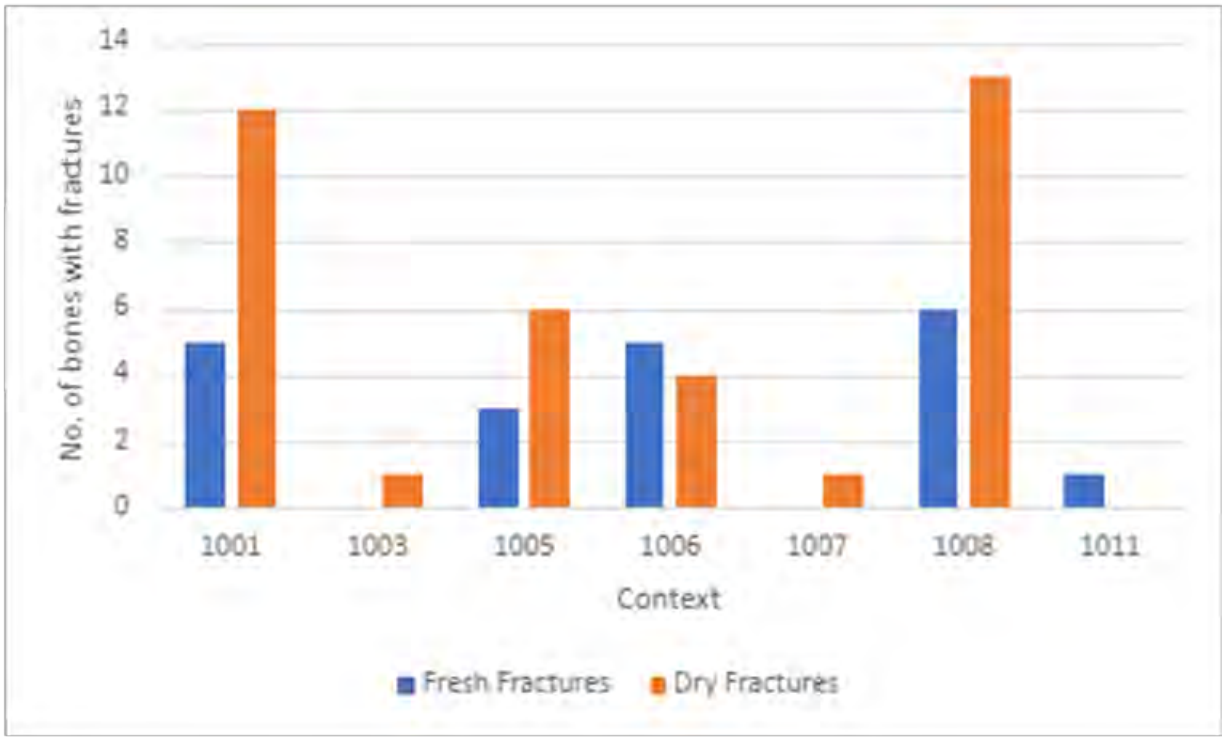


Figure 2. Graph depicting number of bones with fresh and dry fractures from each context.

4.2. Taxon Representation

Due to the small size of this assemblage, and as the site is currently treated as a single phase, taxon representation will be analysed by context. This section of the results will focus on the three major domesticates of Britain during the Iron Age period. The most common species across the whole site was cattle, followed by pig and sheep/goat, which had similar abundance (Figure 3). Contexts 1001, 1005, 1006, and 1008 had the highest abundance of taxa, 30% (n=35) of the entire assemblage was found in context 1008 (Figure 4). Taxon representation per context is highlighted in Figure 5. It must be noted that for several contexts with low abundance, the representation percentage is of 1-3 bones. Cattle were present in all contexts; however, the lowest abundance of cattle is seen in the context with the highest overall abundance of animal remains. Pig bones were most prevalent in contexts 1007 and 1008, and more prevalent than that of cattle. Perhaps radiocarbon dating of the highest yielding contexts could shed some light on the differing values between each species, as there is yet to be definitive phasing across contexts. Sheep/goat remains appear in the fewest contexts and were most prevalent in contexts 1001 and 1006.

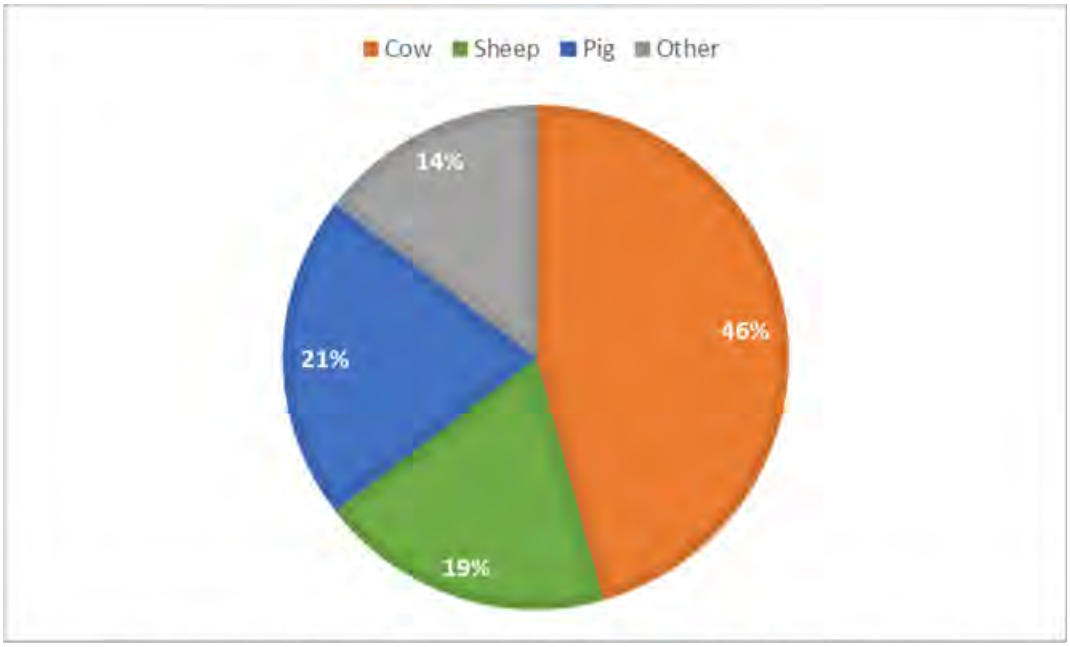


Figure 3. Chart showing taxon representation by NISP in the assemblage.

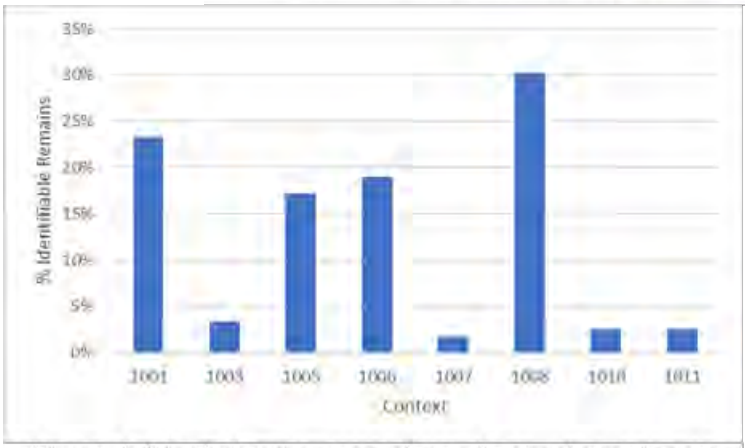


Figure 4. Chart showing percentage of animal remains per context

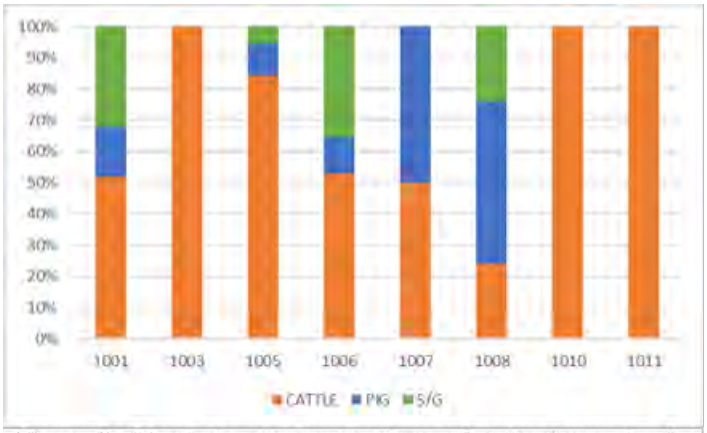


Figure 5. Chart showing percentage of animal remains for each context

4.3. Skeletal Element Representation

Across all the species mandibles and teeth were the among the most common elements represented. Table 1 shows the NISP for all the present elements.

The cattle element representation is more wide ranging compared to pig and sheep/goat. In particular, the cattle show a higher prevalence of limb bones than the other species (Figure 6). This suggests whole cattle were butchered and deposited at the site. It is worth

noting that the quantity of cattle bone fragments was almost double that of pig or sheep/goat, increasing the likelihood for there to be more elements present.

The most represented skeletal elements from the pig remains were mandibles and loose incisors (Figure 7). Aside from the scapula and 3rd metacarpal, there were no other porcine skeletal elements, and these only account for one element each. This suggests that primarily pig skulls were deposited at this site, perhaps butchered before the rest of the carcass was taken away to be eaten. It is also noteworthy that there were no hind limbs present at all, which further supports this hypothesis, as the prime cuts of meat tend to come from the rump of an animal.

The most prevalent elements in the sheep population were mandibles and loose 1st or 2nd molars (Figure 8). Though there were not as many skeletal elements represented as for cattle, the range of elements is more balanced than for pigs. There were limb bones present, however, they were mostly forelimbs, with only a metatarsal representing any hind limbs. Similarly, to the pig assemblage, this could suggest selection of high value meat cuts being deposited/used/eaten elsewhere.

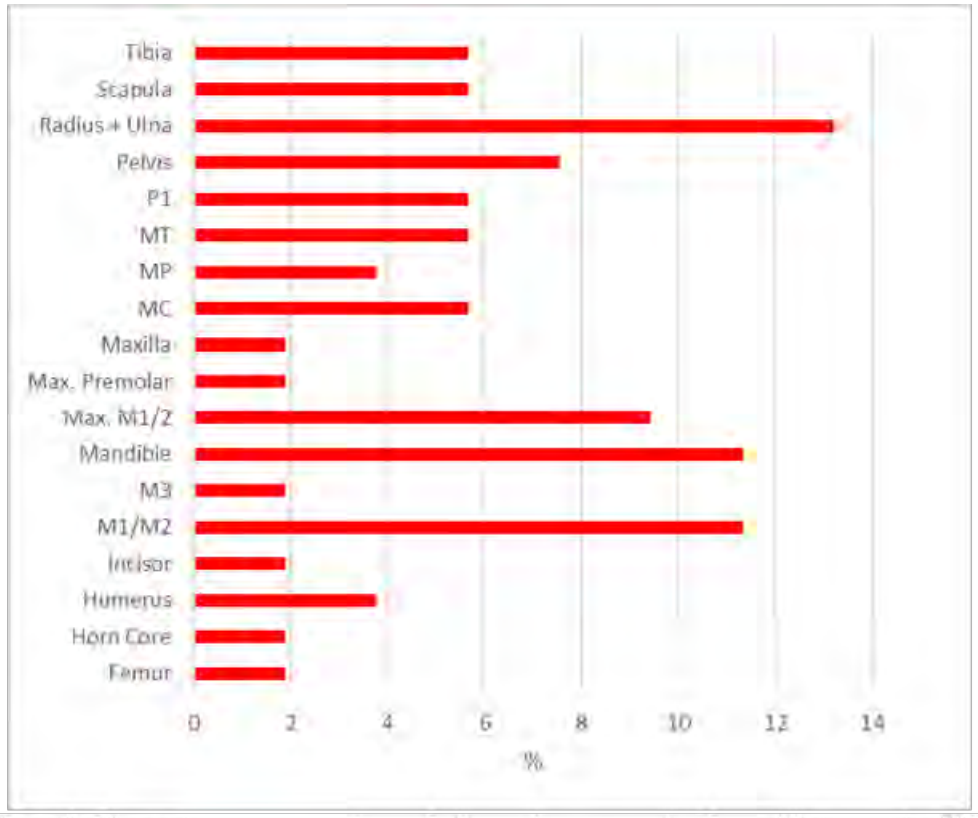


Figure 6. Chart showing percentage of elements represented for cattle bones (n=53)

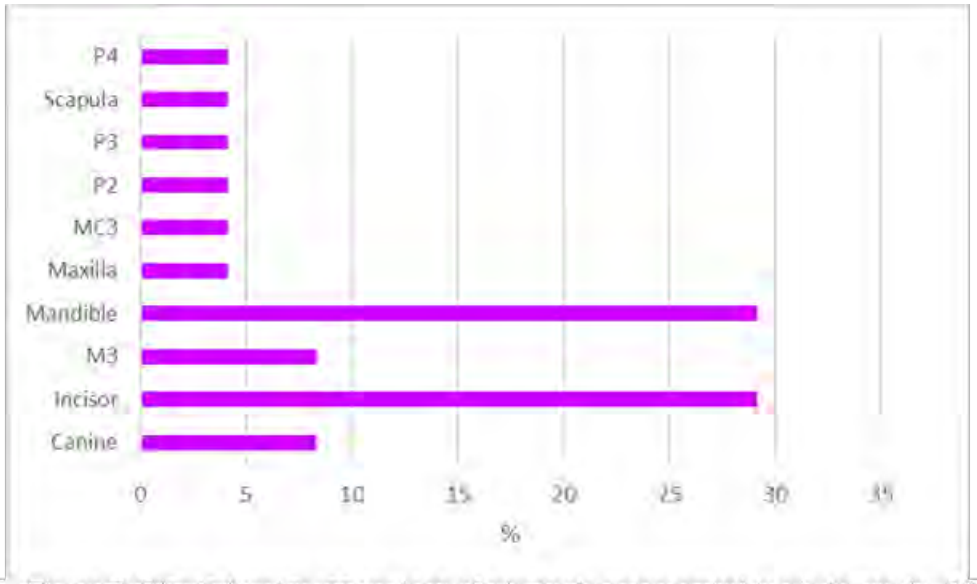


Figure 7. Chart showing percentage of elements represented in pig bones (n=24)

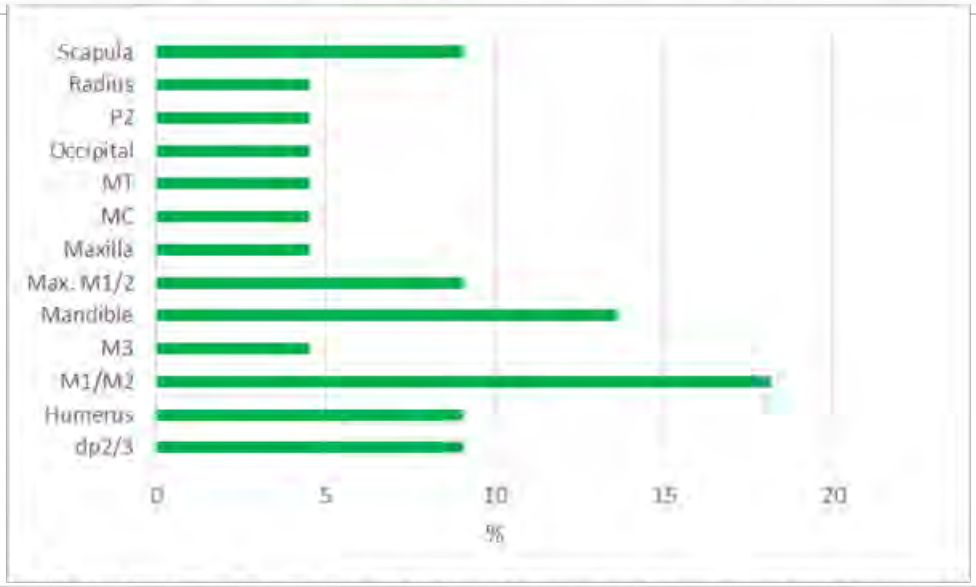


Figure 8. Chart showing percentage of elements represented in sheep/goat bones (n=22)

4.4. Age and Sex

Sexing could only be determined for two pig specimens, which had canines typical of females, however no other sexing data could be obtained due to small sample size and fragmentary remains. The single horncore was broken and the neither the basal circumference or basal diameter could be measured, and therefore could not be sexed. There were 11 bones which were notably porous and were likely to belong to juveniles.
Ageing was primarily completed using teeth still embedded in the mandible (Table 3), Grant (1982) was used for coding the wear on all the teeth analysed. To determine age,

Halstead (1985) was used for cattle, Payne (1973) for sheep/goat, and O'Connor (1988) for pig. The only loose teeth included in ageing was the 3rd molar, and all M3's included were either different species or different wear stages. The data gathered from dental wear is also heavily biased towards pigs as the majority of the specimens from this taxon were mandibles.

The pig mandibles were aged between 2 and 21 months, none reaching adulthood. This could be indicative of meat production, especially since the only product pig's produce is meat (other than manure). The three sheep aged range from 1 to 4 years old, unfortunately this is too small of a sample size to indicate any type of farming regime or management.

Context	Taxa	Anatomy	Side	Dp4	P4	M1	M2	M3	Age
1001	CATTLE	Loose M3	0					l	Senile
1008	PIG	Mandible	R		a	e-f	b		14-21 months (Sub-adult)
1008	PIG	Mandible	R					a (partially in crypt)	14-21 months (Sub-adult)
1008	PIG	Loose M3	0					a	14-21 months (Sub-adult)
1008	PIG	Loose M3	0					d	Adult
1001	PIG	Mandible	L	d		Erupting			2-7 months (Juvenile)
1001	PIG	Mandible	R	d					2-7 months (Juvenile)
1001	S/G	Loose M3	L					f	3-4 years (Young Adult)
1001	S/G	Mandible	R			g			12-24 months (Sub-adult)
1001	S/G	Mandible	L					d	2-3 years (Young Adult)

Table 3. Dental wear stages and ageing

Few bones that had epiphysis with fusion evidence. Particularly in the case of pigs and sheep where only 3 fused bones were found for each specimen. The greater number of cattle limb bones could provide a more useful resource for age estimation. Table 4 shows epiphysial fusion in cattle bones. The majority were fused and therefore provide a minimum age only. Only three bones were found with unfused epiphysis, these cattle two deid before they reached 12-18 months old, and one before 2-3 years old. Again, due to small sample size, fragmentation, and poor preservation, some bones only had one

epiphysis to analyse, so it is hard to create an accurate representation of age at death. This means interpretations on animal management are limited.

Cattle	PHASE		
	F	UF	%F
P. Metapodial D. Phalanges	1		
Total before birth	**1**	**0**	**100%**
Scapula Pelvis			
Total 7-10 Months			
D. Humerus P. Radius P. Phalanx 1 P. Phalanx 2	2 4 3	1	
Total 12-18 Months	**10**	**1**	**91%**
D. Tibia D. Metapodial	1 1	2	
Total 2-3 Years	**12**	**3**	**80%**
P. Humerus P. Ulna D. Radius P. Femur D. Femur P. Tibia	1		
Total 3-4 Years	**13**	**3**	**81%**

Table 4. Table showing epiphysial fusion for cattle

4.5. Pathology

There is only one pathological specimen in this assemblage, which appears in context 1005 (Table 5). Due to the extent of erosion on many of the elements in this assemblage, pathologies were not easy to identify. The cattle phalanx from 1005 has a lesion on the medial surface typical of exostosis, which is non-specific (Figure 9). Skeletal deformities in the feet can be caused by incorrect foot conformation and weaking of the associated joints (Bartosiewicz 2013, 103). The pathology is non-specific but may relate to use of the animal for traction.

Context	Taxon	Element	Pathology
1005	Cattle	1st Phalanx	Exostosis on medial surface

Table 5. Specimens with pathological conditions observed in all contexts

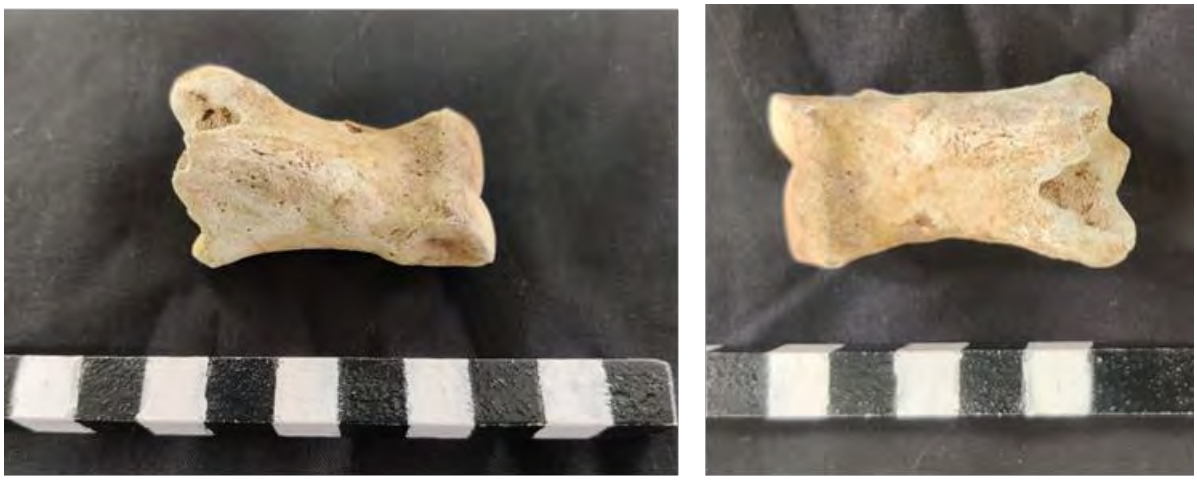


Figure 9. Cattle 1st phalanx with lesion on the medial surface

5. Potential for Further C^{14} Analysis

There is scope to undertake radiocarbon dating on two specimens from this assemblage: an unfused cattle tibia from context 1008, and a cattle radius from context 1001. The presence of an unfused tibial shaft alongside its unfused distal epiphysis is indicative of an undisturbed deposit. The shaft of this tibia is also broken at zones 4 and 5 with a fresh fracture. The cattle radius from context 1001 has a fresh fracture in zones 5 and 6 which joins with another freshly fractured fragment from the same context, which is also indicative of an undisturbed deposit.

6. Discussion

It is evident from this report that the volume of material in each context is not substantial enough to draw robust conclusions about animal exploitation at Llanmelin Outpost. Only 116 fragments, 19% of the assemblage, is identifiable from a total of 8 contexts, and only 7 identifiable fragments belong to the second ditch excavated. The following discussion will identify broad themes, though the interpretations must be caveated by the lack of secure phasing and the limited sample size. Comparisons with other contemporaneous sites were also considered, though the comparative dataset for South Wales is small, particularly in the case of Iron Age faunal assemblages.

6.1. Animal Representation

The majority of the animal bone (94%) originated from Slot 1, particularly contexts 1001, 1005, 1006, and 1008. Contexts from Slot 2 (1003 and 1011) contained only 6% of the faunal remains and contained only cattle remains. It would be useful to have radiocarbon dates to confirm if this has any significance for interpretation. The high volume of animal bones from Ditch 1 support the excavators' interpretation of a quick back fill event, possibly from a midden. This is also supported by the skeletal element representation, the lack of limbs (therefore meat joints) from sheep/goat and pig suggest that they were represented by primary butchery waste, and the rest of the animal was taken elsewhere to be consumed.

The cattle remains had the highest skeletal element abundance across all anatomical regions, suggesting, more complete cattle were butchered, consumed, and deposited at the site. The cattle tooth which was aged was also a senile animal, and there were very few unfused bones. This could suggest these animals were used for traction (supported by a pathological phalanx) or dairy, rather than purely meat consumption. However, the lack of a larger sample size for age data limits this interpretation. Lipid analysis of the pottery from Slot 1 would help determine the use of these animals.

Cattle were the most prevalent taxon of this assemblage, with sheep/goat and pig specimens identified at similar but lower frequencies. The identified cattle remains represent more than double that of the sheep/goat and pig respectively. In other Iron Age sites, it has tended to be sheep/goat which dominate the assemblage more so than cattle, with 54% of assemblages recording a high abundance of sheep/goat (Hambleton 2008, 39). Hambleton (2008) suggests the high frequency of sheep remains is due to their smaller size in comparison to cattle, as they yield less meat. In this case, due to the differing skeletal element representation between species, it is possible the cattle were the primary animal used for meat at this settlement. It is highly possible that this site could also be refuse, and the pigs and sheep/goat were taken elsewhere to be consumed, leaving the primary waste products behind.

6.2. Consumption and Waste

Previous zooarchaeological research suggests the primary food animals on Iron Age sites across Britain were cattle, sheep, and pigs (Green 1992, 7; Cross 2011, 194). All these species were present in this assemblage, and some show evidence of butchery. The elements with evidence of butchery were varied and of little interpretive value with such a small quantity, however, the cut marks around the epiphyses of bones are indicative of meat removal and disarticulation of the carcass. Butchery evidence was not abundant with the Llanmellin hillfort assemblage either, despite a larger assemblage with better preservation (Jones 2013, 2). The fracture freshness evidence suggests most of the identifiable specimens (95%) were not fractured when fresh and this is not indicative of

extensive grease and marrow exploitation. The poor preservation at this site limits the interpretive value of the available evidence, and further evidence of butchery and fresh fractures are likely to have been lost in deposition. Investigation of skeletal element representation does not reveal any patterns of carcass processing or meat consumption. Mandibles and loose teeth were the dominant surviving elements for cattle, sheep, and pigs in this assemblage, as opposed to more 'meaty' elements which may be indicative of meat consumption. Additionally, as the loose teeth for cattle were mostly 1st and 2nd molars, precise ages could not be determined and inferences about dairying practices cannot be made.

7. Summary

Issues of poor preservation throughout this faunal assemblage have resulted in a small sample of identifiable specimens, with limited opportunity for analyses such as metric or epiphyseal fusion and may have destroyed further evidence for taphonomic modifications such as butchery and fracturing. Interpretations of the material are tentative and based upon a number of caveats, especially as phasing is not currently secure. Cattle were the prominent species in this assemblage and element representation indicates that they might have been used for traction. The lack of limb bones for pigs and sheep/goats potentially indicate that animal consumption was occurring elsewhere. Though small, this assemblage may add to interpretations made from nearby faunal assemblage, such as the Llanmelin Hillfort. Future work on this assemblage could focus on isotope analysis, including carbon, nitrogen, oxygen, and strontium, to answer research questions around mobility and management of animals at this site. In spite of its limited size, the assemblage makes a valuable contribution to the limited corpus of Iron Age faunal remains from South Wales. This interpretative potential will be extended with improved chronological resolution.

8. Acknowledgments

We would like to thank Poppy Hodkinson for her help with this report, in both the analysis of the specimens and analysing the data.

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Appendix IV

Assessment of the charred plant remains

Wendy J Carruthers

COMMUNITY EXCAVATION AT LLANMELIN OUTPOST

Assessment of the charred plant remains

Wendy J. Carruthers

(5/12/2022)

Introduction

In May 2022 archaeologist Iestyn Jones led a community excavation at the Iron Age enclosure at Llanmelin outpost. The outpost is located approximately 300m from the main hillfort. A section of the enclosure ditch was excavated over three weeks. The ditch was found to contain primarily stone infill with some soil deposits towards the edge and bottom. The stone fragments are likely to derive from the core of a bank. Bone and late Iron Age pottery was recovered (Iestyn Jones, pers.comm.).

Environmental soil samples of three to six litres in volume were taken from five different contexts within the excavated section of ditch. It was hoped that the environmental samples would contain charred plant remains that might provide information about activities taking place in the area, such as cereal processing or food preparation.

Environmental Sample Processing and Methodology

Sample processing was carried out using a standard bucket floatation method for each sample as follows;

The weight and volume of the soil was measured. The soil was spread two buckets, water was added and the contents of the buckets were gently stirred to help release the charred material from the soil. Each bucket was left to stand for a short time and then the floating fraction (the 'flot') was poured off through a 350 micron meshed sieve. The flot sieve was then rinsed through with clean water, the flot was tipped out into a drying tray lined with newspaper and water was again added to the buckets. This was repeated until all of the soil lumps had broken down to release the charred remains and as much of the charred material as possible had floated and been poured off. When this point was reached the residues in the bottom of the buckets were washed through a 1mm mesh sieve until they were clean. They were then tipped into large drying trays lined with newspaper. The drying trays were placed in a drying cupboard until the flots and residues were completely dry. The flots and residues were bagged, labelled and sorted for finds and charred plant remains.

Results

Table 1 (below) gives the results of the analysis. As the flots were small and charred plant remains were very scarce the samples were fully sorted (both flots and residues) and analysed. Since very little charred material was present in the residues the floatation appears to have been effective in recovering any charred plant remains present. On some sites silt encrustation of charred remains prevents some of the material from floating and double floatation is required but at this site the light silty/sandy soils were easy to process and the charred plant remains were not encrusted. This is worth noting for future excavations in the area as much larger soil samples could be taken (because they are not costly to process) which will give a greater chance for charred plant remains to be recovered.

Contamination – Because there were voids in the ditches (Iestyn Jones pers. comm.) it is possible that modern and/or medieval and later plant material may have been washed down the soil profile and contaminated the Iron Age deposits. Flora and fauna (for example worms and burrowing snails)

may also have moved plant material to some extent. However, although there were signs in sample <2> from the possible palaeosol (context 1012) that soil fauna had been active (see sample description below) none of the ditch samples contained modern contaminants (for example uncharred seeds and insects).

Cenococcum geophilum – The small black rounded fruiting bodies of the Ascomycete fungus *Cenococcum geophilum* were recorded in samples <4>, <5> and <6> indicating the presence of woodland on the site at some time in the past. Unfortunately it is not possible to date these items as they can survive in the soil for a very long time.

Molluscs – Molluscs were frequent in some of the samples (<3> and <6>) and common in the other samples. There was a reasonable diversity of species in some cases so it is possible that analysis of the molluscs could provide some information about the local environment. A mollusc specialist would need to assess the assemblages to determine whether or not they are useful. Burrowing snails (*Ceciloides acicula*) were only present in the possible palaeosol, context 1012, sample <2> - these can increase contamination due to their burrowing activities.

Charcoal – Charcoal fragments were very rare and generally too small to be identified. The only sample to produce a few slightly larger fragments was sample <5>, context 1011. Because of the scarcity of identifiable charcoal this ecofacts has no further potential.

Sample descriptions

Possible palaeosol; Sample <2>, context (1012) – An area of possible palaeosol was excavated adjacent to the northern ditch cut. Six litres of red/brown sandy/silty soil was processed. No charred plant remains were recovered apart from a few small traces of charcoal. There was evidence of contamination and disturbance in this sample, possibly because it was the highest up the soil profile of the samples assessed. Earthworm cocoons, modern roots, uncharred modern seeds and some modern arthropods (woodlice) were present in the flot. As none of these items were charred it was clear that they were recent contaminants. Their presence would not have been a problem if charred plant remains had been present although they do indicate that there may have been disturbance of ecofacts within the soil. In addition, the mollusc assemblage contained frequent burrowing snails. Since molluscs survive in calcareous soils without being charred this makes it difficult to know which of the molluscs were ancient and which were more recent. Therefore the molluscs from this sample may not be worth analysing. This sample produced a much larger residue than the others which consisted of frequent small soil lumps that were difficult to break down. It is possible that the soil was more clayey than the others though not so clayey as to form large clayey balls. If it represented a palaeosol fertilisers such as midden material might have been added to improve the soil. Occasional fragments of coal were also present.

Lower fill of south-facing ditch section [1002], sample <3>, context (1008) – A three litre soil sample of red/brown fine sandy/silt was processed from near the base of the ditch. This deposit was distinctly different from the upper fills that contained frequent large stones and voids and it contained no pot sherds. Pig bones, however, were frequent (Iestyn Jones pers. comm.). A radiocarbon date on a pig bone produced a date that placed the deposit in the Middle Iron Age. Two very small charred plant remains were recovered from the sample; a fragment of hazelnut shell (*Corylus avellana*) and a very poorly preserved emmer/spelt glume base (*Triticum dicoccum/spelta*). These items are typically found in prehistoric domestic waste so they provide slight evidence for activities such as cooking and small-scale crop cleaning (i.e. de-husking emmer or spelt spikelets

prior to cooking). Presumably the pig bones also derive from this type of small-scale domestic or feasting activity.

Fill of south-facing ditch section [1002], sample <4>, context (1009) – A three litre soil samples was processed from a fine red/brown sandy/silt located towards the western side of the ditch section. This deposit produced no pot or bone and was similar to context (1008) in containing no voids. No charred plant remains were recovered except for a few small fragments of charcoal. A few small bones, molluscs and *Cenococcum geophilum* fruiting bodies were present.

Middle fill of north-facing ditch cut [1002], sample <5>, context (1011) – A five litre soil sample was processed from this red/brown sandy/silt with large stones. A single very poorly-preserved emmer/spelt spikelet fork was recovered as well as a few medium-sized fragments of charcoal. Occasional fragments of burnt bone and rodents teeth were also present. As with sample <3>, deposit (1008), this material probably derives from traces of burnt domestic waste, for example small-scale de-husking waste produced during the preparation of food. Very small items such as these can be carried some distance on the breeze when burnt in a fire so their presence in the ditch does not prove that processing was taking place nearby or even that cooking was taking place close to the ditch. However, the presence of heavier items such as burnt bone fragments and pig bones (sample <3>) is more reliable proof that these activities were probably taking place nearby.

Base of south-facing ditch cut, sample <6>, context (1015) – This four litre soil sample came from the base of the ditch, beneath sample <3>. The soil colour was a slightly paler version of sample <3> with fewer stones. It produced no finds or charred plant remains though there was a trace of charcoal which may have been washed down from upper layers. In view of its sterile nature it may represent a degraded rock and silt natural subsoil. Molluscs and what appeared to be a different form of *Cenococcum geophilum* (conjoined spherical structures) were frequent. It is possible that these, too, had washed down the soil profile, having been living in the upper layers.

Recommendations for further work

The scarcity of charred plant remains suggests that if further work was carried out on this structure much larger soils samples would need to be taken in order to obtain information about the plant economy. Prehistoric enclosure ditches are often fairly unproductive (unless they are waterlogged) so this type of result is fairly typical. This is particularly the case in Wales where the increase in concentrations of charred plant remains appears to occur later than in England, around the Late Iron Age/Early Roman period (Caseldine 1990; Rackham 2020; Carruthers forthcoming). The remains that were found - occasional hulled wheat chaff fragments and a trace of hazelnut shell – are also typical of the period as emmer and spelt appear to have been the main crops grown in south Wales at this time (see below). The continued presence of hazelnut shell on sites of this period suggests that native food sources were still important in case of crop failure. It also suggests that sufficient scrub, woodlands and hedgerows were still available to supply these foods.

As the flots and residues from this site have already been fully sorted and analysed there is no further work to do on the archaeobotanical side. There was insufficient charcoal to produce meaningful results. There may be some potential in the mollusc assemblages as molluscs were quite frequent in some of the samples. It may be worthwhile sending the bags of sorted molluscs to a specialist to see if they have the potential to provide any information about the environment In the Iron Age.

At the nearby hillfort of Llanmelin recent excavations produced evidence to suggest that while emmer, spelt and barley grains and chaff were present in the samples spelt was the dominant crop. The frequency of chaff fragments suggested that hulled wheats were being brought into the hillfort as semi-processed spikelets (Carruthers 2016 unpublished). This would have been the best way to store the grain in order to prevent spoilage (Hillman 1981). De-husking would have been carried out on a small scale as part of the cooking preparations. The fertile, base-rich loamy soils around Llanmelin and Llanmelin Outpost would have suited the cultivation of hulled wheats and barley and this was probably an important area for arable cultivation at this time. Even though cereal remains were reasonably frequent in some of the samples from the hillfort hazelnut shell fragments were recovered from five of the twelve samples, demonstrating that nuts were still a popular snack.

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Sample	context		location	Sample volume (litres)	Soil description	Flot description	Residue description	Charred plant remains (CPR)	charcoal
2	1012	Column sample adj [1002]; cut by [1002]	Possible palaeosol cut by Northern Ditch Cut (NDC)	6	Fine red/brown sandy/silty with few stones	25ml of flot. Modern roots ++; coal+; molluscs ++ including burrowing snails, worm cocoons++; modern seeds (Chenopodiaceae, *Rubus* sp.) & insects	Large residue mainly composed of silty/clayey lumps. Very clean of charred plant remains	NIL	Occasional small fragments
3	1008	Basal deposit in ditch section [1002]	NDC	3	Fine red/brown silty/sandy with frequent stones, some large	30ml of flot. Frequent molluscs, no burrowing snails.	Frequent stones, several small fragments of pot and small bones common including rodent tooth. Clean of CPR.	I small hazelnut shell fragment (*Corylus avellana*); 1 poorly preserved emmer/spelt glume base (*Triticum dicoccum/spelta*).	Occasional small fragments
4	1009	Above (1008) in DS (1002]	NDC	3	Fine red/brown silty/sandy with frequent stones, some large	10ml flot. Occasional modern roots.Molluscs common, no burrowing snails. Some small bones (?rodent). *Cenococcum geophilum*	Frequent large stones, burnt bone ++; molluscs ++; very clean of CPR.	NIL	Occasional small frags.
5	1011	Second fill of DS [1002]	SDC (southern ditch cut)	5	Fine red/brown silty/sandy with frequent small stones	7ml flot. Molluscs++; *Cenococcum geophilum* ++	Occasional frags burnt bone; some unburnt including rodent teeth. Occasional small charcoal flakes but no CPR	1 poorly preserved emmer/spelt spikelet fork	Occasional medium/small charcoal
6	1015	Lowest fill of DS [1002]	NDC	4	Slightly paler red/brown silty/sandy with few stones	5ml flot. Molluscs+++, no burrowing snails, frequent *Cenococcum geophilum* ; uncharred modern insect frags ++	Some large mollusc frags, large and small stones frequent. Clean of CPR	NIL	Trace of small charcoal only

Table 1: Results of the assessment of soil samples from Llanmelin Outpost

Appendix V

Geoarchaeological assessement

Tudur Davies

Llanmelin Outpost Geoarchaeological Assessment

Tudur Davies BA MA PhD FSA

Crynodeb

Cynhaliwyd disgrifiadau a dadansoddiad o dueddiadau magnetig ar fonolith a gasglwyd o haenau archaeolegol o safle Allbost Llanmelin, yn Sir Fynwy. Mae'r canlyniadau'n dangos presenoldeb palaeosolau posibl uwchlaw ac islaw haen sydd o bosib yn cynrychioli deunydd clawdd sy'n gysylltiedig â ffos yr Allbost. Ni gynghorir unrhyw ddadansoddiad pellach.

Summary

Physical descriptions and magnetic susceptibility analysis was undertaken on a monolith retrieved from deposits associated with an Iron Age enclosure at Llanmelin Outpost, Monmouthshire. The results indicate the presence of possible palaeosols both above and below a deposit believed to represent remnant bank material associated with the enclosure ditch. No further analysis is advised.

Introduction

Excavations undertaken in May 2022 identified a possible palaeosol associated with the enclosure ditch of an Iron Age settlement site at Llanmelin Outpost, Monmouthshire (ST46369284). The ditch itself appears to be largely filled with a deposit of stones believed to have originally belonged to a revetted bank, deliberately pushed into the ditch on its abandonment in the early Romano-British period (Jones pers. comm). On the internal western side of the ditch, a silt-loam deposit with fragments of angular limestone, rare charcoal flecks and ceramic fragments was identified below a layer of ploughsoil. This silt-loam deposit was tentatively interpreted as a possible palaeosol, pre-dating the construction of the enclosure and may also have included a portion of the surviving bank. This report provides the results of geoarchaeological assessment of an oriented (monolith) sample collected from the possible palaeosol. A description of the techniques used in this assessment is provided below, followed by a discussion of the results and recommendations for further work.

Methodology

The assessment included non-destructive methods to provide descriptions and magnetic susceptibility analysis of deposits noted within the monolith. The description of the sample was undertaken under controlled laboratory conditions, recording variations by colour, texture, inclusions and sorting. Magnetic susceptibility analysis was undertaken using a Bartington MS3 with a core logging sensor at 1cm intervals along the monolith. Three readings were taken, and an average value calculated for each 1cm of the monolith. Whilst undertaking the analysis, it was noted that readings were influenced by the presence of stones within the profile. In response, 3-point average calculations were made to reduce the influence of these individual stones, facilitating the identification of long-term trends within the data.

Results

Seven distinct layers were identified within the monolith as described in Table 1 and shown in graphical form in Figure 1. Variations in magnetic susceptibility broadly correspond with these changes in stratigraphy within the monolith and are also displayed in Figure 1.

Deposits 1.1 and 1.2 are a brown and dark brown silt-loams respectively that broadly correspond with plough soil deposits noted during excavation. The magnetic susceptibility values are generally elevated in the upper portion of these deposits, with trough in values corresponding with the position of a large limestone fragment within the monolith.

The brown silt-loams of deposits 1.3-1.5 are very similar to one another but are differentiated by the very high concentration of angular limestone fragments in deposit 1.4. Magnetic susceptibility values peak near the surface of deposit 1.3 and are also relatively high in deposit 1.5. In contrast, very low magnetic susceptibility values were noted for deposit 1.4.

Deposits 1.6 and 1.7 are very similar in colour to one another, consisting of a reddish brown silt and sandy silt respectively. Despite some similarity in consistency, the sorting of the two deposits are very different. Deposit 1.6, like all its overlying deposits is poorly sorted, but deposit 1.7 is comparably well sorted. Deposit 1.7 is also very loose and powdery in its consistency; however, this may in part be caused by partial disturbance during the sampling process. Deposit 1.7 and the upper portion of deposit 1.6 have relatively similar high magnetic susceptibility values with reduced values in the lower sections of deposit 1.6.

Interpretation

Although there are a number of factors that could cause an increase in magnetic susceptibility values (e.g. particle size, organic content, provenance of the sediment, or natural processes), the elevated values observed in deposits 1.1 and 1.2, and the upper portions of deposits 1.3 and 1.6 are consistent with the expected pattern of values associated with pedogenic processes (soil formation) observed in surface soils (cf. Gale & Hoare 2011: 213). This interpretation is consistent with observations made in the field that 1.1 and 1.2 corresponded with plough soil deposits and the possible palaeosol with deposit 1.6. Deposit 1.3 was originally excavated as one with plough soil deposits 1.1. and 1.2, coming down onto 1.4, whose stone rich material was thought to represent the top of the bedrock. If the interpretation above is correct, deposit 1.3 may also be a previously undetected soil horizon. This also implies that there may be a period of deposit accumulation on top of this possible palaeosol (e.g. manuring or colluvial deposition) before the development of the overlying plough soil.

The very low magnetic susceptibility values noted for the limestone rich deposit 1.4 were also observed at levels within the monolith with higher stone concentrations (e.g. between 10 and 12cm, where a relatively large stone was noted at the surface of the monolith). This deposit is believed to represent material used to construct the bank or revetment packing material, probably quarried from the stone cut ditch immediately to the west. Therefore, in addition to providing magnetic susceptibility values for this specific deposit, these readings enable an understanding of the values expected for the underlying bedrock for the site. The silt loam deposits found in between the stone material of deposit 1.4 was identical in its texture and colour to deposits 1.3 and 1.5 – located above and below 1.4 respectfully. The magnetic susceptibility values for deposit 1.5 was higher than deposit 1.4 yet not as high as deposits tentatively interpreted as palaeosols. One possible explanation for these values for deposit 1.5 might be the presence of a re-deposited topsoil, with mixed magnetic

susceptibility values that would include magnetically enhanced surface deposits and lower values associated with deeper soil deposits. This would be consistent with the likely excavation process of the ditch that would involve the initial removal of topsoil, followed by quarrying the bedrock to create the bank or revetment.

Deposit 1.7, the lowest identified within the monolith, was retrieved from a hollow in the bedrock and likely consists of material derived from degraded bedrock. These elevated magnetic susceptibility values noted in deposit 1.7 are difficult to fully determine; they could potentially relate to differences in particle size, or alternatively from increased concentrations of magnetic grains from weathering (cf. Gale & Hoare 2011: 211). However, given the comparably low values of the lower portions of deposit 1.6, it is unlikely that this deposit provided a significant proportion of parent material for soil formation processes of overlying deposits.

Table 1 Descriptions of deposits within the monolith

Unit number	Top depth (m)	Base depth (m)	Unit thickness (m)	Description
1.1	0	0.04	0.04	Brown (7.5YR 4/2) silt loam with rare angular limestone fragments (<10mm) and rare charcoal flecks. Poorly sorted.
1.2	0.04	0.15	0.11	Dark brown (7.5YR 3/4) silt loam with some angular limestone fragments (<30mm). Poorly sorted.
1.3	0.15	0.21	0.06	Brown (7.5YR 4/3) silt loam with some angular limestone fragments (<20mm). Poorly sorted.
1.4	0.21	0.265	0.055	Brown (7.5YR 4/3) silt loam dominated by angular limestone fragments (<30mm). Poorly sorted.
1.5	0.265	0.31	0.045	Brown (7.5YR 4/3) silt loam with some angular limestone fragments (<20mm). Poorly sorted.
1.6	0.31	0.47	0.16	Dark reddish brown (5YR 3/4) silt with some angular and decayed limestone fragments (<30mm). Poorly sorted.
1.7	0.47	0.53	0.06	Dark reddish brown (5YR 3/4) sandy silt with some decayed limestone fragments (<20mm). Relatively well sorted. The deposit is very loose and powdery - possibly caused by disturbance during the sampling process.

Conclusions

The interpretations of the results of the results of sediment descriptions and magnetic susceptibility analysis would suggest the following narrative for deposit formation at the sampling site (as also noted on Figure 1):

- Deposit 1.7 – degraded bedrock accumulating within hollows in the underlying strata.
- Deposit 1.6 – probable palaeosol developed on top of the bedrock, pre-dating the construction of the enclosure.
- Deposit 1.5 – possible redeposited topsoil displaced during the excavation of the enclosure ditch immediately to the west.
- Deposit 1.4 – stone rich deposit of the remnant bank/revetment.
- Deposit 1.3 – possible palaeosol developing on top of the surviving bank deposits.
- Deposits 1.2 and 1.1 – plough soil

Given the limited quantity of material available within the monolith, further analysis of its deposits would be relatively restricted and have limited potential. Sufficient quantity of deposits would be available for pollen analysis, but the dry and calcareous nature of the site would make preservation highly unlikely (cf. Jones 2011: 6). Additional geoarchaeological analysis (e.g. micromorphology, particle size analysis, loss on ignition – cf. Ayala *et al*. 2015) might support the conclusions made above, but would provide limited additional information. Given the limited potential for further research, no further palaeoenvironmental analysis is advised on this sample.

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Jones, D.M. (ed) 2011. *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition).* Historic England guidance document.

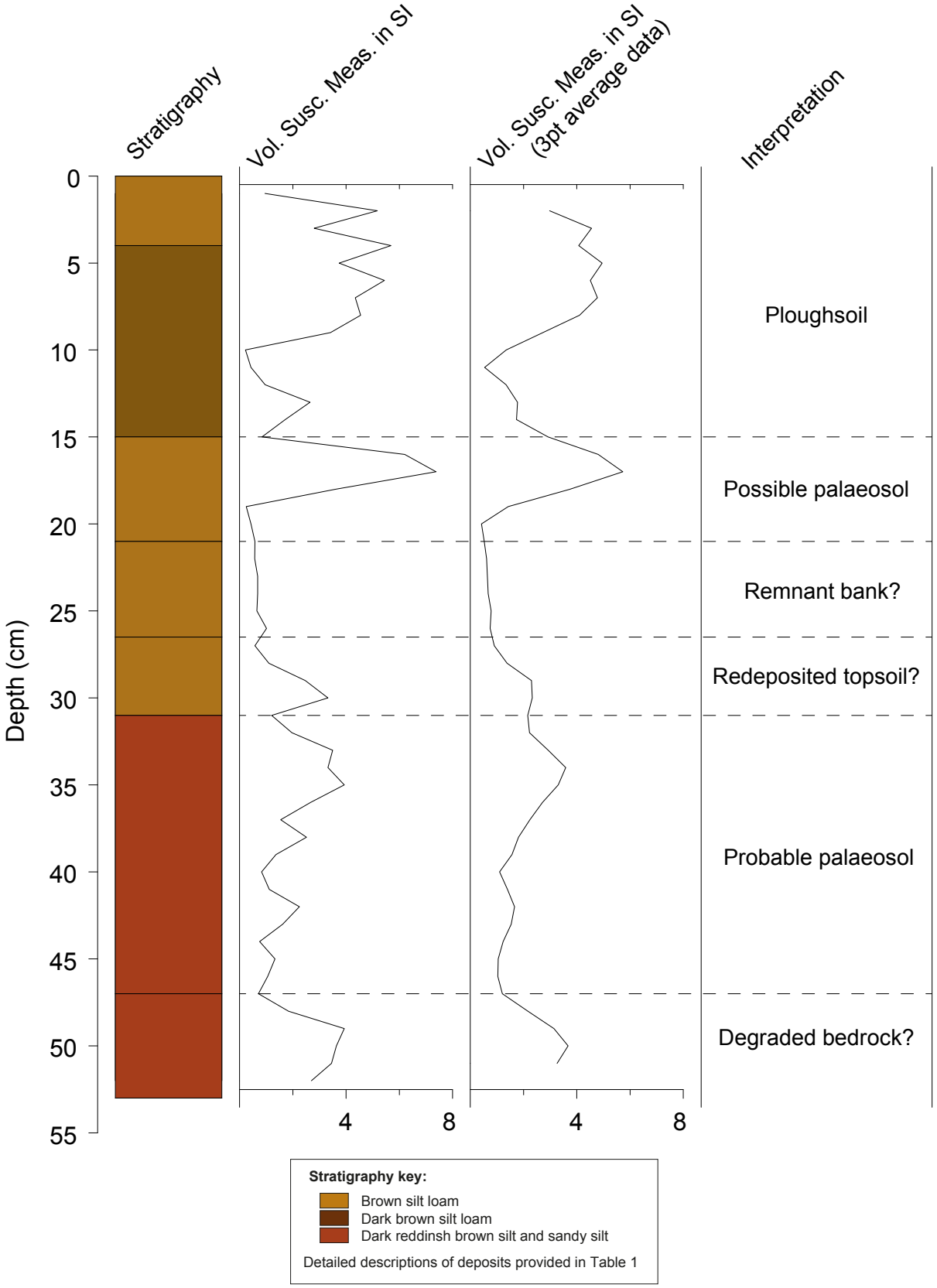

Figure 1 Monolith stratigraphy and magnetic susceptibility values

Appendix VI

14 C Dating results

Chrono Lab, QUB

UBANo	Sample ID	Material Type	^{14}C Age	±	F14C	±	mg Graphite
UBA-49057	bone from (1008)	Cattle tibia	2181	27	0.7622	0.0025	0.985
UBA-49058	Cattle radius from (1001)	Cattle Radius	2074	24	0.7725	0.0023	0.987

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-49057
Date of Measurement:	2022-10-10
Site:	Llanmelin Outpost (EV/LO/21)
Sample ID:	bone from (1008)
Material Dated:	bone, antler or tooth root
Pretreatment:	Collagen
mg Graphite:	0.985
Submitted by:	Iestyn ab Owen Jones

Conventional ^{14}C Age:	2181±27 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-49058
Date of Measurement:	2022-10-10
Site:	Llanmelin Outpost (EV/LO/21)
Sample ID:	Cattle radius from (1001)
Material Dated:	bone, antler or tooth root
Pretreatment:	Collagen
mg Graphite:	0.987
Submitted by:	Iestyn ab Owen Jones

Conventional ^{14}C Age:	2074±24 BP
Fraction corrected	using AMS $\delta^{13}C$

Marine samples will require re-calibration with the marine calibration curve

```
 2
             RADIOCARBON CALIBRATION PROGRAM*
                       CALIB REV8.2
        Copyright 1986-2020 M Stuiver and PJ Reimer
      *To be used in conjunction with:
      Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.

UBA-49057
49057
Radiocarbon Age BP   2181 +/-   27
Calibration data set: intcal20.14c               # Reimer et al. 2020
  % area enclosed       cal AD age ranges            relative area under
                                                   probability distribution
  68.3 (1 sigma)     cal BC 351- 290                        0.638
                            226- 222                        0.024
                            208- 175                        0.338
  95.4 (2 sigma)     cal BC 361- 240                        0.598
                            236- 153                        0.402
  Median Probability:  -283

UBA-49058
49058
Radiocarbon Age BP   2074 +/-   24
Calibration data set: intcal20.14c               # Reimer et al. 2020
  % area enclosed       cal AD age ranges            relative area under
                                                   probability distribution
  68.3 (1 sigma)     cal BC 148- 137                        0.099
                            109- 43                         0.901
  95.4 (2 sigma)     cal BC 166- 38                         0.935
                            13- cal AD 3                    0.065
  Median Probability:   -85

 References for calibration datasets:
Reimer P, Austin WEN, Bard E, Bayliss A, Blackwell PG, Bronk Ramsey C, Butzin M
Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Hajdas I, Heaton TJ, Hogg A
Kromer B, Manning SW, Muscheler R, Palmer JG, Pearson C, van der Plicht J, Reim
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Sakamoto M, Sookdeo A, Talamo S. 2020.
The IntCal20 Northern Hemisphere radiocarbon age calibration curve (0-55 cal kB
Radiocarbon 62. doi: 10.1017/RDC.2020.41.



Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE:  Cal ages and ranges are rounded to the nearest year which
       may be too precise in many instances.  Users are advised to
       round results to the nearest 10 yr for samples with standard
       deviation in the radiocarbon age greater than 50 yr.
```
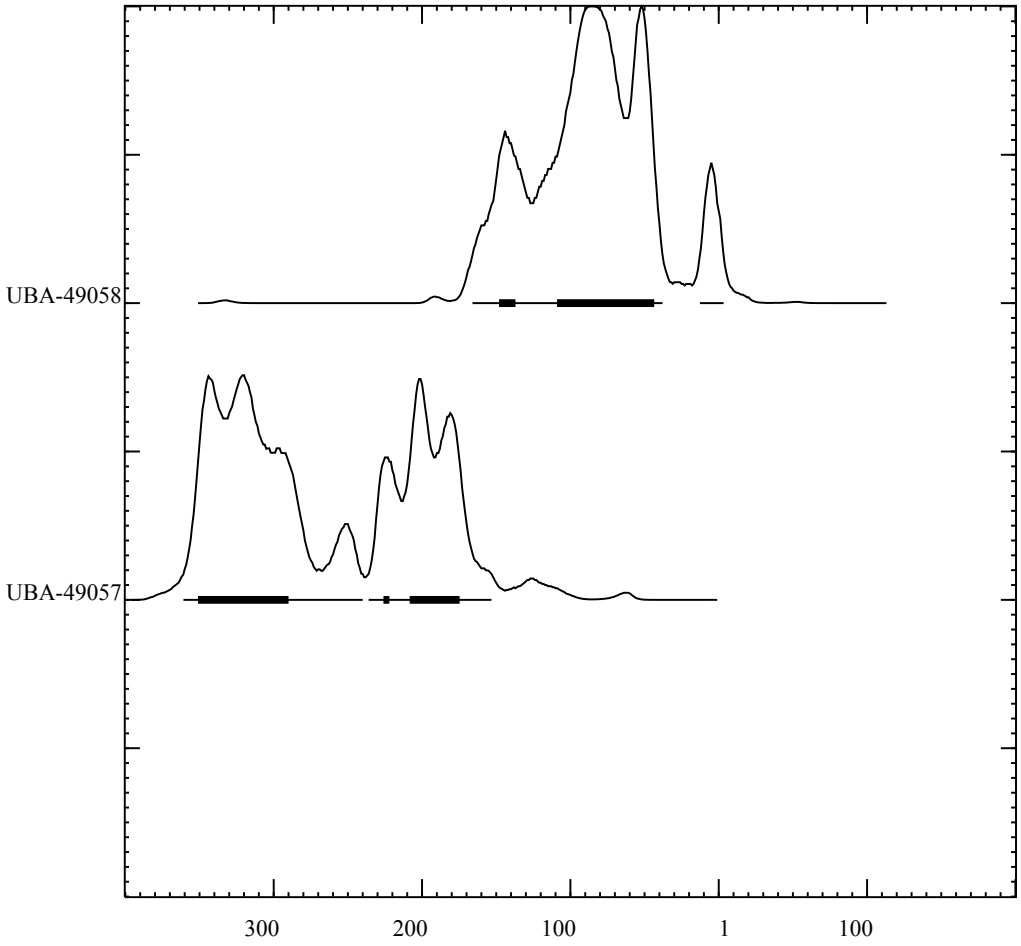

Posterior Probability Distributions



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UBNo	Sample ID	$\delta^{13}C$	$\delta^{15}N$	C:N ratio	Pretreatment	Yield
49057	bone from (1008)	-22.3	4.2	3.10	Collagen	1.80
49058	Cattle radius from (1001)	-21.4	6.8	3.10	Collagen	2.20

C:N values are one indication of the degree of preservation of bone protein ("collagen") and/or contamination by soil organic substances. The recommended values for C:N atomic values reported here are between 2.9-3.5. (1,2).

1. van Klinken, G.J., Journal of Archaeological Science, 1999. **26**(6): p. 687-695.
2. Ramsey, C.B., et al., Radiocarbon, 2004. **46**(1): p. 155-163.

Appendix VII

Photographic Register

Photo no	Date	Camera	L or P	View	Description	Plate
IMG 0006	28/04/22	EOS 4000 D	L	S	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	
IMG 0007	28/04/22	EOS 4000 D	L	S	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	
IMG 0008	28/04/22	EOS 4000 D	L	S	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	1
IMG 0009	28/04/22	EOS 4000 D	L	S	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	
IMG 0010	28/04/22	EOS 4000 D	P	S	Closer view of N-S ditch [1002] on the western edge	
IMG 0011	28/04/22	EOS 4000 D	L	S	Ground level view of N-S ditch [1002] on the western edge	2
IMG 0012	28/04/22	EOS 4000 D	L	N	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	
IMG 0013	28/04/22	EOS 4000 D	L	N	View of trench cleaned prior to slot excavation. Showing N-S ditch [1002] on the western edge	
IMG 0014	28/04/22	EOS 4000 D	L	NW	Showing N-S ditch [1002] on the western edge	7
IMG 0015	28/04/22	EOS 4000 D	L	NE	Showing N-S ditch [1002] on the western edge	
IMG 0016	28/04/22	EOS 4000 D	L	N	N end of ditch showing deposit (1001) lying at surface of ditch	3
IMG 0017	28/04/22	EOS 4000 D	L	N	N end of ditch showing deposit (1001) lying at surface of ditch	
IMG 0018	28/04/22	EOS 4000 D	L	S	E end of trench showing limestone bedrock (1004) and areas of compressed clay lying in depressions	5
IMG 0019	28/04/22	EOS 4000 D	L	S	E end of trench showing limestone bedrock (1004) and areas of compressed clay lying in depressions	
IMG 0020	28/04/22	EOS 4000 D	L	N	E end of trench showing limestone bedrock (1004) and areas of compressed clay lying in depressions	6
IMG 0021	28/04/22	EOS 4000 D	L	S	S end of ditch [1002] showing upper surface (1003) – less stone than (1001) at N end.	4
IMG 0022	28/04/22	EOS 4000 D	L	S	S end of ditch [1002] showing upper surface (1003) – less stone than (1001) at N end.	
IMG 0023	28/04/22	EOS 4000 D	L	W	W edge of ditch [1002] showing section E facing section of topsoil (1000), southern ditch surface (1003) and limestone (1004)	8
IMG 0024	28/04/22	EOS 4000 D	L	W	W edge of ditch [1002] showing section E facing section of topsoil (1000), southern ditch surface (1003) and limestone (1004)	
IMG 0025	28/04/22	EOS 4000 D	L	E	N end of trench showing western wedge of ditch [1002], surface (1001) and limestone bedrock (1004) on the east side	
IMG 0026	28/04/22	EOS 4000 D	L	E	N end of trench showing western wedge of ditch [1002], surface (1001) and limestone bedrock (1004) on the east side	
IMG 0027	03/05/22	EOS 4000 D	L	N	Working picture of beginning of S facing ditch section of [1002] showing (1001) and boulder 0.5m below surface	9
IMG 0028	03/05/22	EOS 4000 D	L	N	Working picture of beginning of S facing ditch section of [1002] showing (1001) and boulder 0.5m below surface	
IMG 0029	03/05/22	EOS 4000 D	L	NW	Working picture of beginning of S facing ditch section of [1002] showing (1001) and boulder 0.5m below surface	
IMG 0030	03/05/22	EOS 4000 D	L	N	Close up of bone fragments as they emerge from (1001)	
IMG 0031	03/05/22	EOS 4000 D	L	N	Close up of pot sherd in (1005) section	12
IMG 0032	03/05/22	EOS 4000 D	L	N	Pot sherd in (1005) section	11
IMG 0033	06/05/22	EOS 4000 D	L	N	Close up of slot into compacted clay in south-eastern corner of trench. Showing bedrock with solution holes after trowelling by a volunteer	
IMG 0034	06/05/22	EOS 4000 D	L	E	Close up of slot into compacted clay in south-eastern corner of trench. Showing bedrock with solution holes after trowelling by a volunteer	26
IMG 0035	06/05/22	EOS 4000 D	L	E	Close up of slot into compacted clay in south-eastern corner of trench. Showing bedrock with solution holes after trowelling by a volunteer	
IMG 0036	06/05/22	EOS 4000 D	L	N	Working picture of S facing section at the N end of trench showing ditch [1002] almost bottomed.	10
IMG 0037	06/05/22	EOS 4000 D	L	N	Working picture of S facing section at the N end of trench showing ditch [1002] almost bottomed.	
IMG 0038	07/05/22	EOS 4000 D	L	N	Picture of S facing section at the N end of trench showing ditch [1002] almost bottomed. Sunny	
IMG 0039	07/05/22	EOS 4000 D	L	N	Picture of S facing section at the N end of trench showing ditch [1002] almost bottomed. Sunny	
IMG 0040	07/05/22	EOS 4000 D	P	N	Picture of S facing section at the N end of trench showing ditch [1002] almost bottomed. Sunny	
IMG 0041	09/05/22	EOS 4000 D	L	N	Picture of S facing section at the N end of trench showing ditch [1002]. Bottomed and cleaned.	
IMG 0042	09/05/22	EOS 4000 D	L	N	Picture of S facing section at the N end of trench showing ditch [1002]. Bottomed and cleaned.	
IMG 0043	09/05/22	EOS 4000 D	P	N	Picture of S facing section at the N end of trench showing ditch [1002]. Cleaned rock cut base visible	15
IMG 0044	09/05/22	EOS 4000 D	L	N	Picture of S facing section at the N end of trench showing ditch [1002].	16
IMG 0045	09/05/22	EOS 4000 D	L	N	Close up of base of S facing section at the N end of ditch [1002].	18
IMG 0046	09/05/22	EOS 4000 D	L	N	Upper section of ditch [1002]	17
IMG 0047	09/05/22	EOS 4000 D	L	N	South facing section across northern slot through ditch [1002]	
IMG 0048	09/05/22	EOS 4000 D	L	N	South facing section across northern slot through ditch [1002]	

IMG 0049	09/05/22	EOS 4000 D	L	N	South facing section across northern slot through ditch [1002]	
IMG 0050	09/05/22	EOS 4000 D	L	E	Small slot excavated by volunteers through compacted clay lying on limestone geology in the centre of trench	25
IMG 0051	09/05/22	EOS 4000 D	L	E	Small slot excavated by volunteers through compacted clay lying on limestone geology in the centre of trench	
IMG 0052	09/05/22	EOS 4000 D	P	E	E side of rock cut ditch showing stepped nature of edge	19
IMG 0053	09/05/22	EOS 4000 D	P	E	E side of rock cut ditch showing stepped nature of edge and rock base	
IMG 0054	09/05/22	EOS 4000 D	P	W	W side of rock cut ditch showing stepped nature of edge and rock base	20
IMG 0055	11/05/22	EOS 4000 D	L	SSW	Working photo of partial slot through ditch [1002] at the southern end of trench	
IMG 0056	11/05/22	EOS 4000 D	L	S	Working photo of partial slot through ditch [1002] at the southern end of trench	
IMG 0057	11/05/22	EOS 4000 D	L	N	Working photo of partial slot through ditch [1002] at the southern end of trench	
IMG 0058	11/05/22	EOS 4000 D	L	N	Working photo of partial slot through ditch [1002] at the southern end of trench	
IMG 0059	12/05/22	EOS 4000 D	L	N	E edge of S facing section of northern slot through ditch [1002] - above eastern edge of ditch showing bedrock, topsoil (1000) and ditch fill (left) (1001)	
IMG 0060	12/05/22	EOS 4000 D	L	N	E edge of S facing section of northern slot through ditch [1002] - above eastern edge of ditch showing bedrock, topsoil (1000) and ditch fill (left) (1001)	
IMG 0061	12/05/22	EOS 4000 D	L	N	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits.	24
IMG 0062	12/05/22	EOS 4000 D	L	N	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits.	
IMG 0063	12/05/22	EOS 4000 D	L	E	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits.	
IMG 0064	12/05/22	EOS 4000 D	P	E	The bank side (W) of ditch [1002] cleaned and sampled for paleosol and bank remnant deposits. Slot to bedrock for full sample.	23
IMG 0065	12/05/22	EOS 4000 D	L	N	South facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not bottomed due to time and significant rock voids.	
IMG 0066	12/05/22	EOS 4000 D	L	N	South facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not bottomed due to time and significant rock voids.	
IMG 0067	12/05/22	EOS 4000 D	L	N	South facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not bottomed due to time and significant rock voids.	
IMG 0068	12/05/22	EOS 4000 D	L	S	North facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not bottomed due to time and significant rock voids.	
IMG 0069	12/05/22	EOS 4000 D	L	S	North facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not excavated due to significant voids.	21
IMG 0070	12/05/22	EOS 4000 D	L	SE	North facing section of southern partial slot through ditch [1002] and the rock cut sides. Base was not excavated due to significant voids.	22
IMG 0071	12/05/22	EOS 4000 D	P	W	Western rock cut edge of southern slot through ditch [1002]	
IMG 0072	12/05/22	EOS 4000 D	L	E	Eastern rock cut edge of southern slot through ditch [1002]	
IMG 0073	12/05/22	EOS 4000 D	L	E	Eastern rock cut edge of southern slot through ditch [1002]	
IMG 0074-77	04/10/22	EOS 4000 D	L		Images of quern stone found in stone fill deposit (1005)	13, 14