



INTERIM REPORT ON TEST EXCAVATIONS AT WOGAN CAVERN (PEMBROKE, PEMBROKESHIRE): 2022 SEASON

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SUMMARY

This document is an interim report on test excavations at Wogan Cavern (Pembroke, Pembrokeshire), describing the results of the 2022 season and the work planned for 2023 and 2024.

A three-week field season in June/July 2022 was the second phase of test excavations, aimed at understanding what intact sediments remain in the cave and whether these are of archaeological value. Work in 2022 was limited to two areas that were first opened in 2021.

The results of the 2022 excavation confirm the presence of intact archaeological deposits in the areas tested. Several phases of activity are represented. At least one historic phase of activity is indicated by regular features cut into the cave's calcium carbonate ("flowstone") floor. In 2021 an early prehistoric layer containing diagnostic Mesolithic lithic artefacts was identified close to the cave wall. Our 2022 work demonstrated the same layer extending further into the cave.

Although the amount of Pleistocene deposits tested in 2021 was limited, a layer of fragmentary Pleistocene faunal remains was identified in sediments close to the cave's eastern wall. One apparent lithic artefact hinted that this was also a Palaeolithic archaeological layer (Dinnis et al. 2022). Our 2022 work confirmed the archaeological nature of these deposits. Provisional observations indicate the possible presence of two Pleistocene (Upper Palaeolithic) layers. Excavations away from the cave wall revealed the presence of intact deposits that appear to be the equivalent of the Pleistocene sediments present by the cave's eastern wall.

Overall, our 2022 excavations confirm that Wogan Cavern is a cave of undoubted national significance. In particular, the presence of intact Pleistocene sediments in all areas tested so far, and the demonstration that in at least some areas these contain archaeological material, makes Wogan Cavern uniquely placed to answer many outstanding questions about Britain's prehistoric past.

A further two field seasons are planned for 2023 and 2024. These are designed to further establish the archaeological status of Wogan Cavern. Excavation will continue in the cave's eastern side, where deposits have been excavated to their deepest extent so far. Continued excavation in this area will aim to test even deeper deposits. In addition, following the demonstration that intact deposits remain towards the centre of the cave, future excavation will look to test deposits close to the cave's western wall. Alongside the excavations, an electrical resistivity tomography survey is planned. It is hoped that this can reveal broad geological patterns across the cave and therefore improved our understanding of the structure of the site.

WOGAN CAVERN: SITE BACKGROUND AND PREVIOUS ARCHAEOLOGICAL WORK



FIGURE 1 - DRONE SHOT OF THE NORTHERN WALL OF PEMBROKE CASTLE, SHOWING THE GREAT HALL. WOGAN CAVERN LIES BENEATH THE GREAT HALL. (IMAGE COURTESY OF OWEN HOWELLS.)

Wogan Cavern lies beneath the Great Hall of Pembroke Castle (Fig. 1; Fig. 2). Following Dixon (1921; see Gunn et al. 2022), the cave has developed within early Carboniferous limestone (forming part of the Pembroke Limestone Group). Some observations suggest the cave may have a hypogenic origin (Gunn et al. 2022). The cave consists of a single, large chamber measuring c.23m north–south and c.18m west–east, with a maximum height of around 5m. It has a wide and high north-facing entrance and a present-day floor that is somewhat uneven but generally flat, with a height above Ordnance Datum of 9–10m. The cave was incorporated into the castle in the early thirteenth century, when a wall was built across its mouth (Fig.1; Fig.2), incorporating a gateway and a spiral stair from the castle inner ward above. The cave is thought to have witnessed several early archaeological and antiquarian investigations, but

these are extremely poorly documented. Extant historic collections from the cave are small and poorly contextualised, and the cave's present archaeological status is unknown (see Dinnis et al. 2022 and references therein). (For further details of the cave and its historic context the reader is referred to Dinnis et al. (2022) and Gunn et al. (2022)).



FIGURE 2 - WOGAN CAVERN DURING EXCAVATION IN SUMMER 2022, TAKEN FROM THE BACK OF THE CAVE. (PHOTO: ROB DINNIS.)

SUMMARY OF 2021 FIELDWORK

The current fieldwork project (outlined in Dinnis 2019) has two major objectives: to determine the extent of intact deposits, and to test these deposits for material of archaeological importance. It is envisaged that this work will:

- provide, for the first time, an assessment of the archaeological value of the cave's extant sedimentary deposits
- help to contextualise old collections from the cave
- establish the site's research potential
- provide information necessary to inform future conservation strategies

The first phase of the project comprised a small-scale test excavation in June/July 2021. This work established the presence of intact Holocene and Pleistocene deposits in the eastern side of the cave (Trench 5; see Fig. 3). A well-stratified early Holocene layer that included diagnostic Mesolithic artefacts was found underneath a calcium carbonate ("flowstone") layer. Underlying this layer were Pleistocene sediments. These contained fragmentary bone – including pieces identified using ZooMS as mammoth, reindeer, horse and deer (Dinnis et al. 2022) – and a single worked lithic artefact. The depth at which the Pleistocene material was found meant that it is unlikely the lithic artefact is intrusive from the higher layer. Minimal investigation in an area towards the centre of the cave (Trench 7; see Fig. 3) revealed a thin layer of post-medieval spoil overlying potentially intact sediments. Similarly small-scale investigation in the cave's southwestern corner (Trench 2; see Fig. 3) indicated the historic removal of a prehistoric layer – interpreted as equivalent to the layer with Mesolithic artefacts still present on the cave's eastern side – as well as the presence of intact ancient deposits of probably Pleistocene age. Full details of this work can be found in Dinnis and French (2021) and Dinnis et al. (2022).

2022 FIELDWORK

The 2022 excavation was limited to two trenches that were started in 2021 (Trenches 5 and 7; see Fig. 3). In the cave's eastern side, further excavation of Trench 5 sought to confirm the faunal layer in Pleistocene deposits as archaeological, and to access deeper sediments. Excavation in Trench 7 sought to test whether the surface encountered during the 2021 season was an intact cave floor, and if so to establish the nature of the intact sediments. Trench 2, in the cave's southwestern corner (see Fig. 3), was opened to allow examination by Prof. M. Bates, but was not subjected to excavation. Work was undertaken over a three-week period in late June/July. As in 2021, the work focussed solely on Wogan Cavern; no work was carried out at "Unnamed Cave" (see Dinnis 2019).

Appendices 1-8 contain initial post-excavation identifications and reporting on material recovered (shell, ceramics/glass, coins, bone, lithics). Appendix 9 lists all material recovered during the 2022 season. For overall excavation protocols the reader is referred to Dinnis (2019). Some additional on-site sample processing protocols were implemented in 2022. These are detailed in Appendix 10. Appendix 11 is a list of people participating in the 2022 season. Appendix 12 contains photographs of the backfilled site.

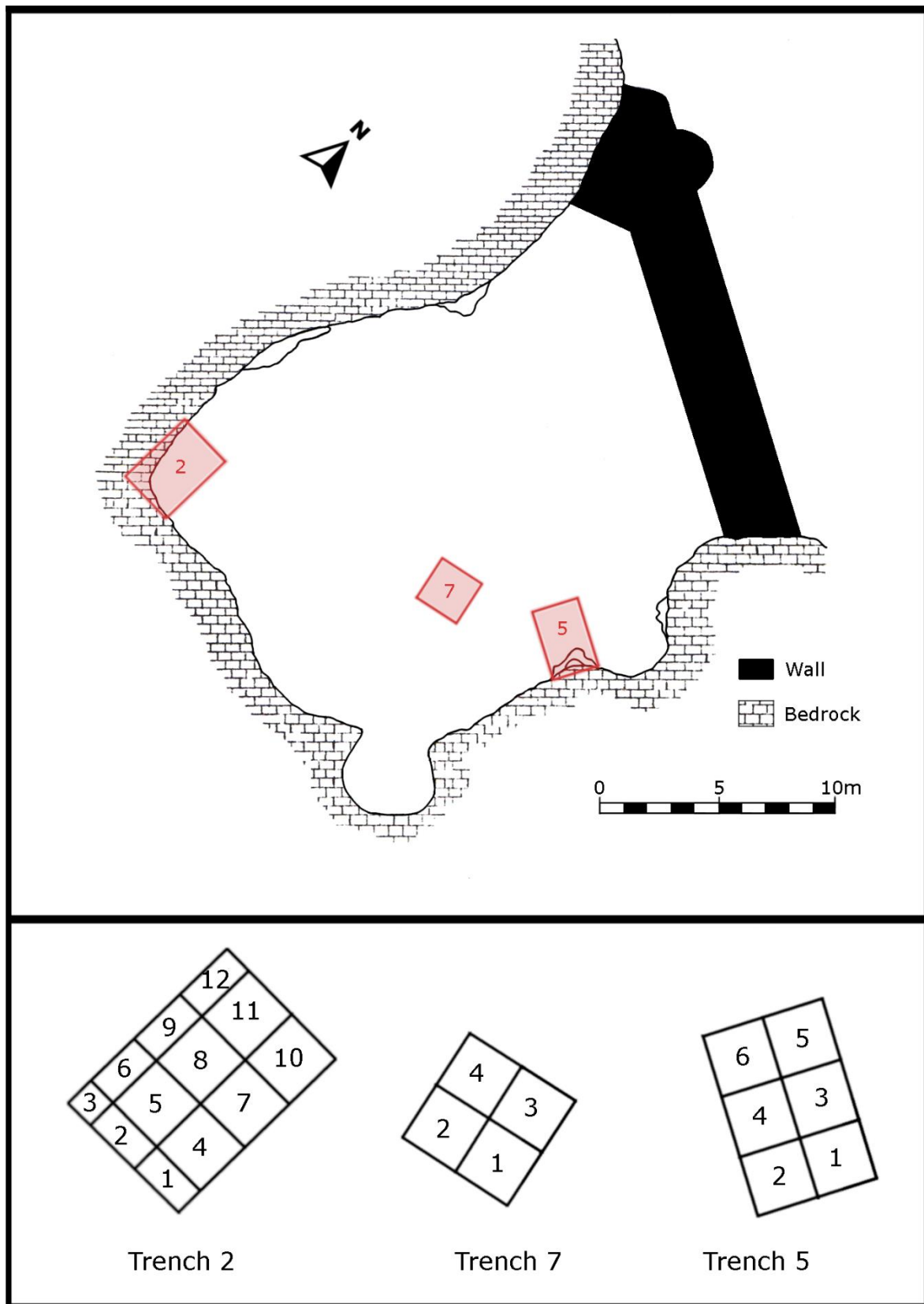


FIGURE 3 - PLAN OF WOGAN CAVERN (MODIFIED FROM KING 1978: 111), SHOWING THE LOCATIONS OF TRENCHES 2, 5 AND 7 (TOP) AND THE DESIGNATED SQUARES WITHIN EACH TRENCH (BOTTOM). WORK IN 2022 WAS RESTRICTED TO TRENCHES 5 AND 7. NOTE: SOME OF THE FEATURES OUTCROPPING FROM THE WALLS IN THE PLAN ARE REMNANT PARTS OF FLOWSTONE FLOOR (SEE TEXT), WHEREAS OTHERS REPRESENT OUTCROPPING AREAS OF BOTH BEDROCK AND FLOWSTONE.

TRENCH 5

Excavation of Trench 5 was limited to two squares: Square 4 and the adjacent Square 6 (Fig. 3). Square 4 had previously been excavated to a maximum depth of c.75cm in 2021. During the 2022 it was excavated to a maximum depth of c.80cm. During the 2022 season Square 6 was excavated from surface down to a maximum depth of c.1.1m (see Fig. 4).

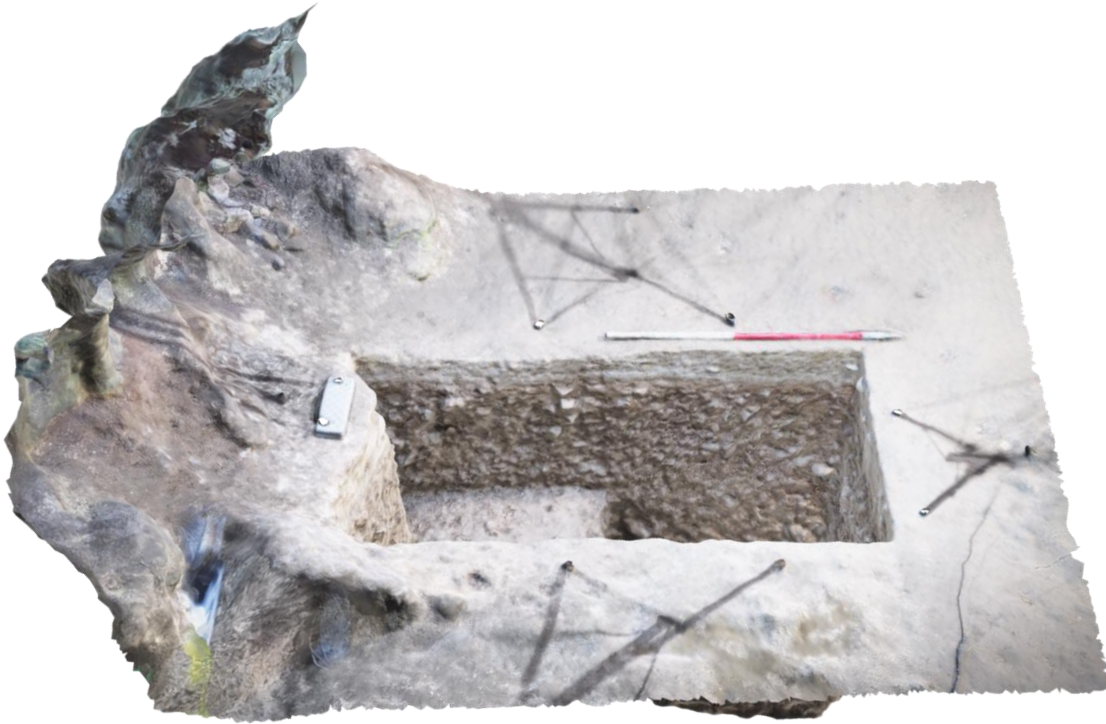


FIGURE 4 - 3D MODEL OF THE MAXIMUM EXTENT OF EXCAVATION OF TRENCH 5 IN 2022. (MODEL PRODUCED BY R. DINNIS.) FOR DESCRIPTIONS AND LOCATIONS OF THE VARIOUS CONTEXTS SEE FIG. 5 AND TABLE 1.

Overall, the 2022 excavations confirmed a stratigraphy in Square 6 closely resembling that in Square 4, therefore demonstrating the extension westwards of intact deposits. A description of the sequence and its archaeological contents can be found in Table 1 (below), and section drawings are shown in Figure 5.

The stratigraphy of Square 6 can be summarised, from top to bottom, as:

- Calcium carbonate (“flowstone”) layer (=Context 5002) forming the cave floor, and containing a marine shell assemblage
- Red-brown clayey sandy silt “cave earth” (=Context 5003), containing an early prehistoric lithic assemblage that includes diagnostic Mesolithic tool types
- Light orange-red sandy clay with some angular limestone clasts (=Context 5004), containing archaeological material, including characteristically Mesolithic (and possible Late Glacial) material
- Abundant angular limestone clasts and light yellowish-red-brown clayey sandy silt matrix (=Context 5004a), containing archaeological material including one characteristically Mesolithic piece, which may derive from the archaeological layer above
- Tightly packed scree of angular limestone clasts with red-brown clay matrix (=Context 5005), containing relatively sparse microfauna/fragmentary bone
- Abundant angular and less commonly subangular limestone clasts, alongside some broken crystalline stalagmite pieces, and with a light yellowish-red-brown clayey sandy silt matrix (=Context 5006), containing two accumulations of bone and lithic material, one within its upper part and one at its base
- Angular limestone clasts and some small, rounded clasts, with yellowish-brown-red crumbly clay silt matrix (=Context 5007), with bone and lithic material in its uppermost part

In the upper part of the excavated sequence in Square 6, of particular note was a cut feature ([501]; see Fig. 5) visible in the east-facing wall of the trench. The regular shape of the cut precludes a non-human agent. The cut has been made through Contexts 5003 and 5004 and into the uppermost part of Context 5004a, and has subsequently filled with the calcium carbonate deposit that forms the cave floor (Context 5002). This cut may relate to the series of cuts ([701]-[704]) in Trench 7, which were cut into deposits interpreted here as equivalent to Contexts 5002, 5003/4 and 5004a in Trench 5 (detailed below). Overall, Context 5002 contained limited archaeological material. This included one modern glass fragment, red deer and pig/wild boar remains, shells of marine mollusc species commonly used as food, and a small number of lithic artefacts, including one possibly Mesolithic blade fragment. 5002 clearly contained mixed age material, and some of this material probably belongs to the early prehistoric layer in underlying deposits.

Deposits immediately underlying 5002 (=Contexts 5003 & 5004, and the uppermost part of 5004a) contained the richest archaeological assemblage. The lithic assemblage is a laminar/lamellar technology, including characteristically Mesolithic pieces. This is consistent with the assemblage found in the adjacent Square 4 during excavation in 2021, and with the small historic collection of blades and one Mesolithic microlith. The remains of pig/boar and hare, recovered from Context 5003 in 2022, are likewise consistent with an early Holocene age for material in the layer, as are faunal remains recovered from the same contexts in 2021 (Dinnis & French 2021; Dinnis et al. 2022). This is also consistent with a radiocarbon date of $c.10,000 \pm ^{14}\text{C}$ BP from a deer bone recovered from Context 5004 in 2021.

It is possible that the layer contains some Late Glacial as well as Early Holocene material, and/or multiple phases of Mesolithic activity (Dinnis & French 2021; Dinnis et al. 2022; Appendix 1, 5), but it is clear that, overall, it is well stratified. Figure 6 (below) shows Trench 5’s north- and south-facing sections with the locations of all plotted finds shown. The layer is well defined, with an overall horizontal orientation aligning with the geological strata, showing only a slight dip westward towards the centre of the cave. It seems possible that the layer represents an occupation surface or surfaces. The freshness of the lithic material indicates limited post-depositional movement, and evidence for burning (e.g. burnt bone, charcoal) alongside lithic and bone material suggests an occupation surface where a range of activities were carried out.

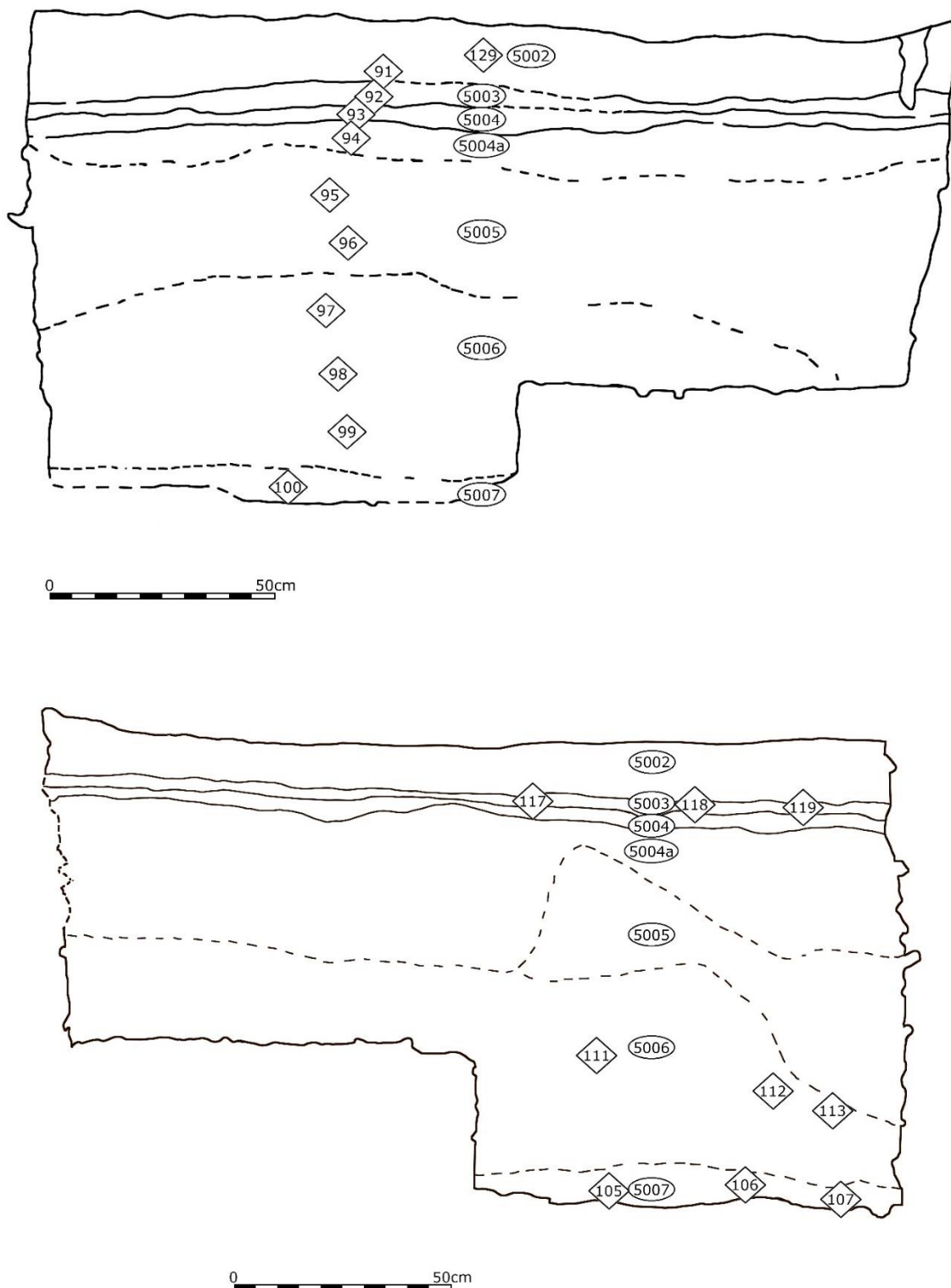


FIGURE 5 (CONTINUED OVERLEAF) - SOUTH-FACING (TOP) AND NORTH-FACING (BOTTOM) SECTIONS OF TRENCH 5 AT THE END OF EXCAVATION, SHOWING CONTEXTS AND SAMPLE LOCATIONS.

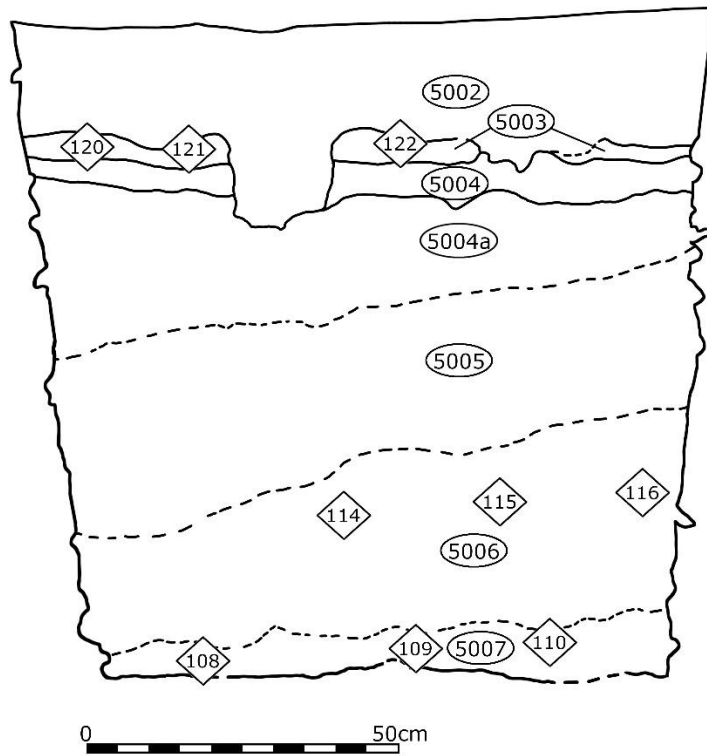


FIGURE 5 (CONTINUED FROM ABOVE) - EAST-FACING SECTION OF TRENCH 5 AT THE END OF EXCAVATION, SHOWING CONTEXTS AND SAMPLE LOCATIONS. NOTE THE CUT FEATURE SUNK THROUGH CONTEXTS 5003 AND 5004. WE INTERPRET THIS CUT AS ANTHROPOGENIC, AND POSSIBLY RELATED TO SIMILAR FEATURES ENCOUNTERED IN TRENCH 7 (SEE BELOW).

Although the contents of the archaeological layer in Contexts 5003, 5004 and the upper part of 5004a were comparable between Square 4 (excavated in 2021) and Square 6 (excavated in 2022), some differences were noted. First, the layer was richer in Square 4, closer to the cave wall. This may be due to clearing of debris away from the main occupation zone. Secondly, there was evidence for burning in both squares, but this was more pronounced in Square 6. In the northern part of Square 6 in particular, Context 5003 was darkened by charcoal/burnt bone staining, and an area of apparently heated clay (=hearth?) was present at the top of Context 5004.

The lower deposits in Trench 5 (Contexts 5004a to 5007) are characterised by abundant angular limestone clasts. This led to our interpretation of the Trench 5 sequence as spanning the Holocene and Late Pleistocene (Dinnis & French 2021). Identification of typical Late Pleistocene species (mammoth, horse, deer, reindeer) among the fragmentary fauna collected in 2021 (Dinnis et al. 2022) confirms this interpretation. A single lithic artefact found within these lower deposits in 2021 indicated they contained archaeological (as well as palaeontological) material. The primary aim of the 2022 excavation of Trench 5 was therefore to test these deposits for archaeological material.

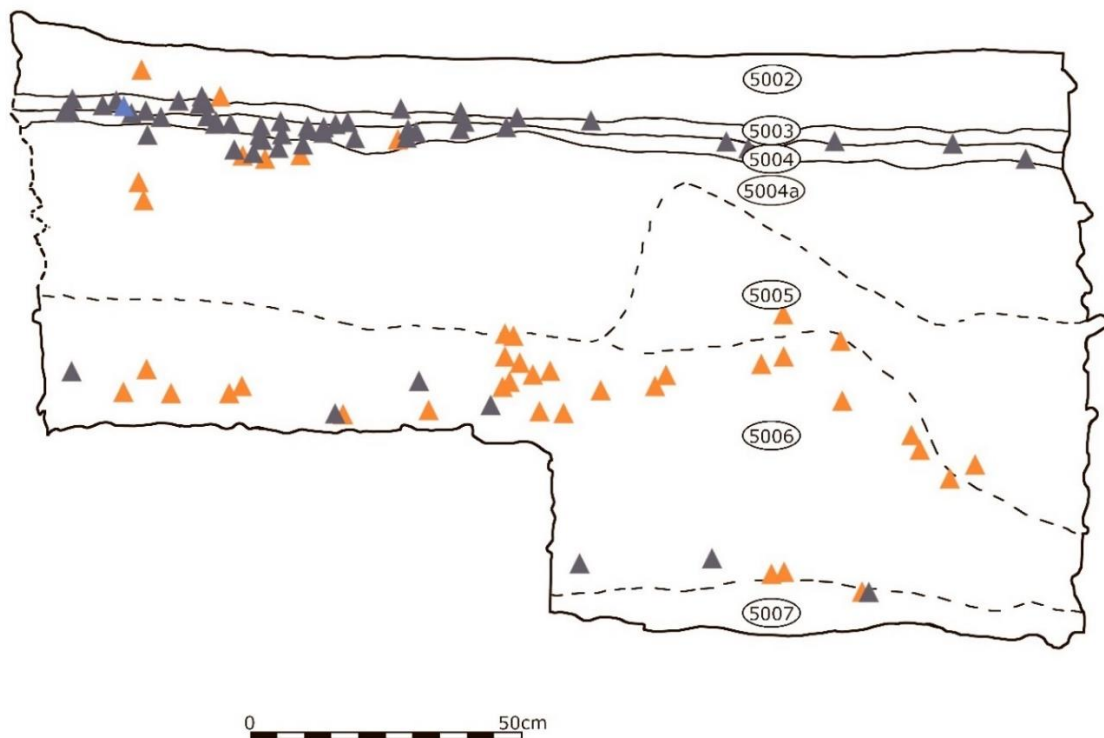
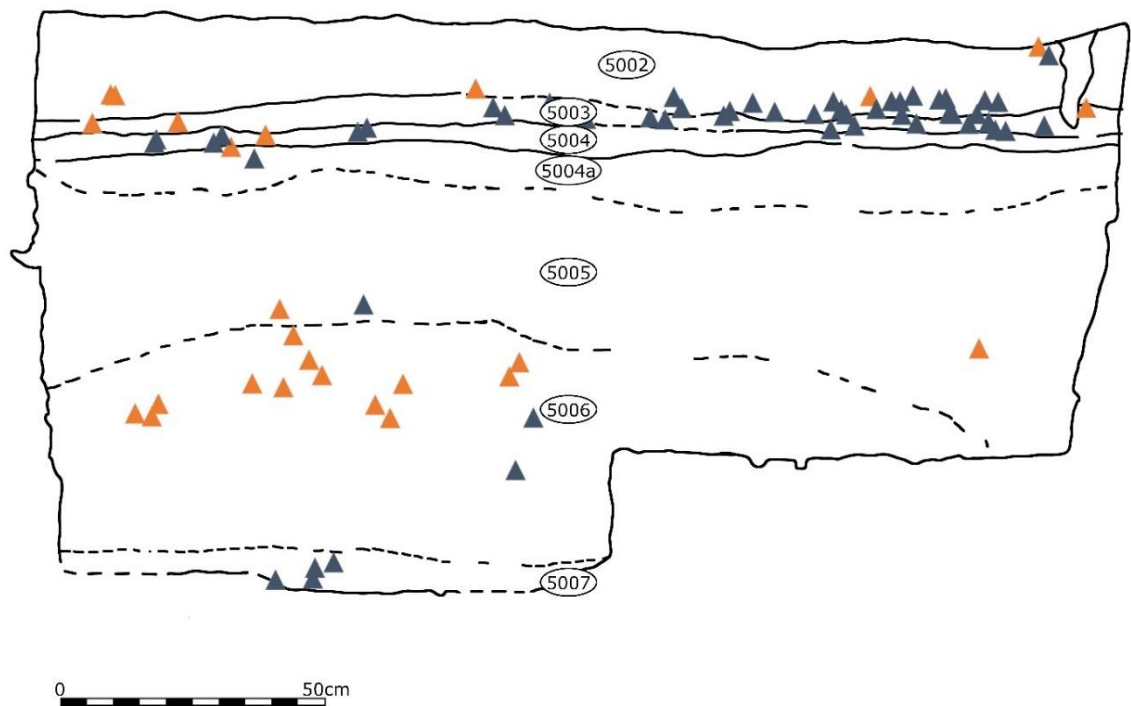


FIGURE 6 - SOUTH-FACING (TOP) AND NORTH FACING (BOTTOM) SECTIONS OF TRENCH 5 AT CLOSE OF EXCAVATION, WITH THE LOCATIONS OF ALL PLOTTED FINDS FROM THE 2021 AND 2022 SEASONS SHOWN. FINDS FROM THE TRENCH'S SOUTHERN PART ARE PLOTTED AGAINST THE NORTH-FACING SECTION, AND THOSE FROM THE NORTHERN PART ON THE SOUTH-FACING SECTION. ORANGE TRIANGLES DENOTE BONE, GREY DENOTE LITHICS AND BLUE DENOTES SHELL. FOR DETAILS OF THE CONTEXTS SEE TABLE 1.

The 2022 excavation of Trench 5 confirmed that the Pleistocene deposits contain archaeological remains, and also demonstrated the organised distribution of archaeological and palaeontological material within them. Although small bone fragments and microfauna were found at low levels elsewhere in the sequence, lithic and faunal finds were restricted to: 1. The upper part of Context 5006, and 2. The lowermost part of 5006 and the top of Context 5007 (Fig. 6). Context 5005, which differs geologically from over- and under-lying deposits, seemingly contained no archaeological artefacts and very little bone¹. Although some caution is needed due to the small area excavated and the possibility that the Pleistocene deposits have been reworked in antiquity, this distribution of finds (Fig. 6) suggests that two archaeological layers may be present within the Pleistocene deposits, and therefore that Trench 5 has at least three stratigraphically discernible early prehistoric layers.

Relative to the uppermost early prehistoric (“Mesolithic”) layer, the lithic assemblages from both accumulations in the Pleistocene deposits are small. Laminar pieces in both, however, suggest true blade production, and therefore an Upper Palaeolithic age. A range of lithic raw materials is represented in both assemblages, consistent with Upper Palaeolithic sites elsewhere in south Wales. Intriguingly, one artefact from the assemblage found at the base of Context 5006 / top of Context 5007 is reminiscent of a series of artefacts from Paviland Cave. These artefacts have long been considered part of Paviland’s large Aurignacian assemblage, currently thought to represent Britain’s earliest *Homo sapiens* occupation (see Appendix 6). It is also notable that the lithic artefacts from the Pleistocene deposits show minimal edge damage. As noted for the early Holocene archaeological layer above, post-depositional movement of the Palaeolithic archaeological material has probably been minimal.

The faunal material in these contexts is highly fragmentary (Appendix 2), with identified pieces limited to three cervid bones in the higher accumulation and a single cervid bone in the lower. We have demonstrated that ZooMS can be used on this material (Dinnis et al. 2022), and more ZooMS analysis is planned. Despite its fragmentation, some pieces show possible or probable human modification, and others are burnt (Appendix 2). This suggests that at least part of the faunal assemblage is anthropogenic, consistent with the associated lithic assemblages.

Overall, our 2022 excavation in Trench 5 demonstrates: a) that the sequence of intact early Holocene and Pleistocene deposits identified in 2021 extends westwards; b) that the early prehistoric archaeological layer with diagnostic Mesolithic pieces directly underlying the calcium carbonate flowstone floor also extends in that direction; c) that deeper Pleistocene deposits contain archaeological (seemingly Upper Palaeolithic) material as well as paleontological material, potentially in two separate layers; and d) that these early prehistoric archaeological layers are seemingly well-stratified. The depth of intact deposits in this area, however, still remains unknown.

¹ Material found in 2021 and previously attributed to Context 5005 is here reattributed to Context 5006 – see Table 1 for details.

TABLE 1 – TRENCH 5 CONTEXTS AND ARCHAEOLOGICAL CONTENTS, BASED ON FINDINGS IN 2021 (=WC21; SEE DINNIS & FRENCH 2021) AND 2022 (=WC22). THESE CONTEXT DESCRIPTIONS SUPERCEDE PREVIOUS DESCRIPTIONS IN DINNIS AND FRENCH (2021) AND DINNIS ET AL. (2022). NOTE THE RETROSPECTIVE CHANGE IN OUR INTERPRETATION OF THE LOWERMOST PART OF CONTEXT 5005 AS EXCAVATED IN 2021 - IT IS NOW THOUGHT THAT THE BONE AND LITHIC MATERIAL RECOVERED FROM THE LOWERMOST PART OF “CONTEXT 5005” ACTUALLY DERIVED FROM THE UPPERMOST PART OF THE STRATIGRAPHICALLY LOWER 5006.

Context	Context description	Contents	Preliminary interpretation/notes
5001	Thin dark brown sandy mud on cave floor.	<u>WC21</u> : Glass (modern); pot sherd (medieval), shell; bone/microfauna; metal. <u>WC22</u> : N/A.	Modern tread containing mixed-age material; equivalent to Contexts 2001 (see Dinnes & French 2021) and 7001.
5001a	Mottled deposit: contains some fine red-brown clay and some patches of darker brown sandy clay with abundant charcoal flecks. Present against cave wall / atop 5002 in eastern end of trench (square 2). Unexcavated.	N/A.	Mixed spoil of various deposits.
5002	Granular calcium carbonate flowstone formation, c.10-25cm. Infrequent large (~6 cm) clasts of stalagmite and angular limestone within matrix. Apparently present across the entire trench with the possible exception of the northwesternmost corner of the trench (i.e. the northwestern corner of Square 5). The formation is flat in Squares 3-6 and part of Square 1; against the cave wall it is present but stands in raised formations. Cut feature [501] visible in eastern facing section.	<u>WC21</u> : Shell (abundant, especially limpet shells); bone/microfauna; worked lithics (rare). WC21 Small Finds 1-5; 81. <u>WC22</u> : Shell (abundant, especially limpet shells); bone/microfauna (including one piece in a condition consistent with the Pleistocene material); charcoal; coal/anthracite; worked lithics (rare). WC22 Small Finds 5-7.	Equivalent of Context 7008/7009 (Trench 7); Possibly equivalent of Context 2002 (Trench 2; see Dinnes & French 2021).
5003	Dark red-brown moist sandy clayey silt (cave earth) underlying 5002, generally c.2-6cm thick. Matrix-supported but with infrequent limestone clasts (<5cm) along with abundant charcoal flecks. Small, cemented lenses present. In Square 6, and especially close to the south-facing section, the sediment is very dark from charcoal/burnt bone staining, and thicker than average (c.5cm).	<u>WC21</u> : Shell (rare); bone/microfauna (fragmentary); burnt bone; abundant worked lithics (some characteristically Mesolithic pieces, including Early Mesolithic-type pieces). WC21 Small Finds 6-64; 82. <u>WC22</u> : Shell (rare); bone/microfauna; burnt bone; charcoal; worked lithics (including some characteristically Mesolithic pieces). Small Finds 9-24.	Early Holocene (Mesolithic) archaeological layer. <u>WC21</u> : In Square 4, two small “cut” pits in the underlying 5004, filled with 5003, were denoted 5003a and 5003b.

Context	Context description	Contents	Preliminary interpretation/notes
5003a	Square 4: Depression in the underlying 5004, ~30 x 25 cm and ~10cm deep, filled with 5003.	<u>WC21</u> : Bone; worked lithics. WC21 Small Finds 65-66; 70-80.	Possible early prehistoric disturbance of the cave floor (bioturbation?).
5003b	Square 4: Depression in the underlying 5004, ~10 x 15 cm and ~7.5 cm deep, filled with 5003.	<u>WC21</u> : Burnt bone; worked lithics; fauna remains. WC21 Small Finds 67-69.	Possible early prehistoric disturbance of the cave floor (bioturbation?).
5004	Light orange-red sandy clay; matrix contains numerous angular limestone clasts (~5 cm); less moist, and stiffer, than the overlying 5003. c.3-10 cm thick, although overall slightly thinner in Square 6 (c.3-5cm). Clay at the top of the context in the northern part of Square 6 appears heat-altered.	<u>WC21</u> : Bone/microfauna; burnt bone (two pieces); shell; worked lithics (including one Late Mesolithic-type microlith). WC21 Small Finds 83-90. <u>WC22</u> : Bone/microfauna; shell; worked lithics (including one characteristically Mesolithic piece and one characteristically Late Glacial/Mesolithic piece); charcoal. WC22 Small Finds 26-29.	Archaeological material probably same as in overlying 5003.
5004a	Light yellowish-red-brown clayey sandy silt. Matrix is slightly darker than overlying 5004, and mainly differentiated from 5004 by a greater abundance of angular limestone clasts (5-10cm) and a more clast-supported matrix. Variable thickness (see Fig. 5), up to 15cm thick in the northern part of the trench and up to 35cm thick in the southern part.	<u>WC21</u> : Bone/microfauna; burnt bone (two pieces); shell (rare); worked lithics (rare). WC21 Small Finds 91-92, 97. <u>WC22</u> : Bone/microfauna; shell (rare); worked lithics (including one characteristically Mesolithic piece); charcoal.	(Late) Pleistocene deposit. Worked lithics pieces found only in the uppermost part of the context. Some or all are likely to be intrusive from the overlying contexts.
5005	Tightly packed scree deposit of angular limestone clasts. Red-brown clay (stiffer and darker than 5004a) within a clast-supported matrix. Some voids evident between clasts (water percolation?).	WC21: Rare microfauna in top part of context (spits 1, 2 & 3). WC22: Rare microfauna/small bone fragments throughout sequence.	(Late) Pleistocene deposit. NOTE: Bone material and a lithic artefact excavated from Square 4 in 2021 were recorded as coming from the lowermost excavated part of Context 5005 (spits 6, 7; see Dinnis & French 2021, Dinnis et al. 2022). 2022 exposure deposits in Square 6 and re-examination of the trench walls made it apparent that these finds in fact belonged to a lower Context (5006). This context is subtly different from 5005 (see context descriptions here), although it should be noted that in places it was hard to distinguish a clear boundary between the two. Finds attributed to the lowermost excavated part of Context 5005 in 2021 (Dinnis & French 2021; Dinnis et al. 2022) are therefore here retrospectively attributed to the uppermost part of Context 5006. Context absent from northernmost part of Square 4 (see Fig. 5).

Context	Context description	Contents	Preliminary interpretation/notes
5006	Similar matrix to 5004a, and therefore slightly lighter/more yellowish in colour, and more friable and less clayey, than the overlying 5005. Abundant angular limestone clasts as higher in the sequence, but additional subangular limestone clasts and common broken crystalline stalagmite pieces. Incompletely excavated in Square 4.	WC21: Bone/microfauna; probable cutmarked bone; struck flake fragment. WC21 Small Finds 98, 103, 105-109. (Note this material was previously attributed to Context 5005 (Dinnis & French 2021; Dinnis et al. 2022). Here it is retrospectively assigned to the upper part of 5006 – see note for Context 5005. WC22: Bone/microfauna (sometimes abundant); lithic artefacts; burnt bone; charcoal; shell (rare fragments). WC22 Small Finds 42-43, 49, 55-57, 66-71, 76-80, 84-85, 88-90, 11-119, 122-124.	(Late) Pleistocene deposit. Microfauna was found in variable amounts down the sequence, but the larger finds were concentrated in two layers: the first occupying the upper part of the context (spits 1-7 of Square 6, and especially spits 3-7), and second in the context's basal part, immediately overlying the lower Context 5007 (spit 12). See Fig 6.
5007	Matrix very similar to 5006 and 5004a – light yellowish-brown-red crumbly clay silt – but marked from the overlying 5006 by subtle textural and colour differences: - the base of 5006 was marked by looser deposits than the majority of 5006; - at the boundary were some small pockets of small clasts not seen in the overlying 5006; - the matrix of 5007 was slightly redder in hue, especially in the southwestern part of the square; - in addition to angular limestone clasts were small (c.3cm), rounded clasts. Note: only a limited amount (c.5cm) of 5007 was excavated from Square 6 only.	WC21: N/A WC22: Bone/microfauna (abundant); lithic artefacts. WC22 Small Finds 131-135.	(Late) Pleistocene deposit.

TRENCH 7

During the 2021 field season, Square 3 of Trench 7 (see Fig. 3) was excavated to a maximum depth of c.10cm. Deposits excavated were mostly mixed, and were interpreted as spoil from previous excavation (Dinnis & French 2021). Underlying these mixed deposits was a more coherent layer that was reached but unexcavated in 2021. This was provisionally interpreted as an intact historic-age cave floor surface (Dinnis & French 2021).

In 2022, all four squares of Trench 7 were subject to excavation, but only the surface mixed spoil deposits were excavated in Squares 1 and 2. Almost all work was therefore carried out in Squares 3 and 4. The 2m x 1m area of Squares 3 and 4 was excavated to a maximum depth of c.35cm (Fig. 7).

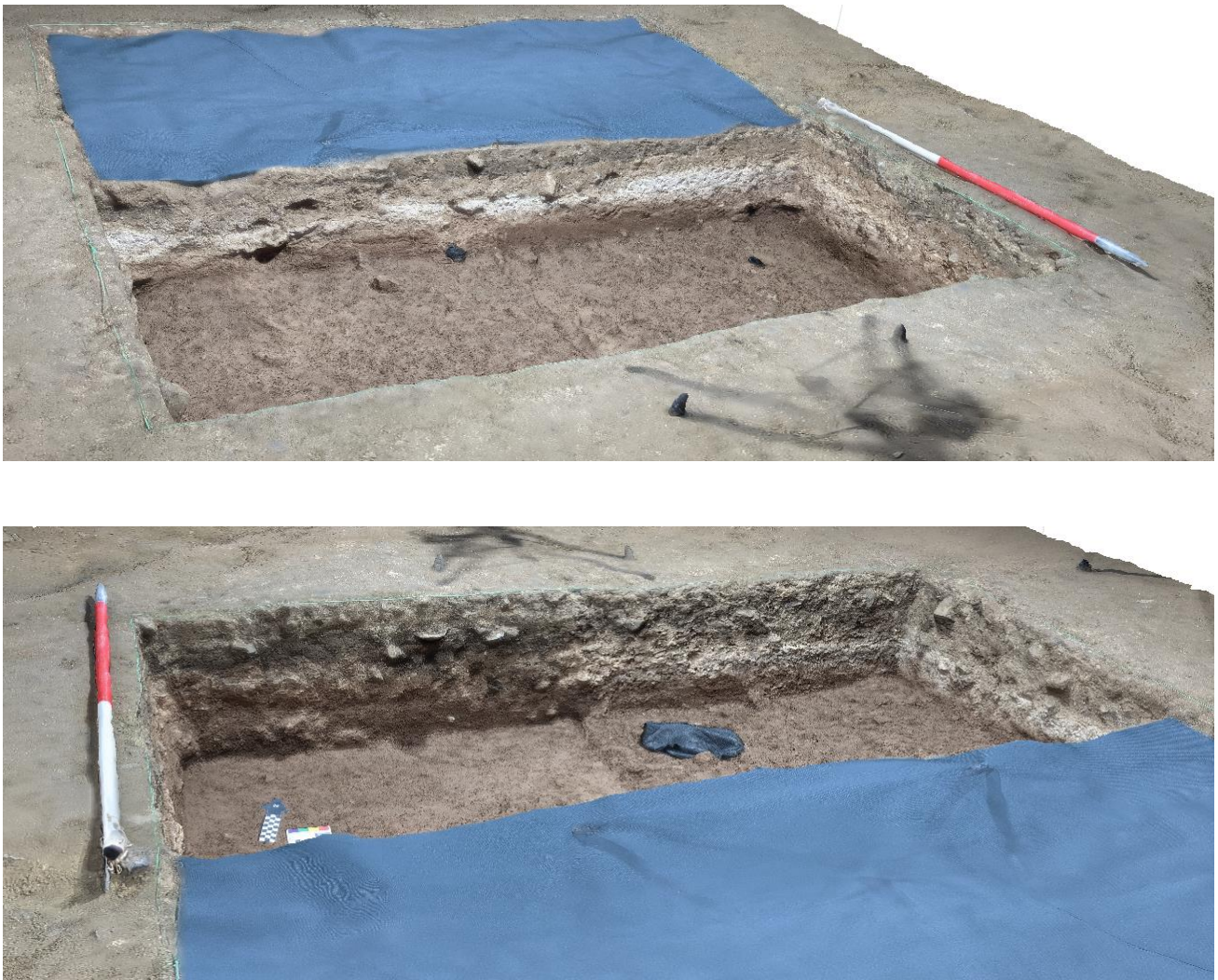


FIGURE 7 - TOP: SCREENGRABS OF A 3D MODEL OF SQUARES 3 AND 4 OF TRENCH 7 AT CLOSE OF EXCAVATION, SHOWING NORTH-FACING SECTION (TOP) AND SOUTH-FACING SECTION (BOTTOM).

The 2022 excavations confirmed that a shallow volume of deposits underlying the mixed surface material was indeed intact and contained evidence of historic activity. Further excavation demonstrated an underlying sequence that is geologically (and archaeologically) equivalent to that in Trench 5. A description of Trench 7's archaeological sequence can be found in Table 2 (below). Trench 7 sections are shown in Figure 8 (overleaf).

Although not clearly defined in the northern part of Square 4, the overall stratigraphy of Squares 3 and 4 can be summarised, from top to bottom, as:

- Shallow, spoil deposits containing mixed-age material (Contexts 7001-7004)
- A thin historic-age layer (Contexts 7005 and 7006) containing bone (including human remains), abundant shell, Roman-age coins and pottery, and abundant charcoal; this layer seems to be associated with cut features sunk into the cave floor (701-704; filled respectively with Contexts 7007, 7010, 7011 and 7013)
- A layer comparable to the calcium carbonate "flowstone" floor in Trench 5 (Contexts 7008 and 7009)
- A dark red-brown clayey sandy silt (Context 7012), containing an early prehistoric archaeological layer that includes diagnostic Mesolithic lithic tool types
- Light yellowish brown sandy silt, less clayey than the lower part of the overlying 7012, and with abundant angular limestone clasts (Context 7014), interpreted here as the uppermost part of the Pleistocene deposits

Excavation of the uppermost deposits confirmed observations made in 2021. The cave floor is made up of mixed spoil deposits (Contexts 7001-7004). Contexts 7002 and 7004 make up the majority of the uppermost unit. These contains clods of different sediment types and mixed-age archaeological artefacts (early prehistoric, Roman, post-medieval). The clay pipe fragments found in Context 7004 are all likely to be 19th century, and a fragment of glass from Context 7003/7004 is from a 19th century wine bottle (Appendix 7). These finds point to 7004 (at least) being a typical antiquarian spoil deposit.

In 2021, potentially intact deposits (=7005 and 7006) were identified underneath the spoil (Dinnis & French 2021). In 2022 these contexts were excavated in Squares 3 and 4. They constitute a relatively homogenous and usually-thin clay layer, with the difference between the two contexts mainly related to the underlying 7006 being more charcoal-laden, and therefore darker in colour. The thickness of the clay layer of Contexts 7005 and 7006 was variable (1-15cm) across the excavated area.

Finds within these contexts are consistent with a historic age: a Roman coin, a Roman-age pot sherd, shell, a few struck flint artefacts, coal/anthracite and bone (including human bone and cutmarked animal bone). The few flint flakes differ from most of the other lithic material from the cave, in that they are unpatinated or only very lightly patinated. This is again consistent with the contexts being an intact historic-age layer.

Three human bones were identified in Context 7005 in Square 3 (Appendix 3): a patella (SF001) and two metacarpals (SF002 and SF003). The two metacarpals refit, and all three bones could be from the same individual: an adult, probably male. A further metacarpal – from Context 5002 in Square 1 – is consistent in its condition and size with SF002 and SF003. Despite it being recorded as deriving from a different context, this bone may also belong to the same individual. With this in mind, it is notable that the two Roman coins found were also recovered from these two contexts: 7002 in Square 1, and 7005 in Square 4. As noted in Table 2, the absence of Context 7003 in most of Square 1 means that Context 7002 in this square is equivalent to 7002 *and* 7004 in other parts of the trench. Furthermore, it was noted during excavation that the spoil deposits in the western part of Square 1 became more coherent and clayey as excavation progressed (and thus more like Context 7005). Given this observation and the similarity of the human bones and Roman coins found in Context 7005 (Squares 3 and 4) and in Context 7002 in Square 1, it seems probable that the boundary between these contexts in Square 1 was unrecognised during excavation. It is therefore likely that the human remains and Roman coins in fact all derive from the deposit, i.e. Context 7005.

The specific human bones found, and their condition, are worthy of some further comment. First, the surface of these bones is an unusual colour relative to other bones from the cave, in that they have an orange-red hue. Secondly, one possible reason for the seemingly peculiar composition of the human bone assemblage (hand

bones and a kneecap), in combination with their good condition and the presence of articulating elements, is that these bones were discarded after associated larger bones had been selected out. If so, the bones may derive from a deposit (burial?) older than the one from which they were recovered. Radiocarbon dating will hopefully establish the age of the human remains.

The discovery of the coins is also intriguing, given comments previous made by Cobb (1883: 197), which, while somewhat ambiguous, can be read that Roman coins were found previously in the cave.

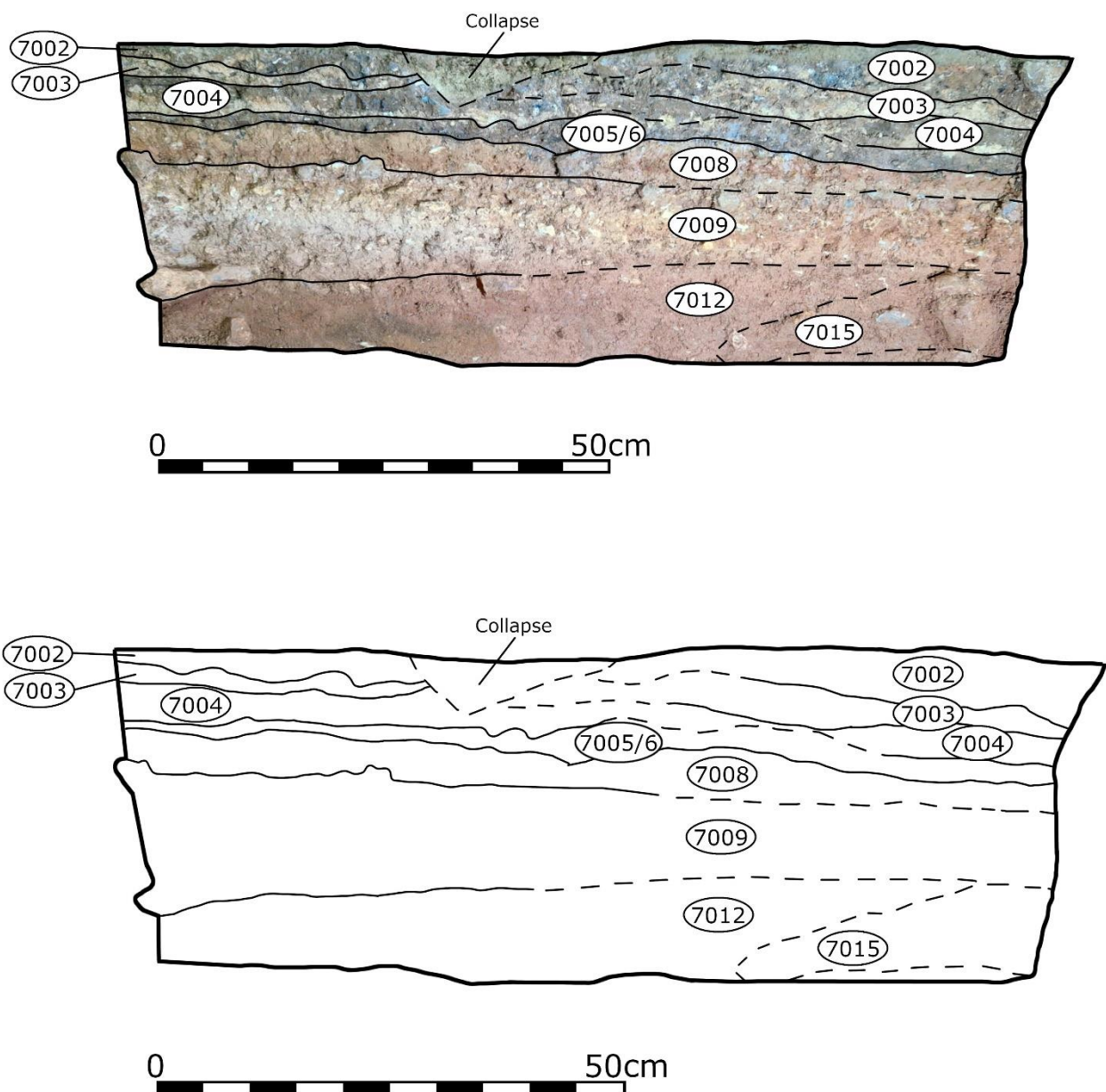


FIGURE 8A: EAST-FACING SECTION OF SQUARE 4 AT CLOSE OF EXCAVATION, SHOWING CONTEXTS AND SAMPLE LOCATIONS.

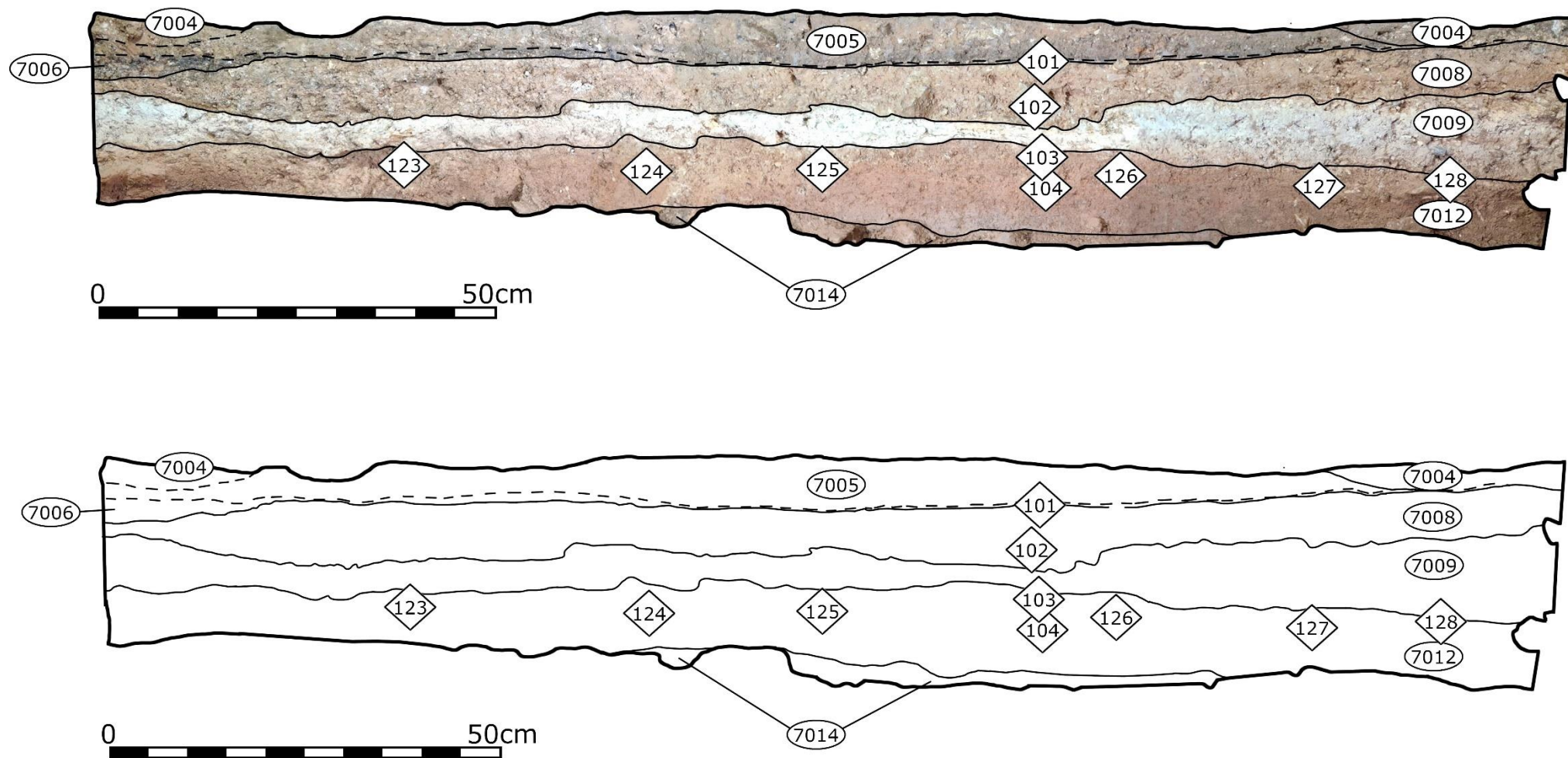


FIGURE 8B - NORTH-FACING SECTION OF TRENCH 7 (SQUARES 3 AND 4) AT CLOSE OF EXCAVATION, SHOWING CONTEXTS AND SAMPLE LOCATIONS. NOTE: THE SECTION IS SHOWN FOLLOWING THE REMOVAL OF MOST OF CONTEXTS 7001-7004 FROM SQUARES 1 AND 2.

Four cut features ([701]-[704]; see Fig. 9) were seemingly associated with the layer represented by Contexts 7005 and 7006:

- **[701]**: Square 3, (northwestern corner); broadly circular, maximum diameter c.20cm; cuts through Contexts 7008, 7009 and 7012, and into Context 7014; filled with Context 7007, including a pig/boar jaw (SFO04) and a fragment of red deer antler bearing chop marks (SFO08; Fig. 10, overleaf).
- **[702]**: Square 3, (southwestern corner); circular, maximum diameter c.6cm; cuts through Contexts 7008, 7009 and 7012, and into uppermost part of Context 7014; filled with Context 7010.
- **[703]**: Square 4, (southwestern corner); circular, maximum diameter c.7cm; cuts through Contexts 7008, 7009 and 7012, and into uppermost part of Context 7014; filled with Context 7011.
- **[704]**: Square 4, (northeastern corner); circular, maximum diameter c.20cm; cuts through Contexts 7008, 7009 and into 7012; filled with Context 7013.

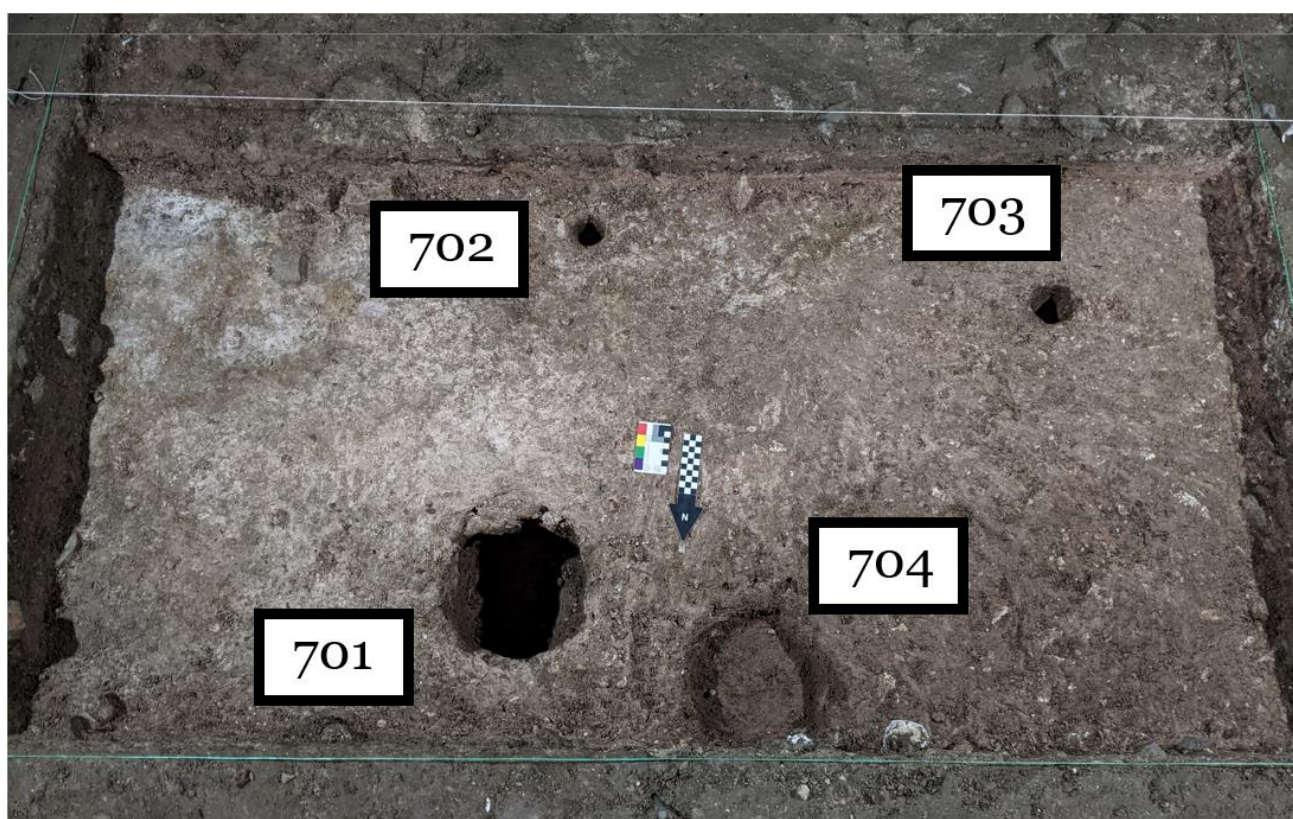


FIGURE 9 - SURFACE OF CONTEXT 7009 IN SQUARES 3 AND 4 OF TRENCH 7, SHOWING CUT FEATURES [701]-[704] FOLLOWING REMOVAL OF THEIR FILLS. NOTE THE VARIABILITY OF COLOUR IN 7009 ACROSS THE TRENCH, RELATED TO ITS VARIABLE LEVEL OF CONCRETION.

[701] – [703] were generally well defined. They seem to be associated with the historic-age clay layer of Contexts 7005 and 7006 and clearly cut into the stratigraphically lower layer represented by Contexts 7008 and 7009 (see below). Their fills (Contexts 7007, 7010 and 7011) were comparable (see Table 2). [704] was shallower and less clearly defined, and contributed to a poorly defined overall stratigraphy in the northern part of Square 4. The fill of [704] (Context 7013) also differed from those of the three other cuts (Table 2).



FIGURE 10 - ANTLER BASE (SF008) BEARING CHOPMARKS, FOUND IN THE FILL OF [701].

A fragment of Roman pottery (SF136) recovered from the top of Context 7009 in the south-facing section of Square 4 stratigraphically underlies the cut of [704]. It therefore provides a maximum age of c.2nd Century AD for [704], and plausibly therefore for all the cut features. The archaeological contents of the seemingly related clay layer (Contexts 7005 and 7006) may argue for a Roman age (see Table 2), but a later age cannot be ruled out given a possible medieval pot fragment in the fill of [701] (=Context 7007; Table 2). Future radiocarbon dating work will seek to clarify the age of this layer and of the seemingly associated cuts.

Underling Contexts 7005 and 7006 was a 10-20cm layer (=Contexts 7008 and 7009) interpreted as the equivalent of the calcium carbonate “flowstone” floor represented in Trench 5 (i.e. Context 5002) (Table 2). Context 7009 represented a more cemented version of 7008, although the layer was variably degraded or well-cemented across the excavated squares. The layer was overall notably more cemented in Square 3 than in Square 4. The northern part of Square 4 was especially poorly defined and it was difficult to distinguish here between 7008 and 7009. Despite this, the presence of this layer – interpreted here as the stratigraphic equivalent of Context 5002 in Trench 5 – demonstrates that deposits in this area of the cave are largely intact. Material in this layer appears to be a mixture of early Holocene and more recent material (Table 2).

Underneath this was a largely clast-free dark red-brown silt (Context 7012) (Fig. 11), containing an early prehistoric archaeological layer. Context 7012 was generally consistent across Squares 3 and 4, although it became increasingly clayey at greater depth². The layer’s lithic assemblage is a blade/bladelet technology with several characteristically Mesolithic pieces, including an (Early)-Mesolithic-type microlith (SF033; see Appendix 5). The faunal assemblage includes fox and pig/boar remains, which would fit well in a Mesolithic assemblage, and contrasts with overlying contexts containing sheep/goat and cattle (Appendix 1). Also notable

² This was noted during excavation, and samples etc. were collected from both its upper and lower part.

are bones of medium-sized birds (as well as in the immediately underlying Context 7014), which, given their context, may well be anthropogenic. The shell assemblage of mussel shells in Context 7012 similarly contrasts with the marine shell signature of later layers.



FIGURE 11 - SCREENGRAB OF A 3D MODEL OF TRENCH 7 DURING EXCAVATION, SHOWING THE SURFACE OF THE CALCIUM CARBONATE “FLOWSTONE” LAYER (CONTEXT 7009) IN SQUARE 3 AND THE DARKER, UNDERLYING “CAVE EARTH” (CONTEXT 7012) IN SQUARE 4.

Context 7012 is clearly the equivalent of 5003/5004 in Trench 5. Both contained comparable archaeological and faunal assemblages, had a similar stratigraphic position (i.e. beneath the calcium carbonate “flowstone” floor) and were similar in their geological make-up (i.e. clayey silts). Some differences between the two trenches are observable, however. The lithic assemblage in Trench 7 is relatively less rich, evidence for burning is far less in Trench 7, and the associated mussel shell assemblage in Trench 7 was not found in Trench 5. Together with the freshness of both the faunal and lithic material (Appendices 1 and 5), these differences argue for good spatial organisation of the cave’s uppermost early prehistoric (“Mesolithic”) layer.

Context 7012 overlaid a light yellowish brown sandy silt, less clayey than the lower part of the overlying 7012, and with abundant angular limestone clasts (=Context 7014). The surface of Context 7014 dipped gently northwards/northwestwards, towards the cave mouth. The dip of surface was more pronounced (and aligned more towards the west) in the northwestern corner of Square 4. In this area two flint artefacts were found on their side: SF117 (base of Context 7012) and SF120 (Context 7015). As very limited amount of 7014 was excavated from the southwestern part of Square 4 (see Fig. 8, north-facing section). 7014 is here interpreted as the stratigraphic equivalent of 5004a in Trench 5, and therefore as the uppermost part of the Pleistocene sediments.

To summarise, our 2022 excavation in Trench 7 demonstrates: a) that historic-age archaeological material is present beneath the layer of spoil from previous work in the cave that can be found in this part of the cave; b) the presence of several cut features that seemingly correspond to this historic-age level; c) that the calcium carbonate “flowstone” formation, found in Trench 5 to the east, extends into the area of Trench 7; d) that a sequence of intact early Holocene and Pleistocene deposits comparable to that in Trench 5 is also present in the area of Trench 7; e) that the well-stratified early prehistoric archaeological layer with diagnostic Mesolithic pieces and associated faunal remains found in Trench 5 extends into the area of Trench 7. Although the presence of Pleistocene deposits was demonstrated, these were not meaningfully tested for archaeological and palaeontological remains, and their depth in this area remains unknown.

TABLE 2 – TRENCH 7 CONTEXTS AND ARCHAEOLOGICAL CONTENTS, BASED ON FINDINGS IN 2021 (=WC21; SEE DINNIS & FRENCH 2021) AND 2022 (=WC22). THESE CONTEXT DESCRIPTIONS SUPERCEDE PREVIOUS DESCRIPTIONS IN DINNIS AND FRENCH (2021). SEE ALSO FIGURE 8.

Context	Context description	Contents	Preliminary interpretation / notes
7001	Dark brown sandy mud on cave floor, 1-3cm thick.	<u>WC21</u> : Glass (modern); pot sherd (post-medieval), shell; bone/microfauna; burnt bone; worked flint. <u>WC22</u> : Bone; coal/anthracite; glass (modern); shell; lithic blade fragment.	Modern tread containing mixed-age material; equivalent to Contexts 2001 (see Dinis & French 2021) and 5001. Note: context was incompletely excavated across Squares 1, 2 and 4 in 2021 (see Dinis & French 2021)
7002	Compacted, variable deposit, usually c.2-5cm thick, comprised of pockets of red/pink/orange clay and dark-brown mud. Note: across most of the excavated area, 7002 was found in convolutions of the underlying 7003. However, 7003 was not always present; therefore sometimes (especially in Square 1) 7002 and the similar 7004 were not separable.	<u>WC21</u> : Shell; metal; bone; burnt bone; pot sherd (Roman). WC21 Small Finds 99-102, 104, 110-117. <u>WC22</u> : Bone; metal; shell; ceramics (Roman, post-medieval); glass (modern, ?Roman); worked flint; coal/anthracite. Roman coin found in Square 1 (but see comments re: Context 7005 below, and in main text of report).	Historic spoil containing mixed-age sediments and material.
7003	Thin layer of calcium carbonate deposit of variable thickness (from a few mm to 2 cm thick) separating 7002 and 7004. Inconsistently present; absent in much of Square 1.	<u>WC21</u> : Shell; bone; metal; clay pipe stem fragment. WC21 Small Find 118. <u>WC22</u> : Shell, bone; worked flint.	
7004	Mixed, discontinuous spoil of varying thickness (1-8cm), primarily a dark brown earth with clods of red/pink/orange clay and containing some angular limestone clasts (<5cm) and charcoal flecks. Note: across most of the excavated area, 7002 was found in convolutions of the underlying 7003. However, 7003 was not always present; therefore sometimes (especially in Square 1) 7002 and the similar 7004 were not separable.	<u>WC21</u> : Bone/microfauna; burnt bone; metal; worked lithics (including an abruptly blunted point fragment [SF122] of probable Late Upper Palaeolithic or Early Mesolithic age); clay pipe stem fragments; pot sherds (including Roman and 17 th /18 th Century); shell (abundant oyster shell). WC21 Small Finds 119-127. <u>WC22</u> : Bone/microfauna; clay pipe fragments; metal; coal/anthracite; shell (especially oyster shell); glass (19 th century).	Spoil deposit, probably from 19 th Century antiquarian archaeological excavation(s).

Context	Context description	Contents	Preliminary interpretation / notes
7005	Fine clay, light yellowish red-brown, but variable in colour across the two excavated squares, and notably darker in some places. In some areas more heterogenous, with patches of more clayey or less clayey sediment and some clusters of limestone clasts. Underlying 7004 and overlying 7006. Excavated only in Squares 3 and 4.	<u>WC22</u> : Bone (including human remains), shell, coal/anthracite, charcoal, pot sherd (Roman); worked flint; coin (Roman). WC22 Small Finds 1-3.	Probable intact, historic-age surface, but with some evidence for possible disturbance
7006	Brown clay, overall darker than 7005, containing abundant charcoal flecks. In some areas not separable from 7005. Excavated in Squares 3 and 4.	<u>WC22</u> : Bone (including cutmarked); shell; charcoal; coal/anthracite; worked lithics.	Probable intact, historic-age surface
7007	Fill of Cut [701] (Square 3). Somewhat heterogenous mix: overall a dark brown sandy clayey silt (the colour related to charcoal content), with some small mineral inclusions comparable to those in 7008.	<u>WC22</u> : Bone/antler/microfauna; charcoal; shell (notably oyster); ceramics (Roman, ?Medieval). WC22 Small finds 4, 8.	
7010	Fill of Cut [702] (Square 3). As 7007.	<u>WC22</u> : Bone; shell; charcoal.	
7011	Fill of Cut [703] (Square 4). As 7007.	<u>WC22</u> : Bone; shell (oyster); charcoal; metal (lead). WC22 Small Find 25.	
7013	Fill of Cut [704] (Square 4). As 7007, lighter in colour (mid-brown), related to fewer charcoal inclusions and more abundant calcite fragments	<u>WC22</u> : Bone/microfauna; shell; charcoal; worked flint (small spalls).	
7008	Light reddish-brown sandy clay matrix; abundant clasts, predominantly <1cm calcite pieces, alongside rare angular limestone pieces. Similar to the upper part of 5002 (in Trench 5). Excavated only in Squares 3 and 4.	<u>WC22</u> : Bone/microfauna; charcoal; anthracite/coal; shell; worked lithics (few, but including characteristically Mesolithic denticulated piece).	Unconcreted version of calcium carbonate formation equivalent to 5002 in Trench 5. Seemingly contains sparse, mixed-age archaeological material (early & late Holocene)
7009	Granular calcium carbonate flowstone formation, with infrequent stalagmite/angular limestone clasts. White/mushroom-coloured in areas where it was well consolidated (notably in Square 3). Iron staining within evident in southern part of Square 3. Variable levels of concretion across the excavated squares, and in northern part of Square 4 difficult to discern from the overlying 7008. Excavated only in Squares 3 and 4.	<u>WC22</u> : Bone/microfauna; shells (notably mussel); worked lithics (few). WC22 Small Finds 30-32, plus Small Find 58 from interface between 7009 & 7012.	Calcium carbonate formation equivalent to 5002 in Trench 5.

Context	Context description	Contents	Preliminary interpretation / notes
7012	Dark red-brown clayey sandy silt (cave earth), very few clasts. Some pockets cemented. More clayey towards base. Excavated only in Squares 3 and 4. Completely excavated in Square 3; excavated across Square 4 except the square's northwestern part.	<u>WC22</u>: Bone/microfauna; burnt bone; charcoal; worked lithics (including diagnostic Mesolithic types); shells (notably mussel). WC22 Small Finds 33-36, 39-41, 44-48, 50-54, 59-65, 72-75, 81-83, 86-87, 91-95 & 103-117. SF117 (flint flake) found on its side in northwestern part of Square 4.	Equivalent to Context 5003/5004 in Trench 5.
7015	Cluster of large limestone pieces (c.10cm) within 7012 in northwestern corner of Square 4 (see Fig. 8). The associated matrix was essentially 7012, but slightly darker in colour.	<u>WC22</u>: Microfauna (abundant); worked flints. WC22 Small Finds 120 & 121. SF120 (flint flake fragment) found on its side.	
7014	Light yellowish brown crumbly sandy silt. Less clayey than the lower part of the overlying 7012. Abundant angular limestone clasts (5-10cm). Surface of deposit dips northwestwards, towards the centre of the cave. Limited excavation of context, restricted to Square 4.	<u>WC22</u>: Bone; worked flints. WC22 Small Finds 125-130.	(Late) Pleistocene deposit. Equivalent to Context 5004a.

INTERIM CONCLUSIONS AND THE IMPORTANCE OF WOGAN CAVERN

In 2021, intact early Holocene and Pleistocene deposits containing archaeological/palaeontological material were identified close to Wogan Cavern's eastern wall. In 2022, as well as identifying historic-age archaeological material, excavation closer to the centre of the cave identified the same intact Holocene and Pleistocene deposits, along with a continuation of the higher early prehistoric ("Mesolithic") archaeological layer. Furthermore, deeper testing of the Pleistocene sediments close to the eastern wall confirmed that the Pleistocene deposits contain Palaeolithic archaeological material.

Our 2022 excavations show that Wogan Cavern is an archaeological site of national importance. Unlike most of Britain's other Mesolithic-Palaeolithic caves it offers a quality archaeological record of our early prehistoric past that can be examined using modern methods. In addition to the site's near-horizontal stratigraphy and the stratigraphic separation of its archaeological horizons, our excavations hint that archaeological material within the cave has not been the subject of significant post-depositional disturbance. Furthermore, excavation of four square metres of the "Mesolithic" layer indicates spatial organisation of evidence for different activities.

It is clear that fundamental and as yet unresolved questions about Wales's Mesolithic and Palaeolithic past cannot be satisfactorily addressed using historic collections from problematic sites with poor, if any, ancillary information. This is the reason why the identification and testing of new sites is crucial (Walker 2022). Even though our understanding of Wogan Cavern is based on two limited field seasons, it is already apparent that the cave is uniquely placed to address some of these key questions.

PLANS FOR FIELDWORK, 2023 AND 2024

The test phase of fieldwork will continue in 2023 and 2024. Having demonstrated the presence of intact, archaeological deposits in the areas of Trench 5 and Trench 7, the coming work will focus on accessing deeper deposits and testing a hitherto untested area against the cave's western wall. Excavation will therefore continue in Trench 5, and an application for a new trench close to the cave's western wall directly opposite Trench 5 (= "Trench 9") has been submitted. In addition, an electrical resistivity tomography survey is planned, which we hope will reveal broad geological patterns across the cave and thus improve our understanding of the structure of the site. Funding for the work through 2023 and 2024 has already been secured.

DISSEMINATION OF 2022 WORK

RD has already given several talks about the 2021 and 2022 work. A short note to mark the 2022 excavation will be submitted for publication to *Archaeology in Wales*. A detailed paper of the 2022 work will be prepared for publication in *Archaeologia Cambrensis*. We also plan to produce an article presenting the first radiocarbon dating results from the site for *Antiquity*.

ACKNOWLEDGEMENTS

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APPENDICES

APPENDIX 1: FAUNA FROM THE HOLOCENE DEPOSITS (EDOUARD MASSON-MACLEAN)

This report presents the results of an assessment of the faunal remains from Trench 7 (all contexts) and higher contexts in Trench 5 (Contexts 5002, 5003, 5004 & 5004a³) from the 2022 Wogan Cavern excavations. A small faunal assemblage of c. 150 bone fragments (excluding microfaunal remains) was recovered by hand and sieving from these contexts.

Materials and Methods

A small faunal assemblage of c. 150 bone fragments (excluding microfaunal remains) was recovered by hand and sieving from Wogan Cavern during the 2022 field season. Trench 7 produced the majority of the faunal remains (over 90%) with almost half of the bones coming from Contexts 7012 and 7002. The assemblage was heavily fragmented with most specimens smaller than 5cm. The condition of the bones was good to excellent with no obvious evidence of subaerial weathering or ex-foliation. It is estimated that less than 10% of fragments were burnt, with both calcined and charred fragments present. Though not quantified, cutmarks were observed on at least one element (MM2 rib from Trench 7, Context 7006, SQ.4) and one specimen may have been chewed by a small carnivore such as fox, cat or dog pup (Trench 5, Context 5002, SQ.6). Overall, due its small size, the assemblage is of low interpretative value in terms of inferring human economic activities such as husbandry practises or subsistence strategies. However, the excavations produced over 40 bird bones and combined with the larger amount of microfaunal remains, the assemblage may have greater value in terms of paleoecological considerations.

The bags labelled “microfauna” were not assessed but a quick visual assessment determined the presence of micromammal remains such as voles and small bird remains, most likely all passerines (singing birds).

Identifications were made using the comparative reference collection at the University of Aberdeen. Specimens were identified to species using Linnaean binomial names where possible or to the nearest

³ RD note: although Contexts 5004a and 7014 are interpreted as the uppermost part of the Pleistocene deposits, they have here been included in the analysis of Holocene faunal material. For 7014, this is because only a very small amount of the deposit was excavated, and material within it is possibly or probably related to the overlying (Holocene) Context 7012. Although the 2022 work comprised relatively more excavation of 5004a, the bone material found in its upper part similarly possibly or probably relates to the overlying (Holocene) contexts (see report main body).

taxonomic level using zoological nomenclature. Fragments that could not be identified were assigned to broader size categories: 'large mammal' (cattle, horse, large deer size), 'medium-sized mammal' (all mammals sized larger than a badger up to the size of pig or small deer), 'small mammals' (larger than squirrel and smaller than dog) and 'micro-fauna' (Dobney, Jaques, and Johnstone 1999; Cussans et al. 2013). Bone fragments were quantified using the Number of Identifiable Specimens (NISP) (O'Connor 2000).

Long bone fusion and tooth wear were noted at context level but the sample size was too small to build age profiles or make interpretations regarding animal use.

Results

Mammalian bone fragments and bird remains predominated the faunal assemblage, excluding microfaunal remains. Among the identified mammal remains, pig/wild boar and cattle/auroch predominated the assemblage. Other taxa identified were sheep/goat, fox, red deer, and hare (Table 1, below). It is most likely that the bulk of the remains comes from domesticated animals. Among mammal remains, isolated teeth, ribs, vertebrae and feet bones predominated, with an apparent lack of skull and long bone fragments. Considering the small size of the assemblage and its fragmentary nature, it is not possible at this stage to determine if body part representation is due to natural taphonomic agents or a result of human behaviour and cultural practices.

Over half of the pig remains were isolated teeth, some of which exhibited moderate to heavy wear indicating mature adult individuals. Younger individuals (juvenile and immature) were also present in the assemblage based on upper premolars with no or light wear, and a canine. An unfused distal femur is indicative of an individual under 3.5 years (Silver 1969). A cut mark was also observed on the same element, indicative of human consumption. A lower first premolar was relatively large and may be from wild boar (Trench 7, Context 7012, SQ.4, SF044).

Cattle/auroch were represented mainly by feet bones, though long bone, pelvis and isolated teeth were also identified. A large premolar from the antiquarian spoil (Trench 7, Context 7002, SQ.1) could perhaps come from auroch though modern improved breed cannot be ruled out. A small scaphoid bone (Trench 7, Context 7006, SQ.3) from the possible medieval layers has a cut mark and could potentially come from an unimproved breed (early medieval?). There was no evidence of immature or juvenile cattle in the assemblage.

Sheep/goat were represented by isolated teeth, mandibular fragments, a pelvis and a phalange. Isolated M1/M2 and M3 with moderate wear indicate an adult individual. The phalange (Trench 7, Context 7004, SQ.4), from antiquarian spoil, is small comparative to the reference collection material and a male Soay sheep specimen and could come from a small primitive or unimproved breed.

Fox remains consisted of feet bones, a lower canine and a radius. Of interest was the fact that most fox specimens came from the early prehistoric (= “Mesolithic”) layer (Context 7012). Foxes are frequently exploited by prehistoric people as a furbearing animal and source of meat, but their feeding behaviour can also result in the accumulation of small prey such as voles (Monchot and Gendron 2011).

Bird remains comprised both small passerine species and small to medium species such as shorebirds. Among the order of birds identified were charadriiforms (gulls, alcids) and gallinaceous birds possibly exploited by the occupants of the cave. A possible third phalange of a raptor and a femur possibly from a large passerine (Corvidae (crow/raven family)?) were observed from Context 7012 but not identified due to time constraints. Interestingly, most of the medium-sized birds came from the early prehistoric layer (Contexts 7012 and 7014) whereas the small bird remains (most likely all passerines) appear to originate mainly from the antiquarian spoil or historic layers. These small bird remains may be prey of other species such as owls or foxes or natural deaths and may indicate periods when the cave was not occupied by humans.

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Table 1: List of taxonomic identifications

Taxon	5002	5003	7001	7001/ 7002	7002	7003/ 7004	7004	7006	7007	7008	7009	7012	7014	Total NISP
Pig/Wild boar (<i>Sus scrofa</i>)	2	1			2	2			2	1	1	2		13
Cattle/Auroch (<i>Bos taurus</i>)					2	2	2	2	1	1				10
Sheep/Goat (Caprinae)					2		3			1				6
Fox (<i>Vulpes sp.</i>)											1	4		5
Cattle / Large Cervid (Large artiodactyla)					1					1		1	1	4
Red Deer (<i>Cervus elaphus</i>)	1								1					2
Hare (<i>Lepus sp.</i>)		1			1									2
Mammalia (large-sized)	1				1			1	2			2		7
Mammalia (medium-sized 1)	2		2	1	5			3	4			3		20
Mammalia (medium-sized 2)								1						1
Passerines (Passeriformes)					1							1		2
Phasianids (Phasianidae)												2		2
?Guillemot (<i>cf. Uria aalge</i>)													2	2
Shorebirds (Charadriiformes).												1		1
Total Birds			2		8	2		1		4	4	19	4	44
Fish													1	1
Total NISP	6	2	4	1	22	6	5	8	10	8	6	31	6	115

APPENDIX 2: FAUNA FROM THE PLEISTOCENE DEPOSITS (ELODIE-LAURE JIMENEZ)

This report comprises preliminary observations of the faunal remains recovered from Pleistocene deposits during 2022 excavations at Wogan Cavern (i.e. Trench 5, Contexts 5005, 5006 and 5007).

State of preservation

The material is highly fragmented, with only seven pieces more than 5cm long. Bone-surface preservation is variable, with some very well preserved (weathering stage mostly being between 2 and 3, and more rarely 4 or 5). Trampling marks were frequently observed. Some fragments appear affected by water action.

Identifications

Species and anatomical IDs are hindered by the material's high level of fragmentation. However, a few fragments from Context 5006 could be identified as belonging to the Cervidae family (deer or reindeer): three from the higher level (SF043, SF055 and SF085), and one from the lower level (SF124). SF085 (Figure 1) is the distal part of a right humerus belonging to a perinatal individual. The flaky surface clearly suggests a very young and probably perinatal death, and therefore likely during spring/summer. No butchery marks were observed on the specimen.



Figure 1 – Perinatal humerus, probably belonging to a cervid.

Burnt material

Three possibly burnt bone fragments from Square 6 were identified. These are all from the middle/upper part of Context 5006, and therefore seemingly associated with the higher Pleistocene archaeological layer: one is from Spit 1 (SF042), one from Spit 4 (Figure 2; no SF no.) and one from Spit 8 (no SF no.).



Figure 4 - "Charcoal"-like burnt bone from Context 5006, Square 6, Spit 4 (no SF no.).

Anthropogenic / carnivore modification

At least one piece is of a condition consistent with carnivore modification (Context 5006, Square 6, Spit 4):

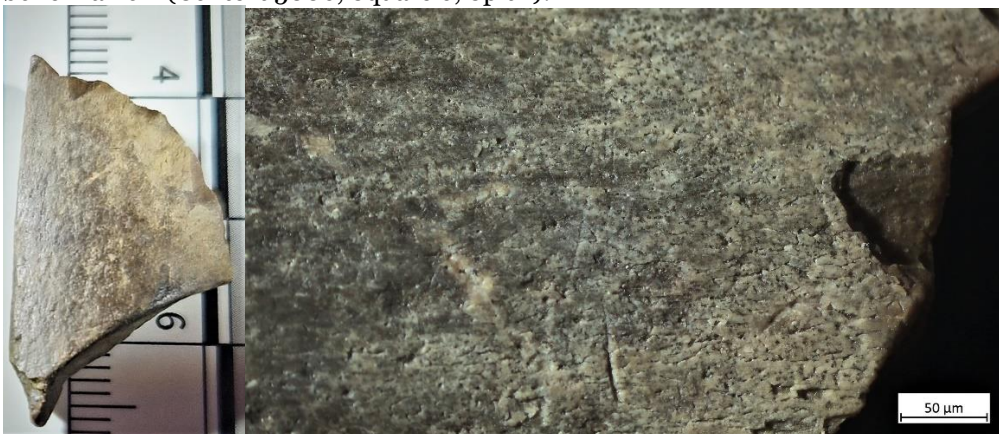


No cutmarks were visible to the naked eye. However, under a Carl Zeiss microscope (Stemi 508) with x20-x25 magnification, probable or possible cutmarks/modifications were observed on several specimens. Further examination of these pieces is recommended:

- Acetabulum fragment of a fox/badger-size adult animal (Context 5006, Square 6, Spit 3):



- Fragment of diaphysis of unidentified species, bearing a sharp V-shape mark which is possibly anthropogenic. The fragment's sharp edges, as well as the morphology of the different fractures (with "fresh bone" properties) are also consistent with an anthropogenic origin of the modifications, more particularly with the extraction of bone marrow (Context 5006, Square 6, Spit 1):



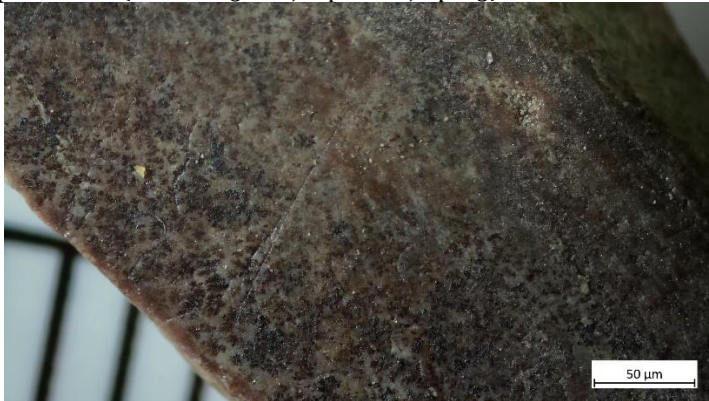
- Fragment of an unidentified bone with three long rectilinear sub-parallel marks with a V-shape cross section (Context 5006, Square 6, Spit 5):



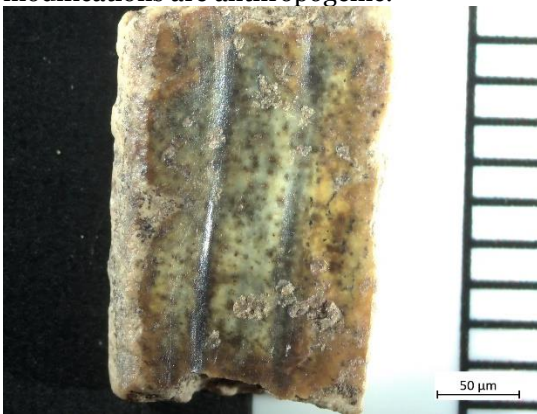
- Fragment of bone from an unidentified species bearing a sharp V-shape mark (another bone from the bag WC22 Tr5 Sq6 Sp3 (5006) 5/7):



- Rib (?) fragment of an unidentified cervid-sized animal bearing sub-parallel transversal cutmarks with a V-shape section (Context 5006, Square 6, Spit 3):



Beyond these pieces, one specimen (from Context 5006, Square 6, Spit 1) requires further study. It is possibly a fragment of ivory. It bears two longitudinal striations, with U-shape sections and microstriations. Further analysis is needed to confirm the material type and the nature of the modifications, and whether the modifications are anthropogenic:



APPENDIX 3: HUMAN BONES (ANDREW CHAMBERLAIN)

Four bones identified in the field as probably human⁴ were examined. All are confirmed as human. They are consistent with a single adult individual:

- **WC22 TR7 SQ3 (7005) 28/06 SF001.** Human adult right side patella. Complete but with slight post-mortem abrasion of the lateral and inferior margins. The medial margin of the articular surface exhibits slight lipping consistent with early degenerative joint disease. The large size and robust appearance of the bone are more consistent with a sex attribution of male.
- **WC22 TR7 SQ3 (7005) 28/06 SF002.** Human adult left side second metacarpal, complete apart from broken off head (the break is a post-mortem dry bone fracture).
- **WC22 TR7 SQ3 (7005) 28/06 SF003.** Human adult left side third metacarpal, complete apart from broken off head (the break is a post-mortem dry bone fracture). This bone articulates with SF002 so is from the same individual.
- **WC22 TR7 SQ1 (7002) 29/06.** Human adult ?right side ?third metacarpal, complete apart from heavily eroded proximal epiphysis. The size of the bone is consistent with it being from the same individual as SF002 and SF003.

⁴ RD note: further bones from this part of the sequence are potentially human, but none that could be identified with confidence in the field, nor were any identified by EMM during his examination of the bone material.

APPENDIX 4: SHELL (CATRIONA PICKARD)

Wogan Cavern (2022 excavation): the marine mollusc assemblage

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Methods – Identification, Quantification and Metrics

A small assemblage of marine and terrestrial molluscs was recovered from Wogan Cavern during the 2022 excavations. Preservation of the marine molluscs is moderate to poor, with considerable fragmentation. Shell remains were identified to taxon with the aid of a reference collection held by the University of Edinburgh and mollusc identification keys (e.g. Cameron 2008; Oliver et al. 2016).

Table A (below) presents a list of taxa by context as well as shell counts (minimum number of individuals). For gastropods, MNI was derived from a count of the number of intact apices, while for the bivalves MNI was calculated from the greater of the counts of left and right valves.

Table B (below) lists the taxa identified in both the 2021 and 2022 collections from Wogan Cavern.

Species Representation and Ecology

The small assemblage of marine molluscs recovered from Wogan Cavern (MNI = 90) includes at least nine taxa. Each of the taxa identified is endemic to British coastal waters. A larger number of shellfish taxa were identified in the Trench 7 assemblage than from Trench 5. This is likely due to the smaller number of shells in the lower (Pleistocene) deposits than in the higher (Holocene) deposits, but may potentially reflect environmental conditions or harvesting strategies (see Table A).

The most abundant taxa identified in the deposits excavated in the 2022 season at Wogan Cavern, i.e. oyster (*Ostrea edulis*), cockle (*Cerastoderma edule*) and limpet (*Patella* sp.) (see Figure A, below). These genera were also the three most abundantly represented in the marine mollusc assemblage recovered in the 2021 season. With the exception of the flat periwinkle (*Littorina fabalis*), all of the taxa identified in the 2022 assemblage are collected as foods. *L. fabalis* is similar in form although typically smaller than the common periwinkle, and the single example identified may have been harvested incidentally alongside larger winkles on the littoral zone of the shore.

As with the 2021 marine shell assemblage, preservation of the shells is poor and erosion is most pronounced in the *O. edulis* shells, which are fragile and are delaminating.

There is no evidence for anthropogenic modification of any of the marine mollusc shells in the 2022 assemblage.

References

Cameron, R., 2008. *Keys for the Identification of Land Snails in the British Isles*. Shrewsbury: Field Council Studies.

Oliver, P.G., Holmes, A.M., Killeen, I.J., Turner, J.A., 2016. *Marine Bivalve Shells of the British Isles*. Amgueddfa Cymru - National Museum Wales. Available at: <http://naturalhistory.museumwales.ac.uk/britishbivalves>

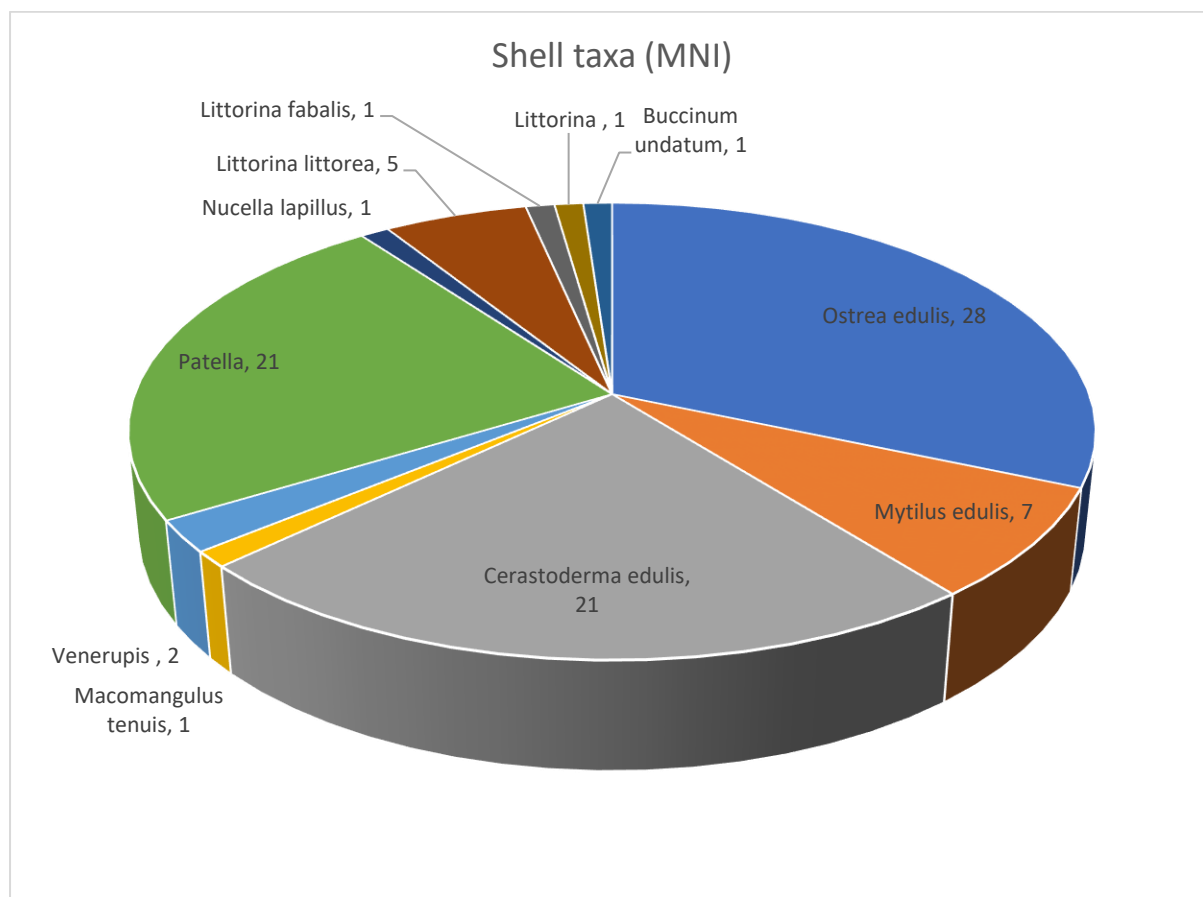


Figure A. Relative representation of shellfish taxa recovered in 2022 excavations at Wogan Cavern.

Table A: Wogan Cavern marine shell MNI counts. P=Present. Each row corresponds to a finds bag. “INT 7009 & 7012” =the interface between Context 7009 and the underlying Context 7012.

Trench	Square	Spit	Context	Date	Sample no.	Notes	Taxon (MNI)																Comments
							<i>Ostrea edulis</i>		Mytilidae		<i>Cerastoderma edule</i>		<i>Macomangulus tenuis</i>	<i>Venerupis</i>		<i>Patella</i>	<i>Nucella lapillus</i>	<i>Littorina littorea</i>	<i>Littorina fabalis</i>	<i>Littorina</i>	<i>Buccinum undatum</i>	Unidentified	
							L	R	L	R	L	R		L	R								
7	1	N/A	7001	28/06/2022	N/A			1			1												
7	2	N/A	7001	28/06/2022	N/A		P					1											
7	4	N/A	7001	28/06/2022	N/A		P																
7	1	N/A	7001/7002	28/06/2022	N/A																P		
7	1	N/A	7002	28/06/2022	N/A		2	4			5	1						1					
7	1	N/A	7002	29/06/2022	N/A		1	1	P			2	?P										
7	2	N/A	7002	28/06/2022	N/A		3	2	P		5	1				P							
7	2	N/A	7002	28/06/2022	N/A																	P	
7	2	N/A	7002	29/06/2022	N/A		P					2											
7	4	N/A	7002	28/06/2022	N/A		2	6	P		2	7				P	1						
7	4	N/A	7002	29/06/2022	N/A		P		P		1					P							
7	1	N/A	7003/7004	29/06/2022	N/A		1	2			P					1							
7	4	N/A	7003/7004	29/06/2022	N/A		2	1			2	2				P							
7	4	N/A	7004	30/06/2022	N/A		5	4	P		P												
7	4	N/A	7004	30/06/2022	N/A				P														
7	3	N/A	7005	28/06/2022	N/A		P																
7	3	N/A	7005	28/06/2022	N/A		1				P												
7	4	N/A	7005	30/06/2022	N/A			1			3												
7	3	N/A	7006	28/06/2022	N/A		1				1					1							

7	4	N/A	7006	30/06/2022	N/A			2			P											
7	3	N/A	7006	28/06/2022	87		P				P										P	
7	3	N/A	7007	28/06/2022	N/A			1				1										
7	3	N/A	7007	29/06/2022	N/A			2				1										
7	3	N/A	7007	29/06/2022	10		P				P											
7	3	N/A	7008	29/06/2022	N/A	Western half of square	P				P		P		P							
7	3	2	7008	29/06/2022	N/A	Eastern half of square									P					P	1 unidentified bivalve hinge fragment	
7	3	N/A	7008	29/06/2022	N/A	Eastern half of square	P				P											
7	4	N/A	7008	30/06/2022	N/A		P				P		P									
7	4	N/A	7008	01/07/2022	N/A		P				P		P		P		2					
7	3	N/A	7008	29/06/2022	12	Western half of square														P		
7	4	N/A	7009	01/07/2022	N/A				P											P		
7	4	N/A	7009	01/07/2022	N/A				P													
7	4	N/A	7009	02/07/2022	N/A		P		P						1		1					
7	4	N/A	7009	02/07/2022	N/A															P		
7	4	N/A	7009	02/07/2022	N/A				P													
7	4	N/A	7009	06/07/2022	N/A				1													
7	4	N/A	7009	06/07/2022	N/A				1	1												
7	4	N/A	7009	02/07/2022	29				P		P									P		
7	3	N/A	INT 7009 & 7012	06/07/2022	N/A				1	1												
7	3	N/A	INT 7009 & 7012	06/07/2022	N/A					1												
7	3	N/A	INT 7009 & 7012	06/07/2022	55				P													
7	3	N/A	INT 7009 & 7012	06/07/2022	55											1						
7	3	N/A	7010	30/06/2022	N/A															P		
7	3	N/A	7010	30/06/2022	14															P		
7	4	N/A	7011	30/06/2022	N/A		1															

7	4	N/A	7011	01/07/2022	N/A		P			P											
7	4	N/A	7011	01/07/2022	23		P													P	
7	4	N/A	7011	30/06/2022	17		P														
7	3	N/A	7012	09/07/2022	N/A				P											P	
7	3	1	7012	06/07/2022	N/A				P	1											
7	3	1	7012	06/07/2022	N/A					1					P					P	
7	3	2	7012	07/07/2022	N/A				P												
7	3	3	7012	08/07/2022	N/A				1												
7	3	4	7012	11/07/2022	N/A															P	
7	4	N/A	7012	04/07/2022	N/A				P												
7	4	N/A	7012	04/07/2022	N/A				1									1			
7	4	2	7012	05/07/2022	N/A				1		P										
7	4	2	7012	05/07/2022	N/A															P	
7	4	3	7012	07/07/2022	N/A													P		P	
7	4	3	7012	08/07/2022	N/A																No marine shell
7	4	4	7012	11/07/2022	N/A															P	
7	4	1	7012	04/07/2022	43															P	
7	4	N/A	7012	04/07/2022	34															P	
7	4	N/A	7012	04/07/2022	35															P	
7	4	N/A	7012	04/07/2022	34															P	
7	4	1	7012	04/07/2022	43															P	
7	4	N/A	7013	01/07/2022	N/A		P			P				1			1				
7	4	N/A	7013	01/07/2022	28				P					P							
7	4	1	7015	12/07/2022	N/A																No marine shell
7	4	1	7015	12/07/2022	N/A																No marine shell
5	6	2	5002	28/06/2022	N/A					1				P		6					
5	6	3	5002	29/06/2022	N/A					1				P		3					
5	6	2	5002	29/06/2022	N/A					1				1	1	6					
5	6	1	5002	28/06/2022	N/A		1	1						1	1	2					
5	6	3	5002	29/06/2022	6									P		P					
5	6	1	5002	28/06/2022	2		P													P	

5	6	2	5002	29/06/2022	4								P							P	
5	6	1	5003	30/06/2022	N/A				P					P							
5	6	1	5003	30/06/2022	16															P	
5	6	1	5004	01/07/2022	N/A																No marine shell
5	6	1	5004	30/06/2022	N/A					P											
5	6	1	5004	01/07/2022	20															P	
5	6	1	5004A	01/07/2022	N/A															P	
5	6	2	5004A	01/07/2022	N/A															P	
5	6	2	5004A	01/07/2022	26															P	
5	6	1	5004A	01/07/2022	24															P	
5	6	6	5005	06/07/2022	N/A																No marine shell
5	6	5	5005	05/07/2022	52															P	
5	6	6	5005	08/07/2022	63															P	
5	6	6	5005	06/07/2022	56																
5	6	2	5005	04/07/2022	38															P	
5	6	3	5005	04/07/2022	42															P	
5	6	1	5005	02/07/2022	31															P	
5	6	6	5006	05/06/2022?	68															P	
5	4	1	5006	09/07/2022	72															P	
5	6	5	5006	07/07/2022	65															P	
5	6	1	5006	05/07/2022	47															P	
5	6	4	5006	06/07/2022	58															P	
5	6	1	5007	12/07/2022	88															P	
7	4	N/A	N/A	04/07/2022	N/A	Cleaning			P												
7	4	N/A	N/A	05/07/2022	N/A	Section cleaning										1					
7	3+4	N/A	N/A	13/07/2022	N/A	Section cleaning			P	P			P	P							
7	4	N/A	N/A	01/07/2022	N/A	Section cleaning	1														
5	6	N/A	N/A	13/07/2022	N/A	Section Cleaning		P						P							
						TOTAL	28		7	21	1	2	21	2	5	1	1	1			

Table B: Taxa list for marine shells recovered during 2021 and 2022 excavations at Wogan Cavern.

Common Name	Taxon
Oyster	<i>Ostrea edulis</i>
Limpet	<i>Patella</i> sp.
Cockle	<i>Cerastoderma edule</i>
Carpet Shell	<i>Venerupis</i> sp.
Marine clam	Veneroida
Thin tellin	<i>Macomangulus tenuis</i>
Top shell	Trochidae
Flat periwinkle	<i>Littorina fabalis</i>
Common periwinkle	<i>Littorina littorea</i>
Periwinkle	<i>Littorina</i> sp.
Mussel	Mytilidae
Common mussel	<i>Mytilis edulis</i>
Tusk shell	Scaphopoda
Buckie whelk	<i>Buccinum undatum</i>
Dogwhelk	<i>Nucella lapillus</i>

AMGUEDDFA CYMRU

REPORT ON LITHIC FINDS RECOVERED FROM ARCHAEOLOGICAL WORK in 2022 at WOGAN CAVERN, PEMBROKE CASTLE, PEMBROKESHIRE

Prepared for Dr Rob Dinnis

by

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January 2023

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Appendix A – Summary catalogue of finds

Introduction

The 2021 season of excavations at Wogan Cavern recovered 357 worked pieces of flint, chert and stone from the three trenches examined during that season (Trenches 2, 5 and 7) (Dinnis *et al.* 2022). Further work in 2022 recovered another large assemblage of lithics of which those from selected upper, presumed Mesolithic, contexts from Trenches 5 and 7 were submitted for analysis here. This report covers the 287 pieces studied by the author. Fourteen pieces were, on examination deemed to be natural and these are not mentioned further here. The remaining 243 pieces are reported on, and an appendix contains the full catalogue of all the pieces examined. This report describes the key findings of the analysis of this new material and provides a statement about the nature of the prehistoric flint working at this site by trench and context in which the two seasons' lithics are combined.

Methodology

All pieces have been subject to macroscopic analysis and identifications have been undertaken in accordance with Andrefsky's published methodology. This involves the examination of each individual piece with the eye under good, directional light (Andrefsky 2005). Any evidence for retouch, and for use along fine edges, is detectable in this way. All the pieces in the assemblage identified as being humanly, rather than naturally, fractured were examined. All these were identified on the basis of the technological characteristics they exhibit and were allocated to a broad time-period where this was possible. Some selected pieces were examined under a microscope to determine whether retouch is present on some edges.

All the artefacts have been described in more detail than the knapping debitage. The artefacts have been categorised wherever possible, using basic British Prehistoric artefact typologies (cf. Butler 2005). Retouch has been described in accordance with Odell's scheme; recording how invasive it is across the edge of the tool (Odell 2004).

Blade fragments are determined by having a narrow width and the presence of remnant longitudinal scars running at right angles to the width of the piece. The fragment is then described according to whether it is the proximal (bulbar), mesial or distal end of the blade that is present (Andrefsky 2005, 19). If it has been impossible to determine whether the piece under examination is a flake, blade or a possible core fragment, it has been classified under the generic term of general knapping debitage.

Post-manufacture and post-burial change and damage are noted where this has been observed. This includes whether the piece has been burned or not. Most of the burnt pieces either show a light pinkish colouration, if heat has been moderate in temperature; or a grey or white crazed appearance on the flint surface where stronger heating has been experienced. Other characteristics noted are where it is evident that damage has been caused in recent times, possibly during excavation.

Raw materials and post-manufacture changes

Most of the worked pieces in the assemblage are made of flint. The majority of this flint is grey in colour, but a substantial quantity of the assemblage has a white patination. The pieces with remaining cortex show a chalky pebble covering. This might suggest that the flint has been carried to the site, possibly from Wiltshire, or another flint source. Much of the worked flint in the assemblage has a reasonably consistent appearance to it which may suggest that the material may have been brought to the site in a single episode. The only caveat to this is that the flint displays a variety of surface changes. Some of these are caused by the start of patination and others are burnt. There are no obvious distinctions to be observed between the finds from specific layers or between trenches. Much of the assemblage is very fresh and some pieces have been noted as they have clearly had no movement and have experienced no use or edge damage whatsoever.

The 2021 assemblage contained a range of cherts. However, the part of the 2022 assemblage examined here contained only one non-flint tool. This, from context 7002, is a blade fragment presumed to be of rhyolite, although a geologist has not examined this to date.

Much of the assemblage examined from the 2022 season has a concreted coating adhering to one or more faces of the pieces. In a few instances this solid concretion obscures some of the features of the flint and there is a chance that some pieces could have concealed evidence of retouch. No concretion was removed from pieces to prepare this report.

Trench 5

Trench 5 generated a total of 162 worked lithics from the 2022 season of work. These artefacts have been assessed according to the context from which they were recovered.

Knapping debitage

Context 5002. This generated one blade fragment, a small flint flake and two spalls. The blade fragment could be Mesolithic in date.

Context 5002/5003. This has produced a single blade fragment from the excavations in 2022.

Context 5003. This produced 60 pieces of knapping debitage. The assemblage contains 6 blades, 14 blade fragments, 4 flakes, 1 flake fragment, 31 spalls of which 4 are burnt, 4 pieces of general knapping debitage of which 3 are burnt.

Context 5004. Fifteen pieces of knapping debitage were recovered from this context comprising 2 blades, 4 blade fragments, one flake and one flake fragment plus 7 spalls.

Context 5004A. Five blade fragments, 2 flakes, 69 chips and 2 general pieces of knapping debitage were recovered from this context.

The worked pieces

Context 5002. There are no tools recorded from this context from amongst the 2022 assemblage.

Context 5003. Only one further tool can be added to the list from the 2022 excavation season, a flint microburin (no SF no.). This is from a sieve sample and is a complete mis-snapped microburin made on the proximal end of a bladelet.

Context 5004. The 2022 season produced a complete obliquely blunted point (SF 026). The piece has a straight length with fine evidence for utilisation. The point is at the bulbar end of the blade on which the piece has been made and the distal end has a hinge fracture to it. This is therefore the entire piece. Concretion adheres to the backed edge which is straight and steeply retouched. This piece could be an early Mesolithic microlith, or possibly even older and late Glacial in date. Also present in the 2022 assemblage from this context is one miscellaneous retouched blade fragment (no SF no.). This is thought to be Mesolithic in date, it is the mesial fragment of a flint blade with steep retouch running along one length.

Context 5004A. The 2022 season generated a single burnt flint microburin (no SF no.). This piece is Mesolithic in date, there is only a small area of the notch, but the oblique scar on the ventral surface is evident.

Discussion

The 2022 finds add to the understanding that the contexts examined all contain Mesolithic lithic artefacts. There are, however, a limited number of tools represented amongst this assemblage and the 2022 season has only added a handful of further tools to the listing. The overall picture of which tools and pieces of knapping debitage originate from which context can be seen in Table 1 below. This draws all the pieces examined so far together. One observation arising from the study of the assemblage is the absence of cortical pieces and cores. There are far fewer cortical flakes and blades than might be expected amongst a knapping assemblage and no cores. It is possible that blades are being brought to the site ready struck, or they are being knapped elsewhere within the cave, and then worked. The presence of four microburins from Trench 5 suggests that there is microlith manufacture taking place within the cave.

Context 5002. There are no tools recorded amongst the 2022 assemblage. The 2021 season generated one worked tool, a microdenticulated blade (SF 2). This is a blade with fine microdenticulations running along one very slightly concave length. The denticulation scars appear on the ventral surface. The other length also has evidence for utilisation running from a slight angle to the bulb.

Context 5003. In 2021 this context generated a range of Mesolithic tools, but only one further tool can be added to the list from the 2022 excavation season, a microburin (SF no no.). The earlier finds comprise one very broad abruptly backed blade (SF 54) that has cortex as its backing. The blade has had an abrupt angle retouched into it taking it towards the tip to give a point. The main blade length has minor and irregular chipping along it from use. This may

be the fortuitous use of a backed blade with the addition of the retouch towards the tip. It could be late Glacial in age, although would equally sit well within an early Mesolithic assemblage. This context has also generated two complete microliths; SF 24 is the tip of an early Mesolithic obliquely blunted point. The retouch is along the right-hand length and is steep. The retouch ends 5mm from the break. There is no leading-edge retouch. SF 51 is also an obliquely blunted point microlith with a feathered termination at the distal end. The tip is missing and there is steep oblique retouch at the left-hand edge leading to the tip. It also does not have leading-edge retouch. Microlith fragment SF 46 has steep retouch on a straight edge leading to the tip. The tool is snapped in half across the centre so the exact form cannot be determined, but it has an oblique blunting so obliquely blunted point is probable. There is no leading-edge retouch, and the tip is slightly rounded. Some minor chipping along the unmodified length may be from utilisation.

There are now two certain and a possible microburin amongst the finds from this context. Those recovered during the 2021 season were both identified amongst chips of flint in presumed sieve bags and so do not have small finds numbers. The first of these is a small flint microburin made on the proximal end of a bladelet. This would have been discarded from the creation of a later Mesolithic narrow-blade microlith. The second microburin has most of the characteristics of a microburin with the ventral scar, but there doesn't seem to be a notch. It is the proximal end of the blade. The 2022 piece is also from a sieve sample and is a complete mis-snapped microburin made on the proximal end of a bladelet (no SF no.).

Two further pieces, both recovered during the 2021 season have been separated from amongst the assemblage for further study. These are a utilised blade (SF 82) and a utilised blade fragment (SF 6). Both pieces have visible evidence for use and fit within a Mesolithic context. The debitage indicates an assemblage dominated by blades and overall the composition of this suggests a Mesolithic assemblage.

Context 5003A. One complete microlith, SF 71, is an early Mesolithic obliquely blunted point made on the proximal end of a broad flint blade. The termination is feathered, and the retouch is oblique and slightly concave leading to the tip. There is no leading-edge retouch. The unmodified length has a series of miniscule chips along its length. This was recovered in 2021.

Context 5003A/B excavations in 2021 generated two microlith fragments, neither of which have small finds numbers. The first of these is a fragment of a microlith close to the tip. It is missing the very end of the tip and its base. The form of the backing is straight and steep and the entire length of what remains is retouched. It is difficult to determine whether this might fall within the narrow- or broad-blade category of microlith, so it is being allocated here more generally as of Mesolithic age. However, the second fragment is more certainly later Mesolithic in date. This is a mesial fragment of a narrow-blade microlith. The retouch is steep and straight parallel to the unmodified edge without any angles.

Context 5004 in 2021 generated one possible later Mesolithic microlith fragment (no SF number). The bladelet has a snapped edge to give it an isosceles triangle shape and retouch

which is very steep to form an angle towards the proximal end of the piece. The 2022 season produced the tip of an obliquely blunted point (SF 026). The piece has a straight length with fine evidence for utilisation. The point is at the bulbar end of the blade on which the piece has been made and the distal end has a hinge fracture to it. This is therefore the entire piece. Concretion adheres to the backed edge which is straight and steeply retouched. This piece could be an early Mesolithic microlith, or possibly even older as late Glacial in date, it is similar in appearance to the piece from context 5003 described above. The association of this with the later Mesolithic microlith recovered in 2021 may indicate some mixing of the deposit in this one context. Also present in the 2022 assemblage is one miscellaneous retouched blade fragment (no SF no.). This is also thought to be Mesolithic in date, it is the mesial fragment of a flint blade with steep retouch running along one length. This context has produced the second largest assemblage of pieces from this context and a Mesolithic, blade-based technology is present with narrow blades and blade fragments dominating the assemblage.

	5002	5002/ 5003	5003	5003A	5003 A/B	5003B	5004	5004A
Abruptly backed blade			1				1	
Microlith			2	1	2		1	
Microburin			3					1
Microdenticulate	1							
Utilised blades			2					
Misc. retouched pieces							1	
Core rejuvenation pieces			1					
Crested blades	1		1					
Blades	1		15	4	2	1	5	1
Blade frags	1	1	51	2	4		13	5
Flakes	1		14	1		1	4	2
Flake frags			6	1			2	
Flake or blade frags			2				1	
Chips	2		189		19		39	79
Knapping debitage			10		1		2	2

Table 1: The identifications of finds from Trench 5 by context from 2021 and 2022 seasons.

Context 5004A the 2022 season generated a single burnt flint microburin (no SF no.). This piece is Mesolithic in date, there is only a small area of the notch, but the oblique scar on the ventral surface is evident. The knapping waste comprises mostly blade based debitage consistent with a Mesolithic age for the context.

Trench 7

A small number of lithic artefacts was recovered during the 2021 excavation season. The 2022 excavations generated a larger number of pieces, although very few of these are tools. The total combined assemblage composition from both seasons is tabulated below in Table 2.

Knapping debitage

Context 7001. Generated a single blade fragment during the 2022 season.

Context 7002. Four pieces of knapping debitage were recovered from this context; a blade, two blade fragments and a flake.

Context 7003. A single blade fragment was recovered from the work in this context.

Context 7004. No finds were recorded from this context during 2022.

Context 7005. This has only produced two pieces; one is a flake and the other a piece of knapping debitage.

Context 7006. Generated two flint flakes and five flint spalls. One of the flint flakes is so fresh it looks as though it has only just been struck indicating that this piece has not been moved far and possibly been buried quite quickly after knapping.

Context 7008. Generated a blade and a blade fragment both of which are made of flint.

Context 7009. Two flint blade fragments, one mesial and the other distal ends of separate blades were recovered from this context.

Context 7009/7012. The interface between these two layers generated five blade fragments and one flint flake.

Context 7012. This is the context which has generated most of the finds from this trench. All the pieces are made of flint. There are four blades, which includes one bladelet which on first glance has the appearance of a microlith, but when examined microscopically is seen to be fortuitous in its shape and no retouch is evident along any of the edges. Twelve blade fragments support the Mesolithic date for this context. Also present are six flakes, two flake fragments and 41 spalls.

Context 7013. This context only generated eight spalls of flint.

Context 7014. Generated one flint blade fragment and three flint spalls.

Context 7015. Produced two pieces of worked flint, a flake fragment and a general piece of knapping debitage.

The worked pieces

Context 7001. No worked tools were recovered from this context during 2022.

Context 7002. No worked tools were recovered from this context during 2022.

Context 7003. No worked tools were recovered from this context during 2022.

Context 7004. No worked tools were recovered from this context during 2022.

Context 7005. No worked tools were recovered from this context during 2022.

Context 7006. No worked tools were recovered from this context during 2022.

Context 7008. This context generated a Mesolithic denticulated blade with denticulations running along one length (no SF no.) from the 2022 excavations. The piece has three clear notches chipped into the length. The blade itself is small but has a backing to it.

Context 7009. No worked tools were recovered from this context during 2022.

Context 7009/7012. No worked tools were recovered from this context during 2022.

Context 7012. This has produced four worked flints; an early Mesolithic microlith is the most significant of these pieces (SF 033). It is a flint microlith of isosceles triangle form. The piece is very sharp with the two shorter lengths steeply, but marginally, retouched. The length is unmodified. A Mesolithic truncated blade fragment is also present (SF 061). This is the distal end of a truncated flint blade. The truncation is steep, and the proximal end is broken. Two utilised blades are also recorded from this context; (SF 053 and 086). The former piece is a proximal end of a blade fragment with very marginal evidence along both lengths for utilisation (SF 053). The second is a mesial fragment of a blade with evidence for some utilisation along the ventral surface of one length (086). Neither of these utilised pieces shows formal retouch and all the chipping along an edge is minor from being used.

Context 7013. No worked tools were recovered from this context during 2022.

Context 7014. No worked tools were recovered from this context during 2022.

Context 7015. No worked tools were recovered from this context during 2022.

Discussion

As with the finds from Trench 5 those recovered from this trench are predominantly Mesolithic in date. There is again very little in the way of cortical pieces and no cores have been recovered from this Trench.

Context 7004 generated a mesial fragment of an abruptly blunted point (SF 122) from the 2021 season of excavations. The tip is missing, and the piece is snapped across its distal end. It has straight, steep retouch running almost the entirety of one length but this stops just 4mm away from the break. There is no obvious angle to this that might help to determine whether this is of early Mesolithic or Late Glacial date. The opposite edge is straight and has evidence of utilisation chips. Although context 7004 is thought to be a mixed spoil deposit, the fact that early Mesolithic finds are recovered from intact deposits deeper in the stratigraphic sequence could give weight to this artefact being of Mesolithic date.

Context 7008. This context generated a Mesolithic denticulated blade with denticulations running along one length (no SF no.). Such denticulated pieces do continue into the Neolithic period, but here is associated with a blade and a blade fragment both deemed to be Mesolithic. Whether this is early or later Mesolithic is therefore uncertain.

Context 7012. This context has generated the most of the Mesolithic flintwork and as well as a reasonably sized assemblage of waste pieces from knapping, including 12 blade fragments and four complete flint blades has produced four worked flints all of Mesolithic age. The microlith is the most significant of these pieces (SF 033). It is a flint microlith of isosceles triangle form and likely to be of early Mesolithic, rather than later date. A Mesolithic truncated blade fragment is also present (SF 061). This is the distal end of a truncated flint blade. The truncation is steep and the proximal end is broken. Truncations can be found in both early and later Mesolithic assemblages, but are more commonly found on later sites. It is not unreasonable, given the context, for this to be of early Mesolithic age. The two utilised blades recorded from this context; (SF 053 and 086) are both acceptable within a Mesolithic assemblage and again could be early Mesolithic in age.

	7001	7002	7003	7004	7005	7006	7008	7009	7009/ 7012	7012	7013	7014	7015
Abruptly backed blade				1									
Microlith										1			
Denticulated blade							1						
Truncated blade										1			
Utilised blades										2			
Core rejuv. pieces	1												
Blades		1					1			4			
Blade frags	1	2	1	3			1	2	5	12		1	
Flakes		1		1	1	2			1	6			
Flake frags										2			1
Chips	1			1		5				41	8	3	
Knapping debitage					1								1

Table 2: The identifications of finds from Trench 7 by context from 2021 and 2022 seasons.

An early Mesolithic age for these finds is therefore deemed to be acceptable given the composition of the assemblage of finds. Context 7012 is possibly where the concentration of early Holocene finds originates and 7015, a pocket of sediment, possibly also of the same sediment as 7012 would sit within this group too. The few finds examined from context 7014, which is deemed to be a possible transitional later between Pleistocene and Holocene deposits, has only generated three lithic finds, none of which are diagnostic to any specific date, all being either spalls or a blade fragment.

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Recommendations for further work

1. Mark the assemblage with finds numbers.
2. Attempt some refitting to see whether there are any possible conjoins and see if this could assist in determining whether there has been any vertical movement of pieces through the sequence.
3. Undertake use-wear analysis of some of the blades for any evidence for utilisation.
4. Determine the identifications of any faunal remains found associated with the contexts.

Recommendations for drawing

Microburins (no SF nos.) from 5003; 5004A

Abruptly backed blade (SF 026)

Retouched flint blade fragment (no SF no.) from 5004

Denticulated blade from (no SF no.) from 7008

Microlith (SF033)

Truncated blade fragment (SF 061)

Appendix A – Summary catalogue of finds

Small Find or Sample No.	Trench	Square	Spit	Context	Identification	Quantity	Period
	5	6	1	5002	Blade fragment	1	
	5	6	3	5002	Flake	1	
	5	6	1	5002	Spall	1	
	5	6	1	5002	Spall	1	
	5	6	1	5002	Water rolled stones	5	
	5	6	1	5003	12 Spalls	12	
	5	6	1	5003	3 Burnt pieces of knapping debitage	3	
	5	6	1	5003	4 Burnt spalls	4	
	5	6	1	5003	5 Blade fragments	5	
023	5	6	1	5003	Blade	1	
	5	6	1	5003	Blade	1	
	5	6	1	5003	Blade	1	
010	5	6	1	5003	Blade	1	Mesolithic
011	5	6	1	5003	Blade fragment	1	Mesolithic
013	5	6	1	5003	Blade fragment	1	Mesolithic
014	5	6	1	5003	Blade fragment	1	Mesolithic
015	5	6	1	5003	Blade fragment	1	Mesolithic
016	5	6	1	5003	Blade fragment	1	Mesolithic
022	5	6	1	5003	Blade fragment	1	
	5	6	1	5003	Blade fragment	1	
	5	6	1	5003	Blade fragment	1	
009	5	6	1	5003	Bladelet	1	Mesolithic
024	5	6	1	5003	Cortical blade	1	
021	5	6	1	5003	Cortical blade fragment	1	
017	5	6	1	5003	Flake	1	
019	5	6	1	5003	Flake	1	
	5	6	1	5003	Flake	1	
	5	6	1	5003	Flake	1	
018	5	6	1	5003	Flake fragment	1	
	5	6	1	5003	General knapping debitage	1	
	5	6	1	5003	Microburin	1	Mesolithic
016	5	1	1	5003	Spalls	15	
	5	6	1	5004	2 Bladelet fragments	2	
	5	6	1	5004	3 Spalls	3	
026	5	6	1	5004	Abruptly backed blade	1	Late Glacial/ Mesolithic
029	5	6	1	5004	Blade	1	

028	5	6	1	5004	Blade fragment	1	
	5	6	1	5004	Blade fragment	1	
	5	6	1	5004	Bladelet	1	
	5	6	1	5004	Flake	1	
027	5	6	1	5004	Flake fragment	1	
	5	6	1	5004	Flint spall.	1	
	5	6	1	5004	Retouched flint blade fragment	1	Mesolithic
020	5	6	1	5004	Spalls	3	
	5	6		5002-5003	Blade fragment	1	
	5	6	1	5004A	2 Pieces of knapping debitage	2	
	5	6	1	5004A	2 Spalls	2	
	5	6	1	5004A	5 Blade fragments	5	
	5	6	Top East facing section	5004A	Flake	1	
	5	6	1	5004A	Flake	1	Mesolithic
	5	6	2	5004A	Flint spall.	1	
	5	6	2	5004A	Flint spall.	1	
	5	6	1	5004A	Microburin	1	Mesolithic
	5	6	Top East facing section	5004A	Spall	1	
	5	6	1	5004A	Spall	1	
024	5	6	1	5004A	Spalls	61	
026	5	6	2	5004A	Spalls	2	
	7	4		7001	Blade fragment	1	
	7	2		7002	?Natural stone	1	
	7	2		7002	3 Natural stones	3	
	7	4		7002	Blade	1	
	7	1		7002	Blade fragment	1	
	7	1		7002	Blade fragment	1	
	7	1		7002	Flake	1	
	7	3	1	7003	Blade fragment	1	
	7	4		7005	Flake	1	
	7	4		7005	Knapping debitage	1	
	7	3		7006	Flake	1	
	7	4		7006	Flake	1	
	7	3		7006	Natural	1	
008	7	3		7006	Spalls	5	
	7	4		7008	2 natural stones	2	
	7	4		7008	Blade	1	
	7	4		7008	Blade fragment	1	
	7	4		7008	Denticulated blade	1	Mesolithic

	7	3	2 Eastern half of square.	7008	Natural	2	
	7	3		7009	Blade fragment	1	
	7	4		7009	Blade fragment	1	
	7	4		7012	2 Spalls	2	
	7	4	2	7012	2 Spalls	2	
	7	3	3	7012	2 Spalls	2	
	7	3	1	7012	2 Spalls	2	
050	7	4	2	7012	Blade	1	
114	7	3	4	7012	Blade	1	
051	7	4	2	7012	Blade fragment	1	
074	7	3	2	7012	Blade fragment	1	
108	7	3	3	7012	Blade fragment	1	
	7	4		7012	Blade fragment	1	
	7	4		7012	Blade fragment	1	
	7	4	2	7012	Blade fragment	1	
	7	4	3	7012	Blade fragment	1	
	7	4	3	7012	Blade fragment	1	
	7	4	3	7012	Blade fragment	1	
	7	3	4	7012	Blade fragment	1	
	7	3	3	7012	Blade fragment	1	
	7	3	2	7012	Blade fragment	1	
	7	4	3	7012	Bladelet	1	Mesolithic
	7	4	3	7012	Burnt blade fragment	1	
039	7	4		7012	Cortical flake	1	
081	7	4	3	7012	Flake	1	
117	7	4	4	7012	Flake	1	
	7	4		7012	Flake	1	
	7	3	2	7012	Flake	1	
113	7	3	3	7012	Flake fragment	1	
	7	4	4	7012	Flake fragment	1	
033	7	4		7012	Microlith	1	Early Mesolithic
	7	3	3	7012	Spall	1	
034	7	4		7012	Spalls	6	
043	7	4	1	7012	Spalls	26	
061	7	3	1	7012	Truncated blade fragment	1	Mesolithic
053	7	4	2	7012	Utilised blade fragment	1	Mesolithic
086	7	4	3	7012	Utilised blade fragment	1	
028	7	4		7013	Spalls	2	
028	7	4		7013	Spalls	6	
	7	4	1	7014	2 Spalls	2	

126	7	4	1	7014	Blade fragment	1	
	7	4	1	7014	Spall	1	
120	7	4	1	7015	Flake fragment	1	
121	7	4	1	7015	General knapping debitage	1	
055	7	3		7009/7012	Blade fragment	1	
055	7	3		7009/7012	Blade fragment	1	
055	7	3		7009/7012	Flake	1	
	7	3		7009/7012 interface	Blade fragment	1	
	7	3		7009/7012 interface	Blade fragment	1	
	7	3		7009/7012 interface	Blade fragment	1	
	7	3 and 4		Section cleaning	Spall	1	
	5 or 7			Unknown	Blade fragment	1	

REPORT ON PALAEOOLITHIC LITHIC FINDS FROM 2022 EXCAVATIONS AT WOGAN CAVERN, PEMBROKE, PEMBROKESHIRE

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December 2022

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Summary

This report describes the worked lithic assemblage recovered from Pleistocene deposits at Wogan Cavern during excavation in 2022. Two layers are potentially represented. Both are likely to be Upper Palaeolithic. The raw materials used for stone tool manufacture are similar to those used at other south Welsh (Upper) Palaeolithic cave sites, including Paviland Cave. The lower Pleistocene layer contains an artefact comparable to a series of artefacts from Paviland, which have historically been attributed to the Aurignacian. Overall, the well-stratified and seemingly relatively undisturbed nature of the material from Wogan Cavern, as well as its apparent similarities to Paviland Cave, mark it as an extremely important Palaeolithic site.

Material Studied

This report describes worked lithics recovered during the 2022 excavation at Wogan Cavern. It includes only those artefacts found securely within deposits interpreted as Pleistocene; material from the uppermost early prehistoric layer is considered separately (by E. Walker).

All material comes from a two-square-metre area of Trench 5, located close to the eastern wall of the cave. The position of lithic and faunal finds in the excavated area suggests two discrete Pleistocene archaeological layers. Although more work is needed to confirm this, material is here treated as belonging to two distinct layers.

In total there are 20 certainly or probably worked lithic pieces: 12 from the higher layer and eight from the lower layer.

Methodology

All pieces were examined macroscopically and, where appropriate, with the aid of a hand lens. Descriptions follow conventions outlined in Inizan et al (1999). Artefacts included here are pieces warranting classification as certainly or probably worked. For pieces whose worked nature was not entirely certain – mainly the extremely small chips and flake fragments – they were judged probably anthropogenic based on their overall morphology and the freshness of their edges and arrises.

The term “retouch” is here reserved for secondary modification sufficiently organised and consistent that it is judged not to derive from use-modification and/or taphonomic damage. The term “modification” is instead used to describe secondary modification judged to derive either from shaping via retouch or alteration through use. Probable post-manufacture and post-deposition alteration was judged on the position, organisation and extent of modification/damage.

The small number of pieces present means confident characterisation of blank production technology is not possible. For this reason the term “laminar pieces” is preferred over “blades” for blanks with morphology indicative of blade production (i.e. narrow width relative to length, organisation of dorsal scars).

Comparison with the Paviland Cave collection was made during a visit to the National Museum of Wales (Cardiff) in November 2022.

Due to the apparent similarity between the lithic assemblages from Wogan Cavern and Paviland Cave, raw materials here are described using terminology favoured by Swainston (2000) for the Paviland collection. Although current work is looking to clarify the different materials used for stone tool production in the south Welsh Upper Palaeolithic (E. Walker pers. comm. 2022), the terminology used by Swainston is presently the most appropriate for the Wogan Cavern assemblage.

The Assemblage

Higher Pleistocene layer

Lithic artefacts from the higher Pleistocene layer were recovered from the upper part of Context 5006 (Table 1). Artefacts were found in both excavated squares: squares 4 and 6.

One flake fragment was recovered from the then lowest excavated part of square 4 during the 2021 fieldwork, from similar depth and the same context as the material recovered from the higher Pleistocene layer in 2022 (Dinnis et al. 2022; see main report for details). Because only one anthropogenic piece was found at this depth in 2021, the designation of the layer as archaeological was tentative (Dinnis et al. 2022). The 2022 excavations recovered further worked lithics from this square and from the same depth and context in the adjacent square 6, thereby confirming the presence of an archaeological layer.

In total, 12 probably or certainly anthropogenic lithic pieces were recovered from the layer during the 2022 excavation (detailed in Table 1). A few further, extremely small pieces found during screening may be anthropogenic, but are not sufficiently characteristic in morphology to be accepted here as certainly/probably anthropogenic.

The small size of the assemblage limits interpretation, but several observations can be made:

- A laminar flake fragment with edge retouch suggests that this is an Upper Palaeolithic assemblage
- The materials used for stone tool manufacture appear comparable to other south Welsh (Upper) Palaeolithic cave sites. This includes sites on the Gower peninsula (most notably Paviland) where flint was used alongside materials previously described as rhyolite and “black carboniferous chert” (following Swainston 2000).
- The artefacts show little sign of significant post-depositional damage, suggesting a limited amount of post-depositional movement.
- The presence of small pieces alongside larger pieces indicates that geological sorting is limited (although extremely small pieces weighing <0.2g may well have filtered down the sequence).

Lower Pleistocene layer

Lithic artefacts from the lower Pleistocene layer were recovered from at or near the base of Context 5006 and from the underlying Context 5007. Only Square 6 was excavated to this depth, and only the uppermost part of 5007 (c.2cm depth) was excavated.

Eight probably or certainly anthropogenic lithic pieces were recovered from the layer (Table 2). A few further, extremely small pieces found during screening may be anthropogenic, but are not sufficiently characteristic in morphology to be accepted here as certainly/probably anthropogenic.

Again, the smallness of the assemblage means interpretation must be limited, but some observations can be made:

- The morphology of SF135 is consistent with it being struck from a true blade core. It is therefore reasonable to conclude the layer is most likely Upper Palaeolithic.
- Like the higher Pleistocene layer, the raw materials used are consistent with those used at other south Welsh (Upper) Palaeolithic cave sites, including those on Gower.
- Although difficult to discern its removal scars clearly, initial inspection of one piece (SF122) suggests a techno-typological match with a series of artefacts in the Paviland collection, whereby a “scraper” edge is formed by direct removals to the right of inverse removals (Sollas 1913; Swainston 2000; Dinnis 2011)⁵. Based on current understanding, these are part of the Paviland Aurignacian (Swainston 2000; Dinnis 2011; Jacobi & Higham 2011). However, although they are documented at a handful of sites in southwest Britain and Belgium, these artefacts are undated at all of these sites.
- Artefacts again show little sign of significant post-depositional damage, suggesting a limited amount of post-depositional movement. Furthermore, the presence of small debitage pieces alongside (heavily) utilised tools suggests activity within the cave.

⁵ For examples in the Paviland collection, see: NMGW 24.94/1.144, NMGW 24.94/1.147a, NMGW 24.94/143, NMGW 24.94/125

Table 1: Certainly/probably worked lithic artefacts from the higher Pleistocene layer recovered during 2022 excavation. Note that the difference in spit number between squares 4 and 6 does not reflect a difference in the depth of the finds, but is instead due to the reinterpretation of Contexts 5005 and 5006 during the 2022 excavation (see the main body of the report for details).

Square	Context	Spit	Date excavated	Small Finds no.	Sample no.	Max dimension (mm)	Weight (g)	Description and notes
4	5006	1	09-Jul	102	N/A	12.9	0.15	cf. Swainston's (2000) fine-grained "black carboniferous chert". Small chip.
4	5006	1	09-Jul	96	N/A	7.0	0.46	?Flint. Flake fragment.
4	5006	1	09-Jul	99	N/A	c.190	1477	Large worn cobble of siliceous material, with one probable anthropogenic flake scar at one end.
4	5006	1	09-Jul	N/A	72	13.2	0.17	Flake fragment, ?rhyolite.
6	5006	1	05-Jul	N/A	47	8.1	0.09	Flake fragment, flint (patinated white).
6	5006	8	08-Jul	90	N/A	11.2	0.18	cf. Swainston's (2000) fine-grained "black carboniferous chert". Small trimming flake.
6	5006	6	07-Jul	84	N/A	23.2	1.74	cf. Swainston's (2000) fine-grained "black carboniferous chert". Proximal(?) portion of laminar blank. Possible direct edge modification on left edge; regular inverse modification on right edge.
6	5006	6	08-Jul	N/A	68	9.9	0.26	Flake fragment, ?rhyolite.
6	5006	5	07-Jul	N/A	65	6.9	0.03	Chip, ?flint.
6	5006	5	07-Jul	N/A	N/A	9.5	0.08	Flake fragment, flint (patinated white).
6	5006	4	06-Jul	N/A	67	5.4	0.03	Chip, ?flint.
6	5006	4	06-Jul	N/A	67	3.2	0.02	Chip, cf. Swainston's (2000) fine-grained "black carboniferous chert".

Table 2: Certainly/probably worked lithic artefacts from the lower Pleistocene layer recovered during 2022 excavation.

Square	Context	Spit	Date excavated	Small Finds no.	Sample no.	Max dimension (mm)	Weight (g)	Description and notes
6	5006	12	12-Jul	122	N/A	34.1	11.76	Thick rhyolite flake with retouch around most of its margin. An apparently alternating "scraper" edge seems to be composed of direct removals positioned to the right of inverse removals. Opposite this is a small nose-like protrusion, isolated and shaped by direct retouch.
6	5006	12	12-Jul	119	N/A	6.1	0.01	cf. Swainston's (2000) fine-grained "black carboniferous chert". Small debitage fragment (?).
6	5006	12	12-Jul	118	N/A	14.5	0.34	Unpatinated flint (?) flake fragment. Inverse edge modification on left edge.
6	5006	12	12-Jul	N/A	84	9.9	0.11	cf. Swainston's (2000) fine-grained "black carboniferous chert". Small debitage fragment.
6	5007	1	12-Jul	131	N/A	13.8	1.23	cf. Swainston's (2000) fine-grained "black carboniferous chert". Fragment of larger retouch piece.
6	5007	1	13-Jul	135	N/A	53.1	6.88	Fine, complete rhyolite laminar flake. Edges generally intact but with small fracturing that could be taphonomic damage. Direct edge modification distally on both edges is more organised, and therefore more likely retouch/use modification.
6	5007	1	12-Jul	134	N/A	23.5	6.1	Flint. Heavily modified, proximal fragment of laminar(?) piece. Direct retouch on right edge; alternating retouch/modification on left edge. Proximally, the blank has two large secondary removal facets on the ventral surface, flanking (and therefore partially obscuring) what was probably the blank's butt.
6	5007	1	12-Jul	133	N/A	20.9	1.44	cf. Swainston's (2000) fine-grained "black carboniferous chert". Mesial fragment of laminar flake?

Significance of the Assemblage

The lithic material from Pleistocene deposits at Wogan Cavern mark it as an extremely valuable Palaeolithic site. Most Welsh (Upper) Palaeolithic caves were excavated many decades ago, which has hindered progress in understanding the period (Walker 2022). Wogan Cavern therefore offers a unique chance to further our understanding greatly, via the application of modern excavation and analytical techniques.

The lithic material is seemingly well-stratified, and does not appear to have undergone large-scale post-depositional movement. The cave therefore offers the future chance for use-wear/residue analysis, which are not possible on other Upper Palaeolithic assemblages from other Welsh caves. A lack of post-depositional movement of the material also opens up the possibility of spatial analysis, which has never been possible for any Welsh Palaeolithic cave site.

The identification of an apparent techno-typological link between Wogan Cavern's lower Pleistocene layer and the Paviland collection is particularly notable. The series of artefacts that characterises the collection have, ever since their first publication by Sollas (1913), been attributed to the Early Upper Palaeolithic Aurignacian (e.g. Swainston 2000; Jacobi & Higham 2011; Dinnis 2012), which in northwest Europe is currently thought to mark the first occupation by *Homo sapiens*. Although similar artefacts have been identified at Kents Cavern in Devon and Spy Cave, Goyet and Trou Magrite in Belgium (Dinnis 2012), it is not possible to date them at any of these sites. Wogan Cavern therefore offers the first opportunity to directly date this Palaeolithic facies, thereby testing the long-held assumption that it relates to well-dated Aurignacian material elsewhere in Europe.

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APPENDIX 7: CERAMICS AND GLASS (DEE WILLIAMS)

Glass and ceramic material from the 2021 and 2022 excavations at Wogan Cavern was examined. Provisional identifications of material from the 2021 excavations are presented in Table A, and those from the 2022 excavations in Table B (both below). Below this is a short note about the medieval and later pottery.

Note: Provisional comments on the 2021 material reported in Dinnis and French (2021) were made on the basis of examination of photographs. The observations here therefore supersede those comments.

Table A: Glass and ceramics excavated in 2021 (WC21). Note: “RD” = R. Dinnis comment. Dr. David Griffiths is gratefully acknowledged for comments regarding SF100.

Context	Material (as on bag, not verified)	Small Find no.	Pieces in bag	Photo	Notes
2001 (clean)	Glass	N/A	5	IMG_8105	19 th century or later
2004	Pottery	N/A	1	IMG_8120	Developed whiteware, 19 th /20 th century
2004	Glass	N/A	5	IMG_8121	19 th century or later
7001	Glass	N/A	1	IMG_8128	19 th century or later
7001	Pottery	N/A	2	IMG_8129	1 pc slate (RD), Post-medieval sherd
7001	Glass	N/A	1	IMG_8135	19 th century or later
7003	Clay pipe	N/A	1	IMG_8140	Probably 19 th century
7002	Pot	100	1	IMG_8152	Oxford ware. Roman, 4 th century?
7004	Clay pipe	N/A	3	IMG_8165	Probably 19 th century
7004	Glass	N/A	2	IMG_8171	19 th century or later
7004	Pot sherd	121	1	IMG_8181	Black-Burnished ware (BB1), Roman, possibly 4 th century
7004	Pot sherd	123	1	IMG_8183	Rim piece, uncertain, possibly Roman
7004	Pot sherd	124	1	IMG_8184	North Devon gravel-tempered ware, 17 th /18 th century
7004	Pot sherd	126	1	IMG_8186	Rim piece, possibly Roman
5001 Cleaning	Glass	N/A	8	IMG_8193	19 th century or later
5001 Cleaning	Pottery	N/A	1	IMG_8195	Medieval

Table B: Glass and ceramics excavated in 2022 (WC22).

Trench	Square	Context	Material (as on bag)	Small Find no.	Pieces in bag	Photo	Notes
7	4	From South- facing wall	Pottery	136	1	WC22 finds catalogue (333)	Black-burnished ware dish rim (BB1), Roman, C2nd-C4th AD.
7	1	7002	Pottery	N/A	1	WC22 finds catalogue (380)	North Devon gravel-tempered ware (NDGTW). Flanged rim from large bowl or dish. Post-med C17th/C18th.
7	2	7001	Glass	N/A	6	WC22 finds catalogue (385)	Assorted bottle glass, modern.
7	1	7001	Glass	N/A	3	WC22 finds catalogue (387)	Assorted bottle glass, modern.
7	3	7007	Ceramic	N/A	1	WC22 finds catalogue (390)	Severn Valley ware jar? Plain body sherd with zone of burnishing. Roman, C2nd-C4th AD.
7	4	7002	Glass	N/A	9	WC22 finds catalogue (395)	Assorted bottle glass, modern.
5	6	5002	Glass	N/A	1	WC22 finds catalogue (396)	Bottle/vessel glass, modern.
7	4	7001	Glass	N/A	4	WC22 finds catalogue (404)	Assorted bottle glass, modern.
7	4	7003 / 7004	Glass	N/A	3	WC22 finds catalogue (414)	2 uncertain/indeterminate frags and 1 frag 19 th century wine bottle.
7	4	Cleaning section	Glass	N/A	1	WC22 finds catalogue (419)	Wine bottle glass, 19 th /20 th century.
7	4	7002	Ceramic	N/A	4	WC22 finds catalogue (436)	Black-burnished ware jar (BB1). Roman, C2nd-C4th AD. 3 sherds representing 3 vessels are Oxford red-brown slipped ware? One of the sherds has stamped & rouletted decoration. Roman, C3rd-end of C4th AD.

Trench	Square	Context	Material (as on bag)	Small Find no.	Pieces in bag	Photo	Notes
7	4	7004	Clay pipes	N/A	2	WC22 finds catalogue (437)	Plain stem fragments.
7	2	7002	Glass	N/A	11	WC22 finds catalogue (438)	Assorted bottle glass, modern.
7	4	7002	Glass	N/A	1	WC22 finds catalogue (443)	Bottle/vessel glass, modern.
7	1	7002	Glass	N/A	3	WC22 finds catalogue (450)	1 very fine colourless frag with impurities i.e. bubbly, indeterminate form but quite possibly Roman. 2 frags modern bottle glass.
7	3	7007	Pottery	N/A	3	WC22 finds catalogue (458)	Largest of 3 oxidised sherds is possibly roman, the two tiny buff-coloured sherds are possibly medieval Dyfed gravel-tempered ware. All three are too small to determine vessel form and precise date.
7	2	7002	Pottery	N/A	3	IMG_2707	1 sherd Oxford red-brown slipped ware? Roman, mid C3rd-end of C4th AD. 1 fragment of iron and 1 unknown material, not obviously ceramic, burnt?
7	1	7003/7004	Clay pipe	N/A	1	IMG_2711	Plain stem fragment with traces of green glaze.
7	1	7002	Ceramic	N/A	4	IMG_2713	2 joining sherds with rouletted decoration and 1 other sherd are Oxford red-brown slipped ware? Roman, mid C3rd-end of C4th AD. 1 small oxidised sherd is possibly Roman but the form is indeterminate.
7	1	7002	Glass	N/A	2	IMG_2717	1 very fine frag with impurities i.e. bubbly, indeterminate form but possibly Roman. 1 frag modern bottle glass.
7	4	7005	Ceramic	N/A	1	IMG_2718	Severn Valley ware?. Plain body sherd, indeterminate form. Roman, C2nd-C4th AD.

The medieval and later pottery

There is one definite and two possible sherds of medieval pottery in the small assemblage. The one identifiable sherd (WC21, Context 5001 (cleaning)) is the thumb-pressed base from a thirteenth/fourteenth century green-glazed jug, the fabric of which suggests West Wales manufacture. The other two tiny pieces of fired clay (WC22, Context 7007) are possibly medieval Dyfed gravel-tempered ware but their very size makes certain identification impossible.

The later pottery is post-medieval and comprises two sherds from seventeenth/eighteenth century North Devon gravel-tempered ware vessels: they are the rim from a large dish or bowl (WC22, Context 7002) and one body sherd from an internally-glazed basin or dish (WC21, Context 2004). A single sherd of developed whiteware (WC21, Context 2004) is late nineteenth or twentieth century.

APPENDIX 8: COINS (NAOMI PAYNE)

Two Roman coins were recovered from Trench 7, both from deposits close to the surface. The first was recorded as coming from context 7002, a thin mixed deposit forming the cave's floor, which is here interpreted as spoil from previous work in the cave. The second was recorded as coming from the stratigraphically lower context 7005, which is interpreted as the first intact deposit in this area of the cave. (See comments in main body of report regarding the possibility that both actually derive from 7005.)

The first coin (from 7002) is a nummus of Constans (AD 337-350) with VICTORIAE DD AVGG QNN (two Victories facing each, each holding a wreath) on the reverse. This coin has the mintmark //TRP, for Trier, and dates from AD 347-8 (RIC VIII Treveri 185).

The second coin (from 7005) is also a nummus of the House of Constantine, but concreted material on the obverse means that the emperor cannot be identified. The reverse and date are the same as the first coin, but the mintmark, A//[PARL] indicates it was minted at Arles. It is likely to be either RIC VIII Arelate 78 (for Constantius II) or RIC VIII Arelate 79 (for Constans).

The fact that both are of the same type and date could suggest that they were originally deposited together.

Reference

RIC VIII:

Kent, J. P., 1981, *The Roman Imperial Coinage (Vol. VIII): The Family of Constantine I, A.D. 337-364*. London: Spink.

APPENDIX 9: CATALOGUE OF ALL MATERIAL COLLECTED

Note that some of the ID's are the original field descriptions, and therefore not all are accurate.

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	1	7002	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (1)
5	4	5006	1	09/07/2022	Bone	N/A	N/A	WC22 finds catalogue (2)
5	4	5006	1	09/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (3)
5	6	5006	4	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (4)
5	6	5006	4	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (5)
5	6	5006	3	05/07/2022	Bone	N/A	N/A	WC22 finds catalogue (6)
7	4	7009	N/A	02/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (7)
7	4	7004	N/A	02/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (8)
7	4	7011	N/A	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (9)
5	6	5006	9	11/07/2022	Bone microfauna	N/A	N/A	WC22 finds catalogue (10)
5	6	5006	7	08/07/2022	Bone	N/A	N/A	WC22 finds catalogue (11)
5	6	5006	7	08/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (12)
5	6	5006	1	04/07/2022	Bone	N/A	N/A	WC22 finds catalogue (13)
7	4	7014	1	12/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (14)
7	4	7014	1	12/07/2022	Bone	N/A	N/A	WC22 finds catalogue (15)
5	6	5004A	1	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (16)
7	4	Cleaning section	N/A	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (17)
7	2	7002	N/A	28/06/2022	Bones + microfauna	N/A	N/A	WC22 finds catalogue (18)
7	4	7009	N/A	01/07/2022	Bone microfauna	N/A	N/A	WC22 finds catalogue (19)
7	4	7004	N/A	30/06/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (20)
7	3	7008 Eastern half	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (21)
7	3	7009	N/A	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (22)
7	4	Section cleaning	N/A	05/07/2022	Bone + microfauna	N/A	N/A	WC22 finds catalogue (23)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	2	05/07/2022	Burnt bone	N/A	N/A	WC22 finds catalogue (24)
7	3	7009	N/A	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (25)
5	6	5006	6	07/07/2022	Bone	N/A	N/A	WC22 finds catalogue (26)
5	6	5006	6	07/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (27)
7	4	7013	N/A	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (28)
7	4	7013	N/A	01/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (29)
5	6	Cleaning of North facing section from 5006 base <u>or</u> 5007	N/A	13/07/2022	Bone	N/A	N/A	WC22 finds catalogue (30)
7	4	Cleaning	N/A	04/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (31)
5	6	5006	8	08/07/2022	Bone	N/A	N/A	WC22 finds catalogue (32)
5	6	5006	8	08/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (33)
7	4	7012	4	11/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (34)
5	6	5007	1	12/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (35)
7	4	7006	N/A	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (36)
7	4	7003 / 7004	N/A	29/06/2022	Bone / teeth	N/A	N/A	WC22 finds catalogue (37)
7	4	7003 / 7004	N/A	29/09/2022	Microfauna	N/A	N/A	WC22 finds catalogue (38)
5	6	5007	1	12/07/2022	Bone	N/A	N/A	WC22 finds catalogue (39)
5	6	5002	1	28/06/2022	Bone / tooth / microfauna	N/A	N/A	WC22 finds catalogue (40)
7	3	7010	N/A	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (41)
7	4	7012	2	05/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (42)
7	1	7002	N/A	29/06/2022	Bone / tooth	N/A	N/A	WC22 finds catalogue (43)
7	3 (W)	7008	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (44)
7	4	7008	N/A	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (45)
7	2	7001	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (46)
5	6	5003	1	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (47)
7	4	7012	2	05/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (48)
7	2	7002	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (49)
7	4	7002	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (50)
7	3	7005	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (51)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7012	2	05/07/2022	Bone	N/A	N/A	WC22 finds catalogue (52)
7	3	7005	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (53)
7	4	7002	N/A	28/06/2022	Bone / teeth	N/A	N/A	WC22 finds catalogue (54)
7	1	7001 / 7002	N/A	28/06/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (55)
7	4	7002	N/A	28/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (56)
7	4	7009	N/A	02/07/2022	Tooth	N/A	N/A	WC22 finds catalogue (57)
5	6	5003	1	30/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (58)
7	3	7007	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (59)
5	6	5006	5	07/07/2022	Bone	N/A	N/A	WC22 finds catalogue (60)
7	4	7014	1	12/07/2022	Bone	N/A	N/A	WC22 finds catalogue (61)
7	4	7014	1	12/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (62)
5	6	5006	5	07/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (63)
7	3	7007	N/A	29/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (64)
5	6	5002	2	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (65)
5	6	5004A	1	01/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (66)
7	4	7008	N/A	01/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (67)
5	6	5005	6	06/07/2022	Tooth fragment	N/A	N/A	WC22 finds catalogue (68)
7	4	7009	N/A	01/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (69)
5	6	5006	11	11/07/2022	Bone	N/A	N/A	WC22 finds catalogue (70)
7	4	7008	N/A	01/07/2022	Bone / tooth	N/A	N/A	WC22 finds catalogue (71)
5	6	5004A	2	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (72)
5	6	5004A	2	01/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (73)
5	6	5006	1	04/07/2022	Bone	N/A	N/A	WC22 finds catalogue (74)
7	3	7007	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (75)
7	3	Cleaning of 701	N/A	30/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (76)
7	3	7012	3	09/07/2022	Bone	N/A	N/A	WC22 finds catalogue (77)
7	4	7012	2	05/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (78)
7	3	Int 7009 + 7012	N/A	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (79)
7	1	7003 / 7004	N/A	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (80)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5002	2	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (81)
7	3	7012	2	07/07/2022	Bone	N/A	N/A	WC22 finds catalogue (82)
7	3	7012	2	07/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (83)
5	6	5004	1	01/07/2022	Bone	N/A	N/A	WC22 finds catalogue (84)
7	4	7001	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (85)
7	3	7006	N/A	28/06/2022	Bone / teeth	N/A	N/A	WC22 finds catalogue (86)
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (87)
5	6	Section cleaning	N/A	13/07/2022	Bone + microfauna	N/A	N/A	WC22 finds catalogue (88)
7	3	7012	1	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (89)
7	3	7012	1	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (90)
7	4	7005	N/A	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (91)
7	3	Sect. clean (base)	N/A	13/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (92)
5	6	5002	3	29/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (93)
5	6	5002	3	29/06/2022	Bone	N/A	N/A	WC22 finds catalogue (94)
5	6	5004	1	01/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (95)
5	6	5006	4	06/07/2022	Burnt bone?	N/A	N/A	WC22 finds catalogue (96)
5	6	5006	10	11/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (97)
7	4	7012	3	07/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (98)
5	6	5006	2	05/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (99)
7	3	7012	4	11/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (100)
5	6	5006	12	12/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (101)
5	6	5006	12	12/07/2022	Bone	N/A	N/A	WC22 finds catalogue (102)
7	4	7015	1	12/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (103)
7	4	7012	N/A	04/07/2022	Bone	N/A	N/A	WC22 finds catalogue (104)
5	6	5006	2	05/07/2022	Bone	N/A	N/A	WC22 finds catalogue (105)
7	3	7012	1	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (106)
7	1	7001	N/A	28/06/2022	Bone	N/A	N/A	WC22 finds catalogue (107)
7	3	7012	1	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (108)
7	3	7012	4	11/07/2022	Bone	N/A	N/A	WC22 finds catalogue (109)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7005	N/A	30/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (110)
7	4	7012	2	05/07/2022	Bone	N/A	N/A	WC22 finds catalogue (111)
7	4	7012	3	07/07/2022	Bone	N/A	N/A	WC22 finds catalogue (112)
7	3	7012	3	11/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (113)
7	4	Section cleaning (base)	N/A	13/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (114)
7	4	7009	N/A	02/07/2022	Bone / tooth	N/A	N/A	WC22 finds catalogue (115)
7	3	7012	2	06/07/2022	Bone	N/A	N/A	WC22 finds catalogue (116)
7	3	7012	2	06/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (117)
7	4	7009	N/A	02/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (118)
7	3	7012	3	08/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (119)
7	3	7012	3	08/07/2022	Bone	N/A	N/A	WC22 finds catalogue (120)
7	3	7012	3	09/07/2022	Bone	N/A	N/A	WC22 finds catalogue (121)
7	3	7012	3	09/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (122)
7	4	7012	N/A	04/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (123)
7	3 + 4	Section cleaning (in depth)	N/A	13/07/2022	Bone / microfauna	N/A	N/A	WC22 finds catalogue (124)
7	4	7012	N/A	04/07/2022	Bone	N/A	N/A	WC22 finds catalogue (125)
7	3	7012	4	11/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (126)
7	3	7012	4	11/07/2022	Bone	N/A	N/A	WC22 finds catalogue (127)
7	3	7012	3	11/07/2022	Bone	N/A	N/A	WC22 finds catalogue (128)
7	4	7012	3	08/07/2022	Bone	N/A	N/A	WC22 finds catalogue (129)
5	6	5004	1	30/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (130)
5	6	5004	1	30/06/2022	Bone	N/A	N/A	WC22 finds catalogue (131)
7	3	7012	2	07/07/2022	Bone	N/A	N/A	WC22 finds catalogue (132)
7	3	7007	N/A	28/06/2022	Microfauna	N/A	N/A	WC22 finds catalogue (133)
7	4	7012	3	08/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (134)
7	3	7012	2	07/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (135)
5	6	5006	1	05/07/2022	Bone	N/A	N/A	WC22 finds catalogue (136)
5	6	5006	3	05/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (137)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	3	7012	3	09/07/2022	Microfauna	N/A	N/A	WC22 finds catalogue (138)
5	6	5003	1	30/06/2022	Bone	N/A	16	WC22 finds catalogue (139)
7	4	7012	1	04/07/2022	Bone + teeth	N/A	43	WC22 finds catalogue (140)
5	6	5006	6	07/07/2022	Bone	N/A	68	WC22 finds catalogue (141)
5	6	5005	5	05/07/2022	Bone	N/A	52	WC22 finds catalogue (142)
7	4	7011	N/A	01/07/2022	Bone	N/A	23	WC22 finds catalogue (143)
5	6	5006	6	07/07/2022	Bone	N/A	68	WC22 finds catalogue (144)
7	4	7012	1	04/07/2022	Bone	N/A	43	WC22 finds catalogue (145)
5	6	5007	1	13/07/2022	Bone	N/A	90	WC22 finds catalogue (146)
7	4	7012	N/A	04/07/2022	Bone	N/A	35	WC22 finds catalogue (147)
7	4	7012	N/A	04/07/2022	Bone	N/A	34	WC22 finds catalogue (148)
5	6	5006	4	06/07/2022	Bone	N/A	58	WC22 finds catalogue (149)
5	4	5006	1	09/07/2022	Bone	N/A	72	WC22 finds catalogue (150)
7	3	7007	N/A	29/06/2022	Bone	N/A	10	WC22 finds catalogue (151)
5	6	5006	1	05/07/2022	Bone	N/A	47	WC22 finds catalogue (152)
5	6	5006	5	07/07/2022	Bone	N/A	65	WC22 finds catalogue (153)
5	6	5005	3	04/07/2022	Bone	N/A	42	WC22 finds catalogue (154)
5	6	5006	5	07/07/2022	Bone	N/A	62	WC22 finds catalogue (155)
7	4	7009	N/A	02/07/2022	Bone	N/A	29	WC22 finds catalogue (156)
5	6	5006	9	11/07/2022	Bone	N/A	73	WC22 finds catalogue (157)
7	4	7011	N/A	30/06/2022	Bone	N/A	17	WC22 finds catalogue (158)
5	6	5006	8	08/07/2022	Bone	N/A	71	WC22 finds catalogue (159)
7	3	7010	N/A	30/06/2022	Bone	N/A	14	WC22 finds catalogue (160)
5	6	5007	1	12/07/2022	Bone / tooth	N/A	88	WC22 finds catalogue (161)
5	6	5002	3	29/06/2022	Bone	N/A	6	WC22 finds catalogue (162)
5	6	5006	11	11/07/2022	Bone	N/A	82	WC22 finds catalogue (163)
5	6	5005	4	05/07/2022	Bone	N/A	48	WC22 finds catalogue (164)
5	6	5005	6	06/07/2022	Tooth	N/A	56	WC22 finds catalogue (165)
7	3	7008 (W)	N/A	29/06/2022	Bone	N/A	12	WC22 finds catalogue (166)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	4	5006	1	09/07/2022	Bone	N/A	72	WC22 finds catalogue (167)
5	6	5006	3	05/07/2022	Bone	N/A	66	WC22 finds catalogue (168)
5	6	5006	5	07/07/2022	Bone	N/A	62	WC22 finds catalogue (169)
5	6	5006	7	08/07/2022	Bone	N/A	69	WC22 finds catalogue (170)
5	6	5007	1	12/07/2022	Bone	N/A	88	WC22 finds catalogue (171)
5	6	5006	2	05/07/2022	Bone	N/A	50	WC22 finds catalogue (172)
5	6	5006	11	11/07/2022	Bone	N/A	79	WC22 finds catalogue (173)
5	6	5006	6	07/07/2022	Bone	N/A	68	WC22 finds catalogue (174)
5	6	5005	7	07/07/2022	Bone	N/A	59	WC22 finds catalogue (175)
7	3	7006	N/A	28/06/2022	Bone	N/A	8	WC22 finds catalogue (176)
5	6	5005	6	06/07/2022	Bone	N/A	56	WC22 finds catalogue (177)
5	6	5006	6	08/07/2022	Bone	N/A	63	WC22 finds catalogue (178)
5	6	5006	3	05/07/2022	Bone	N/A	66	WC22 finds catalogue (179)
5	6	5005	2	04/07/2022	Bone	N/A	39	WC22 finds catalogue (180)
5	6	5005	2	04/07/2022	Bone	N/A	38	WC22 finds catalogue (181)
5	6	5006	12	12/07/2022	Bone	N/A	84	WC22 finds catalogue (182)
5	6	5004A	1	01/07/2022	Bone	N/A	24	WC22 finds catalogue (183)
5	6	5006	7	08/07/2022	Bone	N/A	69	WC22 finds catalogue (184)
7	4	7012	N/A	04/07/2022	Bone	N/A	34	WC22 finds catalogue (185)
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	N/A	55	WC22 finds catalogue (186)
5	6	5006	5	07/07/2022	Bone	N/A	65	WC22 finds catalogue (187)
5	6	5004	1	01/07/2022	Bone	N/A	20	WC22 finds catalogue (188)
7	3	7012	1	06/07/2022	Bone	N/A	57	WC22 finds catalogue (189)
5	6	5006	4	06/07/2022	Bone	N/A	67	WC22 finds catalogue (190)
5	6	5002	2	29/06/2022	Bone	N/A	4	WC22 finds catalogue (191)
5	6	5005	1	02/07/2022	Bone	N/A	31	WC22 finds catalogue (192)
5	6	5006	10	11/07/2022	Bone	N/A	77	WC22 finds catalogue (193)
5	6	5005	8	07/07/2022	Bone	N/A	61	WC22 finds catalogue (194)
5	6	5006	2	05/07/2022	Bone	N/A	51	WC22 finds catalogue (195)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	4	06/07/2022	Bone	N/A	58	WC22 finds catalogue (196)
5	6	5006	12	12/07/2022	Bone	N/A	84	WC22 finds catalogue (197)
7	3	7012	3	09/07/2022	Bone	N/A	74	WC22 finds catalogue (198)
7	4	7014	1	12/07/2022	Bone	N/A	87	WC22 finds catalogue (199)
7	4	7013	N/A	01/07/2022	Sorted residue / Bone	N/A	28	WC22 finds catalogue (200)
5	6	5005	3	04/07/2022	Bone	N/A	40	WC22 finds catalogue (201)
5	6	5006	12	12/07/2022	Bone	N/A	84	WC22 finds catalogue (202)
5	6	5006	3	05/07/2022	Bone	N/A	54	WC22 finds catalogue (203)
5	6	5005	6	06/07/2022	Bone	N/A	56	WC22 finds catalogue (204)
5	6	5006	3	05/07/2022	Bone	N/A	54	WC22 finds catalogue (205)
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	N/A	55	WC22 finds catalogue (206)
5	6	5004A	2	01/07/2022	Bone / Teeth	N/A	26	WC22 finds catalogue (207)
5	6	5005	2	09/07/2022	Bone	N/A	37	WC22 finds catalogue (208)
5	6	5002	1	28/06/2022	Bone	N/A	2	WC22 finds catalogue (209)
5	6	5006	4	06/07/2022	Bone	N/A	67	WC22 finds catalogue (210)
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	55	WC22 finds catalogue (211)
7	4	7012	N/A	04/07/2022	Shell	N/A	35	WC22 finds catalogue (212)
7	4	7009	N/A	02/07/2022	Shell	N/A	29	WC22 finds catalogue (213)
5	6	5005	2	04/07/2022	Shell	N/A	38	WC22 finds catalogue (214)
5	6	5005	3	04/07/2022	Shell	N/A	42	WC22 finds catalogue (215)
5	6	5004	1	01/07/2022	Shell	N/A	20	WC22 finds catalogue (216)
7	4	7012	N/A	04/07/2022	Shell	N/A	34	WC22 finds catalogue (217)
7	3	7006	N/A	28/06/2022	Shell	N/A	8	WC22 finds catalogue (218)
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	55	WC22 finds catalogue (219)
5	6	5005	1	02/07/2022	Shell	N/A	31	WC22 finds catalogue (220)
5	6	5002	2	29/06/2022	Shell	N/A	4	WC22 finds catalogue (221)
7	4	7012	1	04/07/2022	Shell	N/A	43	WC22 finds catalogue (222)
5	6	5006	1	05/07/2022	Shell	N/A	47	WC22 finds catalogue (223)
5	6	5005	6	06/07/2022	Shell	N/A	56	WC22 finds catalogue (224)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	4	06/07/2022	Shell	N/A	58	WC22 finds catalogue (225)
7	4	7013	N/A	01/07/2022	Sorted residue / Shell	N/A	28	WC22 finds catalogue (226)
5	6	5004A	1	01/07/2022	Shell	N/A	24	WC22 finds catalogue (227)
5	6	5003	1	30/06/2022	Shell	N/A	16	WC22 finds catalogue (228)
5	6	5002	3	29/06/2022	Shell	N/A	6	WC22 finds catalogue (229)
7	3	7008 (W)	N/A	29/06/2022	Shell	N/A	12	WC22 finds catalogue (230)
5	6	5004A	2	01/07/2022	Shell	N/A	26	WC22 finds catalogue (231)
5	6	5006	11	11/07/2022	Shell	N/A	82	WC22 finds catalogue (232)
5	6	5007	1	12/07/2022	Shell	N/A	88	WC22 finds catalogue (233)
5	6	5006	6	07/07/2022	Shell	N/A	68	WC22 finds catalogue (234)
5	4	5006	1	09/07/2022	Shell	N/A	72	WC22 finds catalogue (235)
7	3	7010	N/A	30/06/2022	Shell	N/A	14	WC22 finds catalogue (236)
7	4	7011	N/A	30/06/2022	Shell	N/A	17	WC22 finds catalogue (237)
7	3	7007	N/A	29/06/2022	Shell	N/A	10	WC22 finds catalogue (238)
7	4	7012	N/A	04/07/2022	Shell	N/A	34	WC22 finds catalogue (239)
5	6	5002	1	28/06/2022	Shell	N/A	2	WC22 finds catalogue (240)
7	4	7011	N/A	01/07/2022	Shell	N/A	23	WC22 finds catalogue (241)
7	4	7012	1	04/07/2022	Shell	N/A	43	WC22 finds catalogue (242)
5	6	5006	5	07/07/2022	Shell	N/A	65	WC22 finds catalogue (243)
5	6	5006	6	08/07/2022	Shell	N/A	63	WC22 finds catalogue (244)
5	6	5005	5	05/07/2022	Shell	N/A	52	WC22 finds catalogue (245)
7	3	7007	N/A	29/06/2022	Antler	8	N/A	WC22 finds catalogue (246)
7	3	7005	N/A	28/06/2022	Bone (Human patella)	1	N/A	WC22 finds catalogue (247)
7	3	7007	N/A	28/06/2022	Jaw	4	N/A	WC22 finds catalogue (248)
7	3	7005	N/A	28/06/2022	Bone	2	N/A	WC22 finds catalogue (249)
7	3	7005	N/A	28/06/2022	Bone	3	N/A	WC22 finds catalogue (250)
5	6	5002	2	29/06/2022	Bone	5	N/A	WC22 finds catalogue (251)
5	6	5002	6	29/06/2022	Bone	6	N/A	WC22 finds catalogue (252)
5	6	5002	3	29/06/2022	Bone	7	N/A	WC22 finds catalogue (253)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5003	1	30/06/2022	Bone	12	N/A	WC22 finds catalogue (254)
5	6	5003	1	30/06/2022	Tooth	20	N/A	WC22 finds catalogue (255)
7	4	7009	N/A	02/07/2022	Enamel fragment?	30	N/A	WC22 finds catalogue (256)
7	4	7009	N/A	02/07/2022	Bone	31	N/A	WC22 finds catalogue (257)
7	4	7009	N/A	02/07/2022	Bone	32	N/A	WC22 finds catalogue (258)
7	4	7012	N/A	04/07/2022	Bone	34	N/A	WC22 finds catalogue (259)
7	4	7012	N/A	04/07/2022	Bone	35	N/A	WC22 finds catalogue (260)
7	4	7012	N/A	04/07/2022	Bone	36	N/A	WC22 finds catalogue (261)
5	6	5005	3	04/07/2022	Bone	37	N/A	WC22 finds catalogue (262)
5	6	5005	3	04/07/2022	Bone	38	N/A	WC22 finds catalogue (263)
7	4	7012	N/A	04/07/2022	Bone	40	N/A	WC22 finds catalogue (264)
7	4	7012	N/A	04/07/2022	Bone microfauna	41	N/A	WC22 finds catalogue (265)
5	6	5006	1	05/07/2022	Bone	42	N/A	WC22 finds catalogue (266)
5	6	5006	1	05/07/2022	Bone	43	N/A	WC22 finds catalogue (267)
7	4	7012	2	05/07/2022	Tooth	44	N/A	WC22 finds catalogue (268)
7	4	7012	2	05/07/2022	Bone	45	N/A	WC22 finds catalogue (269)
7	4	7012	2	05/07/2022	Bone	46	N/A	WC22 finds catalogue (270)
7	4	7012	2	05/07/2022	Tooth	47	N/A	WC22 finds catalogue (271)
7	4	7012	2	05/07/2022	Bone	48	N/A	WC22 finds catalogue (272)
5	6	5006	2	05/07/2022	Bone	49	N/A	WC22 finds catalogue (273)
7	4	7012	2	05/07/2022	Bone	52	N/A	WC22 finds catalogue (274)
7	4	7012	2	05/07/2022	Bone	54	N/A	WC22 finds catalogue (275)
5	6	5006	3	05/07/2022	Bone	55	N/A	WC22 finds catalogue (276)
5	6	5006	3	05/07/2022	Bone	56	N/A	WC22 finds catalogue (277)
5	6	5006	3	05/07/2022	Bone	57	N/A	WC22 finds catalogue (278)
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	58	N/A	WC22 finds catalogue (279)
7	3	7012	1	06/07/2022	Bone	59	N/A	WC22 finds catalogue (280)
7	3	7012	1	06/07/2022	Bone	60	N/A	WC22 finds catalogue (281)
7	3	7012	1	06/07/2022	Bone	62	N/A	WC22 finds catalogue (282)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	3	7012	1	06/07/2022	Bone	63	N/A	WC22 finds catalogue (283)
7	3	7012	1	06/07/2022	Bone	64	N/A	WC22 finds catalogue (284)
7	3	7012	1	06/07/2022	Tooth	65	N/A	WC22 finds catalogue (285)
5	6	5006	4	06/07/2022	Bone	66	N/A	WC22 finds catalogue (286)
5	6	5006	4	06/07/2022	Bone	67	N/A	WC22 finds catalogue (287)
5	6	5006	4	06/07/2022	Bone	68	N/A	WC22 finds catalogue (288)
5	6	5006	4	06/07/2022	Bone	69	N/A	WC22 finds catalogue (289)
5	6	5006	4	06/07/2022	Bone fragments	70	N/A	WC22 finds catalogue (290)
5	6	5006	4	06/07/2022	Bone	71	N/A	WC22 finds catalogue (291)
7	3	7012	2	07/07/2022	Bone	72	N/A	WC22 finds catalogue (292)
7	3	7012	2	07/07/2022	Bone	73	N/A	WC22 finds catalogue (293)
7	3	7012	2	07/07/2022	Bone	75	N/A	WC22 finds catalogue (294)
5	6	5006	5	07/07/2022	Bone	76	N/A	WC22 finds catalogue (295)
5	6	5006	5	07/07/2022	Bone	77	N/A	WC22 finds catalogue (296)
5	6	5006	5	07/07/2022	Bone	78	N/A	WC22 finds catalogue (297)
5	6	5006	5	07/07/2022	Bone	79	N/A	WC22 finds catalogue (298)
5	6	5006	5	07/07/2022	Bone	80	N/A	WC22 finds catalogue (299)
7	4	7012	3	07/07/2022	Bone	82	N/A	WC22 finds catalogue (300)
7	4	7012	3	07/07/2022	Bone	83	N/A	WC22 finds catalogue (301)
5	6	5006	6	07/07/2022	Bone (hum?)	85	N/A	WC22 finds catalogue (302)
7	4	7012	3	08/07/2022	Tooth	87	N/A	WC22 finds catalogue (303)
7	3	7012	3	08/07/2022	Bone	91	N/A	WC22 finds catalogue (304)
7	3	7012	3	08/07/2022	Bone	92	N/A	WC22 finds catalogue (305)
7	3	7012	3	08/07/2022	Bone	93	N/A	WC22 finds catalogue (306)
7	3	7012	3	08/07/2022	Bone	94	N/A	WC22 finds catalogue (307)
7	3	7012	3	08/07/2022	Bone	95	N/A	WC22 finds catalogue (308)
5	4	5006	1	09/07/2022	Bone	97	N/A	WC22 finds catalogue (309)
5	4	5006	1	09/07/2022	Bone	98	N/A	WC22 finds catalogue (310)
5	4	5006	1	09/07/2022	Bone	100	N/A	WC22 finds catalogue (311)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	4	5006	1	09/07/2022	Horn?	101	N/A	WC22 finds catalogue (12)
7	3	7012	3	09/07/2022	Tooth	103	N/A	WC22 finds catalogue (313)
7	3	7012	3	09/07/2022	Bone	104	N/A	WC22 finds catalogue (314)
7	3	7012	3	09/07/2022	Bone	105	N/A	WC22 finds catalogue (315)
7	3	7012	3	09/07/2022	Bone	106	N/A	WC22 finds catalogue (316)
7	3	7012	3	09/07/2022	Bone	107	N/A	WC22 finds catalogue (317)
7	3	7012	3	09/07/2022	Bone	109	N/A	WC22 finds catalogue (318)
7	3	7012	3	11/07/2022	Bone	110	N/A	WC22 finds catalogue (319)
7	3	7012	3	11/07/2022	Bone	111	N/A	WC22 finds catalogue (320)
7	3	7012	3	11/07/2022	Bone	112	N/A	WC22 finds catalogue (321)
7	3	7012	4	11/07/2022	Bone	115	N/A	WC22 finds catalogue (322)
7	3	7012	4	11/07/2022	Bone	116	N/A	WC22 finds catalogue (323)
5	6	5006	12	12/07/2022	Bone	123	N/A	WC22 finds catalogue (324)
5	6	5006	12	12/07/2022	Bone	124	N/A	WC22 finds catalogue (325)
7	4	7014	1	12/07/2022	Bone	125	N/A	WC22 finds catalogue (326)
7	4	7014	1	12/07/2022	Bone	127	N/A	WC22 finds catalogue (327)
7	4	7014	1	12/07/2022	Bone	128	N/A	WC22 finds catalogue (328)
7	4	7014	1	12/07/2022	Bone	129	N/A	WC22 finds catalogue (329)
7	4	7014	1	12/07/2022	Bone	130	N/A	WC22 finds catalogue (330)
5	6	5007	1	12/07/2022	Bone	132	N/A	WC22 finds catalogue (331)
5	6	5007	1	12/07/2022	Lithic	131	N/A	WC22 finds catalogue (332)
7	4	From South facing section wall	N/A	N/A	Pottery	136	N/A	WC22 finds catalogue (333)
5	6	5007	1	13/07/2022	Lithic	135	N/A	WC22 finds catalogue (334)
5	6	5007	1	12/07/2022	Lithic	134	N/A	WC22 finds catalogue (335)
5	6	5007	1	12/07/2022	Lithic	133	N/A	WC22 finds catalogue (336)
7	4	7014	1	12/07/2022	Flint	126	N/A	WC22 finds catalogue (337)
5	6	5006	12	12/06/2022	Rhyolite / Lithic	122	N/A	WC22 finds catalogue (338)
7	4	7015	1	12/07/2022	Flint	121	N/A	WC22 finds catalogue (339)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7015	1	12/07/2022	Flint	120	N/A	WC22 finds catalogue (340)
5	6	5006	12	12/07/2022	Lithic	119	N/A	WC22 finds catalogue (341)
5	6	5006	12	12/07/2022	Lithic	118	N/A	WC22 finds catalogue (342)
7	4	7012	4	11/07/2022	Flint	117	N/A	WC22 finds catalogue (343)
7	3	7012	4	11/07/2022	Flint	114	N/A	WC22 finds catalogue (344)
7	3	7012	3	11/07/2022	Flint	113	N/A	WC22 finds catalogue (345)
7	3	7012	3	11/07/2022	Flint	108	N/A	WC22 finds catalogue (346)
5	4	5006	1	09/07/2022	Lithic	102	N/A	WC22 finds catalogue (347)
5	4	5006	1	09/07/2022	Lithic	96	N/A	WC22 finds catalogue (348)
5	6	5006	8	08/07/2022	Lithic	90	N/A	WC22 finds catalogue (349)
7	4	7012	3	08/07/2022	Flint	86	N/A	WC22 finds catalogue (350)
5	6	5006	6	07/07/2022	Lithic	84	N/A	WC22 finds catalogue (351)
7	4	7012	3	07/07/2022	Flint	81	N/A	WC22 finds catalogue (352)
7	3	7012	2	07/07/2022	Flint	74	N/A	WC22 finds catalogue (353)
7	3	7012	1	06/07/2022	Flint	61	N/A	WC22 finds catalogue (354)
7	4	7012	2	05/07/2022	Flint	53	N/A	WC22 finds catalogue (355)
7	4	7012	2	05/07/2022	Flint	51	N/A	WC22 finds catalogue (356)
7	4	7012	2	05/07/2022	Flint	50	N/A	WC22 finds catalogue (357)
7	4	7012	N/A	04/07/2022	Flint	39	N/A	WC22 finds catalogue (358)
7	4	7012	N/A	04/07/2022	Flint	33	N/A	WC22 finds catalogue (359)
5	6	5004	1	01/07/2022	Flint	29	N/A	WC22 finds catalogue (360)
5	6	5004	1	01/07/2022	Flint	28	N/A	WC22 finds catalogue (361)
5	6	5004	1	01/07/2022	Flint	27	N/A	WC22 finds catalogue (362)
7	4	7011	N/A	30/06/2022	Lead	25	N/A	WC22 finds catalogue (363)
5	6	5004	1	01/07/2022	Flint	26	N/A	WC22 finds catalogue (364)
5	6	5003	1	30/06/2022	Flint	24	N/A	WC22 finds catalogue (365)
5	6	5003	1	30/06/2022	Flint	23	N/A	WC22 finds catalogue (366)
5	6	5003	1	30/06/2022	Flint	22	N/A	WC22 finds catalogue (367)
5	6	5003	1	30/06/2022	Flint	21	N/A	WC22 finds catalogue (368)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5003	1	30/06/2022	Flint	19	N/A	WC22 finds catalogue (369)
5	6	5003	1	30/06/2022	Flint	18	N/A	WC22 finds catalogue (370)
5	6	5003	1	30/06/2022	Flint	17	N/A	WC22 finds catalogue (371)
5	6	5003	1	30/06/2022	Flint	16	N/A	WC22 finds catalogue (372)
5	6	5003	1	30/06/2022	Flint	15	N/A	WC22 finds catalogue (373)
5	6	5003	1	30/06/2022	Flint	14	N/A	WC22 finds catalogue (374)
5	6	5003	1	30/06/2022	Flint	13	N/A	WC22 finds catalogue (375)
5	6	5003	1	30/06/2022	Flint	11	N/A	WC22 finds catalogue (376)
5	6	5003	1	30/06/2022	Flint	10	N/A	WC22 finds catalogue (377)
5	6	5003	1	30/06/2022	Flint	9	N/A	WC22 finds catalogue (378)
5	6	5002	1	28/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (379)
7	1	7002	N/A	28/06/2022	Pottery	N/A	N/A	WC22 finds catalogue (380)
7	3	7007	N/A	29/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (381)
7	4	7008	N/A	30/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (382)
5	6	5006	1	04/07/2022	Coprolite?	N/A	N/A	WC22 finds catalogue (383)
5	6	5003	1	30/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (384)
7	2	7001	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (385)
7	1	7002	N/A	28/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (386)
7	1	7001	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (387)
5	6	Cleaning section	N/A	13/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (388)
7	4	7002	N/A	29/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (389)
7	3	7007	N/A	28/06/2022	Ceramic	N/A	N/A	WC22 finds catalogue (390)
7	3 + 4	Section clean (in depth)	N/A	13/07/2022	Anthracite	N/A	N/A	WC22 finds catalogue (391)
5	6	5002 - 5003 Contact east facing section	N/A	13/07/2022	Flint	N/A	N/A	WC22 finds catalogue (392)
5	6	Top 5004A East facing section	N/A	13/07/2022	Flint	N/A	N/A	WC22 finds catalogue (393)
7	4	7012	3	07/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (394)
7	4	7002	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (395)
5	6	5002	1	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (396)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5002	2	28/06/2022	Mineral	N/A	N/A	WC22 finds catalogue (397)
7	1	7002	N/A	29/06/2022	Rocks	N/A	N/A	WC22 finds catalogue (398)
7	4	7004	N/A	30/06/2022	Rocks	N/A	N/A	WC22 finds catalogue (399)
7	3	7008 Western half	N/A	29/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (400)
7	4	7003 / 7004	N/A	29/06/2022	Mineral	N/A	N/A	WC22 finds catalogue (401)
5	6	5002	2	29/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (402)
7	4	7012	2	05/07/2022	Flint	N/A	N/A	WC22 finds catalogue (403)
7	4	7001	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (404)
7	3	7008 Western half	N/A	29/06/2022	Metal?	N/A	N/A	WC22 finds catalogue (405)
7	4	7009	N/A	01/07/2022	Quartz	N/A	N/A	WC22 finds catalogue (406)
7	3	7007	N/A	29/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (407)
7	2	7001	N/A	28/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (408)
7	4	7009	N/A	02/07/2022	Stones	N/A	N/A	WC22 finds catalogue (409)
5	6	5006	11	11/07/2022	Mineral	N/A	N/A	WC22 finds catalogue (410)
7	4	7003 / 7004	N/A	29/06/2022	Button	N/A	N/A	WC22 finds catalogue (411)
7	1	7003 / 7004	N/A	29/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (412)
7	4	7002	N/A	29/06/2022	Mineral	N/A	N/A	WC22 finds catalogue (413)
7	4	7003 / 7004	N/A	29/06/2022	Glass	N/A	N/A	WC22 finds catalogue (414)
7	4	7012	2	05/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (415)
7	4	7012	2	05/07/2022	Flint	N/A	N/A	WC22 finds catalogue (416)
7	3	7007	N/A	28/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (417)
7	4	7003 / 7004	N/A	29/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (418)
7	4	Cleaning section	N/A	01/07/2022	Glass	N/A	N/A	WC22 finds catalogue (419)
7	4	Cleaning section	N/A	01/07/2022	Anthracite	N/A	N/A	WC22 finds catalogue (420)
7	3	7012	4	11/07/2022	Goethite	N/A	N/A	WC22 finds catalogue (421)
7	4	7005	N/A	30/06/2022	Slate	N/A	N/A	WC22 finds catalogue (422)
7	3	7009	N/A	06/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (423)
7	3	7009	N/A	06/07/2022	Lithic	N/A	N/A	WC22 finds catalogue (424)
7	3	7012	1	06/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (425)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5004A	1	01/07/2022	Goethite?	N/A	N/A	WC22 finds catalogue (426)
7	4	7015	1	12/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (427)
7	3	7012	2	07/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (428)
7	3	7012	2	06/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (429)
7	3	7012	3	11/07/2022	Mineral	N/A	N/A	WC22 finds catalogue (430)
7	4	7012	4	11/07/2022	Rocks	N/A	N/A	WC22 finds catalogue (431)
7	3	7012	3	08/07/2022	Crinoid	N/A	N/A	WC22 finds catalogue (432)
7	4	7002	N/A	28/06/2022	Mineral	N/A	N/A	WC22 finds catalogue (433)
7	4	7004	N/A	30/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (434)
7	4	7001	N/A	28/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (435)
7	4	7002	N/A	29/06/2022	Ceramic	N/A	N/A	WC22 finds catalogue (436)
7	4	7004	N/A	30/06/2022	Clay pipes	N/A	N/A	WC22 finds catalogue (437)
7	2	7002	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (438)
5	6	5002	2	28/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (439)
7	4	7004	N/A	30/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (440)
7	4	7004	N/A	30/06/2022	Anthracite	N/A	N/A	WC22 finds catalogue (441)
7	3	7007	N/A	29/06/2022	Charcoal	N/A	10	WC22 finds catalogue (442)
7	4	7002	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (443)
7	2	7002	N/A	28/06/2022	Slag	N/A	N/A	WC22 finds catalogue (444)
7	4	7012	N/A	04/07/2022	Flint	N/A	N/A	WC22 finds catalogue (445)
7	3	7010	N/A	30/06/2022	Charcoal	N/A	N/A	WC22 finds catalogue (446)
7	1	7001 / 7002	N/A	28/06/2022	Metal	N/A	N/A	WC22 finds catalogue (447)
7	4	7004	N/A	30/06/2022	Slate	N/A	N/A	WC22 finds catalogue (448)
7	1	7002	N/A	28/06/2022	Lithic	N/A	N/A	WC22 finds catalogue (449)
7	1	7002	N/A	28/06/2022	Glass	N/A	N/A	WC22 finds catalogue (450)
7	4	7012	N/A	04/07/2022	Crinoids	N/A	34	WC22 finds catalogue (451)
5	6	5006	7	08/07/2022	Stone	N/A	69	WC22 finds catalogue (452)
7	3	7012	1	06/07/2022	Unidentified, to keep	N/A	57	WC22 finds catalogue (453)
7	3	7006	N/A	28/06/2022	Balls	N/A	8	WC22 finds catalogue (454)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7012	1	04/07/2022	?Fish vertebrae / stal / crinoid bead	N/A	43	WC22 finds catalogue (455)
5	6	5006	5	07/07/2022	Stones	N/A	62	WC22 finds catalogue (456)
5	6	5006	6	07/07/2022	To be identified	N/A	68	WC22 finds catalogue (457)
7	3	7007	N/A	29/06/2022	Pottery	N/A	10	WC22 finds catalogue (458)
5	6	5006	4	06/07/2022	Mineral	N/A	67	WC22 finds catalogue (459)
7	3	7012	3	09/07/2022	Eroded lithic	N/A	74	WC22 finds catalogue (460)
5	4	5006	1	09/07/2022	?Unknown stone	N/A	72	WC22 finds catalogue (461)
5	6	5006	3	05/07/2022	Stone with hole	N/A	66	WC22 finds catalogue (462)
5	6	5006	4	06/07/2022	?Rhyolite	N/A	58	WC22 finds catalogue (463)
5	6	5006	5	07/07/2022	To be identified	N/A	65	WC22 finds catalogue (464)
5	6	5006	5	07/07/2022	Flint	N/A	65	WC22 finds catalogue (465)
5	6	5006	4	06/07/2022	Lithic	N/A	58	WC22 finds catalogue (466)
5	6	5006	3	05/07/2022	Rhyolite	N/A	54	WC22 finds catalogue (467)
7	4	7012	1	04/07/2022	Unknown lithic	N/A	43	WC22 finds catalogue (468)
7	2	7002	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (469)
7	4	7004	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (470)
7	4	7002	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (471)
7	1	7002	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (472)
7	4	7011	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (473)
5	6	5002	1	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (474)
7	3	7006	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (475)
7	1	7001	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (476)
7	3	7007	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (477)
7	1	7002	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (478)
7	3	7005	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (479)
7	4	7002	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (480)
5	6	5002	3	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (481)
5	6	5002	2	?	Shell	N/A	N/A	WC22 finds catalogue (482)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7005	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (483)
7	4	7006	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (484)
7	2	7002	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (485)
7	2	7001	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (486)
7	4	7003	N/A	02/07/2022	Shell	N/A	N/A	WC22 finds catalogue (487)
7	4	7013	N/A	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (488)
7	3	7010	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (489)
7	3	7007	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (490)
7	4	7009	N/A	02/07/2022	Shell	N/A	N/A	WC22 finds catalogue (491)
7	1	7003 / 7004	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (492)
7	4	7003 / 7004	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (493)
7	3	7009	N/A	06/07/2022	Shell	N/A	N/A	WC22 finds catalogue (494)
7	4	7008	N/A	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (495)
7	4	Cleaning section	N/A	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (496)
7	1	7001 / 7002	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (497)
7	4	7012	3	08/07/2022	Shell	N/A	N/A	WC22 finds catalogue (498)
7	4	Cleaning section	N/A	05/07/2022	Shell	N/A	N/A	WC22 finds catalogue (499)
5	6	5002	2	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (500)
7	4	7015	1	12/07/2022	Shell	N/A	N/A	WC22 finds catalogue (501)
7	3	7008 Eastern half	2	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (502)
5	6	5004	1	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (503)
7	4	7012	4	11/07/2022	Shell	N/A	N/A	WC22 finds catalogue (504)
5	6	5005	6	06/07/2022	Shell	N/A	N/A	WC22 finds catalogue (505)
5	6	5004	1	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (506)
7	3	7012	1	06/07/2022	Shell	N/A	N/A	WC22 finds catalogue (507)
7	3	7005	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (508)
7	6	7008	N/A	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (509)
5	6	5004A	2	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (510)
5	6	5003	1	30/06/2022	Shell	N/A	N/A	WC22 finds catalogue (511)

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7011	N/A	01/07/2022	Shell	N/A	N/A	WC22 finds catalogue (512)
7	4	7012	N/A	04/07/2022	Shell	N/A	N/A	WC22 finds catalogue (513)
7	4	7012	2	05/07/2022	Shell	N/A	N/A	WC22 finds catalogue (514)
7	3	7008 Eastern half	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (515)
7	4	7012	N/A	13/03/1919	Shell	N/A	N/A	WC22 finds catalogue (516)
7	4	7001	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (517)
7	4	Cleaning	N/A	04/07/2022	Shell	N/A	N/A	WC22 finds catalogue (518)
7	3	7008 Western half	N/A	29/06/2022	Shell	N/A	N/A	WC22 finds catalogue (519)
7	3 + 4	Section clean (in depth)	N/A	13/07/2022	Shell	N/A	N/A	WC22 finds catalogue (520)
7	2	7002	N/A	28/06/2022	Shell	N/A	N/A	WC22 finds catalogue (521)
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	N/A	WC22 finds catalogue (522)
7	4	7012	3	07/07/2022	Shell	N/A	N/A	WC22 finds catalogue (523)
7	3	7009	N/A	06/07/2022	Shell	N/A	N/A	WC22 finds catalogue (524)
7	4	7012	2	05/07/2022	Shell	N/A	N/A	WC22 finds catalogue (525)
7	4	7004	N/A	02/07/2022	Shell	N/A	N/A	IMG_2319
7	4	7015	1	12/07/2022	Shell	N/A	N/A	IMG_2320
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	N/A	IMG_2321
7	4	7009	N/A	01/07/2022	Shell	N/A	N/A	IMG_2322
7	4	7009	N/A	01/07/2022	Shell	N/A	N/A	IMG_2323
7	4	7009	N/A	02/07/2022	Shell	N/A	N/A	IMG_2324
7	4	7012	2	05/07/2022	Shell	N/A	N/A	IMG_2325
7	3	7012	N/A	09/07/2022	Shell	N/A	N/A	IMG_2326
7	3	7012	1	06/07/2022	Shell	N/A	N/A	IMG_2327
7	3	7012	2	07/07/2022	Shell	N/A	N/A	IMG_2328
7	3	7012	3	08/07/2022	Shell	N/A	N/A	IMG_2329
7	3	7012	4	11/07/2022	Shell	N/A	N/A	IMG_2331
5	6	5002/5003	3	29/06/2022	Shell	N/A	N/A	IMG_2332
5	6	5004A	1	01/07/2022	Shell	N/A	N/A	IMG_2333

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	Section clean	N/A	13/07/2022	Shell	N/A	N/A	IMG_2334
5	4	5006	1	09/07/2022	Siliceous clast	99	N/A	IMG_2702
5	6	5006	7	08/07/2022	Stal sample	88	N/A	IMG_2704
5	6	5006	7	08/07/2022	Stal sample	89	N/A	IMG_2705
5	6	Interface between 5005 & 5006 in SW corner of Square	N/A	05/07/2022	Stal?	N/A	N/A	IMG_2742
7	2	7002	N/A	28/06/2022	Metal	N/A	N/A	IMG_2706
7	2	7002	N/A	28/06/2022	Pottery	N/A	N/A	IMG_2707
7	1	7001/7002	N/A	28/06/2022	Net/textile	N/A	N/A	IMG_2708
7	4	7005	N/A	30/06/2022	?Mineral	N/A	N/A	IMG_2709
7	4	7008	N/A	01/07/2022	Anthracite	N/A	N/A	IMG_2710
7	1	7003/7004	N/A	29/06/2022	Clay pipe	N/A	N/A	IMG_2711
7	4	7005	N/A	30/06/2022	Anthracite	N/A	N/A	IMG_2712
7	1	7002	N/A	28/06/2022	Ceramic	N/A	N/A	IMG_2713
7	4	7012	2	05/07/2022	Rocks	N/A	N/A	IMG_2714
7	4	7003/7004	N/A	29/06/2022	Metal	N/A	N/A	IMG_2715
7	3	7012	2	07/07/2022	Lithic	N/A	N/A	IMG_2716
7	1	7002	N/A	29/06/2022	Glass	N/A	N/A	IMG_2717
7	4	7005	N/A	30/06/2022	Ceramic	N/A	N/A	IMG_2718
5	6	5005	2	04/07/2022	Charcoal	N/A	39	IMG_2719
5	6	5004A	1	01/07/2022	Charcoal	N/A	24	IMG_2720
5	6	5004	1	01/07/2022	Charcoal	N/A	20	IMG_2721
7	4	7012	N/A	04/07/2022	Charcoal	N/A	34	IMG_2722
5	6	5002	2	29/06/2022	Charcoal	N/A	4	IMG_2723
5	6	5005	3	04/07/2022	Charcoal	N/A	42	IMG_2724
7	4	7012	1	04/07/2022	Charcoal	N/A	43	IMG_2725
5	6	5006	6	08/07/2022	Charcoal?	N/A	63	IMG_2726
7	3	7010	N/A	30/06/2022	Charcoal?	N/A	14	IMG_2727
7	3	7006	N/A	28/06/2022	Charcoal	N/A	8	IMG_2728

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5003	1	30/06/2022	Charcoal?	N/A	16	IMG_2729
7	4	7012	1	04/07/2022	Charcoal	N/A	43	IMG_2730
5	6	5006	6	07/07/2022	Charcoal	N/A	68	IMG_2731
7	4	7011	N/A	01/07/2022	Charcoal	N/A	23	IMG_2732
5	4	5006	1	09/07/2022	Charcoal	N/A	72	IMG_2733
5	6	5006	3	05/07/2022	Charcoal	N/A	66	IMG_2734
7	3	7007	N/A	29/06/2022	Charcoal	N/A	10	IMG_2735
7	3	7008 (W)	N/A	29/06/2022	Charcoal	N/A	12	IMG_2737
7	4	7011	N/A	30/06/2022	Charcoal	N/A	17	IMG_2738
7	4	7013	N/A	01/07/2022	Sorted residue ?charcoal?	N/A	28	IMG_2739
7	3	7005	N/A	28/06/2022	Charcoal	N/A	N/A	IMG_2740
7	4	7002	N/A	28/06/2022	Charcoal	N/A	N/A	IMG_2741
5	6	5002	1	28/06/2022	Mineral/flint	N/A	N/A	IMG_2836
5	6	5004	1	01/07/2022	Lithic(?)	N/A	N/A	IMG_2837
7	4	7006	N/A	30/06/2022	Flint	N/A	N/A	IMG_2838
7	2	7002	N/A	28/06/2022	?Lithics?	N/A	N/A	IMG_2839
7	4	7012	2	05/07/2022	Flint	N/A	N/A	IMG_2840
7	3	7012	3	09/07/2022	Flint	N/A	N/A	IMG_2841
5	6	5004a	2	01/07/2022	?Flint	N/A	N/A	IMG_2842
7	1	7002	N/A	29/06/2022	Flint	N/A	N/A	IMG_2843
7	4	7005	N/A	30/06/2022	Flint	N/A	N/A	IMG_2844
7	4	Cleaning section	N/A	01/07/2022	Slate	N/A	N/A	IMG_2845
5	6	5004a	1	01/07/2022	Flint Chip	N/A	N/A	IMG_2846
7	4	7009	N/A	02/07/2022	Flint	N/A	N/A	IMG_2847
5	6	5006	5	07/07/2022	Flint	N/A	N/A	IMG_2848
7	4	7012	3	07/07/2022	Flint	N/A	N/A	IMG_2849
7	3	7008 Eastern half	2	29/06/2022	Mineral	N/A	N/A	IMG_2850
7	3	Int 7009 + 7012	N/A	06/07/2022	Flint	N/A	N/A	IMG_2851
7	4	7012	3	08/07/2022	Flint	N/A	N/A	IMG_2852

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	3	7012	1	06/07/2022	Flint	N/A	N/A	IMG_2853
7	3	7003	1	06/07/2022	Flint	N/A	N/A	IMG_2854
7 or 5	N/A	Unknown context	N/A	29/6 or 30/6	Flint	N/A	N/A	IMG_2855
7	3	7006	N/A	28/06/2022	Flint/mineral	N/A	N/A	IMG_2856
7	4	7014	1	12/07/2022	Flint	N/A	N/A	IMG_2857
7	2	7002	N/A	28/06/2022	Mineral	N/A	N/A	IMG_2858
7	1	7002	N/A	28/06/2022	Flint?	N/A	N/A	IMG_2859
7	1	7001	N/A	28/06/2022	Flint	N/A	N/A	IMG_2860
7	4	7012	4	11/07/2022	Flint	N/A	N/A	IMG_2861
7	4	7002	N/A	28/06/2022	Flint	N/A	N/A	IMG_2862
7	4	7014	1	12/07/2022	?Flint	N/A	N/A	IMG_2890
7	3	Int 7009 + 7012	N/A	06/07/2022	Lithic?	N/A	N/A	IMG_2864
5	6	5002	3	29/06/2022	Flint	N/A	N/A	IMG_2865
7	3	7012	4	11/07/2022	Flint	N/A	N/A	IMG_2866
7	3/4	Section clean	N/A	13/07/2022	Flint	N/A	N/A	IMG_2867
7	3	7012	2	06/07/2022	Flint	N/A	N/A	IMG_2868
7	4	7012	N/A	04/07/2022	Flint	N/A	N/A	IMG_2869
5	6	5004a/5005	N/A	02/07/2022	Quartz	N/A	N/A	IMG_2870
5	6	5004A	2	01/07/2022	Flint?	N/A	N/A	IMG_2871
7	3	7012	3	09/07/2022	Flint	N/A	N/A	IMG_2872
5	6	5003	1	30/06/2022	Flint	N/A	N/A	IMG_2873
5	6	5004	1	30/06/2022	Flint	N/A	N/A	IMG_2874
7	4	7008	N/A	01/07/2022	Flint / lithics?	N/A	N/A	IMG_2875
5	6	5004a	1	01/07/2022	Flint	N/A	N/A	IMG_2876
5	6	5004	1	01/07/2022	Flint	N/A	N/A	IMG_2877
5	6	5005	1	02/07/2022	Flint	N/A	31	IMG_2878
5	6	5006	6	ND	Lithics	N/A	68	IMG_2879
7	4	7012	1	04/07/2022	Flint	N/A	43	IMG_2880
7	3	Int 7009 + 7012	N/A	06/07/2022	Flint	N/A	55	IMG_2881

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	3	7006	N/A	28/06/2022	Flint	N/A	8	IMG_2882
7	4	7013	N/A	01/07/2022	Flint, Quartz	N/A	28	IMG_2883
5	6	5003	1	30/06/2022	Flint	N/A	16	IMG_2884
5	6	5004a	1	01/07/2022	Flint	N/A	24	IMG_2885
5	6	5004	1	01/07/2022	Flint	N/A	20	IMG_2886
5	4	5006	1	09/07/2022	Flint?	N/A	72	IMG_2887
5	6	5004a	2	01/07/2022	Flint	N/A	26	IMG_2888
7	4	7012	N/A	04/07/2022	Flint	N/A	34	IMG_2889
7	4	7012	2	05/07/2022	Shell	N/A	53	IMG_3486
7	4	7012	2	05/07/2022	Mineral	N/A	53	IMG_3487
7	4	7012	2	05/07/2022	Bone	N/A	53	IMG_3488
7	4	7012	2	05/07/2022	Microfauna	N/A	53	IMG_3489
7	4	7011 ("cleaning material")	N/A	11/07/2022	Microfauna	N/A	76	IMG_3490
7	4	7015	1	12/07/2022	Bead (?)	N/A	83	IMG_3491
7	4	7015	1	12/07/2022	Charcoal	N/A	83	IMG_3492
7	4	7015	1	12/07/2022	Microfauna	N/A	83	IMG_3493
7	4	7015	1	12/07/2022	Shell	N/A	83	IMG_3494
7	4	7015	1	12/07/2022	Quartz	N/A	83	IMG_3495
7	3	7012	3	09/07/2022	Burnt bone	N/A	74	IMG_3496
7	3	7012	3	09/07/2022	Mineral	N/A	74	IMG_3497
7	3	7012	3	09/07/2022	Fauna/Bone	N/A	74	IMG_3498
7	3	7012	3	09/07/2022	Lithic	N/A	74	IMG_3499
7	3	7012	3	09/07/2022	Microfauna	N/A	74	IMG_3500
7	4	7012	4	11/07/2022	Burnt bone?	N/A	80	IMG_3501
7	4	7012	4	11/07/2022	Fauna/Bone	N/A	80	IMG_3502
7	4	7012	4	11/07/2022	Flint?	N/A	80	IMG_3503
7	4	7012	4	11/07/2022	Charcoal	N/A	80	IMG_3504
7	4	7012	4	11/07/2022	Mineral	N/A	80	IMG_3505

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7012	4	11/07/2022	Shell	N/A	80	IMG_3506
7	4	7012	4	11/07/2022	Microfauna	N/A	80	IMG_3507
7	4	7012	3	08/07/2022	Flint	N/A	70	IMG_3508
7	4	7012	3	08/07/2022	Microfauna	N/A	70	IMG_3509
7	4	7012	3	08/07/2022	Shell	N/A	70	IMG_3510
7	4	7012	3	08/07/2022	Bone	N/A	70	IMG_3511
7	4	7012	3	08/07/2022	Mineral	N/A	70	IMG_3512
7	3	7012	1	06/07/2022	Microfauna	N/A	57	IMG_3513
7	3	7012	1	06/07/2022	Mineral	N/A	57	IMG_3514
7	3	7012	1	06/07/2022	Fauna/Bone	N/A	57	IMG_3515
7	3	7012	1	06/07/2022	Shell	N/A	57	IMG_3516
7	3	7012	1	06/07/2022	Flint/lithic	N/A	57	IMG_3517
7	3	7012	4	11/07/2022	Fauna	N/A	81	IMG_3518
7	3	7012	4	11/07/2022	Microfauna	N/A	81	IMG_3519
7	3	7012	4	11/07/2022	Shell	N/A	81	IMG_3520
7	3	7012	4	11/07/2022	Charcoal	N/A	81	IMG_3521
7	3	7012	4	11/07/2022	Flint (?)	N/A	81	IMG_3522
7	3	7012	4	11/07/2022	Quartz	N/A	81	IMG_3523
7	4	7012	1	04/07/2022	Mineral	N/A	43	IMG_3525
7	4	7012	1	04/07/2022	Flint/lithic	N/A	43	IMG_3526
7	4	7012	1	04/07/2022	Shell	N/A	43	IMG_3527
7	4	7012	1	04/07/2022	Microfauna	N/A	43	IMG_3528
7	4	7012	1	04/07/2022	Bone	N/A	43	IMG_3529
7	3	Int 7009 + 7012	N/A	06/07/2022	Microfauna	N/A	55	IMG_3530
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	N/A	55	IMG_3531
7	3	Int 7009 + 7012	N/A	06/07/2022	Tooth	N/A	55	IMG_3532
7	3	Int 7009 + 7012	N/A	06/07/2022	Lithics	N/A	55	IMG_3533
7	3	Int 7009 + 7012	N/A	06/07/2022	Charcoal	N/A	55	IMG_3534
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	55	IMG_3535

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	10	11/07/2022	Microfauna	N/A	77	IMG_3536
5	6	5006	10	11/07/2022	Burnt bone	N/A	77	IMG_3537
5	6	5006	10	11/07/2022	Bone	N/A	77	IMG_3538
5	6	5006	10	11/07/2022	Shell	N/A	77	IMG_3539
5	6	5006	10	11/07/2022	Lithic	N/A	77	IMG_3540
5	6	5006	4	06/07/2022	Lithic	N/A	67	IMG_3541
5	6	5006	4	06/07/2022	Microfauna	N/A	67	IMG_3542
5	6	5006	4	06/07/2022	Bone	N/A	67	IMG_3543
5	6	5006	4	06/07/2022	Burnt Bone	N/A	67	IMG_3544
5	6	5006	8	08/07/2022	Microfauna	N/A	71	IMG_3545
5	6	5006	8	08/07/2022	Lithics	N/A	71	IMG_3546
5	6	5006	8	08/07/2022	Bone	N/A	71	IMG_3547
5	6	5006	8	08/07/2022	Burnt?	N/A	71	IMG_3548
5	6	5006	8	08/07/2022	Burnt bone	N/A	71	IMG_3549
5	6	5006	8	08/07/2022	Shell	N/A	71	IMG_3550
5	6	5007	1	12/07/2022	Lithics	N/A	88	IMG_3551
5	6	5007	1	12/07/2022	Shell	N/A	88	IMG_3552
5	6	5007	1	12/07/2022	Burnt Bone?	N/A	88	IMG_3553
5	6	5007	1	12/07/2022	Bone	N/A	88	IMG_3554
5	6	5007	1	12/07/2022	Microfauna	N/A	88	IMG_3555
5	6	5006	4	06/07/2022	Microfauna	N/A	58	IMG_3556
5	6	5006	4	06/07/2022	Bone	N/A	58	IMG_3557
5	6	5006	4	06/07/2022	Burnt bone?	N/A	58	IMG_3558
5	6	5006	5	07/07/2022	Lithic	N/A	65	IMG_3559
5	6	5006	5	07/07/2022	Burnt Bone	N/A	65	IMG_3561
5	6	5006	5	07/07/2022	Bone	N/A	65	IMG_3562
5	6	5006	5	07/07/2022	Shell	N/A	65	IMG_3563
5	6	5006	5	07/07/2022	Microfauna	N/A	65	IMG_3564
5	6	5006	3	05/07/2022	Burnt Bone?	N/A	66	IMG_3565

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	3	05/07/2022	Microfauna	N/A	66	IMG_3566
5	6	5006	3	05/07/2022	Bone	N/A	66	IMG_3568
5	6	5006	12	12/07/2022	Bone	N/A	84	IMG_3569
5	6	5006	12	12/07/2022	Shell	N/A	84	IMG_3570
5	6	5006	12	12/07/2022	Microfauna	N/A	84	IMG_3571
5	6	5006	12	12/07/2022	Lithic	N/A	84	IMG_3572
5	4	5006	1	09/07/2022	Lithic	N/A	72	IMG_3573
5	4	5006	1	09/07/2022	Burnt Bone	N/A	72	IMG_3574
5	4	5006	1	09/07/2022	Bone	N/A	72	IMG_3575
5	4	5006	1	09/07/2022	Microfauna	N/A	72	IMG_3576
5	6	5006	3	05/07/2022	Lithic	N/A	54	IMG_3577
5	6	5006	3	05/07/2022	Shell	N/A	54	IMG_3578
5	6	5006	3	05/07/2022	Burnt bone, resin?	N/A	54	IMG_3579
5	6	5006	3	05/07/2022	Bone	N/A	54	IMG_3580
5	6	5006	3	05/07/2022	Microfauna	N/A	54	IMG_3581
5	6	5006	11	11/07/2022	Shell	N/A	82	IMG_3582
5	6	5006	11	11/07/2022	Microfauna	N/A	82	IMG_3583
5	6	5006	11	11/07/2022	Bone	N/A	82	IMG_3584
5	6	5006	11	11/07/2022	Lithic?	N/A	82	IMG_3585
5	6	5006	5	07/07/2022	Lithic	N/A	62	IMG_3586
5	6	5006	5	07/07/2022	Bone	N/A	62	IMG_3587
5	6	5006	5	07/07/2022	Microfauna	N/A	62	IMG_3588
5	6	5006	5	07/07/2022	Burnt bone	N/A	62	IMG_3589
5	6	5006	5	07/07/2022	Tooth	N/A	62	IMG_3590
5	6	5006	5	07/07/2022	Shell	N/A	62	IMG_3591
5	6	5006	1	05/07/2022	Lithic	N/A	47	IMG_3592
5	6	5006	1	05/07/2022	Microfauna	N/A	47	IMG_3593
5	6	5006	1	05/07/2022	Bone	N/A	47	IMG_3594
5	6	5006	1	05/07/2022	Burnt bone	N/A	47	IMG_3595

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7014	1	12/07/2022	Bone	N/A	87	IMG_3596
7	4	7014	1	12/07/2022	Microfauna	N/A	87	IMG_3597
7	4	7014	1	12/07/2022	Burnt bone	N/A	87	IMG_3598
7	4	7014	1	12/07/2022	Misc geological / mineral	N/A	87	IMG_3599
7	4	7012	1	04/07/2022	Shell	N/A	45	IMG_4134
7	4	7012	1	04/07/2022	Bone	N/A	45	IMG_4135
7	4	7012	1	04/07/2022	Crinoid	N/A	45	IMG_4136
7	4	7012	1	04/07/2022	Microfauna	N/A	45	IMG_4137
7	4	7012	1	04/07/2022	Charcoal	N/A	45	IMG_4138
7	4	7014	1	12/07/2022	Shell	N/A	85	IMG_4139
7	4	7014	1	12/07/2022	Microfauna	N/A	85	IMG_4140
7	4	7014	1	12/07/2022	Microfauna	N/A	85	IMG_4141
7	4	7014	1	12/07/2022	Bone (mostly microfauna)	N/A	85	IMG_4142
7	4	7014	1	12/07/2022	Charcoal	N/A	85	IMG_4143
7	3	Int 7009 + 7012	N/A	06/07/2022	Shell	N/A	55	IMG_4144
7	3	Int 7009 + 7012	N/A	06/07/2022	Bone	N/A	55	IMG_4145
7	3	Int 7009 + 7012	N/A	06/07/2022	Microfauna	N/A	55	IMG_4146
7	3	Int 7009 + 7012	N/A	06/07/2022	Charcoal	N/A	55	IMG_4147
7	3	Int 7009 + 7012	N/A	06/07/2022	Misc	N/A	55	IMG_4148
7	3	7012	2	07/07/2022	Bead?	N/A	60	IMG_4150
7	3	7012	2	07/07/2022	Fauna	N/A	60	IMG_4151
7	3	7012	2	07/07/2022	Flint	N/A	60	IMG_4152
7	3	7012	2	07/07/2022	Microfauna	N/A	60	IMG_4153
7	3	7012	2	07/07/2022	Charcoal	N/A	60	IMG_4154
7	3	7012	2	07/07/2022	Quartz	N/A	60	IMG_4155
7	3	7012	2	07/07/2022	Shell	N/A	60	IMG_4156
7	4	7012	2	05/07/2022	Microfauna	N/A	53	IMG_4157
7	4	7012	2	05/07/2022	Flint	N/A	53	IMG_4158
7	4	7012	2	05/07/2022	Quartz	N/A	53	IMG_4159

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
7	4	7012	2	05/07/2022	Shell	N/A	53	IMG_4160
7	4	7012	2	05/07/2022	Charcoal	N/A	53	IMG_4161
7	4	7012	1	04/07/2022	Microfauna	N/A	43	IMG_4162
7	4	7012	1	04/07/2022	Quartz	N/A	43	IMG_4163
7	4	7012	1	04/07/2022	Charcoal	N/A	43	IMG_4164
7	4	7012	1	04/07/2022	Flint	N/A	43	IMG_4165
7	4	7012	1	04/07/2022	Fauna	N/A	43	IMG_4166
7	4	7012	1	04/07/2022	Shell	N/A	43	IMG_4167
7	3	7012	1	06/07/2022	Fauna	N/A	57	IMG_4168
7	3	7012	1	06/07/2022	Microfauna	N/A	57	IMG_4169
7	3	7012	1	06/07/2022	Shell	N/A	57	IMG_4170
7	3	7012	1	06/07/2022	Quartz	N/A	57	IMG_4171
7	3	7012	1	06/07/2022	Flint	N/A	57	IMG_4172
7	3	7012	1	06/07/2022	Charcoal	N/A	57	IMG_4173
7	3	7012	1	06/07/2022	Burnt bone	N/A	57	IMG_4174
7	1	7002	N/A	28/06/2022	Coin	N/A	N/A	WC22 7002 1, , IMG_4525
7	4	7005	N/A	30/06/2022	Coin	N/A	N/A	WC22 7005 1, , IMG_4525
5	6	5006	6	07/07/2022	Microfauna	N/A	68	IMG_4527
5	6	5006	6	07/07/2022	Bone	N/A	68	IMG_4528
5	6	5006	6	07/07/2022	Burnt Bone?	N/A	68	IMG_4529
5	6	5006	6	07/07/2022	Lithic	N/A	68	IMG_4530
5	6	5006	6	07/07/2022	Teeth	N/A	68	IMG_4531
5	6	5006	9	11/07/2022	Bone	N/A	73	IMG_4532
5	6	5006	9	11/07/2022	Shell	N/A	73	IMG_4533
5	6	5006	9	11/07/2022	Burnt Bone	N/A	73	IMG_4534
5	6	5006	9	11/07/2022	Lithic	N/A	73	IMG_4535
5	6	5006	9	11/07/2022	Microfauna	N/A	73	IMG_4536
5	6	5006	7	08/07/2022	Microfauna	N/A	69	IMG_4538
5	6	5006	7	08/07/2022	Bone	N/A	69	IMG_4539

Trench	Square	Context	Spit	Date excavated	Material (as on bag, not verified)	SF no.	Sample no.	Photo
5	6	5006	7	08/07/2022	Burnt Bone	N/A	69	IMG_4540
5	6	5006	7	08/07/2022	Lithic	N/A	69	IMG_4541
5	6	5006	7	08/07/2022	Shell	N/A	69	IMG_4542

APPENDIX 10: SAMPLING PROTOCOLS AND SAMPLES COLLECTED

All excavated deposits were screened using a 1 cm gauge dry sieve or a 1 mm gauge wet sieve.

All material processed through the wet sieve was allocated a sample number. Wet sieved deposits were then searched for archaeological and palaeontological material. After the removal of archaeological/palaeontological material, the mineral fraction from some of the wet-sieve residues (usually one batch per context) were kept for archive reference. Additional small samples for each geological context were collected during excavation. These were not processed and are intended for future reference.

Other samples were collected with specific analyses in mind (see Figs. 5 and 8 of the main report). Samples 91-100 (Trench 5) and 101-104 (Trench 7) are appropriate for tephra, pollen etc. analyses. Samples 105-122 (Trench 5) and Samples 123-128 (Trench 7) are appropriate for aDNA analysis. Lastly, a large sample of intact deposits suitable for micromorphology was collected from Trench 5 (Sample 129). This sample spanned the calcium carbonate flowstone layer (=Context 5002) and underlying deposits, including the heat-hardened clay area associated with the upper early prehistoric layer in Square 6 (see main report). All of these samples were taken by JB.

For samples for tephra, pollen etc. analysis, the sample area was cleaned and then a scalpel used to collect the sample. Scalpels were cleaned after each surface preparation and collection of each sample. During collection of the aDNA samples JB wore a protective suit, goggles, face mask and gloves. Sample areas in the layer to be sampled were all cleaned with a scalpel, then samples taken from each one with a UV-treated sterilised spatula. Samples were placed in UV-treated sterilised vials. A new scalpel was used for each layer, and a new spatula for each sample location. JB switched gloves after sample area cleaning and before sampling, and between each layer. ELJ, who was herself wearing a face mask and gloves, provided assistance to JB while changing gloves, switching scalpels etc. Samples for aDNA from Trench 5 were collected from the depth of the lowermost layer (Samples 105-110), then the next layer up (Samples 111-116), and finally the uppermost layer (Samples 117-122). Samples from Trench 5 were collected prior to those from Trench 7. These samples were refrigerated after collection and have since been stored in a refrigerator.

The table below details all samples collected during the 2022 fieldwork.

Date excavated/ sampled	Sample number	Trench	Square	Context	Spit	Sample details, notes
28/06/2022	1	5	6	5002	1	Sample not screened
28/06/2022	2	5	6	5002	1	5% of excavated deposit, all residue retained
29/06/2022	3	5	6	5002	2	Sample not screened
29/06/2022	4	5	6	5002	2	5% of excavated deposit, all residue retained
29/06/2022	5	5	6	5002	3	Sample not screened
29/06/2022	6	5	6	5002	3	5% of excavated deposit, all residue retained
29/06/2022	7	7	3	7006	N/A	Sample not screened
29/06/2022	8	7	3	7006	N/A	5% of excavated deposit, all residue retained
29/06/2022	9	7	3	7007	N/A	Sample not screened
29/06/2022	10	7	3	7007	N/A	5% of excavated deposit, all residue retained
29/06/2022	11	7	3	7008	N/A	Sample not screened
29/06/2022	12	7	3	7008	N/A	5% of excavated deposit, all residue retained

Date excavated/ sampled	Sample number	Trench	Square	Context	Spit	Sample details, notes
30/06/2022	13	7	3	7010	N/A	Sample not screened
30/06/2022	14	7	3	7010	N/A	20% of excavated deposit, all residue retained
30/06/2022	15	5	6	5003	1	Sample not screened
30/06/2022	16	5	6	5003	1	10% of excavated deposit, all residue retained
30/06/2022	17	7	4	7011	N/A	20% of excavated deposit, all residue retained
30/06/2022	18	7	4	7011	N/A	Sample not screened
01/07/2022	19	5	6	5004	1	Top burnt surface; sample not screened
01/07/2022	20	5	6	5004	1	10% of excavated deposit, all residue retained
01/07/2022	21	5	6	5004	1	Sample not screened
01/07/2022	22	7	4	7011	N/A	Sample not screened
01/07/2022	23	7	4	7011	N/A	20% of excavated deposit
01/07/2022	24	5	6	5004A	1	10% of excavated deposit, all residue retained
01/07/2022	25	5	6	5004A	1	Sample not screened
01/07/2022	26	5	6	5004A	2	10% of excavated deposit, all residue retained
01/07/2022	27	7	4	7013	N/A	Sample not screened
01/07/2022	28	7	4	7013	N/A	20% of excavated deposit, all residue retained
02/07/2022	29	7	4	7009	N/A	10% of excavated deposit, all residue retained
02/07/2022	30	7	4	7009	N/A	Sample not screened
02/07/2022	31	5	6	5005	1	10% of excavated deposit, all residue retained
02/07/2022	32	5	6	5005	1	Sample not screened
04/07/2022	33	7	4	7012	N/A	Sample not screened
04/07/2022	34	7	4	7012	N/A	10% of excavated deposit, all residue retained
04/07/2022	35	7	4	7012	N/A	10% of excavated deposit, all residue retained
04/07/2022	36	5	6	5005	2	Sample not screened
04/07/2022	37	5	6	5005	2	5% of excavated deposit, all residue retained
04/07/2022	38	5	6	5005	2	5% of excavated deposit, all residue retained
04/07/2022	39	5	6	5005	2	5% of excavated deposit, all residue retained
04/07/2022	40	5	6	5005	3	2-5% of excavated deposit, all residue retained
04/07/2022	41	5	6	5005	3	Sample not screened
04/07/2022	42	5	6	5005	3	50% of excavated deposit
04/07/2022	43	7	4	7012	1	30% of excavated deposit; lower in spit than samples 34 and 35
04/07/2022	44	7	4	7012	1	Sample not screened; lower in spit than sample 33
05/07/2022	45	7	4	7012	1	10% of excavated deposit, all residue retained; lower in spit than samples 34 and 35
05/07/2022	46	5	6	5006	1	Sample not screened
05/07/2022	47	5	6	5006	1	50% of excavated deposit
05/07/2022	48	5	6	5005	4	50% of excavated deposit
05/07/2022	49	5	6	5006	2	Sample not screened
05/07/2022	50	5	6	5006	2	10% of excavated deposit, all residue retained
05/07/2022	51	5	6	5006	2	50% of excavated deposit
05/07/2022	52	5	6	5005	5	50% of excavated deposit

Date excavated/ sampled	Sample number	Trench	Square	Context	Spit	Sample details, notes
05/07/2022	53	7	4	7012	2	50% of excavated deposit
05/07/2022	54	5	6	5006	3	50% of excavated deposit
06/07/2022	55	7	3	Int. 7009 & 7012	N/A	20% of excavated deposit
06/07/2022	56	5	6	5005	6	50% of excavated deposit
07/07/2022	57	7	3	7012	1	50% of excavated deposit
07/07/2022	58	5	6	5006	4	50% of excavated deposit
07/07/2022	59	5	6	5005	7	50% of excavated deposit, all residue retained
07/07/2022	60	7	3	7012	2	50% of excavated deposit
07/07/2022	61	5	6	5005	8	50% of excavated deposit, all residue retained
07/07/2022	62	5	6	5006	5	50% of excavated deposit
08/07/2022	63	5	6	5006	6	2-5% of excavated deposit, all residue retained
08/07/2022	64	5	6	5006	6	Sample not screened
08/07/2022	65	5	6	5006	5	100% of excavated deposit
08/07/2022	66	5	6	5006	3	100% of excavated deposit
08/07/2022	67	5	6	5006	4	100% of excavated deposit
08/07/2022	68	5	6	5006	6	100% of excavated deposit
08/07/2022	69	5	6	5006	7	100% of excavated deposit
08/07/2022	70	7	4	7012	3	50% of excavated deposit
08/07/2022	71	5	6	5006	8	100% of excavated deposit
11/07/2022	72	5	4	5006	1	100% of excavated deposit
11/07/2022	73	5	6	5006	9	100% of excavated deposit
11/07/2022	74	7	3	7012	3	50% of excavated deposit
11/07/2022	75	7	4	7012	4	Sample not screened; sample taken from westernmost part of square
11/07/2022	76	7	4	7011	n/a	100% of excavated deposit
11/07/2022	77	5	6	5006	10	100% of excavated deposit
11/07/2022	78	5	6	5006	11	Sample not screened
11/07/2022	79	5	6	5006	11	2-5% of excavated deposit, all residue retained
11/07/2022	80	7	4	7012	4	50% of excavated deposit
12/07/2022	81	7	3	7012	4	50% of excavated deposit
12/07/2022	82	5	6	5006	11	50% of excavated deposit
12/07/2022	83	7	4	7015	1	50% of excavated deposit
12/07/2022	84	5	6	5006	12	100% of excavated deposit
12/07/2022	85	7	4	7014	1	5% of excavated deposit, all residue retained
12/07/2022	86	7	4	7014	1	Sample not screened
12/07/2022	87	7	4	7014	1	50% of excavated deposit
13/07/2022	88	5	6	5007	1	100% of excavated deposit
13/07/2022	89	5	6	5007	1	Sample not screened
13/07/2022	90	5	6	5007	1	2-5% of excavated deposit, all residue retained
15/07/2022	91	5	6	5002	N/A	South facing section, sediment sample
15/07/2022	92	5	6	5003	N/A	South facing section, sediment sample
15/07/2022	93	5	6	5004	N/A	South facing section, sediment sample
15/07/2022	94	5	6	5004a	N/A	South facing section, sediment sample
15/07/2022	95	5	6	5005	N/A	South facing section, sediment sample
15/07/2022	96	5	6	5005	N/A	South facing section, sediment sample

Date excavated/ sampled	Sample number	Trench	Square	Context	Spit	Sample details, notes
15/07/2022	97	5	6	5006	N/A	South facing section, sediment sample
15/07/2022	98	5	6	5006	N/A	South facing section, sediment sample
15/07/2022	99	5	6	5006	N/A	South facing section, sediment sample
15/07/2022	100	5	6	5007	N/A	South facing section, sediment sample
15/07/2022	101	7	4	7008	N/A	North facing section, sediment sample
15/07/2022	102	7	4	7009	N/A	North facing section, sediment sample
15/07/2022	103	7	4	7012	N/A	North facing section, sediment sample - upper part of 7012
15/07/2022	104	7	4	7012	N/A	North facing section, sediment sample - base of 7012
15/07/2022	105	5	6	Lower layer	N/A	North facing section, lower layer, sample for aDNA
15/07/2022	106	5	6	Lower layer	N/A	North facing section, lower layer, sample for aDNA
15/07/2022	107	5	6	Lower layer	N/A	North facing section, lower layer, sample for aDNA
15/07/2022	108	5	6	Lower layer	N/A	East facing section, lower layer, sample for aDNA
15/07/2022	109	5	6	Lower layer	N/A	East facing section, lower layer, sample for aDNA
15/07/2022	110	5	6	Lower layer	N/A	East facing section, lower layer, sample for aDNA
15/07/2022	111	5	6	Middle layer	N/A	North facing section, middle layer, sample for aDNA
15/07/2022	112	5	6	Middle layer	N/A	North facing section, middle layer, sample for aDNA
15/07/2022	113	5	6	Middle layer	N/A	North facing section, middle layer, sample for aDNA
15/07/2022	114	5	6	Middle layer	N/A	East facing section, middle layer, sample for aDNA
15/07/2022	115	5	6	Middle layer	N/A	East facing section, middle layer, sample for aDNA
15/07/2022	116	5	6	Middle layer	N/A	East facing section, middle layer, sample for aDNA
15/07/2022	117	5	6	Upper layer	N/A	North facing section, upper layer, sample for aDNA
15/07/2022	118	5	6	Upper layer	N/A	North facing section, upper layer, sample for aDNA
15/07/2022	119	5	6	Upper layer	N/A	North facing section, upper layer, sample for aDNA
15/07/2022	120	5	6	Upper layer	N/A	East facing section, upper layer, sample for aDNA
15/07/2022	121	5	6	Upper layer	N/A	East facing section, upper layer, sample for aDNA
15/07/2022	122	5	6	Upper layer	N/A	East facing section, upper layer, sample for aDNA
15/07/2022	123	7	3	7012	N/A	North facing section, sample for aDNA
15/07/2022	124	7	3	7012	N/A	North facing section, sample for aDNA
15/07/2022	125	7	3	7012	N/A	North facing section, sample for aDNA
15/07/2022	126	7	4	7012	N/A	North facing section, sample for aDNA
15/07/2022	127	7	4	7012	N/A	North facing section, sample for aDNA
15/07/2022	128	7	4	7012	N/A	North facing section, sample for aDNA
15/07/2022	129	5	6	Multiple	N/A	South facing section, for micromorph

APPENDIX 11: ON-SITE PERSONNEL DURING THE 2022 EXCAVATIONS

On-site personnel, with the initials used in the paper archive:

- Geraint Lloyd: GL
- Jude Walters: JW
- Rob Walters: RW
- Richmond Pike: RP
- John Boulton: JB
- Jonquil Mogg: JM
- Elodie-Laure Jimenez: ELJ
- Elena Navarro: EN
- Laura Taylor: LT
- Robin Topper: RT
- Robin Worsman: RWor
- Georgie D'Arcy: GDA
- Vicki Stronach: VS
- Nea Craig: NC
- Lona Cobb: LC
- Jonny McChesney: JMc
- Tom MacMillan: TM
- Marion Hervé: MH
- Inga Edwardson: IE
- Meg Mearns: MM
- Hannah Braniff: HB
- Becky Underwood: BU
- Rob Dinnis: RD

APPENDIX 12: REINSTATED EXCAVATION AREAS AT CLOSE OF FIELDWORK

During the 2022 fieldwork excavation was limited to Trenches 5 and 7. The trenches were lined with geotextile prior to backfilling. Due to the wet-sieve processing of a large quantity of sediment, the trenches were backfilled with limestone chips in addition to the spoil from our work. Trench 2 was uncovered for examination by Prof. M. Bates, but was not subject to excavation.

Photographs of working areas following backfill:

All trenches:



Trench 5:



Trench 7:



Trench 7 northwestern corner, with Trench 2 in the background:

