

ROSEMARKIE CAVES PROJECT

Archaeological Excavation in Learnie 1A/B, Learnie 2B/2C

Near Rosemarkie, Ross-shire

Data Structure Report

2017 Excavations



Rosemarkie Caves Project

Archaeological Excavation in Learnie 1A/B, Learnie 2B/2C

Near Rosemarkie, Ross-shire

Data Structure Report 2017 Excavations

National Grid Reference	NH 756 608 (centred)
Site Code	L1A17, L1B17, L2B17, L2C17
Date	31st January 2018
Authors	Birch, S. & Peteranna, M.
Illustrations	Peteranna, M. & Teufel, L.

Table of Contents

1	SUMMARY	- 6 -
2	LOCATION AND GEOLOGY	- 6 -
3	ARCHAEOLOGICAL AND HISTORICAL BACKGROUND	- 7 -
3.1	2010 Caird’s Cave Excavation	- 7 -
3.2	2011-2015 Test Pitting.....	- 7 -
3.3	Excavation in Learnie 2B.....	- 8 -
4.0	AIMS AND OBJECTIVES	- 18 -
5.0	METHODOLOGY.....	- 18 -
5.1	Permissions.....	- 18 -
5.2	Learnie 1A and Learnie 1B.....	- 19 -
5.3	Learnie 2B and Learnie 2C	- 19 -
5.4	Excavation.....	- 19 -
5.5	Sample and finds processing	- 19 -
6	RESULTS	- 20 -
6.1	Learnie 1B.....	- 20 -
6.2	Learnie 1A.....	- 21 -
6.3	Learnie 2B.....	- 22 -
6.4	Learnie 2C.....	- 22 -
7	DISCUSSION	- 23 -
7.1	Learnie 1A / 1B	- 23 -
7.2	Learnie 2B.....	- 24 -
8	CONCLUSION AND RECOMMENDATIONS	- 24 -
9	REFERENCES.....	- 25 -

List of Tables

<i>Table 1: Learnie 1B and Learnie 2B radiocarbon dates.....</i>	<i>- 10 -</i>
--	---------------

List of Figures

<i>Figure 1: S- and W-facing sections of Test Pit 1 from Learnie 1B in 2013 (Peteranna and Gunn 2015) -</i>	<i>10 -</i>
<i>Figure 2: Location of the Learnie cave group, showing the Learnie groups of caves</i>	<i>- 12 -</i>
<i>Figure 3: Location of the 2017 excavation trenches in Learnie 1B (top, showing the 2013 test pit site) Learnie 1A (bottom).....</i>	<i>- 14 -</i>
<i>Figure 4: Location of the 2017 excavation trenches in Learnie 2C (top) and Learnie 2B (bottom), showing the 2016 extent of excavation.....</i>	<i>- 15 -</i>

Figure 5: Mid-excavation plan of the excavation trench in Learnie 1B, showing hearths (117), (118) and (119) on surface (116/103) (inset: plan/section of heart (117))..... - 26 -

Figure 6: Mid-excavation plan of the excavation trench in Learnie 1B, showing hearths (126), (128) and (130) and middens (125), (134) - 27 -

Figure 7: Post-excavation plan of the excavation trench in Learnie 1B, showing the surface of (108) on east side of trench and (142) on west side of trench; location of section drawings - 28 -

Figure 8: Learnie 1B section drawings: G-I, F-H and J-G and G-H, showing the sequence of archaeological deposits across the cave - 29 -

Figure 9: Learnie 1B section drawing: B-A, A-C, D-F and C-K, showing the sequence of archaeological deposits across the cave - 30 -

Figure 10: Post-excavation plan of Learnie 1A, showing excavation to the possible wall (306) on the west side and the base of the sub-trench to (310) in the east side of the trench - 31 -

Figure 11: Learnie 1A: E-facing section of the central trench baulk, showing the deposits in the sub-trench on the east half of the excavation area - 32 -

Figure 12: Learnie 2B: S-facing section of trench 2 in the cave entrance - 33 -

Figure 13: Learnie 2B, pre-excavation plan of the western trench extension showing deposits (238) and (227) over the location of the hearth settings - 34 -

Figure 14: Learnie 2B: pre-excavation plan of cow burial setting (511):..... - 35 -

Figure 15: Learnie 2B: mid-excavation plan of cow burial setting (511) - 36 -

Figure 16: Learnie 2C: post-excavation plan..... - 37 -

Figure 17: Learnie 2C: northern baseline south facing section drawing..... - 38 -

Figure 18: Learnie 2C: trench sections - 39 -

List of Plates

Plate 1: Looking WNW towards the cave entrances at Learnie 1A (left) and Learnie 1B (right)..... - 13 -

Plate 2: Looking WNW across the entrances to Learnie 2B (left), with the 2016 spoil heap in front, and Learnie 2C (right)..... - 13 -

Plate 3: Looking E over excavations in Learnie 1A..... - 16 -

Plate 4: Looking E over excavations in Learnie 1B..... - 16 -

Plate 5: Looking SW over excavations in front of Learnie 2B.....-17-

Plate 6: Looking W over excavations in Learnie 2C..... - 17 -

Plate 7: Learnie 1B: hearth (117) in the west half of the excavation area, facing NW - 40 -

Plate 8: Learnie 1B: leather boot (SF84) on top of bracken mat floor (103)..... - 40 -

Plate 9: Learnie 1B: N- / E-facing trench sections over surface (106/107) on the east side of the excavation area; stone fill (137) to right of ranging pole and (105) in far left centre, facing SW - 41 -

Plate 10: Learnie 1B: post-excavation of west side of excavaton area, showing S-facing trench secton in the central baulk and floor (142), facing NE..... - 41 -

Plate 11: Learnie 1B: post-excavation view of the trench from the back of the cave, facing E..... - 42 -

Plate 12: Learnie 1B: post-excavation image of east side of trench, showing the surface of (108), facing NW (test pit in centre left)..... - 42 -

Plate 13: Learnie 1B: post-excavation image of trench, showing the surface of (108), facing W (test pit in front left)..... - 43 -

Plate 14: SF130, articulated large mammal..... - 43 -

Plate 15: Clothes pin, SF109, from (116)- 44 -vertebrae in situ within (127) - 44 -

Plate 16: SF164, cobble tool w/ central wear..... - 44 -

Plate 18: SF151, quern from c.137..... - 43 -

Plate 19: SF174, medicine bottle from c.305..... - 44 -

Plate 20: SF175, clay pipe “Wilson’s Cutty”, c.305..... - 43 -

Plate 21: SF158, medieval? jug sherd from c.307..... - 44 -

Plate 22: Learnie 2B: excavation through upper layers in the back of the cave, facing W - 45 -

Plate 23: Learnie 2B: hearth setting (508) after removal of ash layer (507), facing W..... - 45 -

Plate 24: Learnie 2B: burial setting (511), pre-excavation with calf rib bones visible, facing S - 46 -

Plate 25: Learnie 2B: mid-excavation of calf burial after removal of burial setting slabs (511), facing E .. - 46 -

Plates 26-34: Volunteers during the 2017 excavations - 48 -

List of Appendices

Appendix 1 List of Contexts: 2017 Excavation - 48 -

Appendix 2 Small Finds Register: 2017 Excavation - 55 -

Appendix 3 Samples Register: 2017 Excavation - 62 -

Appendix 4 Site Plans Register: 2017 excavation - 65 -

Appendix 5 List of Photographs: 2017 excavation..... - 67 -



Acknowledgements

We would like to thank the project funders: the Cromarty Trust, the Highland Council and the Hunter Historical and Archaeological Trust. Many thanks to Scottish Natural Heritage and James Gibbs for their help and support including access arrangements to the caves. We are appreciative of the help and support of the following individuals: Steven Birch, Tim Blackie, Karen Clarke, Paul Dungey, Eric Grant, Simon Gunn, Bob Jones, Rosemary Jones, Allan Mackenzie, James McComas, Mary Peteranna, Sam Williamson, Janet Witheridge and Robin Witheridge. Thank you to the volunteers from North of Scotland Archaeology Society (NOSAS). We would like to thank specially Dame Professor Sue Black and the staff from the Centre for Anatomy and Human Identification, University of Dundee, and Dr Gordon Noble and Kate Britton of the University of Aberdeen for their continued support. The project was also supported by the CARD fund.

Cover: looking out of Learnie 1B in 2017; p.3: recording in progress in Learnie 1B

1 SUMMARY

- 1.1 The purpose of the Rosemarkie Caves Project is to investigate the archaeology of 19 caves on the southeast side of the Black Isle, near Inverness. The project is run by a team of voluntary professional and amateur archaeologists. Previous fieldwork included excavation inside Caird's Cave in 2010, baseline survey of the caves and test pit excavation in eight caves between 2011-2015 and excavation inside Learnie 2B in 2016.
- 1.2 During 2016, the Learnie 2B excavation uncovered significant archaeological results. In a side alcove of the cave, the grave of a 5th/6th century male inhumation 'deviant' burial was uncovered, representing the earliest activity in the cave. After this, adjacent to the burial site, iron smithing took place within a defined area that respected the location of the grave. Later use of the cave took place during the medieval and post-medieval periods, with significant occupation material representing at least transient use during multiple periods. In 2017, further excavation was undertaken in Learnie 2B to complete excavation in the back of the cave. Below c.19th century fire layers, a burial setting contained the mostly complete skeleton of a young calf. The burial had been constructed over the rising natural bedrock, and late 19th century material was found within the skeletal remains – suggesting that the burial had taken place during this period unless it had been disturbed in antiquity.
- 1.3 In 2013 in Learnie 1B, two test pits revealed significant archaeological potential. The 2017 excavation in Learnie 1B covered the location of the test pit within an area extending 7m into the cave from the entrance along the northern wall of the cave. An extensive burnt ash surface formed the termination point for excavation in 2017 at a depth of 0.8-0.9m below the modern floor level near the cave entrance. It was located below a deep stone and sediment layer that formed the underlying deposit for the upper sequence of late- / post- medieval archaeological layers, which included a bracken mat floor, spot fires and small hearth settings and an array of artefacts including worked bone/horn, leather shoes and personal objects. A rubble stone wall and stone clearance pile formed remnants of built features still visible on the surface of the cave floor. Further excavation is planned in Learnie 1B in 2018 to establish the significance of the ash layer and associated deposits.
- 1.4 In Learnie 1A, a small trench was excavated near the entrance of the cave in 2017, revealing a deep stratigraphic sequence below a post-medieval / Victorian upper sequence. A sherd of possible medieval pottery was found within a deep layer that also contained animal bone and shell midden material and overlay an ash/charcoal-rich deposit. This cave has potential for further investigation, and probably had occupation episodes that coincided with Learnie 1B.
- 1.5 Excavation was also undertaken in Learnie 2C in 2017. A narrow, dark cave, the archaeological material survived as a short sequence of layers, including spot fires, that contained mostly late 19th century artefacts including worked horn, ceramic and bottle glass sherds.
- 1.6 This report contains the full results of the 2017 excavations in Learnie 1A, Learnie 1B, Learnie 2B and Learnie 2C, which was undertaken in September 2017. The full data lists from the fieldwork are supplied in the appendices. Recommendations have been made for post-excavation analysis.

2 LOCATION AND GEOLOGY

- 2.1 The Rosemarkie Caves Project (RCP) identified 19 caves on the Moray Firth shoreline northeast of Rosemarkie on the Black Isle in Ross-shire, Scotland. The most southerly cave is situated approximately 9 miles northeast of Inverness. The group of south- and east- facing caves are located between 3-10m above the present highwater mark and most would have been large enough to be occupied permanently or intermittently. The Learnie group of caves are in a small headland on the east-facing coastline below Learnie Farm (NH 755 610) (**Figure 2**).

- 2.2 The caves formed at the base of cliffs comprising psammite, a brittle and easily fractured stone that over time has formed talus mounds at the entrances to many of the caves. The 2-mile stretch of coastline runs northeast to southwest comprising rocky outcrops and offshore reef complexes that would have been accessible only to small boats, while a number of access tracks descend the steep, vegetated slopes from the northwest. The section of coast is a Site of Special Scientific Interest (SSSI), under the protection of Scottish Natural Heritage.
- 2.3 Learnie 1B is the biggest of the 19 caves. At 5m OD, Learnie 1B has an entrance 7 metres across, extends for 21 metres to the back and has a maximum ceiling height of 5 metres. At its widest, the interior measures 10 metres across. The back of the cave splits into 2 tunnels and the floor is mostly flat. Against the south wall, just inside the entrance, was a small, low rubble wall retaining a small stone pile, while a second stone pile was located against the north wall against an interior alcove. To the south of the main cave, Learnie 1A forms almost an adjunct to Learnie 1B (**Plate 1**). Learnie 1A is 9 metres deep and nearly 6.5 metres across. The floor is strewn with collapsed cliff shatter and contained 2 small stone piles against the base of the north wall.
- 2.4 Learnie 2B (**Plate 2**) is a large cave with a fairly flat floor composed of sand and rocks, with opposing stone-built walls breaching the entrance. The cave, situated at 5 metres OD at the entrance prior to excavation, was easily accessible and unhindered by talus banks or other debris. To its north side, Learnie 2C measured 11 meters long with a mostly flat floor that contained signs of interior fire spots.

3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 2010 Caird's Cave Excavation

- 3.1.1 In 2010, the Rosemarkie Caves Project undertook an excavation in Caird's Cave, located southeast of the Learnie group of caves. The purpose of the fieldwork was to establish the extent of antiquarian excavations by Maclean and Hall (1907-1912), which had yielded an important assemblage of prehistoric bone tools. The 2010 excavation revealed the presence of in situ deposits, from which a bone pin and bone working debris similar to Maclean and Hall's assemblage were recovered. Charcoal and bone samples from the excavated sequences were radiocarbon dated from 4th - 3rd century BC to the 2nd - 3rd century AD while further radiocarbon dates obtained from worked bone and antler artefacts from the Maclean and Hall assemblage dating to the 2nd/3rd century AD and the 7th/8th century AD. Also, as part of this work, a small stone structure outside of the cave that had been occupied by travellers during the late 19th to early 20th centuries was also investigated (Anderson-Whymark 2011).

3.2 2011-2015 Test Pitting

- 3.2.1 The Rosemarkie Caves Project conducted test pitting in eight of the caves (Gunn and Peteranna 2016), four of which were located in the Learnie group (1B, 2B, 3B and 3C). Stratified samples of animal bone and charcoal from archaeological layers in the cave test pits provided evidence for occupation during multiple periods within the 6th-9th centuries in the Learnie cave group, with 2nd-4th century and 11th-12th century dates also derived from material in Learnie 3C. Significant evidence for 19th-20th century traveller occupation was found across the caves, particularly in the Learnie group and Ivy Cave, with frequent evidence for leather shoe-making or repair. Learnie 1B and Learnie 2B were highlighted as particularly intriguing given a depth of at least 1m of archaeological material near the front of the caves. Archaeological sequences were also found in Broad Cave and Through & Through Cave, where dated samples indicated that the caves were used within the 10th-12th and 14th-17th centuries. In 3 Peaks Cave, whose entrance is buried deep below a build-up of talus, charcoal obtained from a small stone-built setting provided a 1st-3rd century date.
- 3.2.2 In Learnie 1B, three test pits were excavated: in the cave entrance, on the south side of the cave through a stone pile and inside the cave floor within the north alcove. Test Pit 1 was located at the

entrance to the cave and contained a sequence of up to 14 stratified layers (**Figure 1**). Material comprising 19th / 20th century midden material (iron, glass, ceramics and leather) was confined to the upper layers. Below context 104, the sequence of deposits indicated a lengthy continuity of occupation, with animal bone and shellfish remains appearing alongside evidence for burning. In particular, a slabbed layer (110) within an ash/charcoal lens (108) was interpreted as a possible hearth structure. A fragment of cattle bone from context (111) provided a radiocarbon date of 689-889 cal AD (SUERC-49920) and a single entity hazel charcoal sample from (112) provided a radiocarbon date of 769-965 cal AD (SUERC-49919) (**Table 1**). Test Pit 2 was excavated against the south wall, inside the cave, through a built pile of sharp stone sherds of similar size and type. The spread of the stone covered a linear rubble-built wall (207) comprising 1-3 courses of large stone clasts and cobbles that was interpreted as a late 19th century/ early 20th century wall and would have formed a break or partition within the cave, similar to later walls on the surface of cave Learnie 2B. The small finds in test pit 2 included a penknife with a bone handle, a metal clasp, a clay pipe bowl, a child's leather shoe, an iron axe head, newspaper clippings and a copper coin. Thin underlying layers contained shell midden material contained finds of a similar period and the lowest archaeological horizon (205) excavated indicated a transition, being free of post-medieval material while animal bone was still present. Test Pit 3 was excavated inside the cave, to the north of a ridge of guano (bird droppings). The shallow sequence of archaeological deposits contained remains of a spot fire associated with 19th / 20th century objects including leather offcuts and broken pot sherds, glass bottles and clay pipes before reaching bedrock.

3.3 Excavation in Learnie 2B

- 3.3.1 Prior to 2016, excavation had been undertaken in Learnie 2B during 2006 with test pit excavation following on from this in 2013 – further details of which are in previous reports. One surprise finding during analysis of the 2006 archive was identification of an uncatalogued 2nd century Tetricus I Roman coin (SF235), the origin of which is still a mystery.
- 3.3.2 The 2016 open-area excavation uncovered significant archaeological results (Birch and Peteranna 2017), including evidence for iron-working activity and a 5th/6th century AD male inhumation burial (named Rosemarkie Man). Found in a dark alcove below a post-medieval cobbled floor and midden deposits, the burial comprised the well-preserved remains of a young male who had suffered severe, multiple trauma to the head. The individual had been placed in an unmarked grave in a position with splayed legs with stones weighting down the limbs showing similarities to deviant-type burials, ones which are treated differently from the norm for potential reasons such as a communal ritual offering, an act of remembrance or to render a corpse safe from returning after death. An offering of cattle and horse bones (Kennedy 2018) had been laid over the location of the head, while additional cattle bones were found around the chest area of the inhumation. A series of four radiocarbon dates (**Table 1**), two from rib fragments of Rosemarkie Man and two from the animal bone offering, have indicated that his death occurred between the first half of the 5th century and the first half of the 6th century AD.
- 3.3.3 During a period after the burial was inserted in the cave, the cave was used for a small-scale iron-working industry. A group of pits and cobbled features associated with iron slag, iron scale, furnace base fragments and a piece of a tuyère showed that metal-smithing was undertaken inside a defined area that respected the site of the burial. The suite of features indicated that the industry took place around an area of small work surfaces and hearth settings, within a defined work zone in the back of the cave. Three archaeological layers (232, 233, 234) were isolated within the lowest deposit overlying the basal sand layer (235) where the metal-working features were clearly identified. One radiocarbon date obtained from a sheep rib from (234) provided a date range of 718-941 cal AD (SUERC-70720). A second radiocarbon date from alder charcoal from (235) provided a date range of 670-770 cal AD (SUERC-77435). The earlier date from the basal layer (235) corresponds with three radiocarbon date ranges obtained from 3 samples of indet mammal/sheep bone and hazel charcoal from layers at the base of the test pit that provided ranges of 604-757 cal AD, 645-767 cal AD and 660-770 cal AD (**Table 1**). Although the test pit layers had been tentatively linked to contexts (232/233) by the author, the correlation of the horizons was found to be difficult to establish with any

accuracy. Overall the results represent activity in the cave between the 7th and 8th centuries, with metal-working preceding this. The animal bone material potentially represents later debris mixed in from occupation after metal-working, given the very mobile nature of the sand sediment. By considering the age of the wood when it was burnt in the metal-smithing horizon, it is likely that iron-smithing was the first activity in the cave after Rosemarkie Man was buried inside the alcove – and that the cave could have been selected for this elite industry because of its association with this special burial. There is a growing body of evidence that the dark, liminal space provided by a cave could be seen as a more unusual venue than an open location, imbuing more meaning to the site and thus highlighting the specialised and elite skill as well as the location of a ritualised, overkill burial act.

- 3.3.4 Learnie 2B continued to be used after the period of metal-smithing activities. Thin lenses of material inside the cave contained mostly animal bone, shell and charcoal fragments, layers that deepened towards the front of the caves. An absence of artefacts from these layers has made interpretation of function and chronology difficult, although several probably medieval ceramic sherds have been found in the cave. Subsequent significant use, likely during the late medieval or post-medieval period, was represented by the construction of two mortared stone walls. Built across the entrance, the walls were separated by an access where a wooden door was most likely used. Other interior features included a small hearth setting against the south wall and a cobbled floor in the north wall alcove. A sheep bone sample from an occupation layer (239) below the cobbled floor provided a radiocarbon date of 1495-1799 cal AD (SUERC-70995). While the chronology of the wall was unclear, secondary sediment built up against it contained a small amount of mostly 18th/19th century finds that appear to have been deposited before the wall was put out of use by a build-up of shattered talus material that covered the walls and blocked the entrance. The cave continued to be in use subsequent to this, probably by itinerant dwellers, who may have been employed specifically in shoe manufacture or repair on the basis of a large quantity of shoes, shoe fragments and cut leather fragments found inside the cave.
- 3.3.5 Chronologically, the excavation indicates that Learnie 2B was selected during the 5th/6th centuries as a special burial site, followed by use for metal-smithing. There was at least discontinuous occupation during later periods, possibly including a medieval period occupation – during or after which a stone wall was built across the entrance. While construction of the wall does appear to represent use of the cave for a specific function, it was obviously designed to enclose the space within the cave. Some potential ideas for function include a livestock enclosure, church/worship/eremitic site and storage for smugglers. The cave was also in use at times within the 15th-19th centuries and later occupied by travellers, likely during the late 19th century representing use for a range of everyday activities.

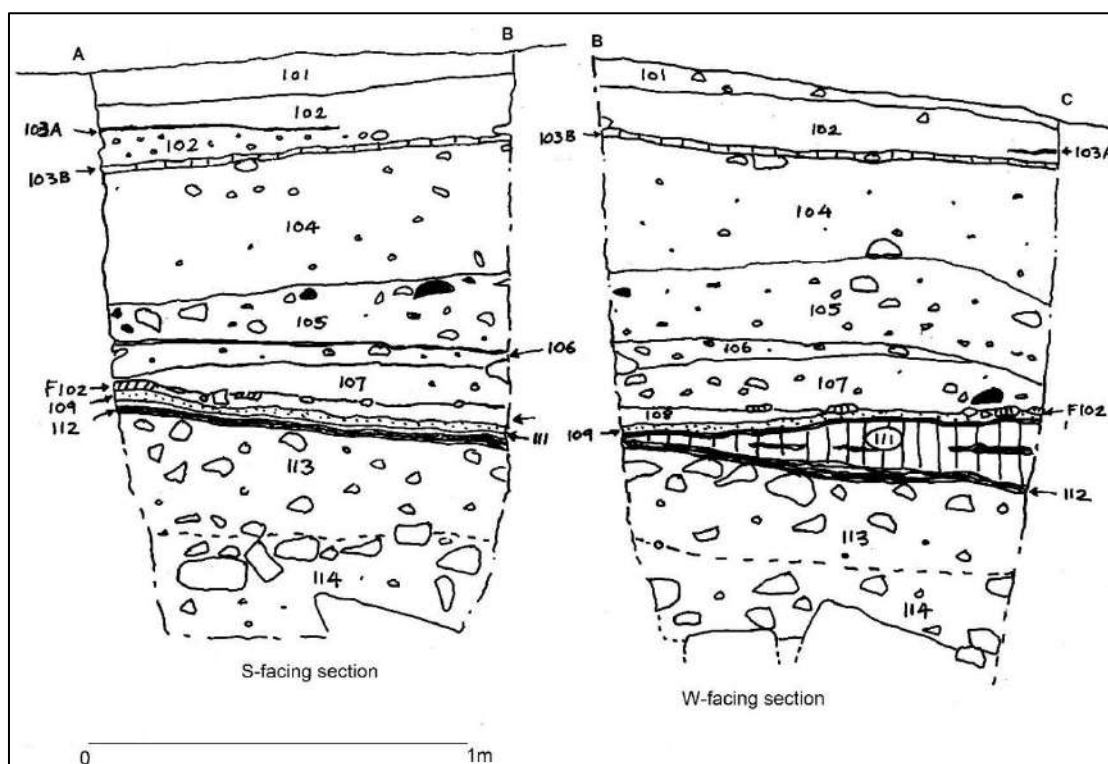
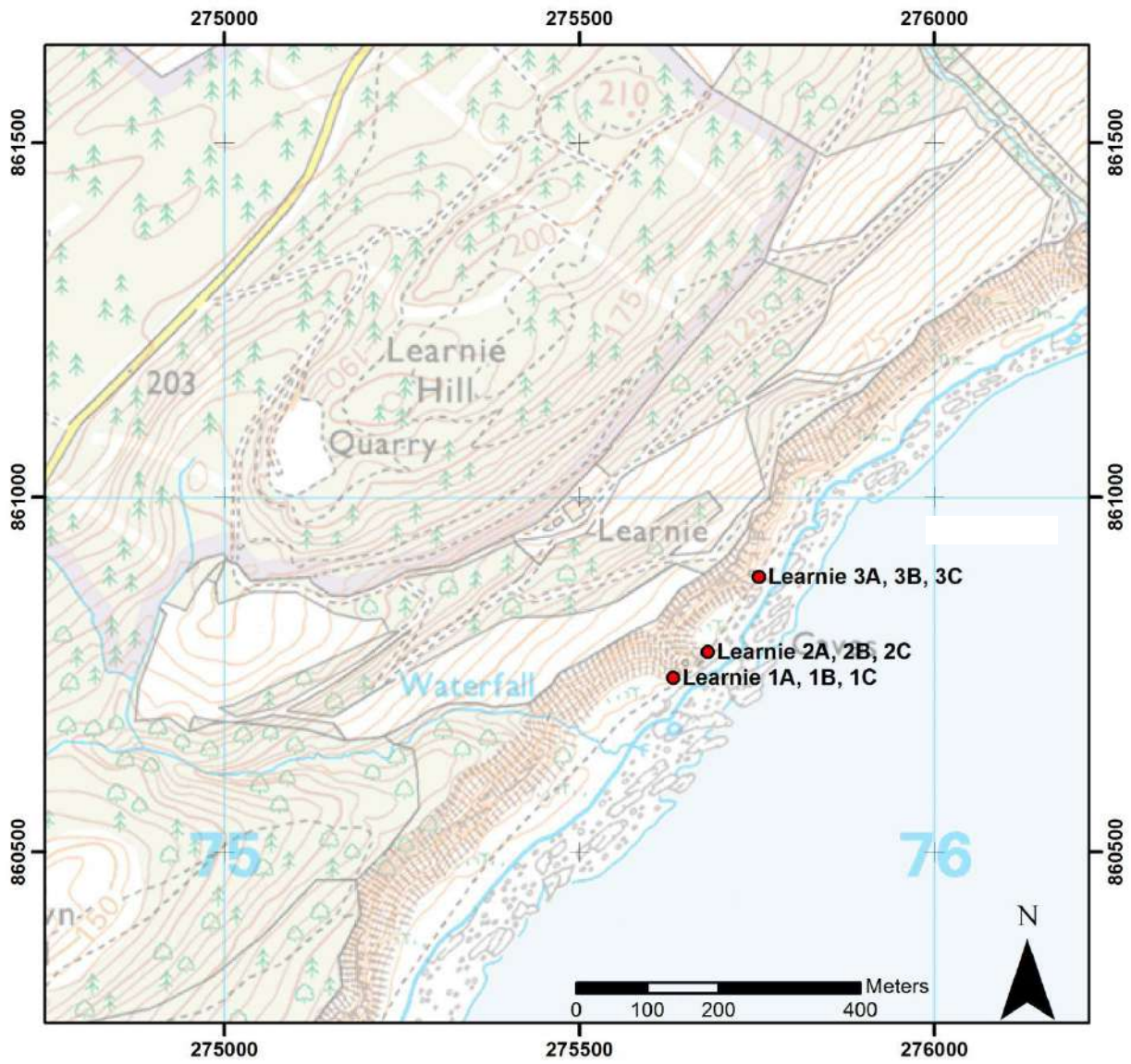


Figure 1: S- and W-facing sections of Test Pit 1 from Learnie 1B in 2013 (Peteranna and Gunn 2015)

Table 1: Learnie 1B and Learnie 2B radiocarbon dates

Lab Code	Cave	Test Pit No.	Sample or Find No.	Context No.	Description	Uncal (BP)	Calibrated 1-sigma (68.2%)	Calibrated 2-sigma (95.4%)
SUERC-49919 (GU32429)	Learnie 1B	T1	7	112	Charcoal from 100cm deep at base of charcoal-ash layer over natural	1177±32	777-889 AD	769-965 AD
SUERC-49920 (GU32430)	Learnie 1B	T1	16	111	Cow bone sample from deposit rich in animal bone, 90cm deep	1225±32	720-870 AD	689-886 AD
SUERC-77423 (GU46476)	Learnie 2B	Main Trench	L2B16-3	264	Human bone, rib fragment from Rosemarkie Man	1538±24	433-564 AD	427-580 AD
SUERC-70721 (GU42494)	Learnie 2B	Main Trench	L2B16-2	264	Human bone, left rib from Rosemarkie Man	1508±3	537-603 AD	430-631 AD
SUERC-77840 (GU46707)	Learnie 2B	Main Trench	214	264	Cow radius frag: Bos sp from over Rosemarkie Man burial	1610±31	400-532 AD	390-539 AD
SUERC-77836 (GU46706)	Learnie 2B	Main Trench	209	264	Horse scapula frag - Equus sp from over Rosemarkie Man burial	1574±29	429-536 AD	415-550 AD
SUERC-77435 (GU46515)	Learnie 2B	Main Trench	Quad D	235	Alder charcoal from lowest archaeological horizon, contains metal-working residues	1282±24	683-766 AD	670-770 AD

Lab Code	Cave	Test Pit No.	Sample or Find No.	Context No.	Description	Uncal (BP)	Calibrated 1-sigma (68.2%)	Calibrated 2-sigma (95.4%)
SUERC-70720 (GU42493)	Learnie 2B	Main Trench	L2B16-1	234	Sheep rib from metalworking horizon (sand below main occupation horizon)	1197±30	775-873 AD	718-941 AD
SUERC-49921 (GU32431)	Learnie 2B	T1	53	108=233	Animal bone from base of deposit at 110cm deep	1372±32	640-672 AD	604-757 AD
SUERC-49923 (GU32433)	Learnie 2B	T2	54	210=232	Sheep bone from 100cm deep in context	1337±32	651-769 AD	645-767 AD
SUERC-49922 (GU32432)	Learnie 2B	T2	13	210=232	Hazel charcoal at 105cm deep from base of context, transition to underlying Context 211	1299±32	669-764 AD	660-770 AD
SUERC-70995 (GU42644)	Learnie 2B	Main Trench	113	239	Sheep left rib from midden deposits overlying metalworking horizon and burial	269±33	1524-1793 AD	1495-1799 AD



Cartographic data reproduced under Ordnance Survey licence no. 100023757 and derived from OS Open Data Crown copyright 2017.

Figure 2: Location of the Learnie cave group, showing the Learnie groups of caves



Plate 1: Looking WNW towards the cave entrances at Learnie 1A (left) and Learnie 1B (right)



Plate 2: Looking WNW across the entrances to Learnie 2B (left-behind the spoil heap), and Learnie 2C (to the right of the spoil)

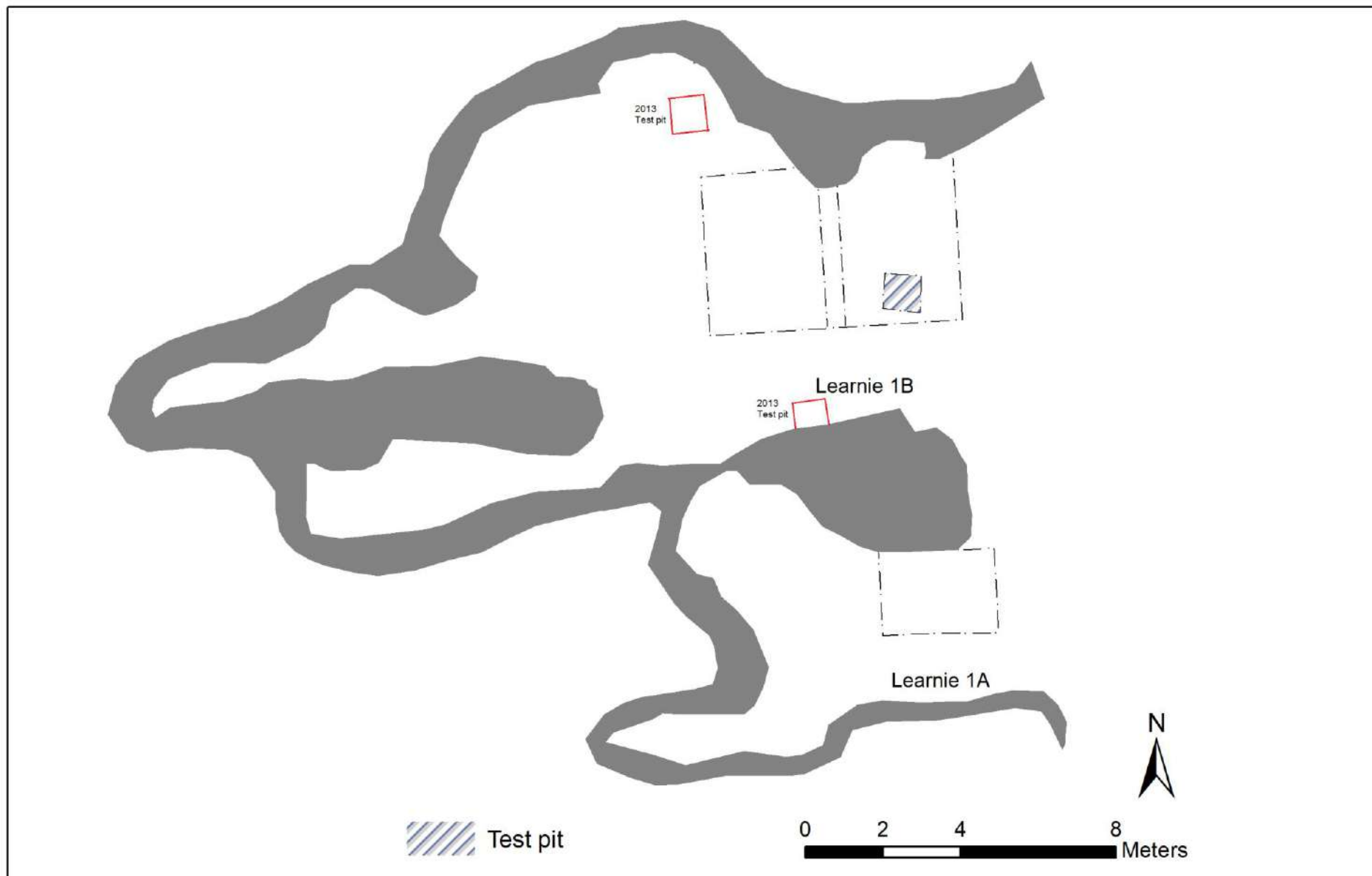


Figure 3: Location of the 2017 excavation trenches in Learnie 1B (top, showing the 2013 test pit site) and Learnie 1A (bottom)

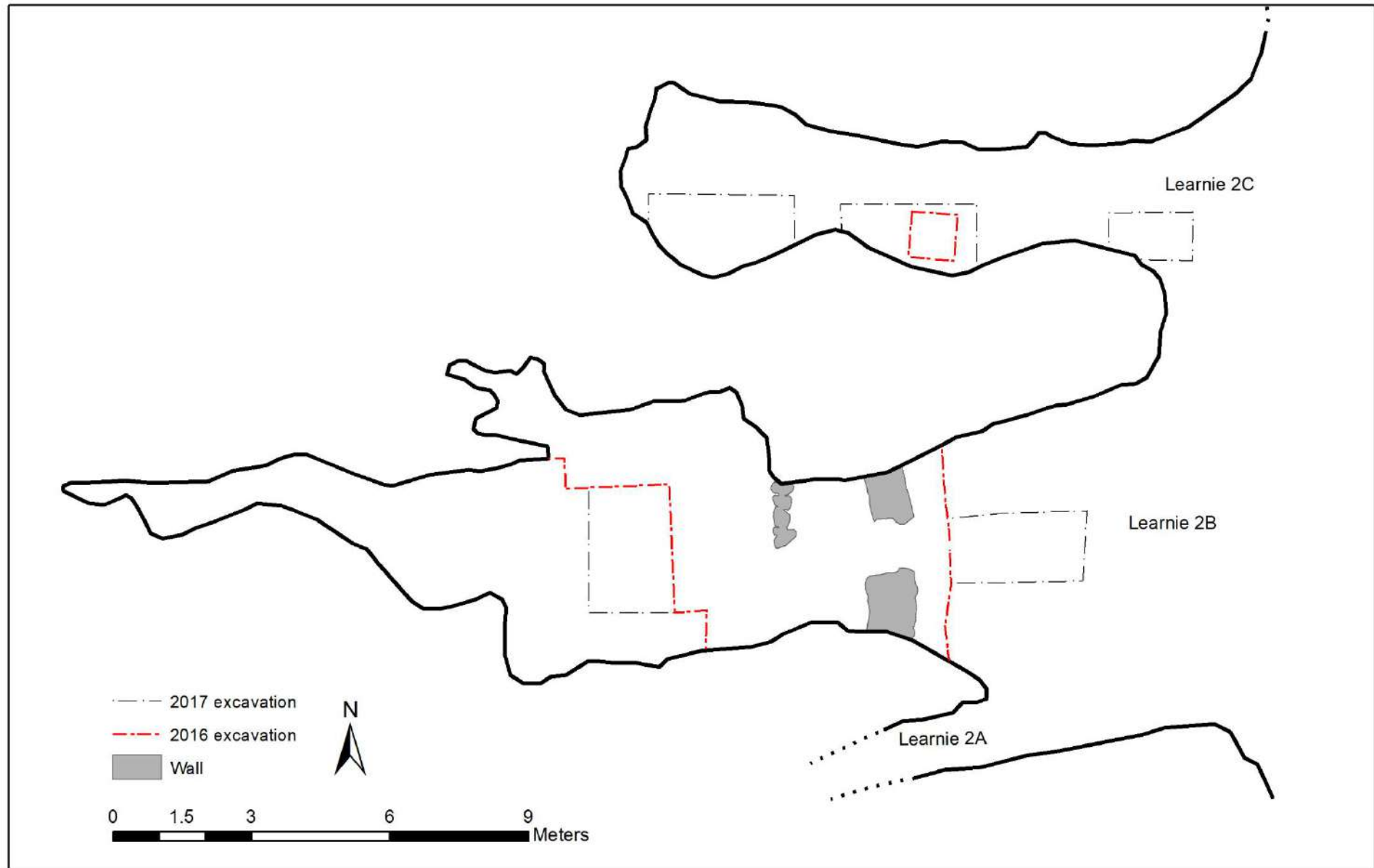


Figure 4: Location of the 2017 excavation trenches in Learnie 2C (top) and Learnie 2B (bottom), showing the 2016 extent of excavation



Plate 3: Looking E over excavations in Learnie 1A

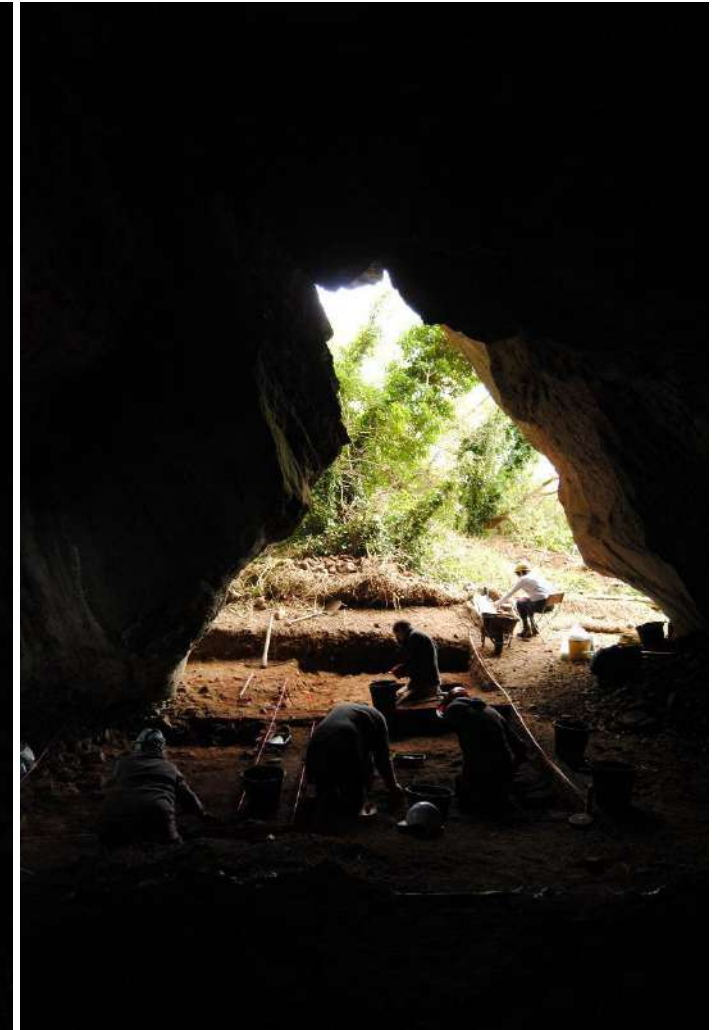


Plate 4: Looking E over excavations in Learnie 1B



Plate 5: Looking SW over excavations in front of Learnie 2B

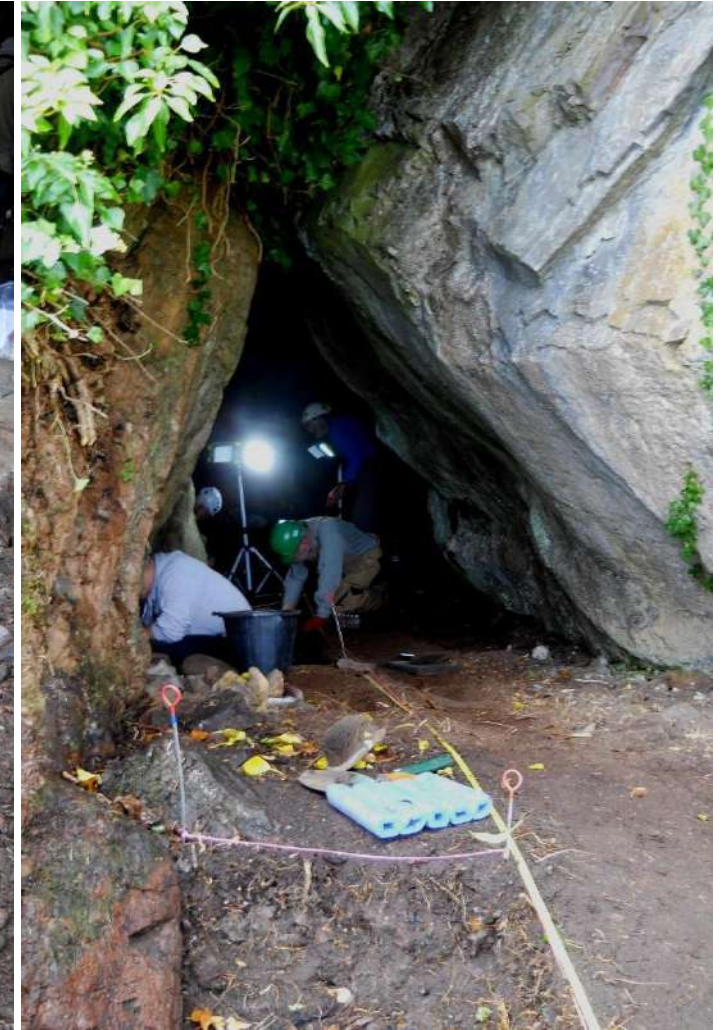


Plate 6: Looking W over excavations in Learnie 2C

4.0 AIMS AND OBJECTIVES

4.1 The aim of further excavation in the Learnie caves group was to better understand the archaeology of the caves and to provide more information to support the 2016 excavation and 2012-15 test pitting results. Open-area area in Learnie 1A uncovered the extent of a large part of the cave, investigating the overall archaeological sequence in this large cave. In the smaller cave to the south of it, Learnie 1B, a small excavation trench investigated its archaeological potential and relationship with 1A.

4.2 In Learnie 2B, targeted excavation trenches in 2017 completed excavation in the back of the cave and investigated the extent of archaeological material outside the cave entrance, where deep stratigraphy had been uncovered in previous years. In Learnie 2C, trench excavation investigated the form, function and extent of the archaeological material identified in the 2016 test pit

4.3 The programme of fieldwork in the Learnie caves continues to investigate the overall chronology of use of the caves and their inter-relationships. The results are providing valuable information about the caves' occupation during the post-medieval, medieval, Early Medieval and Iron Age periods. The project continues to provide an opportunity for volunteers and students to learn archaeological techniques in the unique remote coastal location of the Cromarty-Rosemarkie shoreline environment.

4.4 The overall aims of the archaeological excavation were:

- ❖ To establish the character and extent of surviving archaeological deposits in the caves
- ❖ To conduct excavation inside Learnie 1A, Learnie 1B and Learnie 2C and to complete excavation inside Learnie 2B
- ❖ To improve our understanding of the types of activities taking place in the caves and to compare this evidence with the findings of the test pitting programme
- ❖ To enhance the archaeological record
- ❖ To provide training in archaeological excavation and recording techniques to students and volunteers
- ❖ To encourage the inclusion of local people in the discovery, discussion and outcome of the project, and to develop practical, research and educational benefits for the community as a whole
- ❖ To publish and report on the archaeological results to the wider public and research community

4.5 The specific objectives of the archaeological evaluation were:

- ❖ To conduct an open area excavation in Learnie 1B and 2C, to expose in plan any structures or features of archaeological significance
- ❖ To excavate evaluation trenches near the entrances of Learnie 1A and 2B to investigate the potential for further archaeological discoveries
- ❖ To excavate, by context, the archaeological horizons in the cave
- ❖ To expose the extent of archaeological deposits and features inside the caves
- ❖ To recover environmental samples and artefacts which will assist interpretation and chronology of the past activities taking place in the caves, and inform on overall site function
- ❖ To collate the 2017 fieldwork data and undertake further research to inform future excavation
- ❖ To make proposals post-excavation specialist analysis

5.0 METHODOLOGY

5.1 Permissions

5.1.1 Prior to excavation, the landowners permission was obtained, and the cave was assessed for any changes since the 2016 excavation. Fieldwork was scheduled to comply with Scottish Natural Heritage guidance on bat nesting seasons.

5.2 Learnie 1A and Learnie 1B

- 5.2.1 In Learnie 1A, a small trench measuring 3m E-W by 2m was excavated (**Figure 3; Plate 3**). It was located near the entrance of the cave and extended inside against the northern cave wall. Upper contexts were excavated in plan and a sub-trench was excavated over the eastern 1m of the trench to evaluate the archaeological potential.
- 5.2.2 In Learnie 1B, open area excavation was undertaken within a trench measuring 7m E-W by 4m (**Plate 4; Figure 3**). It covered the location of the 2013 test pit and abutted the northern wall of the cave. Contexts were excavated in plan and correlated with the 2013 stratigraphic sequence, where possible.

5.3 Learnie 2B and Learnie 2C

- 5.3.1 In Learnie 2B, a small excavation trench measuring 3m N-S by 2m extended the 2016 excavation area in the back of the cave in order to complete the excavation in this cave (**Figure 4**). Contexts were excavated in plan, in order to expose and record any features and to remove the last archaeological horizon in the cave.
- 5.3.2 Also in Learnie 2B, an evaluation trench measuring 3m E-W by 2m was excavated in the entrance to the cave, to expose the extent of the archaeological sequence outside the stone walls exposed in 2016 (**Figure 4, Plate 5**). Contexts were excavated in layers for the purpose of the recovery of archaeological material. There were no features encountered.
- 5.3.3 In Learnie 2C, open area excavation was undertaken within three trenches separated by baulks against the south wall of this narrow cave (**Figure 4, Plate 6**), focussing on the interior of the cave but exposing the area just outside the cave mouth. Trench 1 measured 1.5m E-W by 1m, Trench 2 measured 2m E-W by 1m and Trench 3 measuring 2m E-W by 1m. Trench 2 covered the location of the 2016 test pit. Contexts were excavated in plan down to the natural subsoil or bedrock in Trench 2 and Trench 3. In Trench 1, due to time constraints, only the upper topsoil horizon was removed.

5.4 Excavation

- 5.4.1 Open area excavation was undertaken, following a single context recording system based on standard stratigraphic principles. Excavation was undertaken using baulk standing sections with a base site datum set up at the mouth of the caves opposing a second datum set up at the back of the cave and forming the baseline for excavation and recording. Baseline levels were calculated using a standard dumpy level, with measurements taken from a fixed point on the shore retrieved using a Trimble Geo-XR rover using VRS-Now (RTK) corrections rated at centimetre accuracy.
- 5.4.2 All artefacts and ecofacts were hand retrieved and sorted on site. Dry sieving was undertaken on site for certain key deposits. Bulk sampling of all archaeological layers was undertaken and a minimum of 50% of cut fills were sampled for environmental analysis.
- 5.4.3 Recording was undertaken using standard recording sheets, plan and section drawings (scales of 1:20 and 1:10) and high-resolution digital photography. All excavation and recording was carried out in accordance with *CifA (Chartered Institute for Archaeologists) Code of Conduct (2014)* and the Highland Council *Standards for Archaeological Work (2012)*.

5.5 Sample and finds processing

- 5.5.1 A single context recording system was utilised and individual artefacts or groups of finds were given small find numbers. Where possible, finds and samples were recorded following on from the sequence established in the cave from previous excavations in 2013 and 2016. Upon completion of

the fieldwork, small finds and samples were checked, rapidly assessed and stored in a controlled environment. The material is being stored for future post-excavation analysis.

6 RESULTS

6.1 Learnie 1B

- 6.1.1 Open area excavation was undertaken in Learnie 1B in 2017. An area measuring 7m E-W by 4m with a central baulk was excavated against the north cave wall and over the location of the 2013 test pit 1, which had revealed deep archaeological layers in the front of the cave. Prior to excavation, two further test pits (2 and 3) in 2013 had evaluated the cave deposits and recorded the location of two loose stone piles built up against the north and south cave walls, **Figures 5-9** provide the stratigraphic detail of trench sections and plans of features and deposits from 2017.
- 6.1.2 In the eastern half of the trench, excavation in 2017 stopped at the top of an extensive ash layer (108). The surface of context (108) was a very compact dark brown/black and pale yellow/grey/white silty ash layer with heat-cracked slabs within it (**Plates 12-13**). The surface rose in height towards the northern cave wall, with a more vitrified section in the northeast corner of the trench. This layer was correlated with (108) shown in the section drawing (Figure 1) from Test Pit 1 in 2013 and probably represents the surface of what appears to be an extensive ash and burning layer that runs across the eastern front half of the cave. The layer appeared to thin out and dissipate towards the west half of the excavated area below the baulk. West of the baulk, the ash layer was not located and excavation stopped at a thin, dark brown-black greasy silt overlying cobbles embedded into what appeared to be the natural underlying sand (140) (**Plate 11**).
- 6.1.3 Above the extensive ash surface, context (106/107) was excavated as one layer that corresponded with two layers (106) and (107) in the 2013 test pit (Figure 1). It comprised loosely compacted, dark brown silt with charcoal flecks, a small amount of animal and fish bone and a small iron lump (SF204). In one discrete area, the layer contained a charcoal-rich lens with heat-affected cobbles and shell – potentially a spot fire or hearth. Samples for this deposit should provide further information about its content. Context (142) on the west side of the excavation area was interpreted as the remnants of (106) as it dissipated towards the rising back of the cave. Above this, context (139) consisted of a dark brown/black silt with patches of yellow/white ash running across the west half of the excavation trench and extending beyond the excavated area. (139) contained some clay pipe fragments (SF189) and two iron fragments (SF190), along with mammal and fish bone, shell and hazelnut shells. It was covered by a thick stony layer consisting of a mixture of large beach cobbles, small stone clasts and cobbles within a mid to pale brown sandy silt (137). This deposit is clearly visible in the centre of the trench sections with the conglomeration of cobbles (**Plates 9-10**), ending abruptly at both the west and east sides, as if it formed an infill layer at the centre of the cave. It contained a mixture of shell and mammal bone, with a small amount of probable late 19th century ceramics. At its eastern end, in the east half of the excavation area, the layer appeared to transition to a more homogenous layer of angular stones and possible shatter from the caves cave wall and roof - all within a silty sand (105). Context (105) is defined across the eastern edge of the excavation area, mostly below the cave dripline where collapse and silting had built up material over time. It is mostly likely that the transition from (105) to (137) represents material brought in or moved around from inside the cave to create a more level interior floor during 19th century re-occupation. A possible quern stone was recovered from context (137) (SF151) (**Plate 18**).
- 6.1.4 The stone fill layers were overlain by another deposit of mostly homogenous sandy silt (104) on the east side of the excavation area that contained a small amount of c.19th century ceramics. At the same horizon, but towards the cave interior on the west side of the trench, layers (123), (120), (121), (127), (131) and (138) were distinguished as varying deposits from 19th century activity. The transition between layers was difficult to distinguish – with the material comprising highly mobile, organic-rich silts. Overall, the deposits potentially represent multiple periods of occupation within the post-medieval period. Two hearth features at this horizon include stone setting (128) and fire-pit (130),

which had been built into (123)/(127), while discrete midden dumps (125), (132) and (134) were also present. Shell, fish bone and mammal bone were recovered throughout the layers, which contained a mixture of c.19th century ceramics, bottle glass, clay pipes, stone tools and other objects representing everyday activities. Of particular interest was a small cobble with central wear (SF164) from (138) that may have been used as a grinder or anvil-type tool (**Plate 16**), a large animal rib bone with sawn ends used as a tool of some form (SF152) (**Plate 17**) from (132), and a deposit of articulated large mammal vertebrae (SF130) (**Plate 14**) found within contexts (127).

6.1.5 After this, an organic layer with a bracken mat floor formed a late 19th century surface (103/116). The bracken mat survived across most of the interior floor surface in the excavation trench, dissipating towards the north cave wall. A build-up of gravel and soil over the top of it probably represents material brought in during activity over time. Objects from this layer included leather shoes (**Plate 8**) and leather fragments, glass bottle sherds, the remains of an iron cauldron, broken ceramics and personal items such as a thimble (SF111), clothes pin (SF109) (**Plate 15**), buttons, cobble tools and clay pipes. Two fire-pits (118) and (119) and stone hearth setting (117) (**Plate 7**) were constructed over floor (103/116) inside the central floor surface. Another stone hearth setting (126) was located in the northeastern alcove of the cave near the entrance. The activity represented by this period of use has provided an interesting glimpse into the 19th century occupants of Learnie 1B, the largest of the Rosemarkie Caves. The artefacts and ecofacts represent everyday activity and debris left behind by itinerant inhabitants – which may have been using the cave on a permanent basis.

6.2 Learnie 1A

6.2.1 A small trench 3m E-W by 2m was excavated against the north cave wall of Learnie 1A, located immediately to the south side of Learnie 1B. The trench covered part of a small pile of loose stone (303) located against the north wall and extended through the cave entrance. **Figures 10-11** show the plan of features and W-facing trench section drawing. On the west side of the trench, inside the cave, removal of the loose stone revealed the end of small rectangular stone setting or wall base of 1-2 courses of stonework (306). The structure extended west into the cave mouth and may form part of a post-medieval dividing inside the cave.

6.2.2 Underlying the upper silting (300) on the modern cave floor, a spread of ash (301), probably from a hearth or fire, contained leather fragments including a shoe with a cut-off end (SF145), a clay pipe bowl (SF149) (**Plate 20**), a broken medicine bottle (**Plate 22**) and broken late 19th century pot sherds. This layer coincided with remnants of a bracken mat (302), similar to the late 19th century floor (103/116) occupation in Learnie 1B. It covered a silt layer (304) rich in shell and animal bone. (304) contained an array of c. late 19th century objects, including a thimble (SF131), metal and bone buttons (SF138), a bone knife handle (SF140) as well as window glass and various broken pot sherds.

6.2.3 On the east side of the trench, a sub-trench was excavated to investigate the depth of archaeological deposits. Excavation stopped at 0.75m below the present cave floor at the surface of context (310), a compact white-grey ash containing charcoal. This layer formed within or at the base of overlying context (309), a fine grey ash with small cobbles, some mammal and fish bone and occasional shell. Above this, context (307) comprised a thick build-up of sandy silt and stone with occasional large stones and frequent shell, primarily limpet with occasional winkle and whelk shells and some fish bone. A lens of compact ash and some charcoal fragments were noted throughout the deposit, from which a sherd of possible medieval pottery (SF158) (**Plate 21**), a fragment of blue glassy residue (SF192) and two small iron fragments (SF193) were recovered. Above this, context (308) comprised a thick layer of mostly homogenous and sterile cave shatter within a silty sand matrix, similar to (105) in Learnie 1B and probably representing natural collapse below the cave dripline. This was overlain by context (304), the post-medieval layer that extended into the cave interior.

6.3 Learnie 2B

- 6.3.1 Through the entrance of Learnie 2B, a 2m-wide by 4m-long extension to the east side of the 2016 excavation trench was excavated to evaluate the potential for metal-working activity outside of the cave. This revealed that the deep sequence of archaeological layers identified in 2016 dissipated towards the outside of the cave (**Figure 12**). These layers represented material generated within the caves through time and corresponded with previous interpretations (Birch and Peteranna 2017). They contained further fire-cracked stone, charcoal and ash layers, shell, animal bone (cattle, sheep and pig) and large fish (cod, ling) bone. This area of the cave, located below the drip-line was not an ideal place to carry out activities - a number of large rocks were uncovered here that had fallen from the cliff above. Of particular note during the excavation were further finds of metalworking residues including a hearth base, three pieces of iron slag, and one fragment of vitrified furnace wall and a fragment of worked antler (SF287) from the occupation layer (232), which overlay the metal-working activity zone excavated in 2016 in the back of the cave.
- 6.3.2 Inside the cave, the 2016 excavation trench west edge was extended in 2017 to finish excavation of the archaeological layers that dissipated towards the back for the cave over the rising bedrock. At the base of the archaeological sequence within a roughly-built, subrectangular setting of stones (511), the skeleton of a juvenile cow was uncovered over the natural sand and set between inclines of natural bedrock (**Figures 14-15**). The setting measured 1.4m long N-S and comprised angular stones. The spinal column of the calf was partially covered by the setting on the east side, while stones were placed across the limbs on the west side. As a result, the setting did not contain the animal, but rested on top of it, with two larger stones over the lower abdomen area, and smaller stones over the chest area. Strangely, the right mandible, right pelvis and cranium of the calf were missing. The bones displayed minimal evidence for butchery or intervention – in the form of a cutmark and burning on one femur as well as blue-green staining on some of the bones (Kennedy 2018). The cutmark on the femur could indicate that the missing right pelvis had been removed before the carcass was placed in the grave and that something had chemically affected the condition of the bone after the flesh had deteriorated away. The loose silt layer (510) to the outside of the burial setting and the silting fill (511) within the setting and around the calf skeleton contained late 19th century material including clay pipe stems, bottle glass, pot sherds, leather fragments, leather shoes – one of which was located below the animal's rib cage. The loose nature of the surrounding sediment and the voids within the burial environment surrounding the skeleton, call into question whether there had been some disturbance to the burial during 19th/20th century activities in the cave. Radiocarbon dating of a bone sample from the young animal should confirm if this was the case.
- 6.3.3 The calf burial was located below a shallow sequence of post-medieval occupation material, at the top of which was a slabbed hearth setting (508), situated between two ash deposits (507) and (509). It had been built to the east of the burial stone setting (511) covering the calf skeleton, using the stones on its east side as a back for the hearth (to which were added additional smaller stones to form a more circular setting on this inside of the hearth). Above the (509) layer, another hearth (514) had been constructed in the back of the cave, between two bedrock ribs on the natural sand, using a large and flat inclined slab of rock. At some stage during the use of this feature, a pit was cut through the ashy spreads to the west of it, possibly for construction of the animal burial or possibly during later disturbance. Ash from the use of the hearths had filtered down into the burial setting, and above this midden and floor deposits accumulated, completely burying the setting and hearths. A substantial amount of post-medieval artefacts was recovered from the layers overlying the hearths and burial (**Figure 13**), in particular from (222) and (227) – ceramic fragments, glass bottle fragments, leather shoes and offcuts, clay pipe stems and iron fragments and nails.

6.4 Learnie 2C

- 6.4.1 A single test pit measuring 1m square had been excavated during 2016 in Learnie 2C, located immediately to the north of Learnie 2B. Below the modern disturbance, layers containing Victorian ceramics and iron debris (501) and (502) covered possible structural stonework and charcoal-rich ash

lenses. The 2017 excavation set out three trenches against the south wall of the cave, with separating control baulks (**Figures 16-18**).

- 6.4.2 The archaeological sequence inside the cave was shallow, with upper layers (301-302, 201-202, 101) containing mostly late 19th century material including ceramic sherds, bottle glass fragments, leather offcuts and occasional personal items such as buttons and clay pipes. Interestingly, several worked horn cores (SF017) were found in Trench 3. Worked horn was also recovered from Learnie 2B and contexts (101) and (127) in Learnie 1B.
- 6.4.3 Trench 2 contained an upper ash layer (203), below a shallow rubble wall (204), and upper shell midden (208/209). These overlay an organic soil (205) containing shell and mammal bone and 19th century material such as ceramic sherds, clay pipes and bottle glass. Below this, an ashy silt layer containing charcoal (206) had formed over a cobbled surface (207) within the natural sand – potentially representing the earliest archaeological horizon in the cave.
- 6.4.4 Trench 3 contained a shallow sequence of layers, with an upper hearth or spot-fire layer (304) overlying a compact soil (305) that contained mammal bone, iron fragments and clay pipe stems. There was no continuation in the back of the cave of the sequence of lower layers recorded in Trench 2.
- 6.4.5 While the results show there was likely late 19th century use of Learnie 2C, there was a limited depth of deposits suggesting that the cave was used significantly before the post-medieval period.

7 DISCUSSION

7.1 Learnie 1A / 1B

- 7.1.1 In Learnie 1B, the test pit excavated in 2013 isolated contexts (108, (109), (110), (111) and (112) as a sequence of ash and charcoal-rich layers and features. During 2017, excavations only came to the surface of (108), which indicates that the layer contains structural elements, such as a slabbed surface and/or hearth setting. The test pit results clearly demonstrate that further archaeological layers survive below this. The extensive spread of the ash layer with areas of heat-affected slabs and intense burning indicates that a major burning event, or industry associated with frequent use of fires, took place inside the cave. However, the ash did appear to be an in situ horizon. More excavation has the potential to recover material to understand the activities associated with this surface. It is possible that this occupation represents medieval or most likely early medieval use, to judge by the 8th/9th century radiocarbon dates obtained from samples of material below this. Furthermore, it is possible that the use of Learnie 1B relates to or was contemporary with the early medieval occupation in Learnie 2B – perhaps metal-working or another industry was taking place inside Learnie 1B.
- 7.1.2 As established in Learnie 2B in 2016, a stone infill layer had been spread across the cave, forming a levelling deposit on top of which late mid-late 19th century activity resumed. This appears to be the similar case in Learnie 1B and 1A, whether as a result of a sudden collapse of cave wall/roof and associated shatter, or as part of a preparation of a new floor after a period of abandonment. As in Learnie 2B, periods of c.19th century occupation took place in Learnie 1B and 1A associated with hearth settings and fire pits – with material culture representing elements of everyday life inside the cave. And, at the top of the sequence (as in Learnie 2B), late 19th century occupation is present with leather shoes and leather offcuts prevalent. It seems clear now, that associated with the worked horn and frequent iron fragments (including metal offcuts), that small scale industry was undertaken inside the Learnie group of caves during this period – likely representing work performed by itinerant inhabitants for local communities. It is also interesting to note that several knife handles or pen knives, cobble tools and possible bone tools have been found at these levels inside the caves.
- 7.1.3 Learnie 1B is the largest of the groups of caves studied and may have provided shelter for multiple or extended families, as seen at Tinkers Cave in Wick. But there may be other stories to tell – potential

alternative usage of the caves other than for workshops or occupation may have included smuggling, as hideaways and livestock containment. Remains of degraded rubble walls were found inside Learnie 1B, 2B and 2C and may represent the formation of an enclosed space, partitions, or just a simple screen separating activities in the cave from the outside world. Overall, the archaeological evidence indicates that there were multiple periods of post-medieval occupation and it is likely that the use of the caves changed during those periods. Certainly, there is more of a story to tell about these post-medieval periods of occupation inside the caves. Further analysis of the large body of small finds, alongside further documentary research, should enable a clearer chronology to be built together with a greater understanding of the activities taking place.

7.2 Learnie 2B

- 7.2.1 The surprise discovery of the calf burial in the back of Learnie 2B, overlying the natural sand and bedrock, below later midden and hearth layers, caused speculation for the archaeologists. An unusual burial of a young cow, showing minimal butchery and deliberate placement below a stone setting, appeared to display similar characteristics to the unusual burial of Rosemarkie Man, who was also placed on the natural sand/bedrock and had associated with him a minimally butchered offering of meat from cow and horse. As it seems uncommon for 19th century occupants of the cave to sacrifice a calf instead of consuming it, the nature of the burial associated with a mixture of late 19th century artefacts are unusual. It is a possibility that the pit cutting through the upper hearth sequence was made during later activity inside the cave and perhaps unintentionally came into contact with the grave, causing disturbance to the animal's burial conditions. This may have resulted in movement/loss of several of the calf bones include the pelvis, cranium and lower left mandible. Also, given the mobile condition of the sandy cave sediments within these lower horizons, it is possible that the 19th century finds within the burial are residual from disturbance, which could include bioturbated material. It thus remains a possibility that the burial was an early internment in the back of the cave and could be associated with early medieval activity. This should not be ruled out until radiocarbon dating of the bone is undertaken.
- 7.2.2 As with the results from Learnie 1B, there is an interesting story to tell about occupation of the cave by itinerant inhabitants during the late 19th century and prior to this. The 2017 excavation in the back of the cave recovered further post-medieval occupation material. A detailed study of the artefacts will, no doubt, elucidate the evidence.

8 CONCLUSION AND RECOMMENDATIONS

- 8.1 The results of excavation and analysis of the finds from Learnie 2B have provided significant information about activity inside the cave during the 1st millennium AD. In Learnie 1B (and 1A), the recent work has indicated that substantial archaeological information remains to be uncovered from potentially similar periods. More excavation in Learnie 1B/1A would undoubtedly provide more information to compare alongside the Learnie 2B results – enabling greater understanding of the overall story of their use and its relationship to the wider cultural narrative.
- 8.2 The results from Learnie 2B are still in the early stages of interpretation. Crucially, the work has raised further questions about the society/culture to which this information relates. The early-late centuries of the 1st millennium overlap with an interesting history in the north of Scotland – beginning with the Picts, early Christian activity, Norse incursions and finally the early beginnings of feudalism and the monarchy. Further research and post-excavation analysis of the archaeological assemblages is vital moving forward. This will include analysis of the charcoal and animal bone assemblages, metal-working debris, small finds and further radiocarbon dating.
- 8.3 Results from the excavations in Learnie 2B, Learnie 1B and Learnie 1A have indicated that the caves contain a wealth of material from post-medieval periods of activity. The activity represented by these periods of use has, in particular, provided an interesting glimpse into the 19th century occupants of

the Learnie caves. The artefacts and ecofacts represent everyday activities and debris left behind by potentially itinerant inhabitants – which may have been inside the caves on an almost permanent basis. This period seems to be associated with small scale industry represented by the shoe and leather finds, worked horn, iron scraps and other small finds such as the knives and cobble and bone tools. Further specialist analysis on these individual elements (leather, iron and horn) together with the everyday items and midden material will assist in building this story. Further documentary research is also highly recommended for this period. Initial research in archival material has found references to a man from a cave at Learnie regarding the burial of his wife (pers comm R Jones 2017).

9 REFERENCES

- Anderson-Whymark, H 2011. *Excavation at Caird's Cave, Rosemarkie, 2010: Data Structure Report*
- Armit, I., Schulting, R., Knusel, C.J. & Shepherd, I.A.G. 2011 'Death, Decapitation and Display?: The Bronze and Iron Age Human Remains from the Sculptor's Cave, Covesea, North-East Scotland'. *Proceedings of the Prehistoric Society* 77, pp. 251-78
- Birch, S. and Peteranna, M. 2017 *Rosemarkie Caves Project Data Structure Report 2016 Archaeological Excavation in Learnie 2B*.
- Chartered Institute for Archaeologist (CifA), 2014. *By-laws of the Institute for Archaeologists: Code of Conduct*. Reading: CifA
- Dowd, M 2015 *The Archaeology of Caves in Ireland*. Oxbow Books
- Gunn, S. and Peteranna, M. 2016 *Rosemarkie Caves Project: Programme of Archaeological Survey and Test Pitting in 2011-2015*.
- Highland Council 2012 *Standards for Archaeological Work*, v.1
[Http://www.highland.gov.uk/yourenvironment/conservation/archaeology/developmentguidance.htm](http://www.highland.gov.uk/yourenvironment/conservation/archaeology/developmentguidance.htm)
- Kennedy, K 2018 *Rosemarkie Caves Project "Animal Bone Report"*. Unpublished report.
- Wood J 2008 *Community Archaeology Project, Learnie Caves 2006: Summary Report*. Highland Archaeology Services, unpublished report.

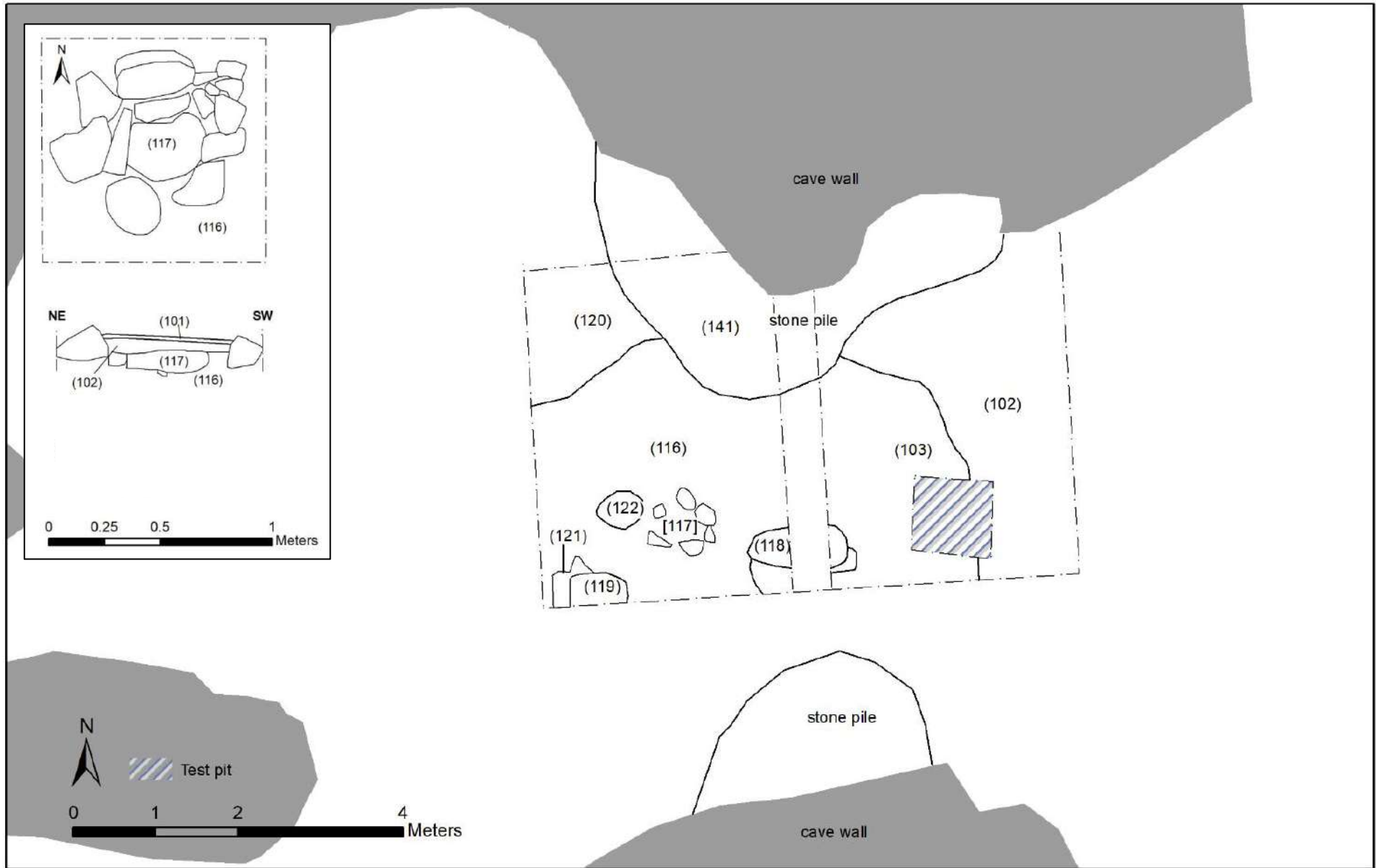


Figure 5: Mid-excavation plan of the trench in Learnie 1B, showing hearths (117), (118) and (119) on surface (116/103) (inset: plan/section of hearth (117))

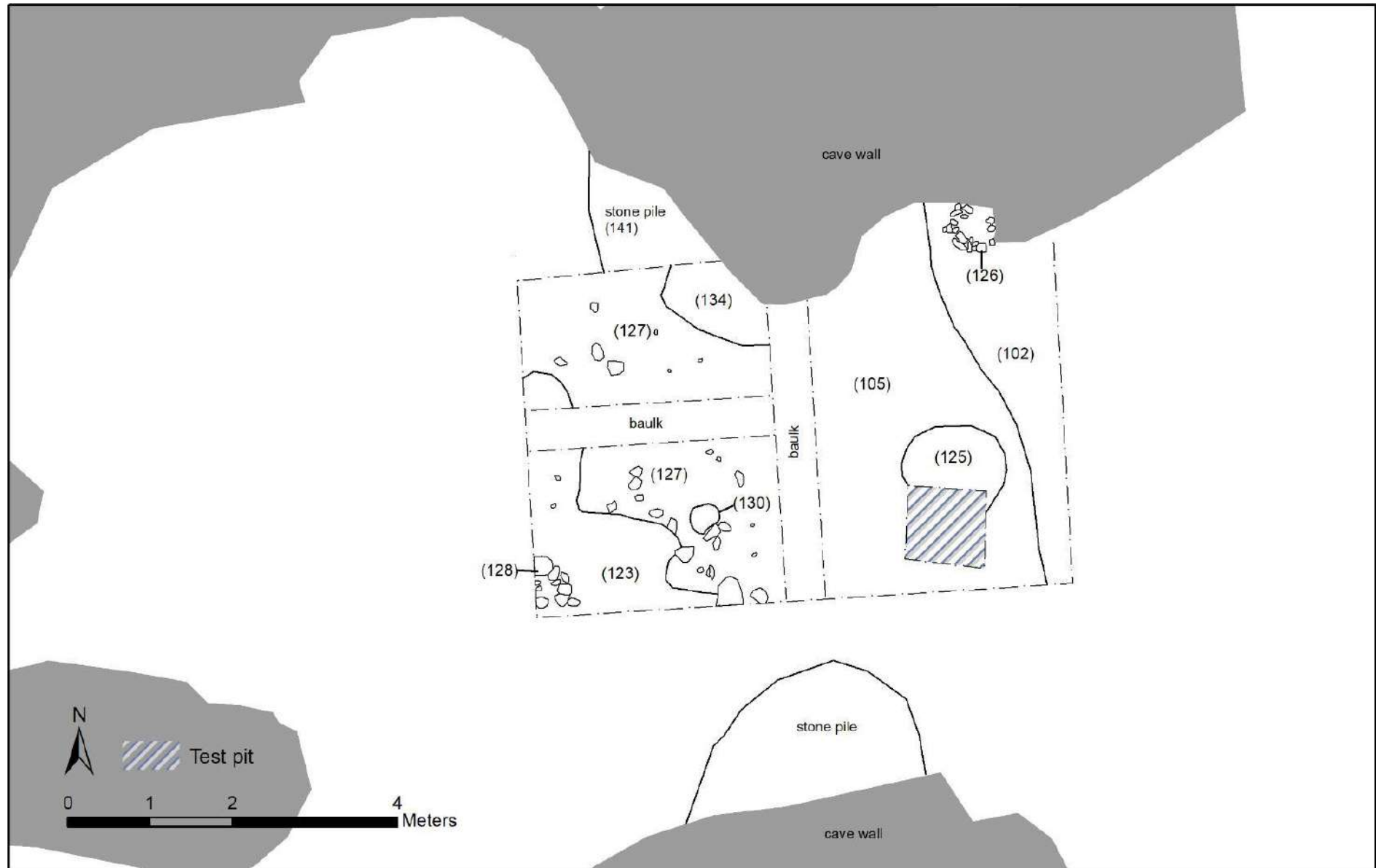


Figure 6: Mid-excavation plan of the trench in Learnie 1B, showing hearths (126), (128) and (130) and middens (125), (134)

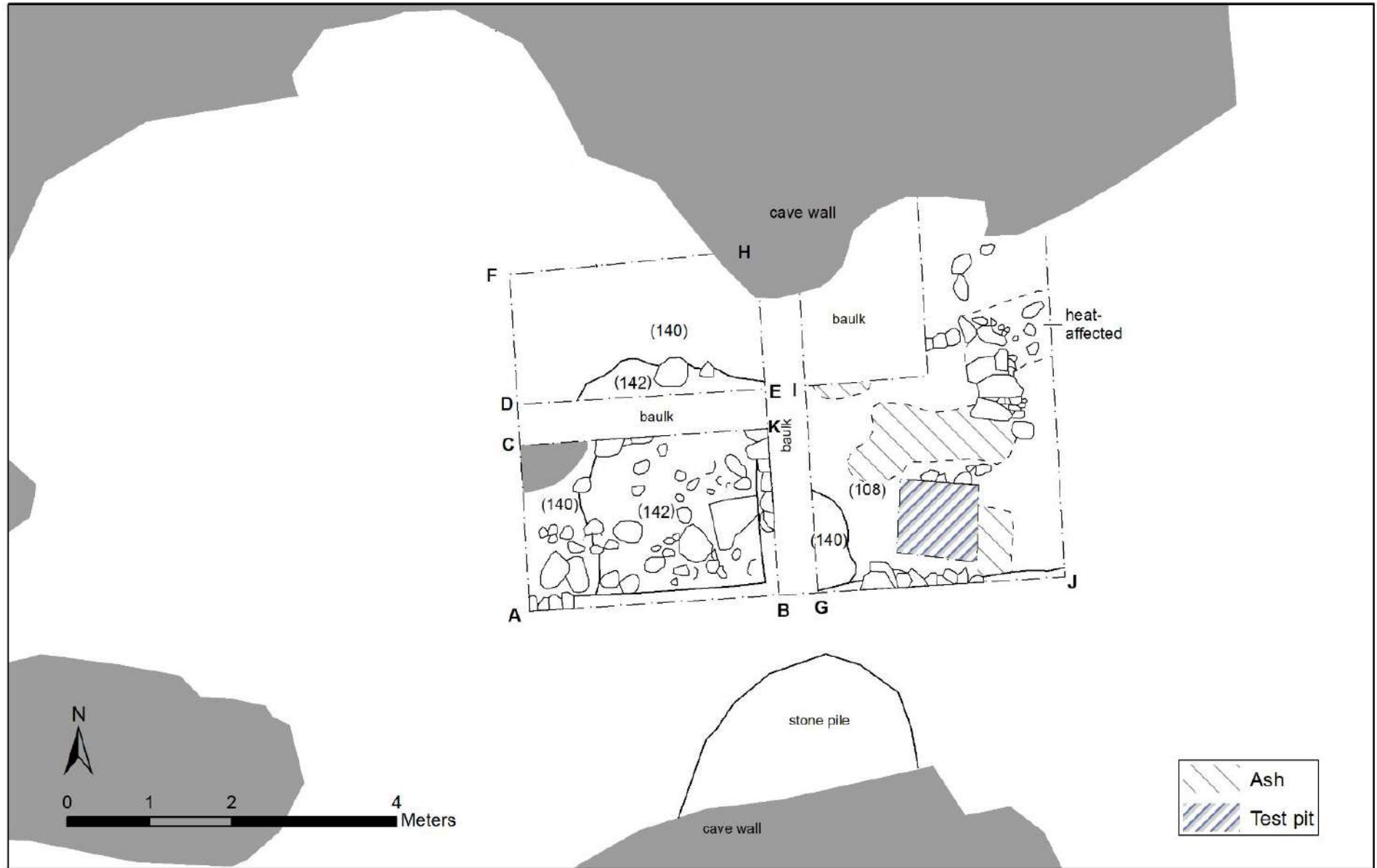


Figure 7: Post-excavation plan of the trench in Learnie 1B, showing the surface of (108) on east side of trench and (142) on west side of trench; location of section drawings

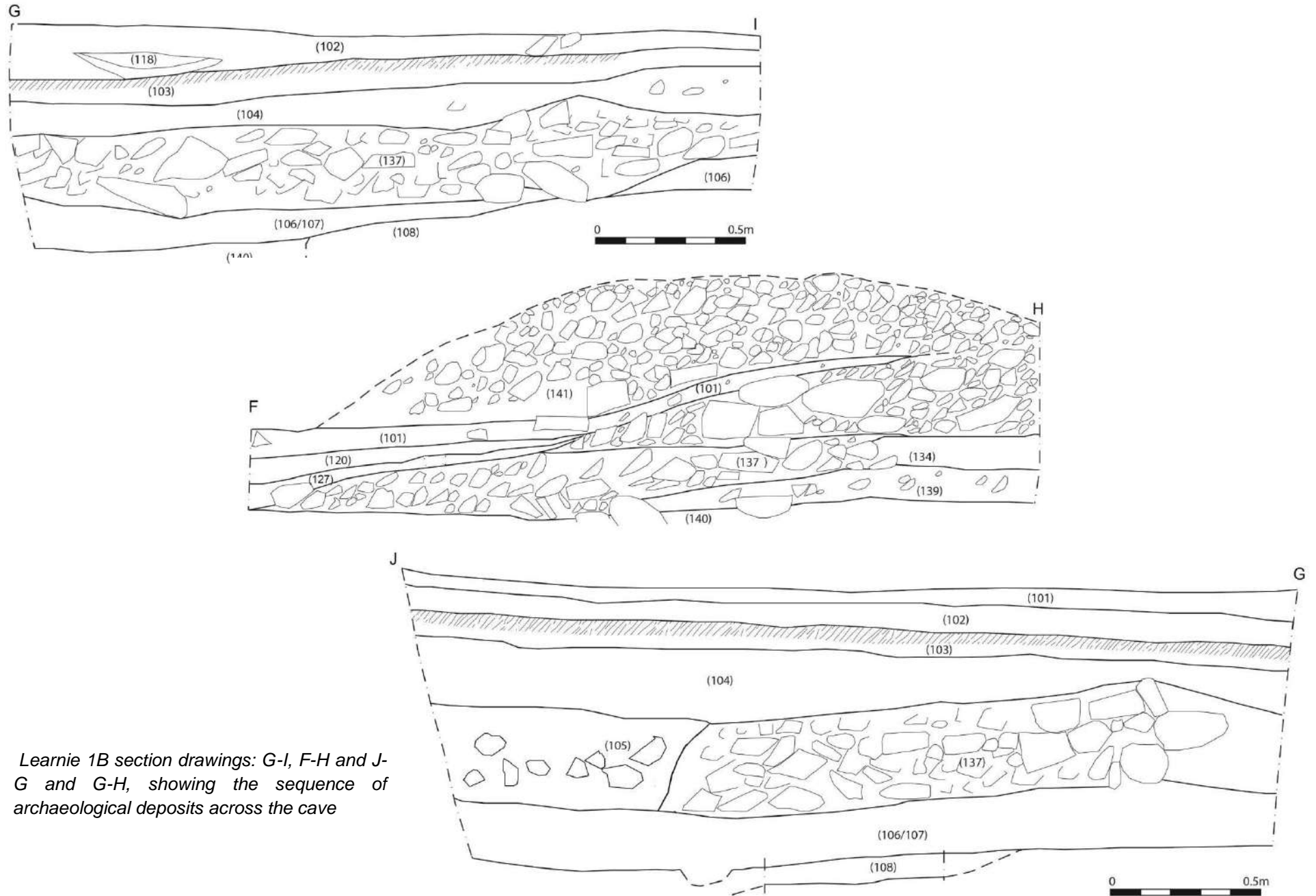


Figure 8: Learnie 1B section drawings: G-I, F-H and J-G and G-H, showing the sequence of archaeological deposits across the cave

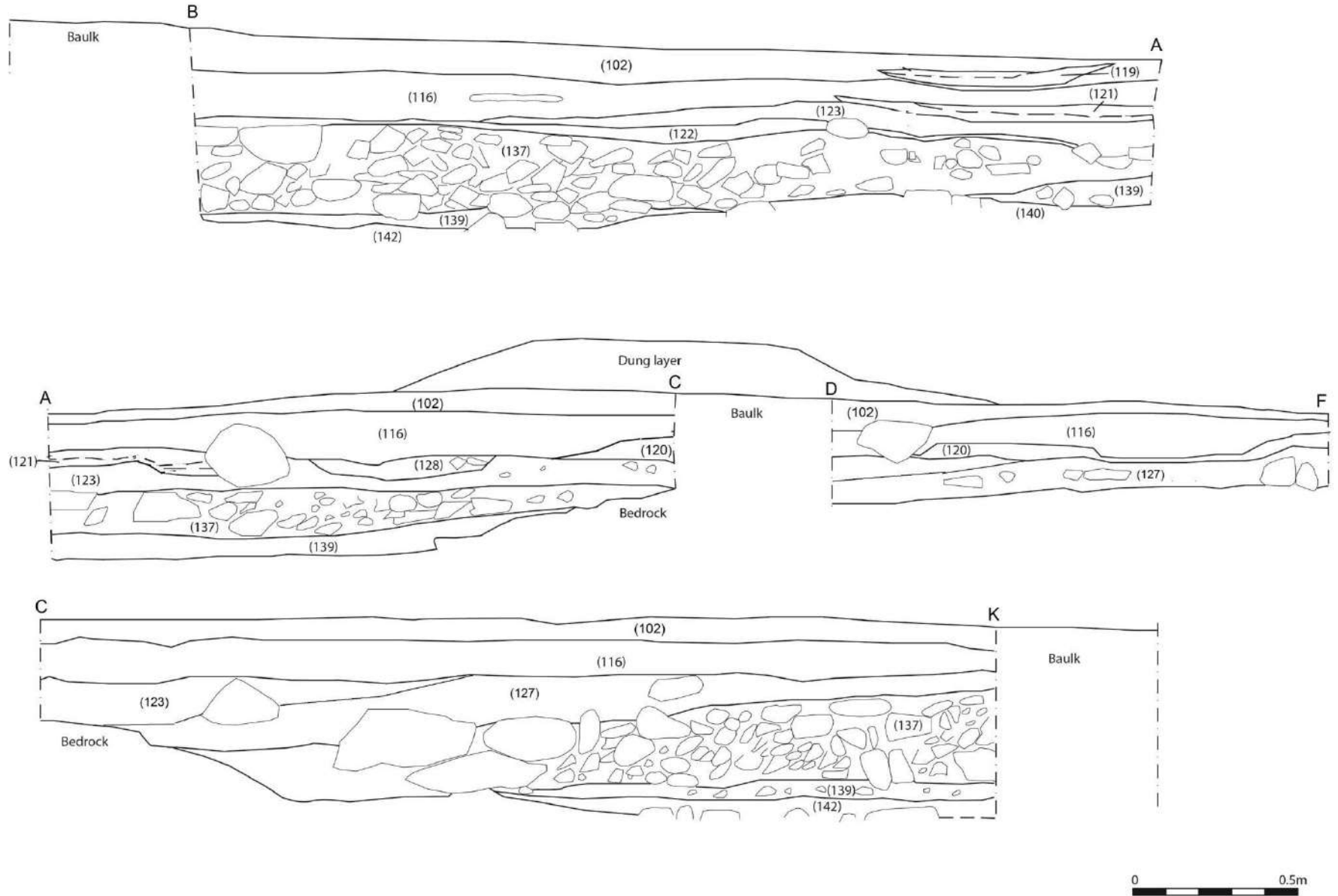


Figure 9: Learnie 1B section drawing: B-A, A-C, D-F and C-K, showing the sequence of archaeological deposits across the cave

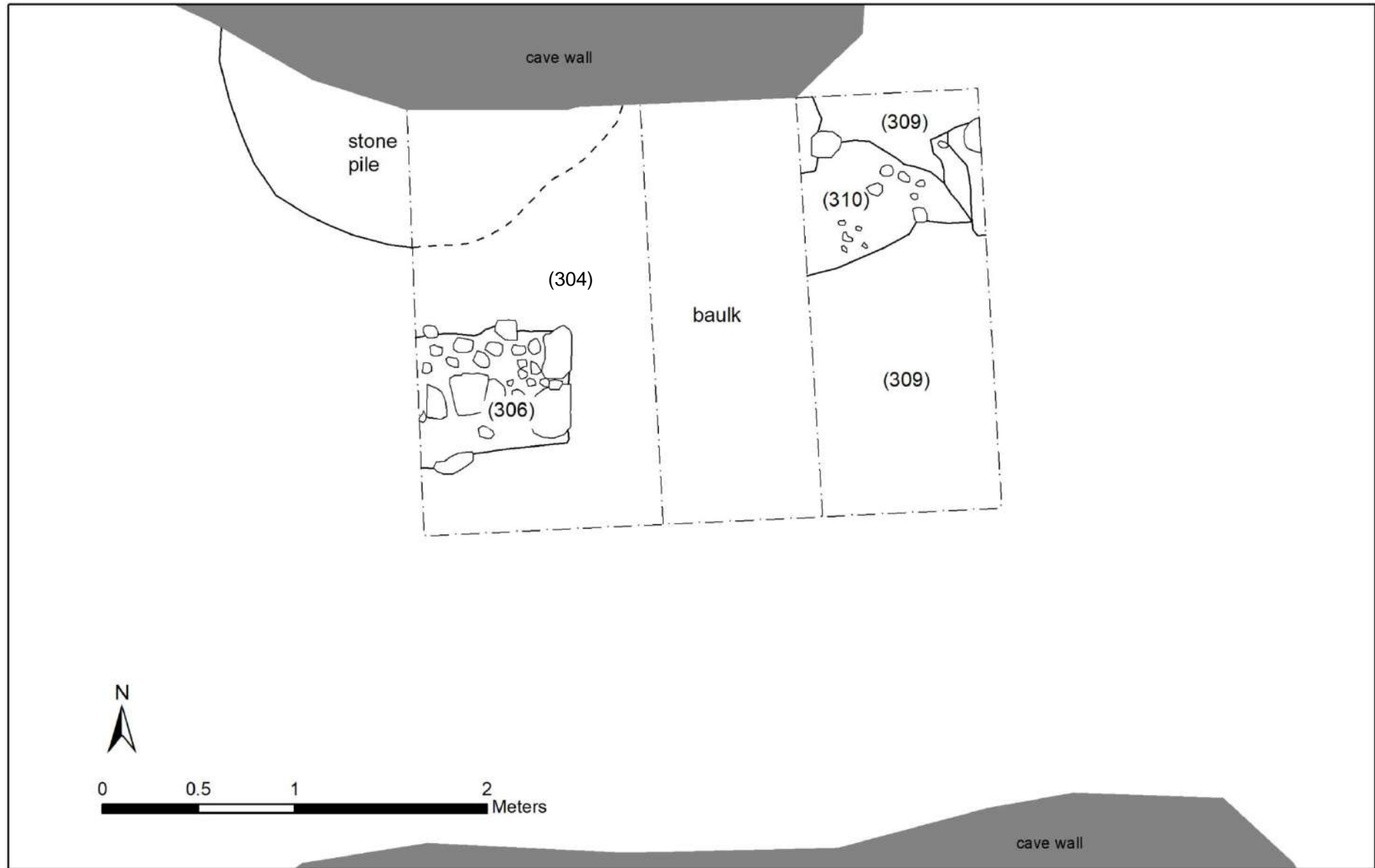


Figure 10: Post-excavation plan of Learnie 1A, showing the possible wall (306) on the west side and the base of the sub-trench to (310) in the east side of the trench

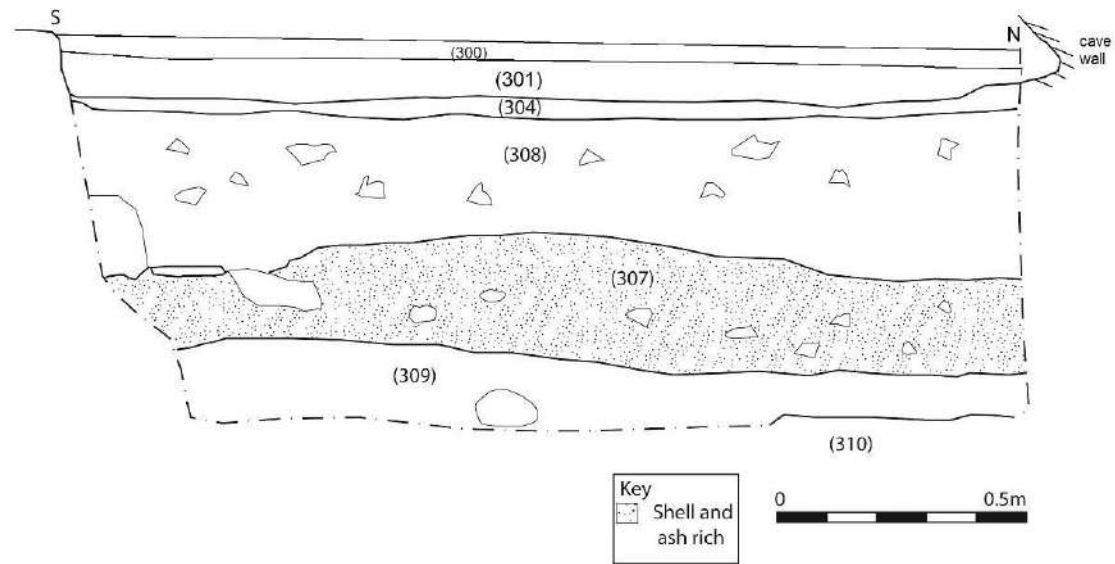


Figure 11: Learnie 1A: E-facing section of the central trench baulk, showing the deposits in the sub-trench on the east half of the excavation area

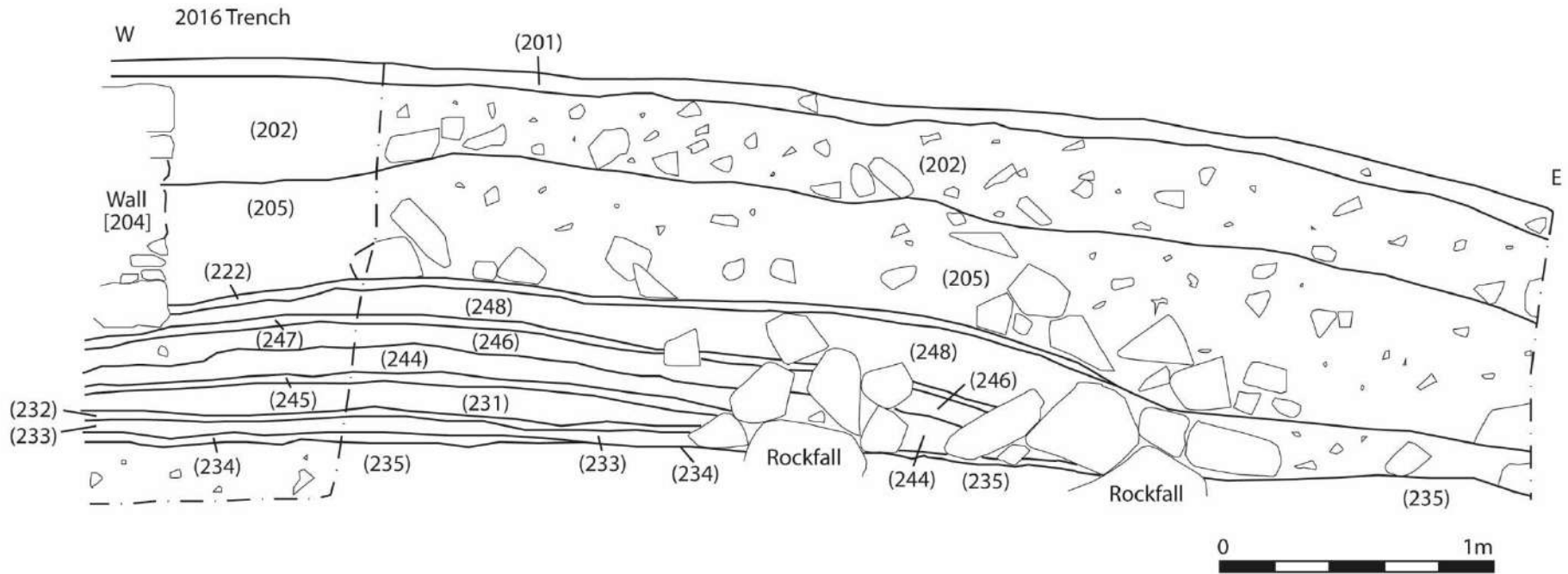


Figure 12: Learnie 2B: S-facing section of trench 2 in the cave entrance



Figure 13: Learnie 2B, pre-excavation plan of the western trench extension showing deposits (238) and (227) over the location of the hearth settings



Figure 14: Learnie 2B: pre-excavation plan of cow burial setting (511):

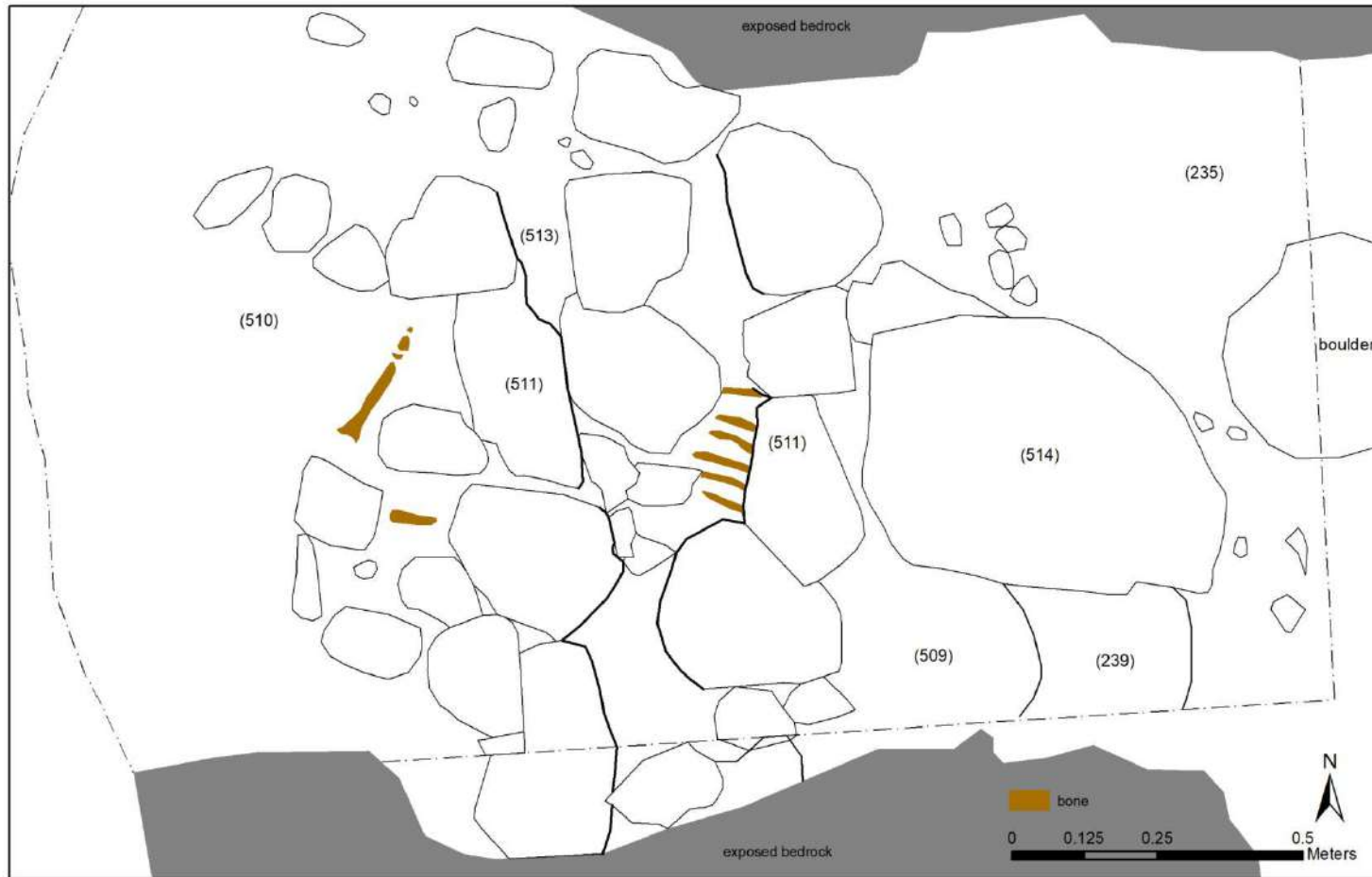


Figure 15: Learnie 2B: mid-excavation plan of cow burial setting (511)

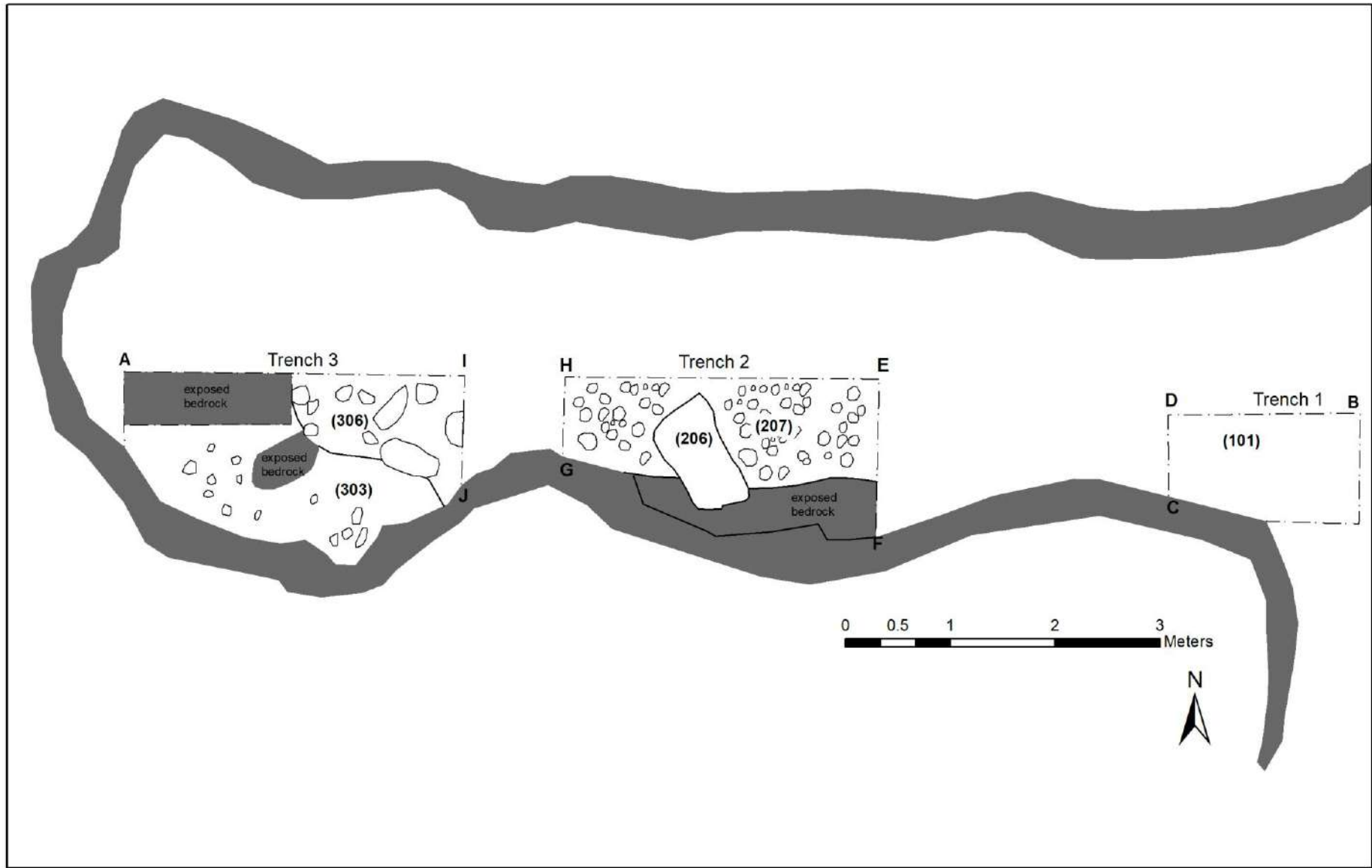


Figure 16: Learnie 2C: post-excavation plan

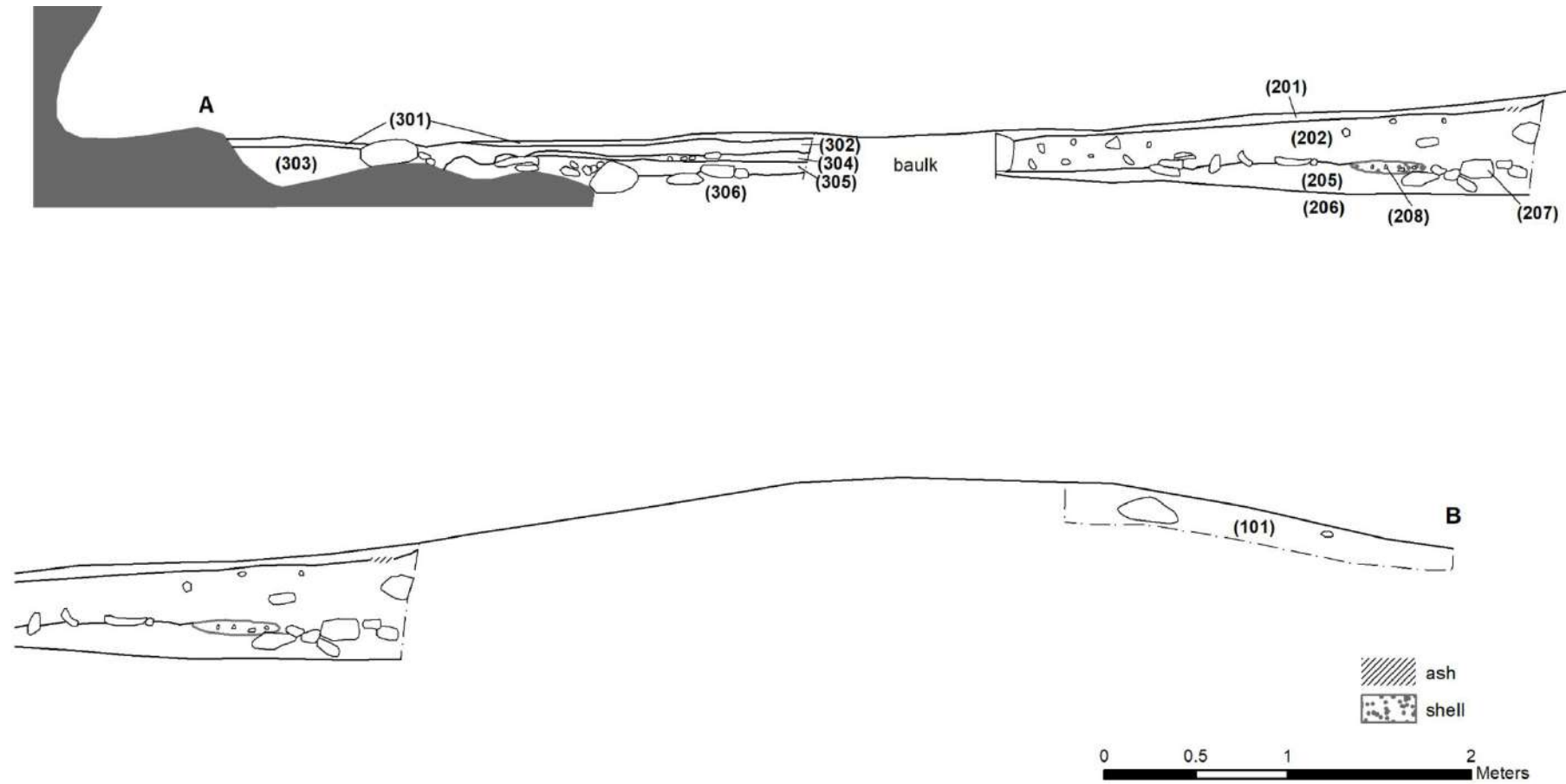


Figure 17: Learnie 2C: northern baseline south facing section drawing

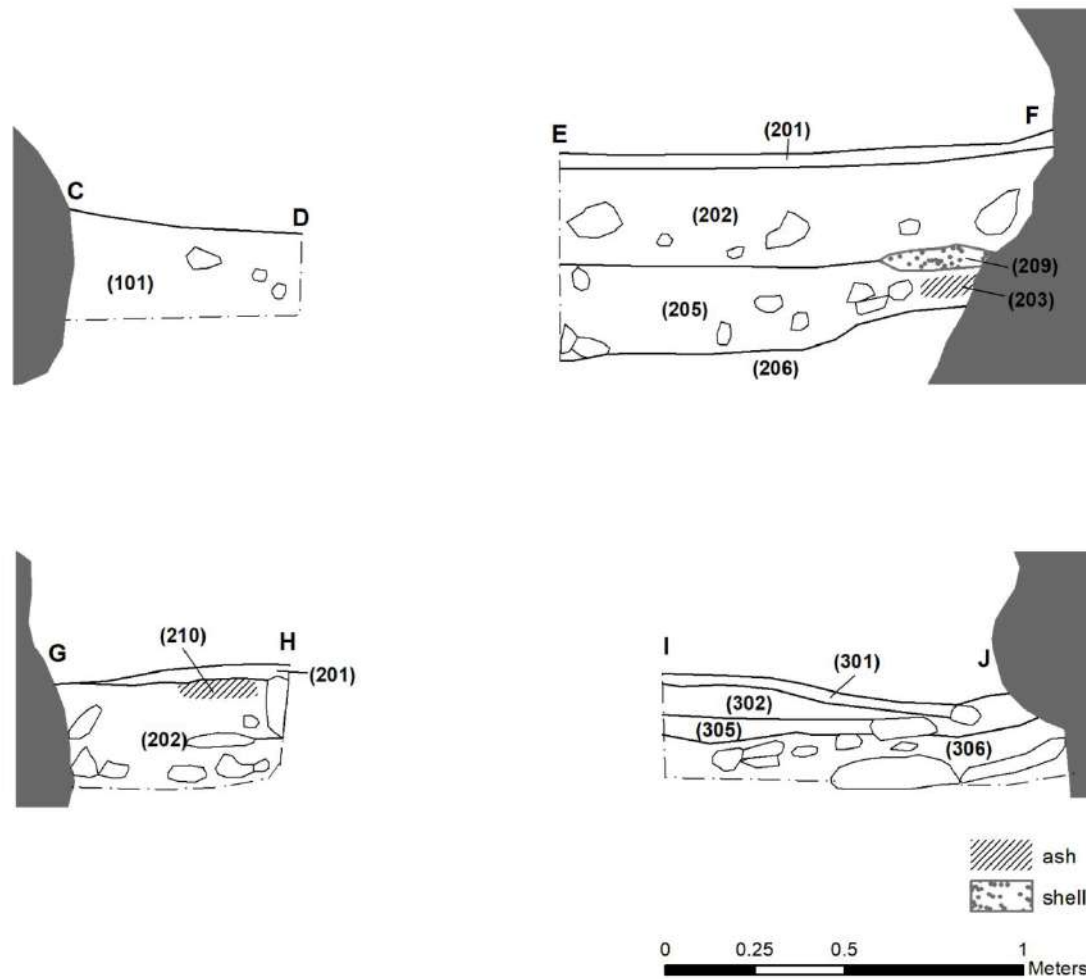


Figure 18: Learnie 2C: trench sections



Plate 7: *Learnie 1B: hearth (117) in the west half of the excavation area, facing NW*



Plate 8: *Learnie 1B: leather boot (SF84) on top of bracken mat floor (103)*



Plate 9: *Learnie 1B: N- / E-facing trench sections over surface (106/107) on the east side of the excavation area; stone fill (137) to right of ranging pole and (105) in far left centre, facing SW*



Plate 10: *Learnie 1B: post-excitation of west side of excavation area, showing S-facing trench section in the central baulk and floor (142), facing NE*



Plate 11: *Learnie 1B: post-excitation view of the trench from the back of the cave, facing E*



Plate 12: *Learnie 1B: post-excitation image of east side of trench, showing the surface of (108), facing NW (test pit in centre left)*



Plate 13: *Learnie 1B: post-excitation image of trench, showing the surface of (108), facing W (test pit in front left)*



Plate 14: SF130, articulated large mammal vertebrae in situ within (127)



Plate 15: Clothes pin, SF109, from (116)



Plate 16: SF164, cobble tool w/ central wear c.138



Plate 17: SF152, worked bone tool? c.132



Plate 18: SF151, quern from c.137



Plate 19: SF174, medicine bottle from c.305



Plate 20: SF175, clay pipe "Wilson's Cutty", c.305



Plate 21: SF158, medieval? jug sherd from c.307



Plate 22: *Learnie 2B: excavation through upper layers in the back of the cave, facing W*



Plate 23: *Learnie 2B: hearth setting (508) after removal of ash layer (507), facing W*



Plate 24: Learnie 2B: burial setting (511), pre-excitation with calf rib bones visible, facing S



Plate 25: Learnie 2B: mid-excitation of calf burial after removal of burial setting slabs (511), facing E





Plates 26-34:

Volunteers during the 2017 excavations

Appendix 1 List of Contexts: 2017 Excavation

Context No.	Type	Description	Under	Over	Fill of	Filled by	Interpretation
Learnie 1A							
300	Deposit	Slightly sandy silt, upper most horizon of trench.					
301	Deposit	Small ash spread, about 1mx0.8m NNE-SSW aligned. Partly covered by trench edge.	300	304			Small fire/hearth, c.late 19/20th century
302	Deposit	Matted bracken WSW of fireplace 301. Possibly a bed/mat. Degraded, 1.25mx1m. N-S aligned.	300	304			Bracken mat/floor surface c.19/20th century use
303	Structure	Mound of stone fragments below overhang of cave wall; stone is mix of angular talus and fragmentary stone, as well as some rounded beach cobbles. Abuts 306 to the south side		306			Stone clearance from cave floor
304	Deposit	Mid brown sandy silt	301, 302	308			
305	Deposit	Grey white mottled ash	304				Thin ash lens, probably 19/20th century fire
306	Structure	Single course, subrectangular setting of fairly large angular stone, aligned ESE-WNW.	303				Low wall, rivets (303) pile of stone shatter
307	Deposit	Mid grey brown sandy silt, few small stones and some large. Rich in shellfish and ash with mainly limpet (95%), rare whelk and occasional winkle (5%) and some mammal bone mostly at	308	309			Archaeological layer - build-up or infill?

Context No.	Type	Description	Under	Over	Fill of	Filled by	Interpretation
		top of layer. Mixed with same fragments of charcoal and occasional large chunks and lenses of ash. 1 x fragment of probably medieval pottery (SF158) recovered from this.					
308	Deposit	Mid brown-grey silty sand with 60% shattered stone. 0.3-0.4m deep	304	307			Cave wall/ceiling collapse/shatter
309	Deposit	Light grey ash deposit, very fine, including rounded stones 2-10cm long and some angular stone. Some animal bone and occasional shell.	307	310			Archaeological layer - build-up of material - early medieval? Not fully excavated
310	Deposit	Compacted ash deposit, nearly white in colour with occasional fragments of charcoal and rounded small stones 1.5-8cm long embedded in it.	309				Not excavated, at the base of (309) - early medieval? Or earlier?
Learnie 1B							
101	Deposit	Upper soil horizon, formed by degraded dung and soil build-up		102			Build-up of dung and silting after cave abandonment
102	Deposit	Fine silty sediment, light brown with small stony inclusions	101	103			Natural silt build-up in cave
103	Deposit	Bracken mat layer, same but base of (116), has a thin gravel layer over the top of it, probable beach/shingle gravel brought in to resurface this layer and lower thick organic layer	102	104			Bracken mat surface late 19th C., same as 116
104	Deposit	Light to mid brown fine sediment with small stone inclusions and occasional thin lenses of organic material	103	105/137			Also excavated in test pit
105	Deposit	Mid to light brown silty sediment with small to medium angular stone and round beach pebbles (some fire cracked) small charcoal flecks, some shellfish, some animal bone	104	106			Excavated in test pit, same as (137)

Context No.	Type	Description	Under	Over	Fill of	Filled by	Interpretation
106 / 107	Deposit	Loosely compact, dark brown silty sediment with small shell fragments, animal bone and charcoal flecks. Contains angular fire-cracked stone. Difficult to distinguish between 106/107. A black charcoal rich lens with heat affected angular and cobble stones and deposits of shellfish was contained within it. SF204 (iron ingot?) retrieved from this.	105/137	108, 140			Floor surface, same as 142
108	Deposit	Dark brown/black charcoal-rich surface, patchy and very compacted. White ashy patches mixed with heat cracked slabs. Black and yellow compact lenses come out, surface rising towards north. Extends across half of the W side of the trench. Contained some animal bone.	106/107				Extensively burnt surface with probable hearth settings - not excavated but top of layer where excavation stopped in 2017 - early medieval or earlier?
116	Deposit	Dark brown organic layer under (101)/102). Butchered animal bone, small amount of shell. At base is vegetation mat with disappears towards cave wall. To the west wide of baulk, probably same as (103)	101, 102	104/120			Same as 103-bracken mat surface late 19th C.
117	Structure	Circular setting of large irregular stones with central slab surrounded on S side by uprights - 0.85m NE-SW x 0.6m. "Puss and Boots" mug fragment (SF154) within it the fill from (102)	102	116		102	Fire/hearth 20th century
118	Deposit	Buff-pale orange ashy sandy silt layers with a charcoal lens at base. Overlies floor surface 103	102	103/116			Fire/Hearth-ash
119	Deposit	Buff-pale orange ashy sandy silt layers with a charcoal lens at base. Overlies floor surface 103	102	103/116			Fire/Hearth-ash deposit
120	Deposit	Mid brown sand-silt deposit below bracken mat in NW quadrant	103/116, 141	127, 131			Silting in back of cave - occupation surface?
121	Deposit	Pale yellow-brown ashy silt forming the remains of probable hearth/fire	119	122, 123			Base of fire/hearth (119)

Context No.	Type	Description	Under	Over	Fill of	Filled by	Interpretation
122	Deposit	Mixed dark brown-black and mid brown silty ash, part of 123	116	137			Surface with burnt patches from fires co
123	Deposit	Mid-brown sandy silt extending across the trench; contains subangular stones about 1-2cm, with some larger; same as 131	116, 122	122, 137			Silting in back of cave - occupation surface?; same as (127)
124	Deposit	Between 103 and 104, lens of dark brown-black burnt silty soil; less than 5cm deep	103	104			Small fire
125	Deposit	Mid brown silt with some shell, within 105	105	105			Midden deposit?
126	Deposit	Angular stones up to 20cm long, set in a rough circle right up against the alcove wall; no ash or burning layer survives but some chunks of charcoal visible over it	101	102			Hearth setting in NE alcove of cave, within (102) - would be visible to anyone approaching from SE...
127	Deposit	Dark brown silt, some organic material and few whelk and limpet shells	116, 120	132, 137			Occupation layer in back of cave, same as (123)
128	Structure	Disorganised setting of small stones extending below WSW trench edges; rounded and subangular stones up to 25cm long and 121 is within and over it; measures 0.8m NNW-SSE 0.6m	121	135			Hearth setting - post-medieval
129	Deposit	Mid brown silt with some intact whelk and limpet shell, within bounds of the cave alcove in the NE corner of trench; probably part of (106) but a discrete midden deposit?	102	106			Midden deposit within the surface of (106)
130	Deposit	Oval-shaped cut for small pit: 0.6m NE-SW x 0.4m. 0.08m deep, bowl-shaped profile but heavily bioturbated	116	127		133	Fire pit
131	Deposit	Dark brown almost black crumbly silt lens with possible windblown sand within it; same as (123)	116	137			Same as (123)?
132	Deposit	Light brown and orange sandy soil in NW quadrant of trench; contains small fragments of broken stones and occasional fire-cracked stone; contains discrete deposit of fish scale in NE corner and some large stones	127	137			Built-up material near cave walls - cleared out material or occupation debris?

Context No.	Type	Description	Under	Over	Fill of	Filled by	Interpretation
		within					
133	Fill	Black sandy silt with some charcoal fragments and a few shattered small fragments of stone	116	130	130		Fill of fire pit (130)
134	Deposit	Dark brown crumbly loam with some shell and bone fragments near N cave wall in centre of cave	141	139			Midden layer?, upper part of (139)?
135	Deposit	Ashy black deposit below hearth setting (128) with charcoal fragment and some fire cracked stone.	128	123			Hearth deposit
136	Fill	Large midden consisting of winkles and limpets, small amount of fish bone, rare pieces of animal bone and fish scales n surface	141, 120	139			Midden layer- same as/part of 134
137	Deposit	Stone layer, consisting of a mixture of large beach pebbles, smaller beach pebbles, some large pieces of samite with a matrix of mid-brown silty soil/sand; probably same as 308 in L1A	122, 123, 104	139			Cave shatter, silting building during abandonment; same as (105) from test pit
138	Deposit	Dark brown compact loamy sandy with small gravel and fragments decayed wood	116	137			same as 123
139	Deposit	Dark brown-black-yellow-white ash and sandy silt patches	137, 134	140, 142			Layer over surface (142/106)
140	Deposit	Coarse orange sand, contains some rounded beach stones.	139, 106/7				Natural sand, but possibly modified
141	Deposit	Loose stones, closes and cobbles packed in pile inside N side alcove of cave		120, 123			Clearance of stone to the side of the cave
142	Deposit	Compact dark brown greasy silt over embedded cobbles. Compact floor. 106 is in N 1/2 of trench, excavated as both 106 and 107 as difficult to distinguish	139	140			Floor surface, contemporary or part of (106/107)
143	Structure?	Disorganised possible stone rubble wall in NE alcove-encloses (129)	102	106			Rubble wall?
144	Structure?	Two large stones on west side of cobble fill (137)	123	106			Unknown?

Learnie 2B

Note: see 2016 DSR for contexts 222, 227, 235, 239

Context No.	Type		Description	Under	Over	Fill of	Filled by	Interpretation
507	2B	Deposit	Pale grey-white silty ash with small charcoal flecks	222, 238	227, 509			Hearth, fire deposit, post-medieval
508	2B	Structure	Semi-circular setting of stone surrounding with hard grey silt compacted surface	222, 238	227, 509			Stone hearth setting
509	2B	Deposit	Pale grey-cream silty ash underlying 508 forming lower hearth; contains small charcoal flecks and fragments; not confined by any stone setting	508	510			Fire deposit - spot fire, post-medieval
510	2B	Deposit	Mid dark brown sandy silt, fairly loosely compact, to the west side of 511; contains some bone, metal, glass, post-medieval ceramic	509	511			Post-medieval occupation material
511	2B	Structure	Roughly rectangular setting of stone aligned N-S. Measures 1.4m x 0.6-0.8m externally; stone is sub-angular, all talus material, averaging 0.25-0.35m long and 0.2-0.3m wide; stones to the E side are almost set on edge	509, 510, 513				Primary stonework forming stone setting around calf burial
512	2B	Structure	Largest stone of the setting at the centre of the group of 511 - "capstone"	509, 510, 513				Possible capstones to the possible cist
513	2B	Deposit	Mid dark brown sandy silt, contains some ash and friable brown silty deposits, large charcoal/burnt wood and calf skeleton; similar to (510)	509	511, 512			Matrix between 511/512
514	2B	Deposit	Large, flat slab to E of [511]	509, 510				Hearth slab?
Learnie 2C								
101	T1	Deposit	Mid brown silty loam with 19/20th c. glass, ceramics, metal, animal bone					Topsoil
201	T2	Deposit	Mid brown silty loam with 19/20th c. glass, ceramics, metal, animal bone		202			Topsoil
202	T2	Deposit	Mid-dark brown sandy loam with Victorian ceramic, glass and clay pipe	201	203, 204, 205, 208			Soil build-up with occupation material
203	T2	Deposit	Ash layer overlying stone on North wall of cave; extends approximately 50 cm x 40cm	202	204			Fire deposit

Context No.	Type		Description	Under	Over	Fill of	Filled by	Interpretation
204	T2	Deposit	Alignment of stones (up to 30cm x 30 cm) across cave in line N-S	203, 202	205			Small rubble wall inside cave, Victorian
205	T2	Deposit	Compacted dark soil layer interspersed with cobbles; extends under ash layer (206), and contains no finds	202, 204	206			Occupation deposit - unknown period
206	T2	Deposit	Dark brown silty ash with some charcoal fragments	205				Burning layer, spread of hearth material
207	T2	Deposit	Roughly laid cobbles in natural sand	204, 206				Cobbled surface
208	T2	Deposit	Winkle/limpet shell deposit at E end of T2	202	205			Shell midden
209	T2	Deposit	Winkle/limpet shell deposit at E end of T2, same as 208	202				Same as 208, shell midden
210	T2	Deposit	Reddish brown sandy silt, very soft like an organic layer, visible in E facing section	201	202			Remnants of a bracken mat deposit?
301	T3	Deposit	Mid brown silty loam with 19/20th c. glass, ceramics, metal, animal bone		302			Topsoil
302	T3	Deposit	Mid-dark brown compact soil with some cobbles (1cm-1.5cm)	301	303-4			
303	T3	Deposit	Patches of sand, with gravel and sea washed rounded cobbles, bed rock showing through; sondage excavated to bedrock	302	304			Sand layer
304	T3	Deposit	Black-pale yellow ash layer in NE corner T3	302	305			Burning layer, fire deposit?
305	T3	Deposit	Mid-dark brown compact soil in NE side of T3	302, 304	306			
306	T3	Deposit	Pale brown yellow gritty sand in SW side of T3	305				Natural sand

Appendix 2 Small Finds Register: 2017 Excavation

Find No.	Context No.	Cave	Material	Interpretation/description	Date
Learnie 1B					
53	Surface collection	L1B	Stone	Possible anvil, with central perforation where stone has split	02/09/2017
55	101	L1B	Fe	Horse shoe	02/09/2017
56	101	L1B	Fe	Iron cauldron fragments, large iron stake, iron tools	02/09/2017
59	101	L1B	Glass	Window glass	2/09/17
64	101	L1B	Ceramic	Misc. ceramic - stoneware and Victorian material	02/09/2017
65	101	L1B	Glass	Various pieces bottle glass	02/09/2017
67	116	L1B	Leather	Various leather shoe fragments	02/09/2017
68	116	L1B	Fe	Iron cauldron fragments and misc. Fe (wire, nails).	02/09/2017
69	116	L1B	Wood	Sawn wood	02/09/2017
70	102	L1B	Glass	Misc. bottle glass 35-50 garments	02/09/2017
72	102	L1B	Leather	Shoe leather fragments	02/09/2017
74	102	L1B	Fe	Iron cauldron fragments and one large nail and small nail	02/09/2017
75	101	L1B	Glass	Broken bottle glass	03/09/2017
77	102	L1B	Ceramic	Misc. ceramic 15-20 sherds, Victorian	03/09/2017
79	116	L1B	Glass	Misc. sherds bottle glass, 20-40 sherds	03/09/2017
80	116	L1B	Ceramic	Misc. small Victorian ceramic sherds, 20-30 fragments	03/09/2017
81	116	L1B	Stone	One possible round pebble tool, smoothed/ worn	03/09/2017
84	103	L1B	Leather	Leather boot	04/09/2017
85	103	L1B	Leather	Leather shoes	04/09/2017
86	103	L1B	Fe	Misc. Fe lumps and cauldron fragments	04/09/2017
87	103	L1B	Wood	Worked wood and bracken attached, part of the bracken mat floor	04/09/2017
88	103	L1B	Wood	Worked wood part of the bracken mat floor?	04/09/2017
89a	103	L1B	Glass	Glass bottle	04/09/2017
89b	103	L1B	Ceramic	Button?	04/09/2017
91	103	L1B	Ceramic	Misc. small Victorian ceramic sherds, 15-20 fragments	04/09/2017
92	116	L1B	Bone	Burnt button, 3 holes	04/09/2017
93	119	L1B	Ceramic	Part of clay pipe stem	04/09/2017
94	119	L1B	Metal	Large copper (?) belt buckle	05/09/2017
95	119	L1B	Fe	Curving Fe bolt/nail	05/09/2017
96	119	L1B	Leather	Small leather strap	05/09/2017
97	119	L1B	Glass	Window glass	05/09/2017
98	119	L1B	Ceramic	Small Victoria sherd	05/09/2017
99	121	L1B	Wood	Burnt wood - worked?	05/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
100	121	L1B	Bone	Burnt and cut bone	05/09/2017
101	121	L1B	Fe	Misc. Fe objects	05/09/2017
102	121	L1B	Glass	Bottle base sherd	05/09/2017
103	121	L1B	Ceramic	2x small Victorian pottery sherds	05/09/2017
105	116	L1B	Stone	Limestone sherd with fossil broken/split cobble possible for fossil hunting	05/09/2017
106	116	L1B	Stone	Bevel ended stone tool?	05/09/2017
107	126	L1B	Ceramic	One small dairy bowl sherd	05/09/2017
108	126	L1B	Glass	One small glass vessel sherd	05/09/2017
109	116	L1B	Metal	Cu alloy pin	05/09/2017
110	103	L1B	Leather	Leather shoe fairly degraded	05/09/2017
111	116	L1B	Metal	Cu alloy thimble	06/09/2017
112	116	L1B	Metal	Cu alloy plate broken strap end?	06/09/2017
113	120	L1B	Ceramic	Misc. small white glazed Victorian pottery sherd	06/09/2017
114	120	L1B	Fe	Misc. Fe cauldron fragments, wire, nails	07/09/2017
115	120	L1B	Leather	Leather off-cuts	07/09/2017
116	120	L1B	Bone	Worked bone object?	07/09/2027
117	120	L1B	Glass	Misc. bottle sherds 20-30 pieces	07/09/2027
119	120	L1B	Fe	One lump slag	07/09/2027
120	120	L1B	Wood	Burnt wood tool with shaped point	07/09/2027
121	120	L1B	Stone	Three possible worked stone tools, two small flakes	07/09/2027
122	135	L1B	Fe	Fish hook	07/09/2027
123	135	L1B	Cu alloy	Circular object	07/09/2027
125	104	L1B	Ceramic	2x Victorian pottery sherds	07/09/2017
126	104	L1B	Fe	Large Fe object	07/09/2017
127	104	L1B	Wood	Small worked wood fragments	07/09/2017
128	104	L1B	Glass	Bottle glass sherd and window glass	07/09/2017
130	127	L1B	Bone	Cattle bone, articulated vertebrae	07/09/2017
150	132	L1B	Bone	Vertebrae and articulated bone	08/09/2017
151	137	L1B	Stone	Possible quern rubber	09/09/2017
152	132	L1B	Bone	Two sawn ends, possible worked edge, knife marks	09/09/2017
153	117	L1B	Fe	Fragments of Fe cauldron and other misc. fragments	09/09/2017
154	117	L1B	Ceramic	Misc. Victorian pottery sherds, including two "Puss and Boots" mug	09/09/2017
155	117	L1B	Stone	Smashed to see fossil? Evidence of fossil hunting	09/09/2017
156	117	L1B	Glass	One large glass vessel sherd and one small window glass sherd	09/09/2017
157	136	L1B	Ceramic	Clay pipe fragment	09/09/2017
158	307	L1B	Ceramic	1x possible medieval earthenware pottery sherd, base sherd of flat bowl; possible yellow/red glaze	09/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
159	137	L1B	Organic	Possible lump of dung or organic matter	09/09/2017
161	137	L1B	Ceramic	Small sherd of Victorian pottery	09/09/2017
162	137	L1B	Fe	Fe nail	09/09/2017
164	138	L1B	Stone	Small rubble tool with central wear throughout	09/09/2017
165	138	L1B	Glass	Two small glass bottle sherds	09/09/2017
166	126	L1B	Ceramic	One small clay pipe fragment with some decoration and one pipe stem fragments	09/09/2017
168	132	L1B	Ceramic	3x sherds of Victorian pottery	09/09/2017
169	132	L1B	Wood	Two worked wood objects	09/09/2017
170	132	L1B	Ceramic	Clay pipe stem	09/09/2017
171	132	L1B	Glass	Bottle glass sherd	09/09/2017
172	127	L1B	Metal	Cu alloy button	09/09/2017
173	127	L1B	Shell?	Small button of mother of pearl	09/09/2017
177	127	L1B	Ceramic	Two stem clay pipe pieces and one bowl fragment	09/09/2017
178	127	L1B	Leather	Leather off-cuts	09/09/2017
179	127	L1B	Fe	One Fe object	09/09/2017
180	127	L1B	Ceramic	Four Victorian fragments, one fragment of glazed red ware	09/09/2017
181	127	L1B	Glass	Two small pieces of bottle glass	09/09/2017
182	127	L1B	Metal	2x Cu off-cuts	09/09/2017
183	127	L1B	Wood	One piece of wood	09/09/2017
184	129	L1B	Stone	Possible stone tool	09/09/2017
185	120	L1B	Ceramic	5x clay pipe fragments and two clay pipe bowl fragments	09/09/2017
186	116	L1B	Ceramic	4x clay pipe stems	09/09/2017
188	103	L1B	Ceramic	2x clay pipe stems	09/09/2017
189	139	L1B	Ceramic	2x pieces of clay pipe bowl and one piece of clay pipe stem	09/09/2017
190	139	L1B	Fe	2x Fe fragments	10/09/2017
194	131	L1B	Ceramic	2x clay pipe stems	10/09/2017
195	131	L1B	Ceramic	2x pieces of small pottery	10/09/2017
196	131	L1B	Leather?	Possible leather off cuts (degraded)	10/09/2017
197	132	L1B	Leather and metal	Worn-out sole of shoe with remains of two nails attached at heel	10/09/2017
198	132	L1B	Leather	Leather off cuts	10/09/2017
199	132	L1B	Ceramics	Two pieces of white pottery	10/09/2017
200	132	L1B	Ceramic	1x clay pipe stem	10/09/2017
201	132	L1B	Glass	Fragments of coloured glass	10/09/2017
202	132	L1B	Fe	Small Fe fragment	10/09/2017
203	132	L1B	Flint	Worked flint	10/09/2017
204	106	L1B	Fe	Ingot	10/09/2017
205	146	L1B	Fe	Nail	10/09/2017
206	142??	L1B	Leather	Leather offcuts	10/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
Learnie 1A					
131	304	L1A	Fe	Thimble	07/09/2017
132	304	L1A	Fe	Misc. Fe including shotgun bullet end	07/09/2017
134	304	L1A	Glass	Window glass	07/09/2017
137	304	L1A	Ceramic	Misc. Victorian pot sherds, 20-30 fragments	07/09/2017
138	304	L1A	Cu alloy	Cu alloy button and shell button	07/09/2017
139	304	L1A	Leather	Small shoe frag	07/09/2017
140	304	L1A	Bone and metal	Broken bone knife handle fragments with metal pin	07/09/2017
144	301	L1A	Ceramic	Misc. Victorian pot sherds	07/09/2017
145	301	L1A	Leather	Leather strap fragments, leather shoe? Cut off end	08/09/2017
147	300	L1A	Ceramic	Small Victorian sherds	08/09/2017
148	300	L1A	Glass	Large window glass sherd, and one clear glass vessel	08/09/2017
149	301	L1A	Ceramic	Clay pipe bowl	08/09/2017
167	301	L1A	Ceramic	One large body sherd, earthenware, possibly medieval?	09/09/2017
174	305	L1A	Glass	Sherds of square-ish sided bottle	09/09/2017
175	305	L1A	Ceramic	Clay pipe bowl fragments - <i>Wilson's Cutty</i> ; 3x stem fragments	09/09/2017
176	305	L1A	Bone	One bone button with four holes	09/09/2017
187	304	L1A	Ceramic	3x clay pipe stems	09/09/2017
191	307	L1A	Ceramic	Small piece of pottery. Possibly medieval	10/09/2017
192	307	L1A	Glass	1x small fragment of blue glass?	10/09/2017
193	307	L1A	Fe	Two small pieces of Fe of which one attached to stone	10/09/2017
Learnie 2B					
10a	202		Leather	Leather shoe fragments	02/09/2017
10b	202		Shell	Shell - drilled hole?	02/09/2017
252b	239	L2B	Antler	Broken antler, handle with perforation at end	02/09/2017
253b	222	L2B	Leather	Leather offcuts	02/09/2017
255a	222	L2B	Ceramic	Clay pipe stem fragments	02/09/2017
255b	222	L2B	Stone	Possible cobble tool	02/09/2017
255c	222	L2B	Ceramic	Misc. Victorian ceramic fragments	02/09/2017
255d	222	L2B	Glass	Misc. bottle glass fragments	02/09/2017
255e	222	L2B	Fe	Misc. Fe fragments	02/09/2017
256a	222	L2B	Glass	Misc. bottle glass fragments	02/09/2017
256b	222	L2B	Ceramic	Clay pipe stem fragment	02/09/2017
256c	222	L2B	Ceramic	Misc. Victorian ceramic fragments	02/09/2017
256d	222	L2B	Wood	Wood object	02/09/2017
256e	222	L2B	Leather	Leather offcuts	02/09/2017
257	238	L2B	Fe	Misc. iron fragments	02/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
259	Out of context	L2B	Bone	Possible human finger bone recovered from sand floor 0.8m away from burial pit - part of Rosemarkie Man	04/09/2017
261	222	L2B	Leather	Leather fragments	04/09/2017
262	222	L2B	Organic	Fragments of bracken, wood	04/09/2017
263	222	L2B	Ceramic	Misc. Victorian ceramic fragments	
264	222	L2B	Glass	Misc. bottle glass fragments	04/09/2017
265	222	L2B	Fe	Misc. Fe fragments	04/09/2017
267	202	L2B	Fe	Misc. Fe fragments	05/09/2017
268	202	L2B	Fe	Fragment of a furnace base	05/09/2017
269	202	L2B	Metal	Cu? Fragments	05/09/2017
270	202	L2B	Glass	Misc. bottle glass fragments	05/09/2017
271	202	L2B	Ceramic	Misc. Victorian ceramic fragments	05/09/2017
273	202	L2B	Leather	Leather fragments	05/09/2017
274	202	L2B	Wood	Wood object	05/09/2017
276	238	L2B	Glass	Misc. bottle glass fragments	05/09/2017
277	238	L2B	Fe	Misc. Fe fragments	05/09/2017
278	238	L2B	Ceramic	Misc. Victorian ceramic fragments	05/09/2017
279	238	L2B	Leather	Leather fragments	05/09/2017
280	222	L2B	Bone	Animal skull	05/09/2017
282	222	L2B	Leather	Leather fragments	05/09/2017
283	222	L2B	Fe	Misc. iron nails	05/09/2017
284	222	L2B	Glass	Misc. bottle glass fragments	05/09/2017
285	222	L2B	Ceramic	Misc. Victorian ceramic fragments	05/09/2017
286	222	L2B	Stone	Two possible stone tools	06/09/2017
287	232	L2B	Antler	Worked antler	06/09/2017
288	222	L2B	Ceramic	Two sherds of post-medieval pottery	06/09/2017
289	248	L2B	Fe	One lump of slag	06/09/2017
290	248	L2B	Fe	Iron fish hook	06/09/2017
291	249	L2B	Fe	Iron rivet	06/09/2017
292	239	L2B	Fe	Iron rivet/nail	06/09/2017
293	239	L2B	Bone?	bone? Button	06/09/2017
294	239	L2B	Ceramic	One sherd of post-medieval pottery	06/09/2017
295	507	L2B	Fe	Mixed metal and slag some bone adhering to slag	06/09/2017
296	507	L2B	Ceramic	Ceramic fragment?	06/09/2017
297	227	L2B	Ceramic	Ceramic marble/lemonade stopper	06/09/2017
298	202	L2C	Flint	Flint chunk	06/09/2017
299	202	L2C	Glass	Mixed Glass	06/09/2017
300	227	L2B	Fe	Misc. Fe fragments	06/09/2017
301	227	L2B	Ceramic	Clay pipe stem	06/09/2017
302	227	L2B	Ceramic	Post medieval pottery sherds	06/09/2017
303	227	L2B	Leather	Leather fragments	06/09/2017
304	227	L2B	Glass	Misc. glass fragments	06/09/2017
305	239	L2B	Ceramic	Post-medieval pottery sherds	06/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
306	239	L2B	Fe	Misc. Fe fragments	06/09/2017
307	232	L2B	Metal	Metal rivet/nail	06/09/2017
308	239	L2B	Glass	Misc. glass fragments	06/09/2017
309	509	L2B	Ceramic	Post-medieval pottery sherds	06/09/2017
310	509	L2B	Fe	Misc. Fe fragments	06/09/2017
311	509	L2B	Glass	Misc. glass fragments	06/09/2017
312	232	L2B	Fe	Slag lump	06/09/2017
313	227	L2B	Fe	Misc. Fe fragments	06/09/2017
314	232	L2B	Fe	Iron slag and vitrified clay furnace lining	07/09/2017
315	513	L2B	Leather	Misc. leather fragments	07/09/2017
316	513	L2B	Fe	Misc. Fe nails	07/09/2017
317	513	L2B	Ceramic	2x clay pipe stems	07/09/2017
318	513	L2B	Wood	Wood object	07/09/2017
319	513	L2B	Bone	Animal bone	07/09/2017
320	513	L2B	Ceramic	Misc. post-medieval ceramic sherds	07/09/2017
321	513	L2B	Leather	Leather shoes	07/09/2017
322	510	L2B	Fe	Misc. Fe fragments	07/09/2017
323	510	L2B	Fe	Fe slag, vitrified? Material	07/09/2017
324	510	L2B	Glass	Misc. bottle glass fragments	07/09/2017
325	510	L2B	Ceramic	2x clay pipe stems	07/09/2017
326	510	L2B	Ceramic	Misc. Victorian ceramic fragments	07/09/2017
327	510	L2B	Leather	Leather fragment	07/09/2017
328	Unstrat	L2B	Leather	Childs leather shoe	2012
329	301	L2C	Bone	Misc. mammal bone	07/09/2017
330	301	L2C	Metal	Metal pin and misc. fragments	07/09/2017
331	301	L2C	Ceramic	Misc. Victorian ceramic sherds x 4	07/09/2017
332	301	L2C	Leather	Leather fragment	07/09/2017
333	301	L2C	Glass	Misc. glass fragments	07/09/2017
335	301	L2C	Ceramic	5 clay pipe stems, bowl fragments	07/09/2017
Learnie 2C					
001	101	L2C	Ceramic	Misc. Victorian ceramic fragments	03/09/2017
002a	101/201/ 301	L2C	Ceramic	Misc. Victorian ceramic fragments x 5	03/09/2017
002b	101/201/ 301	L2C	Leather	Misc. leather fragments	03/09/2017
002c	101/201/ 301	L2C	Metal	Metal fragments, including spoon	03/09/2017
002d	101/201/ 301	L2C	Glass	Misc. bottle glass fragments	03/09/2017
002e	101/201/ 301	L2C	Bone	Animal bone	03/09/2017
003	301	L2C	Mixed	Mix of ceramic, bone, glass, iron, plastic, shell and clay pipe	03/09/2017
004	302	L2C	Fe	Misc. Fe fragments	04/09/2017
005	302	L2C	Bone?	3 buttons	04/09/2017
006	304	L2C	Fe	Misc. Fe objects	05/09/2017

Find No.	Context No.	Cave	Material	Interpretation/description	Date
007	202	L2C	Fe	Misc. Fe fragments	06/09/2017
009	202	L2C	Ceramic	Misc. Victorian ceramic fragments	06/09/2017
010	202	L2C	Mixed	Leather, shell (drilled hoe?)	06/09/2017
012a	202	L2C	Ceramic	Clay pipe stem fragments	06/09/2017
012b	202	L2C	Glass	1 x glass sherd - used as knife?	06/09/2017
012c	202	L2C	Glass	Misc. bottle glass fragments	06/09/2017
012d	202	L2C	Ceramic	Misc. Victorian ceramic fragments	06/09/2017
014a	305	L2C	Ceramic	Clay pipe stem fragments	08/09/2017
014b	305	L2C	Bone	Misc. mammal bone	08/09/2017
014c	305	L2C	Fe	Misc. Fe fragments	08/09/2017
015	205	L2C	Stone	Cobble tool, impact marks on end	08/09/2017
016a	205	L2C	Bone	Misc. mammal bone	08/09/2017
016b	205	L2C	Ceramic	Clay pipe stem	08/09/2017
016c	205	L2C	Glass	Misc. bottle glass fragments	08/09/2017
016d	205	L2C	Ceramic	Misc. Victorian ceramic fragments	08/09/2017
016e	205	L2C	Fe	2x metal fragments	08/09/2017
017	302	L2C	Bone	Horn cores (worked)	08/09/2017
018	302	L2C	Ceramic	Misc. Victorian ceramic fragments	08/09/2017
019	302	L2C	Ceramic	Clay pipe stems	08/09/2017
020	302	L2C	Glass	Misc. bottle glass fragments	08/09/2017
021	302	L2C	Leather	Leather fragments	08/09/2017
022	101	L2C	Ceramic	Fragments of 19/20th c. ceramic	08/09/2017

Appendix 3 Samples Register: 2017 Excavation

Context No.	Area	Sample No.	Volume L/g	Notes
Learnie 1A				
300			1/4L	Limpets, winkles and 1 whelk
304			1/2L	Misc. mammal bone
304			1/2L	Misc. shell, oyster, limpet, wrinkle
307			<1L	Mixed mammal and fish bone, tooth
307			1L	Mixed shell, whelk, limpets, winkles and one piece of mussel shell
307			1/2L	Roundwood charcoal
307			1L	Basal layer, mixed shell (limpets and winkles) a few fish bone, ashy grey silty sand
309			2L	Soil sample
309			1/2L	Small quantity animal and fish bones.
Learnie 1B				
101			1/2L	Small bag mammal bone, including horn core
102			1/2L	Small bag of mammal bone
103			1/4 L	Misc. mammal bone
104			1/2 L	Misc. mammal bone
106			-	2 whelk shells
106			1/2L	Small quantity fish and animal bone
106			2L	Soil sample
106			6L	3 bags - soil sample with charcoal and ash
116			4L	2 bags - soil sample
116			1/2L	Shell mostly limpet
116			1/2L	Mammal bone
116			1/4L	Fish scales from underlying midden
117			-	1 small fragment of mammal bone
120			1/2L	Mammal bone
125			1L	Soil sample
127			1L	Misc. mammal bone and horn cores
127			-	Hazelnut shells
127			1/2L	Misc. shell mixed limpets, winkles, whelk
129			1L	Soil sample
129			1L	Roundwood charcoal
129			1L	Misc. shell - scallop, whelk, crab
129			1L	Misc. mammal bone, some fish bone
131			1/4 L	Small bone
131			-	Small quantity of wood some showing signs of burning
132			1/4L	Misc. shell -limpets and winkles
132			1/4L	Misc. shell -limpets and winkles
132			-	Hazelnut shells

Context No.	Area	Sample No.	Volume L/g	Notes
132			-	Charcoal some round wood
132			1L	Misc. mammal and fish bone
132			-	Hazelnut shells
132			1L	Large mammal bones
132			1L	Large mammal bones
134			10L	Soil sample - charcoal and shell
135			1/4L	Misc. shell - limpet, whelk, crab
136			1/4L	Misc. shell - whelk and crab claw
136			1/4L	Misc. mammal bone
137			1/2L	Misc. shells, mostly scallops, whelk, oyster, limpet
137			2L	Misc. mammal bone - probably some cow, and butchery evidence
139			2L	Misc. mammal and fish bone, incl skull
139			-	Hazelnut shells
139			1/4L	Misc. shell - limpet, winkles, whelk, crab
139			3L	Soil sample - charcoal-rich
142			2L	Soil sample, NW quadrant
142			1/4L	Misc. mammal and fish bone
142			1L	Misc. shell - whelks, limpets, winkle
142			2L	Soil sample, SW quadrant]
Context No.	Area	Sample No.	Volume L/g	Notes
Learnie 2B				
202	L2B	A2	1/2L	Misc. mammal bone
202	L2B	A8	1/4L	Misc. shell
222	L2B	A13	1/4L	Misc. mammal bone
222	L2B	159	1 bag	Fish and animal bone
222	L2B	161	1/4L	Misc. shell
227	L2B	A3	1/4L	Misc. mammal bone
227	L2B	A7	1/4L	Misc. shell
227	L2B	A4	-	Misc. mammal bone
232	L2B	A6	1L	Misc. mammal bone
232	L2B		2L	Soil sample
232	L2B	A10	1/4L	Misc. shell
238	L2B	A14	1/2L	Misc. mammal bone
239	L2B	A1	1/4L	Misc. mammal bone
239	L2B	A11	1/4L	Misc. shell
244	L2B, T2	168	2L	Soil Sample
244	L2B, T2		2L	Soil sample
245	L2B, T2	378	1/4L	Soil sample from below wall
246	L2B	162	1 bag	Shell midden with bone
248	L2B, T2	158	2L	Shell Midden with ash, bone and charcoal
248	L2B	163	1/2L	Shell and ash deposit
509	L2B, T1	A5	-	1x mammal bone

Context No.	Area	Sample No.	Volume L/g	Notes
513	L2B, T1	1	1 bag	Right ribs of calf
513	L2B, T1	2	1 bag	Right limb of calf
513	L2B, T1	3	1 bag	Left limb of calf
513	L2B, T1	4	1 bag	Right lower mandible and teeth
513	L2B, T1	5	1 bag	Left and right scapulae
513	L2B, T1	6	1 bag	Right limb of calf
513	L2B, T1	7	1 bag	Left limb of calf
513	L2B, T1	8	1 bag	Calf vertebrae
513	L2B, T1	9	1 bag	Left ribs of calf
513	L2B, T1	10	1 bag	Sternum of calf
513	L2B, T1	11	1 bag	Calf bone
Learnie 2C				
202	L2C, T2	01	1/2L	Misc. mammal bone
202	L2C, T2	03	1L	Soil sample from E side of T2
202	L2C, T2	07	1/4L	Misc. mammal bone
203	L2C, T2	06	-	Roundwood charcoal
205	L2C, T2	04	1/4L	Misc. shell
205	L2C, T2	05	1 bag	Misc. mammal and fish bone
206	L2C, T2	02	1L	Sample of ash layer
302	L2C, T3	-	1/4L	Misc. mammal bone
302	L2C, T3	-	1/2L	Misc. shell

Appendix 4 Site Plans Register: 2017 excavation

Drwg No.	Scale	Sheet	Description	Direction Facing	Contexts	Drawn By	Date
Plans							
1	1:20	6	L1B trench plan	-	103, 117, 118, 119, 122	MKP	02/09/2017
2	1:100	1	L1B baseline trench plan	-	-	MKP	03/09/2017
3	1:20	1	L1B - plan of [117]	-	117	MKP	03/09/2017
4	1:20	2	L1B mid-ex plan of trenches	-	105, 120, 123, 126	SEW	04/09/2017
5	1:20	3	L1B mid-ex plan of trenches	-	102, 105, 130, 123, 127, 134, 141	SEW	06/09/2017
6	1:20	11	L2C pre-ex plan of T2 and T3	-	-	RJ	07/09/2017
7	1:20	4	L1B mid-ex plan of SW quadrant	-	132	SEW	07/09/2017
8	VOID	12	L2C post-excavation plan of T2 and T3	-	206, 207, 303, 306	RJ	10/09/2017
9	1:20	5	L1B mid-ex plan of trenches	-	106/7, 140, 142, 144	RSJ, JW	08/09/2017
10	1:20	14	L1A post-excavation plan	-	306, 309, 310	MS	10/09/2017
11	1:20	7	L1B trench plan post-excavation	-	108	MKP	10/09/2017
12	1:20	16	L2B Trench 1 extension plan, mid-excavation	-	227, 238	SB	10/09/2017
13	1:20	17	L2B Trench 1 extension plan, after removal of baulk	-	235, 508	SB	10/09/2017
14	1:10	18	L2B Trench 1 extension, detail of pre-excavation plan of animal burial structure (511/512)	-	509-514	SB	10/09/2017
Sections							
S1	1:10	1	L1B - NW-facing section of [117]	NW	117		03/09/2017
S2	1:10	9	L1B N-facing section along S trench edge of SW quadrant, B-A	N	102, 116, 122, 123, 137, 139, 140, 142	MKP	10/09/2017
S3	1:10	9	L1B E-facing section of W trench edges, A-C & D-F	E	101, 102, 116, 120, 121, 128, 137, 139	MKP	10/09/2017
S4	1:10	9	L1B S-facing section of baulk in SW quadrant, C-E	S	102, 116, 123, 137, 139, 142	MKP	10/09/2017
S5	1:10	10	L1B S-facing section of trench in NW quad, F-H	S	102, 120, 123, 134, 137, 139, 140, 141	MKP	10/09/2017
S6	1:10	10	L1B N-facing section of S trench edge J-G	N	101, 102, 103, 104, 105, 137, 106/107, 108	MKP	10/09/2017
S7	1:10	14	L1A E-facing section of trench	E	305-309	MS	10/09/2017
S8	1:10	1	SE facing section of (130)	SE	130	SEW	06/09/2017

Drwg No.	Scale	Sheet	Description	Direction Facing	Contexts	Drawn By	Date
S9	1:10	8	L1B E-facing baulk at centre of excavation area, G-I	E	118, 103, 104, 137, 106/7	MKP	10/09/2017
S10	1:20	13	L2C S-facing baseline section of T1-T3	S	301-306, 201-205, 101	SEW	10/09/2017
S11	1:20	13	L2C E-facing section of T1	E	101	SEW	10/09/2017
S12	1:20	13	L2C W-facing section of T2	W	201-203, 205, 209	SEW	10/09/2017
S13	1:20	13	L2C E-facing section of T2	E	201, 202	SEW	10/09/2017
S14	1:20	13	L2C W-facing section of T3	W	301-306	SEW	10/09/2017
S15	1:20	15	L2B S-facing section of T2 (cave entrance)	S	201-205, 231-248	SB	10/09/2017

Appendix 5 List of Photographs: 2017 excavation

Photo No.	Direction Facing	Area	Context No.	Description	Date
Learnie 1A / 1B					
255	N	L1B	-	Working shot	02/09/2017
256	NNW	L1B	-	Working shot	02/09/2017
258	NW	L1B	-	Pre-excavation image of L1B	02/09/2017
260	NW	L1B	-	Pre-excavation image of L1B	02/09/2017
262-3	NW	L1B	-	Pre-excavation image of L1B	02/09/2017
264-71	-	-	-	Volunteers in front of L1B	02/09/2017
273-5	NE	L1B		Horse shoe find (SF55)	02/09/2017
276-7	E	L1B		Working shot in L1B	02/09/2017
278	W	L1B		Possible quern stone in L1B	02/09/2017
279-80	SW	L1A		Pre-excavation of L1A	03/09/2017
281-3	W	L1B	117	Mid excavation of SW quadrant showing stone setting (117)	03/09/2017
284	NNW	L1B	117	Possible hearth setting (117)	03/09/2017
285-6	NE	L1B	117	Mid excavation of setting	03/09/2017
287-8	SE	L1B	117	Mid excavation of setting	03/09/2017
289-91	WNW	L1B	-	Working shot in L1B	03/09/2017
292-3	SSE	L1B	117	Stone setting, post-excavation	03/09/2017
294	WNW	L1B	117	Location shot of hearth setting (117)	03/09/2017
295	SW	L1B	117	Location shot of hearth setting (117)	03/09/2017
296-8	NNW	L1B	103	Leather boot (SF84) in situ on top of (103)	03/09/2017
300	SE	L1B	117	Stone setting (117), NW facing section	03/09/2017
301-2	N	L1B	103	Leather boot (SF84) in situ on top of (103)	03/09/2017
303	SSE	L1B	119	Pre-excavation of hearth (119)	03/09/2017
304	NE	L1B	103	Surface of 103	03/09/2017
305	NE	L1B	103	Surface of 103	03/09/2017
306	WSW	L1B	118	Hearth 118 visible in ENE-facing section	03/09/2017
307	NW	L1B	117	Stone setting (117) after sectioning	04/09/2017
308	N	L1B	116, 117, 119, 121, 122	Hearth deposits and settings	04/09/2017
309	E	L1B	116, 117, 119, 121, 122	General view showing numerous burnt areas	04/09/2017
312-3	SW	L1B	-	Working shots in L1B	05/09/2017
324	E	L1B	-	Working shots in L1B	05/09/2017
330	WNW	L1B	-	Working shots in L1B	05/09/2017
332	WNW	L1B	-	Working shots in L1B	05/09/2017
335	W	L1A	303	Pre-excavation photo in Learnie 1A, showing mound of stone (303) in back	05/09/2017
336-7	W	L1B	105	Top of layer (105), after emptying of test pit	05/09/2017
338, 340	N	L1B	121, 123	Mid-excavation, showing ash layer (121) (left) and surface of (123) (right)	05/09/2017
341-2	N	L1B	126	(126) Hearth setting in NE cave alcove	05/09/2017
343	-	L1B	-	Photo of pin, SF109, from context (116)	05/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
346	ENE	L1B	123	Mid-excavation, removal of (116) in SW quad, to (123/7);	06/09/2017
347-8	ESE	L1B	127/123	Mid-excavation, removal of (116) in SW quad, to (123/7);	06/09/2017
349	N	L1B	105	Top of (105) context	06/09/2017
350-1	E	L1B	105	Top of 105 context	06/09/2017
352-3	W	L1A	306, 308	Top of (308) in L1A, showing rectangular setting (306) in back	06/09/2017
354-5	ESE	L1B	132	Mid-excavation of SW quad showing top of 132	06/09/2017
357-8	NW	L1B	130	Pre-excavation of feature (130)	07/09/2017
359-60	ENE	L1B	128	Pre-excavation of feature (128)	07/09/2017
361, 363	ENE	L1A	306	Record shot of stone setting (306)	07/09/2017
364	SE	L1B	130	NW-facing section of pit (130)	07/09/2017
365-7	E	L1B	-	Mid-excavation of SW quadrant	07/09/2017
368, 371-2	-	L1B	-	Working shot, excavation of articulate mammal spine SF130	07/09/2017
373-6	-	L1B	132	Within (132) articulated bone SF130 in situ	07/09/2017
377	E	L1B	136	Showing position of midden (136) in NW quadrant	08/09/2017
378	E	L1B	136	Showing position of midden (136) in NW quadrant	08/09/2017
379-80	W	L1A	307	Mid-excavation of trench in L1A to surface of (307)	08/09/2017
381-3	N	L1A	307	Mid-excavation of trench in L1A to surface of (307)	08/09/2017
384	W	L1B	137	View of SW quad showing (137), working shots	08/09/2017
385-6	S	L1B	137	View of SW quad showing (137), working shots	08/09/2017
387-8	N	L1B	137	View of SW quad showing (137), working shots	08/09/2017
389-90	E	L1B	137	View of SW quad showing (137), working shots	08/09/2017
391	-	L1B	137	View of SW quad showing (137), working shots	08/09/2017
392	-	L1B	137	View of SW quad showing (137), working shots	08/09/2017
393-398	-	L1B	137	View of SW quad showing (137), working shots	08/09/2017
399	NW	L1B	-	L1B showing trench location	09/09/2017
400	WSW	L1A	-	L1A showing trench location	09/09/2017
401	WNW	L1A, L1B	-	Entrance to caves (L1A on left, L1B on right)	09/09/2017
402	NW	L2B and L2C	-	Entrance to caves (L2B on left, L2C on right)	09/09/2017
403-4	SW	L2B, L2A	-	Coming into Learnie caves	09/09/2017
405-6	W	L2B, L2A	-	L2B (centre) and L2A (left)	09/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
407-8	SSE	L2B	-	Working shot outside L2B	09/09/2017
409-11	E	L2C	-	Working shot inside L2C	09/09/2017
412-3	W	L2B	-	Working shots inside L2B	09/09/2017
414	N	L2C	-	Working shot outside L2C	09/09/2017
415	NW	L1B	-	Working shot in SW quad L1B	09/09/2017
416	-	L1B	-	SF 164 from (138)- possible small anvil or rough-out	09/09/2017
418-419	-	L1B	-	SF 152- bone rib tool? Spatula from (139)	09/09/2017
420	-	L1B	-	SF151 base quern/rubber from (137)	09/09/2017
421	NW	L1B	-	Cranium fragment from (137)	09/09/2017
422	-	L1A	-	Clay pipe bowl SF175 from (305)	09/09/2017
423	-	L1A	-	Medieval ceramic SF158 from (307)	
424-425	NW	L1B	106/107	Working shot in E quadrant to surface of (106/107)	09/09/2017
426-7	N	L1B	129/106, 143	Working shot in E quadrant to surface of (106/107)	09/09/2017
428-30	NW	L1B	-	Working shot L1B, W side	09/09/2017
431	S	L1A, L1B	-	Working shot outside the caves	09/09/2017
432-4	W	L1A	306	Mid-excavation images of L1A, showing rectangular stone setting (306)	09/09/2017
435	NW	L1A	306	Post-excavation showing rectangular stone setting (306)	09/09/2017
436	NE	L1A	306	Post-excavation showing rectangular stone setting (306)	09/09/2017
437	E	L1A	-	View over L1A during excavation	09/09/2017
438	E	L1A	309	Mid-excavation image in L1A showing 309	09/09/2017
439	NE	L1A	309	Mid-excavation image in L1A showing 309	09/09/2017
440	NW	L1B	106	E side of trench showing (106)	09/09/2017
441	NW	L1B	106	E side of trench showing (106)	09/09/2017
442	N	L1B	106	E side of trench showing (106)	09/09/2017
443-444	NE	L1B	106	E side of trench showing (106)	09/09/2017
445	W	L1B	106	East facing section of baulk 0.5m scale	09/09/2017
446-447	SW	L1B	106	East and North facing sections baulk 1m scale	09/09/2017
448	SW	L1B	106	East and North facing sections baulk 1m scale	09/09/2017
449	N	L1B	106	South facing section of baulk 0.5 scale	09/09/2017
450	W	L1B	-	North facing section of baulk 0.5m scale	09/09/2017
451-452	E	L1B	-	South facing section of baulk 1m scale	09/09/2017
453-454	S	L1B	-	North facing section of baulk 1m scale	09/09/2017
455	NE	L1B	139, 106	Surface 139 and 106 trench floors, SW quad	09/09/2017
456-457	ENE	L1B	139, 106	Surface 139 and 106 trench floors, SW quad	09/09/2017
458-	E	L1B	139, 106	Surface 139 and 106 trench floors, SW quad	09/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
459					
460	NE	L1B	-	West and South facing section of baulk	09/09/2017
461-462	S	L1B	-	South facing section of baulk	09/09/2017
463	W	L1B	-	West facing section of baulk	09/09/2017
464	N	L1B	-	North facing section of baulk	09/09/2017
465-466	-	L1B	-	Medicine bottle SF 174 from (305)	09/09/2017
467	N	L1B	106	Working shot NE alcove	10/09/2017
468	NW	L1B	106	Working shot NE alcove	13/09/2017
469	WNW	L1B	108	Working shot in L1B showing surface 108 coming through	10/09/2017
470	WNW	L1B	-	Working shot in L1B	10/09/2017
472	NE	L1B	108/142	SW quad at floor 108/142	10/09/2017
473	E	L1B	108/142	SW quad at floor 108/142	10/09/2017
474-475	ESE	L1B	108/142	SW quad at floor 108/142	10/09/2017
476	NW	L1B	108	E half of trench at burning layer (108)	10/09/2017
477-478	W	L1B	108	E half of trench at burning layer (108)	13/09/2017
479-480	SW	L1B	108	E half of trench at burning layer (108)	10/09/2017
481-482	SE	L1B	108	E half of trench at burning layer (108)	10/09/2017
483-484	SW	L1B	108	E half of trench at burning layer (108)	10/09/2017
485-486	E	L1B	108	E half of trench at burning layer (108)	10/09/2017
487-488	ESE	L1B	108	E half of trench at burning layer (108)	10/09/2017
489-490	NE	L1B	-	E half of trench at burning layer (108)	10/09/2017
491-492	W	L1B	-	E-facing baulk section on E half of trench	10/09/2017
493-494	S	L1B	-	N-facing baulk section on E half of trench	10/09/2017
495	W	L1B	-	E-facing baulk	10/09/2017
496-497	E	L1B	-	W-facing section	10/09/2017
498	NE	L1B	-	W-facing section	10/09/2017
Learnie 2B / 2C					
1	WSW	L2B		Post clean/pre-excavation image of T2	02/09/2017
2	WSW	L2B		Initial clean back T1, ESE facing composite section	02/09/2017
3	WSW	L2B		Initial clean back T1, ESE facing composite section	02/09/2017
4	WSW	L2B		Initial clean back T1, ESE facing composite section	02/09/2017
5	WSW	L2B		Working shot Learnie 2B	03/09/2017
6	WSW	L2B	507, 508, 509	Hearths and associated deposits in T1, back of L2B	06/09/2017
7	WSW	L2B	507, 508, 509	Hearths and associated deposits in T1, back of L2B	06/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
8	WSW	L2B	507, 508, 509	Hearths and associated deposits in T1, back of L2B	06/09/2017
9	SSW	L2B	507, 508, 509	Hearths and associated deposits in T1, back of L2B	06/09/2017
10	SSW	L2B	507, 508, 509	Hearths and associated deposits in T1, back of L2B	06/09/2017
11	WSW	L2B	222	After removal of upper context to show shell midden deposit (222)	11/09/2017
12	WSW	L2B	222	After removal of upper context to show shell midden deposit (222)	11/09/2017
13	WSW	L2B	222	After removal of upper context to show shell midden deposit (222)	11/09/2017
14	WSW	L2B	508	Hearth setting [508] after removal of ash deposit (507)	07/09/2017
15	WSW	L2B	508	Hearth setting [508] after removal of ash deposit (507)	07/09/2017
16	WSW	L2B	508	Hearth setting [508] after removal of ash deposit (507)	07/09/2017
17	SSW	L2B	508	Hearth setting [508] after removal of ash deposit (507)	07/09/2017
18	SSW	L2C	-	Looking through entrance of Learnie 2C during excavation	07/09/2017
19	SSW	L2C	-	Looking through entrance of Learnie 2C during excavation	07/09/2017
20	SSW	L2C	-	Looking through entrance of Learnie 2C during excavation	07/09/2017
21	WSW	L2B	509	Close view of truncated lower ash deposit (509), left side	09/09/2017
22	WSW	L2B	509	Close view of truncated lower ash deposit (509), left side	09/09/2017
23	WSW	L2B	509	Mid-excavation, showing extent of ash deposit (509)	09/09/2017
24	WSW	L2B	509	Mid-excavation, showing extent of ash deposit (509)	09/09/2017
27	WSW	L2B	508, 514	Mid-excavation showing hearth slab (514) and stone setting (508)	09/09/2017
28	NE	L2B	-	Possible pit with stone or cave roof collapse, T2	10/09/2017
29	NE	L2B	-	Possible pit with stone or cave roof collapse, T2	10/09/2017
30	NNW	L2B	507, 509	SSE-facing section through hearth sequence [507] and (509)	10/09/2017
31	NNW	L2B	507, 509	SSE-facing section through hearth sequence [507] and (509)	10/09/2017
32	NNW	L2B	507, 509	SSE-facing section through hearth sequence [507] and (509)	10/09/2017
33	NNW	L2B	507, 509	SSE-facing section through hearth sequence [507] and (509)	10/09/2017
42	E	L2B	-	Working shot in T1, Learnie 2B	10/09/2017
43	W	L2B	-	Working shot in T1, Learnie 2B	10/09/2017
44	W	L2B	-	Working shot in T1, Learnie 2B	10/09/2017
45	SW	L2B	-	Working shot in T1, Learnie 2B	10/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
46	NW	L2B	227	Animal Jaw from (227) at south end of cist feature	10/09/2017
47	NW	L2B	227	Animal Jaw from (227) at south end of cist feature	10/09/2017
56	S	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
57	S	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
58	N	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
59	N	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
60	S	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
61	S	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
62	E	L2B	511, 513	Mid-excavation of calf skeleton after removal of some stone	12/09/2017
63	E	L2B	511, 513	Mid-excavation of calf skeleton showing 1m grid	12/09/2017
64	E	L2B	511, 513	Mid-excavation of calf skeleton showing 1m grid	12/09/2017
65	E	L2B	511, 513	Mid-excavation of calf skeleton showing 1m grid	12/09/2017
66	E	L2B	511, 513	Mid-excavation of calf skeleton showing 1m grid	12/09/2017
67	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
68	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
69	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
70	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
71	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
72	S	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
73	E	L2B	513	Post-excavation of calf skeleton using 1m grid	12/09/2017
74	E	L2B	513	Post-excavation of calf skeleton using 1m grid	12/09/2017
75	E	L2B	513	Post-excavation of calf skeleton using 1m grid	12/09/2017
76	S	L2B	513	Post-excavation of calf skeleton after removal of upper ribs	12/09/2017
77	E	L2B	513	Post-excavation of calf skeleton after removal of upper ribs	12/09/2017
78	E	L2B	513	Post-excavation of calf skeleton after removal of upper ribs	12/09/2017
79	S	L2B	509	Post excavation images after calf skeleton removal, ash deposits (509) (Leather shoe sole found in base of pit)	12/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
80	S	L2B	509	Post excavation images after calf skeleton removal, ash deposits (509) (Leather shoe sole found in base of pit)	12/09/2017
81	E	L2B	509	Post excavation images after calf skeleton removal, ash deposits (509) (Leather shoe sole found in base of pit)	12/09/2017
82	W	L2B	509	Post excavation images after calf skeleton removal, ash deposits (509) (Leather shoe sole found in base of pit)	12/09/2017
83	W	L2B	509	Post excavation images after calf skeleton removal, ash deposits (509) (Leather shoe sole found in base of pit)	12/09/2017
84	WSW	L2B	507, 509	Superimposed hearth (507) and (509) and underlying layer 227	03/09/2017
85	SW	L2B	507, 509	Superimposed hearth (507) and (509) and underlying layer 227	03/09/2017
86	WSW	L2B	222, 227, 239, 232, 234, 235	E-facing section at south end of T1 extension, showing stratigraphy	03/09/2017
87	WSW	L2B	222, 227, 239, 232, 234, 235	E-facing section at south end of T1 extension, showing stratigraphy	03/09/2017
88	WNW	L2B	509	Surface of ash deposit (509) showing possible small stake hole	03/09/2017
89	N	L2B	507, 508, 509	Section through ash deposits covering hearths	10/09/2017
90	SSE	L2B	507, 508, 509, 511	Section through ash deposits covering hearths; pre-ex of (511)	10/09/2017
91	E	L2B	508, 511, 512	Pre-excavation image showing stone setting and capping stones covering calf skeleton	10/09/2017
92	WSW	L2B	508, 511, 512	Pre-excavation image showing stone setting and capping stones covering calf skeleton	10/09/2017
93	S	L2B	511, 512	Pre-excavation image of stone setting, capping stones and mandible of calf	10/09/2017
94	S	L2B	511, 512	Pre-excavation image of stone setting, capping stones and ribs of calf	10/09/2017
95	-	L2B	-	Close view of mandible from stone setting after removal	10/09/2017
405	WNW	L2A-C	-	Looking over Learnie 2A (left), 2B (centre) and 2C (right) with spoil heaps in front	09/09/2017
499	E	L2B	513	Post-excavation of calf skeleton	12/09/2017
519	E	L2B	513	Post-excavation of calf skeleton after removal of stone setting	12/09/2017
9065	W	L2C	-	Pre-ex of Learnie 2C after cleaning	02/09/2017
9067	W	L2C	-	Pre-ex of Learnie 2C after cleaning	02/09/2017
9068	W	L2C	-	Pre-ex of Learnie 2C after cleaning, W end	03/09/2017
9075	W	L2C, T1	101	Mid-excavation T1	03/09/2017
9076	S	L2C, T3	302	Mid-excavation of T3 showing 302	03/09/2017
9078	W	L2C, T3	302	Mid-excavation of T3 showing 302	03/09/2017

Photo No.	Direction Facing	Area	Context No.	Description	Date
9084	W	L2C, T3	303	Mid-excavation of T3 showing 303	05/09/2017
9085-6	S	L2C, T3	303	Mid-excavation of T3 showing 303	05/09/2017
9088	W	L2C, T2	202-4	Mid-excavation of T2 showing 202,203 (ash),204 (cobbles)	07/09/2017
9089	W	L2C, T3	303	Mid-excavation T3 showing 303	07/09/2017
9090	S	L2C, T3	303	Mid-excavation T3 showing 303	07/09/2017
9104	W	L2C, T3	306	Sondage in NW of T3 showing bedrock	08/09/2017
9105	N	L2C, T3	306	Section of sondage in T3	08/09/2017
9106	S	L2C, T3	306	E part of T3 following removal 305	08/09/2017
9107	W	L2C, T3	306	Overall view of T3 at limit of excavation	08/09/2017
9108	W	L2C, T2	207	Mid-excavation, T2	09/09/2017
9109	E	L2C, T2	207	Mid-excavation, T2	09/09/2017
9110	N	L2C, T2	206	Post-excavation of T2, showing ash layer 206	09/09/2017
9111	N	L2C, T2	206	Post-excavation of T2, showing ash layer 206	09/09/2017
9112	N	L2C, T2	203, 204	Ash layer 203 and stone alignment 204 in T2	09/09/2017
9113	N	L2C, T2	203, 204	Ash layer 203 overlying 204	09/09/2017
9114	S	L2C, T2	203	Rock under 203 showing setting on bedrock in T2	09/09/2017
9115	E	L2C, T2	203	Rock under 203 showing setting on bedrock in T2	09/09/2017
9116	W	L2C, T2	203	Rock under 203 showing setting on bedrock in T2	09/09/2017
9117	-	L2C, T2	203	Rock under 203 showing setting on bedrock from above S at top of frame	09/09/2017
9118	-	L2C, T2	203	Rock under 203 showing setting on bedrock from above S at top of frame	09/09/2017
9119	W	L2C, T2	207	Cobbled surface 207 section of ash 206	09/09/2017
9120	-	L2C, T2	207	Overhead view of cobbled surface 207 section of ash 206	09/09/2017
9121	W	L2C, T2	206	Section through ash 206 prior to sampling	09/09/2017
9122	-	L2C, T2	206	Section through ash 206 prior after sampling	09/09/2017
9123		L2C, T2	206	Looking over ash layer 206	09/09/2017