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Final Report

on excavations at Knockalton Upper, N7 Nenagh Bypass, Co. Tipperary.

Client: N.R.A/North Tipperary County Council
Author: Dáire Leahy
Licence Holder: Richard O'Brien
Date of Field Work: October - November 1998
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ABSTRACT

In 1998 two sites were uncovered adjacent to the route of the N7 Nenagh Bypass, in the townland of Knockalton Upper. These sites consisted of a section of ditch (Site A) and of a possible prehistoric structure (Site B). The lack of artefacts and suitable dating samples from Site A precluded the assignment of this site to a specific period. Site B produced lithics and pottery that have allowed a tentative Early Bronze Age date to be suggested for this site.

1. INTRODUCTION

Archaeological monitoring of topsoil stripping, in advance of the construction of the N7 Nenagh Bypass, resulted in the discovery of two sites in the townland of Knockalton Upper. These sites were subsequently excavated and this work was carried out by Archaeological Development Services Ltd (ADS) for North Tipperary County Council. The sites were excavated during October and November of 1998 and consisted of a section of ditch (Site A) and a possible prehistoric structure (Site B, Figs 1 & 2). The sites are recorded as RMP site numbers TN021-096 (Site A) and TN021-101 (Site B) and Site B is listed in the Archaeological Inventory of North Tipperary as 297 OS 21:9:6 (Farrelly and O'Brien 2002, 51) (Fig. 3).

This document comprises the final report on these excavations and integrates the results of various specialist analyses that were undertaken on material recovered from these sites.

2. SITE LOCATION AND TOPOGRAPHY

Both Site A and Site B were situated in the townland of Knockalton Upper but some 485m apart. Site A was located, at National Grid Reference (NGR) 189660, 177720, while Site B was located at NGR 189300, 177480, off the main route of the bypass on the Knockalton Road (Fig. 1 & 2). Both were in the vicinity of the ringfort site (TN021-50), Site A at a remove of approximately 450m and Site B at approximately 160m. The town of Nenagh lies approximately 2.7km to the northwest and the Silvermines mountains approximately 9.5km to the southwest (Fig. 3).

The site was located on generally flat ground at about 80m above sea level. The site and surrounding area are characterised by low lying, gently undulating pasture and tillage land that lies between the Nenagh river, to the west, and the Ballintotty river, to the northeast (Figs 5 & 6).

3. GEOLOGY

The area to the south of the town of Nenagh is one, as with much of the midlands of Ireland, that is underlain by a geology of carboniferous limestone. To the south, east and west are areas of Devonian Old Red Sandstones and Silurian Slates that comprise features such as the Silvermines Mountains (Aalen *et al.* 1997).

This geology is overlain by glacially derived deposits of till, dating to the end of the last glacial period and resulting form the retreat of the glacial ice cap. Other features deriving

from this period are evidenced in the wider area with eskers occurring to the northeast, kames to the south and drumlins to the west (ibid.).

The soils that have developed over these deposits consist, exclusively, of grey-brown podzolics, with brown podzolics and acid brown earths occurring on the higher ground to the south, east and west (ibid.).

4. ARCHAEOLOGICAL BACKGROUND

The sites at Knockalton Upper form part of an extensive archaeological landscape in the vicinity of the town of Nenagh (Fig. 3). Given the likely prehistoric date of the features at Knockalton Upper the two sites excavated there may be related to a number of sites, also dating to this period, in the vicinity. To the north, 1km from the site, is a standing stone (TN021-046), while to the northwest, in the townland of Ballintotty (Knockaunkennedy, 98E9472; Leahy & O'Brien 2009a) was a burnt mound site also excavated on the route of the Nenagh Bypass. To the southwest, at Knockalton Upper, a tentative dwelling was excavated, also of likely prehistoric date (98E0471; Leahy & O'Brien 2009b).

In the area surrounding the sites at Knockalton Upper, sites of the early Christian/Medieval periods are also well represented with five ringforts spread over the townlands of Lissatunny (TN021-049), Knockalton Upper (TN021-047, -050 and -057) and Curraheen (TN021-051). All of these sites were located within 1km of the sites at Knockalton Upper. Test excavations, carried out at Knockalton by Paul Logue for ADS Ltd (97E320)[1], revealed a single pit that the excavator suggested may have been related to the nearby ringfort (TN021-50).

5. EXCAVATION METHODS

The features described below were originally noted during the removal of topsoil from the area of the road-take. This work was conducted by a mechanical excavator fitted with a toothless, grading bucket. The area was subsequently cleaned back by hand before each of the features was half sectioned to assess its nature. All archaeological features were then drawn in section and photographed before being fully excavated and, where necessary, sampled for dating material and/or environmental evidence. All features and deposits were given unique context numbers and each context was described fully on a standard recording sheet. The site was then recorded, post excavation, photographically and in plan. Context numbers 1-23 were used for Area A and 101-141 for Area B.

[1] http://www.excavations.ie/Pages/Details.php?Year=&County=Tipperary&id=4057

6. EXCAVATION RESULTS

6.1 SITE A

The majority of the features at Site A were subsoil cut and not stratigraphically related to one another (Fig. 6). Among the earliest features on the site was the pit [20]. The surviving portion of this feature, the eastern side of which was later truncated by the ditch [13], was irregular/subrectangular in plan and was filled by a compact yellow/orange sandy clay with very occasional charcoal flecking. It measured 3.7m in length and may have been up to 1.6m in original width.

The ditch [13] was linear in plan and was oriented approximately north-northwest to south-southeast. It extended for 21.2m within the limits of excavation but extended both to the north and the south beyond the CPO line of the road. The ditch, which measured on average 1.75m wide and at best 0.65m in depth, alternated between U and V-shaped in section and was filled by two deposits (14) and (15) (see Fig. 7). The lower of the two, (15), that was not continuous throughout the length of the feature, consisted of a mid-grey/brown silty clay. The overlying deposit, (14), consisted of a dark brown silty clay with occasional charcoal flecking that extended the entire length of the excavated portion of the feature. Towards the northern end of the feature, 1.2m from the limit of excavation, was the pit [22]. This was subrectangular in plan, was joined on its western side to the ditch and measured 0.58 by 0.87m in width and 0.15m in depth. As it was also filled by the deposit (14) it appears to have been contemporary with the ditch.

To the west of the ditch, at its south end, were six features. The western most of these, [16], was subcircular/sub-square in plan with an undulating base, measuring 1.4 to 1.5m in width and a maximum of 0.2m in depth. There were four very slight depressions in the base of the pit. It was filled by (17), a mid brown sticky silty clay with patches of oxidised clay (Fig. 7).

To the northeast, 1.3m from [16], was the cut [18]. This was oval in plan, measured 0.24 by 0.26m in width and 0.27m in depth. It was filled by a grey/brown silty clay (19). Adjacent to [18] was cut [10], this was kidney-shaped in plan, measured 0.4 by 0.56m in width and a maximum of 0.22m in depth. It contained two deposits, the lower of which, (12), consisted of a mid-brown silty clay with occasional charcoal flecking while the overlying (11) consisted of a dark brown silty clay with moderately frequent charcoal flecking (Fig. 7).

To the northeast of [10] were two intercutting features, [2] and [23]. The earlier feature, [2] was subrectangular in plan and measured 0.16 by 0.2m in width and 0.2m in depth. It

was filled by (4), a red brown silty clay that contained fragments of burnt and heat shattered stone. The upper portion of this material and the western edge of the cut were later truncated by [23]. This cut extended to the west and measured 0.28 in width, 0.44m in length and 0.05m in depth. Cut into the base of [23], on its southern side, were two stakeholes, [6] and [8]. Both were vertically inclined and were filled by very similar deposits, (7) and (9) respectively, each a dark brown silty clay. Subsequently, both of the stakeholes and their fills were sealed by, and [23] filled by, a dark brown silty clay with frequent charcoal flecking, (3).

6.2 SITE B

The features excavated at Site B were contained within an area that measured approximately 120m^2 (Fig. 8). A total of twenty one features were investigated and a number of artefacts were recovered from the area, all from the topsoil. With the exception of two features, which were intercutting, the features were cut into the natural subsoil and were not stratigraphically linked.

In the southwest corner of the excavated area was (129). This was an area of subsoil, the colour of which had been changed from orange/brown to a bright orange/red and appeared to have been oxidised. It measured approximately 16m^2 in area and extended beyond the southern limit of excavation.

The westernmost feature on the site was the gulley [132] which was linear in plan with gradually sloping sides and a rounded base (Fig. 9). It measured 0.1m in depth, 0.62m in width and 5.1m in length and was filled by (133), a mid to dark brown silty gritty clay with moderately frequent charcoal flecking. However, it was truncated at its south end by an engineering test pit (see below).

To the east was another curvilinear feature similar in nature to [132]; [107]. This was crudely S-shaped in plan with gradually sloping sides and a rounded base (Fig. 9). It measured 0.8m in width, 3.2m in length and a maximum of 0.2m in depth. It was filled by a deposit, (108), that was very similar to the fill of [132].

To the east of [107] was the feature [116], this was P-shaped in plan with a gulley-like section leading to a subrectangular shaped pit. The pit portion of the feature measured 1.42 by 2.06m in with and was a maximum of 0.44m in depth. It had sides which sloped gently and gradually before steepening towards the centre of the feature (Fig. 9). The gulley that extended to the north of the feature measured 0.74m in width, 1.5m in length and up to 0.05m in depth. It had very gradually sloping sides, a rounded base and both parts of the feature were filled by a dark brown gritty silty clay, (117).

Cut into the base of [116] was the stakehole [120]. It was oval in plan with vertical sides and a rounded base, measured 0.19 by 0.2m in width and 0.15m in depth and was also filled by (117).

To the south of [107] and [116] was a collection of features that have been grouped together on the basis of similarity of form and likely association. This group consisted of fifteen features ten of which were aligned in an arc[2], two were situated in the interior of the arc[3] and the final three to the exterior of the arc[4].

The features comprising the arc were mostly subcircular or subrectangular in plan with one, [126], having been triangular in plan. They measured between 0.06 and 0.38m in width and between 0.02 and 0.23m in depth with mostly steeply sloping or vertical sides and rounded bases (Fig. 9) With the exception of [101], which contained two fills, each feature contained a single deposit that generally consisted of a mid to dark brown silty clay with occasional to frequent charcoal flecking[5].

In the interior of the arc were two pits, [103] and [110] with the latter having been cut through the fill of the S-shaped linear gully [107]. Both were subcircular in plan with steeply sloping sides and rounded bases (Fig. 9) and measured between 0.44 and 0.57m in width and 0.13 and 0.23m in depth. The fills were very similar to those of the adjacent features and consisted of mid to dark brown silty clay with occasional charcoal flecking; (104) in [103] and (111) in [110].

To the east and south of the arc were the final three features in this group. To the south of [101] was [114], this feature was circular in plan with vertical sides and a rounded base. It measured 0.13m in diameter and 0.23m in depth, with a very similar to those of the adjacent features, i.e. a mid to dark brown silty clay with moderately frequent charcoal flecking.

To the northeast of [114] and east on the final feature in the arc, [105], were [134] and [136]. These were both oval/kidney shaped cuts with steeply sloping sides and rounded bases that measured between 0.34 and 0.58m in width and between 0.13 and 0.19m in depth. Both were filled by mid to dark brown gritty silty clay with moderately frequent charcoal flecking, (*135*) in [134] and (*137*) in [136] (Fig. 9).

Truncating the southern end of the gulley feature [132] was a very regular cut that measured 0.8m in width and 4m in length. It had vertical sides and had evidently been

[2] [140], [128], [126], [124], [112], [118], [121], [122], [101] and [105]
[3] [110] and [103]
[4] [114], [134] and [136]
[5] (102) and (109) in [101], (106) in [105], (113) in [112], (119) in [118], (138) in [121], (125) in [124], (127) in [126], (139) in [128] and (141) in [140].

excavated by a mechanical excavator. It is likely that the truncation was caused by a previously excavated engineering test pit.

7. INTERPRETATION AND DATING

7.1 SITE A

With the exception of the ditch it is difficult to interpret the features excavated at Site A. The ditch may well have served as a marker of some form of boundary which at least predated the current field system. The general field system in the area has seen little change since the time of the first edition Ordnance Survey, 1829-1841, and, as there are no other boundaries in the immediate area on a similar orientation to ditch [13], this feature may predate the current field system by some time. However, due to the total lack of artefactual material from the site and the lack of suitable quantities of material for radiocarbon dating, the assignment of this feature to a specific period was not possible.

Similar problems present themselves in the interpretation and dating of the remainder of the features. Due to the lack of stratigraphy it was not possible to directly relate the features to the west of [13] to [20], that was cut by [13]. It is possible that the row of features, [18], [10], [23] and [2], represent the remains of some form of structure, comprised of a row of stakes, with two phases. The first of these incorporating the stakehole [2], that was subsequently backfilled and replaced by the two stakes in the base of [23]. This may have been related to the pit feature [16].

7.2 SITE B

The centre of Site B was occupied by an arc of possible stakeholes and, as such, represented the remains of some form of structure, with a possibly associated post at its exterior [114] and four possibly associated pits [108, 110, 134 and 136]. The arc of stakes may have supported some form of walling, of, e.g. of hide or wicker, and as such could have served as a light shelter. During the initial cleaning of the area two sherds of pottery (97E0320:1:1 and 2) were recovered, both of which were identified as being either Western Neolithic or late Beaker Pottery (Brindley 2000, see Appendix V). This would suggest a potential date range of c. 4000-2300 BC for the construction and use of this structure. Structures similar to this, i.e. light shelter type structures, were excavated at Newgrange, Co. Meath and these have been dated to the Beaker period (O'Kelly 1982). Also recovered from the topsoil were two lithic artefacts (97E0320:1:7 and 8) that consisted of a retouched artefact, probably a scraper, and a flake, respectively. It has been suggested that these artefacts were the products of an industry of Late Neolithic or Bronze Age date (Sternke 2010, see Appendix VI). While it is felt that the small size and basic nature of the lithic assemblage precludes confident temporal assignment, this broad date range would not be completely at odds with the date range suggested by the pottery.

Given the overlap in the date ranges, and the nature of the structure, it is possible that these features were the result of activity dating to the Beaker period[6].

As one of the pits was cut through the fill of one of the linear features it is possible that this feature, [107], and [132] predated the activity associated with the structure. This may also have been the case with the pit [116]. These features may have been associated with agricultural activity.

At the southwest corner of the site an area of oxidised subsoil was recorded, this appears to represent the location of a large and intense fire[7]. As this area of burning was not associated with any finds or features it was not possible to associated it with any dateable phase of activity.

The most modern feature on the site occurred to the north of the area of burning. Here a regular trench, obviously excavated by a mechanical excavator, was possibly a test pit excavated for engineering purposes connected with the pre-construction phases of the N7, Nenagh Bypass project.

Definitive, scientific dating of these features was impeded by the lack of suitable organic material from the samples taken during the excavation.

8. CONCLUSIONS

8.1 SITE A

Due to the lack of artefacts and scientifically datable material from the deposits excavated at Site A, and the non-diagnostic form of the site, it was not possible for it to be definitively dated. However, the ditch was similar to that excavated at Knockalton Lower. This feature has been broadly dated, on the basis of the recovery of slag from its fills, to either the Iron Age or the early Christian period (Leahy 2011). It is possible that the Knockalton Upper feature was also of a similar date and former part of a field boundary system associated with medieval settlement of the area[8]. To the northwest of the site there was a ringfort (TN020-050) which may be contemporary.

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6 None of the samples processed from this site produced material suitable, or in sufficient quantities, for radiocarbon dating.

[7] Effects of fire on soil. Usually soils need to be heated beyond their Curie point, around 565 to 675° C, to display significant heat alteration and remagnetization (by contrast, bronze requires a temperature of approximately 925° C to melt). Other variables such as the iron or clay content of the soil, the type and amount of fuel, the way the fuel was placed or stacked, wind at the time of burning, soil moisture and duration of the fire also contribute to the formation of heat-altered soils. An average campfire usually reaches temperatures of 300-400° C; hence, many features without evidence of altered soil may in fact be hearths or fire pits. However, under the right conditions, campfires can reach a temperature of around 800º C much higher than what is necessary to alter any soil or sediment (Bennett 1999, Stiner et al. 1995) in (McConway, 2008).

[8] None of the samples processed from this site produced material suitable, or in sufficient quantities, for radiocarbon dating.

As this site was found to extend beyond the limits of excavation it will be necessary for any future development to take account of the presence of archaeological remains in this area.

8.2 SITE B

The excavations at Knockalton Upper Site B revealed what appears to have been the remains of a shelter of either Neolithic or Early Bronze Age date. In addition further features provided evidence of possible agricultural activity, on uncertain date, and also of modern activity.

In isolation this prehistoric settlement site is of minor significance. However, when considered along with the numerous other prehistoric sites excavated along the route of the N7 Nenagh bypass, these illustrate the continued and increasing occupation of this area from the Mesolithic (Leahy, Sheehan & O'Brien 2011) through to the modern period.

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Appendices

10. APPENDIX I: CONTEXT LIST FOR SITES A AND B

Context	Site	Description of Context
1	A	Topsoil. A moderately compact red/brown silty clay with occasional small stones. Maximum 0.5m in depth. This topsoil covered both Sites A and B.
2	A	Cut of stakehole. Subrectangular in plan with rounded corners and steeply sloping sides that tapered to a point. It measured 0.16 by 0.2m in width and 0.2m in depth. Filled by 4. Cut by 23.
3	A	Fill of 23. Moderately compact dark brown silty clay with frequent charcoal flecking. Measured 0.15 by 0.25m in max. width and 0.07m in depth.
4	A	Fill of 2. Moderately compact red/brown silty clay with occasional charcoal flecking and occasional burnt stone fragments. Measured 0.16 by 0.2m in width and 0.2m in depth.
5	A	Natural subsoil. Very compact mid grey sticky clay with frequent stones. This subsoil underlay both Sites A and B.
6	A	Cut of stakehole. Oval in plan with steeply sloping sides and a flat base. Measured 0.07 by 0.09m in width and 0.2m in depth. Cut into base of 23. Filled by 7.
7	A	Fill of 6. Moderately compact dark brown silty clay. Measured 0.07 by 0.09m in width and 0.2m in depth.
8	A	Cut of stakehole. Circular in plan with vertical sides and a rounded base. It measured 0.06 by 0.08m in width and 0.1m in depth. Cut into base of 23. Filled by 9.
9	A	Fill of 8. Moderately compact dark brown silty clay. It measured 0.06 by 0.08m in width and 0.1m in depth.
10	A	Cut of pit. Irregular/kidney shaped in plan with steeply sloping sides and a rounded base. It measured 0.4 by 0.56m in width and 0.22m in depth. Filled by 11 and 12.
11	A	Fill of 10. Moderately compact dark brown silty clay with moderately frequent charcoal flecking and occasional stones ($0.03m^3$). Measured 0.35 by 0.4m in width and 0.09m in depth. Overlay 12.
12	A	Fill of 10. Moderately compact light to mid brown silty clay with occasional charcoal flecking. It measured 0.4 by 0.45m in with and 0.22m in depth.
13	A	Cut of ditch. Linear in plan with gradually to steeply sloping sides and a flat/undulating base. It measured 21.2m in length, 1.0 to 2.6m in width and 0.25 to 0.64m in depth. Filled by 14 and 15. It cut pit 20 and was contemporary with pit 22.

Context	Site	Description of Context
14	A	Fill of 13 and 20. Moderately compact dark brown silty clay with occasional charcoal flecking and occasional stones (0.05-0.1m^3). It measured 0.6 to 1m in width, 21.2m in length and 0.15 to 0.4m in depth. Overlay 15.
15	A	Fill of 13. Moderately compact, mid grey/brown silty clay with occasional stones (0.03 to 0.25m^3). It measured 0.25 to 0.6m in width, 0.15m in length and 0.1 to 0.3m in depth.
16	A	Cut of pit. Subcircular/subsquare in plan with very gradually sloping sides and an undulating base. It measured 1.4 by 1.5m in width and 0.13 to 0.2m in depth. Filled by 17.
17	A	Fill of 16. Moderately compact mid brown sticky silty clay with patches of burnt clay, moderate charcoal flecking and occasional stones (0.03-0.1m^3). It measured 1.4 by 1.5m in width and 0.13 to 0.2m in depth
18	A	Cut of stakehole. Oval in plan with steeply sloping/vertical sides and a rounded base. It measured 0.24 by 0.26m in width and 0.27m in depth. Filled by 19.
19	A	Fill of 18. Moderately compact grey/brown silty clay with frequent charcoal flecking and occasional stones (0.04m^3). It measured 0.24 by 0.26m in width and 0.27m in depth.
20	A	Cut of pit truncated by 13. Occurred towards southern end of the exposed portion of 13 on its western side. Subrectangular/irregular in plan with steeply sloping sides and a flat base. It measured 1.1 by 3.7m in width and 0.7m in depth. Filled by 21 and 14.
21	A	Fill of 20. Very compact yellow/orange sandy clay with occasional pebbles and very occasional charcoal flecking. It measured 1.1 by 3.7m in width and 0.7m in depth.
22	A	Cut of pit. Subrectangular in plan with rounded corners, steeply sloping sides and a rounded base. It measured 0.58 by 0.87m in width and 0.15m in depth. Filled by 14. Contemporary with ditch 13.
23	A	Cut of pit that truncated 2. It was subrectangular in plan with gradually sloping sides and a rounded base. It measured 0.28 by 0.44m in width and 0.05m in depth. It contained two stakeholes, 6 and 8. Filled by 3.
101	B	Cut of pit. Irregular in plan with vertical sides and a flat base. It measured 0.38 by 0.8m in width and 0.23m in depth. Filled by 102 and 109.
102	B	Upper fill of 101. Moderately compact dark brown silty clay with moderately frequent charcoal flecking and occasional stones (0.04m^3). it measured 0.38 by 0.8m in width and 0.2m in depth. Overlay 109.
103	B	Cut of pit. Oval in plan with gradually sloping sides and a rounded base. It measured 0.46 by 0.57m in width and 0.13m in depth. Filled by 104.

Context	Site	Description of Context
104	B	Fill of 103. Moderately compact mid/dark brown silty clay with occasional charcoal flecking and occasional stones (0.05m^3).
105	B	Cut of pit. Oval in plan with very gradually sloping sides and a rounded base. It measured 0.28 by 0.34m in width and 0.02m in depth. Filled by 106.
106	B	Fill of 105. Moderately compact dark brown clay with frequent charcoal flecking. It measured 0.28 by 0.34m in width and 0.02m in depth.
107	B	Cut of pit. Linear/Subrectangular in plan with rounded corners, very gradually sloping sides and a rounded base. It measured 0.8 by 3.2m in width and 0.2m in depth. Filled by 108. Cut by 110.
108	B	Fill of 107. Moderately compact dark brown gritty silty clay with moderate charcoal flecking and occasional pebbles. It measured 0.8 by 3.2m in width and 0.2m in depth. Cut by 110.
109	B	Fill of 101. Loose/moderately compact dark grey/brown silty clay with occasional stones (0.04m^3) and very occasional charcoal flecking. It measured 0.38 by 0.8m in width and 0.16m in depth. Below 102.
110	B	Cut of pit. Subcircular in plan with steeply sloping sides and a rounded base. It measured 0.44 by 0.45m in width and 0.23m in depth. Filled by 111. Cut through 108 the fill of pit 107.
111	B	Fill of 110. Moderately compact mid to dark brown silty clay with occasional stones (0.05m^3) and occasional charcoal flecking. It measured 0.44 by 0.45m in width and 0.23m in depth.
112	B	Cut of stakehole. Subcircular in plan with vertical sides and a pointed base. It measured 0.06 by 0.07m in diameter and 0.09m in depth. Filled by 113.
113	B	Fill of 112. Moderately compact mid brown gritty clay with moderately frequent charcoal flecking. measured 0.06 by 0.07m in diameter and 0.09m in depth.
114	B	Cut of stakehole. Circular in plan with vertical sides and a rounded base. It measured 0.13m in diameter and 0.23m in depth. Filled by 115.
115	B	Fill of 114. Moderately compact mid/dark brown gritty silty clay with moderately frequent charcoal flecking. It measured 0.13m in diameter and 0.23m in depth.
116	B	Cut of pit. Irregular in plan: Subrectangular with a linear extension from the northeast corner. It had rounded corners, gradually sloping sides which steepened towards the centre of the feature and an uneven base. The main portion of the feature measured 1.42 by 2.06m in width and 0.44m deep. The extension from the northeast corner measured 0.74 by 1.5m in width and 0.05m in depth. Filled by 117. Contains 120.

Context	Site	Description of Context
117	B	Fill of 116 and 120. Moderately compact dark brown gritty silty clay with moderately frequent charcoal flecking and occasional stones ($0.08m^3$). It measured 1.42 by 2.06m in width and 0.44m deep. The extension from the northeast corner measured 0.74 by 1.5m in width and 0.05m in depth.
118	B	Cut of posthole. Subrectangular in plan with rounded corners vertical sides and a flat base. It measured 0.16 by 0.29m in width and 0.15m in depth. Filled by 119.
119	B	Fill of 118. Moderately compact mid brown silty clay with moderate charcoal flecking. It measured 0.16 by 0.29m in width and 0.15m in depth.
120	B	Cut of stakehole in base of 116. Subcircular in plan with vertical sides and a rounded base. It measured 0.19 by 0.2m in width and 0.15m in depth.
121	B	Cut of stakehole. Subcircular in plan with vertical sides and a rounded base. It measured 0.11 by 0.12m in width and 0.1m in depth. Filled by 138.
122	B	Cut of posthole. Subrectangular in plan with rounded corners, steeply sloping sides and a stepped base. It measured 0.17 by 0.23m in width and 0.13m in depth. Filled by 123.
123	B	Fill of 122. Moderately compact mid brown gritty clay with occasional pebbles and frequent charcoal flecking. It measured 0.17 by 0.23m in width and 0.13m in depth.
124	B	Cut of stakehole. Subrectangular in plan with rounded corners vertical sides and a rounded base. It measured 0.09 by 0.17m in width and 0.14m in depth. Filled by 125.
125	B	Fill of 124. Moderately compact mid brown gritty silty clay with occasional charcoal flecking. It measured 0.09 by 0.17m in width and 0.14m in depth.
126	B	Cut of stakehole. Sub-triangular in plan with rounded corners steeply sloping sides and a rounded base. It measured 0.13 by 0.13m in width and 0.13m in depth. Filled by 127.
127	B	Fill of 126. Moderately compact mid brown gritty silty clay with occasional charcoal flecking. It measured 0.13 by 0.13m in width and 0.13m in depth.
128	B	Cut of pit. Oval in plan with steeply sloping sides and a rounded base. It measured 0.3 by 0.36m in width and 0.1m in depth. Filled by 139.
129	B	Area of oxidised subsoil that measured $16m^2$ in area. Was not fully exposed.
130	B	Natural gravel underlying the natural subsoil.

Context	Site	Description of Context
131	B	Engineering test pit.
132	B	Cut of ditch. Linear in plan with rounded corners gradually sloping sides and a flat base. It measured 5.1m in length 0.62m in width and 0.1m in depth. Filled by 133. Truncated by 131.
133	B	Fill of 132. Moderately compact mid-dark brown silty gritty clay with moderate charcoal flecking. It measured 5.1m in length 0.62m in width and 0.1m in depth.
134	B	Cut of pit. Kidney shaped in plan with steeply sloping sides and a uneven base. It measured 0.34 by 0.62m in width and 0.19m in depth. Filled by 135.
135	B	Fill of 134. Moderately compact mid/dark brown gritty silty clay with moderately frequent charcoal flecking. It measured 0.34 by 0.62m in width and 0.19m in depth.
136	B	Cut of pit. Oval in plan with gradually sloping sides and an uneven base. It measured 0.42 by 0.58m in width and 0.13m in depth. Filled by 137.
137	B	Fill of 136. Moderately compact mid/dark brown gritty silty clay with moderately frequent charcoal flecking. It measured 0.42 by 0.58m in width and 0.13m in depth.
138	B	Fill of 121. Moderately compact mid brown gritty clay with moderately charcoal flecking. It measured 0.11 by 0.12m in width and 0.1m in depth.
139	B	Fill of 128. Moderately compact mid brown gritty silty clay with occasional charcoal flecking. It measured 0.3 by 0.36m in width and 0.1m in depth.
140	B	Cut of posthole. Circular in plan with vertical sides and a rounded, stepped base. It measured 0.24m in width and 0.18m in depth. Filled by 141.
141	B	Fill of 140. Moderately compact mid/dark brown gritty silty clay with moderate charcoal flecking. It measured 0.24m in width and 0.18m in depth.

11. APPENDIX II: SAMPLE LIST SITE A

Sample Number	Cut	Deposit	Number of bags
-	23	3	1
-	2	4	1
-	10	11	1
-	10	12	1
-	13	14	2
-	13	15	1
-	16	17	1
-	18	19	1

12. APPENDIX III: SAMPLE LIST SITE B

Sample Number	Cut	Deposit	Number of bags
1	101	102	1
2	103	104	1
3	110	111	1
4	105	106	1
5	118	119	1
6	134	135	1
7	136	137	1
8	116	117	1
9	116	117	1
10	107	108	1
11	132	133	1

13. APPENDIX IV: FINDS LIST SITE B

Find Number	Description	Context
98E0320:1:1	Pottery	1
98E0320:1:2	Pottery	1
98E0320:1:3	Metal knife (modern)	1
98E0320:1:4	Metal hinge (modern)	1
98E0320:1:5	Nail (modern)	1
98E0320:1:6	Nail (modern)	1
98E0320:1:7	Retouched artefact	1
98E0320:1:8	Flake	1
98E0320:1:9	Natural chunk	1

14. APPENDIX V: REPORT ON FRAGMENTS OF PREHISTORIC POTTERY FROM KNOCKALTON UPPER, CO. TIPPERARY (EXCAVATION LICENCE 97E0320)

A.L. Brindley M.A.

A very small quantity of pottery from an excavation carried out in response to the Nenagh By-Pass development was received for examination. The pottery had not been cleaned or numbered and is in a crumbling condition. It consists of one small sherd in two pieces and some crumbs from two contexts. No information regarding excavation or context was provided.

SITE B
Feature 1
Crumbs, no identifying characteristics. Same as sherd below. 97E0320:1:1. Small body sherd in two pieces. Reddish/brown-coloured fabric with small/medium-sized white quartz grits. Smooth surfaced. Th. 6mm. This pottery is probably early rather than later prehistoric, i.e. either Western Neolithic or late Beaker Pottery rather than one of the middle or late Bronze Age ceramic traditions, but the small size of the sherd and the quantity preclude a more definite identification. 97E0320:1:2

15. APPENDIX VI: LITHICS FINDS REPORT FOR 97E0320EXT KNOCKALTON UPPER, CO. TIPPERARY, N7 NENAGH TO LIMERICK HQDC ROAD SCHEME

Farina Sternke MA, PhD

INTRODUCTION

Three lithic finds from the archaeological excavations of a prehistoric site at 97E0320ext Knockalton Upper, Co. Tipperary as part of the N7 Nenagh Bypass were presented for analysis (Table 1). The finds are associated with a possible prehistoric structure on site B.

Find Number	Context	Material	Type	Condition	Cortex	Length (mm)	Width (mm)	Thickness (mm)	Complete	Retouch
97E0320:1:7	1	Chert	Retouched Artefact?	Reasonably Fresh	Yes	30	38	10	Yes	dist. direct & prox. inverse abrupt, r. e. direct semiabrupt
97E0320:1:8	1	Chert	Flake	Burnt	No	25	18	10	Yes	No
97E0320:1:9	1	Chert	Natural Chunk							

Table 1 Composition of the Lithic Assemblage from Knockalton Upper (97E0320)

METHODOLOGY

All lithic artefacts were examined visually and catalogued using Microsoft Excel. The following details were recorded for each artefact which measures at least 2 cm in length or width: context information, raw material type, artefact type, cortex, artefact condition, length, with and thickness measurements, fragmentation and retouch. The general typological and morphological classifications are based on Woodman et al. 2006. Natural chunks were not analysed further.

QUANTIFICATION

The lithics are two modified pieces of chert, both of which measure larger than 2 cm in length and width and were therefore recorded in detail. In addition, one natural chunk of chert was also presented for analysis.

PROVENANCE

The two finds were recovered from the topsoil.

CONDITION

The artefacts survive in reasonably fresh (97E0320:1:7) and burnt (97E0320:1:8) condition and both are complete.

TECHNOLOGY/MORPHOLOGY

The lithics are a flake (97E0320:1:8) and a possible retouched artefact (97E0320:1:7). The flake is a bipolar example which measures 25 mm in length, 8 mm in width and 10 mm in thickness (Ill. 1). The use of the bipolar technology is generally associated with the second half of the Neolithic period and the Bronze Age.

The possible retouched artefact was most likely used as a scraper. It was produced on a chunky, bipolar flake and measures only 30 mm long, 38 mm wide and 10 mm thick. It is highly likely that some of the retouch observed is the result of post-depositional processes, e.g. plough damage. It is difficult to separate natural from man-made retouch in this case, because the scraper is a rather crude example.

DATING

The assemblage from Knockalton Upper is technologically diagnostic and dates to the second half of the Neolithic or the Early Bronze Age.

CONSERVATION

Lithics do not require specific conservation, but should be stored in a dry, stable environment. Preferably, each lithic should be bagged separately and contact with other lithics should be avoided, so as to prevent damage and breakage, in particular edge damage which could later be misinterpreted as retouch. Larger and heavier items are best kept in individual boxes to avoid crushing of smaller assemblage pieces.

DISCUSSION

In Co. Tipperary, flint is only found in the glacial tills. Green and Zvelebil (1990, 65) noted that "flint takes on a less distinct or definable function" in the Bronze Age which is born out in the Knockalton Upper assemblage. This is all the more reason to suggest a dating to the Late Neolithic or Early Bronze Age. O'Hare (2005) suggested that during the Bronze Age, there is a significant drop in the range of stone tool types that occur. If retouched artefacts do occur, they tend to be scrapers or arrowheads. However, the occurrence of small convex scrapers is not necessarily a reliable indication of a Bronze Age date (Woodman et al. 2006). This is very apparent from their presence in Neolithic contexts. Thus, a dating of Bronze Age assemblages often relies on technology and other aspects such as the occurrence of diagnostic tools (e.g. arrowheads, saddle querns, large manos, some types of hone stones and spindle whorls etc) and their association with other artefact types and/or evidence of metalworking. In addition, it is difficult to separate Early Bronze Age from Middle Bronze Age material based solely on technological characteristics, as the smash-it-and-see bipolar technology tends to be dominant in both periods (O'Hare 2005). Given that the flakes appear to have been produced from a core that rested on an anvil, they perhaps most likely date to the Final Neolithic or Early Bronze Age.

SUMMARY

The lithics from the archaeological excavation at 97E0320ext Knockalton Upper, Co. Tipperary are a bipolar chert flake and a possible scraper, also produced on chert. The assemblage is technologically diagnostic and dates to the Final Neolithic period or to the Early Bronze Age.

The artefacts may represent waste from domestic activities such as hide scraping and are likely to be associated with the prehistoric structure excavated at this site.

This site makes a minor contribution to the evidence for prehistoric settlement and land use in Co. Tipperary.

RECOMMENDATIONS FOR ILLUSTRATION
Flake (97E0320:1:8)

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Inizan, M.-L., M. Reduron-Ballinger, H. Roche and J. Tixier, 1999. *Technology and Terminology of Knapped Stone* 5. CREP, Nanterre.

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Woodman, P. C., Finlay, N. and E. Anderson, 2006. *The Archaeology of a Collection: The Keiller-Knowles Collection of the National Museum of Ireland*. National Museum of Ireland Monograph Series 2. Wordwell, Bray.

Figures & Plates

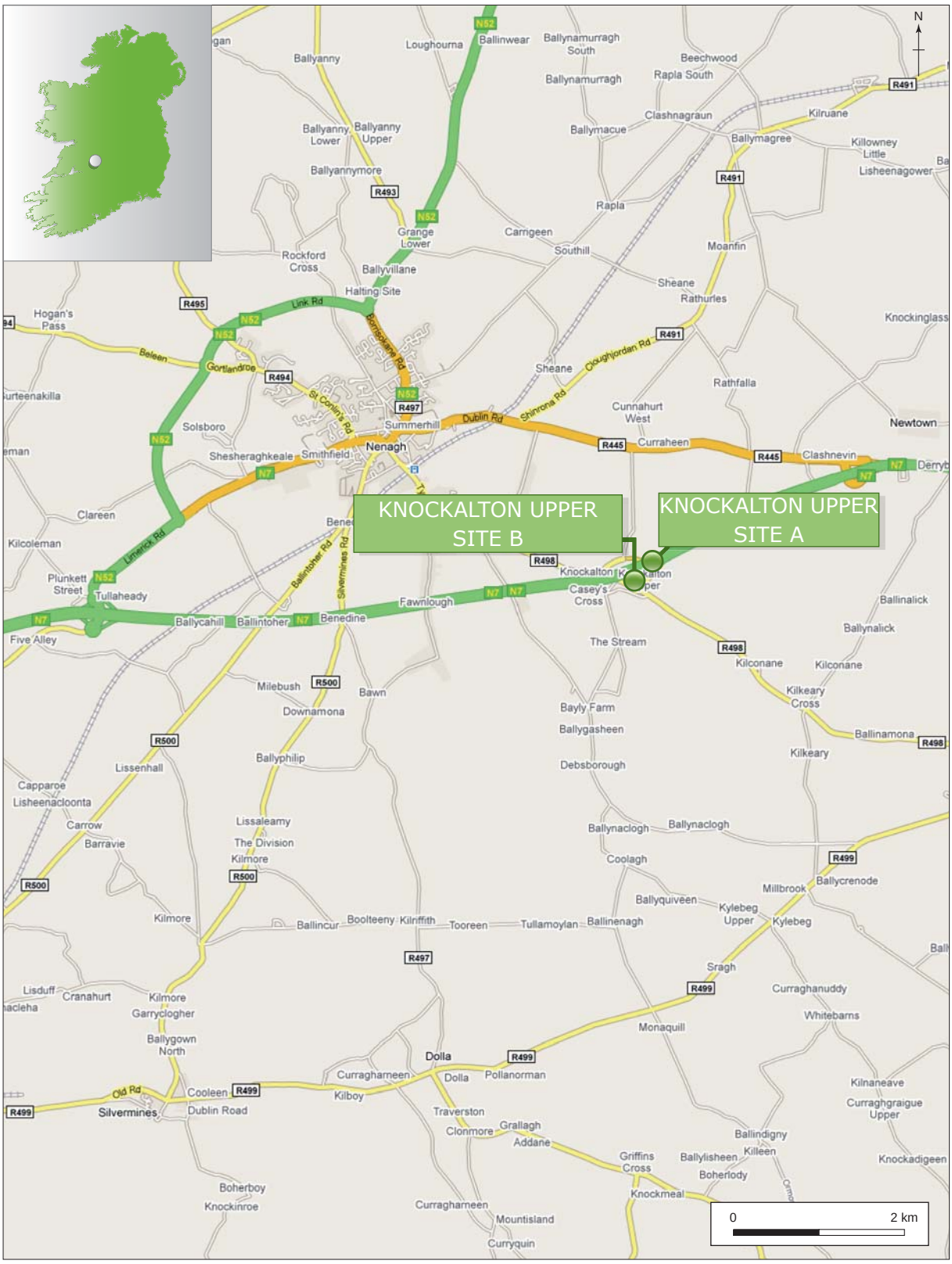


Fig. 1 General site location

Fig. 2 Site Location

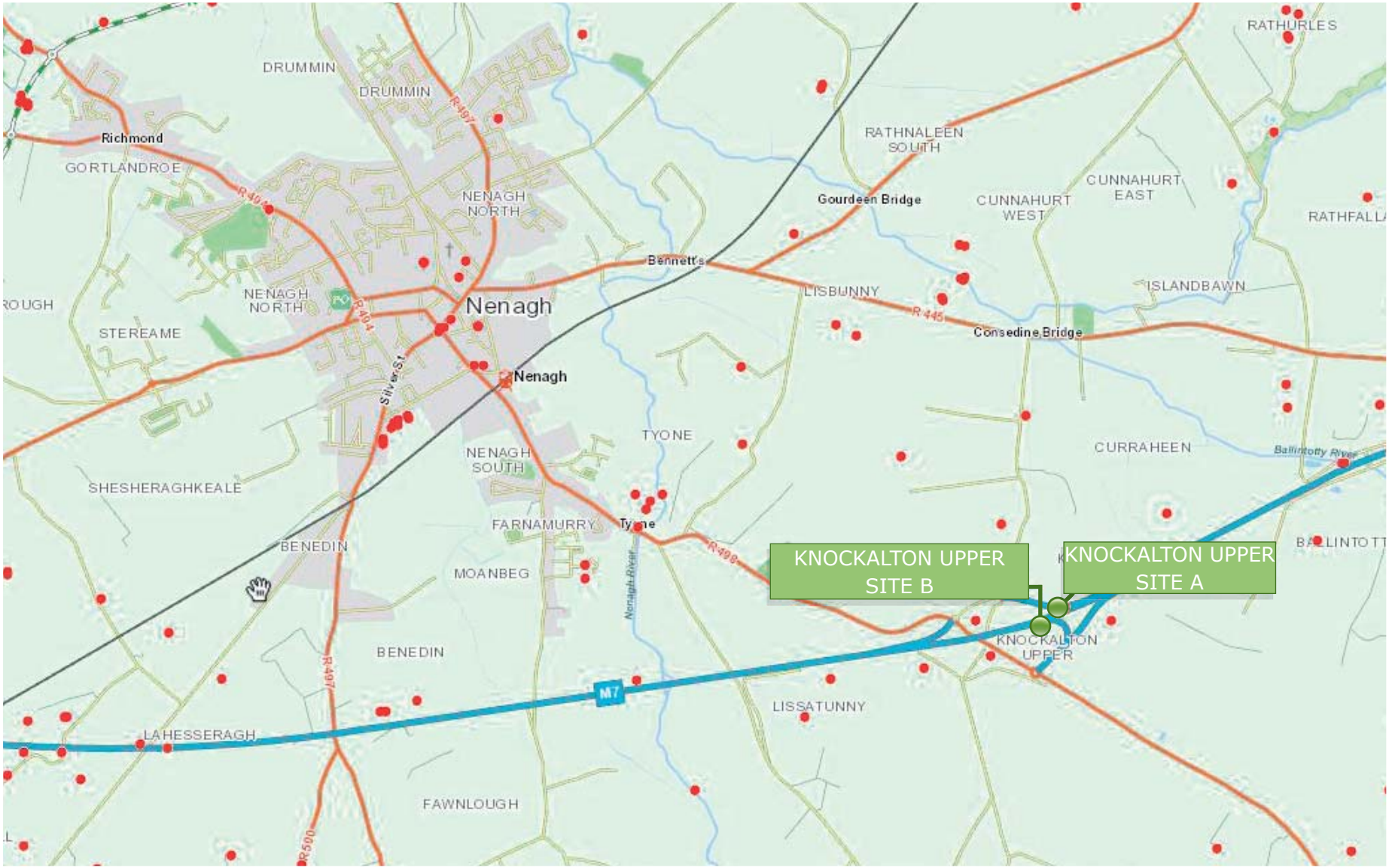


Fig. 3 Location of the site on an extract from the Record of Monuments & Places, Sheets 19 & 20, Tipperary North

Fig. 4 Location of the site on First edition OS map

Fig. 5 Location of the site on Second edition OS map

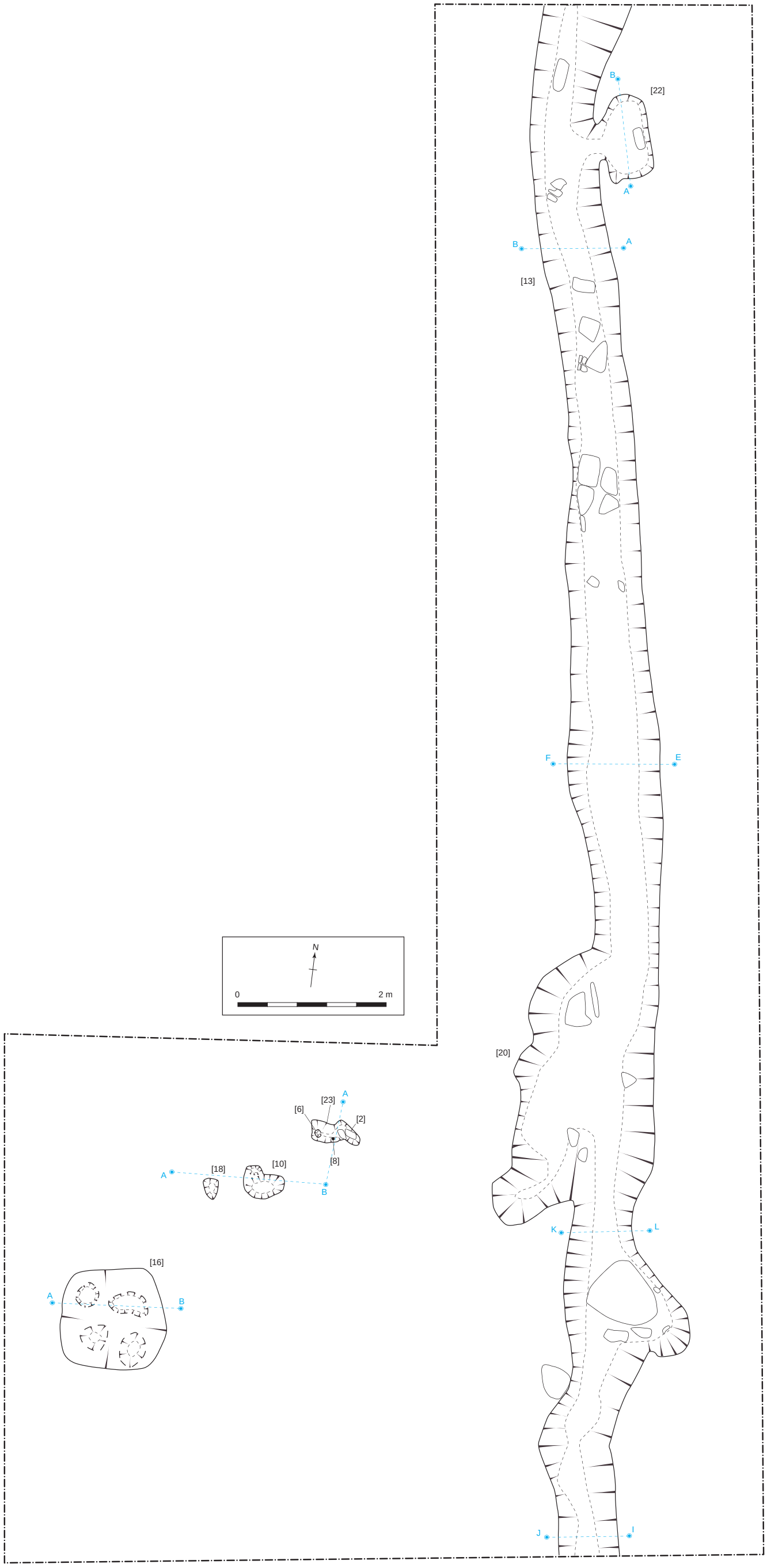
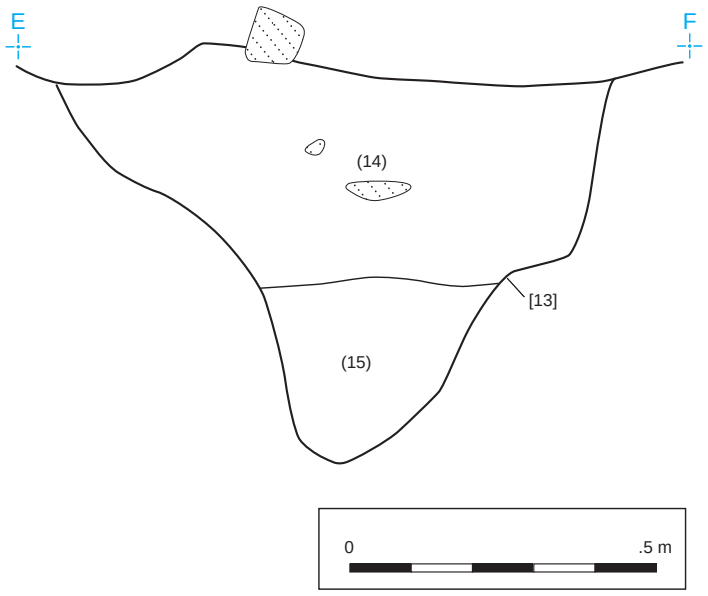
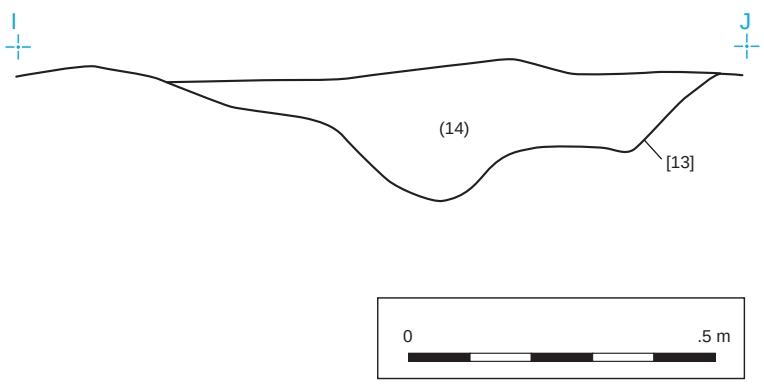


FIG 6: Post excavation plan of Site A

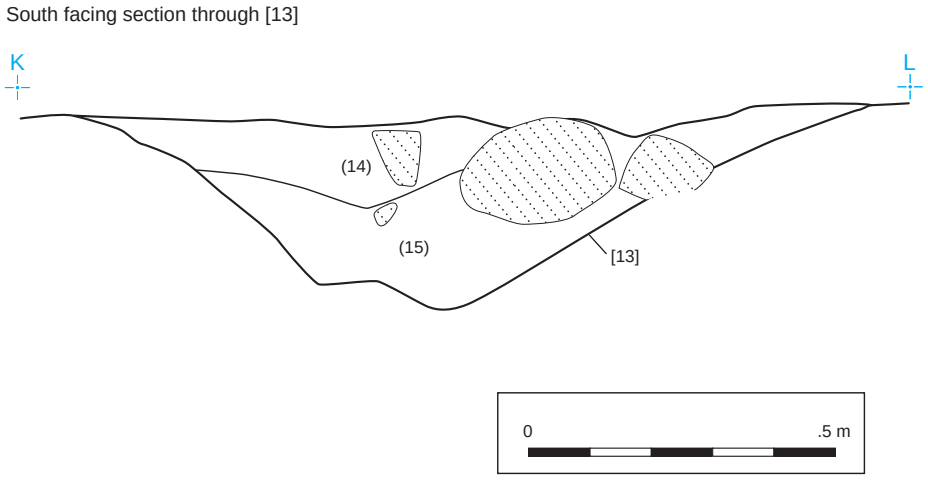
North facing section through [13]



North facing section through [13]



South facing section through [13]



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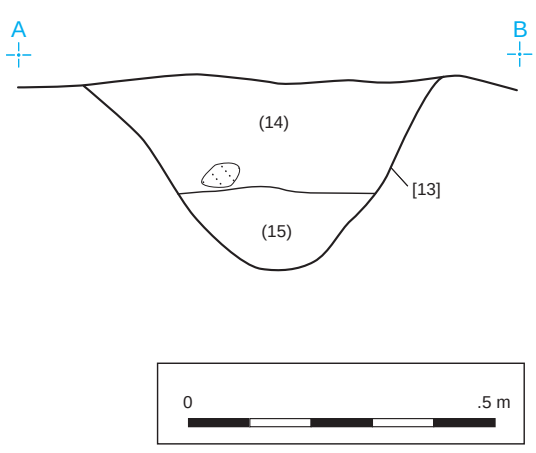
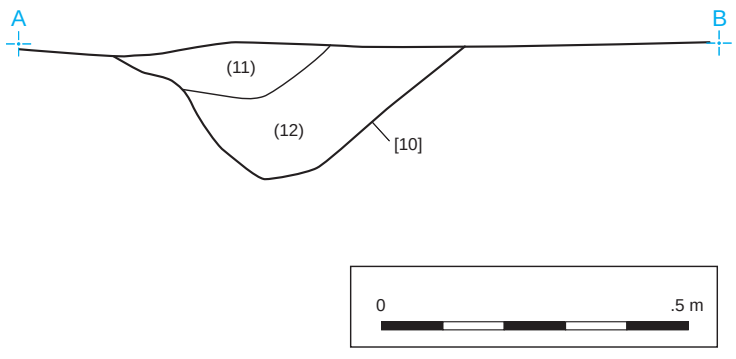
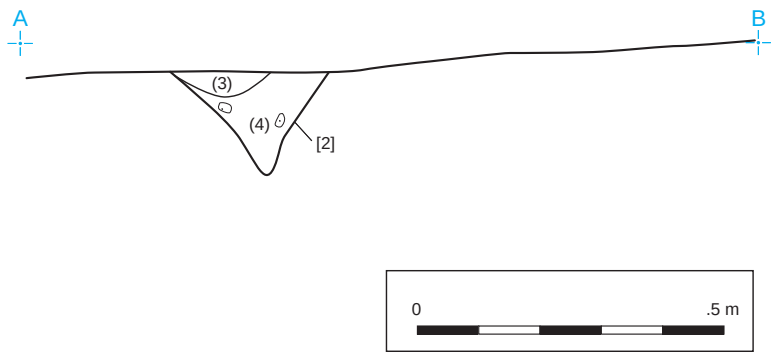


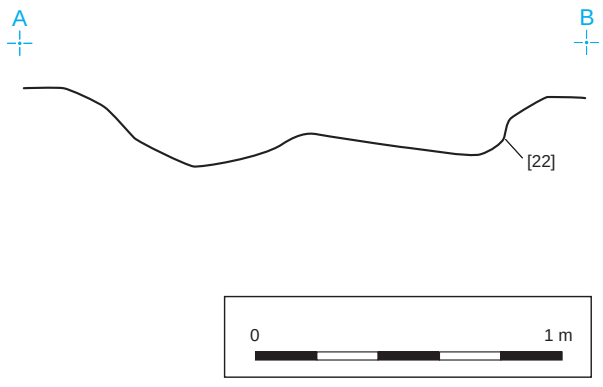
South facing section through [10]



West facing section through [2]



East facing profile of [22]



South facing section through [16]

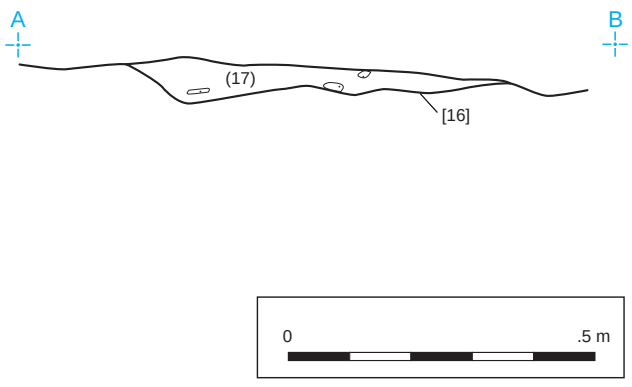


FIG 7: Sections

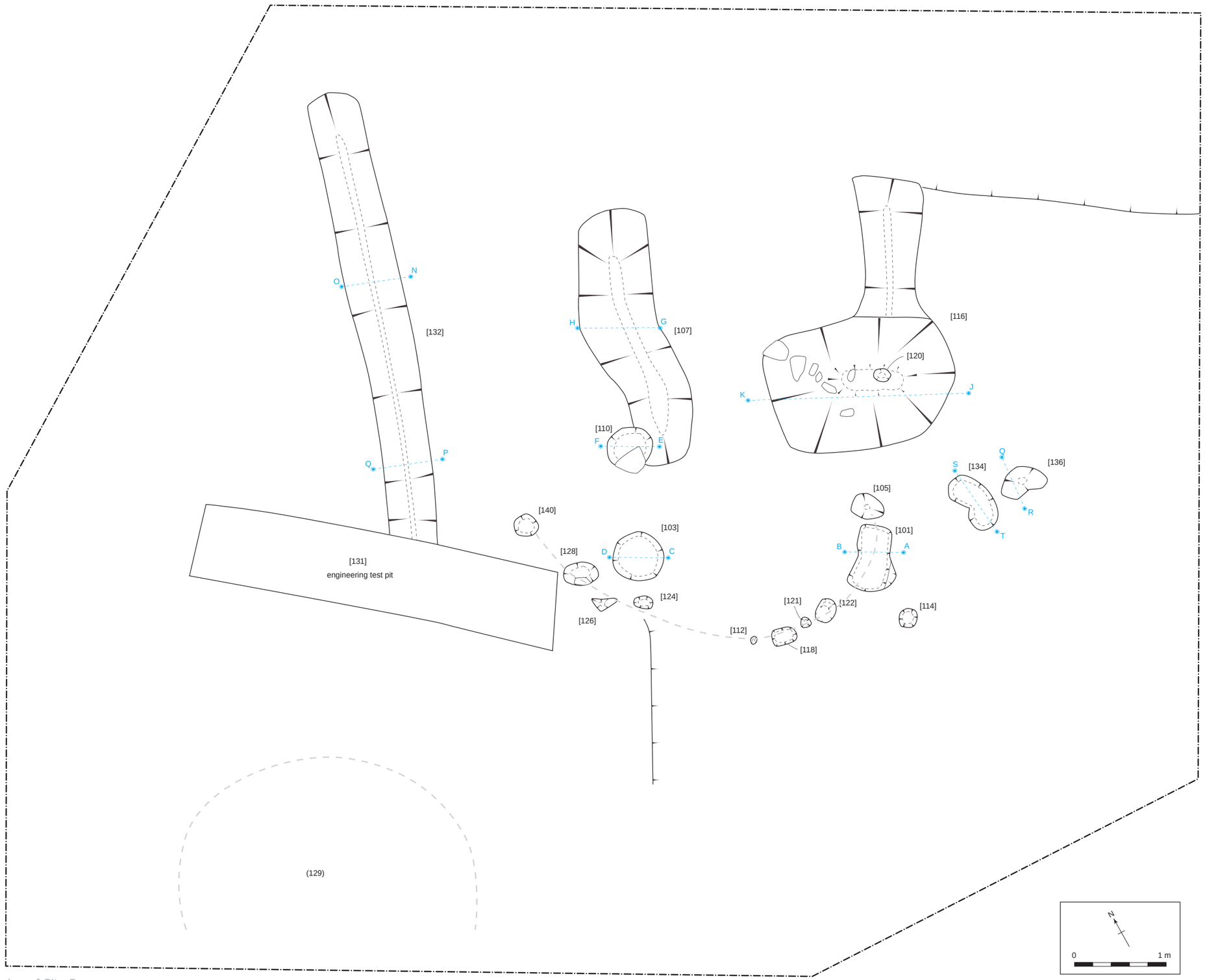
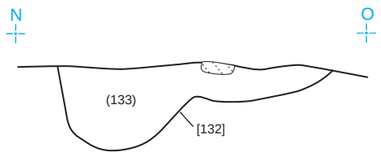
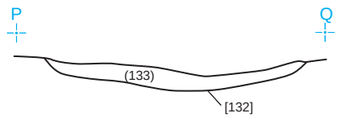


FIG 8: Post excavation plan of Site B

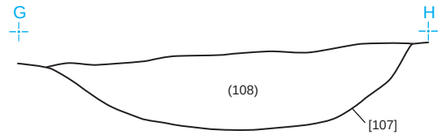
North facing section through [132]



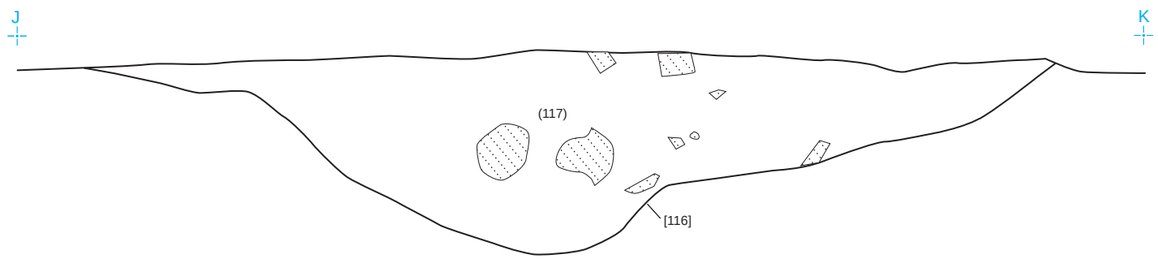
North facing section through [132]



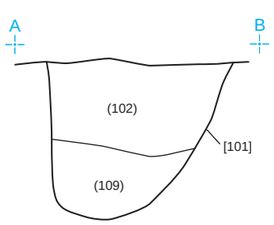
North facing section through [107]



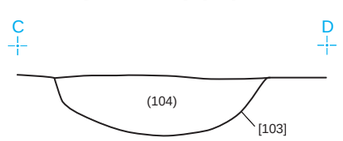
Northeast facing section through [116]



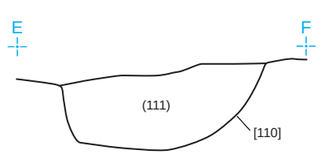
North facing section through [101]



North facing section through [103]



North facing section through [110]



East facing profile across [134]

East facing profile across [136]

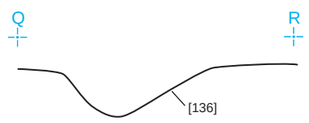
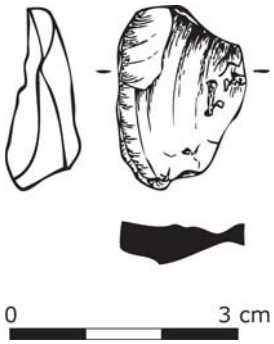


FIG 9: Sections, Site B



Ill. 1 Flake (97E0320:1:8).