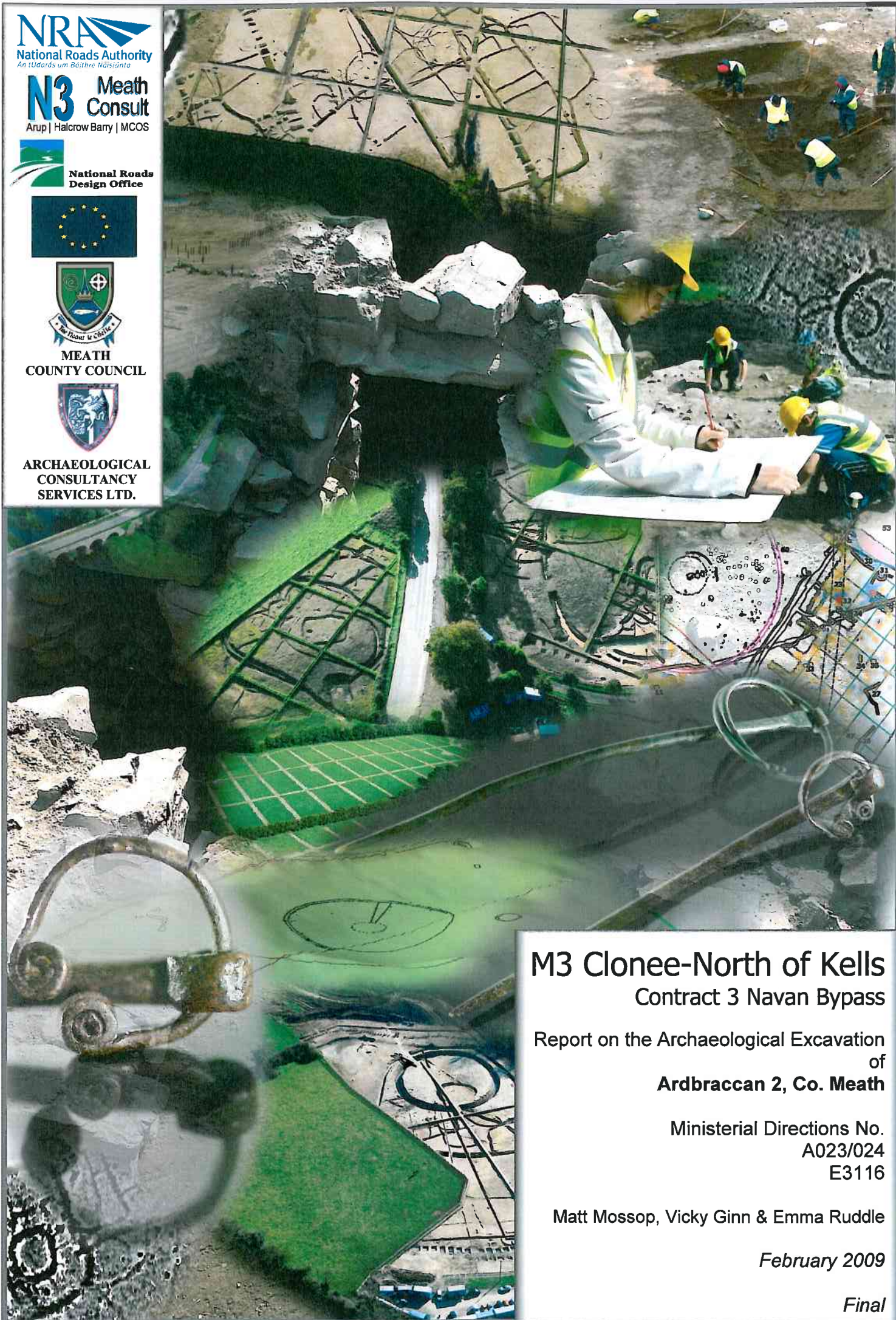




**MEATH
COUNTY COUNCIL**



**ARCHAEOLOGICAL
CONSULTANCY
SERVICES LTD.**



M3 Clonee-North of Kells Contract 3 Navan Bypass

**Report on the Archaeological Excavation
of
Ardbraccan 2, Co. Meath**

**Ministerial Directions No.
A023/024
E3116**

Matt Mossop, Vicky Ginn & Emma Ruddle

February 2009

Final

PROJECT DETAILS

Project	M3 Clonee–Kells Motorway
Site Name	Ardbraccan 2
Ministerial Direction Number	A023/024
Registration Number	E3116
Senior Archaeological Consultant	Donald Murphy
Site Director	Matt Mossop
Excavated	8 May – 31 July 2006
Client	Meath County Council, National Roads Design Office, Navan Enterprise Centre, Navan, County Meath
Townland	Ardbraccan
Parish	Ardbraccan
County	Meath
National Grid Reference	282806/267082
Chainage	47500–47800
OD	67.24m
Report Type	Final
Report Status	Submitted
Date of Report	February 2009
Report by	Matt Mossop with Vicky Ginn and Emma Ruddle

ACKNOWLEDGEMENTS

This report has been prepared by Archaeological Consultancy Services Ltd on behalf of Meath County Council National Roads Design Office (NRDO) and the National Roads Authority (NRA). The excavation was carried out under Ministerial Directions issued by the Department of the Environment, Heritage and Local Government (DOEHLG) in consultation with the National Museum of Ireland (NMI).

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NON-TECHNICAL SUMMARY

This site at Ardbraccan 2 was excavated by Archaeological Consultancy Services Ltd (ACS) as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council NRDO and the NRA. The excavation was carried out between 08 May and 31 July 2006 under Ministerial Direction Number A023/024 issued by DOEHLG in consultation with the NMI. The site lay in pasture at the southern edge of an area of marshy ground. Excavation revealed evidence for a Middle Bronze Age burnt mound complex; a substantial enclosure with two internal structures of probable early medieval date; associated field systems; and a number of pits, postholes, hearths, and possible corn-drying kilns.

CONTENTS

1 INTRODUCTION	v
1.1 Development	1
2 EXCAVATION	2
2.1 Results	2
2.1.1 Burnt mound and associated features	2
2.1.2 Early field systems and other features	4
2.1.3 The Enclosure	4
2.1.4 Outlying pits and heaths	7
2.1.5 Shallow field ditches	7
2.1.6 Post-medieval field system	8
2.2 Finds	9
3 DISCUSSION	9
3.1 Phase 1	9
3.2 Phase 2 and 3	12
3.3 Phase 4 and 5	12
3.4 Phase 6	14
3.5 Phase 7 and 8	14
4 CONCLUSIONS	15
5 REFERENCES	16

APPENDIX 1 *Context Details*

APPENDIX 2 *Finds List*

APPENDIX 3 *Sample List*

APPENDIX 4 *Lithics Report: Farina Sternke*

APPENDIX 5 *Faunal Remains: Rachel Sloane*

APPENDIX 6 *Plant macrofossil, charcoal and cremated bone analysis: Durham University*

APPENDIX 7 *Pollen analysis: Durham University*

APPENDIX 8 *Slag analysis: Angela Wallace*

APPENDIX 9 *Radiocarbon dating: Beta Analytic*

APPENDIX 10a *Stone Object report: Jon Stirland*

APPENDIX 10b *Stone Objects report: Ann Carey*

FIGURE LIST

- Figure 1: Location of Ardbracon 2
- Figure 2: Location of Ardbracon 2 on current OS background
- Figure 3: Ardbracon 2, extract from 1st edition OS map, Meath sheets 24 and 25
- Figure 4: Ardbracon 2, extract from 2nd edition OS map, Meath sheets 24 and 25
- Figure 5: Ardbracon 2, extract from 3rd edition OS map, Meath sheets 24 and 25
- Figure 6: Detailed location of Ardbracon 2
- Figure 7: Pre-excavation plan of Ardbracon 2
- Figure 8: Pre-excavation plan, site west
- Figure 9: Pre-excavation plan, site east
- Figure 10: Post-excavation plan of Ardbracon 2
- Figure 11: Post-excavation plan of F513 and outlying features
- Figure 12: Post-excavation plan of F506 (Figure 12a) and F500 and F502 (Figure 12b)
- Figure 13: Post-excavation plan of Enclosure (F100)
- Figure 14: Post-excavation plan of the western part of the enclosure, showing features associated with the burnt mound
- Figure 15: Post-excavation plan of Structure 1
- Figure 16: Post-excavation plan of Structure 2 and the northern causeway
- Figure 17: Post-excavation plan of the enclosure entrance
- Figure 18: Phase plan of Ardbracon 2
- Figure 19: West facing section A-A1
- Figure 20: South facing section B-B1
- Figure 21: Sections of Ardbracon 2
- Figure 22: Sections of Ardbracon 2
- Figure 23: Sections of Ardbracon 2
- Figure 24: Sections of Ardbracon 2
- Figure 25: Sections of Ardbracon 2
- Figure 26: Sections of Ardbracon 2
- Figure 27: Sections of Ardbracon 2
- Figure 28: Sections of Ardbracon 2
- Figure 29: Sections of Ardbracon 2
- Figure 30: Sections of Ardbracon 2
- Figure 31: Sections of Ardbracon 2
- Figure 32: Sections of Ardbracon 2
- Figure 33: Sections of Ardbracon 2

PLATE LIST

- Plate 1: Aerial photograph of Ardbraccan 2 post-excavation looking east
- Plate 2: Enclosure sub-division ditch (F316), pre-excavation from south
- Plate 3: Burnt mound pre-excavation, looking east
- Plate 4: Section through shallow ditches (F13 and F22) from east
- Plate 5: Northern causeway (F348) across enclosure ditch pre-excavation, looking east
- Plate 6: Posthole F383 from west
- Plate 7: Metalling F66 from west
- Plate 8: Section through northern causeway from southeast
- Plate 9: Metalling at entrance to enclosure from south (F100)
- Plate 10: Sections through enclosure subdivision ditch (F338) from northeast
- Plate 11: Metalling F97 from south
- Plate 12: Recording the burnt mound, looking south
- Plate 13: Section through trough (F79) from north
- Plate 14: Drain F376, post-excavation from south
- Plate 15: Ditch F337, post-excavation from east
- Plate 16: Section through pit F127 from south
- Plate 17: Trough F79 cut by palisade ditch F42, post-excavation, looking north
- Plate 18: Structure 1, post-excavation, looking west
- Plate 19: Section through entrance posthole F420 from south
- Plate 20: Enclosure entrance, looking south
- Plate 21: Enclosure entrance, looking north

ILLUSTRATION LIST

- Illustration 1: Flint recovered from Ardbraccan 2

1 INTRODUCTION

The site at Ardbraccan 2 (Figures 1–6) was identified during advance testing carried out by Neil Fairburn during May 2004 under licence number 04E0584 (Fairburn 2004). Testing revealed the presence of an enclosure ditch (c.30m diameter x c.2.58m width x c.1.10m depth), a burnt mound (c.8m diameter), two pits with charcoal and heat-shattered stone in their fills (1.65m x 1.15m x 0.30m; 0.50m diameter x unknown depth), two small spreads (1.00m x 0.70m x 0.07m; 0.30m diameter x unknown depth), several ditches, and a pond. These features were relocated during the full archaeological resolution of the site in 2006 along with a complex of field systems and features from the prehistoric to the modern periods.

1.1 Development

Meath County Council is constructing 49km of two-lane, dual-carriageway motorway between Clonee and Kells and 10km of single carriageway from Kells to just north of Kells alongside additional road upgrades, realignments and associated ancillary works. The scheme has been subdivided into five separate sections as follows: Clonee to Dunshaughlin (Contract 1), Dunshaughlin to Navan (Contract 2), the Navan Bypass (Contract 3), Navan to Kells and the N52 Kells Bypass (Contract 4), and Kells to North of Kells (Contract 5). This section of the scheme (Contract 3) represents the Navan By-pass.

The desk-based study and the field survey for the whole scheme, carried out in 2000–2001, were divided into sections which were investigated by Valerie J Keeley Ltd and Margaret Gowan and Company Ltd. The Record of Monuments and Places, the Sites and Monuments Record, Topographical files, and literary sources were all consulted. This information was augmented by geophysical testing conducted by Bartlett-Clark Consultancy who undertook a magnetometer survey across sample transects which was then supplemented by magnetic susceptibility, and also by GSB Prospection who undertook gradiometer scanning and a detailed gradiometer survey. The Environmental Impact Survey (EIS) compiled this data set to identify approximately 100 sites of interest either along the route or in its proximity (500m of the landtake). Advance archaeological testing was completed in 2004 by ACS and Irish Archaeological Consultancy Services Ltd (IAC). Excavation of the sites identified during testing was conducted by ACS and IAC on behalf of Meath County Council, and the NRA under directions issued by the Minister for the Environment, Heritage and Local Government following consultation with the Director of the National Museum of Ireland.

2 EXCAVATION

Excavation occurred between 08 May and 31 July 2006 under Ministerial Direction Number A023/024 issued to Meath County Council NRDO. The work was carried out by Matt Mossop on behalf of ACS. The topsoil (F5: 0.40m depth) comprised firm, mid-brownish, grey silt with occasional sub-angular stones and was removed by a machine equipped with a grading bucket under archaeological supervision. F4, the subsoil, included areas of two principal matrixes. The principal matrix consisted of compact, light-orange-yellow clay with occasional concentrations of rounded boulders while the second matrix included dark brownish-grey clay with angular stones and gravel.

All archaeological features exposed were recorded and excavated by hand using the single context method. Each feature was assigned a context number. Where appropriate, samples were retrieved in an attempt to obtain evidence for the date and function of these features (Appendix 3). Unless otherwise stated, the features have been measured length-width-depth. All measurements are in metres. All finds were numbered according to the requirements of the National Museum of Ireland from 1 onwards consistent with licence and feature number. The artefacts recovered from the site underwent an initial archaeological assessment and where deemed appropriate further specialist analysis was carried out on each artefact type. All radiocarbon dates are quoted in calibrated form to two sigma.

2.1 Results

A total of 527 contexts were identified within the excavation area, of which 320 were of archaeological interest (context numbers 170–299 and 428–499 were not assigned, and seven contexts which proved to be non-archaeological). Only the principal archaeological features of Ardracchan 2 will be discussed within this report; full details of all these, and further, contexts are located in Appendix 1. The enclosure ditch F52/F100/F310/F344 will be referred to as F100 in this report.

2.1.1 Burnt mound and associated features

The burnt spread identified during testing was relocated in 2006. F29 (7.40m x 6.00m x 0.19m) consisted of a loose, dark, charcoal-stained deposit with 50% burnt, sub-angular stones, located on a slight natural rise. This spread (F29) was cut to the west by the enclosure ditch F100 as well as a slot-trench for an internal palisade (F42). The burnt spread (F29) overlay two pits (F125 and F127), while five additional pits (F74, F94, F120, F136, F154), two probable troughs (F70, F79), a possible hearth (F95) and two areas of metallurgy (F66, F97) appear to be associated. Charcoal from the spread was identified as alder, hazel, ash, wild cherry and oak. Two charred barley grains were also identified (Appendix 6).

Both probable troughs (F70, F79) were sub-rectangular cuts with well-rounded corners, near-vertical sides and a flat base. Both features lay slightly downslope, to the west of the burnt spread (F29), and both had thin primary layers of grey silty clay and overlying burnt mound material consisting of a loose, charcoal-stained silt, with frequent sub-angular and angular burnt stones and charcoal fragments (wild cherry, where identified; Appendix 6). The western end of probable trough F70 had been cut by the enclosure ditch (F100), so that the surviving feature measured 1.76m x 0.80m x 0.24m. Probable trough F79 had been truncated by the palisade slot-trench (F42) but retained its maximum dimensions 3.05m x 1.30m x 0.44m. This feature was radiocarbon dated to 1601–1392 BC (Beta 247119; Appendix 9).

The pits (F74, F94, F120, F125, F127, F136, F154) were generally sub-oval bowl-shaped cuts with a number of slight irregularities, except pit F125. Pit 125, was a slightly irregular linear cut (2.94m x 1.20m x 0.18m), which contained frequent charcoal and burnt sub-angular stones in its fill (F126). The remaining pits varied from 0.84–1.3m in maximum dimensions by 0.07–0.31m depth. These pits were filled with a dark brown-grey silty-clay with charcoal flecks (alder, hazel and *Maloideae*, where identified; Appendix 6) and frequent burnt-stone inclusions. A light-grey clay (F129) formed in the base of pit F127. Hazel from F94 was dated to 1606–1411 BC (Beta 247117; Appendix 9).

Possible hearth (F95) was an oval cut measuring 0.92m x 0.85m x 0.15m. It contained frequent flecks of charcoal and it had burnt some of the underlying stones. This hearth seems unlikely to be directly associated with the troughs, as it lay approximately 10m from them and was slightly downslope.

A metallised surface F66, which measured 5.40m x 2.60m x 0.09m, comprised small sub-angular stones embedded in the underlying compact, yellow, silty-clay, and was situated south of the burnt spread (F29). A second metallised surface (F97) measured 8.6m north to south by 4.4m, apparently consolidating the area between the pits and troughs. Although there was no stratigraphic relationship evident, both metallised surfaces are probably contemporary with the burnt mound as they appear to help consolidate the ground in this specific area.

2.1.2 Early field systems and other features

A number of narrow, WNW–ESE and NNE–SWS linear cuts (including F11, F144, F312, F337, and F515) seemingly defined part of a sub-rectangular field system. One of the fields measured c. 55m x 37m with the ditches averaging 0.74m–1.16m in width and up to 0.19m in depth. Ditch F337 contained cattle, sheep/goat and pig bone in its primary fill F336 (See Appendix 5). Charcoal from this feature was identified as alder, hazel, ash, *Maloideae*, cherries and oak. A number of charred oats, barley and wheat grains were also recovered. Burnt bone from this deposit was confirmed as animal but not identified to species (Appendix 6).

This field system appeared to have been replaced by one with more substantial ditches. Three ditches (F18, F27 and F374) make up the west, north and east sides of a sub-rectangular field which measured at least 48m north–south by 41m east–west. These ditches averaged 2.2m wide by 0.6m deep. Ditch F515 may have continued in use as the southern side of this field, while in the southeast corner of the field a L-shaped gully, F513, defined a small rectangular enclosure measuring 9m east–west by 10m north–south. This appeared to respect a former field bank. Alder, hazel and ash were recorded in this feature along with charred seeds. A date from a sample of ash was dated to AD 635–774 (Beta 247126). The gully F513 was possibly related to a small sub-oval shallow hearth F511 (0.75m x 0.45m x 0.10m) that contained frequent charcoal and small angular stones (F518).

The three field ditches were cut to the north by the enclosure (F100). No finds were discovered in fill of the ditches but all three contained occasional animal bones, teeth and fragments, including cattle, horse and sheep/goat (See Appendix 5).

2.1.3 The Enclosure

A large enclosure ditch (F100) was identified during testing. Full excavation revealed a sub-oval enclosure measuring 42m east–west by 33m internally with two internal structures, two entrances and an internal subdivision. Four principal sections of the enclosure ditch numbered F52, F100, F310, and F346 during excavation are referred to as F100 in this report. The enclosure ditch (F100) averaged 3.00–3.50m in width and 0.67–1.09m in depth generally with a U-shaped profile, although a small part of the ditch on the eastern side lay outside the proposed land take. The ditch had been re-cut around its circumference (F124 and F362) with further re-cuts at each entrance (F410 and F411). The ditch sections contained similar corresponding fills including waterlogged clays and eroded natural slumped from the sides (F53–F55, F72 and F92, F101–F119, F345–F350). F350 was radiocarbon dated to AD 780–991 (Beta 247121; Appendix 9). A number of large sub-rounded and rounded stones and

occasional boulders appeared to have slumped from a previously partly stone re-vetted internal bank; this was particularly evident at both entrances. The original entrance appears to have been to the southeast where a narrow causeway, just 1m wide, was left in situ. This entrance was also associated with a circular posthole F420 (0.53m x 0.38m x 0.30m), which may have been used as a post for a gate at the inner end of the causeway. The northern entrance was defined by stony backfill material in the ditch, which apparently allowed drainage beneath a constructed causeway. A cut (F376) immediately to the east of this entrance appeared to drain the lower lying northern end of the enclosure beneath the bank. This drain ran northeast–southwest (1.96m x 0.48m x 0.25m) with a sharp break of slope top, vertical sides, sharp break of slope bottom leading to a flat base. No covering stones remained in situ.

Internal features respected an apparent internal bank, which appears to have been part stone faced to allow for greater height. Although there was no surviving evidence for the internal bank, internal ditches F338 and F316 stopped some 2m short of the enclosure ditch suggesting an internal bank of 2m in width. To the west, a slot-trench (F42) ran parallel to the inside edge of the enclosure ditch for 14.90m, allowing for a wooden palisade defining the outside of and possibly retaining the interior bank, thus preventing it from slipping into the ditch. The slot-trench (F42) measured 0.57m wide x 0.27m deep with near-vertical sides, petering out to the north, suggesting that it may have continued further in this direction. The slot-trench (F42) cut the burnt spread F29 and the trough F79 and appeared during excavation to be contemporary with the re-cut of the enclosure ditch (F124). Unfortunately, and possibly as a result of truncating the burnt spread F29, charcoal from F42 was dated to 1430–1260 BC (Beta 247118; Appendix 9). A conspicuous organic layer with numerous degraded fragments of wood (F103) was recorded in the re-cut (F124) beside the palisade slot-trench (F42).

Pottery, clay, glass, and metal finds (A023/024:101:1–21 and A023/024:102:1–2) were recovered from the uppermost fills F101 and F102 of the enclosure ditch suggesting that the enclosure did not entirely silt up until the post-medieval period. Very occasional animal bone fragments and teeth were discovered in a number of the ditch fills, including cattle, sheep/goat, pig, horse, and cat bone fragments (See Appendix 5).

Pollen analysis conducted on waterlogged samples from this ditch indicated a dominance of grasses and other herbaceous taxa and suggested an open meadow environment surrounding the enclosure in the early medieval period. The presence of cereal pollen and pollen of plants such as plantains, dock, daisies and dandelions suggested a vegetation cover disturbed by

human activity. The cereal types and cabbage types could have been produced as food crop plants (Appendix 7).

In the centre of the enclosure a drip-gully (F402 and F406) defined an oval structure (Structure 1) measuring internally 8.5m north to south by 5.5m. Charcoal within the fill of this feature was identified as hazel. Minimal quantities of oats were also identified, while a number of uncharred remains probably reflected wind-borne contaminants amassed during excavation (Appendix 6). A small internal hearth (F380) and a sub-rectangular pit (F369) were centrally positioned within this. The hearth was a shallow, sub-oval cut (0.70m x 0.40m x 0.09m) with a primary layer of oxidised, loose, pinkish-red, silty clay (F381) and an upper fill of loose, charcoal-stained silty sand with frequent charcoal inclusions and occasional burnt bone (F335; animal but not identified to species; Appendix 6). A sample of F381 produced a small amount of charred oat seeds, one of which was dated to AD 657–862 (Beta 247122; Appendix 9). This feature cut an earlier possible cereal-drying kiln (F394). The sub-rectangular pit (F369) measured 1.92m x 0.66m x 0.10m with a sharp break of slope at the top, concave sides and a flat base. It was filled with grey alluvial clay (F370) with a moderate number of charcoal flecks, presumably derived from the hearth. To the south another gully (F424) extended the structure c. 6m in length. This extension also included a central posthole (F383). A small iron blade (A023/024:334:2), a possible stone lamp (A023/024:392:1; see Appendix 10a), as well as a quantity of burnt and butchered animal bone were found in association with this structure (See Appendix 5). Charcoal from F334 was identified as alder, ash and oak. The context also contained high numbers of mixed charred grains, including oats, barley and wheat. Burnt bone from this deposit was confirmed as animal but was not identifiable to species (Appendix 6).

A smaller structure (Structure 2) in the northeastern corner of the enclosure consisted of a curving slot-trench (F340) and exterior pit F426 (0.43m x 0.39m x 0.23m). This defined a structure of at least 4m in external diameter, continuing beyond the edge of the road take to the east.

A sub-circular hearth pit, F365 (0.38m x 0.47m x 0.06m), contained loose, mid-reddish-black silt with frequent charcoal flecks (F366).

The enclosure was subdivided internally by two ditches, running north to south, which appeared to respect the interior bank of the enclosure. The two ditches terminated c. 3m apart beside the central structure allowing access between the east and west halves. Ditch F338 measured 14.80m x 2.08m x 0.63m, and is likely to be continued by F316 (7.60m x 0.91m x

0.19m). This was interrupted in the centre to allow access between the subdivisions. The ditch F338 had nine fills, eight of which (F334, F387–F392 and F396) contained butchered animal bone fragments including vertebrae and jaws along with burnt and calcined bones (See Appendix 5). One of upper fills of this ditch F387 contained a probable stone oil-lamp (A023/024:392:1). Possible slag was recovered at the base of this fill (F387: A023/024:387:2; see Appendix 8). The fill of ditch F316 (F317) also contained animal bone fragments (see Appendix 5). Samples from F388, F390, F391 and F396 had alder, hazel, ash, Maloideae, holly, blackthorn, cherries and oak inclusions and quantities of charred grain (oats, barley and wheat; Appendix 6). A radiocarbon date for F338 indicated this feature belonged to the period AD 687–937 (Beta 247123; Appendix 9). Burnt bone from F388, F390, F391 and F396 was confirmed as animal but not identified to species.

Externally a small annex was defined by a drainage gully (F98) to the northwest. This gully drained into the main enclosure ditch.

2.1.4 Outlying pits and hearths

Two small, shallow rounded pits (F500 and F502) were recorded to the southeast of the enclosure (F100). These measured roughly 0.30m and 0.50m in diameter and 0.07m in depth. Both contained a charcoal-stained burnt fill (F501 and F503). To the south of the enclosure, two hearths (F506, F508) were recorded in apparent isolation, both had been used a number of times. Sub-oval hearth (F506) measured 1.00m north–south by c.0.80m east–west and included burnt bone, heat-cracked stones and charcoal (alder, hazel Maloideae, cherries) flecks (see Appendix 6). Maloideae from this feature was dated to AD 614–771 (Beta 247124; Appendix 9). Hearth F508 was a key-holed shaped cut (2.00m x 0.90m x 0.30m), with a heavily oxidised base that may have served as a cereal-drying kiln (it contained significant numbers of charred seeds (oats, barley, wheat, as well as indeterminate cereals)), although it contained also burnt animal bone and was truncated by the ditch F374. It was dated to AD 647–775 (Beta 247125; Appendix 9).

2.1.5 Shallow field ditches

Two pairs of shallow field ditches (F13, F22, F412, F504), ran from east to west, post-dating the enclosure ditch (F100). These ditches were up to 1.30m wide by 0.40m deep with varying sides and flat bases. The clay fills produced no datable finds, although a hone stone pendant was found in the base of the topsoil immediately above one of them (A023/024:014:1; Appendix 10a). They appear to pre-date a post-medieval field system (see below) to the south and may define plots within strip fields similar to those located to the west (depicted on the

first edition Ordnance Survey map (1836) but not excavated) and those recorded at Ardbraccan 3 (A023/025).

2.1.6 Post-medieval field system

The geophysical survey (Bartlett-Clark 2002) revealed a substantial east–west running ditch (F15: 1.80m width x 0.96m depth), which is also depicted on the 1836 first edition of the Ordnance Survey Map. It was filled (F16 and F17) with numerous stones, some of which were burnt, and with occasional, hand-made bricks (F17: A023/024:017:6–9). The bricks displayed traces of lime mortar, as did some of the stones, suggesting that these had originally formed part of a structure, which was robbed-out for the construction of the field boundary. Occasional sherds of post-medieval red-glazed earthenware pottery were also recovered (A024:024:016:14–15; A023/024:017:2–3 and A023/024:017:5) along with a flint core (A23/024:17:1; Sternke, Appendix 4). A second ditch F302, ran north–south beside the upstanding field system F10. This also contained occasional black-glazed earthenware in a stony fill (F343) towards the base of the cut and is likely to have formed part of the field system continued from F15.

A number of furrows or lazy-beds (including possibly F40, F44, F46, F48, F50, F58, F60, F62, F68, F81, F152, F318, F320, F322, F324, F327, F330, F360, F367, F400, and F408) were identified at c. 2m intervals. These respected either the shallow field ditches (F13 and F22) or the post-medieval field system. These linears varied little in width (0.20–0.25m) and were rather shallow, with an average depth of 0.05m. Their narrow and shallow size, combined with their wavering nature, suggest that they were dug by hand. A black-glass bottle base was found in the base fill (F321: A023/024:321:1) of one of these (F320), firmly dating this particular linear, at least, to the post-medieval period.

Several stone-filled field drains (e.g. F35 and F38) were recorded in the lower lying, northern end of the site. These fed into a large dewpond and cut the furrows as well as the backfill (F101) of the enclosure ditch (F100).

2.2 Finds

A small hone pendant (A023/024:14:1; see Appendix 10a) and a number of iron objects and post-medieval artefacts were retrieved from the base of the topsoil (A023/024:005:1–295) and loose (A023/024:006:1–64 and A023/024:007:1–21) when the site was cleaned. A plethora of other post-medieval artefacts were recovered (Appendix 2). Beneath the post-medieval layers finds were extremely rare, with many deposits appearing to be relatively sterile. However, as mentioned above, a small iron blade (A023/024:334:2), a stone possible lamp (A023/024:392:1), as well as a quantity of burnt and butchered animal bone (See Appendix 5) were found in association with Structure 1, within the subdivision ditches F338 and F316. The flint and chert cores and debitage (the majority of which came from topsoil or other non-chronologically diagnostic contexts) was ascribed to between the Late Neolithic and Early Bronze Age due to the evidence for the use of the bipolar-on-anvil technique (Sternke, Appendix 4; See also Appendix 2).

3 DISCUSSION

The archaeological deposits at Ardraccan 2 belong to two principal periods, the Middle Bronze Age and the early medieval period. Stratigraphical evidence from the site indicated the early medieval period may have been further subdivided into a number of sub-phases.

3.1 Middle Bronze Age *fulacht fiadh*

The *fulacht fiadh* associated with the burnt mound appears to represent the earliest activity at Ardraccan 2. The majority of burnt mounds produce Bronze Age dates, although notably a small number of burnt mounds in Co. Meath have produced Neolithic dates (Clowanstown 1 and 2 (Mossop 2009 (A008/011); Mossop 2009a (A008/012)), Claristown 1 (Russell & Corcoran 2002) Lisdornan 3 (Russell & Corcoran 2001) Moorechurch 1 (Russell 2001)) while at Clowanstown 2 (A008/012) medieval dates have also been returned. The burnt mound remains at Ardraccan 2 date to the Middle Bronze Age period (see Appendix 9).

The larger trough was cut right through the orange boulder clay into the porous underlying natural. The re-deposited clay around the base and sides of this appear to be an attempt to waterproof it. This clay is likely to have derived from the surface of natural through which the feature was cut. The size of the burnt mound and the number of its associated pits suggest that this burnt mound was used more than the burnt mound at Ardraccan 3 (Mossop 2009b, A023/025), despite its higher elevation. Given the higher elevation of the site, it appears the site would have been in use during wetter periods than neighbouring sites Ardraccan 1 (Mossop 2009c, A023/023) and 3. No evidence of function was obviously apparent, although

it seems likely given the shallowness of the features and the free-draining nature of the much of the subsoil, bone would not have survived.

3.1.1 Form and function

Dating predominantly to the Bronze Age, burnt mounds or *fulachta fiadh* and burnt mounds served a number of functions, central to each being the requirement for hot water, provided by hot-stone technology (Brindley *et al.* 1989–90, 25; O’Neill 2000, 19). Fire heated stones were placed into a trough of water causing the water to boil. After each use the stones were removed from the trough and either reused or dumped around three sides of the trough, leaving one side free of debris in order to provide access to and from the site, and forming the crescent shaped mound associated with ‘classic’ *fulachta fiadh*. Apart from the general acceptance that *fulachta fiadh* were used to boil water, a more in depth understanding of the function of these sites has not been agreed upon.

3.1.2 Cooking

One of the most enduring explanations for the function of *fulachta fiadh*, and burnt mounds, is that they were used as cooking places for the boiling of meat. Ethnographical comparisons, cooking experiments and references made in Early Irish literature can all be used to support this argument. O’ Kelly’s experimental work at the excavated site at Ballyvourney 1, County Cork demonstrated how a 4.5kg leg of mutton wrapped in straw could be cooked in three hours and forty minutes, the same amount of time it would take using a modern methods (1954, 122). Similar experiments by Lawless (1990) and others have corroborated that *fulachta fiadh* could have been efficiently used for cooking and provides a plausible explanation for the association of a trough with a build up of shattered stones. However the general absence of animal bone and artefacts from *fulachta fiadh* sites is often used to argue for an alternative function. Be that as it may there are a number of explanations for the scarcity of finds. Rather than consuming the food in a wet and charcoal ridden area it is more plausible that cooked food was brought to a drier and more appropriate place for consumption. O’ Kelly suggests that scavenging dogs and wild animal may have taken the bones or that they were dissolved by the acidity of the peaty soil they were deposited in (1954, 141). The possibility that these sites may have been used for the preparation of non-meat foodstuff, such as porridge or pottage (Feehan, 1991, 205), cannot be ruled out as these would leave little archaeological trace. However of the limited number of finds associated with these site types excavated on the M3 Motorway Scheme, the recovery of animal bone is the most recurrent find. Other cooking methods, such as steaming or roasting, may account for the number of small pits that occur on many sites. Both processes would necessitate the use of a small enclosed space where heated stones could be placed around the food in order

for it to cook, with the former method using small quantities of water. However such methods could not account for the large accumulations of heat shattered stone and charcoal at most sites, thus they may have been used in conjunction with the boiling method.

3.1.3 Bathing or Saunas

An alternative preferred by some scholars is that the *fulachta fiadh* were prehistoric saunas or bathing sites (Lucas 1960, Barfield and Hodder 1987, O' Drisceoil 1991). Barfield and Hodder (1987) argue that the lack of finds and animal bones from *fulachta fiadh* could be accounted for if the sites were used in this manner. This subject has been addressed above. Barfield and Hodder suggest that there were two basic requirements for a sauna: a heat source and enclosed space which may have been a simple tent covered with skins (1987, 372). Nevertheless very few excavations of *fulachta fiadh* sites have produced evidence of structures. The *fulacht fiadh* at Ballyvourney 1 is one of the notable exceptions. At this site a small hut was located to the west of the *fulacht fiadh* on a drier patch of ground (O' Kelly, 1954). Although steam can be produced using a trough of boiling water it is a more efficient method to produce steam by pouring cold water on heated stones. Thus such a function does not explain the numerous pits that are frequently associated with *fulachta fiadh*. Very few heated stones would be needed to create steam in this manner, therefore, it is difficult to account for the large build up of heat-shattered stones at most *fulachta fiadh*, unless they were repeatedly used over generations. The fragmentary nature of the heat affected stones at most sites could only have been achieved by immersing the heated stones into cold water. However bathing by immersion into hot water contained in a trough or pit would have been impractical. Nevertheless it is impossible to prove or disprove such a function and some scholars argue that a dual washing and cooking function may have been performed at many *fulachta fiadh* sites as recounted in the Early Irish tale 'The Romance of Mis and Dubh Ruis' (Ó Drisceoil, 1991, 5).

3.1.4 Alternative functions

A number of other functions have been proposed for burnt mounds (Barfield and Hodder, 1987, 371) such as boat building, butter production, brine evaporation, brewing, pottery filler, fulling and dyeing of textiles, leather working and metallurgy. Processes such as textile fulling and leather working may leave little or no archaeological remains and thus cannot be discounted. However it may be expected that the other procedures would result in the occurrence of pottery vessels, metal slag, etc. in *fulachta fiadh*. The deficiency of these types of finds in burnt mounds makes it difficult to support these functions.

3.2 Phase 2 and 3

Two systems of small rectangular fields appear to pre-date the early medieval enclosure and are likely to have been constructed to control livestock movement and/or provide drainage at sometime in the Iron Age period or at a preliminary stage of the early medieval period. The associated hedges or banks are also likely to have provided shade and shelter. No recorded furrows corresponded to these ditches, although the possible cereal-drying kilns may point to mixed farming. The small enclosure defined by gully F513, located at the southern extreme of the site, may have been a pen for animals.

Evidence of Iron Age antecedence at early medieval sites is recorded elsewhere in Co. Meath. At Colp West, there was significant Iron Age activity prior to the adoption of enclosed settlement (Clarke & Murphy 2001). The general pattern emerging from excavations of early medieval sites is strong evidence for preceding Iron Age activity at the same location, although associated occupation may not be so easily recognised elsewhere in the archaeological record.

3.3 Phase 4 and 5

The enclosure (F100), which may itself date from the early medieval period, demonstrates a surprising investment of resources. The re-cuts to the ditch, second entrance, drainage and palisade all point towards a relatively protracted period of use as well as the importance of security. The substantial ditch, part-stone revetted bank and surmounting palisade would have combined to form a considerable deterrent to opportunist undesirables. The north end of field ditch (F374) was not re-used as part of the enclosure ditch, although it lay just 3m away and was likely used to effect a double bank and ditch immediately beside the narrow entrance. To the north, the marshy ground provided further security as well as a reliable source of water. This is probably the reason for the later causeway on this side and the dewpond in this location may have had its origins earlier than the post-medieval period.

Structure 1 is central to the understanding of the site at every level. Its physical position at the centre clearly demonstrates its importance. This structure notably would not have been recognised had it not been for its surrounding gully. The gully appears to have kept roof run-off away from the walls and interior space. In the absence of peripheral postholes or a slot-trench, it seems that an earth-, turf- or stone-faced bank may have formed the wall and taken the weight from the roof. The construction of successive post-medieval field boundaries immediately to the west is likely to have robbed out any upstanding wall material. Internally the pit and hearth appear to be part of a cohesive use of the interior space. The burnt bone in the hearth is testament to the roasting of meat as well as the provision of light and heat within

the structure, while the sub-rectangular pit is likely to have been a rubbish pit, which would have been emptied periodically, latterly into the sub-division ditch (F338).

The posthole (F383) to the south is likely to have given additional support to the roof in this area, before the subdivision of the enclosure. The lack of associated ceramics fits in well with an Iron Age or early medieval date.

The later sub-division of the enclosure included access immediately beside Structure 1. This sub-division restricted the movement of animals and people within the enclosure and may have defined areas associated with agriculture from areas in which animals were kept.

Structure 2 was built up against the inside of the enclosure bank and its small size, location and simplicity of construction suggest it may have been an animal shelter or outbuilding rather than a habitable dwelling.

The survival of evidence for both structures has been facilitated by the build-up of a considerable depth of silt across the site, providing a relatively rare insight into the internal organisation of such an enclosure. Early medieval enclosures at Castelfarm 1 (O Connell 2009, A017/001), Baronstown 1 (Linnane 2009, A008/017), Ross 1 (Wiggins 2009, A008/079), Calliaghstown 1 (Reilly 2008, A030/002), and Garretstown 2 (Rathbone 2009, A008/008) had substantial outer ditches with little structural evidence internally, although at Roestown 2 (O Hara 2009, A008/002) curvilinear gullies were thought to be the remains of houses, workshops and other structures and at Dowdstown 2 (Cagney 2009, A008/033) a post-built structure and slot-trench structure were recorded. Most of these enclosures had extended periods of use, were located in farmland, with access to water and most included abundant animal bone (See Appendix 5). It seems quite possible that the ephemeral nature of house construction, combined with a great deal of re-modelling have combined to diminish the habitation evidence at many of these enclosures.

With so few stratified finds, dating the activity at Ardbraccan 2 is heavily reliant on radiocarbon dates obtained from post-excavation analysis. Analysis of faunal material has already provided an insight into animal husbandry and diet at the site (Appendix 5). Cattle, sheep/goat, pigs, horses and cats are all represented, although the relatively small amount of surviving bone prevents convincing conclusions about slaughter patterns and population proportions. The pig and cat bone, found in association with the enclosure, point to their association with it. Cats, also recorded at Colp West (Clarke & Murphy 2001) and Claristown 2 (Russell 2004), were probably kept to control rodents and other pests within the enclosure,

while the pigs are likely to have disposed of food waste as well as providing valuable meat. The recording of male cattle bone on site may derive from draft animals in addition to a probable dairy herd (Appendix 5). Floral evidence from the flots and pollen samples is likely to contribute significantly to the understanding of early agriculture at Ardbraccan 2.

3.4 Phase 6

Two pairs of parallel, shallow ditches appear to have been excavated to form low, earthen banks, demarcating strips within a common field. These banks are also known as mearings, ribs, roddens, keellogues, or bones (Buchanan 1973, 586) and may date to the medieval or early post-medieval period. These appear to be part of the same system represented at Ardbraccan 3 approximately 120m to the north.

3.5 Phase 7 and 8

The post-medieval field system included a field boundary (F15) removed since 1836 (OS 1st Edition map), another which had been realigned (F302), as well as the extant field boundaries. The numerous furrows or lazy-beds are associated with these and are likely to have been dug for potatoes in the 19th and possibly 20th century.

4 CONCLUSIONS

Ardbraccan 2 (A023/024) was excavated from 8 May – 31 July 2006 by Matt Mossop (ACS) as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council NRDO and the NRA. The Middle Bronze Age burnt mound recorded at Ardbraccan 2 appears to have had more use than the mound at Ardbraccan 3 despite its relative elevation. This points to its use in a relatively wet period.

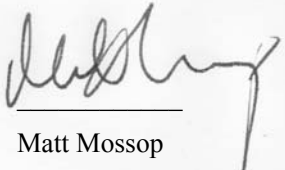
Later activity includes rectangular field systems pre-dating and contemporary with a defended farmstead, possibly of low status. The farmstead had a protracted period of use and appears to reflect considerable unrest in the area in common with virtually all the early medieval enclosures identified and excavated as part of the M3 Clonee to North of Kells Motorway Scheme. The farmstead is likely to have housed a single family who practised mixed farming in the surrounding fields, although the scale of the ditches suggests considerable, organised external help.

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Signed:



Matt Mossop
February 2009

APPENDIX 1 Context Details

Ardbraccan 2: A023/024											
No	Type	Fill of/ Filled with	Strat above	Strat below		Interpretation	Group	Artefacts	Animal bone	Cremated bone	Samples
1-3					Used previously during Topsoil Assessment						
4	Subsoil	N/A	N/A	5	Colour and composition changes across site from a compact, light orange-yellow clay with angular, sub-rounded stones to a dark brown-grey gravel with small sub-angular stones	Subsoil					#1- #4 chemical
5	Topsoil	N/A	4	N/A	Firm, mid brownish-grey silt with occasional sub-angular stones. 0.40m depth	Topsoil		Pottery, glass, metal, flint	#1- #9- bone and teeth	#1- #4- bone	#1 geological
6	Deposit	N/A	5	N/A	Loose material from machine stripping in Area A	Loose		Clay, metal, pottery, glass	#1 bone		#1- #3 geological
7	Deposit	N/A	5	N/A	Loose material from machine stripping in Area B, mid-brownish-grey silt with 10% sub-angular stones	Loose		Metal, flint, iron nails, clay pipe, pottery	#2- fragments	#1- #3- fragments	#1 geological
8	Deposit	N/A	5	N/A	Loose material from machine stripping in Area C	Loose		Metal			
9	Cut	N/A	*	N/A	Upstanding 18/19th century hedge between Area A and Area B running north-south	Post-medieval field boundary					
* Lay over: 30, 37, 39, 43, 67, 96, 121, 137, 147, 301, 307, 308, 309, 313, 341, 353, 355, 372, 375, 377, 384, 413, 421, 425, 427, 501, 503, 507, 510, 512, 516											
10	Cut	N/A	*	76, 343, 397	Medieval field boundary	Medieval field boundary					
* Lay over: 53, 93, 101, 110, 111, 132, 138, 165, 169, 311, 345, 379, 392, 398											

11	Cut	12	4, 33, 162, 399	314, 12	Linear running north-south (18.70m x 1.16m x 0.29m) with a gradual break of slope and sides leading to a flat base. Cut by 27, 301, 312. Same as 314	Field ditch					
12	Fill	11	11	27	Moderately compact, orange-grey, silty clay with black patches from roots and moderate sub-angular stones (0.03m- 0.06m). 18.70m x 1.16m x 0.28m. Same as 315	Single fill of ditch 11					#1 soil
13	Cut	14, 26	91	26	Linear, running east-west (21.30m x 1.60m x 0.50m) with a gradual break of slope (sharp in south) at the top, steep sides descending to a slightly concave base. Possibly continuation of 304.	Field ditch/drain					
14	Fill	13	26	160, 168	Moderately compact grey, silty-clay with occasional sub-angular stones. 21.30m x 1.60m x 0.50m	Alluvial fill of ditch 13		Stone	#1 fragments		#1 geological
15	Cut	16, 17, 76	379, 392, 398	76	Linear, east-west cut (12.07m x 1.80m x 0.96m) with steep sides descending to a concave base. Truncates ditch 18. Part of field boundary 302.	Post-medieval field boundary					
16	Fill	15	17	40, 46, 48, 50, 56, 58, 60, 62, 64, 81, 152, 318, 320, 322, 324, 327, 330, 360, 367, 400, 408, 422	Compact, dark-orange silt with 1% rounded and angular stones. 0.63m depth	Back fill of field boundary 15		Metal, glass, pottery,			#1,#2-organic

17	Fill	15	76	16	Linear deposit of numerous large sub-angular and burnt stones. Occasional mortar lumps adhering to the stones (9.60m x 0.97m x 0.40m)	Deposit of demolition material from earlier structure	S1	Pottery, flint, bricks			#1,#2-organic, #3-geological
18	Cut	19-21,77, 84-89	4, 33, 162, 399	89	Curvilinear cut (27.40m x 2.70m x 0.65m) with moderately steep sides (30°) descending to a rounded, wide base. Truncated by 13, 15, 22, 100	Field boundary ditch					
19	Fill	18	75, 85	100	Compact, mid orange-brown silt with 5% small sub-angular stones. 0.34m depth	Upper fill of ditch 018		Pottery, iron nail	#1-fragments		#1-geological,
20	Fill	18	88	143	Compact, light orange-brown, clayey silt. 0.30m depth	Redeposit at western edge of ditch 18			#1 fragments		
21	Fill	018	84, 141	77, 85	Compact grey clay with 2% stones (0.01m x 0.02m). 0.40m depth	Fill of ditch 18			#1 fragments		
22	Cut	23	23, 25	91	Linear, runs east-west (10.90m x 0.92m x 0.24m) with moderately steep sides (descending at 30° angle) leading to a wide, irregular base. Similar to ditch 13.	Shallow ditch / field boundary					
23	Fill	22	160, 168	22, 24	Compact mid-grey clay, with 2% small sub-angular stones (0.24m) depth	Fill of ditch 22		Metal,			
24	Cut	25	25, 23	91	Linear, runs east-west (24m x 0.80m x 0.28m) with concave sides leading to a wide concave base. Truncates 100.	Post-medieval field boundary					
25	Fill	24	160, 168	22, 24	Compact, mid-grey clay with 2% small sub-angular stones. 0.28m depth	Single fill of field boundary 24					
26	Fill	13	14	13	Compact, mid-grey with orange flecks, clayey silt, with 1% small sub-angular stones. 0.20m depth	Primary fill of ditch 13					#1 soil

27	Cut	28, 166, 167	167	12, 315	Linear, runs east-west (41.50m x 2.40m x 0.68m) with a gradual break of slope with stepped sides on the south, more gradual on north leading to a slightly concave base. Cut by 301. Same as 332	Field boundary ditch					
28	Fill	27	52, 100, 310, 344	166	Moderately compact, light yellow, silty clay with moderate small sub-angular stones. 2.40m width x 0.20m depth	Upper fill of ditch 27			#1 teeth		
29	Deposit	N/A	42	71, 75, 80, 123, 128	Roughly circular spread of loose, dark brown/black charcoal stained, clayey-silt with 50% burnt, sub-angular stones. 7.40m x 6.90m x 0.18m depth. Cut by 42 and enclosure ditch 52/100	Burnt spread		Metal nail			#1 soil
30	Fill	148	5, 9	97	Loose, mid grey, clayey-silt with frequent angular stones. 3.20m x 3.23m x 0.10m depth	Deposit from alluvial action, fill of cut 148					
31	Deposit	94	420	94	Loose, dark charcoal stained silt with 15% sub-rounded stones occasionally heat reddened. 0.08m depth	Fulacht material from cut 94					#1 soil
32	Deposit	72	55, 405	73	Moderately compact, grey clay with occasional snail shells. 0.20m depth. Same as fill 72	Waterborne clay		Clay			#1 organic
33	Deposit	N/A	N/A	*	Moderately compact, stony layer. 14.50m x 8.50m x 0.10m	Stony spread at western edge of Area A					
* Covered by: 53, 93, 101, 110, 111, 132, 138, 165, 169, 311, 345, 379, 392, 398											
34	Fill	354	354	5, 9	Soft dark brown clayey-silt with occasional wooden fragments. 11.00m x 8.60m. Depth unknown. Unexcavated. Same as 355	Fill of dewpond 354		Metal			
35	Cut	36, 37	*	36	Linear runs east-west (43.30m x 0.55m x 0.40m) with vertical, sloping sides descending to a flat, wide base. Cuts 100	Post-medieval field drain					
+ covers: F38, F33 41, 47, 49, 51, 57, 61, 63, 65, 82, 153, 319, 321, 323, 325, 326, 331, 361, 368, 401, 409, 423											

36	Fill	35	35	37	Stony fill consists of moderate large sub-angular stones (0.20-0.30m). 0.40m width x 0.34m depth	Primary fill of drain 35	S1	Pottery			
37	Fill	35	36	5, 9	Loose, mid brown silt with occasional large, sub-angular stones (0.10-0.15m). 0.55m width x 0.40m depth	Upper fill of drain 35		Glass			
38	Cut	39	41, 47, 49, 51, 57, 61, 63, 65, 82, 153, 319, 321, 323, 325, 326, 331, 361, 368, 401, 409, 423	39	Linear runs northeast–southwest (11.80m x 0.40m x 0.25m) with a gradual break of slope top with vertical sides leading to a tapered base.	Post-medieval field drain					
39	Fill	38	38	5, 9	Compact brownish-orange, silty-clay with large rounded stones (0.10m x 0.20m). 11.80m x 0.40m x 0.25m	Fill of modern field drain 38		Glass			
40	Cut	41	303, 16	41	Linear running north-south (20m x 0.52m x 0.24m). Concave sides and base and sides leading to a shallow, wide base.	Furrow					
41	Fill	40	40	354, 146, 35, 38, 312, 356, 300, 352	Loose, mid-brown silt. 0.24m in depth	Fill of furrow 40					

42	Cut	43, 83, 156	29	83	Curvilinear cut (14.90m x 0.57m x 0.27m) with concave sides leading to a flat base. Cuts burnt spread 29 and pit 79	Possible cut of palisade/ slot-trench					
43	Fill	42	156	5, 9	Compact, mid-grey with orange flecks, clayey silt with 1% small sub-angular stones (0.05m x 0.02m). 0.17m depth	Upper fill of cut 42					
44	Cut	45	303, 16	45	Linear running north-south (14m x 0.50m x 0.25m) with a gradual break of slope at the top, concave sides and a gradual break of slope leading to a flat base.	Furrow					
45	Fill	44	44	354, 146, 35, 38, 312, 356, 300, 352	Loose orange-brown, silty-clay with 3% small sub-rounded stones. 0.25m depth	Fill of furrow 44					
46	Cut	47	16, 303	47	Linear running north-south (7.00m x 0.50m x 0.20m) with rounded sides leading to a shallow, rounded base	Furrow					
47	Fill	46	46	354, 146, 35, 38, 312, 356, 300, 352	Loose, mid-brown silt. 0.20m depth	Fill of drain 46					
48	Cut	49	16, 303	49	Linear, northeast-southwest cut (8.60m x 0.30m x 0.09m) with a gradual break of slope at the top leading to a slightly rounded base	Furrow	S3				
49	Fill	48	48	354, 146, 35, 38, 312, 356, 300, 352	Loose, mid orange-brown silt with 2% small sub-angular stones. 0.30m width x 0.09m depth	Fill of furrow 48					

50	Cut	51	16, 303	51	Shallow linear cut, running northeast-southwest (11.90m x 0.40m x 0.08m) with a gradual break of slope descending to rounded base. Truncates 74	Furrow	S3				
51	Fill	50	50	354, 146, 35, 38, 312, 356, 300, 352	Loose, mid orange-brown silt. 0.08m depth	Fill of furrow 50		Glass, metal			
52	Same as 100				Linear, running east-west (11.40m x 5.20m x 1.10m) with an imperceptible break of slope top and bottom, concave sides and a flat, wide base. Cut by 90, 301. Cuts 18. Continuation and same as 100, 310, 344.	Enclosure ditch					
53	Fill	52, 100	54	302, 10	Firm, mid-brown silt with moderate angular and sub-rounded stones (<0.30m). 0.44m depth	Fill of cut 52/100		Metal, glass, pottery	#1 bone		#1-geological
54	Fill	52, 100	405, 414	53	Firm, grey clay with occasional sub-angular, rounded stones (<0.30m). 0.25m depth	Fill of cut 052. Also fill of 100 (S6)			#1-fragments		#1 geological, #2 organic, #3- soil
55	Fill	52, 100	32, 72, 417	411	Firm, mid orange, sandy-clay, on either side of ditch. 0.50m depth.	Redeposited natural of 52/100		Clay pipe	#1-fragments		
56	Cut	57	16,303	57	Linear running north-south (13.90m x 0.47m x 0.12m) with rounded, gently sloping sides (15°) leading to a shallow base	Furrow					
57	Fill	56	56	35, 38, 146, 300, 312, 354	Moderately compact, mid brown, silty-clay. 13.90m x 0.47m x 0.12m	Fill of furrow 56					
58	Cut	59	16,303	59	Linear running north-south (14.53m x 0.84m x 0.08m) gradual break of slope top with concave sides and base	Furrow					

59	Fill	58	58	35, 38, 146, 300, 312, 354	Moderately compact, mid-brown, silty clay with occasional sub-angular stones and frequent roots. 14.53m x 0.84m x 0.39m	Fill of furrow 58		Metal			
60	Cut	61	16, 303	61	Linear running north-south (30m x 0.60m x 0.06m) with a gradual break of slope at the top, gently sloping sides and a gradual break of slope with an uneven base. Cut by 312	Post-medieval furrow					
61	Fill	60	60	35, 38, 146, 300, 312, 354	Loose, mid brown, sandy-silt. 30m x 0.60m x 0.06m	Redeposited topsoil. Fill of cut 60					
62	Cut	63	16, 303	63	Linear running north-south (5.15m x 0.30m x 0.04m) gradual break of slope at the top, concave sides and a gradual break of slope leading to a flat base.	Furrow					
63	Fill	62	62	35, 38, 146, 300, 312, 354	Loose, mid brown, silty-clay with occasional sub-angular stones (0.02m x 0.02m). 5.15m x 0.30m x 0.04m	Fill of furrow 62					
64	Cut	65	16, 313	65	Linear running north-south (7.50m x 0.35m x 0.07m) with a gradual break of slope at the top, concave sides and a gradual break of slope leading to an irregular base. Cut by ditch 312	Furrow					
65	Fill	64	64	35, 38, 146, 300, 312, 354	Loose, mid brown, sandy silt with occasional small stones. 7.50m x 0.33m x 0.07m	Fill of furrow 64					
66	Spread	164	164	29	Compact, yellowish-brown, silty-clay with 25% sub-angular stones. 5.40m x 2.60m x 0.09m	Metalled surface					
67	Fill	98	98	5, 9	Loose, mid grey, clayey-silt. 7.67m x 1.40m x 0.06m	Single fill of cut 98					

68	Cut	69	4	68	Shallow linear, running northeast-southwest (8.00m x 0.40m x 0.10m) with a gradual break of slope top with concaves sides and base	Furrow					
69	Fill	68	68	5	Mid-brown silt with 1% small sub-angular stones. 0.10m depth	Fill of furrow 068		Pottery			
70	Cut	71, 78	4, 33, 162, 399	78	Sub-rectangular cut (1.76m x 0.80m x 0.24m) with a sharp break of slope top and vertical sides leading to an irregular base. Cut by enclosure ditch 052/100	Fulacht trough					
71	Fill	70	78	29	Loose charcoal stained silt with frequent moderate sub-angular and angular burnt stones and frequent charcoal fragments. Depth 0.20m	Upper fill of trough 70					#1 soil #2 geological, #3 chemical
72	Fill	52, 100	73	55, 405	Loose, dark greyish brown clay with flecks of yellowish clay. Depth 0.05m.	Fill of cut 52. Also fill of 100 (S6)			#1- bone	#1- bone	#1 geological, #2 soil
73	Fill	52	124, 130,	72	Loose, dark grey, sandy-silt with occasional large sub-angular stones. 0.65m width x 0.20m depth	Primary fill of cut 52			#1 bone		
74	Cut	75, 161	4, 33, 162, 399	161	Sub-rectangular cut (1.25m x 0.67m x 0.35m) with steep sides leading to a flat base	Pit					
75	Fill	74	161	29	Loose, dark grey/black, burnt material with occasional small, heat shattered sub-angular stones. Depth 0.35m	Fill of 74					#1 soil
76	Fill	15	15	76	Compact, orange-brown, silty-clay. 1.20m width x 0.50m depth	Fill of ditch 15 between stony layer 17					
77	Fill	18	21	19	Compact, orange-yellow clay with occasional angular stones. 1.50m length x 0.15m depth	Fill of field boundary 18					

78	Fill	70	70	71	Moderately compact dark blackish-grey silty-clay with occasional sub-angular stones. 1.64m x 0.78m x 0.04m	Primary fill of trough 70					#1soil
79	Cut	80, 134, 135	4, 33, 162, 399	135	Oval pit (3.05m x 1.30m x 0.44m) with gradual break of slope top and concave sides leading to a flat, wide base. Cut by 42	Probable trough					
80	Fill	79	134	29	Loose, grey/black sandy-silt.(1.52m x 0.86m x 0.20m). Contained coarse medium size grit.	Upper fill of pit 79					#1-chemical, #2,#4-pollen, #3-soil
81	Cut	82	16, 303	82	Linear cut (0.60m width x 0.10m depth) with concave sides descending at 25° angle to a narrow, rounded base. Truncates 100 and 035	Furrow					
82	Fill	81	81	35, 38, 146, 300, 312, 354	Loose, mid-brown silt. 0.10m depth	Fill of furrow 81					
83	Fill	42	42	156	Loose yellow silty-clay with occasional small sub-angular stones. 10.80m x 0.30m x 0.05m	Primary fill of possible palisade 042		Chert			#1 soil
84	Fill	18	87	84	Compact, dark grey clay with frequent small sub-angular stones. 1.30m width x 0.10m depth	Redeposited material of field boundary 18					
85	Fill	18	21	19	Loose, light-grey clay. 0.20m depth	Fill of field boundary 18					
86	Fill	18	143	87	Loose orangey-grey clayey-silt with occasional small sub-angular stones. 0.35m depth	Redeposited natural material, fill of field boundary 18					
87	Fill	18	86	84	Loose, mid orange-grey, clayey-silt with very occasional small sub-angular stones. 0.40m depth	Redeposited fill of cut 18					#1 soil

88	Fill	18	89	88	Loose, mid-grey-brown, silty clay with very occasional small sub-angular stones and occasional large stones. 0.40m depth	Redeposited fill on western edge of field boundary 18					
89	Fill	18	18	88	Loose, dark grey, silty-clay with 15% sub-angular stones. 0.50m	Redeposited fill on eastern edge of field boundary 18					
90	Cut	91, 133	4, 33, 162, 399	133	Linear, running east-west (12.07m x 0.74m x 0.19m) with a sharp break of slope at the top and base (gradual in west). Vertical sides leading to a flat base. Cut by 15, 14, 100. Same as 337.	Possible field boundary					
91	Fill	90	133	13, 22, 24, 304	Moderately compact, grey, silty-clay with occasional small sub-angular stones. 0.33m width x 0.10m depth	Upper fill of ditch 90					
92	Fill	52, 100	100, 52, 310, 344	124	Moderately compact, mid grey/black, silty- clay with frequent sub-angular stones. 2.47m width x 0.80m depth	Fill of ditch 52					
93	Fill	52	131	10, 15, 302	Moderately compact, orange silty-clay. 0.54m width x 0.22m depth	Fill of ditch 52					
94	Cut	31	4, 33, 166, 399	31	Irregular cut (heart shape) (1.40m x 0.95m x 0.08m) with a very gradual break of slope top and concave sides leading to a flat base	Pit					
95	Cut	96, 99	4	99	Sub-circular cut (0.85m x 0.92m x 0.14m) with a gradual break of slope top with concave sides and base	Small pit / possible hearth					
96	Fill	95	99	5	Slightly compact, mid grey clay with moderate charcoal fragments and occasional small sub-rounded stones. 0.09m depth	Alluvial fill of pit 95					
97	Deposit	148	148	030	Compact deposit, running north-south, consisting of frequent small sub-angular stones. 8.60m length x 4.40m width. Cut by furrow 50	Metalled surface					

98	Cut	67	4	67	Shallow curvilinear cut (7.67m x 1.40m x 0.06m), with shallow concave sides leading to an irregular base	Gully					
99	Fill	95	95	96	Mid orange-brown, silty-clay with frequent small charcoal fragments and occasional small sub-rounded stones. 0.07m depth	Primary fill of pit 95					#1 soil
100	Cut	53-55, 72, 92, 93, 101-103, 105, 108, 109-111, 119, 130-132, 163	19, 145, 313, 399, 028, 333	376, 340, 426, 118, 119, 117, 92, 163, 107, 130, 350, 110	Oval ditch, enclosing an area of approx. 41m internal diameter, 3.00-3.30m in width and max. 1.05m depth. Sharp break of slope top with steep vertical sides, occasionally stepped in places, leading to a sharp break of slope bottom and generally flat to concave base. Two possible entrances into the enclosure existed at the extreme northeast and southeast. Cut by 35, 376. Cuts 18. Same as 52, 310, 344	Enclosure ditch					
101	Fill	100	102	302	Loose, mid brown, silty-clay with moderate sub-angular stones and frequent tree roots. 2.20m width x 0.30m depth.	Upper fill of ditch 100		Pottery, clay, glass, metal	#1- bone, #2- tooth		
102	Fill	100	124, 130, 103, 109, 106	101	Moderately compact, light grey, silty-clay with small angular stones. 2.20m width x 0.16m depth	Waterborne clay fill of ditch 100		Metal, pottery	#1- #8- fragments		#1-#3- organic, #4- soil
103	Fill	100	104	103	Compacted, greyish brown, silty-clay with moderate sub-angular stones and occasional timber fragments. 1.00m width x 0.50m depth	Organic material within ditch 100			#1- bone		#1 soil
104	Fill	100	124, 105	103	Moderately compact, orange-brown, silty- clay with occasional small stones. 0.44m width x 0.19m depth	Redeposited fill of ditch 100					

105	Fill	100	124, 130	102, 104, 109, 108	Loose, dark grey clay with orange flecks and 1% large sub-angular stones. 2.00m width x 0.20m depth	Fill of ditch 100			#1- #3,#5- bone, #4- teeth		#1 geological
106	Fill	100	108	102	Loose, mid greyish-yellow clay with moderate small sub-angular stones. 2.20m width x 0.30m depth	Redeposited fill of ditch 100					
107	Fill	100	100	124	Loose, dark-brown grey, clayey-silt with small sub-angular stones.	Alluvial fill of ditch 100					
108	Fill	100	105	106	Compact, mid-orange silty-clay. 0.80m width x 0.25m depth	Redeposit on eastern edge of ditch 100					
109	Fill	100	124, 105	102	Loose, dark brownish grey, silty-clay with moderate sub-angular stones. 0.50m width x 0.20m depth	Redeposit on western edge of ditch 100					
110	Fill	100	100	302	Compact, orange silty-clay with 20% small sub-angular stones. 0.30m length x 0.07m depth	Redeposited fill of ditch 100					
111	Fill	100	112	302	Compact, mid-grey clay with orange flecks and occasional small sub-angular stones. 3.00m width x 0.30m depth	Upper fill of ditch 100					
112	Fill	100	113	111	Compact mid-grey, clayey silt with very occasional small sub-angular stones. 2.20m width x 0.50m depth	Fill of ditch 100			#1- fragments		#1- soil
113	Fill	100	114	112	Firm dark-brown clay. 0.60m width x 0.05m depth	Organic fill of ditch 100					#1- soil
114	Fill	100	124, 130	113	Dark greyish brown, silty-clay with occasional small sub-angular stones.	Mixed lower fill of ditch 100					#1- soil
115	Fill	100	116	124	Firm orange-grey, silty-clay with occasional small sub-angular stones. 1.10m width x 0.20m depth	Redeposit on western edge of ditch 100					

116	Fill	100	117	115	Loose, dark brownish grey silt with moderate sub-angular stones . 1.00m width x 0.10m depth	Redeposit on western edge of ditch 100					
117	Fill	100	100	116	Loose, mid orange-grey silt with small sub-angular stones. 0.40m width x 0.10m depth	Redeposit on eastern edge of ditch 100					
118	Fill	100	100	112	Loose, orange-grey, silty-clay with occasional small sub-angular stones. 1.40m width x 0.40m depth	Alluvial deposit within ditch 100					
119	Fill	100	100	124	Friable, light orange silt with moderate small angular stones. 1.00m width x 0.40m depth	Deposit on eastern edge of ditch 100					
120	Cut	121, 122	4	122	Oval cut (0.85m x 0.78m x 0.28m) with a gradual break of slope at the top, steep sides and a gradual break of slope at the bottom leading to a rounded base	Pit					
121	Fill	120	122	5	Compact, grey clay with occasional charcoal flecks and 15% small sub-rounded stones, occasionally burnt. 0.65m diameter x 0.14m depth	Secondary deposit within pit 120					
122	Fill	120	120	121	Compact, orange-grey clay with occasional small sub-rounded stones and charcoal flecks. 0.40m diameter x 0.14m depth	Primary fill of pit 120					
123	Deposit	29	4	29	Moderately compact, black charcoal-stained silt with moderate sub-angular stones. 0.62m width x 0.46m depth	Slump from deposit 29					
124	Cut	72, 418	119, 115, 92, 163, 107	114, 73, 418, 131, 102, 105	Re-cut of 052/100. 1.00m width x 0.80m deep. Vertical sides with a sharp break of slope bottom leading to a flat base. 124 cuts 52/100	Re-cut of enclosure ditch 52/100					

125	Cut	126	4	126	Sub-rectangular (1.20m x 2.94m x 0.18m) with a gradual break of slope top, gradually sloping sides and an imperceptible break of slope leading to a slightly rounded base. Truncated by test trench	Shallow pit in centre of burnt mound 29					
126	Fill	125	125	29	Moderately compact, dark, charcoal stained silty clay with frequent burnt, sub-angular stones and frequent charcoal fragments. 1.20m x 2.94m x 0.18m	Burnt deposit within pit 125					#1- soil #2- pollen, #3- chemical, #4- geological, #5- chemical
127	Cut	128, 129	4	129	Oval cut (0.85m diameter x 0.17m depth) with a gradual break of slope at the top, steep sides and a gradual break of slope bottom leading to a sub-rounded base	Shallow oval pit					
128	Fill	127	129	29	Loose, dark-brown silt with frequent burnt angular small stones and charcoal fragments. 0.85m x 0.14m depth	Upper fill of pit 127					#1- soil #2- chemical, #3- pollen
129	Fill	127	127	128	Moderately compact, light grey clay with occasional sub-rounded small stones. 0.70m x 0.03m depth	Primary fill of pit 127					#1- soil #2- chemical, #3- pollen
130	Fill	52	100	114, 073, 418, 131, 102, 105	Moderately compact, dark grey silty-clay, with yellow flecks and moderate sub-angular stones. 1.97m width x 0.32m depth	Fill of enclosure ditch 52					
131	Fill	52	124, 130	139, 93	Moderately compact, greyish-orange, silty-clay with moderate sub-angular stones. 3.17m width x 0.66m depth. Same as 139	Fill of enclosure ditch 052. Same as 139					

132	Fill	52	139	302	Moderately compact, grey, silty-clay with occasional small sub-angular stones. 3.01m width x 0.29m depth	Fill of cut 52, redeposit fill of cut 18					
133	Fill	90	90	91	Moderately compact, mid orange-grey, silt- clay with small occasional angular stones. 0.74m width x 0.19 depth	Primary fill of ditch 90					#1- soil
134	Fill	79	135	80	Loose, mid dark-grey, silty-clay with charcoal fragments and 20% burnt small sub-angular stones. 3.05m x 1.30m x 0.44m	Alluvial fill of pit 79					#1- pollen, #2- chemical, #3- soil
135	Fill	79	79	134	Loose, mid to light yellowish-orange clay with occasional charcoal flecks and small sub-angular stones. 3.05m x 1.30m x 0.44m	Primary fill of pit 79					#1- pollen, #2- chemical, #3- soil
136	Cut	137, 140	4	140	Sub-oval cut (diameter 1.27m x 0.31m depth) with concaves sides descending to a narrow concave base	Pit, possibly for storage					
137	Fill	136	140	5	Loose, mid grey-brown, silty-clay. Depth 0.11m	Upper fill of pit 136					#1- soil
138	Fill	018	139	302	Moderately compact, dark grey, silty-clay with moderate, small sub-angular stones. 1.33m width x 0.26m depth	Fill within southern part of cut 52					
139	Fill	52	131	132, 138	Moderately compact, orange-grey, silty clay with moderate to small sub-angular stones. 2.50m width x 0.57m depth	Fill within southern part of cut 52					
140	Fill	136	136	137	Loose, mid-grey clay with orange flecks and occasional small angular stones. Depth 0.20m	Primary fill of pit 136					#1- soil

141	Fill	18	142	21	Moderately compact, greyish brown, silty-clay with occasional small to moderate angular stones. 1.57m width x 0.32m depth	Upper fill of field boundary 18					
142	Fill	18	143	141	Moderately compact, mid grey silt-clay, with occasional small angular stones. 0.88m width x 0.18m depth	Mid fill of field boundary 18					
143	Fill	18	20	142, 86	Moderately compact, dark-grey, silty clay with moderate sub-angular stones. 1.08m width x 0.60m depth	Primary fill of field boundary 18					
144	Cut	145, 149, 157	151	157	Linear running north-south (30.05m x 0.90m x 0.48m) with a gradual break of slope top, concave sides leading to a rounded base. Cut by 052, 412. Cuts 150	Ditch					
145	Fill	144	149	100	Compact orange-grey, sandy-clay with moderate sub-angular stones. Depth 0.48m	Fill of ditch 144					#1- soil
146	Cut	147	4	147	Rectangular cut (3.80m x 0.77m x 0.20m) with a sharp break of slope at the top, vertical sides and a sharp break of slope bottom leading to a flat base	Burnt pit					
147	Fill	146	146	5	Loose, dark greyish brown sand with ash lenses and moderate angular stones. 3.80m x 0.77m x 0.20m	Single fill of pit 146					
148	Cut	30, 97	4	97	Sub-rectangular cut with rounded corners, (3.90m x 3.24m x 0.22m) a gradual break of slope top, gently sloping sides and an imperceptible break of slope leading to flat base	Possibly part of metalling or pit					
149	Fill	144	157	145	Moderately compact, grey silty-clay. 0.50m width x 0.10m depth	Primary fill of cut 144					

150	Cut	151	4	151	Curvilinear cut (4.30m x 0.74m x 0.30m) with a gradual break of slope at the top, gently sloping sides and a gradual break of slope bottom leading to a concave base. Cut by 144, 052	Curvilinear ditch					
151	Fill	150	150	144	Moderately compact, orange-grey, silty-clay with occasional small angular stones. 0.74m width x 0.30m depth	Fill of curvilinear ditch 150					
152	Cut	153	303, 016	153	Linear, running northeast-southwest (5.75m x 0.40m x 0.10m) with a very gradual break of slope top, concave sides leading to a flat base	Furrow					
153	Fill	152	152	354, 146, 35, 38, 312, 300	Loose, mid-brown silt. 0.40m width x 0.10m depth	Single fill of furrow 152					
154	Cut	155	4	155	Oval cut (0.84m x 0.38m x 0.07m), with a gradual break of slope at the top, concave sides and an imperceptible break of slope bottom leading to a flat base	Pit					
155	Fill	154	154	97	Moderately compact, dark-grey, silty-clay with burnt, moderate sub-angular stones. 0.84m x 0.38m x 0.07m	Fill of pit 154					
156	Fill	42	83	43	Loose, dark charcoal stained clay with decomposed burnt material and 10% small sub-angular stones. 0.30m width x 0.10m depth	Secondary fill of cut 42					
157	Fill	144	144	149	Loose, dark-grey soil with orange flecks and 1% sub-angular stones (0.02m x 0.02m). 0.70m x 0.20m depth	Primary fill of cut 144					
158, 159	NON-ARCHAEOLOGICAL										

160	Cut	165	305, 14, 23, 25	165	Linear, running NW-SE (9.20m x 0.40m x 0.35m) with a sharp break of slope at the top, vertical sides and a sharp break of slope bottom leading to a flat base.	Post-medieval field drain					
161	Fill	74	74	75	Moderately compact, grey, silty-clay with occasional small angular stones. 0.36m width x 0.10m depth	Fill on western edge of trough 74					
162	Same as 4 (Natural)				Moderately compact, yellow-clay with occasional stones. 0.05m width x 0.30m depth	Over-cut on western edge of pit 79					
163	Fill	100	100	124	Moderately compact, orange, silty clay with occasional very small angular stones. 0.28m width x 0.56m depth	Redeposit on northern edge of 52/100					
164	Cut	66	4	66	Sub-oval cut (5.40m x 2.60m x 0.09m), with a gradual break of slope top with gently sloping sides leading to a flat to shallow sub-rounded base	Cut for metalling surface					
165	Fill	160	160	302	Moderately compact, grey-clay with frequent large to medium angular stones. 9.20m x 0.40m x 0.35m	Stony deposit within drain 160					
166	Fill	27	167	28	Moderately compact, orange grey, silty-clay with moderate stones. 1.45m width x 0.36m depth	Mid fill of medieval ditch 27			#1-fragments		
167	Fill	27	27	166	Moderately compact, dark-brown, silty clay with frequent moderate sub-angular stones. 0.80m width x 0.50m depth	Redeposited fill in southern edge of ditch 27					
168	Cut	169	514	169	Linear, running NW-SE (3.00m x 0.38m x 0.38m) a sharp break of slope at the top with vertical sides leading to a flat base.	Post medieval field drain					

169	Fill	168	168	302	Moderately compact, mid grey clay with frequent small to large sub-angular stones. 3.00m x 0.38m x 0.38m	Stony fill of drain 168					
170-299	Not assigned										
300	Cut	301	4	301	Linear running north-south (20.8m x 2.50m x 0.90m) with a gradual break of slope at the top, straight sides and an imperceptible break of slope leading to a U-shaped base.	19th-20th century modern field ditch					
301	Fill	300	300	5	Soft, dark brown, organic-silt with frequent root fragments. 2.08m x 1.30m x 0.40m	Modern silting of ditch 300		Pottery	#1-fragments		
302	Cut	303, 343, 357	169, 165	343, 397	Linear cut, running north-south (48m x 1.85m x 0.98m) with corners beyond the limit of site, a gradual break of slope at the top, steep to concave sides and a sharp break of slope bottom leading to a flat base. Same as 015. Truncates 018, 100, 304, 332, 365	Post medieval field boundary					
303	Fill	302	357, 397	5	Loose, dark-brown, clayey-silt with occasional small sub-angular stones. 1.50m wide x 0.40m depth.	Upper fill of ditch 302		Pottery, metal,	#1-fragments		#1-organic
304	Cut	305, 363, 364	91	364	Linear, running east-west (34m x 1.50m x 0.33m) with a sharp break of slope at the top, concave sides and a gradual break of slope bottom leading to a flat base. Cut by 302 and 318. Cuts enclosure 052/100 and 374. Possible continuation of 013	Shallow ditch/drain		Metal			
305	Fill	304	364	160	Firm, mid-greyish-brown, clayey silt with frequent small sub-angular stones. 1.60m width x 0.20m depth	Backfill of ditch 304		Stone			
306	Fill	312	312	313	Loose, light brownish-grey, silty-clay with occasional moderate sub-angular stones. 0.35m x 0.20m x 0.05m	Primary fill of ditch 312		Metal			

307	Deposit	332	317	005	Stone deposit consisting of grey to orange coloured group of stones ranging from (0.05 to 0.50m). Spread 1.20m north-south x 1.00m east-west on surface of ditch 332	Stony deposit of 332					
308	NON- ARCHAEOLOGICAL				Stiff mid-greyish-brown silt with moderate sub-angular stones. 0.37m width x 0.12m depth	Fill of tree root 328					#1- soil
309	Deposit	332	385	5	Shallow deposit of stiff, light-grey silt with occasional burnt stones and frequent charcoal. 0.49m width x 0.06m depth.	Burnt circular deposit at the edge of 332			#1- fragments		
310	Same as 52, 100, 344				Same as 52, 100, 344						
311	Same as 101				Same as 101						
312	Cut	306, 313	4	306	Slightly curvilinear cut running north (7.00m x 1.10m x 0.40m) with a sharp break of slope at the top, steep sides and a sharp break of slope bottom leading to a flat base. Truncated by 300, 314/011 and furrows 060, 064, 400. Possibly a continuation of 337	Narrow ditch					
313	Fill	312	306	100	Loose, greyish-orange, silty-clay with occasional small angular stones, heavily root disturbed. 7.00m x 1.00m x 0.35m	Upper fill of drain 312		Slag			#1- soil
314	Same as 11					Same as 11					
315	Same as 12					Same as 12					
316	Cut	317	352	317	Linear, running north-south (7.60m x 0.91m x 0.19m) with a gradual break of slope at the top, vertical sides and a sharp break of slope bottom leading to a flat base. Cuts ditch 332, and is likely to be a continuation of 338.	Shallow ditch					
317	Fill	316	316	307	Moderately compact, mid brownish grey, silty-clay with frequent large sub-angular/sub-rounded stones and charcoal lumps. 7.62m x 0.91m x 0.19m	Backfill of 316			#1- fragments		#1,#2- soil

318	Cut	319	303, 16	319	Linear, running east-west (4.98m x 0.57m x 0.09m) with a sharp break of slope at the top, steep sides and a gradual break of slope bottom leading to a sharp base	Post-medieval furrow					
319	Fill	318	318	354, 146, 35, 38, 312, 300	Compact, light-brown silt. 4.98m x 0.57m x 0.09m	Fill of furrow 318					
320	Cut	321	303, 16	321	Linear, running ne-sw (30m x 0.62m x 0.10m) with a gradual break of slope at the top, concave sides and a gradual break of slope bottom leading to a flat base. Cuts ditches 332, 338	Post-medieval furrow					
321	Fill	320	320	354, 146, 35, 38, 312, 300	Compact, dark-brown silt. 0.62m width x 0.10m depth	Single fill of furrow 320		Glass	#1-fragments		
322	Cut	323	303, 16	323	Linear running east-west (2.50m x 0.48m x 0.14m) with a gradual break of slope at the top, steep sides and a gradual break of slope bottom leading to a concave base	Post-medieval furrow					
323	Fill	322	322	354, 146, 35, 38, 312, 300	Loose, brown to light brown silt with occasional sub-rounded stones on the bottom. 2.50m x 0.48m x 0.14m	Single fill of furrow 322					
324	Cut	325	303, 16	325	Linear, running east-west (16.64m x 0.70m width x 0.10m depth) with a gradual break of slope top and bottom with a concave base. Truncates 337	Post-medieval furrow					
325	Fill	324	324	354, 146, 35, 38, 312, 300	Compact, light-brown clay. Depth 0.10m. Similar to 331, 326	Single fill of furrow 324					
326	Fill	327	327	354, 146, 35, 38, 312,	Compact, light-brown clay. 5.00m x 0.44m x 0.08m	Single fill of furrow 327					

				300							
327	Cut	326	303, 16	326	Linear, running east-west (5.00m x 0.44m x 0.08m) with a gradual break of slope and steep sides leading to a flat base. Truncates 337	Post-medieval furrow					
328, 329	NON- ARCHAEOLOGICAL										
330	Cut	331	303, 16	331	Linear east-west cut (5.06m x 0.43m x 0.06m) with a gradual break of slope at the top and an imperceptible break of slope bottom leading to a flat base.	Post-medieval furrow					
331	Fill	330	330	354, 146, 35, 38, 312, 300	Compact, light-brown-grey clay. 5.06m x 0.43m x 0.06m	Fill of furrow 330					
332	Cut	307, 333, 382	365	382	Linear, running east-west (2.60m width x 0.70m depth) with a sharp break of slope top with concave sides. Sharp break of slope bottom leading to a flat base. Cut by 316, ditch 100 and 302. Cuts 402. Continuation of ditch 27	Field boundary - predates enclosure ditch 100					
333	Fill	332	382	100	Loose, light orange-grey, silty-clay with occasional charcoal flecks. 2.00m width x 0.44m depth	Upper fill of ditch 332			#1- fragments		#1- organic
334	Fill	338	389, 396	392, 387	Compact, dark-orange-grey clay with lenses of yellow clay. 5% angular and rounded stones with occasional charcoal flecks. 1.80m width x 0.25m depth. Same as 387, 392	Upper fill of ditch 338		Metal	#1,#2- fragments	#1,#2- fragments	#1-#2- soil
335	Fill	380	381	379	Loose, charcoal stained silty-sand with frequent charcoal inclusions. 0.70m x 0.40m x 0.07m	Upper fill of hearth 380			#1- fragments	#1,#2- bone	#1- soil #2-#3 organic

336	Fill	337	337	373	Compact, greyish-orange silty-clay with frequent charcoal and occasional burnt stones. 19.50m x 1.14m x 0.40m.	Fill of ditch 337			#1-fragments		#1-soil #2- pollen
337	Cut	336, 373, 393	4	336	Linear, running northwest–southeast (19.50m x 1.14m x 0.40m) with a gradual break of slope top with vertical sides leading to a flat base. Truncated by 325, 326, 331, 334, 387, 393, 399. Cuts enclosure 100. Possibly a continuation of 312	Possible field boundary					
338	Cut	334, 387- 392, 396, 398	403, 407	389, 391	Linear, running northeast–southwest with rounded terminals (14.80m x 2.08m x 0.63m). Sharp break of slope top with concave sides leading to concave base. Truncated by 320. Cuts 337, 406. Possibly a continuation of 316.	Linear ditch forming an internal division of enclosure 100					
339	Same as deposit 387										
340	Cut	341	100	341	Curvilinear, running north-south (3.80m x 0.37m x 0.13m) with a sharp break of slope at the top, concave sides and an imperceptible break of slope leading to a concave base.	Slot-trench					
341	Fill	340	340	005	Compact, light orange-grey, silty-clay with moderate charcoal flecks and occasional decayed angular stones ($\leq 0.10\text{m}^3$). 3.80m x 0.37m x 0.13m	Waterborne fill of 340			#1-fragments	#1-bone	#1- soil
342	Same as topsoil 5				Soft, grey-brown, clayey-silt with occasional small sub-angular stones. 8.00m x 4.50m x 0.13m	Modern waterlogged deposit from field ditch		Pottery	#1-fragments-tooth		
343	Fill	302	302	357	Loose, light- grey, silty-clay with occasional small sub-angular stones. 15.00m x 1.10m x 0.50m. Same as 076	Primary fill of ditch 302		Pottery, metal	#1-fragments		

344	Same as 100				Same as 052, 100, 310. This cut had a possible entrance way/bridge (3.50m width) consisting of a deposit of large angular stones.	Enclosure ditch			#1- fragments		
345	Fill	344	346	302	Loose, mid orange-grey, clayey-silt with occasional small angular stones and charcoal flecks. 2.76m width x 0.20m depth. Same as 301, 311	Upper fill of enclosure ditch 344		Glass, pottery, metal	#1- fragments		
346	Fill	344	347	345	Firm, mid orange-brown, silty-clay with 2-5% sub-rounded and sub-angular stones and occasional charcoal flecks. 2.76m width x 0.25m depth	Mid fill of ditch 344			#1- teeth, #- bone		
347	Fill	344	362	410	Firm and friable, mid grey, silty-clay with occasional moderate sub-angular stones. 2.00m width x 0.25m depth.	Mid fill of ditch 344		Pottery	#1- fragments	#1- bone	#1- shell, #2- soil
348	Fill	344	410	347	Firm, soft, mid-grey clay with moderate crushed shell fragments and frequent sub-angular and sub-rounded stones. 3.50m width x 0.40m depth	Stony fill of ditch 344 possible bridge crossing			#1- fragments		
349	Deposit	344	350	362	Loose, yellowish orange, clayey-silt. 0.70m width x 0.30m depth	Redeposit natural on s edge of 344					
350	Fill	124	100	349	Loose, brown-grey silt with occasional very small stones/pebbles. 0.60m width x 0.15m depth	Primary fill of ditch 344 (partially submerged)			#1- fragments		#1- soil #2- pollen
351	Cut	352	366	352	Oblong, running east-west (1.80m x 0.50m x 0.15m) with a gradual break of slope at the top, gently sloping sides and a gradual break of slope bottom leading to an uneven base. Cut by 316. Cuts hearth 365	Possible pit					
352	Fill	351	351	316.	Loose, mid grey, clayey-silt with >1% small sub-angular stones. 1.80m x 0.50m x 0.15m	Fill of possible pit 351					#1- soil

353	Deposit	N/A	*	5	Moderately compact, brown-orange, clayey- silt with occasional small angular stones. 0.34m depth	Deposit across site, in Area B, possible band of natural redeposit					
* Covers: 41, 47, 49, 51, 57, 59, 61, 63, 65, 82, 153, 319, 321, 323, 325, 326, 331, 361, 368, 423, 401, 409											
354	Cut	355	4	355	Roughly circular (8.60m x 11.00m). Depth unknown. Gradual break of slope at the top with slightly concave sides. Natural dewpond.	Cut of dewpond					
355	Fill	354	354	005	Soft, dark-brown, silty-clay (8.60m x 11.00m). Depth unknown	Fill of dewpond 354 (unexcavated)		Pottery			
356	Deposit	N/A	*	005	Compact, mid orange-grey clay with occasional charcoal and very occasional angular stones. 0.14m depth	Natural waterborne deposit					
* Covers: 41, 47, 49, 51, 57, 59, 61, 63, 65, 82, 153, 319, 321, 323, 325, 326, 331, 361, 368, 423, 401, 409											
357	Deposit	302	343	303	Light-grey layer of moderate to large sub-angular stones (0.20m x 0.25m). 15m x 0.75m x 0.50m	Fill of post medieval field boundary 302		Metal			#1- soil
358, 359	NON- ARCHAEOLOGICAL										
360	Cut	361	303, 16	361	Furrow	Furrow					
361	Fill	360	360	354, 146, 35, 38, 312, 300	Firm, mid brownish-grey, clayey-silt	Fill of furrow 360					
362	Cut	52, 100, 344	349	347	Linear re-cut of enclosure ditch 100 (20m x 1.70m x 0.75m) with a gradual break of slope at the top, straight sides and a gradual break of slope leading to a flat base	Re-cut of enclosure ditch 100/344					
363	Fill	304	304	364	Friable, mixed white and brown silt with frequent angular stones (0.95m diameter, 0.17 depth)	Fill of shallow ditch/ drain 304 visible on south side					#1,#2- soil

364	Fill	304	363	305	Firm, mid brownish-grey, clayey-silt with frequent angular, sub-rounded and sub-angular stones. 1.00m diameter x 0.12m depth	Primary fill of ditch 304		Metal			#1- soil #2- pollen
365	Cut	366	004	366	Sub-circular (0.38m x 0.47m x 0.06m) Gradual break of slope top with gently sloping sides leading to a flat base. Oxidised natural on the nw side	Hearth					#1- soil
366	Fill	365	365	351	Loose, mid reddish-black silt with frequent charcoal flecks. 0.38m x 0.47m x 0.06m. Cut by 316	In situ burning					#1- soil
367	Cut	368	303, 16	368	Linear, running north-south (0.32m width x 0.06m depth) with a gradual break of slope, gently sloping sides leading to a flat base	Furrow running parallel to 321 and 323					
368	Fill	367	367	354, 146, 35, 38, 312, 300	Compact, mid-brown silt. 2.54m x 0.32m x 0.06m	Single fill of furrow 367					
369	Cut	370	4	370	Linear, northeast-southwest cut (1.92m x 0.66m x 0.10m). Sharp break of slope top (gradual in north) with concave sides leading to a flat base. Truncated by 302, 371.	Shallow pit					
370	Fill	369	369	371	Firm, light-grey clay with 1% angular stones and 5% charcoal flecks. 1.92m diameter x 0.10m depth	Single fill of 369			#1- fragments		#1- soil
371	Cut	372	370	372	Linear running ne-sw with rounded terminal (2.69m x 0.26m x 0.12m). Sharp break of slope top with concave sides leading to a flat base. Truncated by 406. Truncates 369.	Possible drainage ditch					

372	Fill	371	371	5	Firm, mid-grey clay with occasional small sub-angular stones. 0.26m diameter x 0.12m depth	Single fill of ditch 371					
373	Fill	337	336	393	Moderately compact, charcoal stained, orange silt with frequent charcoal flecks. 0.40m width x 0.05m depth	Thin charcoal fill of cut 337					#1- soil/ charcoal
374	Cut	375, 415	4	415	Linear running northwest-southeast (40m x 2.50m x 0.94m) Sharp break of slope top, almost vertical sides with a gradual break of slope bottom leading to a tapered blunt point base. Truncated by 015, 304.	Field boundary ditch					
375	Fill	374	415	5	Loose, brownish-orange, silty-clay with a yellow lens and 8% angular and rounded stones ($\leq 0.20\text{m}^3$). 40m x 2.50m x 0.64m	Upper fill of boundary 374			#1- fragments		
376	Cut	377	100	377	Linear running northeast-southwest (1.96m x 0.48m x 0.25m) with a sharp break of slope top, vertical sides, sharp break of slope bottom leading to a flat base.	Drain					
377	Fill	376	376	5	Compact, light orange-grey, silty-clay with occasional sub-angular and sub-rounded stones ($\leq 0.24\text{m}$) and charcoal flecks. 1.90m x 0.46m x 0.23m	Single fill of drain 376					#1- soil
378	Deposit	380	395	380	Loosely compacted, light-grey, silty-clay. 2.20m x 0.52m x 0.06m. Cut by possible hearth 380	Waterborne deposit					
379	Deposit	380	335	15	Loosely compacted, light-grey, silty-clay. 2.20m east-west x 0.52m north-south x 0.06m	Waterborne deposit, similar to 378, sealing hearth 380				#1- fragment	

380	Cut	335, 381	378	381	Sub-oval (0.70m x 0.40m x 0.09m) with a gentle break of slope at the top and steep sides leading to a rounded base. Cut into deposit 378. Cut by ditch 302	Possible hearth	S1				
381	Fill	380	380	335	Loose, pinkish-red, silty clay. 0.70m x 0.40m x 0.05m	Oxidised base of hearth 380					#1- soil
382	Fill	332	332	333	Compact, dark grey, silty-clay with occasional bones. 2.06m width x 0.13m depth	Primary fill of ditch 332			#1- fragments	#1- bone	#1- geological, #2- soil
383	Cut	384	4	384	Circular cut (0.35m diameter x 0.21m depth) with a sharp break of slope at the top and bottom leading to tapered rounded base	Possible posthole	S1				
384	Fill	383	4	384	Stiff, dark-grey silt with moderate charcoal flecks. 0.35m diameter x 0.21m depth	Fill of possible posthole			#1- teeth		#1- soil
385	Fill	309	329	309	Firm, light-grey clay with occasional charcoal. 0.40m width x 0.20m depth. Same as 333	Fill of ditch 332					
386	Same as 394				Hearth pit that cut into this grey layer	Hearth pit					
387	Deposit	338	334	398	Compact, light orange-grey clay with 3% angular and rounded stones. 2.00m width x 0.24m depth. Same as 392, 334	Upper fill of ditch 338		Slag,	#1- fragments	#1, #2, #3- bone	
388	Same as 334				Loose, dark-grey, silty-clay with frequent charcoal flecks. 2.00m width x 0.25m depth. Same as 334	Fill of ditch 338			#1- fragments	#1- bone	#1- soil
389	Fill	338	338	334	Compact, mid grey clay with lenses of reddish/orange oxidised clay and occasional angular, burnt stones. 1.16m width x 0.18m depth	Fill of ditch 338			#1- fragments	#1- fragments	

390	Deposit	338	391	396	Compact, charcoal stained, silty-clay with 1% angular stones and frequent charcoal flecks. 1.20m x 1.00m x 0.30m	Fill of ditch 338			#1- fragments	#1, #2- fragments	#1, #2- soil
391	Fill	338	338	390	Loose, light reddish-orange, silty-clay with frequent animal bones. 0.60m width x 0.10m depth	Oxidised primary fill of cut 338			#1- fragments	#1, #2- bone	#1, #2- soil
392	Deposit	338	334	15	Loose, grey clay (2.00m width x 0.24m depth). 1.00m disturbed by machine on south end of 338. Same as 387, 334. Same as 387, 334	Upper fill of ditch 338		Stone	#1- fragments	#1, #2- bone	
393	Deposit	N/A	373	399	Compact, light orange-grey, silty-clay with 3% small angular, sub-angular and sub-rounded stones.(5.50m x 5.00m x 0.20m). Cut by posthole 383	Possibly part of waterborne deposit					
394	Cut	395	4	395	Keyhole-shaped (2.10m x 0.48m x 0.21m) with a sharp break of slope top, straight sides and a gradual break of slope leading to a flat base. Cut by 302, sealed by 379	Cut of possible corn-drying kiln					
395	Fill	394	394	378	Firm, mid orange-grey silt with moderate sub-angular, burnt stones and frequent charcoal flecks and fragments. 2.10m width x 0.21m depth	Single fill of hearth 394			#1- fragments		#1- soil
396	Fill	338	390	334	Loose, mid grey silty-clay with frequent charcoal flecks. 0.60m width x 0.20m depth	Fill of ditch 338			#1- fragments	#1- bone, tooth	#1- soil
397	Fill	302	302	303	Loose, dark blackish-brown, odorous, silty-clay. 2.50m width x 0.27m depth	Waterlogged primary fill of ditch 302					
398	Deposit	338	387	015	Firm, brownish-orange silt with very occasional sub-angular stones. 1.50m width x 0.38m depth	Upper redeposit of ditch 338, (slot 2)					

399	Deposit	N/A	393	100	Brittle, light grey with orange mottling clay with 2% sub-angular and sub-rounded stones ($\leq 0.07\text{m}$). 8.60m x 4.00m x 0.18m	Waterborne natural deposit		Stone			
400	Cut	401	303, 16	401	Linear, running north-south (30m x 0.30m x 0.05m) with a gentle break of slope at the top and a slight break of slope bottom leading to an uneven base	Post-medieval furrow					
401	Fill	400	400	354, 146, 35, 38, 312, 300	Loose, mid-brown, sandy silt (30m x 0.30m x 0.05m). Similar to topsoil 005	Upper fill of furrow 400					
402	Cut	403	4	403	Curvilinear cut (internal diameter 8.60m) (1.20m width x 0.25m depth) with a sharp break of slope at the top, concave sides and a gradual break of slope bottom leading to a flat base. Truncated by 302, 317, 332, 338. Possibly part of 406	Curvilinear gully					
403	Deposit	402	402	338	Very compacted, light orange-grey, silty-clay with occasional small angular stones and charcoal flecks. 1.20m width x 0.25m depth	Fill of enclosure 402			#1- tooth		#1- soil
404	Same as 419				Stony layer	Fill of enclosure ditch 100					
405	Deposit	52	72, 417	54	Compact, brown-orange clay with lenses of light orange silt. Occasional small angular stones. 0.24m depth	Bank slump fill of enclosure ditch 52/100					
406	Cut	407	4	407	Circular cut (9.80m diameter x 0.20m depth) with a sharp break of slope at the top, vertical sides and a sharp break of slope bottom leading to a flat base. Truncated by ditches 302, 338 and 372. Possibly part of 402	Curvilinear gully	S1				

407	Deposit	406	406	338	Compact, orange-grey mottled clay. 0.20m depth. Similar to 403	Fill of gully/enclosure 406. Sealed by 393	S1					#1- soil
408	Cut	409	303, 16	409	Linear, running north-south (4.00m x 0.58m x 0.25m) with a sharp break of slope at the top, steep sides and a sharp break of slope leading to a flat base. Possibly continuation of furrow 320. Truncates 302	Post-medieval furrow						
409	Fill	408	408	354, 146, 35, 38, 312, 300	Moderately compact, mixed greyish-orange-brown clay with occasional stones (0.02-0.05m). 4.00m x 0.58m x 0.25m	Fill of furrow 408						
410	Cut	344	347	348	Linear, northwest-southeast cut (3.00m x 1.10m x 0.40m) with a gradual break of slope at the top and concave sides leading to a U-shaped base. Similar to 411	Re-cut of enclosure ditch 344 at north side						
411	Cut	100	55	416	Linear cut (6.00m x 1.60m x 0.52m) with a gradual break of slope at the top, concave sides and a gradual break of slope leading to a flat base	Re-cut of enclosure ditch (entrance)						
412	Cut	413	4	413	Linear, running east-west (20m x 0.90m x 0.31m). Sharp break of slope top with concave sides leading to a flat base. Possibly contemporary with 504.	Possible medieval/post-medieval field boundary						
413	Fill	412	412	5	Firm, compact, mid brownish-grey clay with occasional small sub-angular stones. 20m length x 0.20m depth	Single fill of ditch 412						
414	Deposit	411	416	54	Compact, mid- orange silt with moderate occasional sub-angular and rounded stones. 0.20m depth	Redeposit along inside ditch edge 52 (entrance)						

415	Fill	374	374	375	Soft, grey clay with sandy lenses near the base and 3% angular and rounded stones. 40m x 0.80m x 0.30m	Primary fill of cut 374			#1- fragments, teeth		#1- soil #2- organic, #3- pollen
416	Deposit	411	411	414	Compact, mid brownish-grey, clayey-silt with occasional large sub-rounded and angular stones and wood fragments. 0.25m depth	Stony bridge material of ditch 52					#1-#2 organic
417	Deposit	52	418	405, 55	Friable, spongy, mid dark brown silt with frequent decayed wood fragments and occasional lenses of greyish-green clay. 0.20m depth	Organic fill of enclosure ditch 54			#1- fragments		#1- organic
418	Fill	52	124	417	Compact, light orange-brown, sandy-clay with occasional large sub-angular to rounded stones. 0.13m depth. Same as 073	Primary fill of enclosure ditch 52			#1- tooth		#1-#2 - organic
419	Same as 4 (Natural)				Stone spread of dark brown, clayey-silt with frequent sub-angular stones of varying sizes. 3.62m length x 1.69m width. Same as 404	Stone spread on south side of enclosure ditch 052 - possible revetment collapse					
420	Cut	421	31	421	Circular cut, (0.53m x 0.38m x 0.30m). Sharp break of slope top with concave sides leading to a concave base	Possible posthole					
421	Fill	420	420	5	Compact, brownish-grey clay with occasional small stones. 0.53m length x 0.30m depth	Single fill of posthole 420					#1- soil
422	Cut	423	303, 16	423	Linear, east-west running (3.20m x 0.50m x 0.22m). Gradual break of slope top with concave sides leading to a rounded base. Cut by 015, 052/100. Possibly continuation of furrow 367	Furrow					

423	Fill	422	422	354, 146, 35, 38, 312, 300	Compact, orange-brown fill with 2% sub-angular and sub-rounded stones. 3.20m x 0.50m x 0.22m.	Fill of furrow 422					
424	Cut	425	4	425	Sub-circular cut (16.20m x 1.80m x 0.18m) Gradual break of slope on the south side, sharp on the north with sharp sides leading to a flat base. Cut by 302. Continuation of 402.	Gully	S1				
425	Deposit	424	424	4	Moderately compact, grey-orange, silty clay with occasional sub-angular stones (0.02m). 16.20m x 1.80m x 0.18m. Same as 403	Fill of enclosure/gully 424					#1- soil
426	Cut	427	100	427	Oval cut (0.43m x 0.39m x 0.23m) a gradual break of slope at the top, concave sides and a gradual break of slope leading to a flat base. Possibly associated with 340	Small pit					
427	Fill	426	426	5	Compact, light greyish-brown clay with occasional charcoal flecks. 0.39m width x 0.23m depth	Fill of pit 426					#1- soil
428-499	Not assigned										
500	Cut	501	4	501	Circular cut (0.30m diameter x 0.05m depth) with a gentle break of slope and gently sloping sides leading to an uneven base	Shallow pit					
501	Fill	500	500	5	Loose, charcoal stained, sandy-silt with moderate charcoal inclusions. 0.30m diameter x 0.05m depth	Fill of cut 500					
502	Cut	503	4	503	Circular cut (0.50m diameter x 0.07m depth) with a sharp break of slope at the top, steep sides and a sharp break of slope leading to a flat base. Similar to pit 500	Shallow pit					

503	Deposit	502	502	5	Loose, dark brownish-grey, sandy-silt with frequent charcoal flecks and small angular stones. 0.50m diameter x 0.07m depth	Burnt fill of pit 502						#1- soil
504	Cut	505	4	505	Linear, running northwest-southeast (30m x 0.83m x 0.18m). Gradual break of slope at the top with concave sides and a gradual break of slope bottom leading to a flat base. Parallel to 412. Truncated by ditch 374	Possible medieval or post-medieval shallow ditch						
505	Fill	504	504	506	Compact, orange-brown silt with 1% angular stones. 30m x 0.83m x 0.18m	Fill of ditch 504						
506	Cut	507	505	525	Circular pit (1.00m diameter, 0.30m depth) with a sharp break of slope at the top, concave sides and a gradual break of slope bottom leading to a concave base. Cut by 504	Hearth						
507	Fill	506	527	5	Stiff, brownish-grey silt with occasional sub-angular stones and moderate charcoal flecks. 1.00m width x 0.13m depth	Fill of 506				#1- fragments		#1- soil
508	Cut	509, 510, 519-521	4	521	Sub-oval cut (2.00m x 0.90m x 0.30m) with a sharp break of slope at the top, vertical sides and a gradual break of slope bottom leading to a concave base. Truncated by ditch 374	Hearth pit with evidence of reuse						
509	Fill	508	519	510	Fairly loose, grey-brown, sandy-clay with frequent charcoal inclusions. 1.00m width x 0.05m depth	Fill of hearth 508						
510	Fill	508	509	005	Compact, light brown-grey silt with occasional charcoal flecks and small angular stones. 0.05m depth	Upper fill of cut 508 possibly a layer of natural silting						


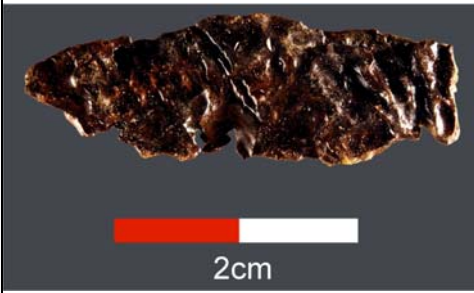
511	Cut	512, 517, 518	4	518	Sub-oval cut (0.75m x 0.45m x 0.10m) with a sharp break of slope top and steep-near-vertical sides leading to a flat base	Small hearth					
512	Fill	511	517	5	Light-orange-brown silt with occasional small stones. 0.04m depth. Naturally formed silting layer within hearth	Upper fill of hearth 511					
513	Cut	514, 522-524	4	523	Curvilinear cut (10.00m east-west x 9.00m north-south, 0.90m width x 0.30m depth) with a sharp break of slope at the top, concave sides and an imperceptible break of slope bottom leading to a rounded base.	Small enclosure gully, possibly related to hearth pit 511					
514	Fill	513	522	168	Loose, light yellow-brown silt with moderate small, sub-angular stones. 0.85m width x 0.10m depth	Upper fill of ditch 513			#1- fragments		
515	Cut	516	4	516	Linear, running east-west (>35m x 0.60m x 0.15m) with a sharp break of slope and concave sides leading to a flat base. Parallel to 412 and 504	Field ditch					
516	Fill	515	515	5	Compacted to firm, light-brown, clayey-silt with 2% charcoal flecks and 70% stones (0.01-0.02m). 19.40m x 0.62m x 0.16m	Fill of gully/drain 515					#1- soil
517	Fill	511	518	512	Loose, thin black layer of charcoal. 0.02m depth	Burnt fill of hearth 511					#1- soil
518	Fill	511	511	517	Loose, orange to yellowish-brown, clayey-silt with frequent charcoal and small stones. 0.45m width x 0.03m depth	Primary fill of hearth 511				#1- bone	#1- soil
519	Fill	508	520	509	Compact, reddish-orange clay with occasional charcoal flecks. 0.01m depth	Thin oxidised layer of hearth 508					#1- soil
520	Fill	508	521	519	Loose, black, charcoal stained silt layer. 1.10m length x 0.04m depth	Burnt fill of hearth 508				#1- bone	#1- soil

521	Fill	508	508	520	Compact, orange-red clay with moderate charcoal flecks. Primary oxidised layer of hearth. 2.00m length x 0.02m depth	Primary oxidised layer of hearth 508						#1- soil
522	Fill	513	524	514	Loose to firm, charcoal stained silt with pink mottling. Frequent charcoal flecks and burnt stones. 0.16m width x 0.04m depth	Thin charcoal fill within eastern end of ditch 513						
523	Fill	513	513	524	Loose, dark-black with pink mottling silt with frequent charcoal flecks and lumps with burnt stones. 0.41m width x 0.09m depth	Primary fill of ditch 513					#1- bone	#1- soil
524	Fill	513	523	522	Loose to firm light-yellow-brown silt with moderate sub-angular stones. 0.56m width x 0.10m depth. Similar to 514	Fill of ditch 513						
525	Deposit	506	506	526	Firm, dark greyish-red clay with very occasional pebbles and moderate charcoal flecks. 0.27m diameter	Oxidised spread within ditch 506						#1- soil
526	Fill	506	525	527	Firm, dark greyish-brown clay with frequent charcoal flecks. 1.00m width x 0.09m depth	Burnt fill of ditch 506						#1- soil
527	Fill	506	526	507	Loose, charcoal stained silt with frequent charcoal fragments and occasional stones at the base. 0.60m width x 0.02m depth	Charcoal fill of ditch 506						#1- soil

APPENDIX 2 Finds List

Find Number	Description
A023/024:5:1	Iron chain link (broken)
A023/024:5:2	Modern iron object/plate
A023/024:5:3	Metal object, slag?
A023/024:5:4	Clay pipe bowl
A023/024:5:5	Post-medieval pottery rim sherd
A023/024:5:6	Iron nail
A023/024:5:7	Iron object, nail
A023/024:5:8-9	2 Clay pipe stem fragments
A023/024:5:10-11	2 Modern iron objects
A023/024:5:12-18	7 pieces of clay pipe
A023/024:5:19	Modern iron object, plate
A023/024:5:20	Modern iron nail
A023/024:5:21	Modern iron nail
A023/024:5:22	Iron object, nail
A023/024:5:23	Iron object, nail
A023/024:5:24-25	2 Modern iron objects
A023/024:5:26-27	2 Metal objects
A023/024:5:28	Modern iron object/bolt
A023/024:5:29	Modern iron object
A023/024:5:30	Unworked stone
A023/024:5:31	Modern iron knife blade
A023/024:5:32	Modern iron object
A023/024:5:33	Modern iron object, nail/bolt
A023/024:5:34	Metallic waste/clinker
A023/024:5:35	Slag fragment
A023/024:5:36	Modern iron nail
A023/024:5:37	Modern iron object
A023/024:5:38	Chert core
A023/024:5:39	Modern iron nail
A023/024:5:40	Modern iron object
A023/024:5:41	Modern iron horseshoe (broken)
A023/024:5:42	Flint debitage
A023/024:5:43	Modern iron plate fragment (broken)
A023/024:5:44	Metallic waste/clinker
A023/024:5:45	Flint debitage
A023/024:5:46-47	2 Modern iron objects
A023/024:5:48	Modern iron object
A023/024:5:49	Modern iron nail
A023/024:5:50	Slate roof tile
A023/024:5:51	Iron pony shoe (broken)
A023/024:5:52-63	12 Modern iron objects/fragments
A023/024:5:64	Metallic waste/clinker
A023/024:5:65-81	17 Post-medieval earthenware pottery sherds
A023/024:5:82	Post-medieval brown glazed earthenware
A023/024:5:83-120	38 Post-medieval pottery sherds
A023/024:5:121-122	2 Post-medieval cream glazed pottery sherds
A023/024:5:123-128	6 Clay pipe stem fragments
A023/024:5:129-160	32 Post-medieval earthenware pottery sherds
A023/024:5:161-172	12 Post medieval earthenware pottery sherds
A023/024:5:173	Post medieval unglazed pottery sherd
A023/024:5:174	Post-medieval glazed pottery sherd
A023/024:5:175-281	107 Post-medieval glazed pottery
A023/024:5:282-295	14 Modern glass shards
A023/024:6:1-2	2 Clay pipe stem fragments
A023/024:6:3	Modern iron object
A023/024:6:4-5	2 Iron nails
A023/024:6:6-7	2 Iron objects (Modern)
A023/024:6:8-10	3 Iron objects (Modern)
A023/024:6:11-13	3 Clay pipe stem fragments
A023/024:6:14-17	4 Post-medieval earthenware pottery sherds
A023/024:6:18-29	12 Post-medieval earthenware pottery sherds

A023/024:6:30-56	27 Post-medieval pottery sherds
A023/024:6:57-59	3 Stoneware pottery sherds
A023/024:6:60-64	5 Modern glass shards
A023/024:7:1	Iron object (Modern)
A023/024:7:2	Clay pipe stem fragment
A023/024:7:3	Iron nail
A023/024:7:4	Iron nail
A023/024:7:5	Metallic waste/clinker
A023/024:7:6	Iron nail
A023/024:7:7	Iron nail
A023/024:7:8	Iron nail
A023/024:7:9	Flint core (Illustration 1)
A023/024:7:10	Iron object (Modern)
A023/024:7:11	Clay pipe bowl fragment
A023/024:7:12-15	4 Post-medieval pottery sherds
A023/024:7:16	Post-medieval glazed pottery base sherd
A023/024:7:17-21	Modern glass fragments
A023/024:8:1	Iron object
A023/024:14:1	Stone pendant
A023/024:16:1	Iron nail
A023/024:16:2	Iron object
A023/024:16:3-6	4 Iron objects
A023/024:16:7	Iron object/nail/bolt
A023/024:16:8	Iron object
A023/024:16:9	Modern glass shard
A023/024:16:10	Modern glazed pottery sherd
A023/024:16:11	Iron nail
A023/024:16:12	Iron nail
A023/024:16:13	Modern glass shard
A023/024:16:14	Black glazed earthenware sherd
A023/024:16:15	Iron nail
A023/024:16:16	Black glazed earthenware sherd
A023/024:16:17	Iron object/nail
A023/024:16:18	Post-medieval pottery sherd
A023/024:17:1	Flint core (Illustration 1)
A023/024:17:2	Black glazed earthenware pottery sherd
A023/024:17:3	Black glazed earthenware sherd
A023/024:17:4	Post-medieval glazed pottery sherd
A023/024:17:5	Black glazed earthenware sherd
A023/024:19:1	Post-medieval earthenware sherd
A023/024:19:2	Iron nail
A023/024:23:1	Iron object
A023/024:32:1	Clay piece with possible fingerprints (?)
A023/024:34:1	Iron object
A023/024:34:2	Iron nail
A023/024:36:1-2	2 Red glazed earthenware pottery sherd
A023/024:37:1	Modern glass base shard
A023/024:39:1	Modern glass shard
A023/024:51:1	Iron nail
A023/024:51:2	Modern glass shard
A023/024:53:1	Post-medieval earthenware pottery sherd
A023/024:53:2	Iron object
A023/024:53:3	Slate roof tile
A023/024:53:4	Iron nail
A023/024:53:5-8	4 Modern glass shards
A023/024:55:1	Clay pipe stem fragment
A023/024:59:1	Iron object/chain link (broken)
A023/024:59:2	Iron object
A023/024:69:1	Post-medieval stoneware sherd
A023/024:83:1	Chert fragment/chunk
A023/024:101:1	Iron nail
A023/024:101:2	Clay pipe stem fragment
A023/024:101:3	Modern glass shard
A023/024:101:4-5	2 Post-medieval earthenware sherds

A023/024:101:6-9	4 Modern glass shards	
A023/024:101:10-20	11 Modern pottery sherds	
A023/024:102:1	Iron nail	
A023/024:102:2	Modern pottery sherd	
A023/024:301:1	Modern glazed pottery sherd	
A023/024:303:1	White glazed pottery modern sherd	
A023/024:303:2	Iron nail	
A023/024:303:3	Cream glazed modern pottery sherd	
A023/024:303:4	Modern iron object	
A023/024:303:5	Modern glazed pottery sherd	
A023/024:303:6	Modern iron object	
A023/024:303:7	Modern glazed pottery sherd	
A023/024:303:8	Pos-medieval glazed earthenware sherd	
A023/024:303:9	Iron bolt	
A023/024:303:10	Iron nail	
A023/024:303:11	White glazed modern pottery sherd	
A023/024:303:12	Post-medieval earthenware sherd	
A023/024:303:13	Modern iron object	
A023/024:303:14	Iron chain link	
A023/024:303:15	Iron belt buckle	
A023/024:313:1	Slag	
A023/024:321:1	Modern glass bottle base fragment	
A023/024:334:1	Fragment of Iron object – T-shaped. May represent small craftsmans tool. Length: 52mm, Width: 44mm, Thickness: 12mm	
A023/024:334:2	Possible tip of Iron knife blade fragment. Length: 46mm, Width: 10mm, Thickness: 4mm	
A023/024:342:1	Post-medieval earthenware sherd	
A023/024:343:1	Post-medieval black glazed earthenware sherd	
A023/024:343:2	Iron horseshoe	
A023/024:345:1-2	2 Modern glass shards	
A023/024:345:3	Post-medieval black glazed earthenware sherd	
A023/024:345:4-6	3 Modern glazed pottery sherds	
A023/024:345:7-11	5 Post-medieval earthenware sherds	
A023/024:345:12	Iron object	
A023/024:355:1-4	4 Post-medieval pottery sherds	
A023/024:357:1	Iron object	
A023/024:364:1	Iron object	
A023/024:387:1	Unworked stone	
A023/024:387:2	Slag (multiple fragments)	
A023/024:392:1	Stone lamp	
A023/024:399:1	Unworked stone	

APPENDIX 3 *Sample List*

Sample No	Context No	Results
1	12	Nothing
2	26	Nothing
3	29	4g charcoal, wood
4	31	Nothing
5	75	2g charcoal
6	78	Nothing
7	83	Nothing
8	99	7g charcoal
9	103	Nothing
10	112	Nothing
11	113	Shell and charcoal flecks
12	114	Nothing
13	126	28g charcoal
14	128	Nothing
15	133	Nothing
16	137	Nothing
17	140	Nothing
18	145	Nothing
19	308	Nothing
20	313	Nothing
21	331	15g charcoal, 6g burnt bones
22	335	14g charcoal
23	336	14g charcoal
24	341	4g charcoal
25	350	Shell
26	352	Nothing
27	364	Nothing
28	366	Nothing
29	370	Nothing
30	373	<1g charcoal
31	377	Nothing
32	381	Nothing
33	384	5g charcoal
34	388	11g charcoal, seeds and organic material, 6g burnt bone
35	391	4g charcoal, 14g burnt bones
36	392	Nothing
37	395	3g charcoal
38	396	8g burnt bones, seeds
39	403	Shell
40	407	Nothing
41	415	Nothing
42	421	Nothing
43	425	Nothing
44	425	Nothing
45	427	Nothing
46	503	Nothing
47	507	43g seeds and charcoal
48	515	Nothing
49	517	9g charcoal
50	518	4g charcoal

51	519	4g charcoal
52	520	251g charcoal, 2g burnt bones
53	521	Nothing
54	523	4g charcoal, seeds
55	525	Nothing
56	526	20g charcoal
57	527	46g charcoal
58	72	Nothing
59	347	Shell
60	40	Nothing
61	54	Nothing
62	80	9g charcoal
63	134	1g charcoal
64	135	Nothing
65	102	Nothing
66	71	Nothing
67	317	7g charcoal
68	334	8g charcoal, seeds and organics, 2g burnt bones
69	363	Shell
70	382	Nothing
71	390	22g charcoal, 27g burnt bones

APPENDIX 4 *Lithics Report: Farina Sternke*

Lithics Finds Report for E3116 Ardbraccan 2, Co. Meath M3 Road Scheme

Farina Sternke MA, PhD

Introduction

Six lithic finds from the archaeological investigations of a prehistoric site at Ardbraccan 2, Co. Meath were presented for analysis (Table 1). The finds are associated with the remains of pits, possible hearths and a possible enclosure.

Find No.	Context	Material	Type	Cortex	Condition	Length (mm)	Width (mm)	Thickn. (mm)	Complete	Retouch
A023/024:5:38	5	Chert	Core	Yes	Slightly Rolled	28	49	27	Yes	No
A023/024:5:42	5	Flint	Debitage							
A023/024:5:45	5	Flint	Debitage							
A023/024:7:9	7	Flint	Core	No	Patinated	16	15	7	Yes	No
A023/024:17:1	17	Flint	Core	Yes	Slightly Patinated	17	14	11	Yes	No
A023/024:83:1	83	Chert	Chunk	Yes	Slightly Rolled	25	12	9	Yes	No

Table 1 Composition of the Lithic Assemblage from Ardbraccan 2 (E3116)

Methodology

All lithic artefacts are examined visually and catalogued using Microsoft Excel. The following details are recorded for each artefact which measures at least 2 cm in length or width: context information, raw material type, artefact type, the presence of cortex, artefact condition, length, with and thickness measurements, fragmentation and the type of retouch (where applicable). The technological criteria recorded are based on the terminology and technology presented in Inizan *et al.* 1999. The general typological and morphological classifications are based on Woodman *et al.* 2006. Struck lithics smaller than 2 cm are classed asdebitage and not analysed further. The same is done with natural chunks.

Quantification

The lithics are four worked flints and two worked pieces of chert. Four artefacts are larger than 2 cm in length and width and were therefore recorded in detail.

Provenance

The lithics were recovered from the topsoil and two ditch fills (Table 2).

Find Number	Context	Description	Type
A023/024:5:38	5	Topsoil.	Core
A023/024:5:42	5	Topsoil.	Debitage
A023/024:5:45	5	Topsoil.	Debitage
A023/024:7:9	7	Loose soil	Core
A023/024:17:1	17	Fill of ditch C15	Core
A023/024:83:1	83	Fill of ditch C42	Chunk

Table 2 Context Information for the Assemblage from Ardbraccan 2 (E3116)

Condition:

The lithics survive in slightly patinated (A023/024:17:1 and A023/024:83:1), patinated (A023/024:7:9; Illustration 1) and slightly rolled (A023/024:5:38) condition. All artefacts are complete and three bear the remnants of cortex (Table 1).

Technology/Morphology:

The assemblage comprises three types of flaking products (Table 3).

TYPE	AMOUNT
Core	3
Debitage	2
Chunk	1
Total	6

Table 3 Assemblage Composition from Ardbraccan 2 (E3116)

CORES

Two (A023/024:7:9 and A023/024:17:1) of the three identified cores are made of flint (Illustration 1) and one of chert (A023/024:5:38). The two flint cores were produced on split pebble flakes and worked using a bipolar-on-an-anvil technique. They are remarkably small (Fig. 1). The chert core is a larger multi-platform core with two dominant platforms from which small blades were removed. It measures 28 mm long, 49 mm wide and 27 mm thick.

CHUNKS

Artefact A023/024:83:1 is a chunk of chert. It is possible that unsuccessful attempts were made to use it as a core, but unambiguous negative removal scars are not present.

DEBITAGE

The presence of two pieces ofdebitage and the occurrence of cortical flakes suggest that a limited amount of knapping took place at or in the vicinity of the site.

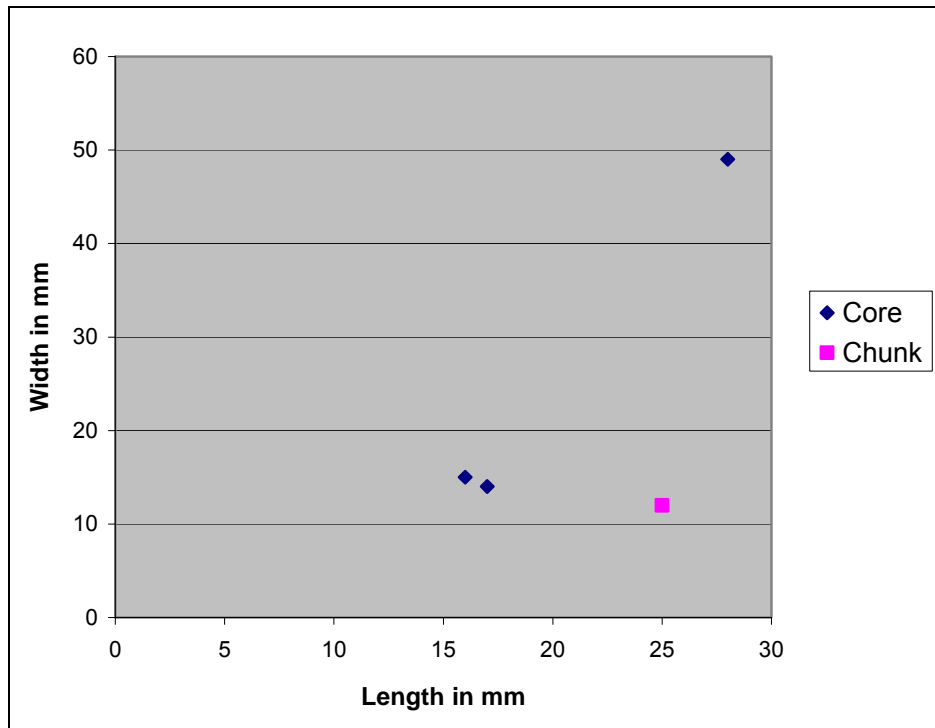


Figure 1 Dimensions (mm) of the Assemblage Components from Ardbraccan 2 (E3116)

Dating:

The assemblage from Ardbraccan 2 is typologically undiagnostic. The small size of the assemblage and its technological characteristics, i.e. the use of a bipolar-on-an-anvil reduction technique would suggest a dating to the Late Neolithic or Early Bronze Age (O'Hare 2005; Woodman *et al.* 2006).

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

Flint in this region is available in smaller nodules on the eastern coast or locally in the form of remanié pebbles. The use of chert and the bipolar technology is a direct result of a scarcity of flint in Co. Meath. The majority of flint nodules were brought from the coast and are rather small pebbles with an average dimension of less than 5 cm. They often only permit the use of a limited single platform and bipolar technology to efficiently reduce the nodule achieving a

maximum outcome, i.e. the largest possible amount of suitable and usable blanks. The result is the regionally dominant split pebble bipolar-on-an-anvil technology which was most prominent during the second half of the Neolithic and the Early Bronze Age (O'Hare 2005). The lithics at Ardraccon 2 were produced on split beach flint pebble flakes and worked using the bipolar-on-an-anvil technology.

Conclusion

The lithic finds from the archaeological investigations at Ardraccon 2, Co. Meath are two flint cores, a chert core, a chunk of chert and two pieces of flint debitage. The assemblage is typologically undiagnostic, but may date to the Late Neolithic or Early Bronze Age based on its technological characteristics. All finds appear to derive from disturbed contexts, but represent prehistoric activity at the site or in the immediate vicinity.

This site makes a minor contribution to the evidence for late prehistoric settlement in Co. Meath.

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APPENDIX 5 Faunal Remains: Rachel Sloane**04_01, M3 Clonee to North of Kells Road Scheme
Analysis of mammalian bone remains from Ardbraccan 2, Co. Meath****(A023/024)****5th March 2008****Rachel Sloane****1. Introduction**

This report details the results of analysis of mammalian bone remains retrieved during archaeological excavations at Ardbraccan 2, Co. Meath. The site was excavated in advance of the proposed M3 Clonee to North of Kells Road Scheme and resolution phase excavation took place from 8th May to 31st July 2006. Advanced testing at the site in May 2004 revealed amongst other features, an enclosure ditch, a burnt mound, two pits containing charcoal and heat-shattered stone, a number of ditches and a pond (Ginn pers. comm.). All of these features were revealed again during excavation in addition to a complex of field systems and other features. Human activity is evident at this location from prehistoric to modern times (*Ibid*).

Following thorough inspection of all animal bone remains presented for analysis, specimens classified as ‘recordable’ were observed for a total of 36 archaeological features. To facilitate more concise interpretation and presentation of the zooarchaeological findings, these features have been grouped as outlined in Table 1. The most significant features in terms of mammalian bone remains are the fills of the enclosure ditch F052/100/344 (Group 1), fills of the internal ditch F338/316 (Group 2) and fills of the field boundary ditches F18, F27 & F374 (Group 3). Recordable mammalian bone remains were also retrieved from F301 and F336. The excavation director requested that material from both of these features be considered independently of the three main groups (Mossop pers. comm.).

Group	Description	Features Included
1	Fills of enclosure ditch F052/100/344	F53, 54, 55, 72, 73, 101, 102, 103, 105, 112, 344, 345, 346, 347, 348, 350, 417, 418.
2	Fills of internal ditch F338/316	F317, 334, 387, 388, 389, 390, 391, 392, 396.
3	Field boundary ditches F18, F27 & F374	F21, 28, 166, 333, 375, 382, 415.
N/A	Modern silting of field ditch	F301 (excavation director requested this material be included in analysis).
N/A	Fill of ditch F337	F336 (possibly part of field system, pre-dates enclosure).

Table 1 Ardbraccan 2: Grouping of archaeological features that produced recordable mammalian bone.

2. Methodology

The methodology adopted for analysis of this collection is based on that used for Knowth by McCormick and Murray (2007). A detailed description of the applied methodology has been outlined by the current author in the analysis report for Roestown 2 mammalian bone remains, recovered from archaeological excavation carried out as part of the M3 Clonee–North of Kells Road Scheme. The quantification method applied is a modified version of that used by Albarella and Davis (1996). It entails a selective approach which, rather than counting every fragment of bone, results in the production of NISP values i.e. number of identifiable specimens. The method involves examination of all faunal bone remains but specimens found to be of low-grade information value are not recorded. Consequently the recording of a narrower range of clearly defined bone elements is ensured. Selected elements are recorded provided at least 50% of the diagnostic zone survives. These are the elements referred to above as ‘recordable’. This procedure avoids multiple counting of very fragmented elements (*Ibid*). The MNI i.e. minimum number of individuals was calculated for all species. This estimates the minimum number of animals that the recorded faunal remains could have come from (Chaplin 1971, 70). It is calculated through dividing the recorded value of each element for a species by its frequency in the skeleton. The resulting highest value is the MNI for that particular species. While both sides and proximal or distal were taken into account for MNI calculations, ageing data was not. Specimens not meeting the criteria to be classified as recordable but providing evidence such as butchery, pathology, gnawing or burning were recorded separately as ‘non-countables’ i.e. the evidence they displayed was noted but the elements were not included in quantification of the assemblage.

3. Results of Analysis

3.1 Summary of Findings

A total of 219 recordable elements were identified from Ardraccan 2. The majority of specimens were found to be in a good state of preservation with 0.45% observed as in excellent condition, 88.7% in good condition, 10% in fair condition and 1.8% in poor condition. For the latter two categories, the designation as fair or poor was generally due to the partial erosion of the outer surface of the bone although the overall structure of elements remained good. In one case, a cattle astragalus from Group 2 (F387) was found to be in a severely eroded state. The compact nature of the astragalus makes it one of the more robust elements that usually survive in a good state. The very poor condition of this particular specimen may have been caused by its exposure to some sort of acidic environment. However, as eight other elements from this feature were observed as in good condition and one in fair condition, a definite pattern of destructive taphonomic factors cannot be concluded. The recording of four specimens with fusion states of 'UX' suggests that there was little disturbance of these since the time of their deposition. One came from Group 1 and Group 3 while the other two were retrieved from Group 2. A fusion state of UX means that the given element has been retrieved with both the unfused metaphysis and the unfused epiphysis together but as two separate units that remain unfused due to the animal they belonged to not having yet reached the age range where fusion occurs. When this is the case, it seems most unlikely that the animal bone in question has been disturbed since it was discarded. If it had been impacted upon by later human or animal activity the elements could easily have become separated.

The NISP and MNI values for Ardraccan 2 are displayed in Tables 2-5. The species of cattle (*Bos taurus*), sheep/goat (*Ovis/Capra*), pig (*Sus sp.*), horse (*Equus caballus*) and cat (*Felis catus*) are represented. In several cases it was possible to positively identify some elements as sheep (*Ovis aries*) rather than sheep/goat. These included an astragalus, three distal humerus, one distal tibia and one phalanx 1. Identifications were based on morphological characteristics as outlined by Boessneck (1969) and Prummel and Frisch (1986) as well as comparison with the author's reference material. The NISP total for the entire site is 212.5. Group 1 accounts for 33.5% of this total, while Group 2 comprises the largest proportion accounting for 55.8%. Group 3, F301 and F336 make up 7.1%, 0.5% and 3.3% of the total NISP respectively. This is a small assemblage and due to its size the interpretation of zooarchaeological data is quite limited. For example, in terms of producing reliable patterns of age/slaughter of animals and thereby inferring a model of animal husbandry, a much larger

amount of data is needed than Ardbraccan 2 provides. Nonetheless some useful information has been ascertained from the collection.

Element	Cattle	Sheep/Goat	Pig	Horse	Cat	Total
Cranium			1			1
Loose teeth	3	1	6	7		17
Loose lower incisor			1			1
Loose lower M1/2	6			1		7
Loose lower M3	1			1		2
Mandible	4	3		1		8
Scapula	2			1		3
Humerus	2			2		4
Radius	1	2		1		4
Metacarpal	1	1				2
Femur				1	1	2
Patella						0
Tibia	3	1		1		5
Astragalus	2	1		1		4
Calcaneum	1					1
Metatarsal	2					2
Scafocuboid	2					2
Phalanx 1	3			1		4
Phalanx 2	1					1
Phalanx 3				1		1
NISP	34	9	8	19	1	71
%NISP	47.9	12.7	11.3	26.8	1.4	
MNI	2	1	1	1	1	6
%MNI	33.3	16.7	16.7	16.7	16.7	

Table 2 Ardbraccan 2: Group 1 Number of identifiable specimens (NISP) by element and species¹.

All five species are represented in Groups 1 and 2. The minimum number of individuals represented by Group 1 is two cattle and one each of sheep/goat, pig, horse and cat. Although Group 2 accounts for the largest portion of the assemblage its MNI is not much greater than that of Group 1. A minimum of two cattle, sheep/goat and pig and one horse and cat are evident for Group 2. Two cattle and one each of sheep/goat and horse are represented by

¹ Loose teeth include loose maxillary teeth and teeth that could not be definitely classified as either mandibular or maxillary. Cranium includes either zygomatic arch or tooth row where 3 or more teeth of the dP4/P4-M3 tooth row were present.

For calculation of MNI;

Loose teeth or unfused epiphyses were not counted. Incisors for cattle and sheep/goat were divided by 8, for pig were divided by 6. Pig canines were divided by 2. Premolars were divided by 6, M1/2 were divided by 4, M3 were divided by 2 and phalanges were divided by 8. With the exception of teeth and phalanges, left and right were taken into account for all elements. Proximal and distal ends were taken into account for all elements where applicable.

In the case of cattle or sheep/goat metapodials MC2/MT2/MP2 were counted as 0.5 units.

In the case of pig MC/MT/MP were counted as 0.5 units.

(This explains why the total number of elements recorded in the electronic database/countable elements was 219 but the total NISP value was 212.5).

Group 3 while one cattle, sheep/goat and pig comprise the MNI for F336. A single sheep phalanx 1 was the only element recorded for F301.

Element	Cattle	Sheep/Goat	Pig	Horse	Cat	Total
Horncore	2					2
Cranium	2		1			3
Loose teeth	13	2	4			19
Loose lower incisor			4			4
Loose lower premolar	2	2	1			5
Loose lower M1/2	8	1	4			13
Loose lower M3	1		1			2
Mandible	4	1				5
Scapula	3		1		1	5
Humerus	1	3			3	7
Radius	1	3	1		1	6
Ulna					1	1
Metacarpal	1.5		2.5			4
Pelvis	2	2	2			6
Femur		2				2
Tibia		1				1
Astragalus	1	2	1			4
Calcaneum	1		2			3
Metatarsal	3					3
Metapodial	1.5	2	1	1	4	9.5
Phalanx 1	5		3			8
Phalanx 2	1	1	1			3
Phalanx 3	2			1		3
NISP	55	22	29.5	2	10	118.5
%NISP	46.4	18.6	24.9	1.7	8.4	
MNI	2	2	2	1	1	8
%MNI	25.0	25.0	25.0	12.5	12.5	

Table 3 Ardbraccan 2: Group 2 Number of identifiable specimens (NISP) by element and species.

Element	Cattle	Sheep/Goat	Horse	Total
Loose lower M1/2	3			3
Mandible	1			1
Pelvis			1	1
Tibia	3	1		4
Astragalus	1			1
Metatarsal	1		1	2
Metapodial			1	1
Phalanx 1	2			2
NISP	11	1	3	15
%NISP	73.3	6.7	20.0	
MNI	2	1	1	4
%MNI	50	25	25	

Table 4 Ardbraccan 2: Group 3 Number of identifiable specimens (NISP) by element and species.

Element	Cattle	Sheep/Goat	Pig	Total
Loose teeth			2	2
Loose lower premolar			2	2
Loose lower M1/2			1	1
Mandible	1			1
Scapula		1		1
NISP	1	1	5	7
%NISP	14.3	14.3	71.4	
MNI	1	1	1	3
%MNI	33.3	33.3	33.3	

Table 5 Ardbraccan 2: F336 Number of identifiable specimens (NISP) by element and species.

3.2 Ageing Data

In analysing mammalian bone remains, two ageing methods are generally used. These include recording the state of tooth eruption and wear, which is recognised as the more reliable ageing method. Tooth eruption and wear is recorded for cattle, sheep/goat and pig teeth wherever the occlusal surface of the mandibular dP4 (deciduous fourth premolar), P4 (fourth premolar), M1/2 (first or second molar) or M3 (third molar) survives. In the case of loose mandibular M3s, as this is the innermost tooth, a mandible wear stage (MWS) can be assigned thereby facilitating estimation of a minimum age range for the animal represented. For mandible specimens with teeth remaining in situ, if the innermost tooth is present a MWS may also be assigned. The more problematic ageing method (Watson 1978, 97-101) entails recording state of epiphyseal fusion for appropriate elements. It involves examining the rate of development the metaphysis or epiphysis has reached. The metaphysis is the growing end of the shaft of a developing long bone while the epiphysis is a part of a bone that develops from a separate ossification centre but later fuses with the bone (Davis 1987, 16). Both methods were applicable for some of the Ardbraccan 2 mammalian bone assemblage.

3.2.1 Tooth wear

All tooth and mandible wear data is detailed in Tables A1-A10 of the appendix. For cattle and pig, tooth wear stages follow Grant (1982) while for sheep tooth wear stages are after Payne (1973 and 1987). Mandible wear stages (MWS) for all species were assigned following Higham (1967, 104-106). As can be seen from the tables a lot of the data it was possible to record does not facilitate estimation of an age for the animals they belonged to. Where the innermost tooth was present in mandible specimens or where loose mandibular M3s were recorded mandible wear stages have been assigned. This allows inference of a minimum age the animal in question had reached before its death. For cattle, mandible wear stages of 20 and 15 were observed for two Group 1 specimens. This indicates that the animals lived to a minimum of 40 months and 30-31 months respectively (Higham 1967,

104). Group 2 cattle mandible wear stages of 14 and 5 represent animals that had lived to an age of at least 30 and 6-7 months respectively (*Ibid*). Even less mandible wear data was present for pig, one loose mandibular M3 was assigned a mandible wear stage of 19 indicating the presence of an animal that reached a minimum age range of 19-21 months old (*Ibid*, 105). For sheep/goat two mandible wear stages were recorded for Group 1 mandibles and one for a Group 2 mandible. Stages of 16 and 17 were observed for Group 1 while the Group 2 specimen was assigned as stage 16. This data implies that adult and mature animals, i.e. older than 28 months are represented (*Ibid*, 106). Such an inconsequential amount of data inhibits production of any remotely reliable age/slaughter pattern for Ardbraccan 2. All that can be surmised is that both young and mature cattle are evident, adult and mature sheep/goat are represented and one pig falling within the main peak for age of slaughter from early medieval rural sites is present (McCormick and Murray 2007, 60-61). With such a paltry amount of ageing evidence any hypothesis beyond this would be unwise.

3.2.2 Epiphyseal Fusion

For cattle, sheep and pig, interpretation of epiphyseal fusion data follows Reitz and Wing (1999, 76). For assigning of age ranges, any sheep/goat elements with stage of fusion recorded were assumed to be sheep rather than goat. States of epiphyseal fusion for horse are after Silver (1969, 285-286) and for cat are after Habermehl (1961, 146-153). All of the recorded fusion data is detailed in Tables A11-A18 of the appendix. The “Age in months” or “Age of fusion” sections indicate the age range at which fusion of the given element takes place. Therefore it may be inferred that if for example, a cattle proximal humerus is observed as fully fused (as in Table A11) then the animal it belonged to must have lived to a minimum age of 42-48 months old (Reitz and Wing 1999, 76). Similarly, the unfused nature of a cattle proximal radius (Table A12) leads to the conclusion that the animal it represents died before reaching the age range of 12-18 months (*Ibid*).

A larger quantity of age-related data was provided through state of epiphyseal fusion than tooth and mandible wear. Unfortunately, the former is a more problematic method. Previous research has shown that ageing patterns based on epiphyseal fusion result in bias towards older animals, this has even been the case for waterlogged sites where preservation of material was excellent (McCormick and Murray 2007, 12-13). Watson has stated that there are many flaws with this method such as the fact that unfused specimens are more susceptible to destruction than more robust fused ones and fused specimens may be subject to removal for manufacture of bone tools or other objects thereby potentially creating a distortion in the animal bone record (1978, 97-101). Another important consideration is that age of fusion varies from one breed of a species to another and those of the past may not reflect those of now (*Ibid*). It must also be borne in mind that factors such as castration and malnutrition

impact on age of fusion (*Ibid*). Therefore, ageing data compiled from state of epiphyseal fusion should be considered cautiously and perhaps is best used as a correlation with data based on tooth and mandible wear rather than as a primary source in deducing age/slaughter patterns (McCormick and Murray 2007, 12-13).

For Ardbraccan 2, reasonable comparison of data from the two ageing methods is hampered by the miniscule amount of tooth and mandible wear. A dominance of fused specimens over unfused is indeed evident for all species. The span in age for cattle ranges from fused data indicative of an animal at least 42-48 months old (Reitz and Wing 1999, 76) to unfused data representing an animal below the age of 12-18 months (*Ibid*). Sheep age ranges from at least 36-42 months to under 15-24 months were recorded (*Ibid*). For pig, fused and unfused specimens indicate ages of at least 24 months and under 24 months (*Ibid*). All specimens of horse were found to be in a fused state and a fused distal radius from the enclosure ditch indicates the presence of an animal at least 3.5 years old at the time of death (Silver 1969, 285-286). This is unsurprising as unlike the three species already mentioned, horse was not bred for consumption. In the early medieval period horses in Ireland were used for riding, sport and work as pack-horses for carrying agricultural goods such as corn, flour and wheat (McCormick 2007, 93-94). Fusion data was also recorded for a number of cat specimens from Groups 1 and 2. One unfused proximal femur from Group 1 indicates the animal it belonged to had died before reaching the age of 8.5 months old (Habermehl 1961, 146-153). All other cat specimens were fully fused with a variety of Group 2 specimens indicating the presence of an animal (or animals) that had lived to a minimum age range of 11.5-20 months (*Ibid*).

3.3 Metrical Data

A pre-defined range of biometrical data was recorded for fully fused bones or fully fused fragments of bones. These followed measurement specifications of von den Driesch (1976), Davis (1992), Payne (1969) and Payne and Bull (1988). Descriptions of the measurements recorded are displayed in Table A19 of the appendix. An insufficient quantity of metrical data was available to make compilation of a summary of measurements worthwhile. However, the complete or relatively complete nature of four specimens from Group 1 facilitated calculation of estimated shoulder heights. Calculation of these heights followed Fock (1966) for cattle, Teichert for sheep and Kiesewalter for horse all of which are quoted in von den Driesch and Boessneck (1974, 336, 339 & 333). Cattle at Knowth ranged in height from 102-120cm (McCormick and Murray 2007, 80) so the two metapodials from Ardbraccan 2 indicate animals of similar stature. The metacarpal was confirmed as belonging to a male animal based on an estimated greatest distal width (Bd) (see section 3.4). The suggested

sheep/goat stature also compares well with the Knowth data as the average estimated shoulder height for Knowth was 54cm (*Ibid*, 90). A small number of estimated shoulder heights were calculated for horse from Stage 8, 9 and 10 at Knowth (*Ibid*, 96-97 & 186-188). Estimated shoulder heights of 141.3cm (stage 10), 140.5cm (stage 8) and 140.2cm (stage 9) compare similarly with that of 141.8cm from Ardbraccan 2.

Species	Element	GL/GLI (mm)	Estimated Shoulder Height (cm)
Cattle	Metacarpal (male)	192.5 (GL)	120.3
Cattle	Metatarsal	208.3 (GL)	113.5
Sheep/goat	Metacarpal	112.6 (GL)	55.1
Horse	Tibia	325.3 (GLI)	141.8

Table 6 Ardbraccan 2: Group 1 Estimated shoulder heights for cattle after Fock (1966), sheep after Teichert and horse after Kiesewalter as quoted in von den Driesch and Boessneck (1974, 336, 339 & 333).

At this stage it has not been established if the Ardbraccan 2 enclosure ditch F052/100/344 is contemporaneous with any of the Knowth stages. A programme of radiocarbon dating which is currently underway should confirm if this is the case. If the enclosure ditch is confirmed as early medieval in date then it is reasonable to compare the Ardbraccan 2 findings with at least one of the Knowth stages. This will need to be reconsidered when dating results are returned.

3.4 Sex Determination

Sex determination of certain mammalian bone remains is possible through examination of specified characteristics. In the case of pig, the morphology of the root of the permanent canine tooth or the alveolus (where the canine is absent) should be considered in order to distinguish males and females (Schmid 1972, 81). The root of the male canine tooth is very wide and as a result it often survives in situ in the mandible. In contrast to this, the female canine narrows significantly towards the root so that it is often lost from mandibles. Cattle metacarpals may be defined as male or female through calculation of the slenderness index (McCormick 1992). Alternatively, if complete metacarpals are few, sex determination may be attempted through examination of their greatest distal width (Bd) (McCormick 1997, 822). Analysis of a very large collection of distal cattle metacarpals from the Viking levels at Fishamble Street, Dublin led McCormick to the finding that a distal width measurement less than 56mm represents a female animal while a distal width greater than 57.5mm is male with measurements in between being classed as indeterminate (*Ibid*). Sex was determined for two elements amongst the Ardbraccan 2 collection. A maxillary pig canine tooth was identified as female. One cattle metacarpal which was almost complete (whole bone equivalent = 95%) was considered for determination as male or female. One edge of the element was slightly

broken at the distal extremity and while it was not possible to record the true Bd, it could be established that it was greater than 58.7mm. Therefore this element was confirmed as male.

3.5 Butchery/Gnawing/Burning/Pathology/Injury

No evidence for pathology or burning was observed amongst the Ardbraccan 2 assemblage. A small amount of butchery evidence was noted as detailed in Table 7A and 7B but no clear pattern of a systematic butchery practice could be established from such a small amount of data.

Group	Species	Element	Details
1	Cattle	Metatarsal	Chopped: Chopped at an angle through shaft.
2	Cattle	Mandible	Cut: Cut mark on lateral side of ramus below condyle.
3	Cattle	Tibia	Chopped: Possibly chopped horizontally through shaft, not a clean edge.
3	Cattle	Tibia	Chopped: Possibly chopped at an angle through shaft.

Table 7A Ardbraccan 2: Details of butchery noted for recordable specimens.

Group	Species	Element	Details
1	Bovid/Equid	Femur	Chopped: F344, non-countable shaft fragment with series of definite chop marks present.

Table 7B Ardbraccan 2: Details of butchery noted for non-countable specimen.

Evidence for gnawing was observed in only two cases. A cattle humerus from Group 2 showed signs of having been subjected to carnivorous chewing at the medial and lateral sides of its distal extremity and a few shallow tooth marks were present. A second case of carnivorous gnawing was observed for a non-countable cattle distal calcaneum from Group 1. It appeared to be gnawed at the sustentaculum but no actual tooth marks were visible. Anomalous attrition was noted for one cusp of a cattle maxillary molar from Group 2. The crown height towards the edge of the cusp remained almost at full height while the rest of it was worn at a sharp angle. The occlusal surface of the other cusp of this tooth displayed a normal wear pattern. This was the only such case noted for Ardbraccan 2.

4. Conclusion

The small animal bone assemblage from Ardbraccan 2 has indicated the presence of cattle, sheep/goat, pig, horse and cat at that site. It is likely that the majority of the assemblage i.e. from Groups 1-3 is of early medieval date. This is yet to be confirmed by a programme of radiocarbon dating. While ageing data, metrical data and some evidence of butchery and

gnawing was recorded, in all cases the amount of data is too small to present any dependable inference on animal husbandry or butchery practices. Following completion of the radiocarbon dating programme for this site the comparisons made with evidence from Knowth (section 3.3) should be reviewed in order to confirm if it is reasonable to present them as contemporary.

5. Recommendations

If the Ardbraccan 2 assemblage is confirmed as early medieval in date then due to the small size of the collection, the recorded raw data along with the analysis report will form a sufficient archive. Once the standard of the recorded data and report is approved all animal bone should be discarded.

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Appendix

Element	Grant TWS	Higham MWS
M1/2	b	N/A
M1/2	f	N/A
M1/2	g	N/A
M1/2	h	N/A
M1/2	j	N/A
M1/2	k	N/A
M3	g	20

Table A1 Ardbraccan 2: Group 1 Tooth wear stages for loose mandibular cattle teeth following Grant (1982, 92) and mandible wear stage assigned to M3 following Higham (1967, 104).

Cattle Mandible	Grant TWS					Higham MWS
	dP4	P4	M1	M2	M3	
Specimen 1			A	I	X	N/A
Specimen 2		V	j	g	b	15

Table A2 Ardbraccan 2: Group 1 Tooth wear stages for cattle teeth in mandibles following Grant (1982, 92) and mandible wear stage assigned following Higham (1967, 104).

Element	Grant TWS	Higham MWS
dP4	h	N/A
P4	a	N/A
M1/2	a	N/A
M1/2	a	N/A
M1/2	d	N/A
M1/2	g	N/A
M1/2	j	N/A
M1/2	U	N/A
M1/2	U	N/A
M1/2	U	N/A
M3	a	14

Table A3 Ardbraccan 2: Group 2 Tooth wear stages for loose mandibular cattle teeth following Grant (1982, 92) and mandible wear stage assigned to M3 following Higham (1967, 104).

Cattle Mandible	Grant TWS					Higham MWS
	dP4	P4	M1	M2	M3	
	h	-	H	-	-	5

Table A4 Ardbraccan 2: Group 2 Tooth wear stages for cattle teeth in mandibles following Grant (1982, 92) and mandible wear stage assigned following Higham (1967, 104).

Element	Grant TWS	Higham MWS
M1/2	I	N/A
M1/2	I	N/A
M1/2	o	N/A

Table A5 Ardbraccan 2: Group 3 Tooth wear stages for loose mandibular cattle teeth following Grant (1982, 92).

Cattle Mandible	Grant TWS					Higham MWS
	dP4	P4	M1	M2	M3	N/A
	j	-	a	X		

Table A6 Ardbraccan 2: Group 3 Tooth wear stages for cattle teeth in mandibles following Grant (1982, 92).

Group/Feature	Element	Grant TWS	Higham MWS
Group 2	M1/2	a	N/A
Group 2	M1/2	b	N/A
Group 2	M1/2	c	N/A
Group 2	M1/2	e	N/A
Group 2	M3	U	19
F336	P4	a	N/A
F336	M1/2	e	N/A

Table A7 Ardbraccan 2: Tooth wear stages for loose mandibular pig teeth following Grant (1982, 94) and mandible wear stage assigned to M3 following Higham (1967, 105).

Sheep/Goat Mandible	Payne TWS					Higham MWS
	dP4	P4	M1	M2	M3	16 17
	Specimen 1	X	9A	9A	9G	
Specimen 2		X	14A	9A	11G	

Table A8 Ardbraccan 2: Group 1 Tooth wear stages for sheep/goat teeth in mandibles after Payne (1973 and 1987) and mandible wear stages assigned following Higham (1967, 106).

Sheep/Goat Mandible	Payne TWS					Higham MWS
	dP4	P4	M1	M2	M3	16
		12S	10A	9A	10G	

Table A9 Ardbraccan 2: Group 2 Tooth wear stages for sheep/goat teeth in mandible after Payne (1973 and 1987) and mandible wear stage assigned following Higham (1967, 106).

Element	Payne TWS	Higham MWS
dP4	a	N/A
M1/2	5A	N/A

Table A10 Ardbraccan 2: Group 2 Tooth wear stages for loose mandibular sheep/goat teeth after Payne (1973 and 1987).

CATTLE		Group	Age in months
Early Fusing	humerus d.	Group 2	12-18
	scapula	Group 1, 2	7-10
	metapodium p.	Group 1, 2, 3	fused before birth
	phalanx 1 p.	Group 1, 2, 3	18-24
	phalanx 2 p.	Group 1, 2	18-24
Middle Fusing	tibia d.	Group 1, 3	24-30
	calcaneum p.	Group 1, 2	36-42
	metapodium d.	Group 1, 2	24-36
Late Fusing	humerus p.	Group 1	42-48

Table A11 Ardbraccan 2: Fused (fused and fusing) cattle specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

CATTLE		Group	Age in months
Early Fusing	radius p.	Group 1	12-18
	phalanx 1 p.	Group 1, 2, 3	18-24
Middle Fusing	tibia d.	Group 1	24-30
	metapodium d.	Group 2	24-36
Late Fusing	humerus p.	Group 1	42-48
	radius d.	Group 2	42-48

Table A12 Ardbraccan 2: Unfused cattle specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

SHEEP		Group/Feature	Age in months
Early Fusing	humerus d.	Group 2	3-10
	radius p.	Group 1,	3-10
	acetabulum	Group 2	6-10
	metapodium p.	Group 1	fused before birth
	phalanx 1 p.	F301	6-16
	phalanx 2 p.	Group 2	6-16
Middle Fusing	tibia d.	Group 3	15-24
	metapodium d.	Group 1, 2	18-28
Late Fusing	radius d.	Group 2	36-42

Table A13 Ardbraccan 2: Fused (fused and fusing) sheep specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

Any sheep/goat elements with stage of fusion recorded were assumed to be sheep rather than goat when assigning age ranges.

SHEEP		Group/Feature	Age in months
Middle Fusing	tibia d.	Group 1	15-24
	metapodium d.	Group 2	18-28
Late Fusing	radius d.	Group 2	36-42
	femur p.	Group 2	30-42
	femur d.	Group 2	36-42
	tibia p.	Group 2	36-42

Table A14 Ardbraccan 2: Unfused sheep specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

PIG		Age in months
Early Fusing	scapula	12
	radius p.	12
	acetabulum	12
	metapodium p.	fused before birth
	phalanx 1 p.	24
	phalanx 2 p.	12

Table A15 Ardbraccan 2: Group 2 fused (fused and fusing) pig specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

PIG		Age in months
Early Fusing	phalanx 1 p.	24
Middle Fusing	calcaneum p.	24-30
	metapodium d.	24-27

Table A16 Ardbraccan 2: Group 2 unfused pig specimens present, classified as early, middle or late fusing after Reitz and Wing (1999, 76).

Bone	Ossification Centre	Group	Age of Fusion
Humerus	Distal epiphysis	Group 1	15-18 mts
Radius	Proximal epiphysis	Group 1	15-18 mts
	Distal epiphysis	Group 1	3.5 yrs
1st phalanx	Proximal epiphysis	Group 1	13-15 mts
3rd phalanx	No true epiphysis	Group 1, 2	Partly ossified at birth
Pelvis	Fusion of main bones	Group 3	1.5-2 yrs
Femur	Proximal epiphysis	Group 1	3-3.5 yrs
Tibia	Proximal epiphysis	Group 1	3-3.5 yrs
	Distal epiphysis	Group 1	20-24 mts
Metatarsal	Proximal epiphysis	Group 3	Before birth
Metapodial	Distal epiphysis	Group 2, 3	15-20 mts

Table A17 Ardbraccan 2: Fused horse specimens present with age of fusion after Silver (1969, 285-286).

Fusion Zone	Age of fusion (months)	Group	State of fusion
humerus d.	8.5	Group 2	Fused
femur p.		Group 1	Unfused
ulna p.	10-11	Group 2	Fused
metapodials d.		Group 2	Fused
metapodials d.	11.5-20	Group 2	Fused
humerus p.		Group 2	Fused
radius d.		Group 2	Fused

Table A18 Ardbraccan 2: Fused and unfused cat specimens present with age of fusion after Habermehl (1961, 146-153).

Abbreviation	Description	Source
GL	Greatest length	vdD
GLl	Greatest lateral length	vdD
BFdm	Maximum breadth of medial trochlea	Davis
BFdl	Maximum breadth of lateral trochlea	Davis
Ddm	Maximum depth of medial trochlea	Davis
Dtm	Depth of external trochlea of medial condyle	Payne
GLP	Greatest length of glenoid process (in scapula)	vdD
SLC	Smallest length of collum (in scapula)	vdD
Bd	Greatest breadth of distal end	vdD
BT	Greatest breadth of trochlea	Payne & Bull
HTC	Height of trochlea	Payne & Bull
B@F	Maximum breadth of distal fusion point in metapodials	Davis
Bp	Greatest breadth of proximal end	vdD
BpP	Greatest proximal width (used for pig radii)	Payne & Bull
SD	Smallest breadth of diaphysis	vdD
LA	Length of acetabulum including lip	vdD
LAR	Length of acetabulum on rim	vdD
Wmin	Minimum width at base of horncore	vdD
Wmax	Maximum width at base of horncore	vdD
GLm	Greatest length of medial half (in astragalus)	vdD
Dm	Greatest depth of medial half (in astragalus)	vdD
DI	Greatest depth of lateral half (in astragalus)	vdD
GH	Greatest height (in astragalus of horse)	vdD
BFd	Breadth of distal articular surface (in astragalus of horse)	vdD

Table A19 Ardbraccan 2: Biometrical data recorded after von den Driesch (1976), Davis (1992), Payne (1969) and Payne and Bull (1988).

APPENDIX 6: Plant macrofossil, charcoal, cremated bone and mollusc analysis

Durham University



**Ardbraccan 2, M3 Motorway Project, Co
Meath, Ireland**

**plant macrofossil, charcoal, cremated bone
and mollusc analysis**

on behalf of

Archaeological Consultancy Services Ltd

**Report 2057
December 2008**

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1. Summary

The project

- 1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Ardbraccan 2, Co Meath, Ireland. Bronze Age and early medieval activity were identified on the site. This report presents the results of plant macrofossil, charcoal, cremated bone and mollusc analysis of burnt spreads and the fills of pits, ditches, furrows and hearths.

Results

- 1.2 Plant macrofossil analysis indicates that barley formed a part of the Bronze Age diet at Ardbraccan 2, while hulled 6-row barley, oats, rye and wheat were predominant during the early medieval period.
- 1.3 Deciduous woodland was growing locally throughout the occupation of the site. Hazel and alder appear to have been the main fuels for activities associated with the burnt mound. The fuel woods used for domestic activities during the early medieval period included hawthorn, oak, ash, hazel, alder, Maloideae, cherry, holly and willow/poplar.
- 1.4 The bulk of the burnt bone was derived from 4 contexts associated with one of the ditches. All 4 of these contexts contained fragments of animal bone, as did the fill of a furrow and a pit; possible animal bone fragments were present in 3 other contexts. It was not possible to tell whether bone from the remaining context was animal or human. In most cases the bone was charred or partially oxidised, although a small amount of fully oxidised bone was present in some contexts.
- 1.5 Small assemblages of shell were recovered from 13 deposits. The remains were, on the whole, rather poorly preserved with most of the submitted assemblages consisting largely of unidentified fragments – very few or no identifiable shell remains were recovered from 3 of the deposits and these were of no interpretative value. The 2 slightly larger assemblages were of limited interpretative value suggesting that the ditches from which they were recovered held permanent, well-vegetated freshwater and, in one case, that the immediate surroundings were probably of wet grassland/water meadow at the time of the formation of the fill.

2. Project background

Location and background

- 2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Ardbraccan 2, Co Meath, Ireland (NGR 282806 267082). Features identified include a burnt spread of heat-shattered stones and charcoal, two discrete complexes of small possible pits and hearths, a number of field ditches or drains cut by possible enclosure ditches, and a post-medieval field system. Radiocarbon analysis indicated that features associated with the burnt spread were Bronze Age in date, while most of the other features on the site were early medieval. This report presents the results of plant macrofossil, charcoal, cremated bone and mollusc analysis of the burnt spreads, and the pit, ditch, furrow and hearth fills.

Objective

- 2.2 The objective was to analyse the plant macrofossils, charcoal, cremated bone and molluscs from the site, in order to provide information about the diet, land use and local environment.

Dates

- 2.3 Samples were received by Archaeological Services Durham University in April 2008. Analysis and report preparation was conducted between April – December 2008.

Personnel

- 2.4 Sample processing was undertaken by Archaeological Consultancy Services Ltd. The residues were sorted by Mr Bryan Atkinson. Plant macrofossil analysis, charcoal analysis and report preparation were carried out by Dr Charlotte O'Brien. Cremated bone analysis was by Dr Anwen Caffell, with faunal identifications by Ms Louisa Gidney. Mollusc analysis was by Mr John Carrott.

Archive

- 2.5 The licence number is A023/024. The charcoal, flots, bones and mollusc samples are currently held at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Plant macrofossil analysis

Methods

- 3.1 The residues were examined for plant remains, shells, bones, pottery sherds and metalworking debris. The dry flots were scanned at up to x60 magnification using a Leica MZ7.5 stereomicroscope for charred and waterlogged plant remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

Bronze Age

- 3.2 Charcoal and heat-shattered stones were present in the Bronze Age contexts (29, 31, 83 and 135). A few roots, wood fragments and uncharred seeds were occasionally recorded. These are likely to be predominantly later intrusive material, but some, for example the crowfoot seeds, may indicate the presence of waterlogged or semi-waterlogged conditions. The only charred plant macrofossils were two barley grains in fulacht spread (29). The results are presented in Appendix 1.1.

Early medieval

- 3.3 The enclosure ditch/gully fills (113), (350) and (403) and possible ditch fill (347) contained abundant uncharred seeds, which were dominated by wetland, aquatic and ruderal taxa. These contexts also comprised uncharred vegetative material, insect remains and molluscs. By contrast, the other ditch, hearth and pit fills contained few uncharred remains, and were dominated by charred plant macrofossils. These were predominantly barley, oats and wheat grains with lower frequencies of rye present. A range of charred weed seeds were recorded, but chaff was rare. A single charred hazel nutshell fragment was present in context (391), a fill of ditch (338). The results are presented in Appendix 1.2 and 1.3.

Discussion

Bronze Age

- 3.4 The two barley grains in context (29) suggest that barley formed a part of the Bronze Age diet at Ardbraccan 2, but the poor condition of the grains prevented their differentiation between the hulled or naked varieties, and it was not possible to establish if 2-row or 6-row barley was represented. Barley was widely cultivated in Ireland in prehistory, particularly in the middle Bronze Age (Johnston 2007; Monk 1986).

Early medieval

- 3.5 The abundance of uncharred plant remains in ditch/gully fills (113), (347), (350) and (403) indicates that these fills were waterlogged. The presence of duckweed, crowfoots and horned pondweed shows that the ditches held permanent, shallow, standing water (Preston *et al.* 2002). This is also confirmed by the mollusc assemblages (see section 6). In addition, the damp conditions supported the wetland taxa bugle, aquatic mint and sedges. Trees and shrubs growing in or beside the ditches included alder, elder and bramble. Low numbers of sheep's sorrel nutlets suggest the proximity of acidic soils, and perhaps heathland. A wide range of herbaceous taxa of open disturbed ground, grassland and woodland margins suggest that these habitats were present in the immediate vicinity of the ditches. These taxa include wild radish, hemp-nettle, dead nettle, nipplewort, redshank, knotgrass, prickly sow-thistle, common nettle, thistles, buttercups, lesser stitchwort and upright hedge-parsley.
- 3.6 Charred cereal remains were abundant in many of the other early medieval contexts, which included ditch, gully, pit, hearth and trough fills (Appendix 1.3). The charred assemblages were similar in all of these contexts, and were dominated by oats, barley and wheat grains. The grains were generally in a poor condition, with damaged, pitted surfaces, and therefore many could not be identified further. However, some of the barley grains were clearly hulled, and a number had the twisted shape characteristic of a proportion of grains in 6-row barley. Although, wheat grain morphology is variable, most had the stout, compact form often seen in bread wheat, but unfortunately, the absence of diagnostic wheat chaff prevents confirmation of the identification. Rye grains were recorded in several of the contexts, but in lower numbers than the other cereals. A charred hazel nutshell fragment in ditch fill (391) suggests that wild, gathered foods supplemented the diet.
- 3.7 The oat grains were divided into 2 size categories: large grains which were retained on a 2mm sieve; and small, slender grains which passed through this sieve. All of these could be from *Avena sativa* (cultivated oats), as the spikelets of this species usually have two fertile florets, the first producing larger grains than the second (Jacomet 2006). However, the abundance of the small, slender grains, coupled with the identification of an *Avena fatua* (wild oats) floret base in context (396), suggests that at least a proportion of these grains, are from wild species of oats, and some may be from other wild, large-grained grasses. Bristle oats (*Avena strigosa/brevis*) may

also be represented among the smaller oat grains, but the absence of cultivated oat floret bases prevents further identification.

- 3.8 Hulled 6-row barley, oats and rye are commonly recorded cereals on early medieval sites (McClatchie 2007; Monk 1986), while bread wheat was the dominant cereal in use later in the medieval (Monk 1986). Oats and 6-row barley are listed as low-status cereals in the 8th century law text, *Bretha Déin Chécht* (Binchy 1966), which suggests that activities at Ardbraccan 2 were usually associated with the lower end of the social scale. However bread wheat and rye are at the top of the list, which suggests that the inhabitants also had access to higher status crops.
- 3.9 The low number of chaff fragments suggests that the cereal grains had been processed prior to their incorporation in the fills. Yet, a number of weed seeds were recorded, many of which are likely to have grown with the crops, including the arable weeds, black-bindweed and scentless mayweed. These indicate that either the grain was not thoroughly cleaned and the fragile chaff had burnt away disproportionately (Boardman & Jones 1990), or that the fills include some waste from the later stages of grain processing. The abundance of charred cereal grains, in addition to burnt animal bone (see section 5), suggests that the ditch, pit and hearth fills are largely comprised of general domestic hearth waste, and possibly also sieving by-products of crop processing used as fuel.
- 3.10 While most of the charred weed seeds probably represent plants which grew amongst the cereal crops, some of the ruderal taxa, e.g. nipplewort, cleavers, knotgrass and redshank, may also have occupied areas of disturbed, waste ground, and ribwort plantain suggests the proximity of some open grassland (Preston *et al.* 2002). Sedges would have grown on areas of damp ground, and perhaps reflect cultivation on heavy clay soils.

4. Charcoal analysis

Methods

- 4.1 Charcoal was collected from the residues and flots and added to pre-sorted material. Following Boardman (1995), identifications were made on fragments >4mm. At least 100 fragments were identified per context, where available. The transverse, radial and tangential sections were examined at up to x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Hather (2000) and Schweingruber (1978), and modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. A single entity of charcoal from a short-lived tree species was provided for radiocarbon dating from each of contexts (31), (83), (135), (391), (507), (520) and (523). A charred barley grain was provided from each of contexts (350) and (381).

Results

Bronze Age

- 4.2 The burnt mound spreads (contexts 29 and 31) contained a moderate amount of charcoal which was dominated by hazel and alder, with low frequencies of ash, oak, wild cherry and Maloideae (hawthorn, whitebeams, apple or pear). Ditch fill (83) and pit fill (135) comprised very little charcoal, which included a fragment of hazel and willow/poplar in (83), and a fragment of cherry (bird cherry, wild cherry or blackthorn) in (135). The results are presented in Appendix 1.1-1.3 and Figure 4.1.

Early medieval

- 4.3 The waterlogged ditch fills (contexts 113, 347, 350 and 403) contained little charcoal, but the other early medieval contexts comprised a range of taxa. Blackthorn was abundant in pit fill (507) and hearth fill (520), while oak, ash, hazel, alder and cherry were frequent in the ditch fills. Holly was present in ditch fills (390) and (391). The results are presented in Appendix 1.1-1.3 and Figure 4.1.

Discussion

Bronze Age

- 4.4 The Bronze Age landscape at Ardbraccan 2 comprised hazel, alder, oak, ash, Maloideae, wild cherry and willow/poplar. Hazel and alder appear to have been the main fuels used for activities associated with the burnt mound. This is broadly in line with the results of a recent study of charcoal from Bronze Age sites in central and western Ireland, which has provided evidence that hazel, alder, ash and oak were the main trees selected for fuel on burnt mound sites (O'Donnell 2007). It has been

suggested that this choice of fuel reflects the marginal situation of most burnt mounds, between wet and dryland areas (ibid.). This pattern of fuel selection has been noted at other burnt mound sites along the route of the M3 motorway, for example at Ardbraccan 3, Gainstown 1+2 and Drumbaragh 3 (Archaeological Services 2008abcd).

Early medieval

- 4.5 The charcoal assemblages in the early medieval contexts indicate the proximity of deciduous woodland. This comprised a high canopy of oak and ash, with hazel, Maloideae, blackthorn, holly and cherry growing in the understorey or by the woodland margins. Alder would have grown on areas of wetland, either forming a carr or as individual stands. Willow and poplar charcoal cannot be differentiated with certainty (Hather 2000), and therefore the fragment of Salicaceae charcoal in context (520) may derive from willows growing in similar wetland areas to the alders, or poplar trees which would have thrived on rich, alluvial soils.

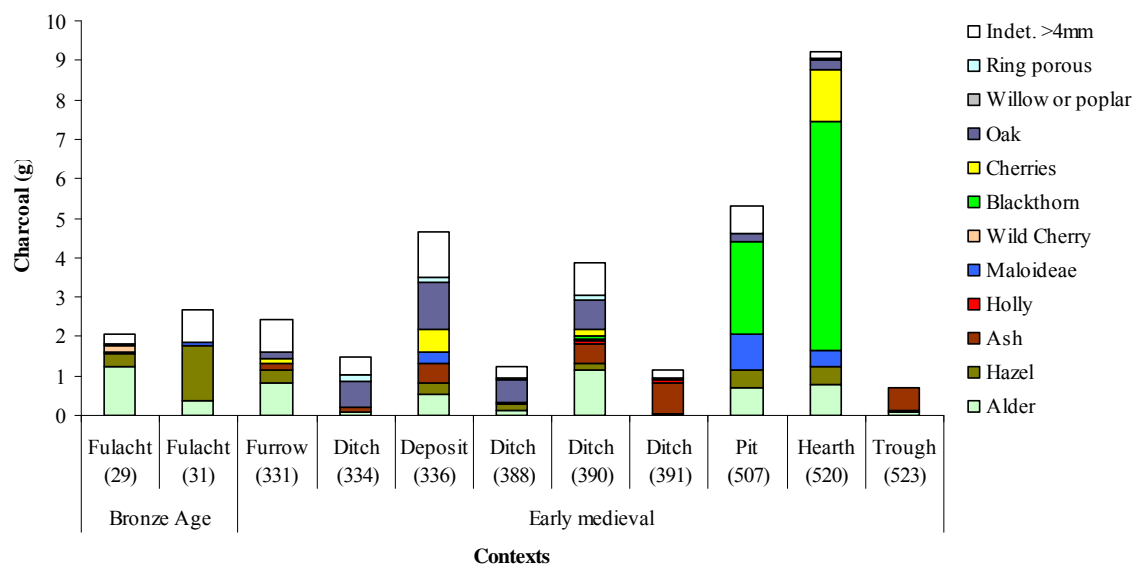


Figure 4.1: Proportions of charcoal from Ardbraccan 2
(Contexts with <0.5g charcoal are not shown)

- 4.6 The fills appear to comprise general domestic waste (see section 3), and therefore the charcoal is likely to reflect the fuel woods used on the domestic hearth. Hawthorn, oak, hazel, ash, alder and Maloideae were frequently selected, and most of these provide good fuels as they burn slowly, giving off a high heat (O'Donnell 2007). Although this is not true of alder wood (which burns quickly), alder does provide excellent charcoal (ibid.). The small size of most of the charcoal fragments prevented their differentiation between roundwood (branchwood) and timber (stemwood). Tyloses, which occur in the heartwood of certain trees, particularly oak, were not noted.

5. Cremated bone analysis

Methods

- 5.1 Burnt bone was recovered from field ditches, pits, a hearth, layers, and spreads. Ten contexts were presented for analysis, with a total weight of 122.4g. Each context was passed through a nest of sieves, with mesh sizes of 10mm, 5mm, and 2mm (McKinley 2004). Each fraction was weighed and the largest fragment of bone was measured.

Results and interpretation

- 5.2 Summary data for each context is presented in Table 5.1, and the fraction weights per context are given in Table 5.2.
- 5.3 The weight of burnt bone in each context ranged from 1.9g to 36.1g (Table 5.1). The two heaviest contexts (390 and 391) were deposits from the eastern edge of a linear ditch (338), and a further 26.0g of bone was recovered from two fills within this ditch (388 and 396). Thus the bulk of the material was associated with ditch (338). In most contexts the bone was moderately fragmented (Table 5.2). The mean maximum fragment size was 29.3mm, and it ranged from 17.2mm to 44.4mm. The contexts associated with ditch (338) tended to have the largest fragments.

Table 5.1: Summary of cremated remains

Context	Context Detail	Bone Colour	Species	Weight (g)
331	Fill of furrow (330)	Grey to pale grey	Animal	6.5
334	Deposit of possible ditch	Brown, black, grey, pale grey, white	Animal?	3.2
336	Deposit E of burnt deposit (335)	Dark grey to pale grey/ white	Animal?	4.3
381	Oxidised clay at edge & base of hearth (380)	Most dark brown, some with black; 1 fragment white	Animal?	6.8
388	Second fill of linear ditch (338)	Most dark brown & black; some grey to pale grey/ white	Animal	9.2
390	Dark deposit, E edge of linear ditch (338)	Brown, black, grey, pale grey, white	Animal	35.0
391	Reddish-black deposit, E edge of linear ditch (338)	Most grey; some dark brown & black, some pale grey & white	Animal	36.1
396	Third fill of linear ditch (338)	Dark brown & black; a few small white fragments	Animal	16.8
507	Fill of round pit (506)	Grey, some white	Animal	2.6
520	Charcoal layer under (519) in (508)	Most white, some grey to pale grey	Unknown	1.9

5.4 The colour of the bone fragments in all the contexts was extremely varied, suggesting diverse burning conditions (Table 5.1). This could indicate mixing of bone from separate burning episodes. Dark brown and black colouration occurs when the bone is charred at low temperatures (below *c.* 300°C) or when there is a severe oxygen restriction (McKinley 2004). Dark grey and grey colours occur when bone is partially oxidised, indicating temperatures of between *c.* 300-600°C and/or a restricted oxygen supply (*ibid.*). A white colour occurs when bone is completely oxidised, after exposure to temperatures greater than *c.* 600°C with a plentiful supply of oxygen (*ibid.*). In the majority of cases the bone was charred or partially oxidised, with a small percentage of fully oxidised bone present.

5.5 All fragments were examined with a view to identification. The 4 contexts associated with ditch (338) all contained definite fragments of animal bone, as did context (331), the fill of a furrow, and pit fill (507). A further 3 contexts contained fragments of possible animal bone (Table 5.1). The identifiable animal bone included pig, cattle and sheep/goat (Table 5.3). None of the bone in context (520) could be identified, and it was not possible to determine whether it was human or animal.

Table 5.2: Fraction weights and fragment size

Context	Total Weight	Fraction Weights						Max. Frag Size
		>10mm		5-10mm		2-5mm		
	g	g	%	g	%	g	%	mm
331	6.5	3.7	56.9	2.0	30.8	0.8	12.3	27.7
334	3.2	0.0	0.0	2.5	78.1	0.7	21.9	17.2
336	4.3	2.8	65.1	1.2	27.9	0.3	7.0	26.3
381	6.8	4.3	63.2	2.3	33.8	0.2	2.9	30.0
388	9.2	3.4	37.0	4.8	52.2	1.0	10.9	29.9
390	35.0	13.8	39.4	15.7	44.9	5.5	15.7	42.5
391	36.1	15.2	42.1	14.9	41.3	6.0	16.6	37.8
396	16.8	7.0	41.7	8.9	53.0	0.9	5.4	44.4
507	2.6	1.0	38.5	1.3	50.0	0.3	11.5	19.3
520	1.9	0.0	0.0	1.1	57.9	0.8	42.1	17.8

Table 5.3: Identifiable animal bone

Context	Species	Description
331	Cattle-size	Sesamoid
388	Sheep/goat	Tooth
390	Pig	Tooth
	Sheep/goat	Tooth, phalanx and metapodial
	Pig/sheep/goat	Toe bone
391	Pig/sheep/goat-size	Femur
396	Cattle	Tooth
507	Cattle	Tooth enamel

6. Mollusc analysis

Methods

- 6.1 The sediment samples from the site were processed to 500 microns by the excavator. The submitted material was examined for mollusc remains and these were identified as closely as possible with reference to published works (main sources Cameron 2003, Cameron & Redfern 1976, Ellis 1969, Kerney 1999, Kerney & Cameron 1979, Macan 1977). The assemblages of identifiable remains were mostly small so that minimum numbers of individuals could be readily determined and counts were recorded (based on numbers of shell apices). Nomenclature follows Kerney (1999).

Results

- 6.2 Very small to moderate assemblages of shell were recovered from the samples. The remains were, on the whole, rather poorly preserved with most of the submitted assemblages consisting largely of unidentified fragments. In general, smaller and relatively more robust shells (e.g. of *Carychium* species) were less fragmented,

whereas identifiable remains of larger forms were typically apex fragments. Some bias of counts of minimum numbers of individuals in favour of the smaller species was, therefore, unavoidable. In some cases species level identifications were prevented by erosion of the shell surfaces or by small amounts of encrusted sediment obscuring diagnostic features (e.g. in the mouth of the shell). Table 6.1 presents details of the assemblages recovered.

Table 6.1: The shell assemblages

Context	113	347	350	363	403
Sample	1	2	1	2	?
Context description	fill of enclosure ditch C100	deposit in ditch	basal fill of enclosure ditch	south side of C309	fill of possible curvilinear enclosure gully C402
2-sigma calibrated C14 date	-	-	AD 780 to 1000	-	-
Approximate total number of fragments	6	100s	100s	50	13
Maximum fragment size /mm	8	4	4	5	4
Weight of submitted material /g	<1	<1	<1	<1	<1
Taxon					
<i>Valvata cristata</i> Müller – mostly apex fragments	-	22	3	-	-
<i>Carychium minimum</i> Müller	-	6	1	-	-
<i>Carychium tridentatum</i> (Risso)	-	15	-	-	-
<i>Carychium</i> sp. – apex fragments	-	10	-	-	-
<i>Lymnaea</i> sp. – fragments	-	1	-	1	-
<i>Anisus ?leucostoma</i> (Millet)	-	-	-	-	2
<i>Anisus vortex</i> (L.) – apex fragments	-	8	12	-	-
<i>Anisus leucostoma/A. vortex</i>	-	-	-	-	3
<i>Bathyomphalus contortus</i> (L.) – apex fragments	-	13	3	-	-
<i>Gyraulus crista</i> (L.)	-	11	2	-	-
Planorbid (species indeterminate apex fragments)	1	-	-	-	2
Small succineid (species indeterminate apex fragments)	-	3	9	-	-
<i>Cochlicopa</i> sp. – apex fragments	-	4	-	-	-
<i>Vertigo pusilla</i> Müller/ <i>V. angustior</i> Jeffreys	-	1	-	-	-
<i>Vertigo pygmaea</i> (Draparnaud)	-	2	-	-	-
<i>Vertigo</i> sp.	-	4	-	-	-
<i>Vallonia pulchella</i> (Müller)/ <i>V. excentrica</i> Sterki	-	5	-	2	-
<i>Acanthinula aculeata</i> (Müller)	-	1	-	-	-
<i>Vitrea crystallina</i> (Müller)/ <i>V. contracta</i> (Westerlund)	-	17	4	15	1
? <i>Trichia</i> sp. (apex fragment)	1	-	-	-	-

Discussion

- 6.3 Very few identifiable shell remains were recovered from 3 of the deposits, contexts (113), (363) and (403) (see Table 6.1) and these were too few to be of any interpretative value.
- 6.4 The 2 larger assemblages were also dominated by unidentified shell fragments but included some identifiable remains which were mostly of freshwater and waterside taxa; although both contained occasional land snail remains. The assemblage from the basal fill of an enclosure ditch, context (350) (AD 780 to 1000), was rather small for interpretation, but did include 4 aquatic snail taxa (*Valvata cristata*, *Anisus vortex*, *Bathyomphalus contortus* and *Gyraulus crista*) all of which are indicative of permanent water and rich vegetation; the latter further supported by records of small succineids which are typically found on waterside and emergent plants. The only terrestrial snails present were a single *Carychium minimum* (but this species is virtually amphibious and can survive long periods of flooding; Kerney 1999) and 4 *Vitrea crystallina*/*V. contracta* catholic taxa of moist sheltered places; however, *V. crystallina* at least is common in river flood rubbish which may explain its presence here.
- 6.5 The largest assemblage of identifiable remains was recovered from another ditch fill, context (347), and contained the same taxa as identified from context (350) (with the same interpretative implications), but with the addition of small numbers of other land snails (*Carychium tridentatum*, *Vertigo* species, *Vallonia pulchella*/*V. excentrica* and *Acanthinula aculeata*). These were rather few for more than tentative interpretation but, taken as a whole, perhaps suggest wet grassland/water meadow, surrounding this water-filled and well-vegetated ditch at the time of the formation of the fill.

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Appendix 1.1: Plant macrofossil and charcoal analysis - Bronze Age contexts

Context	29	31	83	135
Sample	1	1	1	3
Feature	Fulacht spread	Fulacht spread	Ditch C42	Pit C79
Material available for radiocarbon dating	✓	✓	✓	✓
Volume of flot (ml)	150	50	20	10
<i>Residue matrix (relative abundance)</i>				
Charcoal	2	3	1	-
Cracked/burnt stones	5	-	3	1
<i>Flot matrix (relative abundance)</i>				
Charcoal	2	2	1	1
Roots	4	3	2	2
Wood	1	-	-	-
<i>Charcoal (g/number of fragments)</i>				
Total charcoal (g)	2.048	2.675	0.131	0.103
Percentage of sample analysed	100	100	100	100
Total charcoal analysed >4mm (g)	2.048	2.675	0.131	0.103
Number of analysed charcoal fragments >4mm	39	18	2	1
<i>Alnus glutinosa</i> (Alder)	1.237 (23F)	0.390 (2F)	-	-
<i>Corylus avellana</i> (Hazel)	0.333 (10F)	1.359 (11F)	0.065 (1F)	-
<i>Fraxinus excelsior</i> (Ash)	0.030 (1F)	-	-	-
Maloideae (Hawthorn, whitebeams, apple, pear)	-	0.114 (1F)	-	-
<i>Prunus avium</i> (Wild Cherry)	0.175 (2F)	-	-	-
<i>Prunus</i> spp (Cherries)	-	-	-	0.103 (1F)
<i>Quercus</i> sp (Oak)	0.037 (1F)	-	-	-
Salicaceae (Willow or poplar)	-	-	0.066 (1F)	-
Unidentified >4mm fraction	0.236 (2F)	0.812 (4F)	-	-
<i>Charred remains (total number)</i>				
(c) <i>Hordeum</i> spp (Barley species) grain	2	-	-	-
<i>Uncharred remains (relative abundance)</i>				
(q) <i>Ranunculus</i> subgenus <i>Batrachium</i> (Crowfoot) achene	1	1	-	1
(t) <i>Sambucus nigra</i> (Elder) fruitstone	1	-	-	-

[c-cultivated plant; q-aquatic; t-tree]. F = number of charcoal fragments. Relative abundance is based on a scale from 1 to 5, where 1 = 1-2; 2 = 3-10; 3 = 11-40; 4 = 41-200; 5 = 200+

Appendix 1.2: Plant macrofossil and charcoal analysis – waterlogged ditch/gully fills

Context	113	347	350	403
Sample	1	2	1	1
Feature	Enclosure ditch C100	Ditch	Enclosure ditch C344	Enclosure gully C402
Material available for radiocarbon dating	✓	✓	✓	✓
Volume of flot (ml)	30R	20R	20R	50
<i>Residue matrix (relative abundance)</i>				
Cracked/burnt stones	2	1	3	1
Mollusca	1	-	1	-
<i>Flot matrix (relative abundance)</i>				
Charcoal	-	-	-	1
Insect	2	2	1	1
Insect egg case	3	-	-	1
Mollusca	-	1	1	1
Roots	-	-	-	2
Vegetative material (Uncharred)	-	2	1	-
<i>Charcoal (g/number of fragments)</i>				
Total charcoal (g)	-	-	-	0.130
Percentage of sample analysed	-	-	-	100
Total charcoal analysed >4mm (g)	-	-	-	0.130
Number of analysed charcoal fragments >4mm	-	-	-	1
<i>Corylus avellana</i> (Hazel)	-	-	-	0.130 (1F)
<i>Charred remains (total number)</i>				
(c) <i>Avena</i> spp (Oat species) small grain	-	3	-	1
(c) Cerealia indeterminate grain	-	-	-	1
<i>Uncharred remains (relative abundance)</i>				
(a) <i>Raphanus raphanistrum</i> (Wild Radish) pod	1	-	-	-
(h) <i>Rumex acetosella</i> (Sheep's Sorrel) nutlet	2	-	-	-
(q) <i>Lemna</i> spp (Duckweed) fruit	-	1	-	-
(q) <i>Ranunculus</i> subgenus <i>Batrachium</i> (Crowfoot) achene	-	5	4	-
(q) <i>Zanichellia palustris</i> (Horned Pondweed) fruit	1	4	5	-
(r) <i>Galeopsis</i> spp (Hemp-nettle) nutlet	3	-	-	-
(r) <i>Lamium</i> spp (Dead Nettle) nutlet	2	-	-	-
(r) <i>Lapsana communis</i> (Nipplewort) achene	2	-	-	-
(r) <i>Persicaria maculosa</i> (Redshank) nutlet	3	-	-	-
(r) <i>Polygonum aviculare</i> (Knotgrass) nutlet	3	2	-	-
(r) <i>Sonchus asper</i> (Prickly Sow-thistle) achene	2	-	-	-
(r) <i>Urtica dioica</i> (Common Nettle) achene	5	1	2	2
(t) <i>Alnus glutinosa</i> (Alder) fruit	-	1	-	-
(t) <i>Rubus fruticosus</i> agg. (Bramble) fruitstone	2	3	2	2
(t) <i>Sambucus nigra</i> (Elder) fruitstone	1	2	-	1
(w) <i>Ajuga reptans</i> (Bugle) seed	-	-	4	-
(w) <i>Carex</i> spp (Sedges) trigonous nutlet	1	2	3	1
(w) <i>Mentha cf. aquatica</i> (Aquatic Mint) nutlet	-	1	-	-
(x) <i>Brassicaceae</i> undifferentiated (Cabbage family) seed	2	1	-	-
(x) <i>Chenopodium</i> spp (Goosefoot) seed	-	-	-	1
(x) <i>Cirsium</i> / <i>Carduus</i> spp (Thistles) achene	2	3	-	-
(x) <i>Geranium</i> sp (Crane's-bill) seed	-	1	1	-
(x) <i>Ranunculus</i> subgenus <i>Ranunculus</i> (Buttercup) achene	-	2	2	2
(x) <i>Rosaceae</i> (Rose family) thorn	-	-	1	-
(x) <i>Rumex</i> spp (Dock) nutlet	3	2	-	1
(x) <i>Stellaria graminea</i> (Lesser Stitchwort) seed	2	-	1	-
(x) <i>Torilis japonica</i> (Upright Hedge-parsley) fruit	2	-	-	-

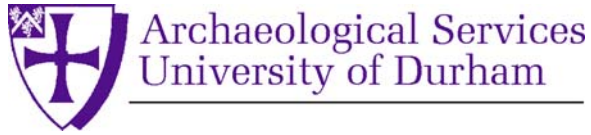
[a-arable weed; c-cultivated plant; q-aquatic; r-ruderal; t-tree/shrub; w-wetland; x-wide niche]. F = number of charcoal fragments. R = rifled. Relative abundance is based on a scale from 1 to 5, where 1 = 1-2; 2 = 3-10; 3 = 11-40; 4 = 41-200; 5 = 200+

Context	331	334	336	363	381	388	390	391	396	507	520	523
Sample	1	1, 2	1	2	1	1	1, 2	1	1	1	1	1
Feature	Furrow C330	Ditch	Deposit	Deposit	Hearth C380	Ditch C338	Ditch C338	Ditch C338	Ditch C338	Pit C506	Hearth C508	Trough
Material available for radiocarbon dating	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Volume of flot (ml)	50	20	150	20	20	25	60	25	20	140R	600R	50
Residue matrix (relative abundance)												
Bone (burnt)	-	1	1	-	-	2	2	2	2	2	1	-
Charcoal	-	1	2	-	-	1	1	1	2	2	3	1
Cracked/burnt stones	-	-	1	1	1	1	-	-	-	1	1	-
Snails	-	-	-	1	-	-	-	-	-	-	-	-
Tufa?	-	-	-	3	-	-	-	-	-	-	-	-
Flot matrix (relative abundance)												
Bone (burnt)	-	1	-	-	-	-	1	1	-	-	-	-
Charcoal	2	2	3	-	1	2	3	3	2	3	5	2
Crinoid (pre-Quaternary fossil)	-	1	-	-	-	-	1	-	-	-	-	-
Mollusca	-	-	-	1	-	-	-	-	-	-	-	-
Roots	-	-	2	-	2	1	-	2	-	1	2	1
Vegetative material (Uncharred)	-	-	-	2	-	-	-	-	-	-	-	-
Charcoal (g/number of fragments)												
Total charcoal (g)	2.418	1.488	4.647	-	-	1.229	3.872	1.143	0.149	5.317	88.094	0.706
Percentage of sample analysed	100	100	100	-	-	100	100	100	100	100	10	100
Total charcoal analysed >4mm (g)	2.418	1.488	4.647	-	-	1.229	3.872	1.143	0.149	5.317	9.204	0.706
Number of analysed charcoal fragments >4mm	31	21	59	-	-	22	83	21	3	73	108	27
<i>Alnus glutinosa</i> (Alder)	0.818 (9F)	0.079 (3F)	0.543 (14F)	-	-	0.103 (3F)	1.172 (30F)	0.055 (2F)	-	0.705 (17F)	0.777 (15F)	0.102 (4F)
<i>Corylus avellana</i> (Hazel)	0.342 (4F)	-	0.271 (1F)	-	-	0.185 (4F)	0.140 (4F)	-	0.132 (2F)	0.460 (8F)	0.473 (3F)	0.019 (1F)
<i>Fraxinus excelsior</i> (Ash)	0.157 (2F)	0.142 (2F)	0.501 (9F)	-	-	0.047 (2F)	0.484 (12F)	0.759 (16F)	0.017 (1F)	-	-	0.585 (22F)
<i>Ilex aquifolium</i> (Holly)	-	-	-	-	-	-	0.101 (1F)	0.106 (1F)	-	-	-	-
Maloideae (Hawthorn, whitebeams, apple, pear)	-	-	0.292 (3F)	-	-	-	0.054 (1F)	-	-	0.880 (13F)	0.389 (6F)	-
<i>Prunus spinosa</i> (Blackthorn)	-	-	-	-	-	-	0.050 (1F)	-	-	2.347 (24F)	5.829 (63F)	-
<i>Prunus</i> spp (Cherries)	0.137 (3F)	-	0.562 (8F)	-	-	-	0.179 (5F)	-	-	-	1.304 (12F)	-
<i>Quercus</i> sp (Oak)	0.156 (3F)	0.629 (9F)	1.209 (11F)	-	-	0.562 (5F)	0.749 (16F)	0.047 (1F)	-	0.209 (6F)	0.260 (5F)	-
Salicaceae (Willow or poplar)	-	-	-	-	-	-	-	-	-	-	0.040 (1F)	-
Ring porous	-	0.193 (3F)	0.105 (2F)	-	-	0.051 (3F)	0.121 (4F)	-	-	-	-	-
Unidentified >4mm fraction	0.808 (10F)	0.445 (4F)	1.164 (11F)	-	-	0.281 (5F)	0.822 (9F)	0.176 (1F)	-	0.716 (5F)	0.132 (3F)	-
Charred remains (total number)												
(a) <i>Fallopia convolvulus</i> (Black Bindweed)	nutlet	-	-	-	-	1	-	-	-	4	-	1
(a) <i>Tripleurospermum inodorum</i> (Scentless Mayweed)	achene	-	2	-	-	-	-	-	-	-	-	-
(c) <i>Avena fatua</i> (Wild Oat)	floret base	-	-	-	-	-	-	-	1	-	-	-
(c) <i>Avena</i> spp (Oat species) large	grain	-	-	-	-	49	56	4	14	200	76	8
(c) <i>Avena</i> spp (Oat species) small	grain	83	72	36	2	4	159	27	24	38	280	40
(c) <i>Cerealia</i> indeterminate	grain	23	3	8	1	-	47	4	6	8	36	4
(c) <i>Cerealia</i> indeterminate	culm nodes	-	-	-	-	-	-	-	1	3	-	-
(c) <i>Hordeum</i> spp (Barley species)	grain	58	71	97	-	1	141	69	30	31	960	352
(c) <i>Hordeum</i> spp (Barley species)	grain - sprouting	-	-	-	-	-	-	-	-	-	1	-
(c) <i>Hordeum</i> spp (Barley species) indet	rachis frag.	2	-	-	-	-	-	-	-	-	-	-
(c) <i>Hordeum</i> spp (Hulled Barley)	grain	12	4	8	-	-	2	2	7	-	16	-
(c) <i>Hordeum vulgare</i> (6-row barley)	twisted grain	-	-	-	-	-	7	-	2	16	-	1
(c) <i>Hordeum vulgare</i> (6-row hulled barley)	twisted grain	12	7	4	-	-	8	15	2	9	16	-
(c) <i>Secale cereale</i> (Rye)	grain	7	-	-	-	-	2	-	-	-	4	-
(c) <i>Triticum</i> cf. <i>aestivum</i> (cf. Bread Wheat)	grain	17	-	-	-	-	10	10	10	-	16	-
(c) <i>Triticum</i> spp (Wheat species)	grain	-	3	12	-	-	-	-	-	3	8	28
(r) <i>Galium aparine</i> (Cleavers)	seed	-	-	1	-	-	-	1	-	-	-	-
(r) <i>Lapsana communis</i> (Nipplewort)	achene	-	-	-	-	-	1	-	-	1	-	-
(r) <i>Persicaria maculosa</i> (Redshank)	nutlet	-	-	-	-	-	1	1	-	-	4	-
(r) <i>Polygonum aviculare</i> (Knotgrass)	nutlet	-	-	-	-	-	-	-	-	-	-	1
(r) <i>Plantago lanceolata</i> (Ribwort Plantain)	seed	1	-	2	-	-	-	-	-	-	-	-
(t) <i>Corylus avellana</i> (Hazelnut)	nutshell frag.	-	-	-	-	-	-	-	1	-	-	-
(w) <i>Carex</i> spp (Sedges)	biconvex nutlet	1	1	-	-	-	-	-	-	1	-	-
(w) <i>Carex</i> spp (Sedges)	trigonous nutlet	2	1	-	-	1	-	-	-	-	-	-
(x) <i>Chenopodium</i> spp (Goosefoot)	seed	6	-	-	-	-	-	-	-	-	-	-
(x) <i>Rumex</i> spp (Dock)	nutlet	4	17	25	-	-	19	23	4	13	32	-
(x) <i>Vicia</i> spp (Vetch)	seed	-	2	-	-	-	-	-	-	1	-	-
Uncharred remains (relative abundance)												
(q) <i>Ranunculus</i> subgenus <i>Batrachium</i> (Crowfoot)	achene	2	-	2	-	-	-	-	-	-	-	-
(r) <i>Urtica dioica</i> (Common Nettle)	achene	-	-	2	-	-	2	-	-	-	-	-
(t) <i>Betula</i> sp (Birch)	fruit	-	-	-	-	-	-	1	-	-	-	-
(t) <i>Crataegus monogyna</i> (Hawthorn)	fruitstone	-	-	-	1	-	-	-	-	-	-	-
(t) <i>Crataegus monogyna</i> (Hawthorn)	leaf	-	-	-	1	-	-	-	-	-	-	-
(t) <i>Rubus fruticosus</i> agg. (Bramble)	fruitstone	1	2	-	1	-	1	3	2	5	-	-
(t) <i>Sambucus nigra</i> (Elder)	fruitstone	-	-	-	-	-	1	-	2	-	-	-
(w) <i>Carex</i> spp (Sedges)	trigonous nutlet	-	-	1	-	-	-	1	-	-	-	-
(x) <i>Chenopodium</i> spp (Goosefoot)	seed	-	-	-	1	-	-	1	-	1	-	-
(x) <i>Cirsium</i> / <i>Carduus</i> spp (Thistles)	achene	1	-	-	-	-	-	-	-	-	-	-
(x) <i>Poaceae</i> undifferentiated >2mm (Grass family)	caryopsis	-	-	-	1	-	-	-	-	-	-	-

[a-arable weed; c-cultivated plant; q-aquatic; r-ruderal; t-tree/shrub; w-wetland; x-wide niche]. F = number of charcoal fragments. R = riffled. Relative abundance is based on a scale from 1 to 5, where 1 = 1-2; 2 = 3-10; 3 = 11-40; 4 = 41-200; 5 = 200+

Appendix 1.3: Plant macrofossil and charcoal analysis – non-waterlogged early medieval contexts

APPENDIX 7: Pollen Analysis: Durham University



Ardbraccan 2, M3 Motorway Project, Co Meath, Ireland

pollen analysis

on behalf of

Archaeological Consultancy Services Ltd

**Report 2000
August 2008**

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1. Summary

The project

- 1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Ardbraccan 2, Co Meath, Ireland. This report presents the results of pollen analysis of 1 sample taken from an enclosure ditch (context 350).

Results

- 1.2 Pollen analysis of context (350) from the enclosure ditch reveals principally herbaceous taxa, including some cereal-type grains.

2. Project background

Location and background

- 2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Ardbraccan 2, Co Meath, Ireland. Features at this site include a burnt spread, early field ditches or drains, and a post-medieval field system. This report presents the results of pollen analysis of the basal fill of an enclosure ditch, context (350).

Objective

- 2.2 The objective was to provide information about the land use, agricultural activities and palaeoenvironment at the site.

Dates

- 2.3 Samples were received by Archaeological Services Durham University in February 2008. Analysis and report preparation were conducted in July 2008.

Personnel

- 2.4 Sample preparation was undertaken by Mr Bryan Atkinson. Dr Mairead Rutherford carried out the pollen analysis and compiled the report.

Archive

- 2.5 The licence number is A023/024 (E3116). The samples are currently at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Method

- 3.1 Pollen was extracted from one ml of the sample. A single *Lycopodium* spore tablet from batch 307862 was added before processing (the average number of spores per tablet from this batch is 13,500). The sample was pre-treated with 10% hydrochloric acid to remove any carbonates before undergoing sodium hydroxide digestion. The residue was then sieved through a 125 µm sieve and over a 10 µm mesh. After being washed in distilled water, the sample was heated in an acetylation mixture of acetic anhydride and sulphuric acid. The sample was washed again before the pollen was separated from the mineral matrix using a heavy liquid technique, with sodium polytungstate at a density of 1.95 g/l. The extracted pollen was then dehydrated using industrial methalated spirits followed by tertiary butyl alcohol. The pollen was mounted in silicone fluid and examined at ×500 magnification.
- 3.2 Identification of pollen and spores was undertaken by comparison with modern reference material, using Moore *et al* (1991) as a guide. Plant taxonomic nomenclature follows Stace (1997). A minimum number of 500 pollen grains was counted.

4. Results

- 4.1 The pollen in context (350) is principally from herbaceous taxa, including some cereal-type grains. Microscopic charcoal is present in the sample. The results of the pollen analysis are presented in Table 1.

Table 1: Data from pollen analysis

Feature fill	enclosure ditch
Context	350
Sample	2
Volume processed (ml)	1
Charcoal	present
<i>Lycopodium</i> spores	103
Pollen/spores (absolute counts)	
Arboreal taxa	
<i>Alnus</i> (Alder)	1
<i>Betula</i> (Birch)	2
<i>Corylus</i> (Hazel)	2
<i>Quercus</i> (Oak)	4
<i>Hedera</i> (Ivy)	3
<i>Sambucus</i> (Elder)	7
<i>Salix</i> (Willow)	2
Herbaceous taxa	
Apiaceae (Carrot family)	3
Asteraceae (Daisy family) - Lactuceae	17
<i>Taraxacum</i> -type (Dandelions)	20
<i>Cirsium</i> -type (Thistles)	2
<i>Chenopodiaceae</i> (Goosefoot family)	1
Brassicaceae (Cabbage family)	13
<i>Artemisia</i> (Mugwort family)	1
Cereal -type	12
<i>Galium</i> -type (Bedstraw -type)	2
<i>Mentha</i> -type (Mint)	9
<i>Plantago lanceolata</i> -type (Ribwort Plantain -type)	58
Poaceae (Grass)	305
<i>Cyperaceae</i> (Sedges)	23
<i>Rumex</i> (Dock)	4
<i>Rumex obtusifolius</i> (Broad-leafed dock)	1
Ranunculaceae (Buttercup family)	7
Rosaceae (Rose family)	1
<i>Polygonum</i> (Bistort)	1
<i>Potentilla</i> –type (Rose family)	1
Pteridophyte spores	
Filicales (<i>Ferns undifferentiated</i>)	1
Polypodium (<i>Polypody</i>)	1
Sphagnum (<i>Sphagnum</i>)	1
Total number of pollen grains	502

5. Discussion

- 5.1 The dominance of pollen from grasses and other herbaceous taxa indicates an open meadow environment. The presence of cereal pollen and pollen of plants such as plantains, dock, daisies and dandelions suggests a vegetation cover disturbed by human activity. The cereal types and cabbage types could have been produced as food crop plants. The microscopic charcoal is likely to represent a residual background level associated with habitation.
- 5.2 Rare tree pollen suggests a regional pollen source and is probably not a reflection of local woodland.

6. Sources

Moore, P D, Webb, J A, & Collinson, M E, 1991 *Pollen analysis*, 2nd edition Oxford
Stace, C, 1997 *New Flora of the British Isles*, 2nd Edition, Cambridge

APPENDIX 8: Metalworking report: Angela Wallace

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**Archaeometallurgical Report on material from Ardbraccan 2
For
Archaeological Consultancy Services Ltd.**

**Angela Wallace MSc, MIAI
January 2009**

Ardbraccan 2

F5 Find 3

Small flattish piece of slag, light grey in colour with a reddish hue. Length 3.5cm, Th. 0.3-1.0cm, Weight 11g.

Possible copper slag, further analysis required to confirm.

F5 Find 34

Small nodule of baked clay, oxidised fired on the inside, the outer surface is reduced fired consisting of a dark grey vitrified layer. Length 3.5cm, Th. 1.4cm, Weight 15g.

F5 Find 35

Small nodule of slag Length 2.5cm, Th.0.7cm, Weight 13g. This may be copper slag but its not possible to say definitively from visual examination alone, chemical analysis required to confirm this.

F5 Find 44

Dark grey/black highly vitrified ceramic material with reddish oxidised clay/slag adhering to the inside. The fabric of the ceramic material appears quite fine and it is possibly part of a mould or crucible, although the shape is quite irregular. Length 5cm, Width 3.5cm, Th. 1-2cm, Weight 5g

C7 Find 5

Small fragment of vitrified clay/slag, Length 3cm, Th. 1.2-2.4cm, Weight 10g

This piece is reddish coloured and may also be associated with copper working.

F313: 01

Small roughly rounded piece of slag, L 7cm, W 6cm, Th. 1.5-2.5cm, weight 137g.

This piece has appearance of a typical small iron smithing slag.

F387 Find 2

c.15 small irregular shaped nodules of slag ranging from 1-4cm diameter, nodules consist of grey/reddish material with frequent porosity, possible furnace lining slags.

Discussion & Conclusions

There is a relatively small quantity of slag from this site (0.334Kg). The majority of the slag came from topsoil layers F5 and F7. Find 3 and Find 35 from F5 are possibly associated with copper working but it is difficult to be certain without further analysis. Find 44 also from F5 may be part of a mould or crucible as it has a fine clay fabric. Find 5 from C7 could also possibly be associated with copper working.

Several small additional pieces of slag most likely associated with iron smithing were recovered from F313 (fill of drain 312) and F387 (upper fill of ditch 338).

There were very few finds from the site, no evidence for any copper alloy artefacts of archaeological significance. No evidence to suggest any metalworking area was located during excavation. The site comprised a Bronze Age burnt mound, an Iron Age/early medieval field system, an early medieval enclosure and a post-medieval field system. As the majority of the slag from this site is unstratified and is not closely linked to any specific chronological period or features it is not considered worthwhile carrying out further analysis on unusual pieces identified.

APPENDIX 9: Radiocarbon dates: Beta Analytic

Feature	Sample No	Species id/ weight	Beta Analytic Code	Date Type	Lab Calibrated Date (2-sigma)	Oxcal Calibrated Date	Conventional Date (BP)	13C/12C Ratio ‰
31: from pit F94	1	Hazel (233mg)	247117	AMS (Std)	Cal BC 1590-1590 & Cal BC 1530-1410	1606-1411 BC	3210 +/-40	-25
83: from palisade F42	1	Hazel (304mg)	247118	AMS (Std)	Cal BC 1430-1260	1435-1223 BC	3080 +/-40	-25.9
135: from pit F79	3	Cherry (172mg)	247119	AMS (Std)	Cal BC 1520-1400	1601-1392 BC	3190 +/-40	-25.5
350: from ditch F344	1	Charred barley grain (10mg)	247121	AMS (Std)	Cal AD 780-1000	AD 780-991	1130 +/-40	-22.9
381: from hearth F380	1	Charred barley grain (10mg)	247122	AMS (Std)	Cal AD 660-810	AD 657-862	1280 +/-40	-22.8
391: from slot F338	1	Ash (302mg)	247123	AMS (Std)	Cal AD 690-900	AD 687-937	1210 +/-40	-25
507: from pit F506	1	Maloideae (460mg)	247124	AMS (Std)	Cal AD 640-710 & Cal AD 750-760	AD 614-771	1350 +/-40	-25.1
520: from hearth F508	1	Cherry (1037mg)	247125	AMS (Std)	Cal AD 650-770	AD 647-775	1320 +/-40	-23.5
523: from trough F9	1	Ash (117mg)	247126	AMS (Std)	Cal AD 640-720 & Cal AD 740-770	AD 635-774	1340 +/-40	-25.9

APPENDIX 10a *Stone object report: Jon Stirland*

Project	Ardbraccan 2,M3 Stone Finds Description Report
Archaeologist	Jon Stirland
Site	Ardbraccan 2
Project Start Date	22 January 2009
Report Date	23 January 2009
Job No	04_01

CONTENTS

1. Introduction	1
2. Methodology	1
3. List of Stone Finds	2
4. Catalogue	2
5. Bibliography	4

1.Introduction

This report provides a description and interpretation of a hone stone (A023/024:14:1) and a stone reed lamp (A017/001:19:1) found during the excavation of the Ardbraccan 2 site along the route of the M3. The hone stone has a limited diagnostic nature that inhibits any accurate dating. However, its general appearance suggests an Early Medieval / Medieval date. It is similar to hone stones found during excavations of Late Viking Age and Medieval deposits in Waterford. The stone reed lamp is generally typical of prehistoric and early medieval type.


2. Methodology


The methodology used to assess the nature of these stone objects was stylistic relative dating and a literature review comparing and contrasting other examples from previous archaeological excavations and publications.

3. List of Stone Finds

Site	Find No	Feature No	Description
Ardbraccan 2	A023/024:14:1	14	Hone Stone
Ardbraccan 2	A023/024:392:1	392	Stone Lamp

4. Catalogue

Project	04_01 M3 Contract 3	
Site	Ardbraccan 2	
Finds No	A023/024:14:1	
Type	Hone Stone	A023/025:14:1 Hone Stone
Stone Type	Sand Stone	
Weight	11g	
Shape	Rectangular	
Description	<p>This sand stone hone stone appears to be a fragment of a once longer rectangular hone stone.</p> <p>All four of its sides show clear signs of use. One of its surfaces contains two grooves or striations, which appear not to be associated with its use as a hone.</p> <p>This small hone stone also contains a small circular hole 4mm in diameter designed to support a leather thong or strap.</p> <p>It has a length of 52mm, a width of 13mm and a depth of 6mm.</p>	
Interpretation	This hone stone is similar to hone stones found during excavations of Late Viking Age and Medieval deposits in Waterford.	

Project	04_01 M3 Contract 3	
Site	Ardbraccan 2	
Finds No	A023/024:392:1	
Type	Stone Lamp	A023/024:392:1 Stone Lamp
Stone Type	Sandstone	
Weight	112g	
Shape	Irregular	
Description	<p>The outer surface of this sandstone reed lamp is naturally domed. Its main worked surface contains a shallow circular depression with a diameter of 42mm and a depth of 9mm.</p> <p>This stone lamp has two broken surfaces that appear to be relatively recent.</p> <p>It has a length of 72mm, a width of 55mm and a depth of 15mm.</p>	
Interpretation	<p>This stone reed lamp is generally of typical prehistoric and early medieval type.</p> <p>Its limited diagnostic nature inhibits any accurate dating.</p>	

5. BIBLIOGRAPHY

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- Hurley, M 1992 Late Viking Age settlement in Waterford City in W Nolan & T Powers (eds), *Waterford: History and Society. Interdisciplinary Essays on the History of an Irish County*, 49–72. Dublin, Geography Publications.
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- Waddell, J. (1998) *The Prehistoric Archaeology of Ireland*. Galway University Press.

APPENDIX 10b *Stone object report: Ann Carey***Stone Tools, M3, Ardbraccan 2****Ardbraccan 2**

Three stones were examined from Ardbraccan 2, as part of the stone tool specialist analysis. All the stones were non-archaeological finds, with no wear or diagnostic marks, indicating they were natural and unworked and of no archaeological significance.

Table: Non-archaeological finds

Ardbraccan 2 A023/024:387:1

Irregular shaped stone of natural origin. The stone is flat and uneven on both the upper surface and the base and there is no evidence of wear. Dimensions: L. 380mm, Wth. 195mm, Th. 50mm.

Ardbraccan 2 A023/024:5:30

Irregular shaped stone object, highly weathered and of natural origin. Dimensions: L 80mm, Wth 10.8mm, Th 10.5mm.

Ardbraccan 2 A023/024:399:1

Irregular shaped stone of natural origin. The stone is not shaped and is unworked. Dimensions: L 110.2mm, Wth 50.5mm, Th 50mm.

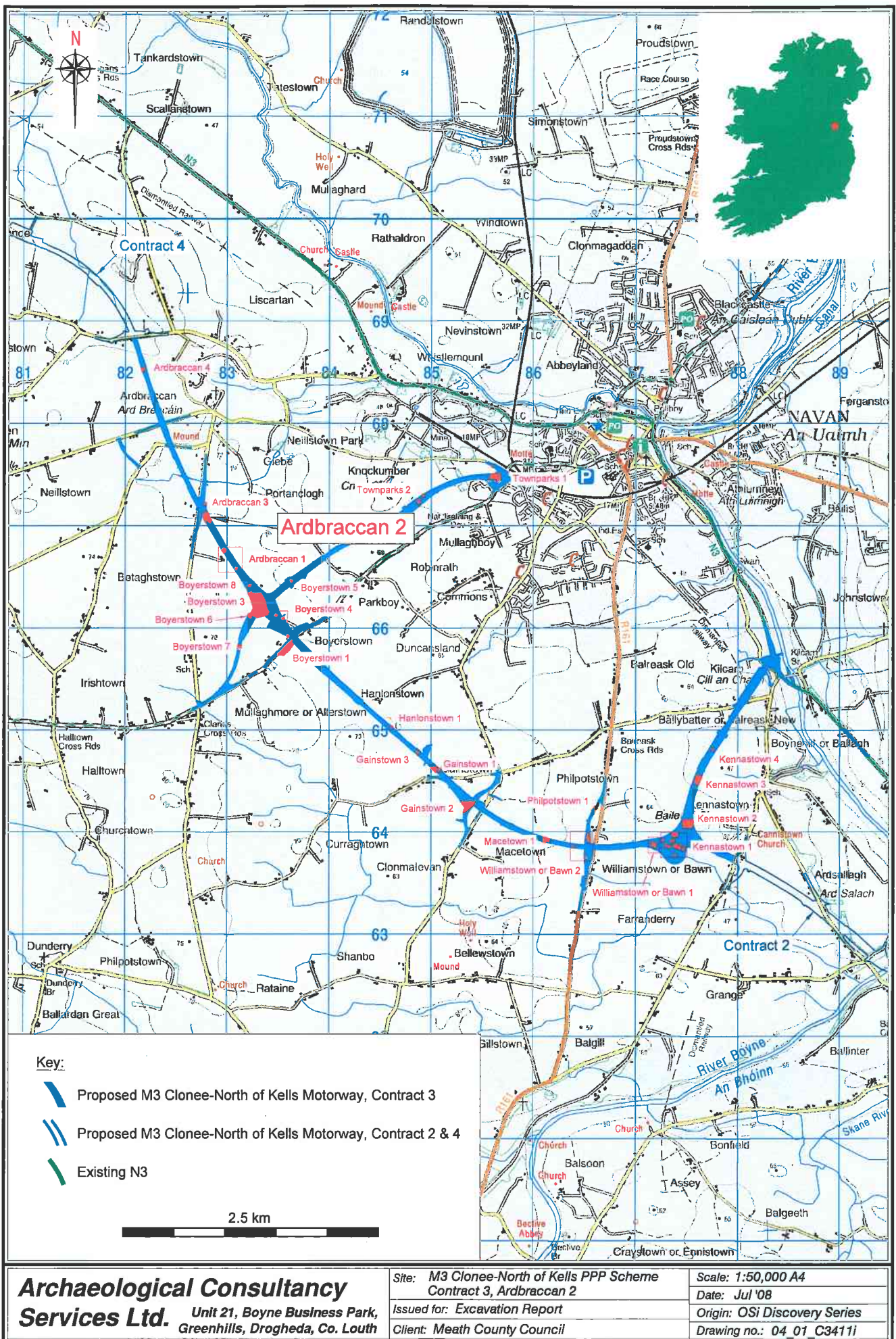


Figure 1: Location of Ardraccan 2

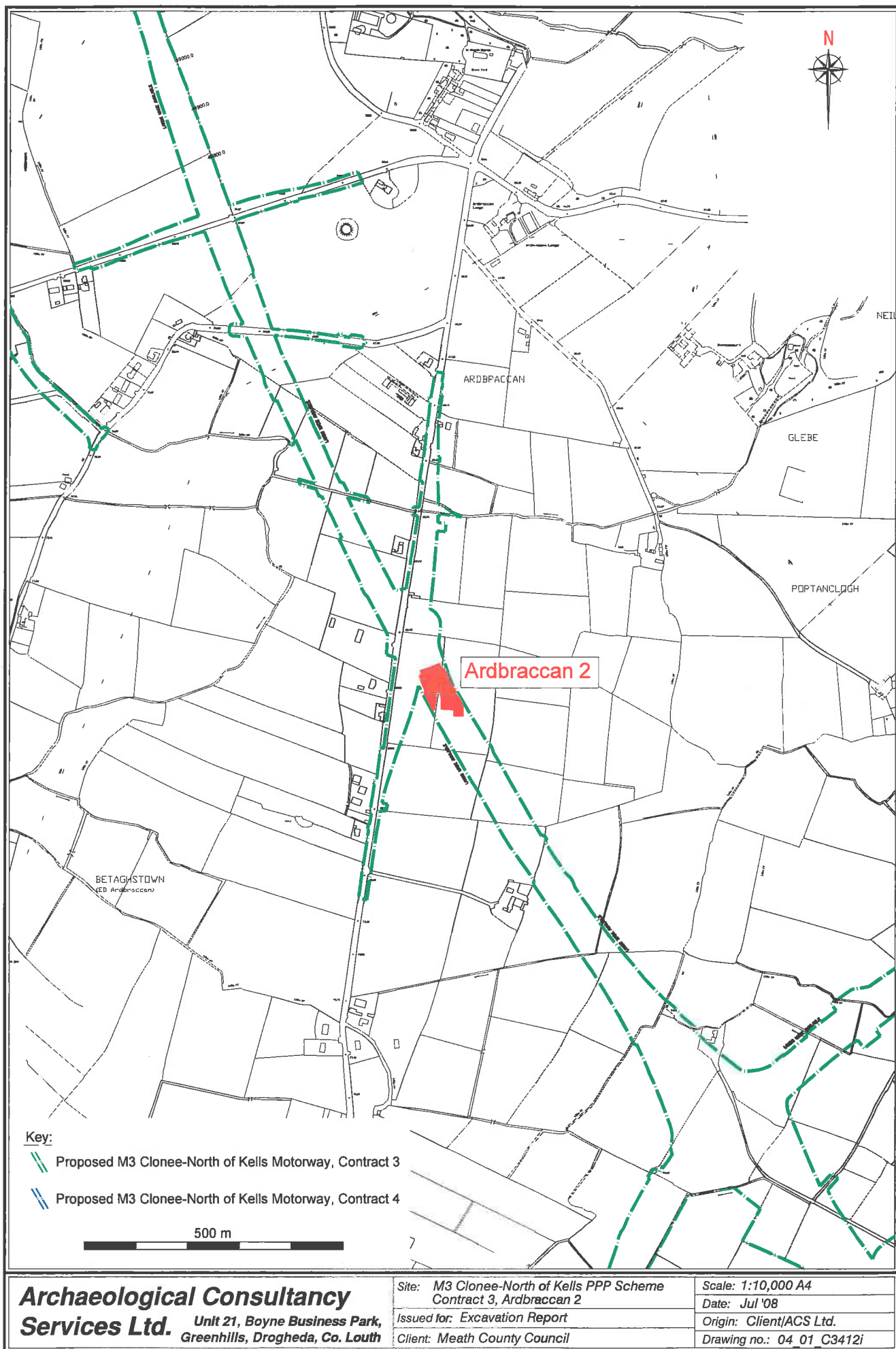
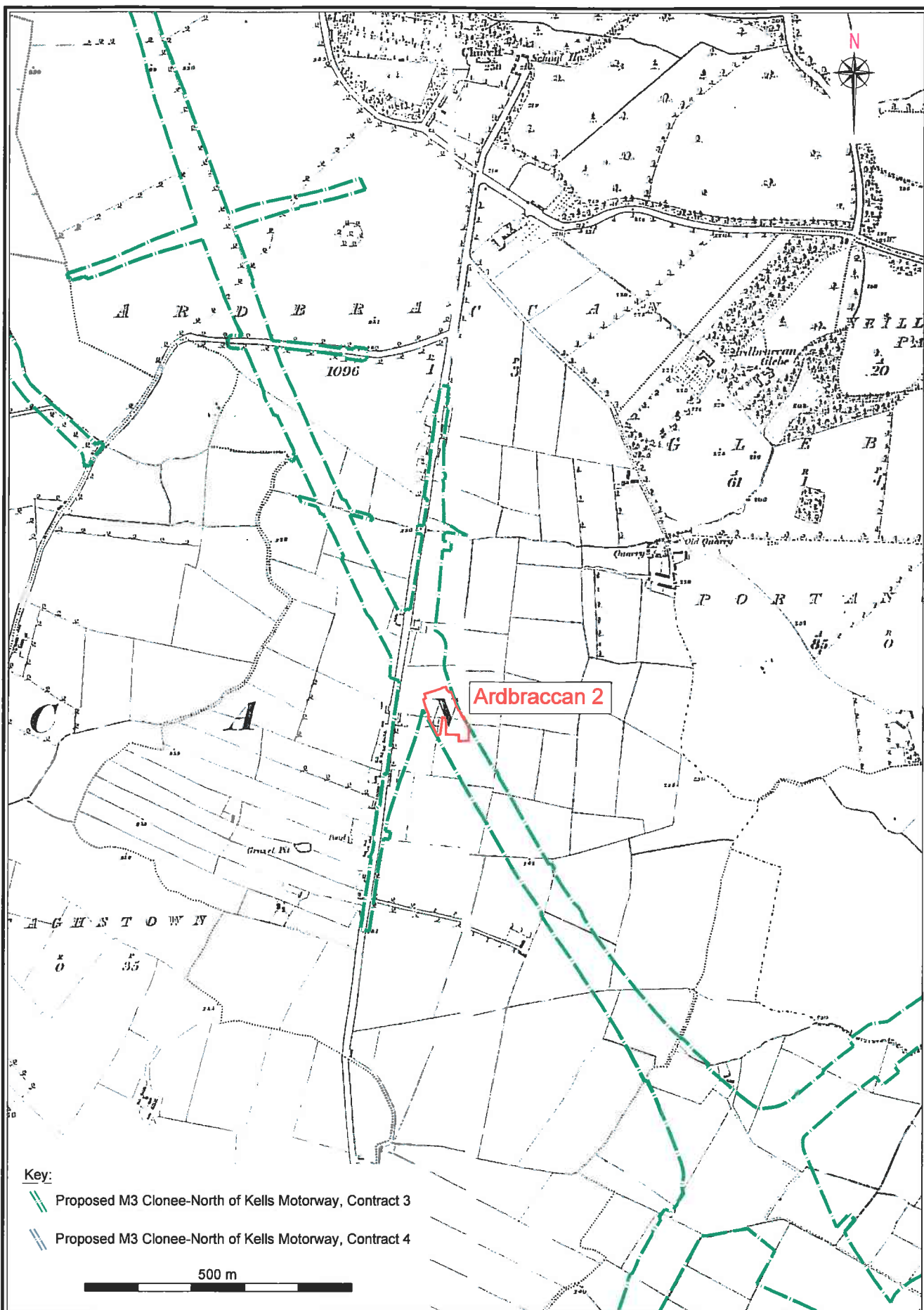


Figure 2: Location of Ardraccan 2 on current OS background

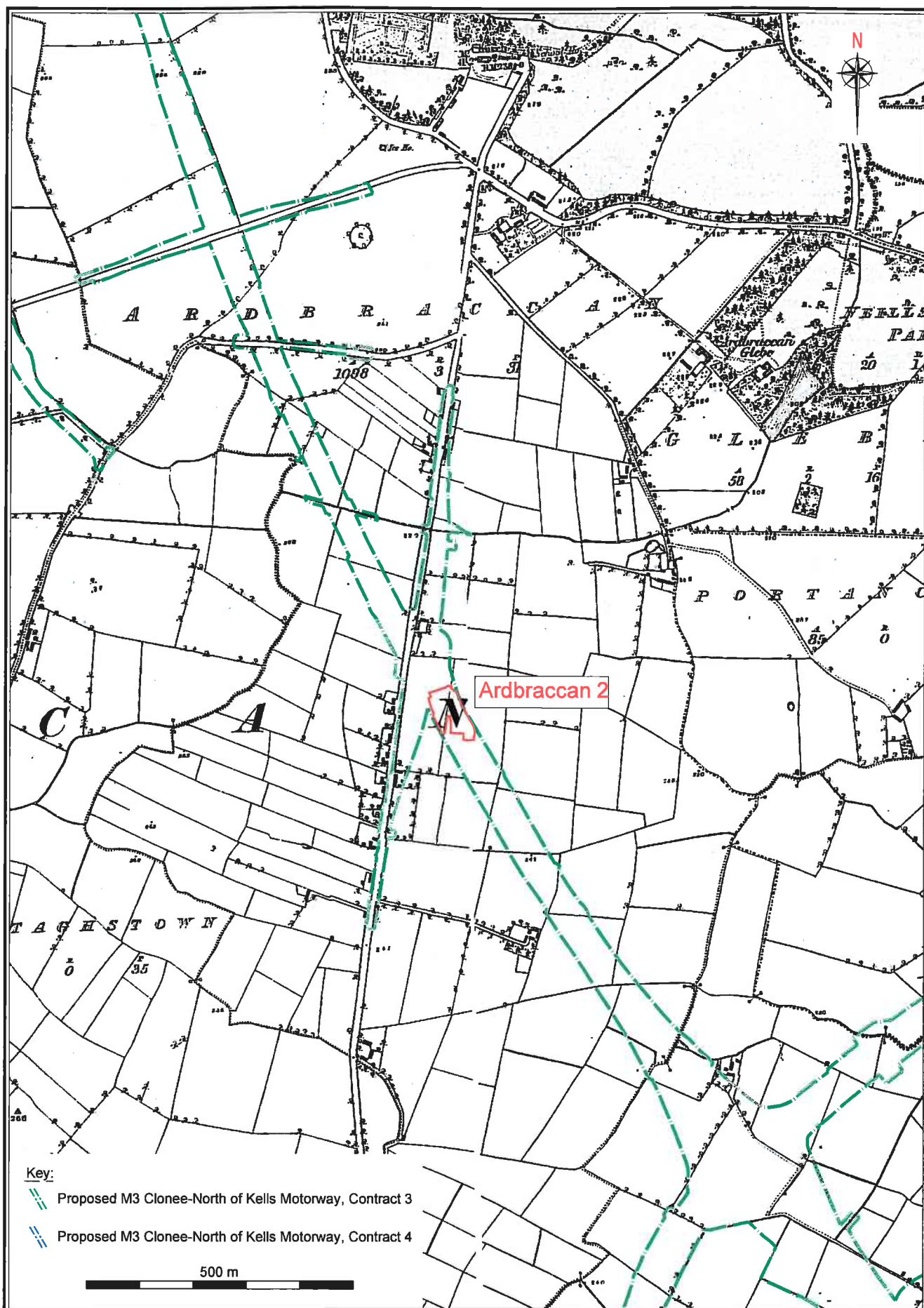


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Scale: 1:10,000 A4
Date: Jul '08
Origin: OSI (1836)
Drawing no.: 04_01_C3413i

Figure 3: Ardbraccan 2, extract from 1st edition OS map, Meath sheets 24 & 25



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Scale: 1:10,000 A4
Date: Jul '08
Origin: OSi (1882)
Drawing no.: 04 01 C3414i

Figure 4: Ardbraccan 2, extract from 2nd edition OS map, Meath sheets 24 & 25

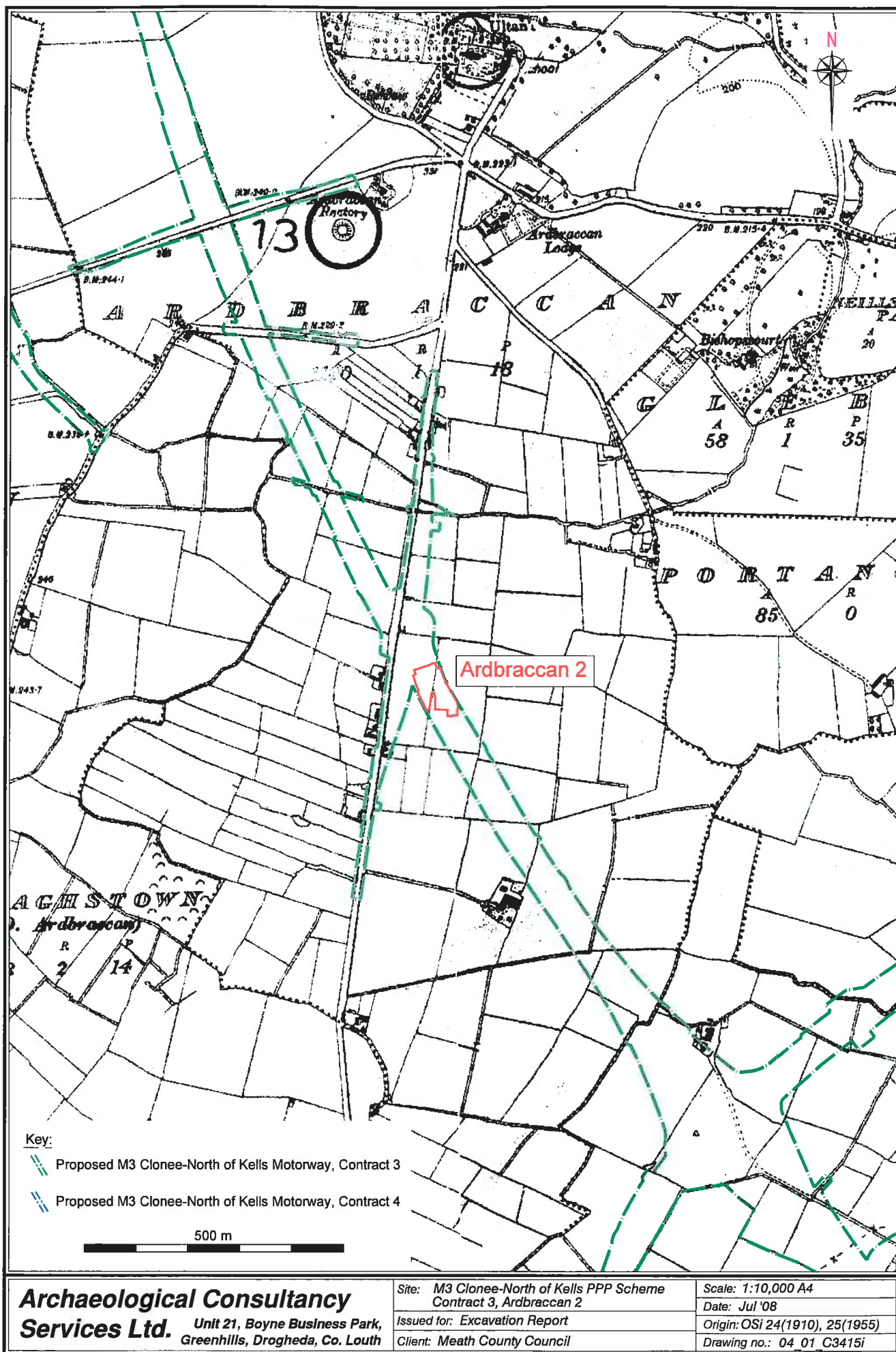
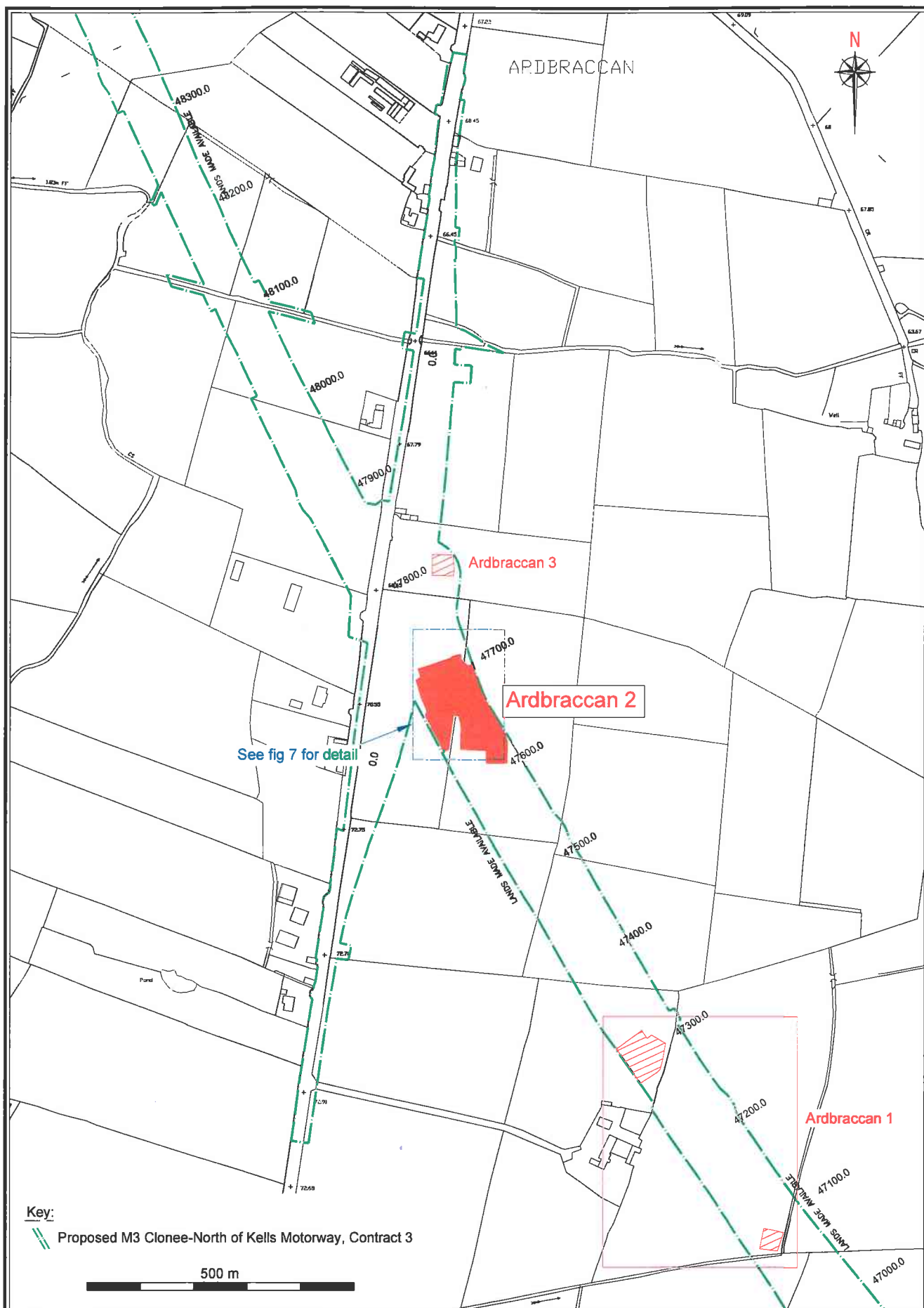


Figure 5: Ardbraccan 2, extract from 3rd edition OS map, Meath sheets 24 & 25

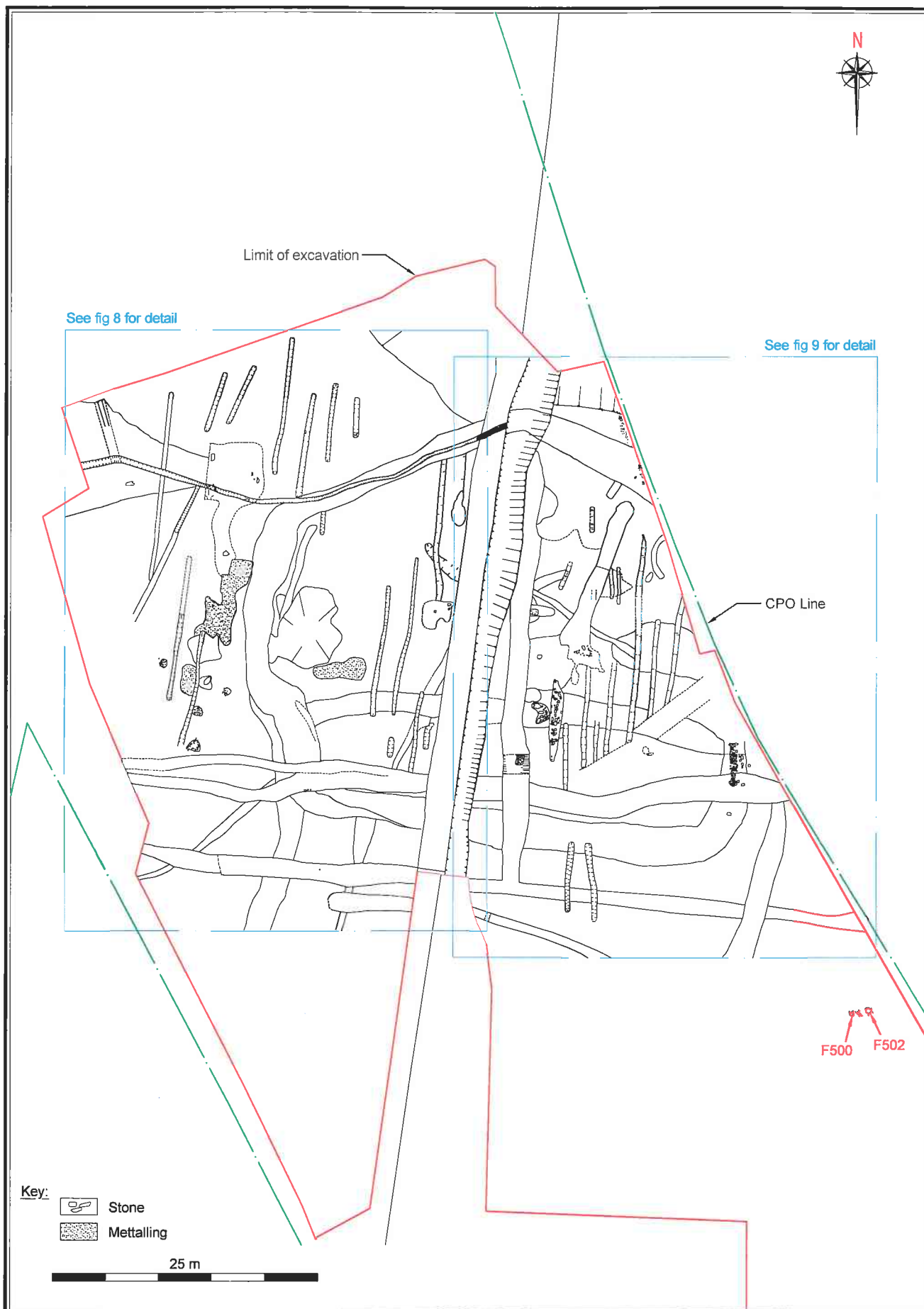


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 Date: Jul '08
 Origin: Client/ACS Ltd.
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Figure 6: Detailed location of Ardbraccan 2



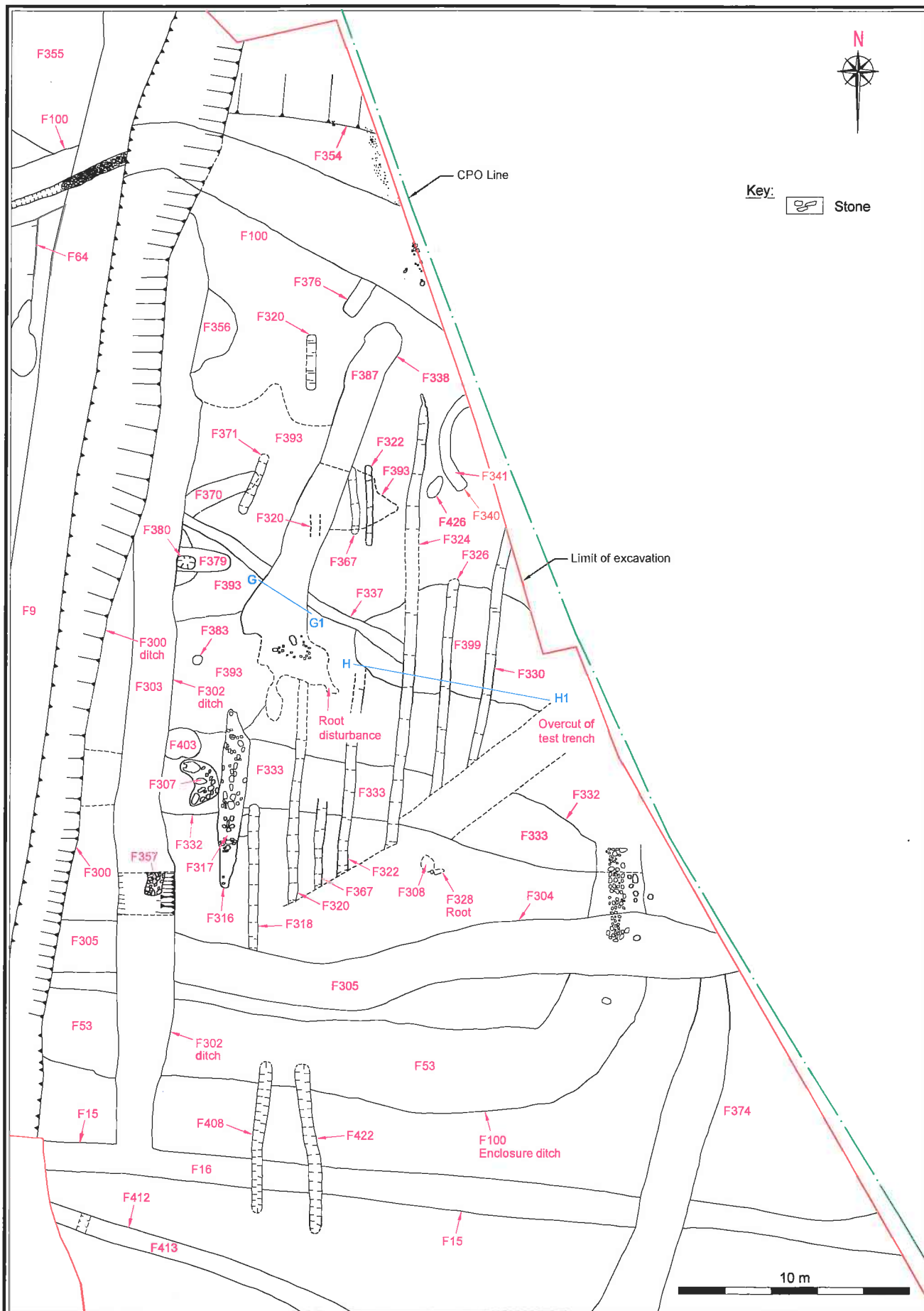
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Scale: 1:500 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C34171

Figure 7: Pre-excitation plan of Ardbraccan 2

Scale: As scalebar
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04 01 C3418i

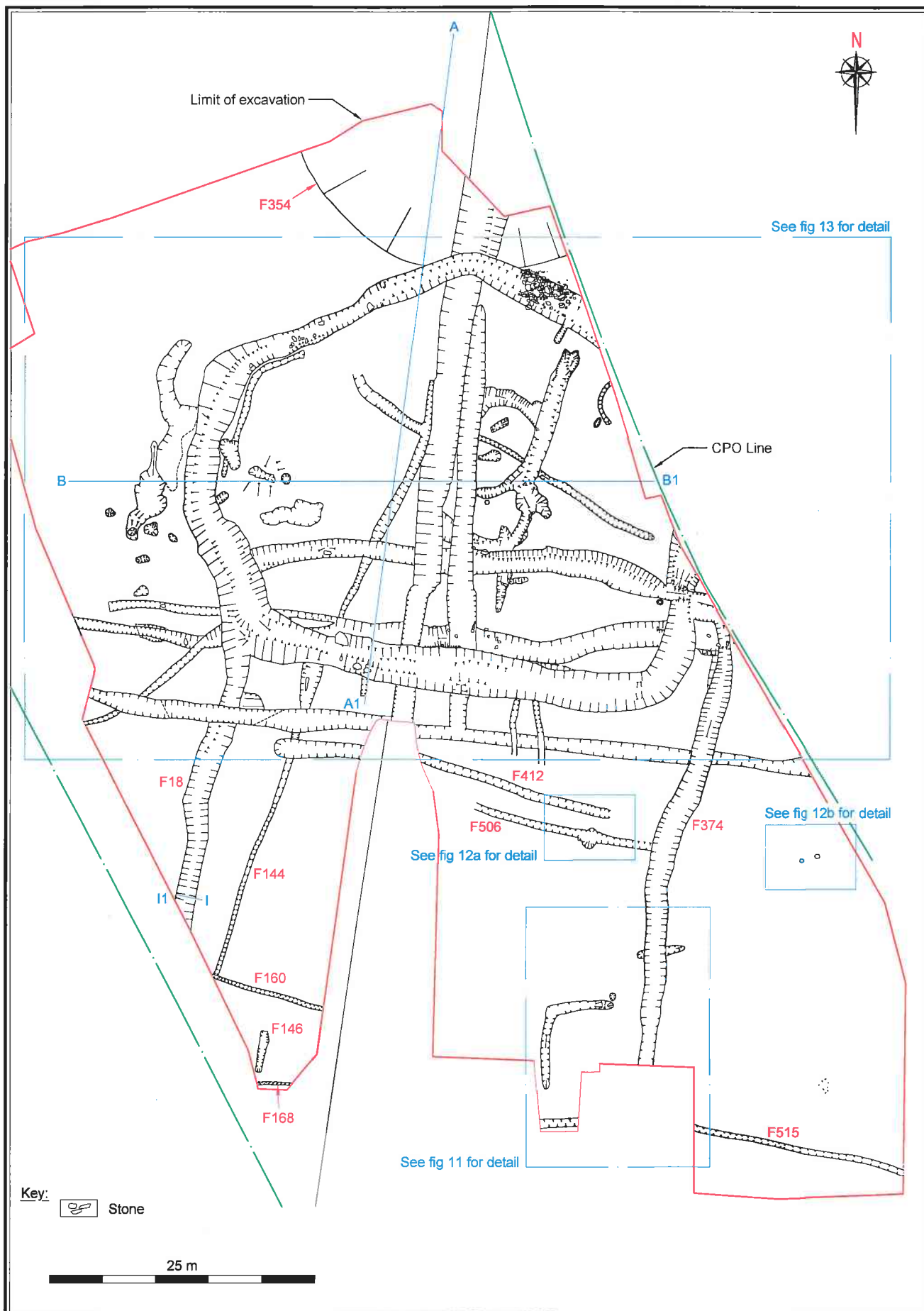


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Scale: As scalebar
 Date: Jul '08
 Origin: Client/ACS Ltd.
 Drawing no.: 04_01_C3419i

Figure 9: Pre-excitation plan, site east

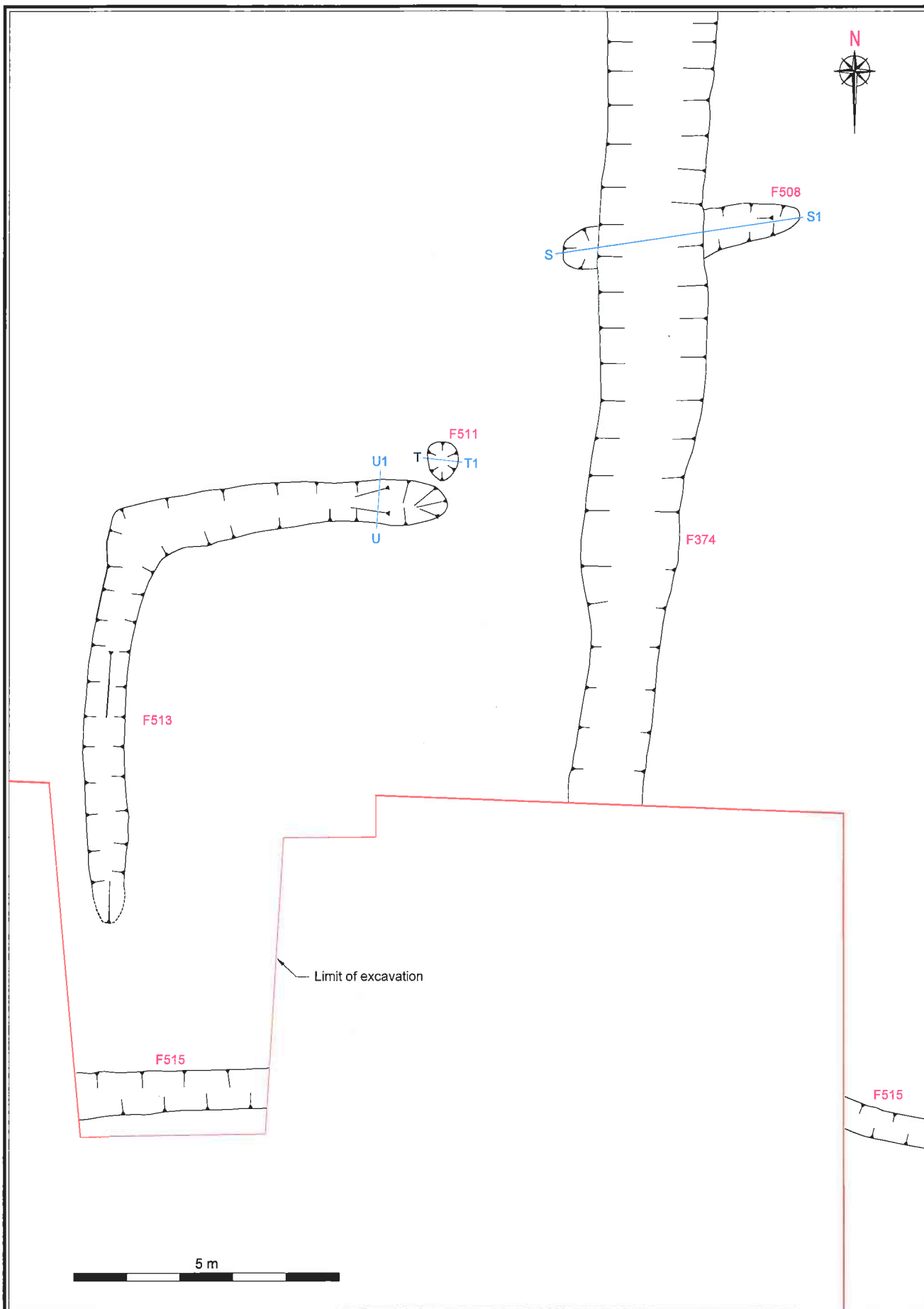


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Scale: 1:500 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3420i

Figure 10: Post-excavation plan of Ardbraccan 2

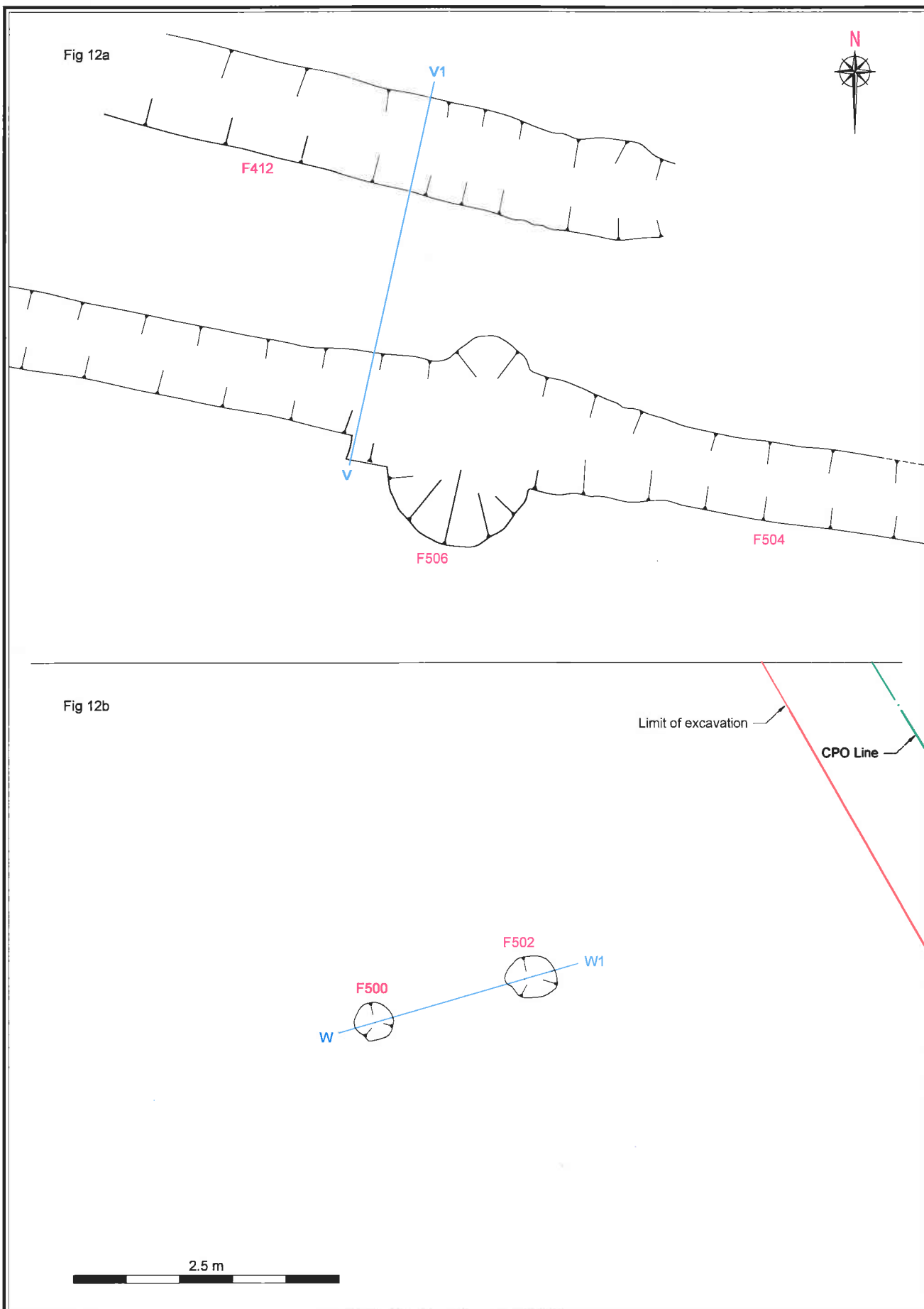


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Scale: 1:100 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3421i

Figure 11: Post-excavation plan of F513 and outlying features

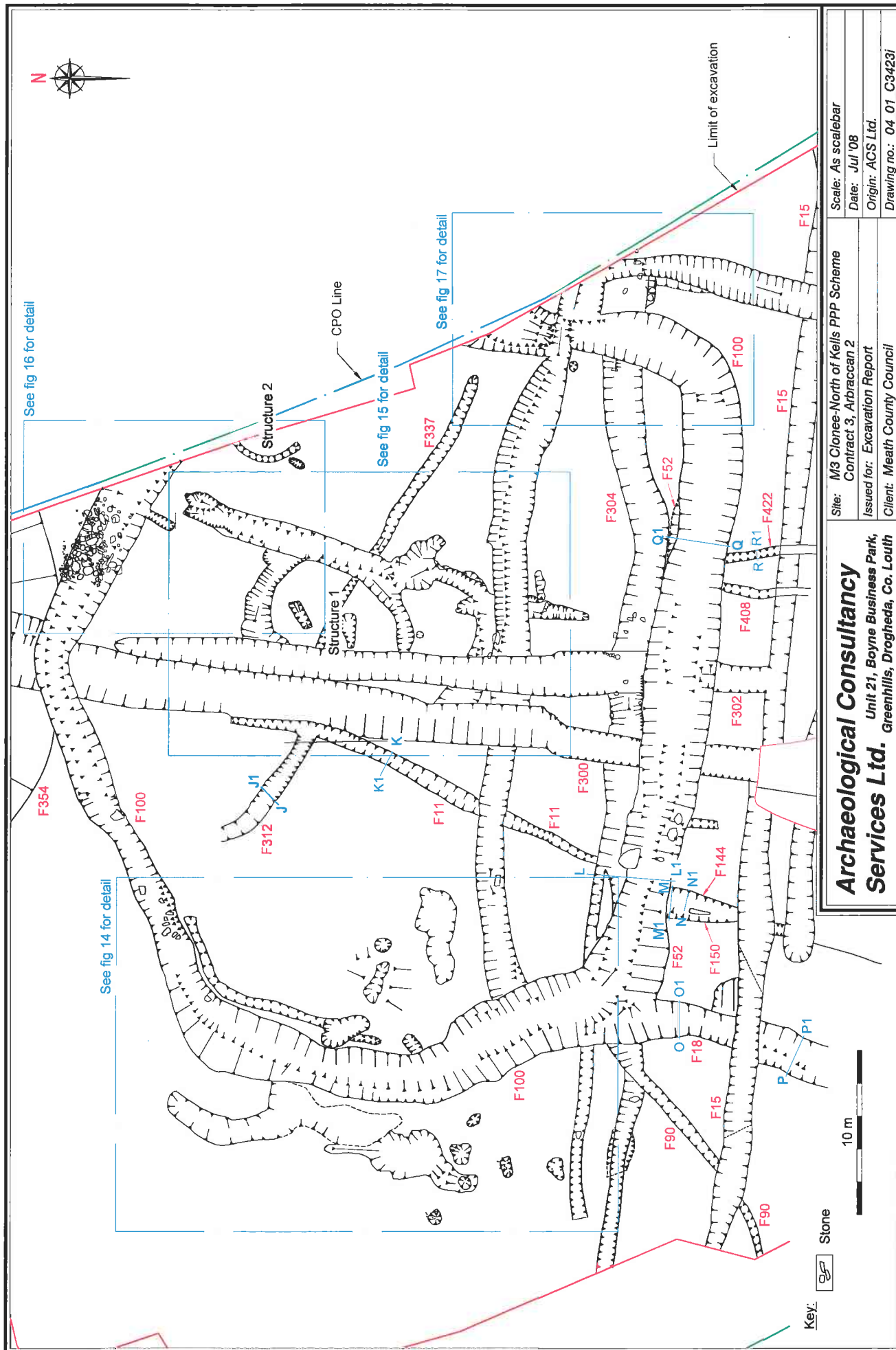


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Scale: 1:50 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3422i

Figure 12: Post-excavation plan of F506 (Figure 12a) and F500/F502 (Figure 12b)



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		Issued for: Excavation Report		Origin: ACS Ltd.	
		Client: Meath County Council		Drawing no.: 04_01_C3423i	

Figure 13: Post-excavation plan of Enclosure (F100)

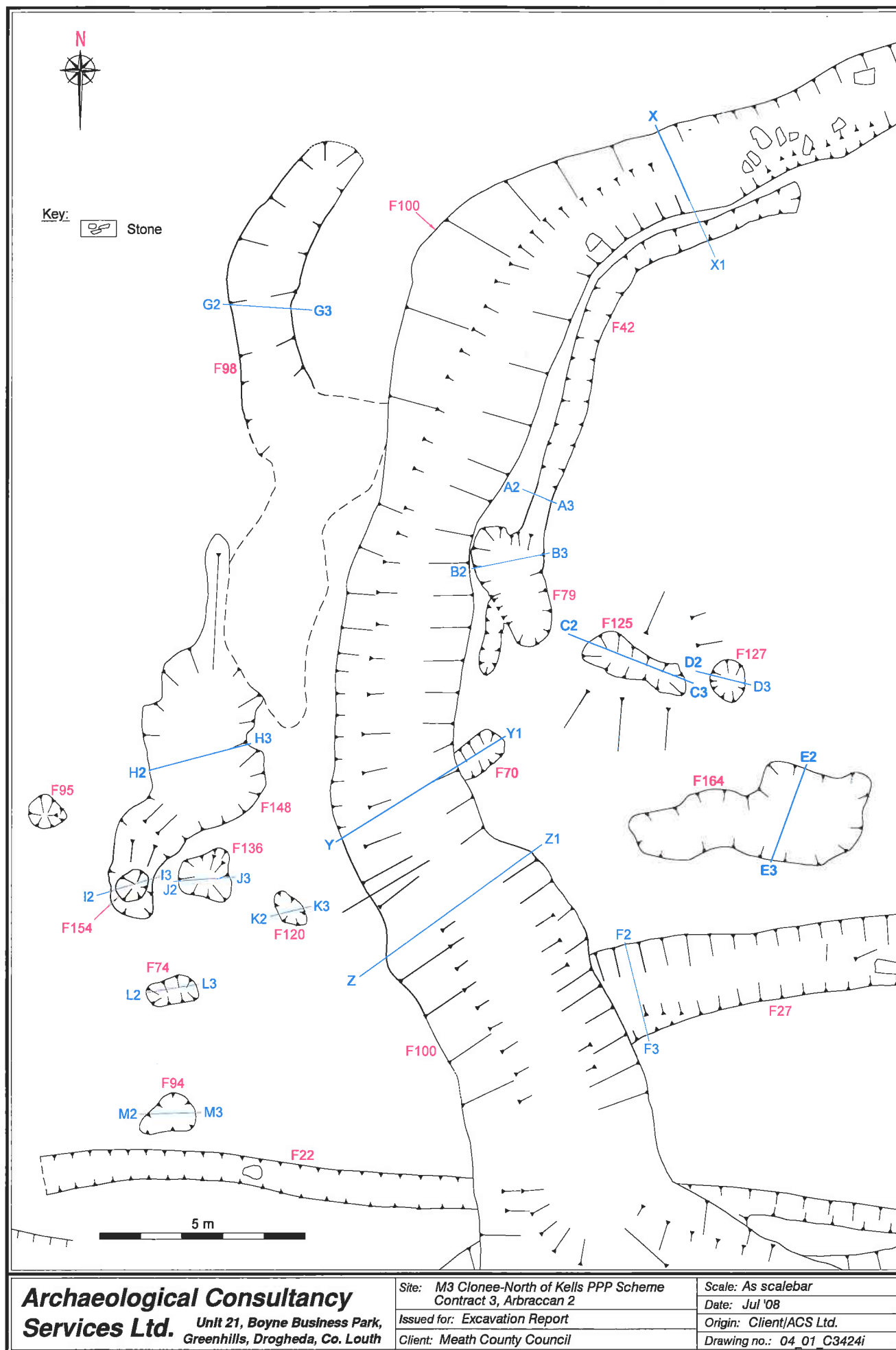
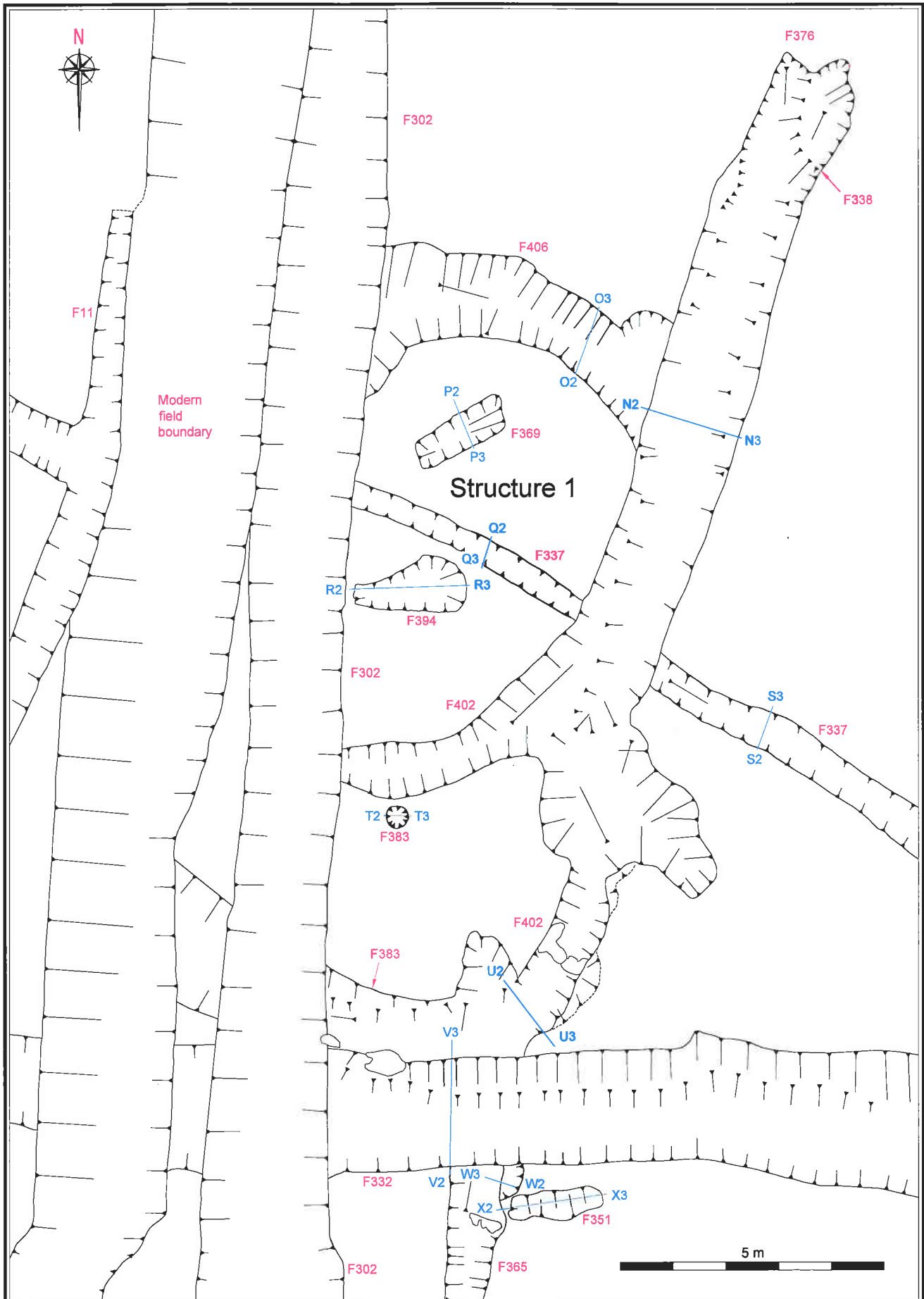


Figure 14: Post-excavation plan of the western part of the enclosure, showing features associated with the burnt mound

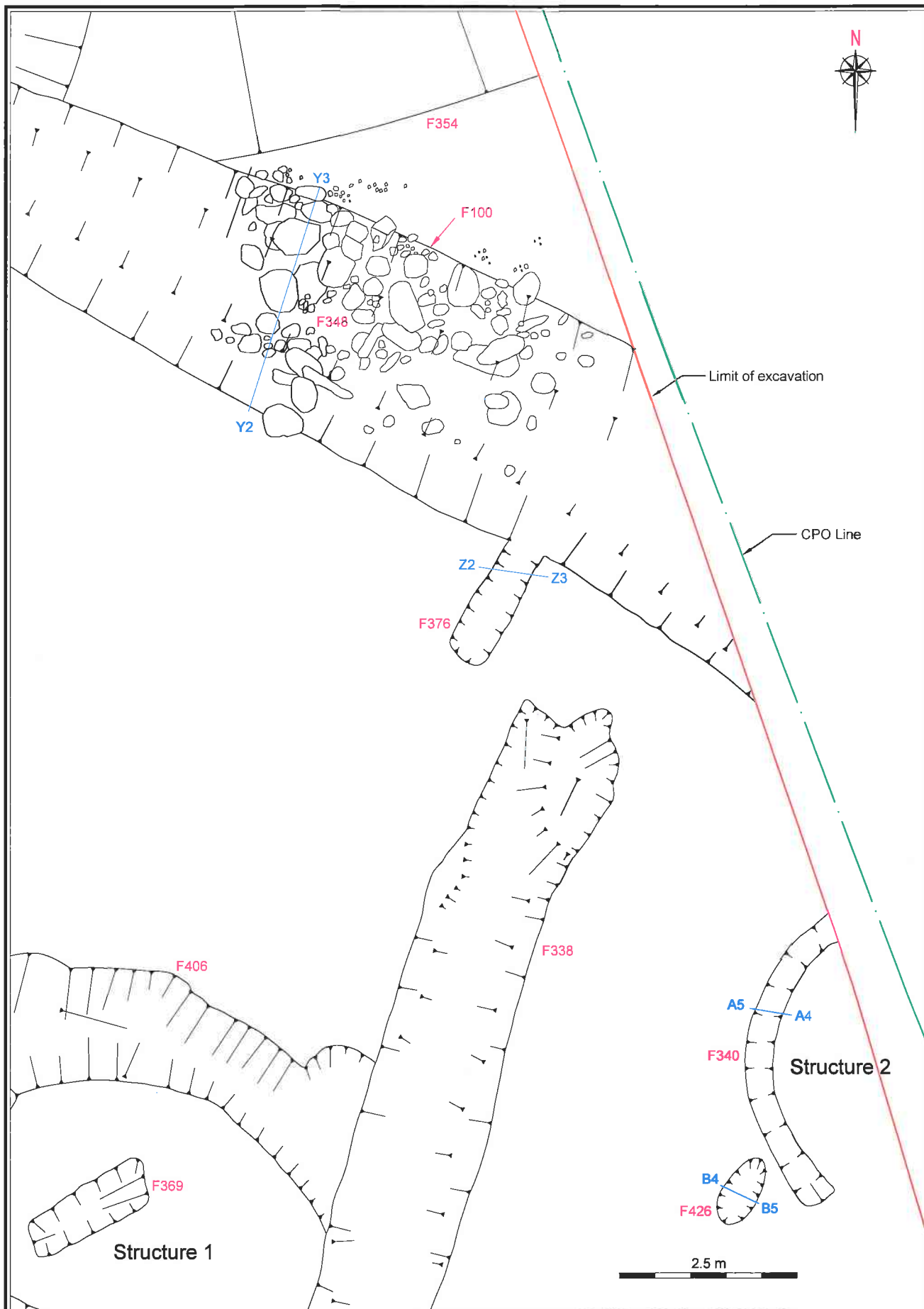


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Scale: 1:100 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3425i

Figure 15: Post-excavation plan of Structure 1

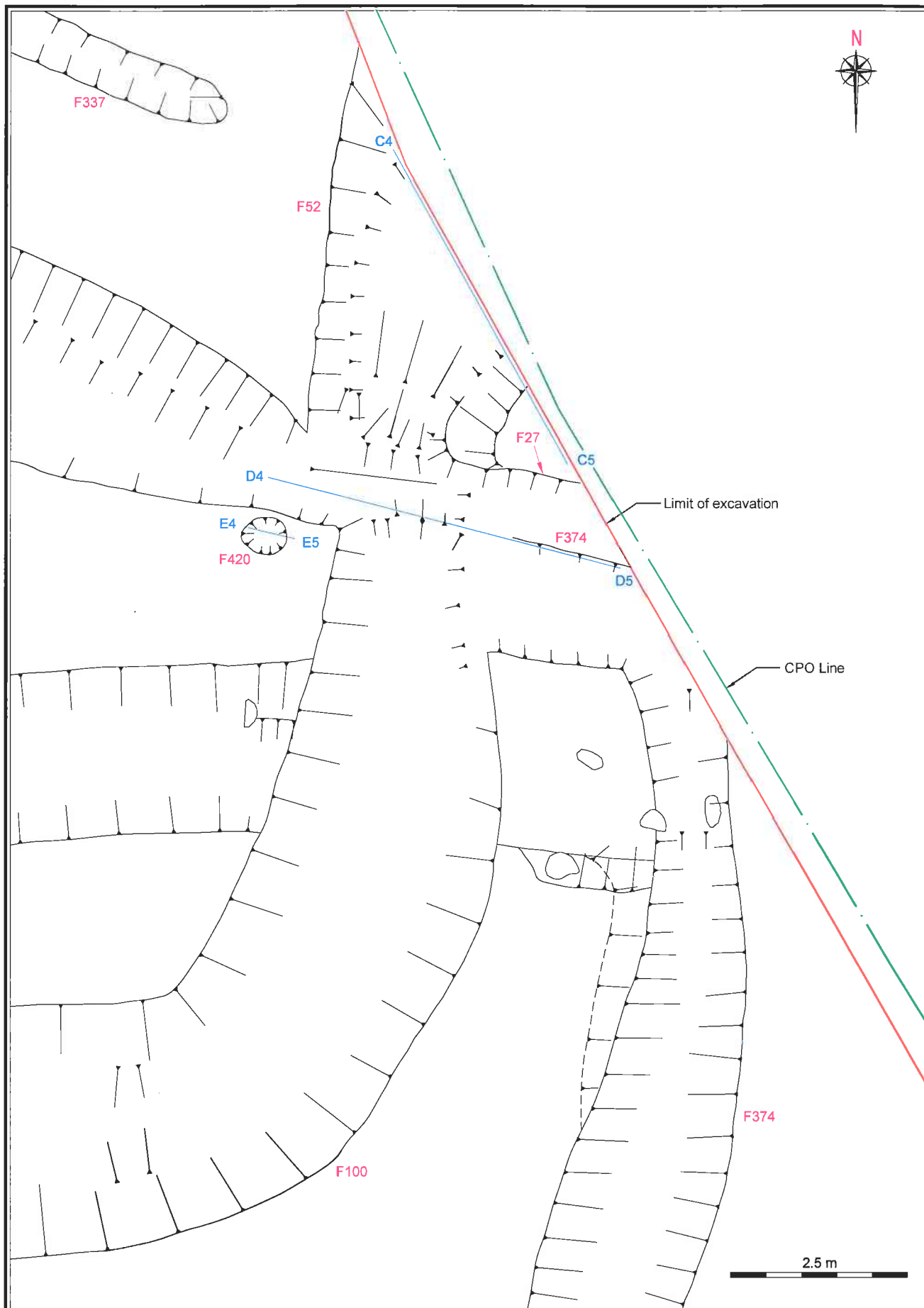


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Scale: 1:75 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3426i

Figure 16: Post-excavation plan of Structure 2 and the northern causeway



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Scale: 1:75 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3427i

Figure 17: Post-excavation plan of the enclosure entrance



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Scale: 1:500 A4
Date: Jul '08
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C3428i

Figure 18: Phase plan of Ardbraccan 2

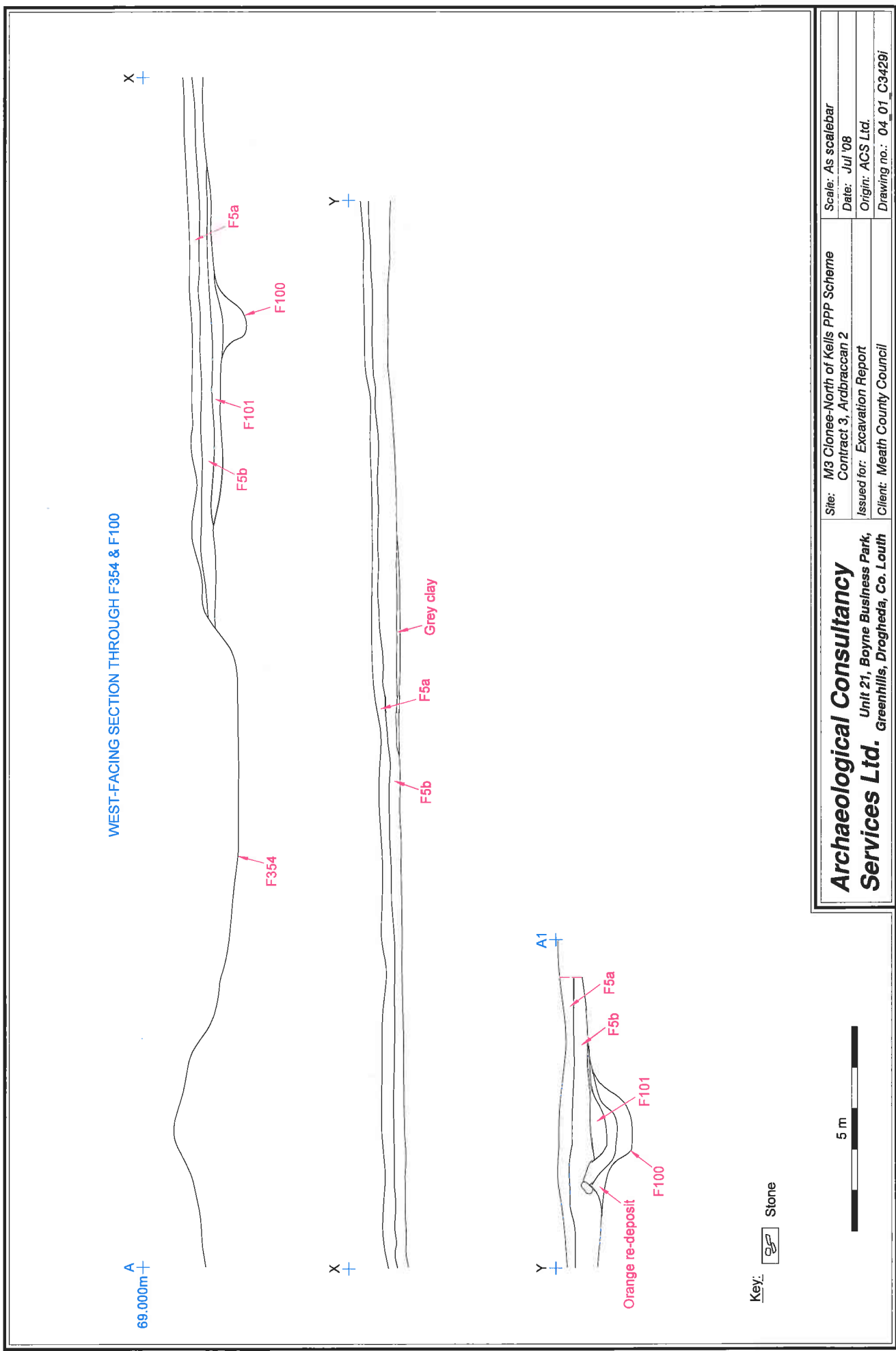
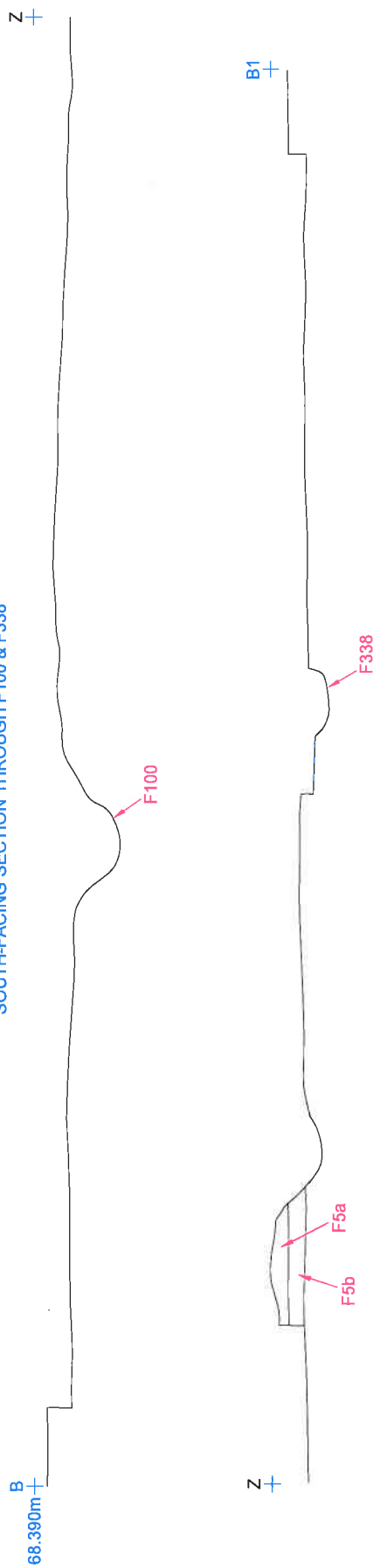


Figure 19: West facing section A-A1

SOUTH-FACING SECTION THROUGH F100 & F338

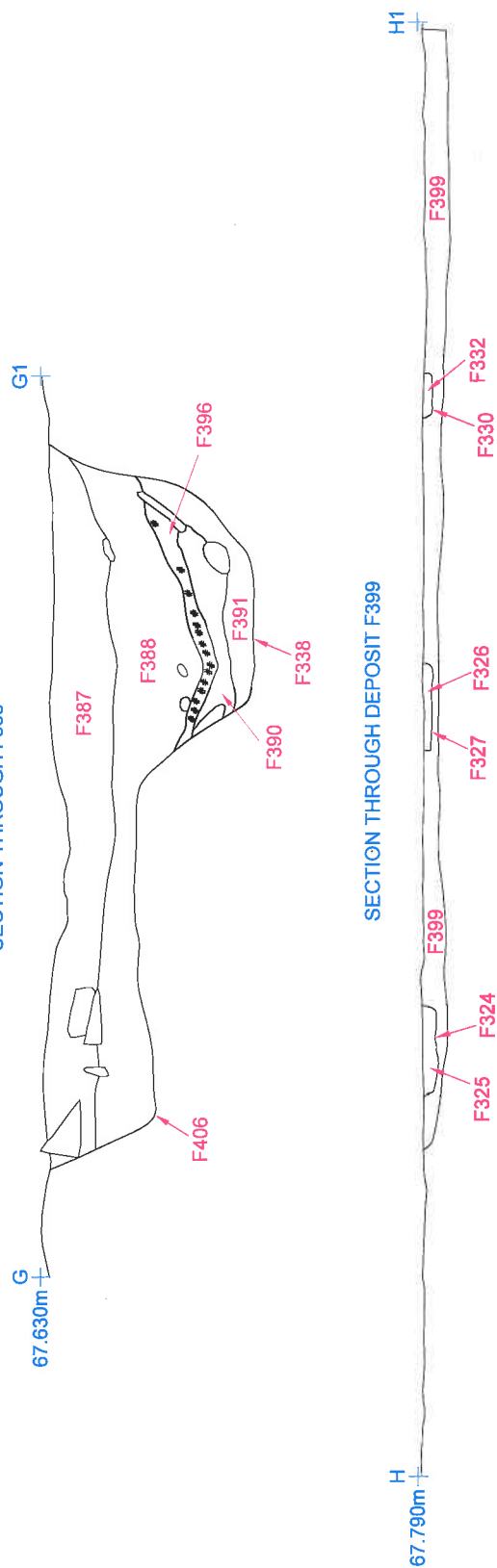


5 m

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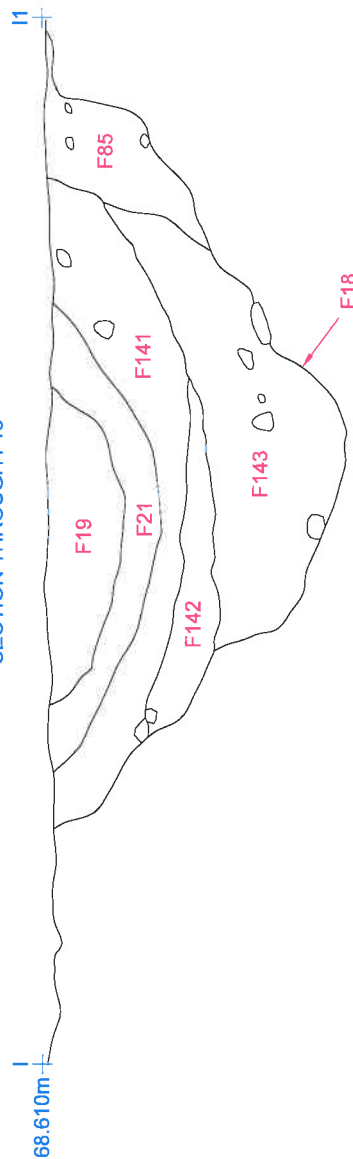
Figure 20: South facing section B-B1

SECTION THROUGH F338



SECTION THROUGH DEPOSIT F399

SECTION THROUGH F18



Key:



Stone



Charcoal

1 m



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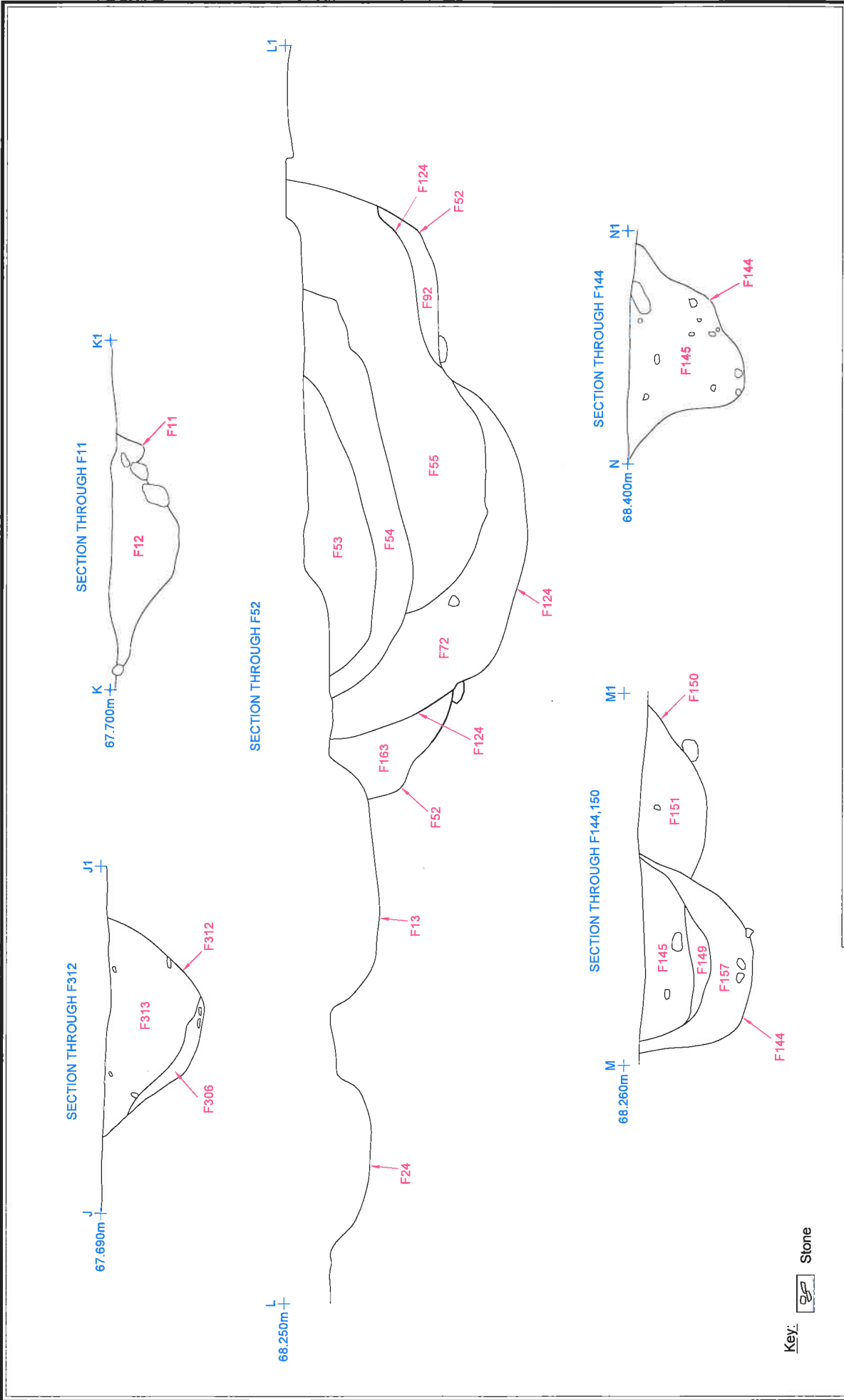
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Issued for: Excavation Report
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Scale: 1:20 A4
Date: Jul '08

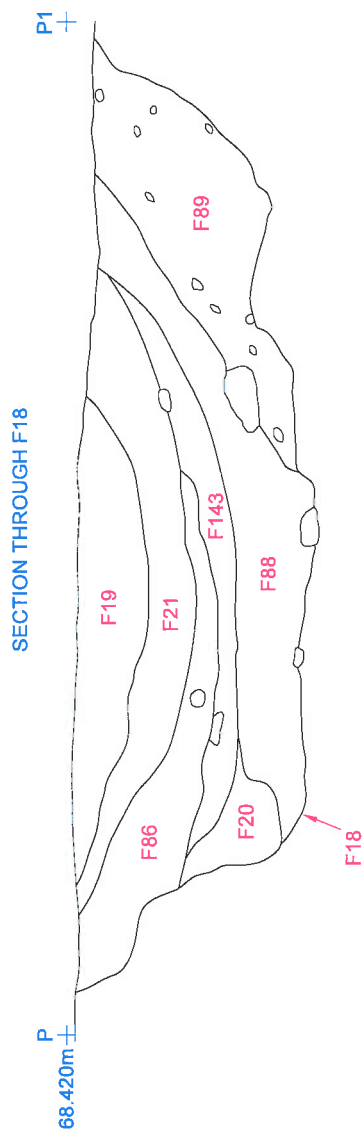
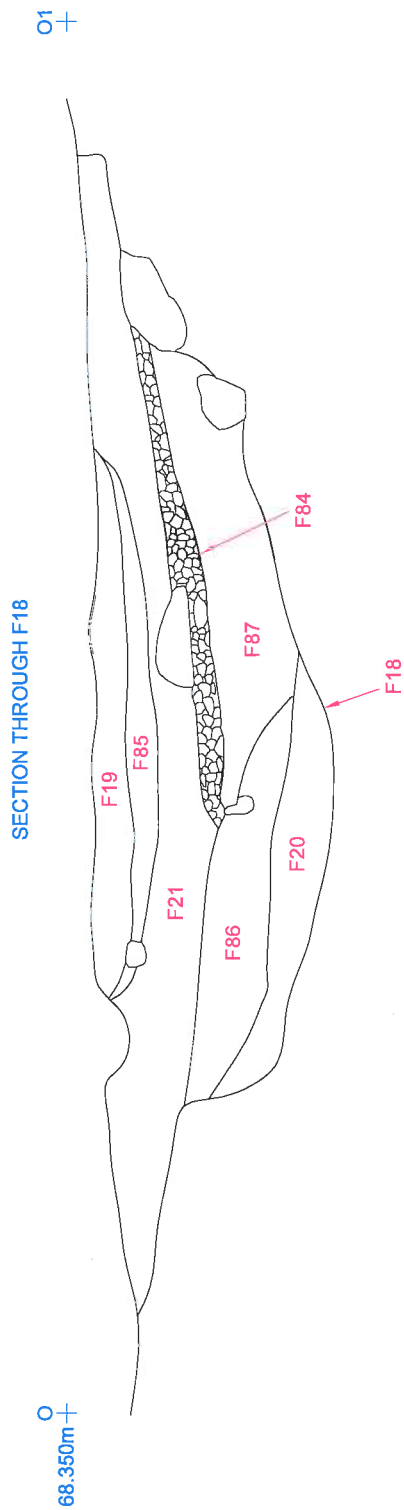
Origin: ACS Ltd.
Drawing no.: 04_01_C3432i

Figure 22: Sections of Ardracran 2



Archaeological Consultancy		Scale: As scalebar	
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Client: Meath County Council		Drawing no.: 04.01 C3433i	
Site: M3 Clonee-North of Kells PPP Scheme Contract 3, Ardracran 2		Scale: As scalebar	

Figure 23: Sections of Ardracran 2



Key: Stone

1 m

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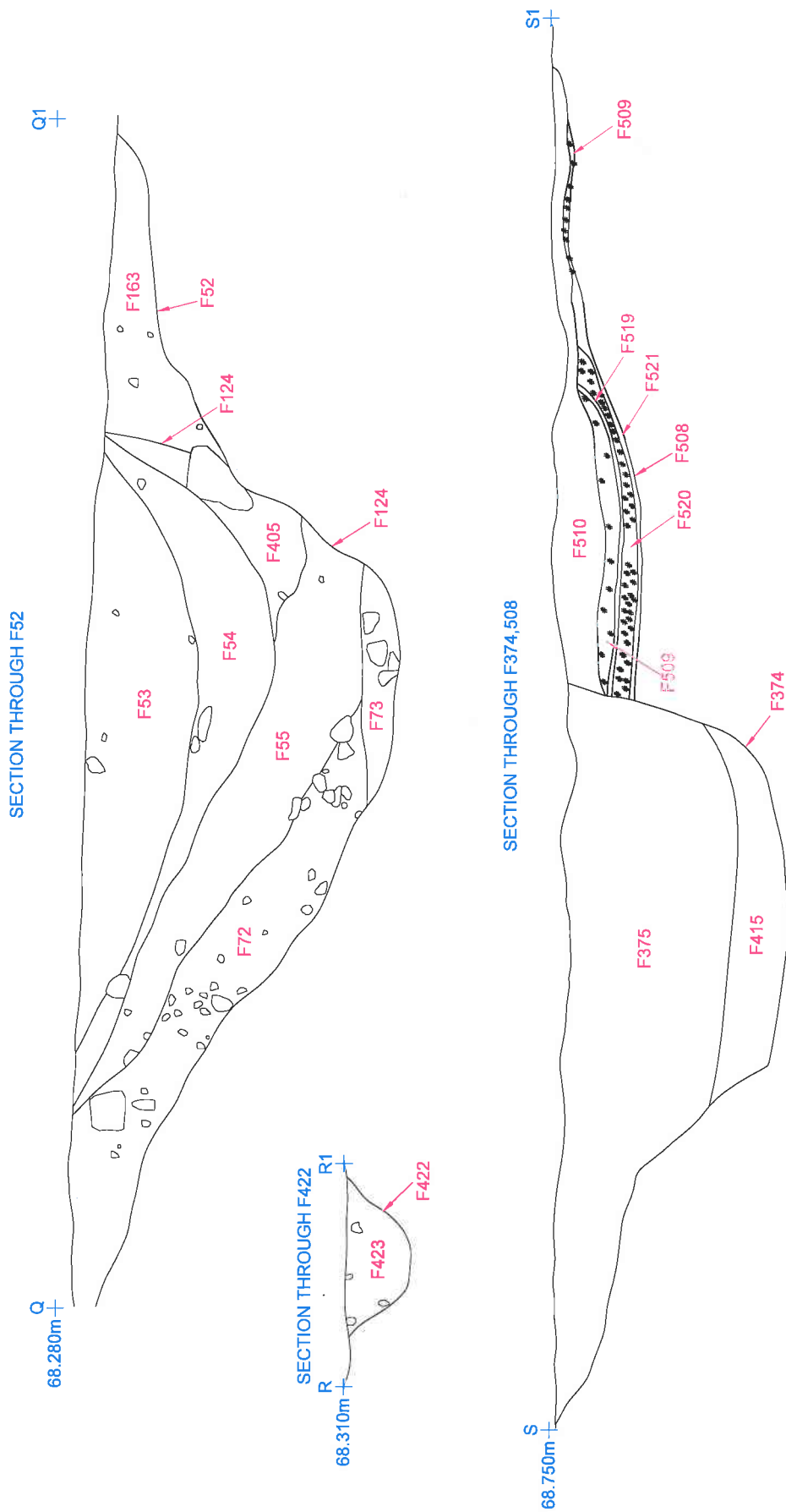
Scale: 1:20 A4

Date: Jul '08

Origin: ACS Ltd.

Drawing no.: 04_01_C3434i

Figure 24: Sections of Ardbraccan 2

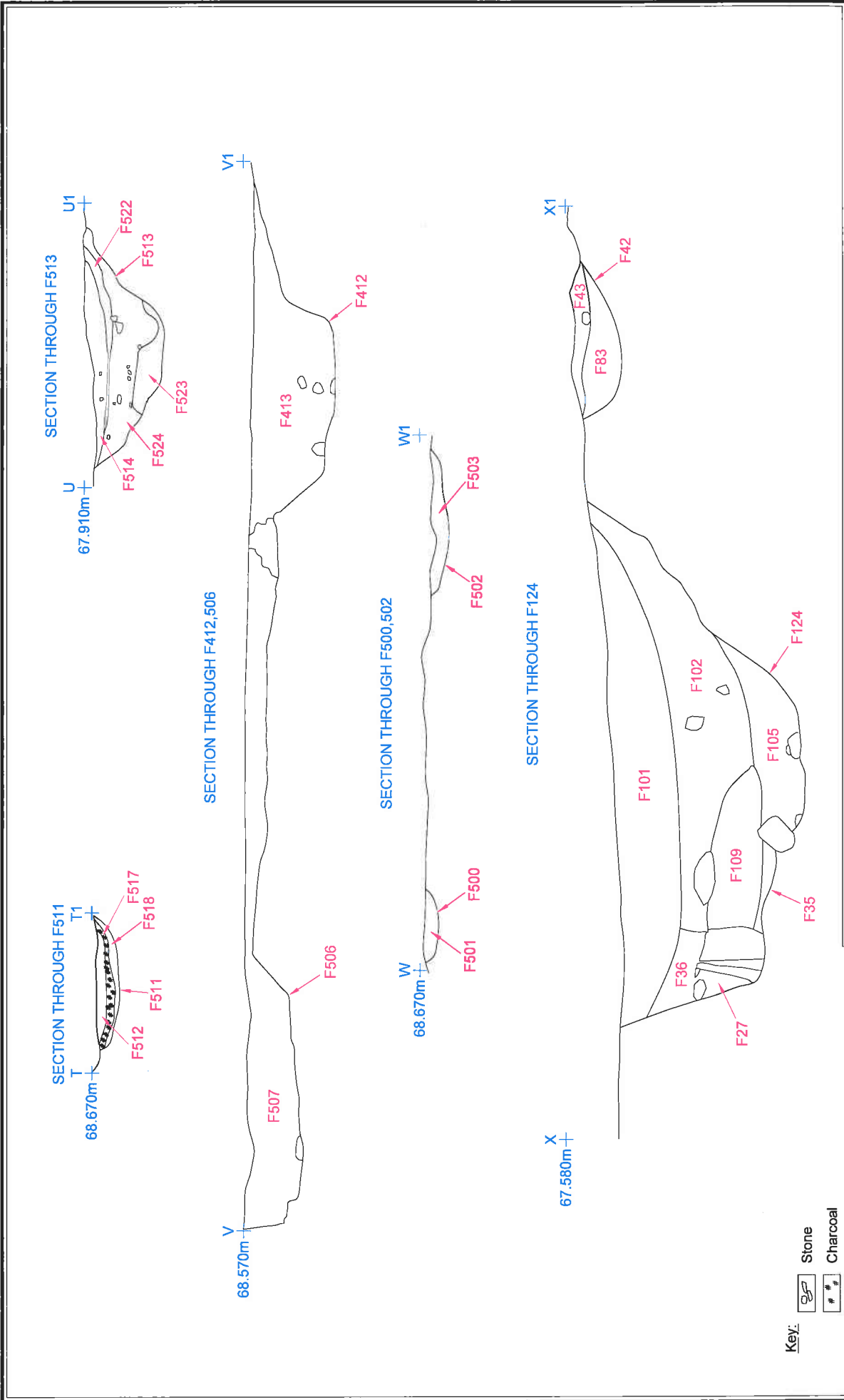


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Site: M3 Clonee-North of Kells PPP Scheme
 Contract 3, Ardraccon 2
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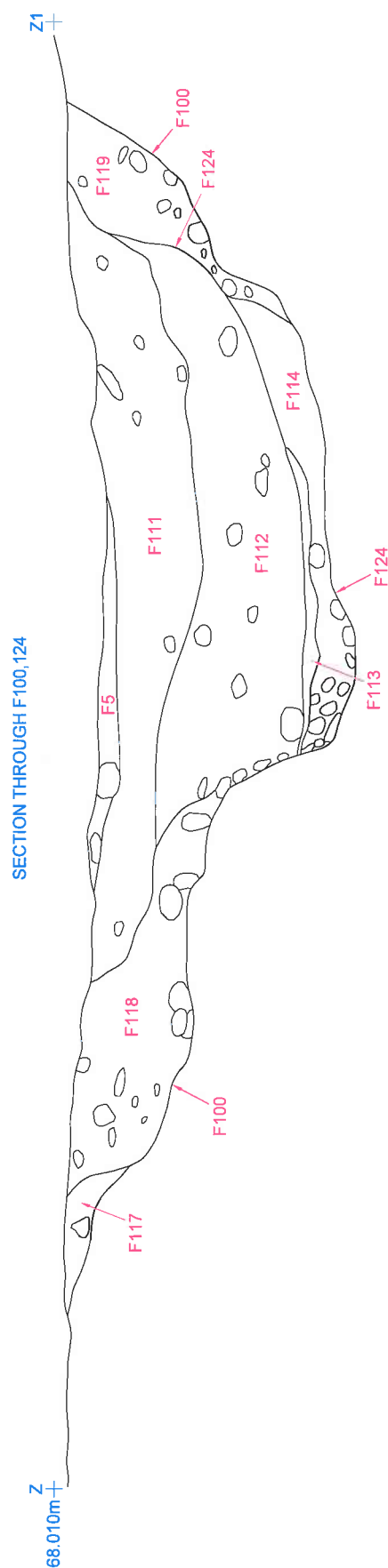
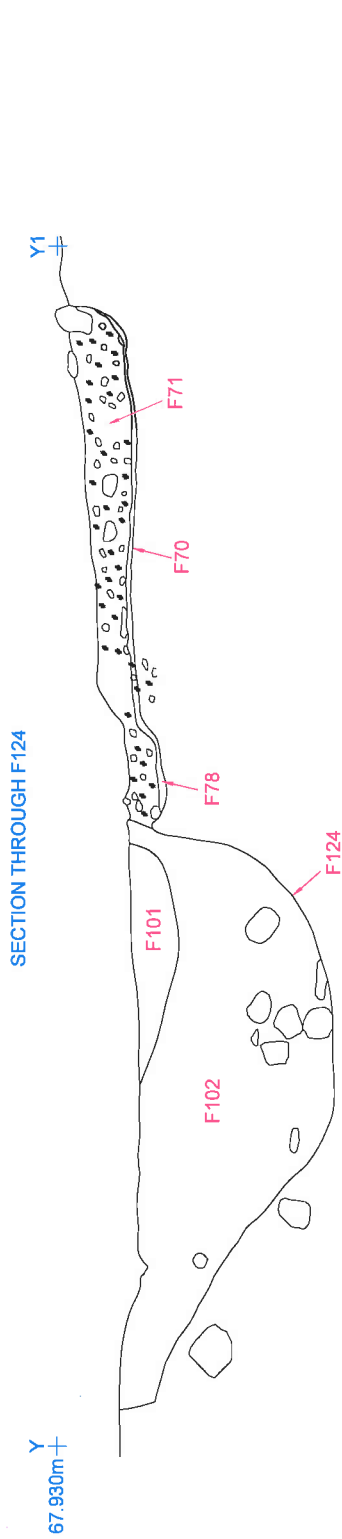
Scale: 1:20 A4
 Date: Jul '08
 Origin: ACS Ltd.
 Drawing no.: 04_01_C3436i

Figure 25: Sections of Ardraccon 2



Archaeological Consultancy Services Ltd.		Site: M3 Clonee-North of Kells PPP Scheme	Scale: 1:20 A4
Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth		Contract 3, Ardracran 2	Date: Jul '08
		Issued for: Excavation Report	Origin: ACS Ltd.
		Client: Meath County Council	Drawing no.: 04_01_C3436i

Figure 26: Sections of Ardracran 2



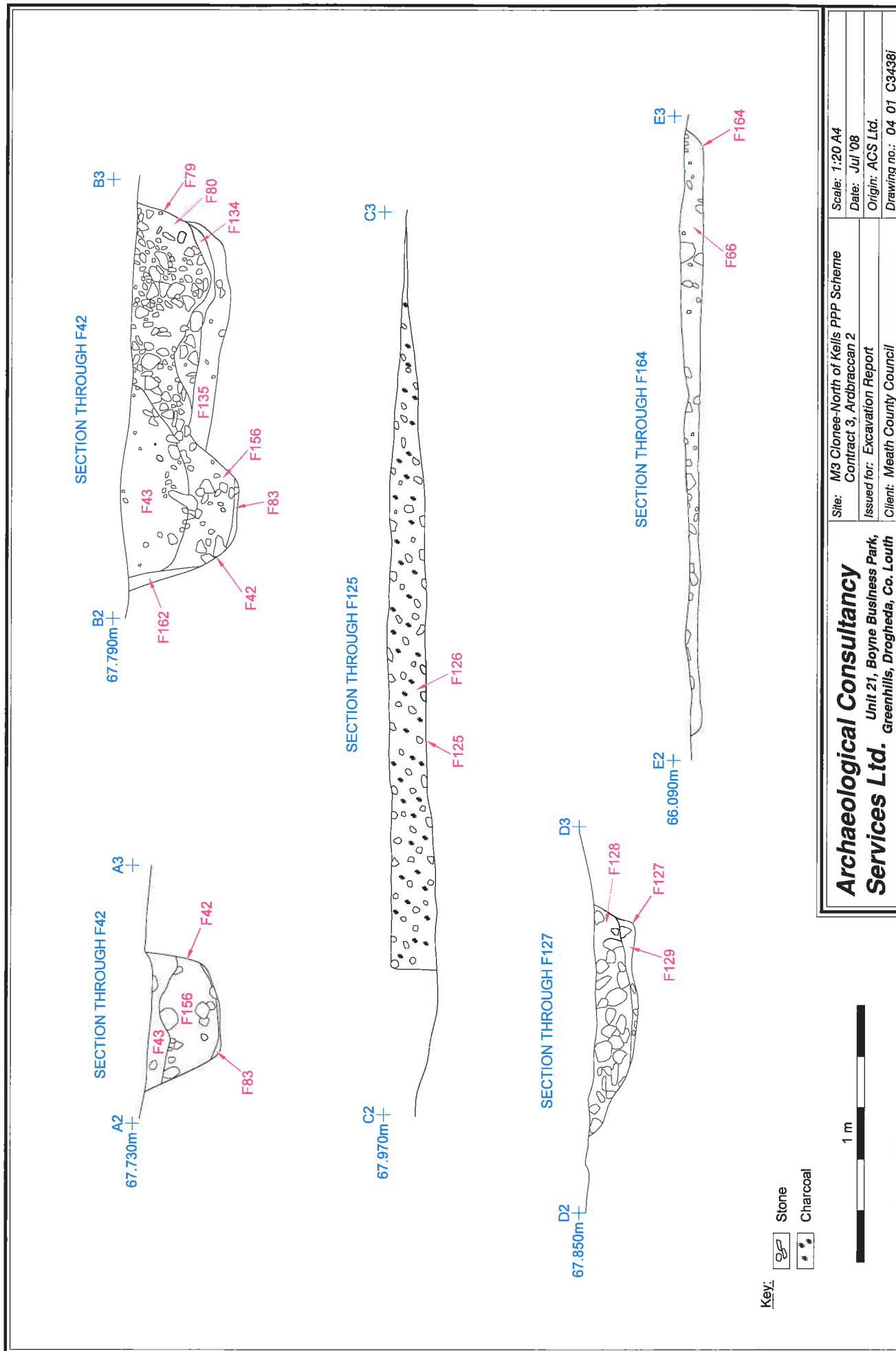
Key:

	Stone
	Charcoal



Archaeological Consultancy Services Ltd.		Site: M3 Clonee-North of Kells PPP Scheme Contract 3, Ardraccon 2	Scale: As scalebar Date: Jul '08
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Figure 27: Sections of Ardraccon 2



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Figure 28: Sections of Ardraccon 2

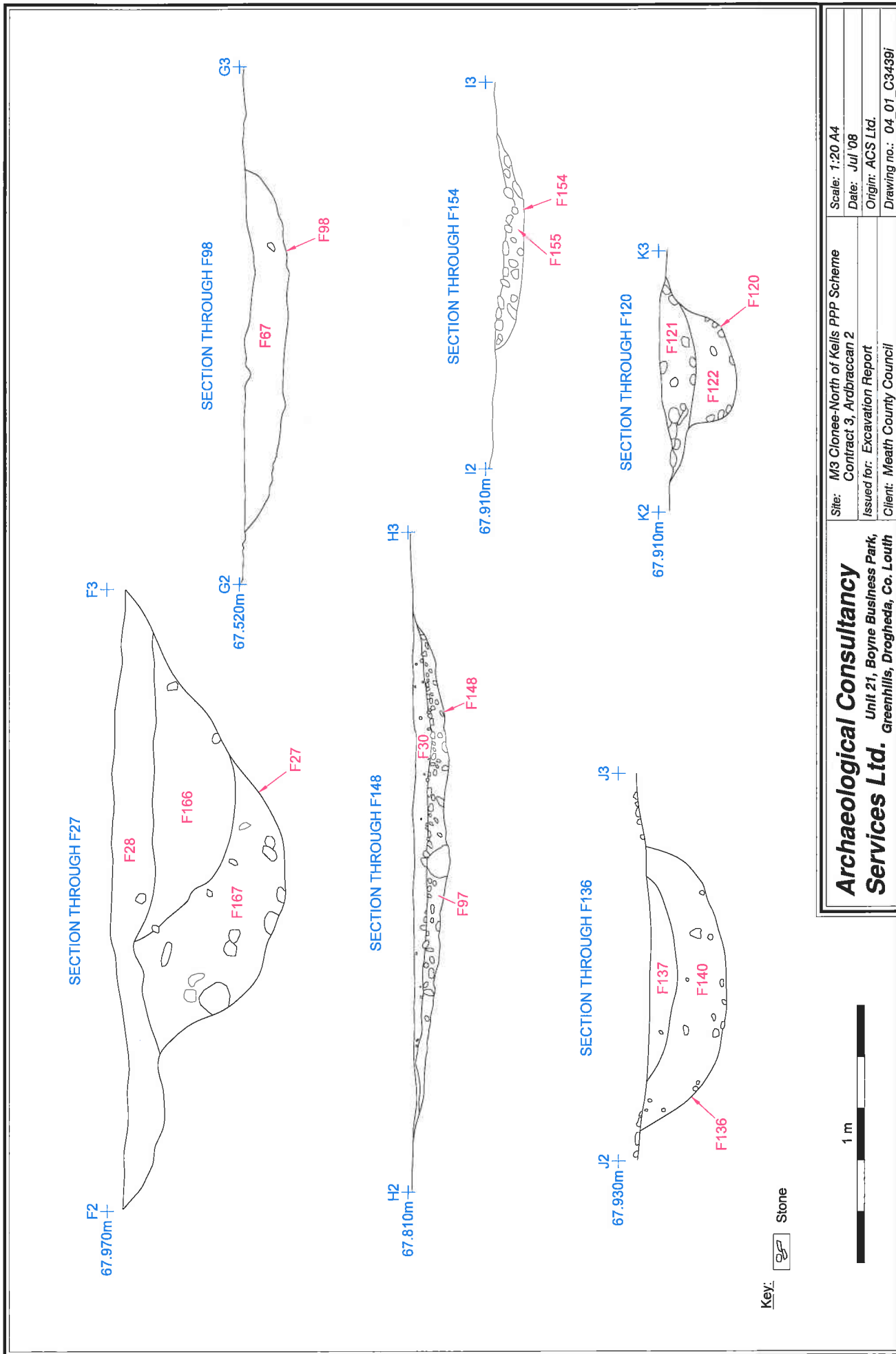
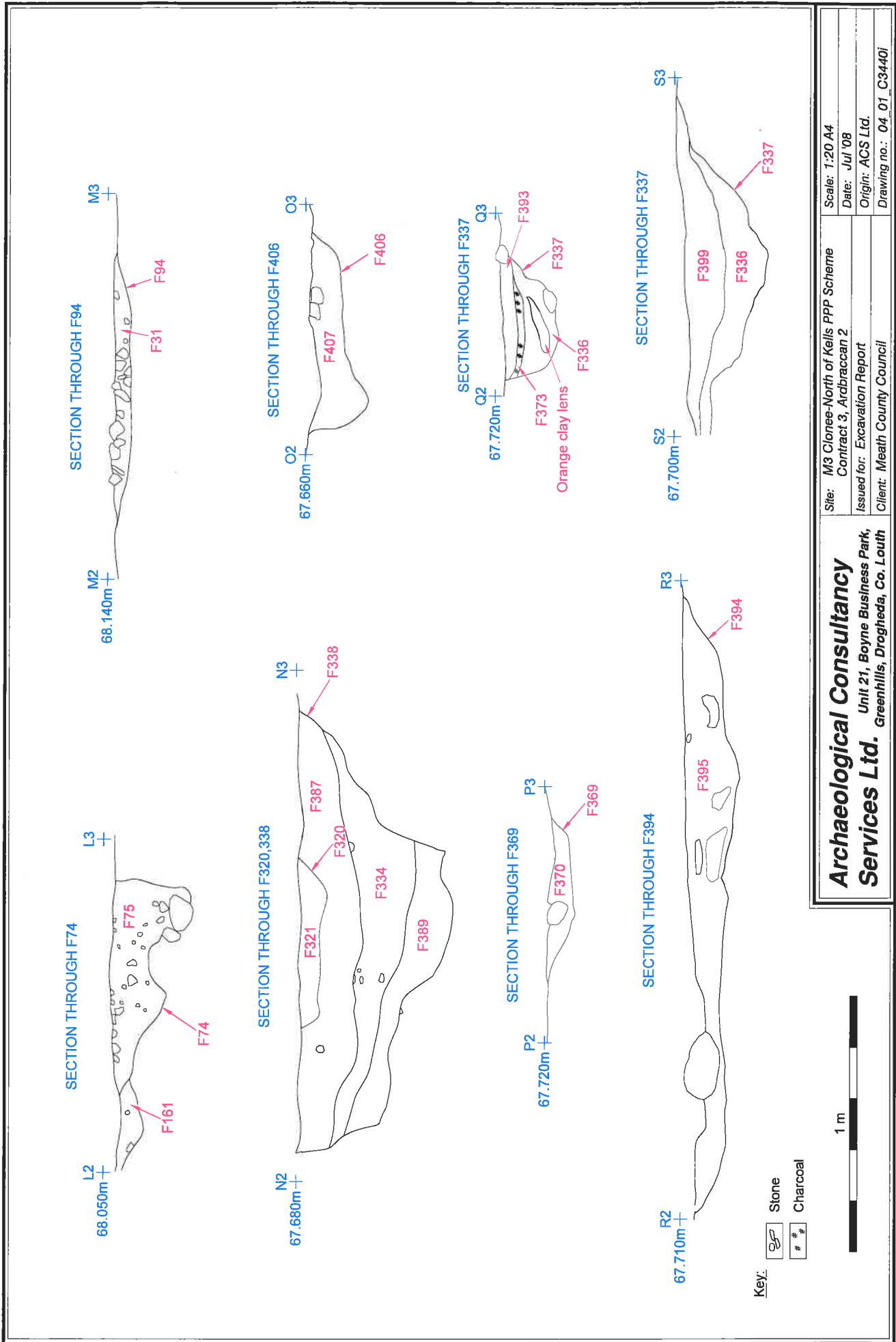
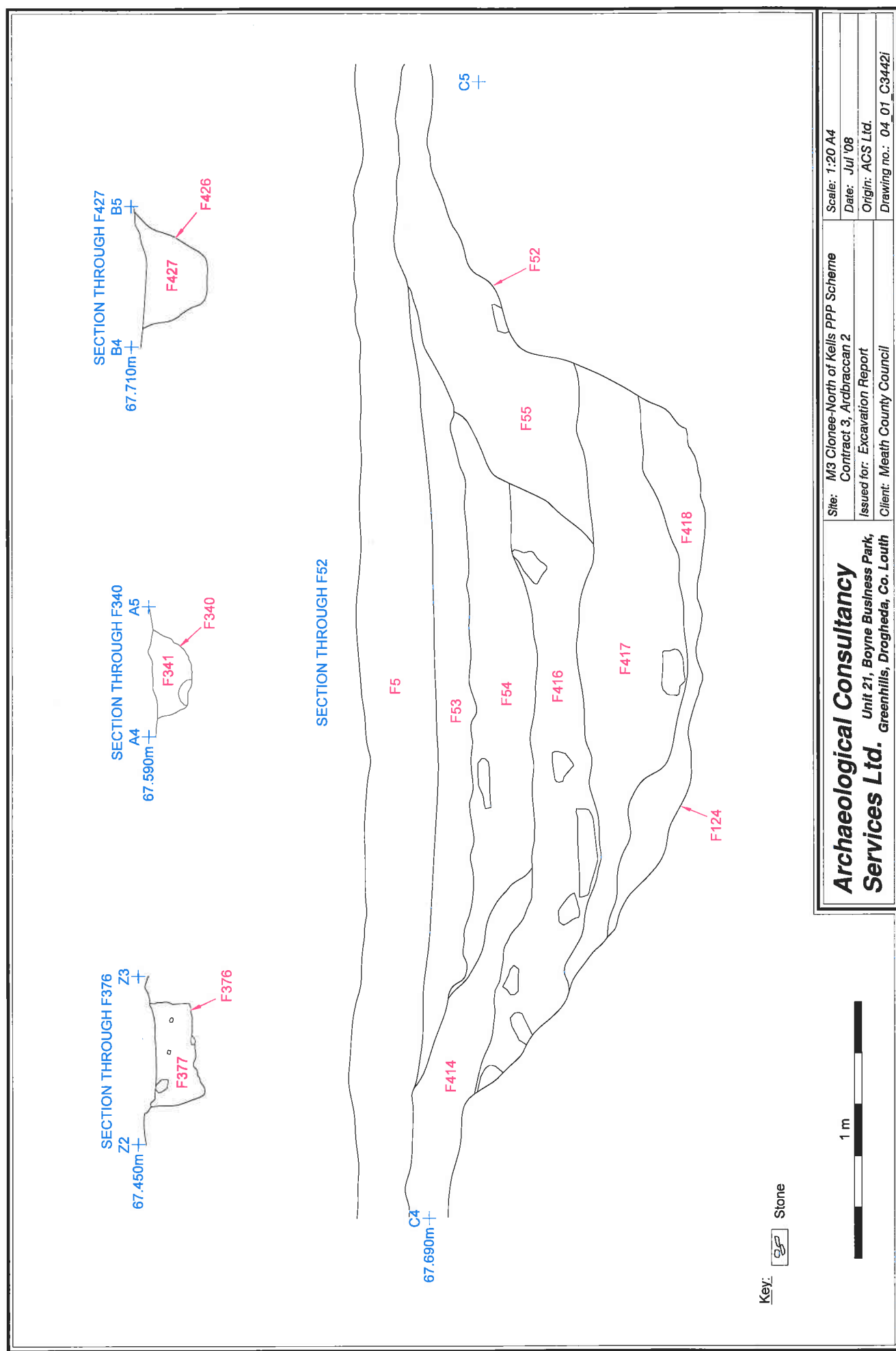


Figure 29: Sections of Ardbraccan 2



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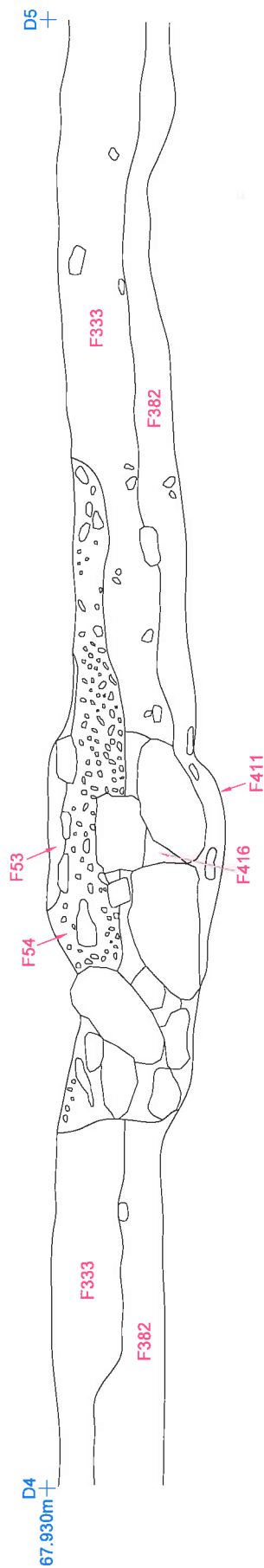
Figure 30: Sections of Ardbraccan 2



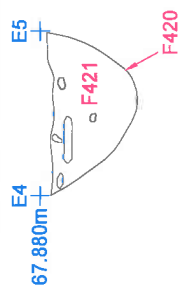
Archaeological Consultancy		Site: M3 Clonree-North of Kells PPP Scheme		Scale: 1:20 A4
Services Ltd.		Contract 3, Ardbraccan 2		Date: Jul '08
Unit 21, Boyne Business Park,		Issued for: Excavation Report		Origin: ACS Ltd.
Greenhills, Drogheda, Co. Louth		Client: Meath County Council		Drawing no.: 04_01_C3442i

Figure 32: Sections of Ardbraccan 2

SECTION THROUGH F411



SECTION THROUGH F420



Key:



Stone



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Contract 3, Ardraccan 2

Issued for: Excavation Report

Client: Meath County Council

Scale: As scalebar

Date: Jul '08

Origin: ACS Ltd.

Drawing no.: 04_01_C3443j

Figure 33: Sections of Ardraccan 2



Plate 1: Aerial photograph of Ardbraccan 2 post-excavation, looking east (04_01_Hawkeye_Ardbraccan 2_001)



Plate 2: Enclosure sub-division ditch (F316), pre-excavation from south (04_01_Ardbraccan 2_CP3_5)



Plate 3: Burnt mound pre-excitation, looking east (04_01_Ardbraccan 2_CP3_12)



Plate 4: Section through shallow ditches from east (F13 and F22) (04_01_Ardbraccan 2_CP5_9)



Plate 5: Northern causeway (F348) across enclosure ditch pre-excitation, looking east (04_01_Ardbraaccan 2_CP6_8)



Plate 6: Posthole F383 from west (04_01_Ardbraaccan 2_CP6_9)



Plate 7: Metalling F66 from west (04_01_Ardbraccan 2_CP7_1)



Plate 8: Section through northern causeway from south-east (04_01_Ardbraccan 2_CP7_12)



Plate 9: Metalling at entrance to enclosure from south (F100) (04_01_Ardbraccan 2_CP7_17)



Plate 10: Sections through enclosure subdivision ditch (F338) from north-east (04_01_Ardbraccan 2_CP7_24)



Plate 11: Metalling F97 from south (04_01_Ardbaccan 2_CP8_11)



Plate 12: Recording the burnt mound, looking south (04_01_Ardbaccan 2_CP8_20)

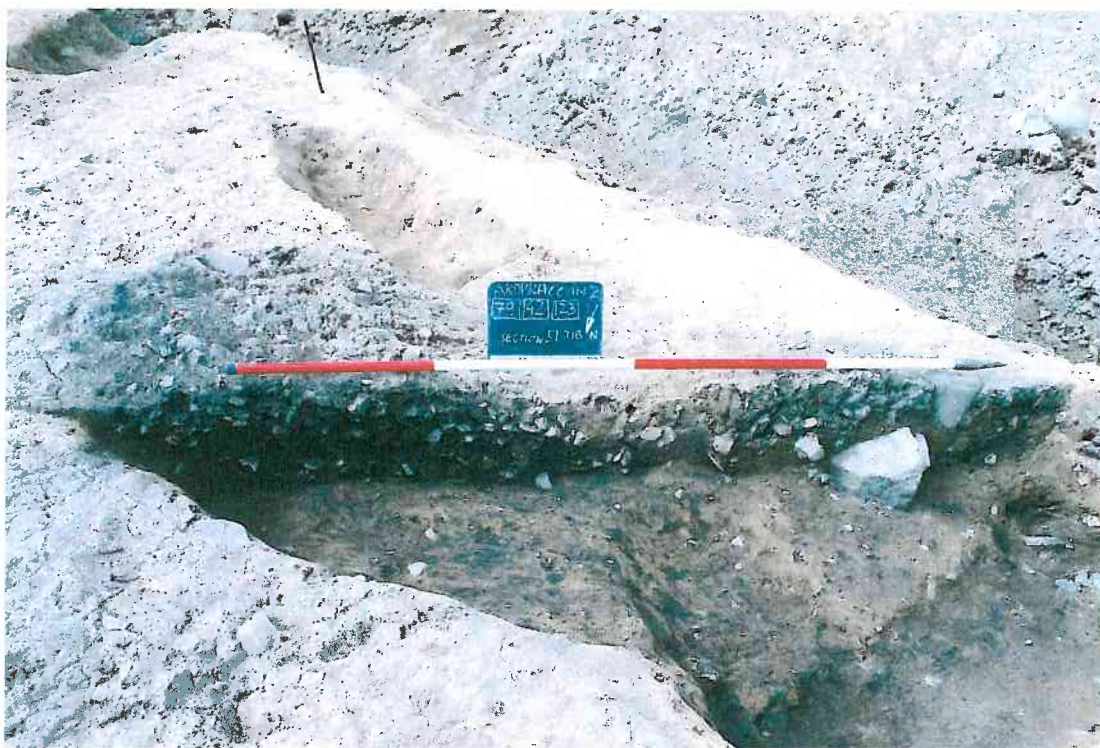


Plate 13: Section through trough (F79) from north (04_01_Ardracchan 2_CP9_4)



Plate 14: Drain F376, post-excitation from south (04_01_Ardracchan 2_CP9_6)

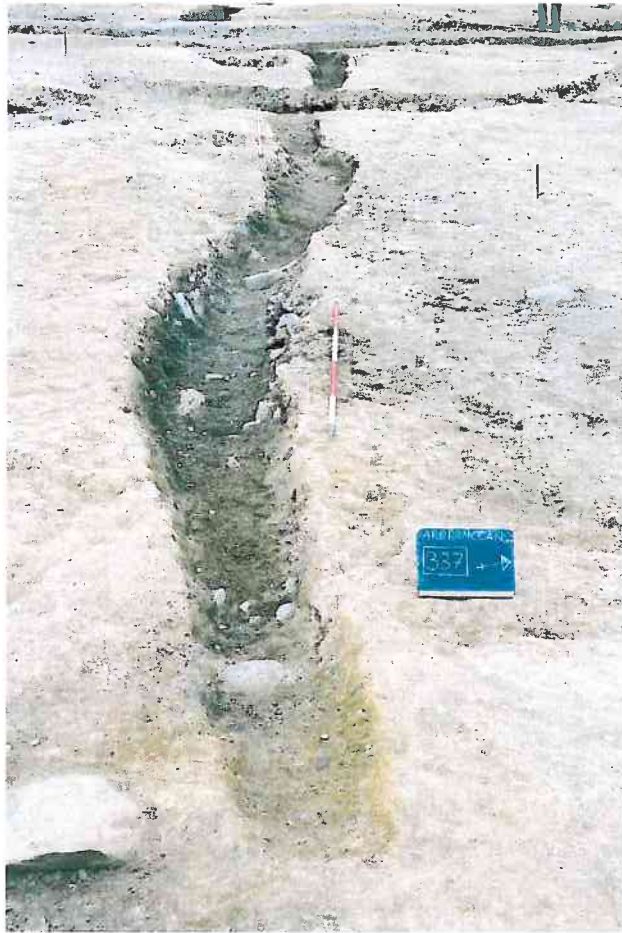


Plate 15: Drain F337, post-excavation from east (04_01_Ardbaccan 2_CP9_16)



Plate 16: Section through pit F127 from south (04_01_Ardbaccan 2_CP9_23)



Plate 17: Trough F79 cut by palisade ditch F42, post-excavation, looking north (04_01_Ardbraaccan 2_CP10_17)



Plate 18: Structure 1, post-excavation, looking west (04_01_Ardbraaccan 2_CP12_1)



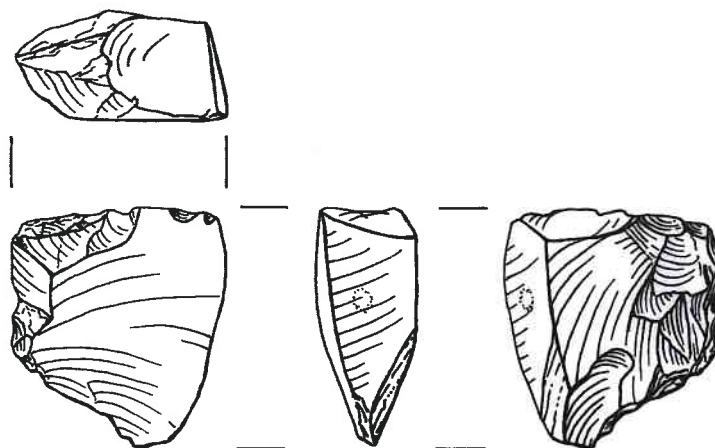
Plate 19: Section through entrance posthole F420 from south (04_01_Ardbraccan 2_CP12_11)



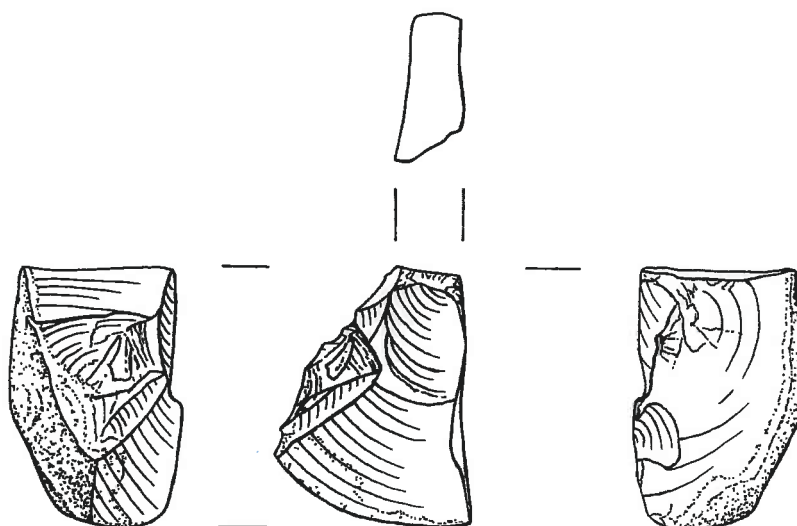
Plate 20: Enclosure entrance, looking south (04_01_Ardbraccan 2_CP13_5)



Plate 21: Enclosure entrance, looking north (04_01_Ardbraccan 2_CP13_24)



A023/024:7:9



A023/024:17:1



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Contract 3, Ardraccon 2
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Client: Meath County Council

Scale: 2:1 A4
Date: Jul '08
Origin: J. Kurkiewicz & P. Wolff
Drawing no.: 04_01_C34191

Illustration 1: Flint recovered from Ardraccon 2