N7 Nenagh to Limerick High Quality Dual Carriageway
Archaeological Resolution Project
E2479, Ballywilliam Site 1, Co. Tipperary

(A026/344, 399, 400, 402 & 404)

Final Archaeological Excavation Report

for

Limerick County Council

Margaret McNamara, Edel Ruttle and Kate Taylor
TVAS Ireland Ltd

Job J06/15

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

Comhairle Chontae Luimnigh Limerick County Council

NDP National Development Plan Transforming Ireland

European Union Structural Funds

transport21 progress in motion

December 2012

Summary

Scheme name: N7 Nenagh to Limerick High Quality Dual Carriageway

Scheme number: A026/000

Site name: E2479, Ballywilliam Site 1, Co. Tipperary

Scheme sub number: A026/344, 399, 400, 402 & 404

Record number: E2479

Townland: Ballywilliam (ED Burgesbag)

Parish: Burgesbeg

Barony: Owney and Arra

County: Tipperary (NR)

NGR: 179470 174300 to 179850 174980

OS 6" Sheet No: Co. Tipperary (NR) Sheet 026

Chainage: 22660 to 23450

Client: Limerick County Council, Mid West National Road Design Office, Lissanalta House, Dooradoyle Road, Dooradoyle, Co. Limerick

Naturally occurring geology: Glacial gravels and clays

TVAS Ireland Job No: J06/15

Licence Eligible Director: Kate Taylor (transferred from Markus Casey)

Report author: Margaret McNamara, Edel Ruttle and Kate Taylor

Site activity: Excavation

Site area: 12238.47 m^2

Date of fieldwork: 2nd November to 21st December 2006 and 31st January to 28th April 2007

Date of report: December 2012

Summary of results: Eight areas were excavated that contained settlement evidence dating from the Neolithic to medieval period and later. Enclosures, houses, *fulachtaí fia*, pits, kilns and hearths were amongst an array of features excavated. A series of pits, which may represent graves were also investigated.

Monuments identified: Neolithic pits, *fulachtaí fia*, Bronze Age cremation cemetery, pits and roundhouse, Iron Age enclosures, early medieval enclosure, roundhouse, pits, postholes and hearths, graves, medieval kiln and pits

Location and reference of archive: The primary records (written, drawn and photographic) are currently held at TVAS Ireland Ltd, Ahish, Ballinruan, Crusheen, Co. Clare.

Report edited/checked by: Nóra Bermingham √28.02.2012

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Margaret McNamara, Edel Ruttle and Kate Taylor

Introduction

This report documents the final results of the archaeological excavation of multi-phase activity, dating from the Neolithic through to the post-medieval and later in ten areas at site E2479 on the route of the N7 Nenagh to Limerick High Quality Dual Carriageway (HQDC), Ballywilliam, Co. Tipperary (NGR 179470 174300 to 179850 174980) (Fig. 1). The excavation described here forms part of the N7 Nenagh to Limerick HQDC Archaeological Resolution Contract. A preliminary report on the excavation was produced in December 2009 (McNamara et al. 2009). The National Monuments Act 1930 (as amended) provides the legislative framework within which archaeological excavation can take place and the following government publications set out many of the procedures relating to planning/development and archaeology:

Framework and Principles for the Protection of the Archaeological Heritage (DAHGI 1999a)

Policy and Guidelines on Archaeological Excavation (DAHGI 1999b)

Code of Practice between the National Roads Authority and the Minister for Arts, Heritage, Gaeltacht and the Islands (NRA/MAHGI 2001)

The archaeological work was carried out following Ministerial Direction given under the National Monuments (Amendment) Act 2004.

Project background (Figs 1 and 2)

The excavation was carried out on the route of the new N7 Nenagh to Limerick HQDC. The scheme starts at the existing Newport Junction in the townlands of Carrowkeel and Mountshannon, runs north-eastwards towards Nenagh (Carrigatogher) and continues to Ballintotty at the end of the Nenagh Bypass, which will be widened. The total length of the route is 35.7 km.

The archaeological work included assessment of sites previously recognised and prospection for sites without surface expression by means of mechanical test trenching. A number of archaeological sites were confirmed or recognised during this testing. As preservation *in situ* was not a reasonable option, the resolution strategy for these sites was preservation by record, i.e. full archaeological excavation.

The archaeological fieldwork and post-excavation work were funded by Limerick County Council through the National Roads Authority.

Location, topography and geology

Archaeological site E2479 was located at NGR 179470 174300 and 179850 174980 in Ballywilliam (ED Burgesbeg) townland, parish of Burgesbeg, barony of Owney and Arra, Co. Tipperary (Figs 1 and 2).

The route of the new Nenagh to Limerick HQDC traverses a gently undulating landscape of lowland pasture broken only by a large area of peat basin that straddles the border between Counties Limerick

and Tipperary. The region is overlooked by the Silvermines Mountains to the east and the Arra Mountains to the north and west.

Ballywilliam Site 1 was located on undulating pasture in the foothills of the Arra Mountains that rise along a ridge providing good views across to the Silvermines Mountains. The site was made up of ten excavation areas (A-J). The site was bounded to the north-east by the townland boundary with Ballycuddy More, a minor roadway. One of the ten areas (E) was separated from the other sites to the south by the present N7. The natural geology is glacial gravels, notably mixed grey brown sandy silt podzol soil overlying orangey gravely silty soil to bluish clays. The sites lie at approximately 65 m to 85 m above Ordnance Datum (OD).

Archaeological and historical background (Figs 3 and 4)

A search of documentary and cartographic sources was made. Information was gathered from, amongst other sources, the Sites and Monuments Record (SMR), Record of Monuments and Places (RMP) files, The National Monument Service website www.archaeology.ie, the *Excavations* database and publications (www.excavations.ie and Bennett 1987-2008) and from holdings of the County Tipperary Local Studies Centre, Thurles.

Cartographic sources

The Down Survey map, 1655-56, of Burges (Burgesbeg) parish shows the townland of Ballikilliam. The townland is situated between Drommyna and Shesiragh Keale townlands.

There are four structures depicted on the Ordnance Survey (OS) 1st edition 1843 map in Ballywilliam townland within the road take, fronting either side of the present N7 (Fig. 3). Outside the road take there are a number of buildings situated along the N7, one at the townland boundary with Carriggal, a large farmstead to the north-west of the townland with its entrance from the N7 and other singular structures dotted around the townland. There is a dark shaded area within the road take to the north-east. The 1851 Griffith Valuation map shows no changes in the townland.

The 1901-1902 25" OS edition show that the structure on the townland boundary with Carriggal and two of the structures fronting either side of the present N7 within the road take have since been removed. Indeed there now are only two structures remaining on the N7. The large farmstead to the north-west of the townland has changed in layout and the entrance is now from a minor road that bounds Ballywilliam with Ballycuddy More. The other entrance from the N7 now has no trace on this map. The dark shaded area seen on the 1st edition map is annotated as a 'Gravel Pit'. The 3rd edition OS map, surveyed 1904, shows even fewer properties remain in the townland.

Sites and Monuments Record/Record of Monuments and Places

There are no recorded monuments in the townland.

The Excavations *database*

A search of the *Excavations* database was made for the townland of Ballywilliam and the neighbouring townlands of Ballycuddy More, Carriggal, Dromin and Gortmore. Licences issued as part of this road scheme are not included here as they are discussed in detail elsewhere. There were no other licences issued for the townlands.

National Museum of Ireland Topographic Files

No stray finds are recorded on the National Museum of Ireland Topographic Files for Ballywilliam or surrounding townlands.

Documentary sources

The townland name, Ballywilliam, derives from the Irish *'Baile Mhic Uilliam'*. It contains the Irish prefix *baile*, meaning a town, and *mhic uilliam* meaning son of William. In the Civil Survey of 1654-6 Ballywilliam is called 'Ballykilliam'. In 1640 the proprietors of Ballykilliam were:

'*Connor ó Bryen of Knockane Esqr., Dermot ó Bryen of Gortmore Gent., Doune ó Bryen of Knockaneneglasny, Gent., Teige mcDonogh of Barrebehagh, Gent., Mathew ó Bryen of Carrigall Gent., Teige ó Bryen of ye same Gent. and Teige ó Bryen of Toburteriffe Gent., all Irish Papists'* (Simington 1931, 149).

These lands contained an estimated 140 plantacon acres, including 130 arable acres, 8 meddow acres, 2 pasture acres, and was valued at 4 li., and is described below:

The sd. pld of Ballykilliam is bounded on the East & South wth. the lands of Dromune on the West wth. the lands of SheSiraghkeale all in this Parish, and on the North wth. the lands of Barbehagh in the Parish of Youghill The sd. Connor ó Bryen Esqr pprietor in fee of one fourth pte of the sixteenth pte of the sd. pld of Ballykilliam by purchas long before the Rebellion (as wee are informed) from Mortagh mc Morrogh ó Bryen. The sd. Dermott ó Bryen pprietor in fee by purchas long before the Rebellion from Mathew mcMorrogh ó Bryen, Daniell mc Morrogh ó Bryen, Morrogh mc Kenedy ó Bryen, Mortagh McTeige ó Bryen, & Tegie mc Connor ó Bryen, of one fourth pte of a pld of the sd. pld of Ballykilliam (as wee are informed). The sd. Doune ó Bryen ppreitor of one sixth pte of an eight pte of a pld of the sd. pld of ballykilliam in fee by Descent from his Ancestors. The sd. Teige mc Donogh pprietor of one Sixteenth pte of a pld of the sd. pld of Ballykilliam in fee by Descent from his Ancestors. The sd. Mathew Bryen of Carrigall pprietor of one eight pte of a pld of the sd. pld in fee by Descent from his Ancestors. The sd. Teige ó Bryen of Carrigall pprietor in fee of 1/8 & 1/3 of a 4th pt of the sd. pld by Descent. The sd. Teige ó Bryen of Toburteriffe pprietor in fee of one sixteenth and three 4ths of ye sixteenth pte of a pld of the sd. pld of Ballykilliam. The sd. pld is not cleerely devided betweene the sd. ppreitors whereby each pprietors pportion may be pticulerly meared and bounded. The sd. land is totally wast without any Improvemt (ibid, 148).

The Ordnance Survey Name Book, 1840, translates Ballywilliam as 'Mac William's town' and describes the townland thus: *A Townland under cultivation with some scattered trees on it, the road from Nenagh forms the Northern boundary* (O'Flanagan 1930, 97). Samuel Lewis writing in the mid-19th century describes Burges Beg parish (Lewis 1837, 231-2) in which he says the parish *'contains a modern chapel on the townland of Ballywilliam'*. There are numerous tenants listed in Ballywilliam townland (Griffith 1851). The occupiers of the land on which Site E2479 is situated were Daniel Quinn, Margaret Woods, Michael Cuddy, Michael D'Arcy and Michael Brien.

Environment Impact Statement

As part of the Environmental Impact Statement (EIS) for this road project, an Architectural, Archaeological and Cultural Heritage Report (MGL 2003) was commissioned. This statement of archaeology and built/cultural heritage was based on a desktop study of published and unpublished documentary and cartographic sources, supported by a field inspection and aerial inspection of the proposed route. The report identified two areas of archaeological potential. The first was identified by field inspection within a field in Ballywilliam (ID No. 37). The feature was a relatively level and roughly circular platform located in pasture on the south-east side of the present N7. The second potential feature was an oval spur of land identified during a contour survey as part of the EIS in Ballywilliam townland (A026/344).

Archaeological investigation on the N7 Nenagh-Limerick HQDC

Archaeological test trenching by means of mechanically excavated centre-line and offset trenching along the route of the road project was undertaken by Aegis Archaeology Ltd and Judith Carroll and Company Ltd in early 2006. Areas of potential identified in the EIS were tested more intensively

where possible and at this time the watercourses and townland boundaries were also examined. Further testing was undertaken by Headland Archaeology Ltd and TVAS (Ireland) Ltd in early 2007. This further testing was targeted on previous inaccessible areas i.e. under power lines etc. The results of the testing are not discussed except where archaeological deposits were encountered.

To the north-east of Ballywilliam Site 1 were Ballycuddy More Site 1 (28 m), Cloghleigh Site 1 (240 m) and Ballyhisky Site 1 (770 m) and Site 2 (655 m). At Ballycuddy More Site 1, E2483, Neolithic domestic activity, an Iron Age cremation cemetery and early medieval and post-medieval activity were excavated (Taylor 2011). Cloghleigh Site 1, E2480, revealed Middle to Late Bronze Age burnt stone spreads and pits and early medieval to medieval burnt stone spreads (Ruttle 2010a). Ballyhisky Site 1, E2481, contained an Iron Age to early medieval patch of *in situ* burning and three isolated pits (Ruttle 2010b) and Ballyhisky Site 2, E2482, had Early Neolithic and Middle to Late Bronze Age domestic activity, early medieval pits and post-medieval field boundaries (Ruttle 2010c).

At Gortmore Site 1, E3265, 1290 m to the south-east of the site, excavation revealed a medieval pit, possible contemporary pit and deposits and post-medieval/modern agricultural features (McNamara 2010).

Discussion of archaeological and historical background

Other excavations in the neighbouring townlands have proven that there was activity dated from the Neolithic to the medieval period, followed by post-medieval farming activity. The structures depicted on the 1st edition map within the road take now have no above ground expression.

Earlier test excavations

Part of site E2479 was identified during centre-line and offset testing of the road route by Judith Carroll and Company (Gibbons 2006a-c, d'Hane and Carroll 2006a-b and Prunty 2006). The remainder of the site was uncovered following archaeological monitoring of Electricity Supply Board (ESB) topsoil stripping and further test trenching by Headland Archaeology Ltd (McLeod and O'Neil 2007).

Area A (A026/404) was initially identified as three pits (Gibbons 2006a). The first pit was oval, measured 0.45 m by 0.61 m and was filled with dark grey black sandy silt that contained frequent lumps of charcoal. The second pit was circular, was 'U'-shaped in section and filled with dark brown grey sandy silt with occasional charcoal flecking. The third pit was irregular and contained a similar deposit to the second pit.

In Area B (A026/402) two spreads of burnt material and two pits were uncovered (d'Hane and Carroll 2006a). The larger of the spreads measured 8.5 m by 1.6 m and was composed of heat-shattered stone and charcoal. An iron bar, measuring 95 mm x 18 mm x 10 mm, was retrieved from this deposit. The second spread was a linear deposit of dark greyish brown sandy silt with inclusions of heat-shattered stone and charcoal. The context was not fully exposed. The pits were both irregular and contained deposits of black clayey silt with heat-affected stone and charcoal and light brown sandy silt with only a moderate amount of burnt stone and charcoal.

Area C (A026/344) was previously identified as an area of potential in the EIS (as mentioned above) and the test trenching revealed two possible cremation pits and a possible posthole (Gibbons 2006b). The two pits (2.00 m by 1.00 m and 0.18 m deep and 0.50 m by 0.42 m) contained dark brown grey silt with frequent inclusions of small stone inclusions and occasional charcoal and burnt bone. The posthole had a similar fill and measured 0.26 m in diameter.

In Area D (A026/400) a burnt stone spread was identified (d'Hane and Carroll 2006b). The spread contained frequent charcoal and heat-shattered stone inclusions and measured 18.0 m by 8.3 m. Brown

silty clay was seen around the edges of the spread and it contained some burnt stone also. Drains and linear furrows truncated the site. Area E lay within the zone of a potential circular platform that was identified in the EIS, given sub scheme number A206/304 and targeted by archaeological test trenching (Prunty 2006). A burnt spread and two burnt deposits were identified within this area and given scheme number A026/399 (Gibbons 2006c). The site was located south of the present N7, beside a watercourse and the field had been drained. The main body of the burnt spread was compact black burnt stone and charcoal and measured 4.8 m by 3.7 m and was seen to be 0.20 m deep. The two burnt deposits were composed of the same material.

Sometime after Areas A-E had been excavated a number of other areas of archaeological potential were revealed and these were subsequently incorporated into Ballywilliam Site 1. Area F was identified during monitoring of topsoil stripping by ESB during relocation of a pylon. A curvilinear ditch and a number of features with charcoal-rich fills were observed and the site was subsequently fully stripped and excavated. Area F incorporated the previously excavated Area C. Area G was revealed by the additional test trenching carried out beneath removed overhead powerlines. A horseshoe-shaped patch of dark soil and a number of drains were recorded. Area H was immediately adjacent to Area A and lay partially beneath an ESB created carpark. A number of pits and postholes were revealed and appeared to represent a continuation of the Area A activity. These areas have been amalgamated in this report. Areas I and J were located in test trenches excavated along the south-west side of a minor road at the north-eastern end of the site. In each case a small patch of charcoal-rich material was identified.

Following the submission of the reports on the testing and discovery of Areas A-E (d'Hane and Carroll 2006a-b, Gibbons 2006a-c and Prunty 2006) the site was excavated under Ministerial Directions. In the case of Areas F-I no testing report was produced and the excavation was undertaken as an extension of the original E2479 site.

Excavation Aims and Methodology

The aims of the excavation were to:

1) Preserve by record all archaeological deposits and features within the excavation area
2) Produce a high quality report of the findings

The fieldwork on sites Areas A-E took place from 2nd November to 21st December 2006 and was directed by Markus Casey, supervised by Margaret McNamara and Edel Ruttle and assisted by Tom Byrne, Maurizio Campanelli, Paolo Ciuchini, Borbala Dios, Anne-Julie Lafaye, Mary-Clare Linnane, Anna Łukasz, Alberto Martinez Gago, Marcin Olejnik, Waldemar Podlecki, Mario Sanchez Canadas, Slawomir Stawicki, Jaroslaw Szymonski, Szymon Wojciechowski and Mariusz Wolny.

The field work on Areas F-J took place from 31st January to 28th April 2007 and was directed Kate Taylor (licence transferred from Markus Casey), supervised by Pawel Kolacz, Adrian McCarthy, Astrid Nathan and Jaime Parra Rizo, and assisted by Robert Alkiewicz, Rafel Andryskowski, Magdalena Augustyniak, Lukasz Balaga, Monika Bednarczyk, Ana Belen Colen, Lluis Bermudo Ferrer, Bartosz Bomba, Piotr Ciesla, Paolo Ciuchini, Agnieszka Chabinska, Mariusz Chabinski, Adam Chudy, Marcin Czaja, Borbola Dios, Brigid Fitzsimmons, Arkadiusz Gnas, Denise Hennessy, Hollee Hibberson, Lukasz Janicki, Lukasz Jaworski, Joanna Jezierska, Jacek Kacprzak, Krzysztof Kacprzak, Tomasz Kaczmarczyk, Wojciech Koczorowski, Wojciech Kozlowski, Patrycja Kolon, Katarzyna Kozyra, Dorota Krenc, Wojciech Krol, Robert Laczak, Piotr Lemaniak, Mary-Clare Linnane, Anna Łukasz, Alberto Martinez Gago, Marcin Makus, Fintan McCarthy, Joe McCooey, Margaret McNamara, Adam Mrozowski, Aisling Mulcahy, Tomasz Neyman, Aoife O'Grady, Marcin Olejnik, Karolina Oleksiek, Mikolaj Ostrowski, Caitriona O'Sullivan, Krzysztof Pecherzewski, Dorota Piechocka, Jacek Pikulski, Anita Pinagli, Carles Plana Lorenzo, Pawel Pobudkiewicz, Rafal Pobudkiewicz, Waldek Podlecki, Christophe Poulain, Agata Raclaw, Artur Rosiek, Karol Rosiek,

Monika Rosiek, Iwona Sliwka, Kamila Sliwka, Jerzy Spyra, Slawomir Stawicki, Roman Szajna, Jaroslaw Szymonski, Mara Tesorieri, Marceli Warmusz, Monika Widelka, Szymon Wojciechowski and Mariusz Wolny.

The stripped areas are detailed in Table 1 below. Topsoil was removed by a tracked mechanical excavator fitted with 6-foot (1.8 m) toothless grading bucket and operated under direct and continuous archaeological supervision. The spoil was visually scanned for artefacts. The archaeological features were excavated by hand. In Area F, following full hand excavation of the enclosure ditch and associated features, a spread of sterile but possibly archaeological material was removed by machine in order to ascertain whether it overlay any earlier features. A full written, drawn and photographic record was made according to the TVAS (Ireland) Ltd Field Recording Manual (First Edition 2003). The site was tied into the National Grid using a Global Positioning System (GPS) unit.

Table 1: Stripped areas of E2479

Area No.	Scheme Sub No.	Stripped area
Area A	A026/404	482.64 m²
Area B	A026/402	499.54m²
Area C	A026/344 (within Area F)	125.63m² (within Area F)
Area D	A026/400	866.60m²
Area E	A026/399	344.18m²
Area F	n/a	8596.84 m²
Area G	n/a	523.73m²
Area H	(includes part of Area A)	707.98m²
Area I	n/a	43.09m²
Area J	n/a	48.24m²

Excavation results (Figs 5-43, Plates 1-34)

Excavation revealed at least eight phases of activity across the various areas, ranging from Early Neolithic to post-medieval. All features and contexts are listed in Appendix 1.

Areas A & H (Figs 5-6, Plates 1-4)

These overlapping areas contained pits, postholes and stakeholes, some of which were dated to the Middle Bronze Age.

Area A contained one posthole and three stakeholes (Tables 2-4). In Area A the topsoil (50) was mixed brown-orange sandy/gravelly silt 0.30-0.70 m deep. Posthole 2 was flat based with a single fill of dark brown sandy silt containing pebbles (52) and oak and willow charcoal. Stakehole 1 showed evidence of truncation, being distorted on the north-western side and had a single fill (51) of soft black sandy silt with some oak charcoal flecking. Stakeholes 3 and 4 contained similar fills of dark brown sandy silt.

Area H contained six stakeholes, nine postholes and nine pits (Tables 2-4). In Area H the topsoil (2650) was machined off prior to excavation and yielded the only artefact (a rubbing or hammer stone (E2479:2650:1)) retrieved from the area. The stone object was burnt and can be associated with prehistoric food production. The stakeholes were clustered and near to those excavated within Area A. Stakehole 2611 was located in the edge of pit 2607 but their relationship is uncertain. Hazel charcoal was present in stakehole 2621. The postholes formed a wide arc but did not appear to represent a cohesive structure.

There were two large pits in the north-east corner of Area H, 2619 and 2623 (Table 3). There was no apparent relationship between the two pits but pit 2623 contained the cremated human remains of an

adult. The pit also contained oak charcoal, presumably the remains of pyre fuelwood. Pit 2619 contained oak charcoal. One other pit, 2608, contained burnt bone in its upper fill (deposit 2663). The bone was identified as mammal and could be either animal or human in origin. There was evidence of *in situ* burning in pit 2610. These pits may be interpreted as a cremation cemetery. Oak charcoal from pit 2608 was dated to 1610-1453 cal. BC (UBA-13889). Hazel charcoal from pit 2619 was dated to 1600-1420 cal. BC (UBA-13890) placing the activity in the Middle Bronze Age.

Table 2: Description of stakeholes in Areas A & H

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
1	51	0.12	0.12	0.10	Circular / Irregular
3	53	0.12	0.12	0.18	Circular / 'U'-shaped
4	54	0.10	0.07	0.06	Oval / 'U'-shaped
2611	2668	0.14	0.15	0.30	Sub-circular / 'U'-shaped
2612	2670	0.11	0.12	0.10	Sub-circular / Concave
2613	2671	0.10	0.10	0.11	Circular / Concave
2620	2682	0.09	0.09	0.11	Circular / 'U'-shaped
2621	2683	0.12	0.12	0.18	Circular / Tapering
2622	2684	0.10	0.10	0.12	Circular / Tapering

Table 3: Description of pits in Areas A & H

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
2600	2651, 2652	1.46	0.88	0.60	Irregular oval / 'U'-shaped
2607	2660, 2661, 2662	0.86	0.75	0.24	Sub-circular / Flat based
2608	2663, 2664	0.30	0.26	0.13	Sub-oval / Irregular. Possible cremation burial
2609	2665	1.10	1.05	0.28	Irregular / Concave
2610	2666, 2667, 2669	0.88	0.65	0.33	Oval / Concave
2615	2673	0.80	0.62	0.18	Oval / Concave
2616	2674	0.86	0.48	0.10	Oval / Flat
2619	2677, 2678, 2679, 2680, 2681	1.55	2.20	0.44	Oval / Concave
2623	2685, 2686, 2687	2.58	0.78	0.42	Sub-oval / Concave

Table 4: Description of postholes in Areas A & H

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
2	52	0.47	0.30	0.15	Oval / Flat-based
2601	2653	0.50	0.53	0.20	Sub-circular / Flat based
2602	2654	0.49	0.54	0.20	Sub-circular / 'U'-shaped
2603	2655	0.42	0.34	0.08	Sub-circular / Irregular
2604	2656	0.38	0.26	0.24	Sub-circular / 'U'-shaped
2605	2657	0.40	0.35	0.34	Sub-circular / Flat based
2606	2658, 2659	0.28	0.38	0.36	Oval / 'U'-shaped
2614	2672	0.25	0.25	0.11	Circular / Flat based
2617	2675	0.31	0.35	0.25	Sub-circular / Concave
2618	2676	0.32	0.45	0.16	Oval / Concave

Area B

Area B consisted of a single deposit of gravel (351) that measured 2.30 m by 0.90 m and was 0.12 m deep. The deposit was dark brown sandy loam with frequent inclusions of angular and rounded

pebbles. An iron knife blade recovered from this area during testing (E2479:352:1) was unstratified (context 352 was given for the unstratified find).

Area D (Figs 7-14, Plates 5-12)

This excavation focused on a burnt stone spread with associated features dated to the Late Neolithic/Early Bronze Age Beaker period. The excavation area was sub-rectangular (33 m by 28 m) and was situated within an area of gently sloping pasture within a generally level area with spectacular unobstructed views of the Silvermines to the south and south-east. Features excavated in Area D included the burnt stone spread, four pits (including at least two troughs), ten stakeholes and linear features (including drains).

The topsoil (50) was moderately compact orange-brown, sandy gravelly silt with gravel and pebble inclusions 0.30-0.70 m thick. The topsoil overlay glacial till (60 and 98) with frequent inclusions of pebbles and small stones. The ground immediately south-east of the spread sloped down gradually and was therefore inclined to flood, at least within the confines of the excavation trench. The land to the north rose gradually towards a height on which the Area F enclosure was situated (see below). The Area E burnt stone spread (see below) was located to the south-east, on the opposite side of the present N7.

The burnt stone spread (Figs 7-14, Plates 5-12)

The spread had an irregular oval shape and measured approximately 10.2 m (north-south) by 7.3 m with an average depth of 0.30 m. The spread was underlain by a trough which held up to 0.55 m of burnt spread material. Originally, the spread may have formed a mound that had been levelled by erosion and reclamation activities. The deposits forming the spread area are described below.

The spread was also underlain in part by a series of cut features. Trough (6) was located underneath the western edge of the spread. Pit 10 was located immediately south of the trough. A single stakehole (24) also underlay the spread while a second (9) appeared to truncate the spread. A second trough-like feature (12) was located to the south-east, beyond the limits of the spread. North of the spread was a large pit (23).

Troughs, pits and stakeholes (Figs 8-13, Plates 7-9)

Feature 6 was sub-circular with a regular bowl-shaped profile, and was interpreted as a trough. The trough measured approximately 1.16 m by 1.31 m and was 0.46 m deep with two fills, 58 and 57. In addition to being the primary fill of the trough, deposit 58 formed a spread to the north, south and east. Deposit 58 filled most of the trough apart from the area close to the top of the trough in the west. Here, the burnt stone deposit was overlain by moderately compact, charcoal-flecked, grey-brown sticky clay (57). This layer may have been caused by modern disturbance from an adjacent drain, however as this deposit appeared to respect the edges of trough 6, it may represent a partial attempt to seal the feature. The trough filled naturally with ground water supply (note: a natural spring was identified 5 m west of the trough). No lining was evident in the trough nor were any postholes or stakeholes detected within or surrounding it. Hazel charcoal from deposit 58 was dated to 2459-2208 cal. BC (UBA-13864) placing it in the Late Neolithic/Early Bronze Age Beaker period.

Two irregularly shaped pits (10 and 23) of uncertain function were recorded south and north-east of trough 6. Pit 10 was located 0.76 m south of trough 6 and was truncated by a modern drain (7). The pit was irregularly shaped and measured approximately 1.28 m by 1.11 m and was 0.34 m deep with three fills. The primary fill, 68, was a thin (0.05 m deep) layer of loose, grey-brown, slightly peaty, charcoal-flecked clay with wood fragments, which partially filled the base of the feature. The peaty nature of this deposit may have been caused by persistent water-logging of the lower levels of the pit. The secondary fill, 67, that was 0.22 m thick, filled most of the pit and consisted of loose pale beige clay, possibly redeposited natural. The upper part of the pit was filled with loose dark beige clay with

occasional stone inclusions and root activity (66), similar to the topsoil. Hazel and oak charcoal was present in the pit.

Pit 23 was located approximately 5.5 m north-east of trough 6 and was cut into deposits 177 and 183 (material eroded from the burnt stone spread 58). The pit had an irregular rounded shape and its south-west edge had been completely truncated by a modern stone-packed drain (21). Pit 23 measured 2.00 m by 1.80 m and was 0.35 m deep with gradual breaks of slope, gradually sloping sides and a rounded base and had two circular hollows in its eastern half. The pit's primary fill (181) was moderately compact multi-coloured (grey with orange and black lenses) sand with frequent ash charcoal. This deposit was located along the base and the lower sides of the pit and reached a maximum depth of 0.12 m. Two chunks of unmodified natural chert were recovered from this primary fill. Two secondary fills (176 and 180) were recorded. Deposit 180, also 0.12 m thick, was similar to 181, but lacked charcoal, perhaps as a result of leaching. Deposit 176 was a small (0.30 m diameter by 0.07 m depth) patch abutting deposit 180 and truncated by the modern drain. These layers were overlain by fill 179, moderately firm, dark brown clayey silt, and 0.10 m thick. The uppermost or final fill, 178, was peaty and shallow (0.05 m), moderately compact and contained wood fragments.

Pit 12 was located approximately 7.3 m south-east of trough 6 and approximately 2.8 m south-east of the spread. The pit measured 1.11 m north-east to south-west by 0.80 m and was 0.12 m deep with an unusual, albeit regular, rhomboid shape, and a shallow profile with sharp breaks of slope at the top, steep sides, and a generally flat base. This pit was filled with soft light grey-brown silty clay and decayed stone (82). Pit 12 filled continuously with ground water and this suggests that the pit may have served as trough, albeit a shallow example.

Pit 12 was partially surrounded, and occasionally cut by, a sub-circular arrangement of eight stakeholes, 13-20 (Table 5) some of which appeared to be paired (stakeholes 13 and 14 and stakeholes 19 and 20). Stakehole 20 was also a possible 'double' stakehole. A possible 'triple' stakehole (13) was located opposite the double stakehole (20). Stakehole 18 cut the south-east edge of the pit and there were no stakeholes located at the south-west edge of the pit. Some of the stakeholes may instead have been created by root disturbance. All the stakeholes contained a similar fill of loose brown clayey silt with pebble and wood fragments. Charcoal of ash, hazel, oak and Pomoideae were retrieved from stakehole 14; the other stakeholes contained charcoal of indeterminate species. The stakeholes probably represent a wind-break or held an item of furniture which hung over the pit. Hazel charcoal from stakehole 14 was dated to 2338-2142 cal. BC (UBA-13865).

Two other stakeholes (9 and 24) were recorded (Table 6). Stakehole 9 appeared to cut into and therefore post-date the spread, while stakehole 24 may be earlier and possibly associated with burnt spread activity. Both stakeholes were filled with loose dark brown silty clay with occasional charcoal and pebble inclusions.

Table 5: Description of stakeholes associated with pit 12 in Area D

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / Profile. Comments
13	83	0.07	0.06	0.24	Sub-circular / Vertical sides, flat base
14	84	0.09	0.07	0.43	Sub-circular / Vertical sides, 'U'-shaped base inclined to north-east
15	85	0.12	0.07	0.60	Figure-of-eight /Triple profile, main stakehole undulating south-west side, vertical north-east side, 'U'-shaped base, supporting stake or root hole 'U'-shaped, other stake or root hole inclined to north-east. Possible root disturbance
16	86	0.07	0.06	0.44	Sub-circular / Undulating south-west side, north-east side vertical, flat base. Possible root disturbance
17	87	0.07	0.06	0.22	Sub-circular / Tapering, inclined to north-east. Possible root disturbance

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / Profile. Comments
18	88	0.07	0.06	0.27	Sub-circular /South-east side slanted, north-west side slightly concave, V-shaped base, tip inclined to north-west. Cut south-east edge of pit 12
19	89	0.10	0.07	0.32	Sub-circular / South-east side vertical, north-west side slightly concave, flat base
20	90	0.11	0.08	0.54	Figure-of-eight /Double profile, main stakehole 'U'-shaped inclined to north-west, supporting stake or roothole 'U'-shaped inclined to south-east. Possible root disturbance

Table 6: Description of isolated stakeholes in Area D

Cut	Deposit	Diameter (m)	Depth (m)	Plan / Profile. Comments
9	61	0.06	0.10	Circular / Tapering. Cut deposit 63
24	184	0.07	0.17	Circular / Tapering. Overlain by deposit 62

Linear feature (Fig. 8)

A short east to west aligned linear feature, 22, located in the centre of the site was truncated at its eastern end by a modern drain (21). Feature 22 was 3.40 m long, 0.70 m wide and 0.20 m deep with a shallow profile, vertical and sloping sides and a flat base. It was filled with deposit 76, compact, firm sandy clay with frequent charcoal and occasional stone inclusions. Charcoal of ash, hazel, Pomoideae and willow were represented. Feature 22 was overlain by burnt stone deposit 74 suggesting it pre-dated deposit 74. This part of the site was however heavily truncated by a series of modern drains and it is possible that feature 22 is in fact a later, possibly modern drain, over which deposit 74 was redeposited.

Spread deposits (Figs 7, 10-12 and 14, Plates 5-6 and 10-11)

Five deposits of burnt stone were recorded (59, 63, 74, 80 & 92) that were characterised by charcoal-rich, compact dark grey to black silty clays containing multi-coloured heat-affected stone. These deposits most probably represent upcast from trough 6. The site had clearly been subject to erosion and truncation. Mixed deposits of redeposited glacial till, peaty horizons and mixed topsoil were evident throughout (Table 7). Deposits 63 and 80 yielded ash, alder, oak and hazel charcoal. One of the peaty deposits (75) contained three fragmented timbers, measuring between 0.80 m and 1.40 m in length and fragments of oak and ash charcoal. There was no evidence the wood had been modified or worked and it may represent a natural deposit.

Table 7: Description of spread deposits in Area D

Deposit	Thickness (m)	Description	Comments
58	0.55	Moderately compact sticky dark grey charcoal-rich silty clay with frequent multi-coloured (orange, light brown and beige) heat-affected stone	Upcast burnt stone deposit forming primary fill of trough 6 and spread to the north, south and east of it, similar to deposits 63 and 80
59	0.04	Moderately compact greyish creamy clay with frequent charcoal inclusions	Interface layer between burnt stone deposit 58 and the natural clay 60, similar to 62
62	0.08	Moderately compact sticky grey (pink and beige hue) clay with occasional stone inclusions	Interface layer between burnt stone deposit 63 and the natural clay 60, similar to 59
63	0.11	Loose to moderately compact dark greyish black charcoal rich silty clay with frequent multi-coloured (orange, light brown and beige) heat-affected stone	Upcast burnt stone deposit, similar to 58 & 80

Deposit	Thickness (m)	Description	Comments
64	0.10	Loose dark brown silty clay with occasional charcoal and heat-affected stone	Mixed deposit, interface between topsoil and burnt stone deposit. Same as 91
65	0.07	Loose greyish beige clay	Fill of natural depression
69	0.20	Loose grey silty sand with stone and root inclusions	Abutted edge of drain 11, possibly created by or cut by 11.
70	0.15	Moderately compact whitish grey clay	Similar to natural, probably displaced during excavation of drains 11 or 7.
71	0.06	Firm brown silt with occasional charcoal and heat-affected stone	Mixed deposit, interface between topsoil and burnt stone deposit.
72	0.05	Dark grey sandy clay with occasional charcoal and stone inclusions	Occurring in lenses within deposit 73
73	0.20	Moderately compact brown clay with stone inclusions and sandy lenses	Pre-dated burnt stone deposit 58
74	0.35	Moderately compact charcoal rich dark grey black silty clay with frequent multi-coloured (orange, light brown and beige) heat-affected stone	Upcast burnt stone material north of deposits 58, 63 & 80. May represent a separate upcast or be displaced by modern drains. Similar to deposit 92
75	0.13	Compact reddish brown peaty silty clay	Overlay burnt stone deposit 74. Contained timbers. Cut by drain 21.
76	0.25	Compact firm charcoal-rich sandy clay with frequent inclusions of stone	Underlay burnt stone deposit 74 and filled linear feature 22
77	0.28	Moderately compact whitish grey sandy clay	Redeposited natural clay
78	0.34	Compact sticky dark grey clay with occasional charcoal inclusions	Redeposited natural clay
79	0.20	Moderately compact sticky light grey clay with charcoal inclusions	Interface layer between burnt stone deposit 80 and the natural clay 60
80	0.15	Loose dark brown charcoal rich silty sand with frequent multi-coloured (orange, light brown and beige) heat-affected stone	Upcast burnt stone deposit, truncated by drain 11
91	0.10	Moderately compact greyish brown silty clay with frequent occurrence of decayed stone and pebbles	Mixed deposit, interface between topsoil and burnt stone deposit. Same as 64
92	0.21	Loose greyish black charcoal rich silty clay with occasional heat-affected stone	Upcast burnt stone deposit. Located north of deposits 58, 63 & 80 and west of deposit 74. May represent separate upcast or be redeposited
94	0.10	Moderately compact dark brown peaty clay	Overlay burnt deposit 92.
95	0.09	Loose to moderately compact charcoal-rich mid grey silty clay	Interface layer between burnt stone deposit 92 or redeposited
96	0.16	Loose to moderately compact charcoal-rich greyish brown silty clay with inclusions of orange and grey sand	Interface layer overlying natural clay 60, deposited during excavation of trough or drains
97	0.09	Loose grey and orange (with greyish brown lenses) silty clay with occasional charcoal inclusions.	Mixed deposit overlying natural clay 60, deposited during excavation of trough or drains
177	0.10	Moderately firm dark brown clayey silt	Cut by pit 23 and drain 21
183	0.18	Compact reddish brown silty and slight peaty clay with occasional charcoal inclusions	Cut by pit 23

Drains – Modern (Figs 7-8, 10-12 and 14, Plates 5 and 12)

Four drains (7, 8, 11 and 21) truncated the archaeology within Area D. Most were narrow (between 0.35-0.50 m wide) with 'U'-shaped profiles and between 0.30 and 0.60 m deep. Three drains (7, 8 and

21) were packed with stone. Drain 8 spanned the western half of the site and was aligned north-east to south-west. This drain ran along the western edge of the spread and cut drain 7 which was aligned north-west/south-east. Drain 7 truncated the burnt stone spread (58) and ran parallel to drain 21 which also truncated the stone spread in the east and a short linear feature 22 and pit 23. In the south, also truncating the stone spread was a third north-west/south-east aligned drain (11). This drain was 4.30 m wide, 0.60 m deep and contained a modern pipe.

Area E (Figs 15-18, Plates 13-16)

Area E contained a horseshoe-shaped *fulacht fia* and a number of pits (Table 8) dated to the Middle Bronze Age. The area was bounded to the north-east by a stream and an old stream bed was revealed within the excavation area north-east of the *fulacht fia*. All the features were heavily truncated by agricultural activity. The topsoil in Area E (160) was a mid-brown clayey silty loam, 0.30-0.45 m deep.

Pits (Figs 15-18, Plates 14-16)

Pit 101 was located almost in the centre of the horseshoe-shaped mound facing the stream. The pit was sub-rectangular with a flat base and contained two fills. The main fill (154) was compact brown to black sandy silt containing >50 % small to large angular burnt sandstone and oak, hazel and willow charcoal. Fill 155 was brown organic material lying on the bottom of the pit in the north-west. The area immediately to the west of pit 101 had been disturbed by root activity and deposit 153 had accumulated here. Feature 100 was a natural root hole adjacent to deposit 153 that had been back-filled with topsoil.

Most of the pits (particularly pits 103, 104 and 105) had been damaged by roots and agricultural activity. The fill of pit 103 (152) and the primary fill of pit 104 (158) comprised grey-black silt with some burnt sandstone and hazel, oak and willow charcoal. The upper fill of pit 104 (159) was black-grey sandy silt with some charcoal of indeterminate species and burnt sandstone pieces. Pits 102 and 105 were two large pits filled with burnt stone (150). Pit 102 was entirely sealed by the burnt stone material whereas pit 105 only partially.

Hazel charcoal from pit 101 returned a date of 1634-1505 cal. BC (UBA-13866) and similar material from pit 102 gave a date of 1622-1454 cal. BC (UBA-13867) placing the activity in the Middle Bronze Age.

The mound deposits (Figs 15 and 17-18, Plates 13 and 16)

The horseshoe-shaped burnt stone mound was formed by a series of deposits of burnt stone material, 14 m long, 3.10-4.20 m wide and 0.08-0.30 m thick. The primary mound deposit (156) comprised black sandy clay and frequent burnt sandstone. This horizon was overlain by deposit 157, oxidised orange-brown sandy clay. The main mound deposit (150) was composed of dark brown-black sandy silty clay with >65% burnt stone and oak and hazel charcoal present throughout. Other mound related deposits included deposit 153, grey-black sandy silt with ash charcoal and some burnt sandstone. Situated to the east of the mound was deposit 151, a small shallow patch of black-brown sandy silt, with sandstone inclusions and occasional oak and hazel charcoal flecking.

Hazel charcoal from deposit 150 was dated to cal. AD 1036-1185 (UBA-13868). Given the trough fill returned a date in the Middle Bronze Age which is more in keeping with the use and formation of burnt stone mounds (although historic examples are known), the later date is likely to represent intrusive material.

Table 8: Description of features in Area E

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Type	Plan / profile. Comments
100	-	0.48	0.43	0.13	Natural root hole	Sub-circular / Concave.
101	154, 155	1.00	0.73	0.20	Trough	Sub-rectangular / Flat based
102	150	2.00	0.80	0.30	Pit	Oval / Concave
103	152	0.70	0.60	0.12	Pit	Sub-circular / Irregular
104	158, 159	1.50	0.60	0.26	Pit	Oval / Irregular
105	150	3.30	1.10	0.27	Pit	Linear / Flattish base
-	150	14.00	4.20	0.30	Layer	Horseshoe-shaped
-	151	0.82	0.55	0.07	Layer	Sub-circular / Concave
-	153	1.35	1.00	0.13	Layer	Linear / Irregular
-	156	1.95	1.40	0.10	Layer	Not seen in plan – section only
-	157	2.40	1.40	0.07	Layer	Not seen in plan – section only

Areas C & F (Figs 19-37, Plates 17-32)

A small number of features were excavated within an area originally designated as Area C. Additional archaeological deposits were discovered in the vicinity of Area C during archaeological monitoring of works undertaken by ESB relating to the re-location of a pylon. These were excavated as Area F. Unfortunately, the archaeology had been damaged in part by ESB machine activity. Within Area C/F topsoil (250/1250) comprised 0.25-0.35 m of brown sandy silt with some gravel inclusions.

Area F was the largest area excavated in Ballywilliam and incorporated several different phases of activity dating from the Neolithic to the Medieval.

Phase 1: Neolithic (Figs 19-22, Plates 17-18)

Pits (Figs 20-22 and 25, Plates 17-18)

Four pits dated to the Neolithic each contained Early Neolithic carinated bowl pottery fragments (Table 9). The pits were clustered towards the northern end of Area F. Pit 709 contained a lower fill (861) of firm orange-brown silty sand with stone inclusions overlain by dark grey sandy silt with a high hazel and oak charcoal content (1371). The pottery (Vessels 1 and 2) mostly occurred within the lower pit with co-joining sherds (broken *in situ*) lying on the base of the pit. The pit also produced a small chert end scraper (E2479:861:1) of probable Neolithic date. Hazelnut shell from the pit was dated to 3761-3641 cal. BC (UBA-13887).

Pit 945 was located close to pit 709 and had been damaged by roots from a modern hedge. Pottery fragments from the pit pertain to Vessel 3 which was also represented in pit 1000. Hazel, oak and ash charcoal were retrieved from the pit.

Pits 1000 and 1001 were adjacent to each other and were oval with steep sides and slightly concave bases. The top of the pits had been damaged by roots. In each case it appeared that burnt material had been placed in the pits on top of redeposited natural before being backfilled.

The lower fill of pit 1000 (1381) was redeposited natural. This was overlain by a layer of dark grey charcoal-rich sandy silt (1373) and patches of burnt clay (1374 and 1463). The pit contained two upper fills; a second deposit of redeposited natural (1465) and a deposit of dark brown sandy silt (1372). Pit 1000 produced pottery (Vessel 3) from its basal, middle and uppermost fill. Hazel, ash and oak charcoal were present and hazel charcoal from the pit was dated to 3937-3702 cal. BC (UBA-13881)

The lower fill of pit 1001 (1380) comprised redeposited natural. This was overlain by dark grey charcoal-rich horizon (1375) that contained patches of burnt clay (1464 and 1379). The charcoal-rich deposit was overlain by a paler grey layer (1376). Charcoal of hazel, ash and oak were present. Two deposits of redeposited natural finally filled the pit. The pit produced pottery (Vessel 4), burnt mammal bone fragments as well as sandstone rubbing and/or hammer stones (E2479:1375:1 and 1376:1-4). One example was manufactured from quartzite.

On excavation pit 1006 (situated approximately 15 m south-west of the dated pits described above) was interpreted as a cremation pit. The pit was small and contained charcoal and fragmentary burnt bone in its dark grey brown fill. Analysis showed the bone could be only identified as mammal and could be either animal or mammal in origin.

Other pits of possible late Neolithic date include a cluster of pits in the centre of the area defined by the later early medieval enclosure. Three intercutting pits (514 and 515 and 544) each with generally dark, oak charcoal-rich fills. Pit 515 was cut by pits 514 and 544. The lower fill of pit 514 (654) was black and almost pure oak charcoal, whilst the upper fill was dark grey sandy clay. Pit 544 had evidence of *in situ* burning (655) at its northern end which was overlain by an oak charcoal-rich layer (654) and a dark grey silty fill (661). A small quantity of burnt animal bone was recovered from the pit. Pit 544 was cut by pit 540 that contained a dark grey sandy silt fill. Pig bone fragments were recovered from pit 540 suggesting food waste had been thrown into the pit. Furrow 545 truncated several of these features. All four pits contained burnt animal bone fragments and pit 514 also produced one sandstone rubbing stone that had been burnt.

Table 9: Neolithic pits in Area F

Cut	Deposit(s)	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
514	563, 564	0.75	0.50	0.25	Oval / Irregular, stepped. Probably truncated pit 515
515	565	1.00	0.40	0.15	Elongated oval / Concave. Truncated by pits 514 & 544 and furrow 545
544	654, 655, 661	0.80	0.80	0.20	Circular / Steeply concave. Truncated by pit 540 and furrow 545. Truncated pit 515
709	861, 1371	1.10	0.86	0.20	Oval / concave
945	1364, 1369	0.66	0.44	0.25	Oval / irregular
1000	1372, 1373, 1374, 1381, 1463, 1465	1.25	0.75	0.45	Oval / very steep sides, concave base.
1001	1375, 1376, 1377, 1378, 1379, 1380, 1464	1.10	1.00	0.38	Oval / steep sides, concave base
1006	1383	0.45	0.45	0.25	Circular / steep sides, concave base.

Residual radiocarbon date

Early Neolithic charred plant material was recovered from a later feature on the site and radiocarbon dated, indicating ongoing occupation of the site during this period (Table 64).

Phase 2: Late Neolithic/Early Bronze Age

Archaeological activity from the late Neolithic/Early Bronze Age was confined to Area D (see above).

Phase 3: Early Bronze Age (Figs 20-21, Plate 17)

Pit (Figs 20 and 21, Plate 19)

Pit 430 had been truncated by the ESB machine work and was observed in section, part of the feature having been machined away. The pit was 0.80 m wide and at least 0.84 m of the length of the pit was seen. Pit 430 was 0.15 m deep, the upper fill of the pit was topsoil, suggesting disturbance, whilst the main fill (459) was firm brownish grey sandy silt with pebble and hazel charcoal inclusions. Pit 430 was dated to 2140-1966 cal. BC (UBA-13870) and contained Early Bronze Age Food Vessel pottery (Vessel 6) and a chert blade (E2479:459:1) that dates from the Late Neolithic or later.

Phase 4: Middle Bronze Age (Figs 20-23, Plates 20-22)

The Middle Bronze Age material from the site indicates a domestic presence in the 17th–15th centuries BC. A number of additional, contemporary and slightly later, radiocarbon determinations from residual material in later features (see Tables 63 and 64), suggest ongoing occupation of the site through this period.

Roundhouse 1003 (Figs 20 and 22-23, Plates 20-22)

The remains of a sub-circular structure (Group 1003) were excavated in the north-eastern half of the site. The foundations were formed by a slot trench, door postholes and internal postholes and stakeholes. The remains, having been damaged by ploughing, were somewhat ephemeral at the eastern side and were also partially truncated by pit 1016 (see below). The surviving features indicated a structure with internal dimensions of 6.60 m south-west to north-east by 5.70 m with a 0.80 m wide entrance at the south-east.

The slot trench, of which approximately 16 m survived, was excavated in six portions (Table 10) and was 0.16-0.25 m wide and 0.07-0.20 m deep with steep sides and a concave base. The trench was more substantial at the west, the rear of the house. The fills were pale yellow brown silty sand with pebble inclusions. Oak and hazel charcoal were present within the trench fill with oak the more common of the two taxa.

The six postholes were 0.17-0.60 m across and 0.07-0.28 m deep (Table 11). The doorway at the south-east was defined by the two largest postholes (1021 and 1025) whereas postholes 1005, 1012 and 1026 were internal. Small posthole 1035 and stakehole 1042 were on the line of the slot trench, perhaps indicating that a different construction technique was used at the front of the house. The combination of features excavated suggests a building constructed with wattle walls set in a slot trench with an inner ring of posts supporting the roof. Oak charcoal from the postholes suggests oak was used in constructing the walls. Ash was also exploited. The postholes also yielded abundant charred barley grains with smaller amounts of oats and wheat also occurring.

The structure did not produce any artefacts but two radiocarbon determinations suggest a Middle Bronze Age date for the building. Barley grains from posthole 1025 were dated to 1605-1401 cal. BC (Beta-244827) and from the house trench (1018) to 1658-1495 cal. BC (UBA-13888).

Table 10: Slot trench of roundhouse 1003 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Profile. Comments
1018	1453	0.18	0.10	Steep sides, concave base
1019	1454	0.22	0.20	Steep sides, concave base
1022	1458	0.25	0.15	Steep sides, concave base
1027	1467	0.16	0.09	Steep sides, concave base

Cut	Deposit(s)	Width (m)	Depth (m)	Profile. Comments
1028	1468	0.19	0.07	Steep sides, concave base
1043	1487	0.16	0.07	Steep sides, concave base

Table 11: Postholes and stakeholes within roundhouse 1003 in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
1005	1382	0.43	0.38	0.28	Oval / steep sides, concave base. Packing stones
1012	1396	0.32	0.32	0.13	Circular / steep sides, irregular base
1021	1457	0.47	0.42	0.12	Oval / concave sides, flat base. Door posthole
1025	1462	0.60	0.42	0.17	Oval / steep sides, flat base. Door posthole
1026	1466	0.15	0.14	0.27	Sub-circular / vertical sides, concave base. Stakehole
1035	1476	0.17	0.17	0.07	Circular / steep sides, flat base
1042	1484	0.19	0.14	0.20	Oval / steep sides, concave base. Top truncated by pit 1016

Pit (Figs 20-22, Plates 20-21)

Pit 1016 was cut through the south side of roundhouse 1003, post-dating it. The sub-rectangular feature measured 2.40 m by 1.38 m and was 0.56 m deep and contained three fills, 1399, 1450 & 1451, of various shades of yellow brown sandy silt. Hazel and oak charcoal were present in the pit. Beaker pottery sherds (Vessel 5), a double concave scraper (E2479:1399:1) and a barbed-and-tanged arrowhead rough-out (E2479:1399:2) were retrieved from the upper fill (1399). The stone tools and pottery are Late Neolithic (Beaker period) in date and may represent residual deposits.

Phase 5: Iron Age (Figs 24-27, Plates 23-24 and 29)

In the Iron Age the site was again occupied, with evidence for an enclosure on the plateau on which Area F lay. Residual material recovered from a later feature gave an additional radiocarbon date from this period (see Table 64).

Palisades (Figs 24-27, Plates 23-24 and 29)

Two curvilinear gullies, occupying the slopes of a high point situated towards the middle of the excavation area, returned Iron Age dates. Gully 630 was the better preserved of the two and, although discontinuous, formed a semi-circle extending over 38 m long. The gully may once have formed a complete circuit and if so would have enclosed a sub-rectangular area approximately 25 m wide. The gully was 0.16-0.42 m wide and 0.08-0.37 m deep (Table 12). For most of its length, the gully comprised a steep-sided narrow trench with a concave base. In places the line of the gully was marked by postholes. Depressions were visible in the base of the gully which may indicate where planks or post once stood. It is probable the gully represents the remains of a palisade trench. Elsewhere, four small stakeholes cut into the top of the gully may represent stakes originally positioned within the gully, perhaps as a later repair or support for the palisade. The fills of gully 630 were varied but typically comprised orange- or grey-brown sandy silt with frequent gravel and occasional charcoal inclusions. Charcoal from the gully suggests oak, hazel and willow were used in the construction of the palisade. A small quantity of burnt bone, probably animal, was retrieved from the gully. Hazel charcoal from fill 1355, slot 816 was dated to 362-112 cal. BC (UBA-13886) suggesting an Iron Age date for the gully.

Inside the line of Gully 630 was a second gully (640). This gully survived for a length of 18 m, was 0.10-0.30 m wide and 0.05-0.35 m deep with a steeply concave profile. The gully became shallower and concave towards its south-eastern end where it petered out (Table 13). The gully truncated layer 853 and was filled with grey-brown sandy silt with gravel and occasional charcoal inclusions. The line

of the gully in part mirrored that of gully 630, with each gully having a rounded corner in the north. The projected lines of each gully suggest they would have crossed in the west. This area had been machine truncated prior to the excavation resulting in the loss of the gullies' stratigraphic relationship. Dating evidence suggests that gully 640 represents a later attempt at enclosure. Hazel charcoal from the gully was dated to 200-54 cal. BC (UBA-13879).

Table 12: Slots, postholes and stakeholes in palisade trench 630 in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Type. Plan / profile. Comments
711	859, 879	-	0.32	0.25	Gully slot. Curvilinear / steep sides, concave base
714	961	-	0.21	0.24	Gully slot. Curvilinear / steep sides, concave base
715	962	-	0.16	0.08	Gully slot. Curvilinear / steep sides, concave base
716	963	-	0.42	0.11	Gully slot and posthole. Curvilinear and oval / concave
717	1360	-	0.31	0.22	Gully slot. Curvilinear / concave
719	873	-	0.26	0.37	Gully slot. Curvilinear / steep sides, concave base. Line of stakeholes in base
737	954	-	0.46	0.18	Gully slot. Curvilinear / concave
814	1054	0.42	0.30	0.20	Posthole. Oval / concave
816	1355	-	0.30	0.35	Gully slot. Curvilinear / steep sides, concave base. Multiple depressions in base
817	1295, 1296	-	0.21	0.36	Gully slot. Curvilinear / steep sides, concave base. Truncated pit 844, had stakeholes 823 & 824 in top
818	1095	-	0.22	0.17	Gully slot. Curvilinear / steep sides, concave base
821	1096	-	0.19	0.16	Gully slot. Curvilinear / steep sides, concave base. Stakeholes 825 & 826 in top
823	1298	0.17	0.09	0.09	Stakehole. Oval / concave. In top of gully 817
824	1297	0.15	0.07	0.07	Stakehole. Oval / concave. In top of gully 817
825	1299	0.18	0.08	0.09	Stakehole. Oval / concave. In top of gully 821
826	1350	0.15	0.07	0.07	Stakehole. Oval / concave. In top of gully 821
908	1190	-	0.35	0.15	Gully slot. Curvilinear / steep sides, concave base
918	1266	-	0.40	0.21	Gully slot. Curvilinear / steep sides, concave base

Table 13: Slots through palisade trench 640 in Area F

Cut	Deposit	Width (m)	Depth (m)	Plan / profile. Comments
414	698	0.10	0.05	Curvilinear / steep sides, concave base
418	782	0.26	0.20	Curvilinear / steep sides, concave base
419	783	0.23	0.17	Curvilinear / steep sides, concave base
702	798	0.30	0.35	Curvilinear / steep sides, concave base
727	889	0.30	0.26	Curvilinear / steep sides, concave base
743	960	0.29	0.30	Curvilinear / steep sides, concave base
819	1062	0.20	0.17	Curvilinear / steep sides, concave base

Unphased prehistoric activity (Fig. 25)

Pit and deposit truncated by Iron Age features (Fig. 25)

The Iron Age gully 630 truncated the top of pit 844, deposits 853 and 854 and was itself truncated by furrows in a number of places. Pit 844 measured 1.97 m by 1.12 m and 0.58 m deep and contained two fills. The upper fill (1094) comprised brown clayey silt with charcoal and frequents stones. This overlay natural silt with occasional charcoal (1156). The pit clearly pre-dates the palisade trench 630 but it is not known to which phase of earlier activity the pit belongs.

Two extensive soil horizons or deposits were truncated by gullies 630 and 640. These horizons comprised yellow-brown and yellow-grey silty clay with occasional charcoal flecking (853 and 854). They may represent sediment eroded from the high point ringed by the Iron Age gullies. The horizons covered an irregular area approximately 20 m by 12 m and were up to 0.30 m thick. They were removed by machine following the completion of the excavation. No additional archaeological features were discovered beneath the sediment.

Phase 6: Early medieval (Figs 24-33, Plates 23-30)

Enclosure 525 (Figs 24-26 and 28, Plates 23-28)

The most substantial feature within Area F was a large ditched enclosure, 525, located at the south-eastern end of the excavation. Almost the entire enclosure lay within the road-take with a small portion extending beyond the limit of excavation at the north-west. Dates from deposits within the ditch include a series of prehistoric determinations. These represent dates on residual material inadvertently incorporated into the ditch following its construction and/or use. A series of early medieval dates from the ditch and other features within the enclosure demonstrate the presence of an early medieval enclosed settlement at this location.

The enclosure was sub-circular with a flattened southern end. The enclosure had internal dimensions of 49 m north to south by at least 46 m (to the limit of excavation) and enclosed an area of at least 2264 m^2. The enclosure ditch was continuous except where it was broken by an entrance in the south-east. The enclosure ditch (525) was 1.20-2.50 m wide and 0.36-1.05 m deep and was truncated and eroded, particularly in the south. Following the recording of 32 hand-dug slots (Table 14) the entire ditch was hand excavated. The ditch profile varied around the circuit but was generally 'U'-shaped with steep sides and a slightly concave base. The ditch was truncated by several later ditches, furrows and pit 621.

The ditch fills were reasonably sterile but of varied composition, reflecting the underlying geological deposits, being more gravelly at the north and sandier at the south. Generally the lower fills were yellow-brown silts and represented eroded natural deposits from inside and outside the ditch. In a few locations, generally in the north, substantial deposits within the ditch appear to represent bank material eroded or slumped into the ditch. The ditch was external to the bank. The ditch termini at the south-eastern entrance contained slightly richer grey-brown fills, perhaps indicating the inclusion of organic material and domestic refuse. The ditch produced a small number of finds, namely some iron slag and worked stone from slots 404, 406 and 803. Stone finds consisted of three hone stones and a rubbing or hammer stone (E2479:497:1-2, 5 and 586:2). Hone stones may be associated with metalworking and can be early medieval in date while the rubbing/hammerstone may represent a residual prehistoric deposit. Two highly polished siltstone pebbles (E2479:497:3-4) were also recovered from the ditch and may have been used as tokens or ornaments. Charcoal from the ditch was mainly of oak with alder and willow also occurring. Hazel/alder charcoal from fill 588, slot 406 was dated to cal. AD 776-933 (UBA-13874).

Table 14: Slots through enclosure ditch 525 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
403	454, 467, 468, 469, 658	1.80	0.90	
404	496, 497, 499	1.45	0.92	
405	480, 481, 482, 495, 498	1.30	0.75	
406	585, 586, 587, 588, 597	1.59	0.90	Terminus
415	761, 762	1.54	0.52	
417	766, 767	1.70	0.78	
423	786, 787	1.38	0.72	Cut by ditch 810 (slot 421)

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
424	791, 792, 793, 799 850	1.50	0.62	Cut by ditch 725 and machine
508	566, 567, 568, 569	1.55	0.98	
510	550, 557, 558, 559, 56, 561	1.74	0.80	Terminus
528	578, 580, 581, 582, 583, 584, 964	2.16	0.88	
605	674, 781	1.52	0.78	
613	692, 693, 694	1.60	0.70	Cut by pit 621
704	862, 863, 864, 865, 866, 868, 869, 870, 871	1.30	0.65	Cut by ditch 409 (slot 713) and 410 (slot 416)
710	857	1.20	0.36	Cut by ditch 935 (slot 723)
726	1195, 1196, 1197	1.50	0.65	Cut by ditch 409 (slot 909), ditch 410 (slot 910) and ditch 420 (slot 1109)
731	893, 894, 895, 896, 897, 959	1.70	0.75	
732	898, 899	1.32	0.95	Truncated by ESB machines
747	966, 970, 971	1.25	0.58	
803	987, 988, 989, 990	1.60	1.05	
808	1097, 1098, 1099,1150	1.53	0.86	
813	1051, 1052, 1053	1.90	0.92	
815	1056, 1057, 1058, 1059	1.79	0.90	Truncated by ESB machines
828	1065, 1066, 1067, 1068, 1069	1.85	0.74	
831	1075, 1076, 1077, 1078, 1079	2.50	0.99	
832	1080, 1084	1.72	0.75	Cut by ditch 425 (slot 827)
839	1082, 1089, 1090, 1091	1.55	0.75	
840	1182	0.45+	0.50	Cut by ditch 935 (slot 841)
847	1151, 1152, 1153, 1154	1.44	0.97	
848	1157, 1158	1.30	0.84	
915	1259, 1260, 1261	1.30	0.65	Cut by ditch 930 (slot 916)
934	1265	0.42+	0.12+	Partial slot cut by ditch 930 (slot 527)

Palisades and entrance (Figs 24-27, Plates 23-24)

Within the enclosure were a series of narrow curvilinear features or gullies, thought to represent the locations of palisades. The gullies were shallow and were present in the northern half of the enclosure. Some of the gullies may once have formed a complete circuit within the enclosure but have since been eroded. Geological deposits in the south consisted of easily eroded, loose sand and gravel.

Trenches 914 and 949 (Figs 25-26)

Two short gullies were recorded within 1 m of the inner edge of the enclosure ditch. Gully 914 was situated close to the entrance in the east. The gully was 4.00 m long, 0.13 m wide and 0.04 m deep with a concave profile. Gully 949 survived in the north as a trench 3.50 m long, 0.15 m wide and 0.10 m deep with a steeply concave profile. Both gullies contained mid brown sandy fills and did not yield any finds. The gullies may represent the remains of a once continuous trench positioned at the foot of the bank and may have served to hold a revetment to retain the bank.

Gullies 705 and 1111 (Figs 25 and 27)

Gully 705 was positioned broadly parallel to and within 8.80 m of the enclosure ditch 525. The gully curved over 19 m and was 0.30-0.57 m wide and 0.07-0.31 m deep with a steeply concave profile (Table 15). The gully fills were mid grey-brown sandy silt and hazel and ash charcoal was present. The western end of the gully had been truncated during ESB groundworks and the east end petered out in the natural loose gravel. It is possible that this feature was originally linked to gully 1111 (see below).

Located about 6 m to the east of the gully 705 was part of a second gully, 1111 (Table 16). This gully also lay approximately 3.80 m from the enclosure ditch and occurred in three segments (927, 1108 and 1111) extending over 21.50 m. The gully was up to 0.45 m wide, 0.22 m deep with steep sides and a concave base and was filled by grey and orange-brown sandy silts. The trench truncated layers 853 and 954 and was itself truncated by agricultural furrows.

Table 15: Slots gully 705, Area F

Cut	Deposit	Width (m)	Depth (m)	Plan / profile. Comments
718	872	0.30	0.07	Curvilinear / steep sides flat base
740	956	0.57	0.31	Curvilinear / steep sides, concave base

Table 16: Slots through Group 1111, Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
912	1193	3.15	0.38	0.09	Linear / concave
927	1278, 1279	7.90	0.42	0.22	Linear / steep sides, concave base
1108	1554	2.95	0.44	0.18	Curvilinear / steep sides, concave base

Group 1112 (Figs 24 and 26-27)

Gully 1111 was broken to accommodate the entrance formed by a third probable palisade trench including a probable gate trench (Group 1112) (Table 17). Group 1112 was located approximately 3 m inside the enclosure and directly opposite the break in its ditch. Group 1112 comprised a single gully that had been widened and deepened where it lay opposite the enclosure entrance. This part of the gully was recorded as 907 (845 and 846). The northern end of the gully Group 1112 was recorded as 911 and was aligned north-north-west/south-south-east and formed an oblique angle with the modified trench 907. The segment south of the gate trench was recorded as 906. The overall length of the gully represented by Group 1112 was 17.70 m.

The modified portion of gully 1112 was recorded as 907 and is interpreted as a gate trench. The area occupied by the gate trench measured 4.60 m long, wider than the actual break in the ditch. Large stones were concentrated at either end of this trench which served as packing stones for supporting posts. The space between the posts is interpreted as a threshold. The gate was flanked by a fence or palisade represented by the gully segments 906 and 911. Group 1112 may originally have been longer and may have been connected to the palisade trench represented by the trenches 705 and 1111. Furrows truncated the feature in several places.

The gully and trench were filled with varied brown silty sands with occasional oak charcoal flecks and small stones. The only finds from Group 1112 were a small shaft of corroded iron retrieved from the gate trench (E2479:1188:1); some burnt animal bone fragments and a scalar core (E2479:1192:1). The latter represents a residual find indicative of earlier and unrelated prehistoric occupation of the area. Oak charcoal from the probable gate trench 907 (slot 845) was dated to cal. AD 779-908 (UBA-13885).

Table 17: Slots through Group 1112, Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
845	1188, 1189	-	-	-	-
846	1186, 1187	-	-	-	-
906	1185	-	0.44	0.36	Linear / steep sides, concave base

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
907	-	4.60	0.65-0.75	0.65	Linear with rounded ends / steep sides, concave base. Same as 845 + 846
911	1192, 1198, 1199, 1254, 1255, 1456	10.40	0.54	0.36	Linear / steep sides, concave base

Internal features (Figs 24-26 and 29-31, Plate 30)

Possible roundhouse Group 1105 (Figs 24-25 and 29)

Part of a circular structure survived within the northern end of the enclosure. The structure (1105) was preserved as a curvilinear gully (507) with two postholes (426 and 429) marking the entrance at the south-east. The gully had been cut into loose natural gravel and had been heavily eroded. The gully survived in the south-west but its full circuit was observed on the ground following heavy frost although nothing more survived to be excavated. The observation has allowed the diameter of the building to be estimated at between 6 m and 7 m with an entrance 0.80 m wide. The building is interpreted as a roundhouse.

The excavated gully, 507, was 2.70 m long, 0.28 m wide and 0.13 m deep with a shallow concave profile. The gully fill was brown sandy silt with frequent gravel inclusions. A later posthole (543) was cut into the fill of the gully. The two postholes marking the entrance were about 0.30 in diameter and were filled with dark grey to black sandy silt with frequent charcoal and gravel inclusions (Table 18). Animal bone (cattle) was recovered from posthole 429 which also contained charred oats, barley and wheat grains. Posthole 429 contained the same suite of taxa as well as a range of weed seeds. Hazelnut shell from deposit 455 was dated to cal. AD 775-931 (UBA-13869).

Table 18: Postholes in roundhouse 1105 in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
426	455	0.30	0.30	0.27	Circular / steep sides, concave base
429	458	0.33	0.33	0.27	Circular / steep sides, concave base

Pits and postholes (Figs 24-26, 28 and 30-31, Plate 30)

A number of pits and postholes within the main enclosure were dated to the early medieval period (Table 19). Pit 621 truncated the edge of the enclosure ditch in the east. The pit contained loose grey and dark brown sandy gravelly silt fills and charred oats. The lower fill produced fragments of burnt animal bone (large mammal) and a piece of a shale bangle (E2479:696:1). Charred oats from the pit were dated to cal. AD 688-869 (UBA-13877) which pre-dates the early medieval chronology of the enclosure ditch. Given the pit truncates the ditch (including its upper fills) the pit may date to the later end of the date range.

Approximately 1.50 m west of the probable gate trench (907) was pit 834. The pit was heavily truncated but contained an oak and willow charcoal-rich fill that produced another fragment of a shale bangle (E2479:1083:1), the cremated remains of a single human adult and fragments of burnt animal bone. The cremated bone suggests this pit represents a cremation pit burial. However, the bangle is most probably early medieval in date which leaves the pit's interpretation and/or the chronology of bracelet open to question.

A third bangle fragment was recovered from posthole 502 (E2479:492:1a-b). This posthole was located approximately 4.0 m south-west of roundhouse 1105. The posthole retained a single fill of silty sand with oak charcoal and burnt mammal bone. During excavation this posthole was described as a possible cremation pit. Although bone was present it was identified as mammal and could be

either human or animal. The presence of a probable early medieval bangle makes interpretation of the posthole as a cremation problematic.

That the three features, including one probable cremation and one that looked very much like a cremation, each contained bracelet fragments suggests these features may have had a ritual rather than domestic role. The pits and posthole were positioned in close proximity to major structural elements and within 35 m of each other; one truncated the enclosure ditch, one lay within 4 m of the roundhouse 1105 and the third was situated behind the entrance to the enclosure.

Three intercutting pits (744, 745 and 746) were located west of the enclosure centre, close to the ditch. Pits 744 and 746 were almost entirely truncated by pit 745 which had unusual undercut sides. Pit 744 had two sterile sand fills. The lowest fill of pit 745 was dark brown and black sandy deposit (1174) that contained six iron objects, including a knife blade (E2479:1174:4 dated anywhere from the 10th-15th century AD) and a buckle (E2479:1174:1 and post-7th century AD in date) in addition to a quantity of burnt bone of cattle and sheep/goat. The upper fills were generally alternating layers of mid brown and pale yellow sand. Pit 746 also produced burnt bone fragments, in this case identified only as mammal. The pits probably functioned as domestic rubbish pits. Oak charcoal from pit 745 was dated to cal. AD 689-884 (UBA-13884).

A cluster of pits in the centre of the enclosure may have had an industrial function. Pit 509 was relatively shallow and was partially truncated by deeper pit 505, adjacent to which was another similar feature, pit 506. All were truncated by furrows. The pits had charcoal-rich silty fills, particularly their lower fills. Pits 505 and 506 produced iron slag whilst all three pits contained fragments of burnt animal bone including sheep/goat remains. Pit 509 yielded charred oats and spelt grains while pit 505 contained charred oats. Charred cereal grains from pit 505 were dated to cal. AD 694-890 (UBA-13872).

Pit 431 had a black silty sand fill with a high concentration of oak and hazel charcoal. Charred oats, barley and spelt were present in the pit. Adjacent pit 434 had a dark brown sandy clay fill with gravel inclusions. Both pits contained fragments of burnt bone with cow represented in pit 431. A large number of stakeholes were located in the area immediately around these two pits and may have been related to their use. Charred cereal grains of indeterminate species from pit 434 were dated to cal. AD 775-891 (UBA-13871).

Large pit 700 was pear-shaped in plan with vertical sides and a flat base (Plate 30). The upper pit fills were truncated by two features, 201 and 206, originally excavated within Area C (not illustrated). Pit 700 was cut through natural sand and gravel deposits and the majority of the fills were sterile orange and yellow sand and gravel that had collapsed in from the unstable pit edges. A few slightly greyer deposits produced most of the finds, including a spread of ashy material (1060) near the base at the south-eastern end of the pit. The pit contained a small quantity of burnt animal bone and an array of stone finds including fragments of a saddle quern (E2479:1060:2-3), rubbing or hone stones (E2479:885:1-2). Although the pit had been carefully dug it was excavated into unstable sediment and its original function is uncertain. A single charred cereal grain (oat) was retrieved from the pit. Hazel charcoal from ashy fill 1060 in pit 700 was dated to cal. AD 780-969 (UBA-13882). Some of the finds, namely the saddle quern, may represent a residual prehistoric deposit.

Two postholes (835 and 836) were in the base of pit 700 and sealed by the basal fill of the pit. They were presumably related and another posthole (722) cut into the pit edge may also have been associated. These presumably relate to the use of the pit, although their precise function is unknown. The posthole fills were largely sandy silt, dark brown to black with varying inclusions of stones and occasionally oak charcoal. Posthole 835 contained burnt and weathered fragments of a sandstone rotary quern stone (E2479:1085:1-3).

Table 19: Early medieval pits and postholes inside the enclosure, Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
431	462	1.03	0.78	0.10	Oval / Concave sides, flat base. Truncated by furrow 444, unclear relationship with stakehole 443
434	464	0.84	0.70	0.30	Sub-circular / Concave sides, flat base. Truncated stakehole 546
502	492	0.22	0.20	0.16	Sub-circular / Concave
505	475, 476, 554, 555	0.95	0.90	0.40	Sub-circular / Steep sides, concave base. Truncated by furrows 503 & 504. Truncated pit 509
506	477, 556	1.05	0.90	0.20	Oval / Concave. Traces of *in situ* burning. Truncated by furrows 503 & 504
509	493	0.94	0.90	0.16	Sub-circular / Steeply concave sides, concave base. Truncated by furrow 504 and pit 505
621	695, 696	1.30	1.00	0.38	Oval / Steep sides, concave base. Cut enclosure ditch 52 (slot 613)
700	880, 881, 882, 883, 884, 885, 886, 1060, 1061, 1072, 1074, 1290	6.00	2.73	1.42	Pear-shaped / Near-vertical sides, flat base. Postholes 835 and 836 in base, posthole 722 in edge
722	878	0.31	0.15+	0.46	One curving edge / Steep sides, concave base. In edge of pit 700, unclear relationship
744	1167, 1168	1.80	0.88	0.64	Oval / Concave. Truncated by pit 745
745	1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1180, 1181	2.51	1.65	0.98	Oval / Undercut north and west sides, concave south and east sides, flat base. Truncated pits 744 and 746
746	1178, 1179	1.14	0.88	0.99	Oval / Undercut east side, flat base. Truncated by pit 745
834	1083	1.10	1.00	0.06	Oval / Concave side, flat base. Truncated by furrow 444 and modern disturbance
835	1085	0.44	0.42	0.30	Oval / Steep sides, concave base. In base of pit 700
836	1086	0.48	0.60	0.27	Oval / Concave. In base of pit 700

Phase 7: Medieval (Figs 24 and 32-33, Plate 31)

Kiln (Figs 24 and 32-33, Plate 31)

A stone-lined dumb-bell-shaped kiln, 622, was excavated at the western side of the enclosure interior. The kiln was 5.70 m long and aligned south-west to north-east with the chamber at the north-east end and slightly off-centre. The chamber measured 1.60 m by 1.40 m and was 0.58 m deep with steeply concave sides and a slightly concave base. The flue was 2.80 m long, 0.85 m wide, 0.60 m deep and had steep sides and a flat base. The fire box at the south-west was sub-circular in plan, measured 2.00 m by 1.50 m and was 0.46 m deep with a bowl-shaped profile.

The kiln was lined with stone (1362), large irregular sandstone slabs along the sides of the flue and around most of the north-eastern chamber, with other stones in the fill, presumably collapsed lining. Some of the stones showed signs of burning. Behind the stones was sand (974), presumably the original packing to secure the stones when the kiln was constructed.

The primary fills were a patch of heat-affected gravelly sand (981) at the south-western end of the flue and a patch of charcoal (980) in the base of the chamber that was overlain by redeposited natural

yellow sandy clay (979). Above these deposits was a thin layer of willow charcoal (978) seen in the base of the flue and chamber that was overlain by two sandy clay deposits (977, 976) that included heat-reddened clay and charcoal. A band of willow charcoal (984) lay over these deposits in the flue and in the chamber was dark grey sandy clay (975). Above the charcoal layer was a small patch of redeposited natural yellow sandy clay (982) and a dark grey deposit (973) with oak charcoal, the latter of which filled most of the fire box. Above these was a thick layer of dark brown sandy clay (972) that filled most of the kiln, being overlain by a small patch of dark yellow grey sandy clay with oak charcoal (983) in the centre of the feature.

No artefacts were recovered from the kiln; however charred oats and barley grains as well as a range of weed seeds were retrieved from the kiln deposits. Charred grains of oats from deposit 978 in the base of the kiln were dated to cal. AD 1282-1396 (UBA-13880).

Pits (Figs 24 and 34-35)

There was a cluster of intercutting pits outside and to the south of the enclosure. Pit 805 was large (4.90 m by 2.10 and 0.50 m deep) and contained charred grains of oats, barley and wheat as well as a range of weed seeds. Charred wheat grains from the pit were dated to cal. AD 1490-1649 (UBA-13883). The pit truncated the edge of a second pit, 933. This pit intersected with a third pit, 833 but the precise stratigraphic relationship between the two could not be determined.

Pits 201 and 206 (not illustrated) were excavated within Area C but when the site was extended as Area F it was clear that they were actually cut into the upper fills of large pit 700 that was almost indistinguishable from the underlying geology. Pit 201 produced mammal bone fragments, an iron nail shaft (E2479:251:1) and a spoon bit (E2479:253:2) from its mid grey-brown silty sand fills. The spoon bit is a wood working tool with parallels in 12th and 13th century contexts from elsewhere in Ireland.

Table 20: Medieval pits

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
201	251, 253	6.00	1.50	0.70	Elongated / Concave. Truncated pit 700. Truncated by pit 206.
206	251	1.64	1.50	0.70	Oval / Concave. Truncated pits 201 and 700
805	991, 1155, 1166, 1268, 1269, 1270, 1352, 1353, 1354	4.90	2.10	0.50	Oval / concave sides, flat base. Truncated pit 933. Unclear relationship with ditch 940 (slots 809 & 929) – possibly contemporary
833	1356, 1357, 1358	2.10	1.10	0.42	Oval / concave. Intersected with pit 933
933	1283, 1284, 1359	0.80	0.80	0.50	Circular / steep sides, flat base. Truncated by pit 805

Unphased

Unphased internal features (Figs 24-26, 28, 30-31 and 36, Plate 32)

Pits (Figs 24-26 and 30-31)

Thirty-two pits that were recorded within the enclosure interior could not be assigned to any phase (Table 21). Some of these may have had an industrial function, or perhaps represent domestic activity, but in general the purpose of the remaining pits is unclear.

Pits 202, 203 and 204 were also originally excavated within Area C although pit 204 was probably a tree bole. Burnt animal bone was recovered from pit 203. There was a concentration of small pits in the centre of the enclosure distributed between a number of early medieval pits (431 in the south and

pit 505 in the north). Pit 437 was situated just east of pit 431 and displayed evidence of *in situ* burning (551). This was overlain by grey-brown clayey sand that produced fragments of bone from medium/large mammals.

Pit 806 was located on the western edge of the excavation area and had been badly truncated by modern ditch 420 (slot 649). The pit appears to have had a stone lining and retained a lower charcoal-rich fill of willow and a small amount of charred barley. This pit may represent the remains of a damaged kiln.

The remaining pits were generally filled with mid to dark brown sandy clay, clayey sand or sandy silt with pebble and occasional charcoal inclusions. Some pits contained re-deposited natural material amongst the fills (e.g. 641) and pits 820 and 923 had high concentrations of oak charcoal. Two pits (926 and 939) contained burnt stone and hazel and oak charcoal. In addition to pits mentioned above, eight pits contained fragments of burnt animal bone mainly from large and medium-sized mammals (202, 203, 445, 511, 516, 820, 926 and 939). Pit 919 contained a corroded iron nail (E2479:1267:1) of possible post-medieval date.

Table 21: Pits within the enclosure in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
202	252	1.08	0.88	0.38	Oval / Concave
203	254	0.90	0.88	0.36	Sub-circular / Concave
204	255	1.28	1.16	0.20	Oval / Steep at east, shallow at west. Possible tree hole
432	461	2.12	1.55	0.28	Oval / Sloping sides, flat base
437	472, 551	1.58	1.40	0.19	Oval / Concave
440	478	1.40	1.00	0.18	Oval / Concave
445	479	1.77	0.80	0.56	Irregular / Steep sides, concave base
511	552	0.70	0.51	0.27	Oval / Concave. Truncated posthole 520
512	553	0.91	0.80	0.16	Oval / Concave. Unclear relationship with stakehole 538
516	570	0.73	0.45	0.12	Oval / Concave
537	650	1.00	0.48	0.14	Oval / Irregularly concave. Truncated posthole 536
540	653	0.35	0.35	0.20	Circular / Steep sides, concave base. Truncated pit 544. Truncated by furrow 545
541	656, 657	2.20+	0.70	0.20	Irregular oval / Concave. Truncated by ESB machines
618	687	0.74	0.48	0.22	Oval / Concave. Cut into layer 853
619	688, 690	0.40	0.40	0.30	Circular / Concave. Cut into layer 853
620	689, 691	0.60	0.55	0.32	Oval / Concave. Cut into layer 853
633	765	0.46	0.40	0.26	Oval / Steep sides, concave base. Truncated by furrow 632
637	775	0.45	0.44	0.09	Sub-circular / Concave sides, flat base. Cut into layer 853
641	768, 769, 770, 1191	0.70	0.40+	0.10	Semi-circular surviving portion / Concave. Truncated by ESB machines. Cut into layer 853
646	784	0.60	0.42	0.10	Oval / Concave sides, flat base. Cut into lay 853
806	995, 996	1.28	0.47+	0.57	Sub-circular / Steep sides, concave base. Truncated by ditch 420 (slot 649). Stone lining?
820	1064	0.59	0.22	0.07	Sub-rectangular / Vertical sides, flat base. Truncated by furrow 545.
913	1252, 1280	1.50	0.93	0.36	Oval / Concave sides, flat base. Truncated by furrow 601
919	1267	1.20	0.76	0.17	Oval / Concave
923	1272	1.31	0.65	0.11	Oval / Irregular.

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
925	1274	0.80	0.80	0.22	Circular / Concave. Cut into top of pit 926. Truncated by ditch 409 (slot 924)
926	1275, 1276, 1277	1.97	1.42	0.55	Irregular / Steeply concave. Truncated by ditch 409 (slot 924) and pit 925
928	1285, 1286	0.80	0.60	0.25	Oval / Concave. Truncated by furrow 444
931	1281	0.20	0.15	0.10	Irregular / Concave. Cut into pit 932. Truncated by furrow 601
932	1282	0.53	0.17	0.13	Elongated oval / Steep sides, concave base. Truncated by furrow 601 and pit 931
939	1351	0.72	0.36	0.35	Irregular / Steep sides, concave base
1103	1550	1.40	0.60	0.15	Irregular / Concave. Intersected with trench 838

Postholes (Figs 24-26 and 36)

Forty-four postholes were recorded within the enclosure (Table 22) in addition to those noted within structure 1105. Due to the palimpsest of overlying features and phases of activity it was not possible to identify any structures within the distribution of postholes, however some may represent former buildings that stood in the area at various times.

The posthole fills were largely sandy silt, dark brown to black with varying inclusions of stones and occasionally charcoal. A few postholes contained larger stones that may have functioned as post-packing and some included burnt sandstone pieces. The only finds from these postholes were fragments of burnt animal bone (including medium and large-sized mammals) from eight features (435, 436, 501, 517, 539, 610, 638 and 644). Charred barley and oak charcoal were retrieved from some of the postholes.

Table 22: Postholes within the enclosure in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
400	450	0.31	0.18	0.20	Oval / Concave
401	451, 452	0.43	0.27	0.12	Oval / Irregular
402	453	0.31	0.22	0.14	Oval / Concave
427	456	0.36	0.32	0.21	Oval / Vertical sides, concave base
428	458	0.30	0.22	0.33	Sub-rectangular / Steep sides, concave base
433	460	0.29	0.28	0.18	Sub-circular / Concave
435	466	0.30	0.29	0.33	Sub-circular / Vertical sides, concave base
436	471	0.30	0.24	0.15	Oval / Steep sides, concave base
501	491	0.16	0.16	0.18	Circular / Vertical sides, concave base
517	571, 965	0.36	0.36	0.12	Circular / Steep sides, flat base
519	573	0.32	0.30	0.31	Sub-circular / Steep sides, concave base
520	574	0.20	0.20	0.06	Circular / Vertical sides, concave base. Truncated by pit 511
535	598	0.30	0.23	0.10	Oval / Concave
536	599	0.18	0.16	0.04	Oval / Concave
539	652	0.17	0.17	0.18	Circular / Steep side, concave base
542	659	0.34	0.34	0.14	Circular / Concave. Possible packing stones
543	660	0.33	0.24	0.19	Oval / Steeply concave
549	666	0.30	0.25	0.12	Oval / Steeply concave
600	669	0.20	0.15	0.08	Oval / Concave. Truncated by furrow 601
607	677	0.24	0.24	0.20	Circular / Steep sides, flat base
608	678	0.18	0.15	0.20	Rectangular / Steep sides, flat base
610	680	0.45	0.26	0.14	Oval / Concave
611	681	0.30	0.20	0.20	Oval / Steep sides, concave base

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
626	697	0.43	0.39	0.24	Oval / Steep sides, flat base. Cut into layer 853
631	763	0.29	0.29	0.08	Circular / Concave. Truncated by furrow 632
634	771	0.36	0.36	0.29	Circular / Vertical sides, flat base. Cut into layer 854. Post-packing stones
638	778	0.38	0.32	0.36	Oval / Vertical sides, concave base. Truncated by furrow 444
639	779	0.38	0.34	0.22	Sub-circular / Steep sides, concave base. Truncated by furrow 444
642	773	0.58	0.40	0.38	Oval / Tapering sides, concave base. Cut into layer 853
644	776	0.40	0.35	0.16	Irregular / Steeply concave
701	797	0.35	0.25	0.20	Oval / Steep sides, concave base
708	856	0.26	0.21	0.07	Oval / Concave. Cut into layer 853
729	891	0.18	0.18	0.20	Circular / Steep sides, concave base
733	950	0.28	0.28	0.15	Circular / Steep sides, concave base
734	951	0.25	0.25	0.16	Circular / Steep sides, irregular base
735	952	0.35	0.25	0.14	Oval / Steep sides, flat base
736	953	0.38	0.16	0.12	Oval / Steep sides, concave base
829	1070	0.41	0.29	0.14	Oval / Steep sides, concave base. Post-packing stones
842	1092	0.45	0.45	0.32	Circular / Vertical sides, flat base. Cut into layer 853. Post-packing stones
849	1159	0.28	0.28	0.22	Circular / Vertical sides, flat base
900	1160	0.25	0.25	0.15	Circular / Steep sides, concave base. Truncated by furrow 444
903	1162	0.48	0.20	0.13	Oval / Concave
943	1368	0.26	0.20	0.15	Oval / Vertical sides, flat base
1107	1553	0.40	0.40	0.15	Circular / Concave. Unclear relationship with trench 1106

Stakeholes (Figs 24-26)

Thirty-three stakeholes were recorded within the enclosure interior (Table 23). Most were in a cluster in the centre of the enclosure in the area of intense domestic or industrial activity characterised by pits with charcoal-rich fills and small quantity of burnt mammal bone (stakeholes 441-3, 446-9, 500, 518, 521-4, 529-34, 538 and 546). Some may represent a windbreak around pit 434. These stakeholes are illustrated but not individually labelled on Figure 25.

Four stakeholes (547, 548, 609 and 612) were located a little south of the central cluster and may be associated with a group of nearby postholes (see above). An isolated stakehole 830 was truncated by a furrow. Six randomly distributed stakeholes (623, 635, 636, 645, 647 and 707) were located in the north-western part of the enclosure cut into layer 853 and another isolated feature (513) lay to the east of this deposit.

The stakeholes in a cluster around pit 434 were generally filled with dark brown silty sand with occasional pebbles and charcoal inclusion. Those stakeholes further south had mid grey-brown clayey silt with pebbles; those further north were filled with mid grey or pale brown sandy silt with gravel and rare charcoal inclusions. The only finds from these features were fragments of burnt mammal bone from stakehole 546.

Table 23: Stakeholes within the enclosure in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
441	483	0.06	0.06	0.09	Circular / Vertical sides, concave base. Near pit 434
442	484	0.06	0.06	0.09	Circular / Vertical sides, concave base. Near pit 434

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
443	485	0.06	0.06	0.10	Circular / Vertical sides, concave base. Unclear relationship with pit 431
446	486	0.06	0.06	0.09	Circular / Vertical sides, concave base. Near pit 434
447	487	0.05	0.05	0.09	Circular / Vertical sides, concave base. Near pit 434
448	488	0.06	0.06	0.07	Circular / Vertical sides, concave base. Near pit 434
449	489	0.07	0.07	0.06	Circular / Vertical sides, concave base. Near pit 434
500	490	0.07	0.07	0.06	Circular / Vertical sides, concave base. Near pit 434
513	562	0.17	0.12	0.24	Oval / Vertical sides, concave base
518	572	0.07	0.07	0.07	Circular / Vertical sides, concave base. Near pit 434
521	575	0.06	0.06	0.08	Circular / Vertical sides, concave base. Near pit 434
522	576	0.06	0.06	0.07	Circular / Vertical sides, concave base. Near pit 434
523	577	0.08	0.08	0.12	Circular / Vertical sides, concave base. Near pit 434
524	579	0.06	0.06	0.06	Circular / Vertical sides, concave base. Near pit 434
529	589	0.07	0.07	0.11	Circular / Vertical sides, concave base. Near pit 434
530	590	0.07	0.05	0.13	Oval / Vertical sides, concave base. Near pit 434
531	591	0.05	0.05	0.15	Circular / Vertical sides, concave base. Near pit 434
532	592	0.05	0.05	0.12	Circular / Vertical sides, concave base. Near pit 434
533	593	0.05	0.05	0.12	Circular / Vertical sides, concave base. Near pit 434
534	594	0.05	0.05	0.10	Circular / Vertical sides, concave base. Near pit 434
538	651	0.05	0.05	0.10	Circular / Vertical sides, concave base. Unclear relationship with pit 512
546	470, 663	0.15	0.15	0.18	Circular / Vertical sides, concave base. Possibly truncated by pit 434
547	664	0.15	0.15	0.22	Circular / Vertical sides, concave base
548	665	0.12	0.12	0.22	Circular / Tapering
609	679	0.10	0.10	0.13	Circular / Vertical sides, concave base
612	682	0.22	0.15	0.19	Oval / Steep sides, concave base
623	750	0.15	0.15	0.24	Circular / Steep side, concave base. In edge of pit 620, unclear relationship. Cut into layer 853
635	751	0.08	0.06	0.18	Oval / Tapering. Cut into layer 853
636	772	0.06	0.06	0.15	Circular / Tapering. Cut into layer 853
645	777	0.12	0.10	0.26	Oval / Tapering, angled down to west. Cut into layer 853
647	789	0.16	0.16	0.21	Circular / Steep sides, concave base. Cut into layer 853
707	855	0.13	0.10	0.13	Oval / Steep sides, concave base. Cut into layer 853
830	1071	0.11	0.08	0.09	Oval / Vertical sides, flat base. Truncated by furrow 545

Linear features (Figs 24-26)

Nine linear and/or curvilinear features were located in the centre of the enclosure (Table 24) south-east of the cluster of pits and stakeholes. This area was badly damaged by ploughing and the features were truncated. Some of these features may represent foundation trenches for structures although no ground plans were evident. Alternatively some of the features could represent plough scars, representing ploughing that occurred on a different alignment to the rest of the agricultural activity.

Features 838 and 1106 may be related based on their proximity to one another and their alignment. These were 2.3 m apart and broadly parallel and aligned south-east to north-west. To the south-west was a right-angled, shallow gully (905) which may have formed a rectangular structure with postholes 903 and 849. Part of another structure may be represented by a short narrow gully, 901. Alternatively, this gully may represent part of the palisade trench 630 albeit slightly off-line. In general these features were filled with pale to dark brown sandy clay with gravel and occasional charcoal inclusions of oak and hazel. Animal bone, cattle tooth fragments, were retrieved from feature 843.

Table 24: Linear features within the enclosure in Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
837	1087	1.20	0.40	0.15	Curvilinear / Concave
838	1088	7.70	0.33	0.20	Linear / Steeply concave. Unclear relationship with linear feature 843 and pit 1103
843	1093	2.40	0.30	0.23	Linear / Steep sides, pointed base. Truncated by furrows 444. Unclear relationship with linear feature 838
901	1161	2.18	0.20	0.15	Linear / Steep sides, flat base. Truncated by furrows 444
902	1162	2.14	0.15	0.10	Curvilinear / Steep sides, flat base
904	1164	0.60	0.16	0.10	Linear / Concave
905	1165	2.50	0.25	0.14	Forms right angle / Steep sides, flat base. Truncated by furrow 444
1104	1551	2.80	0.34	0.12	Curvilinear or right-angle. Concave. Truncated by furrow 444
1106	1552	7.20	0.40	0.18	Linear / Concave. Unclear relationship with posthole 1107

Spread (Figs 24-26)

A small patch of *in situ* burning (1287) presented as a circle of red oxidised clayey sand, 0.45 m in diameter and 0.10 m thick survived immediately east of the enclosure centre. The patch was truncated by a plough furrow.

Group 941 (Graves?) (Figs 24-25 and 36, Plate 32)

On the northern side of the enclosure, between the enclosure ditch and palisade trench 705, were eleven, parallel elongated pits. The overall alignment of the group of pits mirrored that of the enclosure ditch and the palisade trench 705. Within the group, individual pits retained a variety of alignments from approximately north-south to approximately east-west. The pits were 1.35-2.00 m long and 0.30-0.56 m wide. They were shallow, from 0.10-0.25 m deep with variously concave or steep-sided profiles (Table 25). Furrow 937 truncated three of the pits, all of which contained mid orange-grey silty sand and gravel inclusions. A small quantity of burnt mammal bone was recovered from pit 942; otherwise there were no artefacts or finds of bone retrieved. The shape of the pits is reminiscent of graves and this may well have been their original purpose. The absence of bone or actual inhumations from the pits may be the result of preservation. Soil conditions and truncation of the site may have resulted in the loss of human remains from the graves.

Table 25: Pits or graves, Group 941, Area F

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
936	1488	1.35	0.54	0.10	Oval / shallow concave
942	1361	1.75	0.40	0.25	Sub-rectangular / sloping sides, concave base
948	1489	2.10	0.44	0.20	Sub-rectangular / steep sides, concave base
1044	1490	1.38	0.42	0.14	Sub-rectangular / concave sides, flat base
1045	1491	1.42	0.48	0.12	Sub-rectangular / concave sides and base
1046	1492	1.42	0.56	0.18	Sub-rectangular / concave sides, flat base
1047	1493	1.60	0.44	0.15	Sub-rectangular / steep sides, flat base. West end truncated by test trench
1048	1494	1.78	0.42	0.10	Sub-rectangular / steep sides, flat base
1049	1495	2.00	0.34	0.11	Sub-rectangular / steep sides, flat base
1100	1496	1.88	0.38	0.18	Sub-rectangular / steep sides, flat base
1101	1497	1.53	0.30	0.14	Sub-rectangular / steep sides, flat base

Unphased external features (Figs 19-20, 22 and 34-35)

Pits to the north of the enclosure (Figs 19-20, 22 and 35)

Fifteen pits, in addition to those known to be prehistoric in date, were excavated in the area north of the enclosure. Some were situated close to the Middle Bronze Age roundhouse 1003 and others occupied seemingly isolated positions within the limits of the excavation. Doubtless some of these features were associated with the prehistoric activity in this part of the site, but in the absence of suitable dating evidence (either direct or indirect) the pits remain unphased. The pits were of varying size and shape (Table 26) and probable function. Examples of some are described below. With the exception of these pits, the remainder were typically filled with sterile mid orange or grey-brown sandy clay with occasional stone inclusions

Pit 643 was situated close to a group of prehistoric pits located in the north. The pit was largely covered by a stone slab but was otherwise unremarkable. A single charred cereal grain (oats) was retrieved from a soil sample from the pit. Approximately 50 m to the south was pit 1040. The pit had been very neatly cut into the underlying glacial till and was filled with stones and a thin, sealing covering of soil. An elongated pit (742) situated approximately 15 m north of the early medieval enclosure may have served as a hearth. The pit showed evidence of *in situ* burning in its base and contained a large amount of oak charcoal and charred barley grains.

Table 26: Pits to north of enclosure in Area F

Cut	Deposit(s)	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
643	852	1.05	0.85	0.13	Oval / concave
706	1055	3.35	2.90	0.38	Irregular / concave sides, flat base
742	992, 993, 994	1.55	0.66	0.10	Oval / very shallow, flat base. Hearth, *in situ* burning
1002	876	1.80	1.10	0.30	Irregular oval / concave
1008	1385, 1386, 1387, 1388, 1389, 1390	2.40	2.30	0.45	Sub-circular / concave sides, undercut in places, irregular base. Possibly tree hole
1009	1391, 1392	1.00	0.86	0.16	Oval / concave
1010	1393	0.80	0.45	0.30	Oval / steeply concave sides, concave base
1011	1394, 1395	0.96	0.73	0.17	Oval / concave. *In situ* burning
1013	1271, 1289	2.56	1.80	0.35	Oval / concave sides, flat base
1014	1397	0.60	0.52	0.31	Irregular / irregular concave
1020	1455	0.46	0.39	0.13	Oval / concave. Possible posthole
1023	1459, 1460	1.72	1.30	0.44	Irregular oval / concave, steeper at north
1024	1461	1.20	0.72	0.10	Oval / concave
1032	1472, 1482, 1486	2.30	1.40	0.35	Irregular / irregular
1040	1481, 1485	0.65	0.65	0.35	Circular / steep, slightly undercut sides, flat base

Postholes and stakeholes to north of enclosure (Fig. 20)

Eleven small postholes and stakeholes were excavated in the area to the north of the enclosure (Table 27). Many represent seemingly isolated examples but some clusters were evident, e.g. 1031 and 1037-9. The postholes and stakeholes were generally filled with relatively sterile soil and none produced artefacts. Three sampled features yielded hazel and oak charcoal (1004, 1017 and 1034),

Table 27: Postholes and stakeholes to north of enclosure in Area F

Cut	Deposit(s)	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
1004	1367	0.35	0.19	0.21	Oval / steep sides, flat base. Posthole
1017	1452	0.58	0.31	0.13	Oval / concave. Dubious posthole

Cut	Deposit(s)	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
1029	1369	0.10	0.10	0.14	Circular / tapering. Stakehole
1030	1470	0.12	0.10	0.15	Oval / tapering. Stakehole
1031	1471	0.28	0.27	0.10	Oval / steeply concave. Posthole
1034	1474, 1475	0.65	0.40	0.42	Oval / steep sides, partly undercut. Posthole
1036	1480	0.09	0.09	0.13	Circular / tapering. Stakehole
1037	1477	0.15	0.15	0.30	Circular / tapering. Stakehole
1038	1478	0.21	0.13	0.35	Oval / tapering. Stakehole
1039	1479	0.25	0.19	0.28	Oval / irregular. Stakehole
1041	1483	0.25	0.20	0.12	Oval / steeply concave. Posthole

Pits and hearth to the south of the enclosure (Figs 24 and 34)

Five pits and hearths were excavated outside the enclosure to the south. These varied in size and shape ranging from 0.70-3.05 m in length (Table 28). These features remain unphased and their relationship with the prehistoric, early medieval or medieval activity is unknown. One, pit 812 was most probably modern in origin.

Hearth 526 was heavily truncated. The hearth was located immediately outside the southern corner of the enclosure and was represented by a patch of *in situ* burning. Pits 616, 617 and 917 were intercutting but the precise stratigraphic relationships could not be discerned. Pits 616 and 617 also intersected with ditches 422 and 810, whereas pit 917 met ditch 930. The pit fills were mid to dark grey-brown sandy clay and pit 617 contained patches of orange and white clay and gravel.

Table 28: Pits to the south of the enclosure in Area F

Cut	Deposit(s)	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
526	788	0.70	0.40	0.18	Oval / concave. *In situ* burning. Truncated by furrow
616	685	2.80	1.30	0.21	Oval / concave. Intersected with ditch 422 (slot 614), ditch 810 (slot 615), pit 617, pit 917
617	686, 795, 796	1.45	1.10	0.65	Oval / steep sides round to flat base. Intersected with ditch 422 (slots 614 & 648), ditch 810 (slot 615), pit 616
812	1050	1.80	0.80	0.24	Oval / concave. Intersected with furrow
917	1256	3.05	1.42	0.35	Oval / concave. Intersected with ditch 930 (slots 527 & 916) and pit 616

Phase 8 - Post-medieval/early modern (Figs 19-20, 22, 24-26, 28, 31-32, 34 and 37)

A number of linear features crossed the site aligned north-west to south-east, broadly parallel to the modern field boundaries. Many of these features truncated the archaeological activity described above and some produced early modern/modern artefacts. These features relate to recent agricultural activity.

Ditches 409 and 410 (Figs 19, 24, 31-32 and 37)

Ditches 409 and 410 were adjacent and parallel and situated to the south side of the enclosure which they truncated at each end. The ditches were each 47.50 m long within the site, 0.40-1.06 m wide and 0.12-0.58 m deep with steeply concave profiles (Tables 29 and 30). Ditch 409 truncated pits 925 and 926 and furrows 920 and 922. Both ditches were cut by ditch 420 and in the case of ditch 410 by ditch 935 also. Both ditches were filled with mid grey-brown sandy clay with gravel and occasional charcoal inclusions. Each produced single pieces of corroded iron and ditch 410 contained a piece of clay tobacco pipe suggesting the ditches are of post-medieval date.

Table 29: Slots through ditch 409 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
411	463	0.78	0.35	
602	671	0.55	0.15	
624	752	0.50	0.19	
627	754	0.61	0.25	
713	867	0.75	0.18	Truncated ditch 525 (slot 704)
909	1073	0.94	0.45	Truncated ditch 525 (slot 726). Truncated by ditch 420 (slot 1109)
921	1263	0.48	0.39	Truncated furrows 921 & 922
924	1273	0.44	0.17	Truncated pits 925 & 926

Table 30: Slots through ditch 410 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
412	465	0.75	0.18	
413	473	0.78	0.17	
416	758	1.06	0.24	Possibly part of ditch 935. Truncated ditch 525 (slot 704)
628	755, 757	0.40	0.58	
749	968	0.50	0.13	Truncated by ditch 935 (slot 800)
910	1194	0.72	0.25	Truncated ditch 525 (slot 726). Truncated by ditch 420 (slot 1109)
938	1292, 1293, 1294	0.76	0.58	
1102	1499	0.40	0.12	Truncated by ditch 935 (slot 728) and ESB machine

Ditch 422 and gully 810 (Figs 19, 24, 28, 34 and 37)

Ditch 422 and gully 810 were parallel features located outside the enclosure to the south. Gully 810 truncated the edge of the enclosure ditch 525. Ditch 422 and gully 810 were broadly aligned south-east/north west but retained a distinctive curve or 'S'-bend in plan. Ditch 422 was 49 m long, 0.88-1.30 m wide and 0.13-0.40 m deep with a concave profile (Table 31). Gully 810 was 36 m long within the excavated area, 0.30-0.79 m wide and 0.15-0.31 m deep with a concave profile (Table 32). The gully petered out part way along its length, possibly having been eroded, and its north-west end was probably also formed by erosion of the shallow feature. Both ditch and gully were filled with mid orange-brown sandy silt with gravel inclusions. The only artefact recovered from either feature was a piece of clay tobacco pipe which suggest a post-medieval date for these features. Two pits, 616 and 617, occupied the same line as the ditch and gully. However the precise stratigraphic relationship between this group of features could not be readily discerned and it was unclear which features pre- or post-dated the others.

Table 31: Slots through ditch 422 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
408	596	1.10	0.40	
604	673, 675	1.32	0.41	
614	683	1.22	0.13	Intersected with pit 617
625	753	1.10	0.37	
648	790	0.88	0.25	Intersected with pit 617
720	874	1.20	0.21	
741	957, 958	1.01	0.19	

Table 32: Slots through gully 810 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
407	595	0.41	0.22	
421	785	0.79	0.31	Truncated ditch 525 (slot 423)
603	672	0.30	0.15	Petered out at NW end
615	684	0.62	0.16	Intersected with pits 616, 617
721	875	0.54	0.15	

Ditch 420 (Figs 19 and 24)

Ditch 420 was located at the western edge of the excavated area and was aligned south-west to north-east. The ditch truncated enclosure ditch 525, ditches 409 and 410 and pit 806. The ditch had been cut from immediately below the sod layer, indicating that it was of very recent origin. Several pieces of plastic and metal were observed in the ditch fill but these were not retained. Ditch 420 was 28 m long, 1.50-1.80 m wide and 0.45-0.75 m deep with steep sides and a concave base. The four recorded ditch slots are described in Table 33.

Table 33: Slots through ditch 420 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
629	759, 760, 774	1.46	0.55	
649	974	1.75+	0.75	Truncated pit 806.
738	1251	1.40	0.45	Terminus. Truncated by pit 739
1109	888, 1555	1.20+	0.40+	Truncated ditch 409 (slot 909), ditch 410 (slot 910), ditch 525 (slot 726)

Ditch 425 (Figs 19-20 and 24)

Ditch 425, was aligned south-west/north-east and was located at the western edge of the excavation area, immediately north of the enclosure. The ditch truncated the enclosure ditch 525. Ditch 425 was 20 m long, 1.12-1.90 m wide and 0.12-0.25 m deep where excavated (Table 34). In places the ditch retained evidence for having being re-cut. At the north-eastern end the ditch petered out. The ditch was filled with mid-brown sandy loam, similar to the topsoil. The ditch cut originated immediately below the field surface indicating the ditch was recent in origin.

Table 34: Slots through ditch 425 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
703	851	1.90	0.22	Double-ditch profile
730	892	1.12	0.12	
827	1081	partial	0.12	Truncated enclosure ditch 525 (slot 832)

Ditch 725 (Figs 19 and 24)

This ditch had been almost entirely removed by the ESB machine work but originally was aligned south-west/north-east and ran parallel to ditches 420 and 425. The surviving portion of the ditch was fully excavated and measured 25.30 m long, 0.93 m wide and up to 0.40 m deep with a concave profile. The ditch truncated the enclosure ditch 525 (slot 424).

Ditches 930 and 935 (Figs 19, 24, 28 and 37)

Ditches 930 and 935 were located immediately south of the enclosure which they each truncated. Both were aligned broadly north-west/south-east and where they survive beside each other were 0.20 m apart. Ditch 930 was 6.4 m long, 1.10-1.74 m wide and 0.28-0.65 m deep with a concave profile (Table 35). Ditch 935 was 31.5 m long, with a small eroded break in the middle, 0.55-1.15 m wide and 0.15-0.35 m deep with a concave profile (Table 36). No artefacts were recovered from either ditch. Ditch 935 is most probably early modern in date as it truncated the post-medieval ditch 410.

Table 35: Slots through ditch 930 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
527	667, 668	1.60	0.28	Truncated ditch 525 (slot 934), intersected with pit 917
748	967	1.74	0.39	
916	1257, 1258	1.50	0.45	Truncated ditch 525 (slot 915), intersected with pit 917

Table 36: Slots through ditch 935 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
416	758	1.06	0.24	Possibly part of ditch 410. Truncated ditch 525 (slot 704)
723	858	1.05	0.15	Truncated ditch 525 (slot 710)
728	890, 955	1.15	0.25	Truncated ditch 410 (slot 1102)
800	969	1.10	0.30	Truncated ditch 410 (slot 749)
841	1183, 1184	0.70+	0.35	Truncated ditch 525 (slot 840)

Ditch 940 (Figs 19, 24 and 34)

Ditch 940 was located in the south-east corner of the excavation area where it extended beyond the limits of the excavation. The ditch formed a right-angle with pit 805 occupying the corner made by the angle. It was not clear whether the pit was earlier, later than or contemporary with the ditch. The ditch was exposed over 15 m and was 0.95-1.20 m wide, 0.18-0.35 m deep with a concave profile (Table 37). Filled with mid orange-brown clayey sand the ditch did not contain artefacts, despite being entirely excavated within the area of investigation. Although no dateable material was recovered from the ditch it ran parallel to furrows and is likely to relate to post-medieval agricultural activity.

Table 37: Slots through ditch 940 in Area F

Cut	Deposit(s)	Width (m)	Depth (m)	Comments
801	985, 1063	0.95	0.35	
802	986	1.10	0.18	
809	1288	0.20+	0.07+	Partial slot. Intersected with pit 805
929	1291	1.20	0.28	Intersected with pit 805

Ditch 1110 (Fig. 19-20)

At the northern end of the site was a north-east/south-west ditch (1110) that continued beyond the limit of excavation. The ditch was 23.5 m long, 0.80-1.180 m wide and 0.34 m deep; the ditch was subject to investigation at one location (slot 1007). There were no finds recovered during the investigation. The ditch ran perpendicular to modern field boundaries and furrows and is most probably of relatively recent origin.

Furrows (Figs 19-20, 22, 24-26, 28, 31 and 34)

Multiple south-east/north-west furrows crossed the site, and these were especially evident within the enclosure where they truncated numerous archaeological features. The furrows often contained charcoal-rich deposits removed from the archaeological features as a result of ploughing. The furrows were generally recorded as context 444 with other context number also applied where the furrows cut other features (503, 504, 545, 601, 606, 632, 807, 920, 922 and 937 – not labelled on figures). The furrows produced some artefacts including pieces of clay tobacco pipe, iron nails, animal bone fragments, slag and a stone item. Some of these finds probably originally derived from the archaeological features truncated by the furrows.

Modern pits (Figs 19 and 24)

Two pits (739 and 811) at the western edge of the excavated area contained modern farm animal burials. The latter intersected with ditch 725. Oval pit 739 was 2.40 m long, 0.90 m wide and 0.80 m deep with steep sides and a concave base. Pit 811 had a similar shape and profile but was 1.60 m long, 0.80 m wide and 0.32 m deep.

Non-archaeological features

A number of features were excavated that proved to be non-archaeological and these are not labelled on the figures in this report. Amongst these were root holes 946, 947 and 1015. Curvilinear feature 724 (not illustrated) had the initial appearance of a partial ring gully with stone packing but on investigation was revealed as a natural geological feature. Area 205 (not illustrated), excavated in Area C, was found to be a root hole.

Area G (Figs 38-39, Plates 33-34)

Area G contained a horseshoe-shaped cut feature that was proved difficult to excavate and problematic to interpret. The spread had been truncated by plough furrows (e.g. 2500) and the natural geology was variable in this area which hampered attempts at distinguishing the archaeology. Two slots were excavated through the feature before it was fully excavated (2501 and 2502). Its edges were difficult to ascertain as result of truncation and/or tree root disturbance. Overall the feature measured 5.70 m by 5.20 m and occupied in part a cut 0.40-1.95 m wide and 0.40-0.85 m deep with an extremely irregular profile. The cut contained multiple different fills, with patches of charcoal-rich black sediment (2551) on the surface in a number of locations. This overlay mid brown, yellow and grey clayey silts and clay, all with pebble inclusions. A stone disc (E2479:2552:1) was the only artefact recovered from the feature fill. The disc appears to be a stone weight or possibly a rough-out for a whorl or sinker. Parallels are known from early medieval contexts within Ireland.

Area I (Figs 40-41)

This small area was opened around a patch of charcoal-rich material observed in a test trench. On further investigation it became apparent that the charcoal was a small spread (2753) overlying a ditch. Two slots were excavated in the ditch (Table 38). The ditch fills were grey brown sandy silts with stone and gravel inclusions. Although no dating evidence was recovered the ditch was parallel to existing field boundaries and was probably a post-medieval agricultural feature indicating that the charcoal-rich material was also relatively recent in origin.

Table 38: Slots through ditch in Area I

Cut	Deposit	Length (m)	Width (m)	Depth (m)	Plan / profile. Comments
2700	2750, 2751, 2752	0.55	1.36	0.21	Linear / concave with step on north-west
2701	2754	0.42	2.35	0.60	Linear / concave with step on north-west. Overlain by spread 2753

Area J (Figs 42-43)

Another small area was opened to investigate a patch of burning. A single deposit of mixed black and brown silty material with charcoal and gravel inclusions (2755) was recorded, measuring 1.34 m by 0.72 m and 0.10 m thick. This deposit overlay an animal burrow (2702) and it is unclear if it represents *in situ* archaeological activity.

Finds

Cremated human bone by Mara Tesorieri

Osteological analysis was undertaken on cremated remains recovered during the excavation of Neooithic pits, two *fulachtaí fia*, a Middle Bronze Age roundhouse, pits and an enclosure of Iron Age or early medieval date, located on the N7 Nenagh to Limerick High Quality Dual Carriageway, Ballywilliam, Co. Tipperary. Six assemblages were subject to osteological analysis, five of which were found in Area F, which included pits, the Bronze Age roundhouse and the enclosure. Area H contained stakeholes, postholes and nine pits, two which (2623 and 2608) produced burnt bone. Within Area F, three pits containing burnt bone (745, 746 and 834) were located within the enclosure. These pits were disturbed by later activity. Pit 745 produced a knife blade and buckle, while pit 834 contained a fragment of a shale bracelet. A further pit, 1006, which had a small amount of bone, was found north of the enclosure.

During the various phases of Irish prehistory, cremation was the predominant rite for the disposal of the dead; consequently, burnt human bone is frequently found in archaeological deposits along with burnt domestic animal bone waste. Identification and analysis of cremated bone elements retained in the pyre debris can provide information on particular areas or portions of the body which may have been purposefully selected following firing, as well as provide information on the pyrotechnical event, such as temperature.

Methodology

The cremated remains were first analysed by a zooarchaeologist to determine cremated remains which were animal. Assemblages of cremated animal remains were removed, with the following report providing information on the cremated human assemblages and unidentified assemblages. All bags were first weighed, with the total number of fragments (>1 mm) counted.

The skeletal material was analysed macroscopically, with fragments divided into various categories, including: skull, teeth, long bones, vertebrae, ribs, hands, feet, and unidentified. The number of identifiable fragments is dependent on the fragment size, with larger fragments usually easier to identify. Successful identification depends on the number of distinguishing features found on the fragment as well as known thickness of particular bones. However, this is hindered by the shrinking and warping of bones during the cremation process. Identification is further hindered if cremated remains are not found in a protected case such as with Bronze Age urns, which are often found in covered short cists. The cremation deposits in question were retrieved from open pits, many of which

had been disturbed by later activity; therefore the high level of fragmentation and small amount of bone found within the samples is not surprising.

Each category was weighed and recorded. Specific bones were identified where possible. Once each category was weighed, the total identified weight was calculated along with the total weight of bone recovered. The examination of the percentages of identifiable bone can indicate specific parts of collection of the cremated material, either at the pyre site or later. Percentages can also help in determining the minimum number of individuals (MNI). The average skeleton contains the following bone percentages (McKinley 1989): Skull: 18.2%, Axial: 23.1%, Upper Limb: 20.6% and Lower Limb: 38.1%.

Within the fragments, it is possible to differentiate between adults and sub-adults, based on unfused epiphyses, thickness of the fragments and tooth fragmentation. Adult teeth tend to shatter during the cremation process due to the heat; whilst unerupted juvenile teeth tend to survive complete due to the protection of the jaw bones.

The bone colour, amount of fragmentation, and cracking were noted to obtain information on the process and efficiency of the cremation process. Bone which has been efficiently cremated is generally white, grey or blue/grey in colour and most often has a chalky texture. Cremated bone which has not been cremated efficiently will tend to have a blue/black colour, and is an indication of either low pyre temperatures or restricted oxygen flow (Buikstra and Swegle 1989; McKinley 1993; Shipman *et al*. 1984).

All methods of excavation, recording, cleaning and analysis follow the code of practice laid out by the IAI (Buckley and Murphy 2004) and BABAO/IFA (Brickley and McKinley 2004).

Results

Two assemblages contained material identifiable as human, the others were unidentifiable to species. The assemblages are described and discussed in turn.

Human and unidentifiable assemblages

Cremated assemblage 1 (cut 2623, deposit 2687, sample 1630, find 2687:1) was found in Area H and represents the largest cremated human remains sample found at Ballywilliam. The fragments are mostly white in colour with some fragments displaying patches of blue (particularly the cranial fragments). Most of the fragments exhibit a cracking pattern both spiral and checked in form. This would insinuate the bones were cremated while still maintaining a high fat content, as would occur in a fresh cadaver. The cremated remains as a whole were highly fragmented, with the largest long bone fragment measuring 3.25cm. The small size of the fragments proved problematic when attempting to identify the fragments, as can be seen by Table 39, most fragments were only placed under main categories rather than specific bones. Specific fragments such as the teeth roots and petrous portion of the temporal bone indicated the remains belonged to an adult however sex could not be determined.

Table 39: Cremated assemblage 1 (cut 2623, deposit 2687, sample 1630, find 2687:1)

Category	Subcategory	# of fragments	Weight (g)
Skull	2 of these fragments from the orbital margins	48	13.5
	Possible mandible	1	0.7
	Petrous bone	1	1.9
	Teeth	8	0.8
Thorax	Ribs	6	2.2
Pelvis	Auricular surface	1	2.5
Joint Surfaces		6	2.5

Category	Subcategory	# of fragments	Weight (g)
Hand	Possible metacarpal	1	<0.1
Tibia	Proximal condyles	1	0.4
Long Bones		89	106.7
Vertebrae	Vertebral body	1	0.4
TOTAL IDENTIFIED		**163**	**136.7**
Unidentified		637	163.2
TOTAL RECOVERED		**800**	**299.9**

The second human cremated assemblage (cut 834, deposit 1083, sample 644, find 1083:2) was quite small with only a few identifiable fragments available (Table 40). The largest fragment, which measured 3 cm in length, is possibly from the proximal half of a tibial shaft. The colour of the fragments are a dirty white, with few fragments displaying the typical cracking pattern of the surface, however due to the small fragments it is highly possible that the cracking pattern is just not noticeable. A piece of shale bracelet was found within the cremation. A minimum number of one adult individual was identified within the cremation.

Table 40: Cremated assemblage 2 (cut 834, deposit 1083, sample 644, find 1083:2)

Category	Subcategory	# of fragments	Weight (g)
Pelvis	Fragment with part of auricular surface	1	0.6
Lower Limb	Possible tibia	1	1.6
TOTAL IDENTIFIED			**2.2**
Unidentified		24	4.9
TOTAL RECOVERED		**26**	**7.1**

The remaining assemblages were too small to either identify or weigh the identifiable fragments and therefore have been placed in one Table (Table 41). Cremated assemblage 3 (cut 745, deposit 1174, sample 668) was not identifiable as either human or animal, however, the remains do appear to belong to a juvenile, whether human or animal, as there is a fragment of an epiphysis present. The fragment does not appear to be human. All cremations placed in Table 41 were white in colour, with cracking patterns unable to be identified due to the high fragmentation of the remains.

Table 41: Cremated assemblages, unknown if human or animal

Cut	Deposit	Sample	Find	Category	Subcategory	# of fragments	Weight (g)
745	1174	668	1174:6	Unidentified		64	5
746	1178	672	1178:1	Unidentified		12	0.5
1006	1383	751	1383:1	Unidentified		26	1
2608	2663	1611	2663:1	Unidentified		60	3.7

Cremated assemblage identified as animal

The remaining cremated assemblage (cut 745, deposit 1174, sample 676, find 1174:7), which weighed a total of 170.2 grams, has been identified as animal, with known fragments of animal bone present and no identifiable fragments of human present.

Summary and conclusions

The cremation assemblages analysed represent only partial cremations, as the amount of retrieved bone is very small. It is possible, especially for cremation assemblage number 1, that a full adult cremation was placed in the pit, as many different parts of the skeleton are present. The remains appear to be that of one adult of unknown age and sex. Unfortunately, due to the small amount of

identifiable fragments, it was not possible to undertake comparison of percentages. Cremation assemblage 2 was also identified as human, adult, with age and sex unknown.

The remaining analysed assemblages are very small compared to normal cremated remains recovered. This is most likely caused by the later disturbance from other cuts and activity within the area. Due to the fragmentation, it was not possible to identify the remains as either animal or human. The last cremated assemblage (cut 745, fill 1174) had known fragments of animal bone, however it was not possible to identify all the fragments as being animal. There were no identifiable fragments of human remains.

The total cremated assemblage therefore represents two human cremation pits, one located in Area H and one located in Area F, with a piece of a shale bracelet also found in the latter feature. The remaining cremated assemblages could not be identified as being either human or animal. All of the assemblages were white to blue in colour, with a chalky texture, with the larger fragments displaying a cracked texture; indicating an efficient cremation process.

Animal Bone by Fiona Beglane

This report details the faunal remains recovered as part of excavation E2479: Ballywilliam Site 1, Co. Tipperary.

Methodology

For the purposes of analysis, contexts were grouped on the basis of the information supplied by the excavator (McNamara et al. 2009). Mammalian faunal remains were identified using comparative collections and by reference to Hillson (1992) and Schmid (1972). For cattle and pigs, toothwear was recorded per Grant (1982) and Higham (1967) after Silver (1963). Evidence for chopping, cutting and sawing were recorded, as was gnawing by carnivores and rodents. Burnt material was classified as singed for bone with only partial blackening, burnt for blackened bones or calcinated for those bones that were predominantly white/blue-grey in colour. Where pathologies, developmental defects and non-metric traits were identified on bones these were examined and recorded in further detail.

Cortical bone is found in the shafts of long bones, while trabecular bone is found at the ends of the long bones and is also used to make up the form of the flat and irregular bones such as the pelvis, ribs and scapula. In an Irish context the classification “Large Mammal” includes cattle, horse and large deer, “Medium Mammal” includes species such as pig, sheep, smaller deer and larger dogs and “Small Mammal” includes small dogs, foxes, cats and hares, while “Very Small Mammal” includes species such as rat and mouse. Throughout the text the common names for species have been used. A translation of common to Latin names is shown in Table 42, based on Schmid (1972).

Table 42: Translation of Latin to Common Names

Common Name	Latin Name
Bird	Aves
Cattle	*Bos sp.*
Pig	*Sus sp.*
Sheep/Goat	*Ovis/Capra*

Results

With the exception of a sample of cattle teeth, this small assemblage of bone was entirely calcinated, suggesting that the bone had been burnt at high temperatures. The bone came from a range of features and areas so that it will be discussed in these groupings (Table 43).

Area A

The only feature from this area to yield bone was pit 2, which contained four fragments of unidentified cortical bone.

Area C

Pits 201, 202, and 203 yielded very small quantities of calcinated bone. Pit 202 contained a fragment of phalanx (toe bone) from a medium mammal while pit 203 contained a large mammal rib fragment and a medium/large mammal vertebral fragment.

Area F

This area contained a large number of features with a range of contents. Only those features with identifiable material or containing large quantities of bone will be described in detail. Information on other features can be obtained in Table 43.

Posthole 429:
This contained a cattle left mandible hinge.

Pit 431:
This contained a number of large mammal bone fragments including a cattle os malleolare. This bone is from the hind leg, close to the ankle where the tibia meets the foot bones, and a number of probable large mammal tarsals (foot bones) were also identified in the same fill, as was a humerus from the front limb of a large mammal.

Pit 437:
This contained a number of bone fragments from medium/large mammals including a medium mammal sesamoid, a bone found adjacent to the toes.

Pit 505:
This pit contained a centrotarsale or foot bone from the hind leg of a sheep/goat as well as a number of other fragments from the hind leg of a medium mammal, suggesting that the pit had been used to dispose of a sheep/goat leg. This is likely to be cooking waste.

Pit 506:
This pit contained a number of large mammal rib fragments, suggesting food waste, as well as part of a second phalanx (toe bone) of a medium mammal.

Pit 509:
This contained a medium mammal rib fragment.

Pit 540:
This pit contained 130 bone fragments weighing 32 g and ranging in size between dust and 31 mm as well as a fragment of non-faunal material described below. The fill of this pit included a fragment of calcinated pig tooth. The fill also contained medium mammal rib fragments and some skull fragments including a fragment of orbit that could potentially have also come from pig. There were also long bone fragments from medium and large mammals, again potentially including pig. It is likely that this fill represents food waste, since although not usually served at table today, in the past, pig's heads were commonly cooked and served whole since they contain considerable quantities of meat.

Posthole 644:
This contained a calcinated tooth root from a medium or large mammal as well as cortical and flat bone fragments.

Pit 745:
This feature contained *c*. 400 fragments of bone ranging in size from dust to 30 mm and weighing 188 g. The fill included the identified remains of cattle and sheep/goat, as well as large and medium mammal bones that could have come from these two species. The sheep/goat bone fragments were from a right radius and right metacarpal, both from the front limb. Fragments of small/medium mammal ribs, medium mammal pelvis, femur and tibia from the hind limb were also identified, but could not be confirmed as sheep/goat. Medium mammal phalanx and sesamoid bones from the foot were also recovered. In the case of sheep/goat, therefore, both front and hind limbs and the torso appear to be represented. This may suggest a single animal cooked whole and then disposed of into the fire after use. Cooking of this type would be possible by roasting over a fire or in a pit oven or by boiling in a *fulacht fia.* The cattle bones included a fragment of astragalus or ankle bone and phalanx or toe bone. These parts are commonly disposed of early in the butchery process since they contain little usable meat. The excavator (McNamara et al. 2009) suggested that this feature and pit 746 may have been cremation burials, however there was no evidence of any human bone in these pits, and all the identified bone was from cattle and sheep/goat.

Pit 834:
This included a medium mammal rib fragment as well as cortical and trabecular bone fragments. The excavator (McNamara et al. 2009) suggested that this feature may have been a cremation burial however there was no positively identified human bone in this feature.

Pit 843:
This included fragments of cattle molar tooth that were probably unburnt. In acidic soil conditions teeth have a better survival rate than unburnt bone, suggesting that this feature may have originally contained additional unburnt material.

Pit 1006:
This feature did not contain any bone that could be identified to species, containing only small/medium mammal flat bone plate fragments. The excavator (McNamara et al. 2009) considered that this pit may have been a cremation burial, however no human remains could be identified.

Area H

Posthole 2602:
This feature contained a small number of small /medium mammal cortical bone fragments.

Pit 2608:
This pit contained *c.*60 small fragments of unidentified bone, mainly trabecular bone. The excavator (McNamara et al. 2009) suggested that this may have been a cremation burial, however it was not possible to determine whether these bones were of animal or human origin.

Pit 2623:
This pit feature was described by the excavator as a possible cremation. It contained c.800 fragments of bone weighing 300 g and with fragments ranging in size between dust and 38 mm. A small mammal/bird long bone shaft was present in this sample. While the fill did contain some calcinated material that could be definitely identified as faunal, a number of bones were of possible human origin. One fragment of possible human skull was identified and two tooth roots were of a type and size that they could potentially have come from human, pig or dog. Medium and large mammal cortical and trabecular long bone fragments, rib fragments and further skull fragments were also present as was the proximal articulation of a humerus or femur from a large mammal. Depending on the particular element, human bones may be classified with medium or large bones so that some of these may be of human origin.

Discussion and recommendations

The species identified in this analysis were cattle, sheep/goat and pig, with probable human bone also found. The majority of samples were small and it was not possible to glean any age or sex information from the identified bones however some information of interest was recovered.

The best represented identified elements were the robust bones of the foot, including tarsals, phalanges, sesamoids and an os malleolare. These bones survive the burning process well since they have solid, robust structures and are easily identified even from small fragments. With the exception of pigs, which have edible trotters, the foot bones are usually discarded early in the butchery process, since in sheep/goat and cattle these have little usable meat. Ribs were also well represented in the assemblage. Again these are easily identified in calcinated samples since only a small fragment is needed in order to determine the overall shape of the bone. Despite this, the majority of bone was compact cortical bone that makes up the shafts of long bones. These are the main meat-yielding body parts of the front and hind limbs and in combination with the presence of ribs, which would be included in modern cuts such as ribs, briskets and chops suggest that the majority of bones in this assemblage are food waste, disposed of into fires after use.

Pit 2623 contained a number of elements of possible human origin and it is strongly recommended that the entire sample (2687:1) be forwarded to a human bone specialist with experience of cremations so that any human remains can be separated from the remainder of the material. This sample also included a very small mammal/bird bone long bone. If this pit fill is confirmed as a cremation then this raises two possibilities; either the small creature was an accidental/incidental inclusion on the funeral pyre, perhaps sheltering in dry stored brushwood, or it may have been deliberately included on the pyre, potentially as a food offering or a messenger to the afterworld.

A number of other pits were suggested by the excavator as possible cremation pits: 2608, 745, 746, 834 and 1006; however in none of these cases were human remains positively identified.

Table 43: Summary results of faunal analysis

Cut	Deposit	Find No	Group	Area	Feature type	Sample No	No pieces	Weight (g)	Size (mm)	Burning	Identifications
2	52	52:1		A	Pit fill	2	4	<1	2 - 5	Calcinated	Cortical bone
201	253	253:1		C	Pit fill		1	<1	5	Calcinated	Cortical bone
202	252	252:1		C	Pit fill	202	15	<1	2 - 10	Calcinated	MM fragment of distal articulation of phalanx. Cortical bone.
203	254	254:1		C	Pit fill	204	14	<1	5 - 18	Calcinated	LM rib frag. MM/LM vertebral frag. Mainly cortical bone
429	458	458:1	1105	F	Posthole fill	407	c.70	6	Dust - 27	Calcinated	Cattle left mandible hinge. Frag of mandible of MM/LM. Mainly trabecular bone.
431	462	462:1		F	Pit fill		7	26	Dust - 91	Calcinated	Distal shaft of left LM humerus, plus several LM long bone frags probably from same bone
431	462	462:2		F	Pit fill	412	c.140	68	Dust - 37	Calcinated	Cattle os malleolare. Mainly LM cortical long bone fragments. Some trabecular bone inc. fragments of probable LM tarsals. Some frags. of flat bone.
431	462	462:3		F	Pit fill	411	c.170	32	Dust - 17	Calcinated	Small fragments of cortical and trabecular bone.
434	464	464:1		F	Pit fill	414	20	3	2 - 16	Calcinated	LM long bone frags. SM long bone frags. Cortical and trabecular bone frags.
435	466	466:1		F	Posthole fill	417	2	<1	2 - 5	Calcinated	Cortical and trabecular
436	471	471:1		F	Posthole fill	434	9	<1	3 - 5	Calcinated	Cortical and trabecular
437	472	472:1		F	Pit fill		50	12	Dust - 18	Calcinated	Small sesamoid from MM. Mainly cortical bone, incl. LM long bone frags.
437	472	472:2		F	Pit fill	435	c.110	6	Dust - 30	Calcinated	MM/LM long bone frags. Cortical bone.
444	756	756:4		F			8	<1	c.5	Calcinated	Cortical bone
444	756	756:6		F		510	3	1	6 - 28	Calcinated	LM cortical long bone frags.
445	479	479:1		F	Pit fill	433	9	<1	2 - 5	Calcinated	Tiny frags.

Cut	Deposit	Find No	Group	Area	Feature type	Sample No	No pieces	Weight (g)	Size (mm)	Burning	Identifications
501	491	491:1		F	Posthole fill	428	c.20	<1	2 - 18	Calcinated	Cortical bone frags
502	492	492:2		F	Posthole fill	429	c.40	<1	2 - 12	Calcinated	Cortical bone frags
505	476	476:1		F	Pit fill		7	2	5 - 30	Calcinated	Sheep/goat centrotarsale. MM long bone frag - probable tibia shaft. Trabecular bone frag - probably another MM tarsal.
505	554	554:2		F	Pit fill	445	8	<1	2 - 12	Calcinated	SM/Bird long bone shaft. SM/MM flat bone frags.
506	477	477:1		F	Pit fill		10	<1	Dust - 8	Calcinated	Cortical bone frags
506	556	556:2		F	Pit fill	446	50	13	Dust - 42	Calcinated	LM rib frags. MM long bone frags. MM proximal articulation of second phalanx
509	493	493:1		F	Pit fill		1	<1	9	Calcinated	MM rib fragment
511	552	552:1		F	Pit fill	437	7	<1	4 - 10	Calcinated	SM/MM cortical bone frags.
514	563	563:1		F	Pit fill		7	1	10 - 20	Calcinated	MM and LM cortical bone frags
514	563	563:3		F	Pit fill	460	14	<1	2 - 13	Calcinated	SM long bone frag. LM cortical frags.
515	565	565:1		F	Pit fill		c.65	7	Dust - 15	Calcinated	MM rib fragments and mainly cortical bone frags of MM and LM
516	570	570:1		F	Pit fill	459	2	<1	c. 5	Calcinated	Tiny frags.
517	571	571:1		F	Posthole fill	458	5	<1	5 - 10	Calcinated	Cortical bone
539	652	652:1		F	Posthole fill	470	32	6	5 - 30	Calcinated	LM long bone frags. Cortical and trabecular bone frags.
540	653	653:1		F	Pit fill		131	32	Dust - 31	Calcinated	Mostly cortical bone incl. long bone frags from LM and MM. Some trabecular bone frags. Some MM rib frags. Some skull fragments incl fragment of orbit. Calcinated pig tooth fragment
540	653	653:1		F	Pit fill		131			Unburnt	Examined under microscope. Has a linear, fibrous structure, hollow, cylindrical shape. Probable plant material.

Cut	Deposit	Find No	Group	Area	Feature type	Sample No	No pieces	Weight (g)	Size (mm)	Burning	Identifications
544	661	661:1		F	Pit fill		c.75	14	Dust - 17	Calcinated	Mostly cortical bone incl. Long bone frags from LM, some trabecular
546	470	470:1		F	Stakehol e fill	421	2	<1	c. 7	Calcinated	Trabecular bone.
610	680	680:1		F	Posthole fill	486	12	<1	2 - 17	Calcinated	MM cortical long bone frags
621	696	696:2		F	Pit fill		13	3	Dust - 35	Calcinated	Cortical bone incl. long bone frags from LM
638	778	778:1		F	Posthole fill	526	14	<1	2 - 12	Calcinated	Cortical bone
644	776	776:1		F	Posthole fill		2	<1	5 - 10	Calcinated	Cortical bone
644	776	776:2		F	Posthole fill	522	42	1	2 - 16	Calcinated	MM/LM tooth root. Cortical bone and flat bone frags.
700	1060	1060:1		F	Pit fill	613	c.15	<1	Dust - 5	Calcinated	Cortical bone
700	1061	1061:4		F	Pit fill	614	4	<1	5 - 14	Calcinated	Cortical bone and flat bone
700	1072	1072:1		F	Pit fill	631	4	<1	2 - 5	Calcinated	Cortical bone
700	882	882:1		F	Pit fill	557	1	<1	c.10	Calcinated	Cortical bone
700	882	882:2		F	Pit fill	678	13	<1	3 - 20	Calcinated	SM/MM cortical long bone frags.
714	961	961:1	630	F	Gully slot	579	2	<1	c.2	Calcinated	Bone
745	1174	1174:6		F	Pit fill	668	c.50	4	Dust - 14	Calcinated	Trabecular bone and SM/MM long bone frags.

Cut	Deposit	Find No	Group	Area	Feature type	Sample No	No pieces	Weight (g)	Size (mm)	Burning	Identifications
745	1174	1174:7		F	Pit fill	676	c.400	188	Dust - 30	Calcinated	Sheep/goat proximal articulation of right radius. Sheep/goat proximal articulation of right metacarpal. Cattle astragalus fragment. Cattle fragment of distal articulation of phalanx. M fragment of proximal articulation of tibia. M fragment of distal articulation of femur. MM fragment of distal articulation of first phalanx. MM small sesamoid. Mainly MM cortical long bone frags. Some LM cortical long bone frags. SM long bone frags. Some trabecular bone. MM pelvis frags. SM/MM rib frags. Skull frags.
746	1178	1178:1		F	Pit fill	672	12	<1	2 - 8	Calcinated	Trabecular and cortical bone
816	1355	1355:1	630	F	Gully slot		1	<1	10	Calcinated	Cortical bone
820	1064	1064:1		F	Pit fill	618	5	<1	2 - 8	Calcinated	Cortical bone
834	1083	1083:2		F	Pit fill	644	27	6	10 - 32	Calcinated	MM rib frag. MM and LM cortical bone. Trabecular bone.
843	1093	1093:1		F	Linear feature	722	c.20	6	Dust - 47	Prob unburnt	Cattle molar tooth fragments.
845	1188	1188:2	1112	F	Palisade trench fill	694	2	<1	10 - 17	Calcinated	LM cortical long bone frags.
926	1276	1276:1		F	Pit fill		10	<1	3 - 16	Calcinated	Cortical and trabecular
939	1351	1351:1		F	Pit fill	723	c.120	14	Dust - 18	Calcinated	MM and LM cortical bone frags. Trabecular frags.
942	1361	1361:1	941	F	Grave fill	731	7	<1	5 - 10	Calcinated	Cortical bone
1001	1375	1375:7		F	Pit fill	746	c.50	<1	Dust - 10	Calcinated	SM/MM long bone frags. Cortical and trabecular bone
1001	1375	1375:8		F	Pit fill	714	c.20	<1	2 - 8	Calcinated	Cortical and trabecular
1006	1383	1383:1		F	Pit fill	751	c.20	<1	5 - 15	Calcinated	SM/MM flat bone plate frags.
	1250	1250:3		F	Topsoil		2	<1	c.10	Calcinated	Cortical bone
	1250	1250:4		F	Topsoil		1	<1	7.9	Calcinated	Cortical bone

Cut	Deposit	Find No	Group	Area	Feature type	Sample No	No pieces	Weight (g)	Size (mm)	Burning	Identifications
2602	2654	2654:1		H	Posthole fill	1603	15	<1	5 - 10	Calcinated	SM/MM cortical bone frags.
2608	2663	2663:1		H	Pit fill	1611	c.60	2	2 - 22	Calcinated	Mainly trabecular bone
2623	2687	2687:1		H	Pit fill	1630	c.800	300	Dust - 38	Calcinated	Mainly cortical long bone frags of MM and LM. Some trabecular bone inc. one fragment of LM proximal humerus or femur articulation. LM and MM rib fragments. VSM/Bird long bone shaft. LM/MM skull fragments inc. one possible human frag. 2 tooth roots of human/pig/dog type and size

Table 44: Prehistoric pottery details from pits at Ballywilliam, Site 1, Co. Tipperary.

Vessel	Pit	Deposit	Date	Rim	Neck	Shoulder	Base-angle	Base	Body	Fragment	Crumbs	Weight (g)
1	709,	861, 1371	Early Neolithic	-	-	2	-	-	4	7	11	165
2	709	861, 1371	Early Neolithic	-	-	2	-	-	-	1	-	6
3	945, 1000	1369, 1372, 1373, 1381	Early Neolithic	2		-	-	-	1	10	-	36
4	1001	1375	Early Neolithic	2	1	2			11	30	46	174
5	1016	1399	Beaker	-	-	-	1	4	-	3	12	49
6	430	459	Vase	-	-	-	-	-	3	9	5	39
Total	-	-	-	4	1	6	1	4	19	60	74	469

The prehistoric pottery by Helen Roche and Eoin Grogan

Summary

The site produced an assemblage of 169 sherds (four rims, one necksherd, six shouldersherds, one base-anglesherd, four basesherds, nineteen bodysherds, 60 fragments and 74 crumbs; weight: 469 g) representing four Early Neolithic carinated bowls, one Late Neolithic/Early Bronze Age Beaker and a single Early Bronze Age food vessel of the Vase Tradition.

Six pits on the north-east side of the site produced pottery. Pits 709, 945, 1000 and 1001 contained sherds representing four Early Neolithic carinated bowls; pit 1016 contained a small number of sherds from a Late Neolithic/Early Bronze Age Beaker and pit 430 contained sherds from an Early Bronze Age food vessel of the Vase Tradition (see Table 44). Detailed descriptions of the sherds and contexts are presented in the Catalogue (below), after a general discussion of the assemblage.

The pottery

Early Neolithic carinated bowls

The site produced 24 sherds (four rimsherds, a necksherd, six shoulder sherds, sixteen bodysherds, 48 fragments and 57 crumbs, weight: 381 g) representing four Early Neolithic carinated round bottomed bowls (Vessels 1-4). These vessels represent the earliest type of Neolithic pottery in Ireland (Case 1961: 'Dunmurry-Ballymarlagh styles'; Sheridan 1995: 'classic' carinated bowls). Vessels of this type in Ireland usually have deep bowls and neutral or open profiles, ***i.e***. where the shoulder diameter is equal to or less than that of the rim. Dated sites indicate that this pottery style was current during the period *c*. 4000-3600 BC.

The assemblage is of exceptionally good quality containing well-made and well-finished coil-built vessels. The fragmented nature of the sherds did not permit accurate measurements for any of the vessels but they probably measured about 190 mm to 230 mm in rim diameter. From the surviving featured sherds it can be said that the rims were out-turned and pointed (Vessel 3) or rounded (Vessel 4), with gently curved necks and low stepped shoulders. The surfaces were carefully smoothed over with the fingers or a smooth implement and when dry, but before firing, the vessels were burnished to a high sheen. This was probably achieved by rubbing with a smooth stone or leather cloth, to provide an even finer finish. The vessels are generally thin-walled, ranging from 5.1 mm to 9.4 mm and contain crushed quartzite inclusions measuring ≤ 2.8 to 4.7 mm. Slight traces of carbonised residue were present on the interior surfaces of Vessels 1, 3 and 4, indicating domestic use. The pottery is in good condition although the exterior surface of sherds from Vessels 1, 3 and 4 are somewhat weathered indicating limited exposure to the elements.

This type of pottery has recently been found on sites in the area at Cooleen 1 and Ballycuddy More 1, Co. Tipperary (Roche and Grogan 2009a; Grogan and Roche 2009a); the latter produced a large Early Neolithic assemblage of 24 carinated bowls while small-scale discoveries came from Carrigatogher (Abbott) 1 and Ballyhisky 2 (Grogan and Roche 2009b; 2009c). Small assemblages were also found at Gortmakellis, Monadreela and Boscabell in the Cashel area of county Tipperary (Grogan and Roche 2006). The Ballywilliam vessels have a wide variety of parallels on other Neolithic domestic sites, including those with characteristic Early Neolithic rectangular houses, and early court tombs. At a regional scale, however, early carinated bowls with out-turned rounded rims, curved necks and simple angle or small step shoulders feature at Lough Gur Circles J, K, L and Site 10 (Grogan and Eogan 1987, figs 15, 20, 27, 40-41, 67), and Site C (Ó Ríordáin 1954, fig. 11), Co. Limerick. This pottery also came from a pair of rectangular houses at Tankardstown South, Co. Limerick (Gowen 1988; Gowen and Tarbett 1988), and more recently from houses at Granny and Newrath, Co. Kilkenny (Hughes 2005; Wren 2005). Recent discoveries in the south-east at, for example, Kerlogue, Co. Wexford, Ahanaglogh, Cooltubrid East and Knockhouse Lower, Co. Waterford (Elder 2001; Tierney et al. 2000; McQuade 2006) indicate a much more extensive settlement pattern during this period.

Similar results have also occurred in Cork with early Neolithic pottery from sites such as Ballinglanna North, Ballinaspig More and Curraheen (Roche and Grogan 2009b; Danaher 2004; Danaher and Cagney 2004). In the north-east important contemporary assemblages occur at Monanny, Co. Monaghan (Walsh 2006; Grogan and Roche 2006), Knowth, Co. Meath (Eogan and Roche 1997), and Feltrim Hill, Co. Dublin (Hartnett and Eogan 1964).

Final Neolithic/Early Bronze Age Beaker

This vessel (No. 5) was represented by twenty sherds (one base-anglesherd, four basesherds, eight fragments and twelve crumbs, weight: 49 g). Although little of the vessel survives the hard compact fabric with quartzite inclusions and the distinctive orange fabric with a grey core is consistent with fine Beakers that were in use during the period 2450 to 2300 BC. The fabric was somewhat weathered and traces of carbonised residue were present on the interior surface.

Beaker pottery is not common in this area of the country with single sherds identified at Ballycuddy More 1, Touknockane and Gortybrigane, Co. Tipperary (Taylor 2011; O'Neill et al. 2009; Long and O'Connell 2009; Grogan and Roche 2009a; 2009d; 2009e); however, larger assemblages were found in the Cashel area of county Tipperary and from Lough Gur, Co. Limerick (Grogan and Roche 2006; Ó Ríordáin 1954; Grogan and Eogan 1987).

Early Bronze Age Food Vessel of the Vase Tradition

Seventeen sherds representing a single vase (Vessel 6) were identified, consisting of three bodysherds, nine fragments and five crumbs (weight: 39 g). The hard compact fabric (5.9-8.4 mm thick), although weathered, had been smoothed with a creamy clay wash and traces of carbonized residue are present on the interior surface. While little of the vessel survives, the angle of the bodysherd and the incised decoration in the form of horizontal incised lines and a panel of filled triangles, filled with criss-cross incised motifs, is not unlike a recorded bipartite vase, but unfortunately of unknown locality (Ó Ríordáin and Waddell 1993, 282: no. 603). It is possible the vase sherds from Ballywilliam are disturbed and were derived from a burial, although no such evidence was found during the excavation. In fact, this region of the country is notable for its absence of Early Bronze Age burials with just a few further south in Dundrum, Glenacunna and Moanmore, all in Co. Tipperary (Ó Ríordáin and Waddell 1993, 131-32). There are, however, a small number of examples throughout the country where vase food vessel sherds have been found in domestic contexts at, for example, Lough Gur, Co. Limerick, Dalkey Island, Co. Dublin, and Knowth Co. Meath (Ó Ríordáin and Waddell 1993, 25; Eogan and Roche 1997, fig. 49: V.12).

Catalogue

The excavation number E2479 is omitted throughout; only the deposit number followed by the find number is included. Where the pottery is listed in the catalogue the context numbers are in bold: e.g. bodysherd: **1375**:22. Sherd numbers incorporating a forward slash indicates joining sherds, e.g. 888/444. The colour reference refers to the outer surface/core/inner surface, e.g. orange/grey/black. The thickness refers to an average dimension; where relevant a thickness range is indicated. Vessel numbers have been allocated to pottery where some estimation of the form of the pot is possible, or where the detailed evidence of featured sherds (e.g. rims, shoulders) or the fabric indicates separate vessels.

Early Neolithic carinated bowls

Vessel 1. (Pit 709). Represented by a large shoulder-/bodysherd **861**:6 and a shoulder fragment **861**:10a/10b, four bodysherds **861**:7a/7b/7c/7d, 8a/8b, 9a/9b, 13a/13b/13c/13d, seven fragments **861**:11a/11b, 12a/12b, 14, 15, 16; **1371**:1, 4, and 11 crumbs **861**:4; **1371**:3.
The bowl has a low stepped shoulder. Good quality, thin-walled hard fabric with a high content of crushed quartzite inclusions (≤ 4.5 mm). The slightly weathered exterior surface is smooth and

burnished. Slight traces of carbonized residue are present on the interior surface. Colour: dark orange/dark grey/dark orange-black. T: 6.2-7.7 mm. Weight: 165 g.

Vessel 2. (Pit 709). Represented by a shoulder fragment **861**:3, a second possible shoulder fragment **861**:2, and a fragment **1371**:2.
The bowl has a low stepped shoulder. Hard compact fabric with a moderate content of crushed quartzite inclusions (≤ 2.8 mm). The exterior surface is smooth and probably burnished. Colour: orange throughout. T: 8.9-9.4 mm. Weight: 6 g.

Vessel 3. (Pits 945 and 1000). Represented by rimsherd **1381**:1/5, a rim fragment **1381**:2, a bodysherd **1372**:1, and 10 fragments **1369**:1a/1b; **1372**:2, 3, 4, 5, 6, 7; **1373**:1;**1381**:3, 4.
Out-turned pointed rim with a gently curved neck. Good quality, thin-walled slightly friable fabric with a high content of crushed quartzite inclusions (≤ 3.7 mm). The weathered exterior surface had been burnished. Slight traces of carbonized residue are present on the interior surface. Colour: dark orange/dark grey/dark orange-black. T: 5.6-6.4 mm. Weight: 36 g.

Vessel 4. (Pit 1001). Represented by two rim fragments **1375**:2, 3, a necksherd **1375**:33, two shoulder fragments **1375**:4, 14, eleven bodysherds **1375**:10, 16-18, 20-25, 30, 30 fragments **1375**:5, 9a/9b/c, 11-13, 19, 26-29, 31-32, 34-51, and 46 crumbs **1375**:6, 15, 52.
Out-turned rounded rim with a gently curved neck and a low stepped shoulder. Good quality, thin-walled hard brittle fabric with a high content of crushed quartzite inclusions (≤ 4.7 mm). The exterior surface is smooth, burnished and somewhat weathered. Slight traces of carbonized residue are present on the interior surface. Colour: dark orange throughout. T: 5.1-7.9 mm. Weight: 174 g.

Late Neolithic/Early Bronze Age Beaker

Vessel 5. (Pit 1016). Represented by a gently angled base-anglesherd **1399**:3, four basesherds **1399**:4, 5, 6, 9, three fragments **1399**:7, 8, 10, and 12 crumbs **1399**:11.
Hard fabric with a moderate content of crushed quartzite inclusions (≤ 3.6 mm). The surviving surfaces are smooth but weathered. Traces of carbonized residue are present on the interior surface. Colour: orange/grey/orange-black. T: 9.7-11.6 mm. Weight: 49 g.

Early Bronze Age Food Vessel of the Vase Tradition

Vessel 6. (Pit 430). Represented by a three bodysherds **459**:5, 13a/13b, 14a/14b, nine fragments **459**:2-4, 6, 7a/7b, 8-11, and five crumbs **459**:12. Probably a bipartite vase.

Good quality hard compact fabric with a moderate to high content of crushed inclusions (≤ 2.7 mm). The sherds are weathered but the exterior surface had originally been smoothed with a creamy clay wash. Decoration is present in the form of horizontal incised lines and a panel of filled triangles, filled with criss-cross incised motifs. Traces of carbonized residue are present on the interior surface. Colour: buff-orange/dark grey/orange-black. T: 5.9-8.4 mm. Weight: 39 g.

Bangle fragments by Alison Sheridan (Figs 44-46)

Parts of three bangles of black, organic-rich non-jet stone were found at Ballywilliam.

Fragment 1 (E2479:492:1, Fig. 44) comprises two conjoining arcs of a bangle that had originally been *c* 70 mm in diameter (and therefore large enough for an adult); just over a quarter of the circumference is present, and the bangle had also split along a laminar plane, so that only half of the hoop is present. The hoop is 8.5 mm wide and 7 mm thick; it would originally have been roughly twice as thick. It had originally probably been plump-elliptical in cross-section. There is minimal faceting (from manufacture) on the top and interior of the hoop, but enough to confirm that the bangle had been hand-carved, not turned. The interior and exterior of the bangle had been polished to a high sheen, leaving

very faint striations which are horizontal in some areas and multi-directional on the exterior. The fracture surfaces at each end have very slight wear; one had broken with a slightly conchoidal fracture. The material is black, compact but laminar, and there is laminar hairline cracking; it has a 'stony' appearance, rather than the woody appearance of some jet and lignite. Macroscopically it gives the impression of being a high-quality cannel coal/canneloid shale/oil shale; it does not look to be of jet, despite the conchoidal fracture, nor does it look like lignite (which in some cases, as with jet, can have an obviously woody appearance). The XRF analysis (see report by Angela Wallace) does not contradict such a conclusion (despite the term 'lignite' being used by the analyst), although the absence of data on zirconium content hampers interpretation and it is also possible that some of the recorded composition relates to sediment adhering to the surface, rather than to the bangle itself.

Fragment 2 (E2479:1083:1, Fig. 45) is a slightly larger arc – around a third – of a bangle of very similar size (*c* 70 mm diameter); as with Fragment 1, it had split along a laminar cleavage plain and only half of the hoop is present. The hoop is slightly more slender and would have been D-shaped, 7.7 mm wide and with a surviving thickness of 8.3 mm. There is an old flake scar on the inside, and there are horizontal striations on the interior and horizontal and diagonal faint striations on the exterior. Most of these relate to the smoothing and polishing of the bangle, but some of the striations on the exterior may be post-manufacture scratches. The bangle had been polished to a high sheen on its exterior. The fracture surfaces at each end have very slight wear. The material is black, compact and laminar, with a 'stony' feel; the fracture surface is blackish-grey, but to some extent this may be influenced by the presence of sediment. Macroscopically the material resembles that used for Fragment 1; the minor differences suggested by the XRF analysis need not relate to a basic difference in material.

Fragment 3 (E2479:696:1, Fig. 46) is a smaller fragment (comprising *c* 15% of the circumference) of a bangle of similar size (i.e. *c* 70 mm in diameter); like the others, it had also split along a laminar cleavage plain and only part of the hoop is present. It would have been roughly D-shaped in cross-section originally; it is 7.6 mm wide and survives to a thickness of *c* 6.2 mm. The fracture surface at one end is stepped, and there is an old flake scar on the interior at one point. The surface had been polished to a low to medium sheen on the exterior and interior, and there are very faint multi-directional striations on the exterior and even fainter vertical striations on the interior. The stone is black, compact but laminar (with some laminar cracking as well as the laminar breakage), and has a 'stony' feel; there are natural iron pyrites inclusions, which have produced some orange iron staining to the fracture surface. Compositional analysis suggested that this bangle is of identical material to Fragment 2; again, a cannel coal, canneloid shale or oil shale is the most plausible identification.

Discussion

The discovery of Fragment 1 in a pit that stratigraphically post-dates the infilled ditch of the enclosure in Area F suggests that we are probably dealing with an early medieval find, within the second half of the first millennium AD; and given the similarity of all three fragments, it is reasonable to assume that they may all date to that period. The three findspots (namely pits 621 (Fragment 1) and 834 (Fragment 2) and posthole 502 (Fragment 3) are less than 35 metres apart.

Bangles of cannel coal and similar black or blackish material are relatively common finds in early medieval contexts in Ireland (Edwards 1996, 96), with recently-discovered examples including three from Parknahown 5, Co. Laois, with one from a context radiocarbon-dated to cal. AD 430–650 and reported on by Dr Fraser Hunter for ACS Archaeology (Hunter pers. comm.). As pointed out in that report, the widely-held assumption that these bangles are of lignite is incorrect, and much more analytical work is necessary to determine the use of different black and blackish materials, and to assess their sources and the degree of exchange that must have existed.

XRF analysis of three bracelet fragments by Angela Wallace

Methodology

Artefacts were analysed using an Oxford ED 2000 XRF in conjunction with XpertEase analytical software. XRF of the surface of an artefact can facilitate qualitative results, i.e. proportions of different elements are calculated relative to each other, as opposed to an absolute quantitative result. As the surface of an artefact is often characterised by corrosion products or surface coatings from the burial environment the results do not necessarily reflect the true chemical composition of an artefact.

The results are useful in giving an indication of main elements present; it is a non-destructive technique for characterising chemical aspects of an artefact. Providing the artefact is small enough to fit into the chamber of instrument, several spot analyses can be carried out on the surface. No sampling or sample preparation is required for this technique. Quantitative results can be obtained using XRF if a sample is removed, mounted in resin and polished.

X-ray fluorescence (XRF) analysis, is based on the ionization of the atoms of the material being investigated by an energetic beam of primary X-rays. The characteristic radiation that is emitted by the ionized atoms upon relaxation contains information on the nature and the abundance of the elemental constituents present (Janssens 2004, 129).

Once the beam of X-rays is directed onto an archaeological artefact it then emits an X-ray spectrum which contains peaks for each of the elements present in the object or sample. 'EDXRF is relatively cheap and quick and can determine the presence of most elements within a few seconds' (Bayley et.al. 2001, 25).

Results

Bracelet Fragments 25160:1083, 696 & 492

The graphical presentation of XRF chemical data from the three bracelet fragments suggests that fragments 25160-1083 and 25160-696 have roughly the same chemical signature. Both these fragments are likely to have been manufactured from material from the same source. Fragment 25160 has a far higher Al2O3 content than the other two fragments. The alumina to silica ratio is significantly different from the other two pieces suggesting a different source for this material. Data from the three fragments is qualitative only and is not suitable for a detailed analysis of possible sources of provenance for the material. Sampling of the fragments and more comprehensive chemical analysis would be necessary for this, and also detailed analysis of chemical signatures of potential sources.

Lithics by Farina Sternke (Figs 47-49)

Summary

The lithics from the archaeological excavation at E2479 Ballywilliam Site 1, Co. Tipperary are a small possible scalar flint core, a bipolar chert blade, a small convex end scraper, a double concave scraper and an abandoned barbed-and-tanged arrowhead roughout, all produced on chert. In addition, several natural chunks of chert and quartz were also recovered, including 37 small quartz pebbles and quartz crystal fragments which derive from the same pit fill and may actually be part of a burial deposit. The assemblage is typologically and technologically diagnostic and dates to the second half of the Neolithic, more specifically to the Beaker period. The artefacts represent waste from lithic production and domestic activities such as hide scraping. They predate the Middle Bronze Age roundhouse and represent an earlier phase at this site. This site makes a minor contribution to the evidence for prehistoric settlement and land use in Co. Tipperary.

Forty-four lithic finds from the archaeological excavations at E2479 Ballywilliam Site 1, Co. Tipperary were presented for analysis (Table 45). The lithics are one modified piece of flint and four modified pieces of chert, all of which measure larger than 2 cm in length and width and were therefore recorded in detail (Table 45). In addition, one unmodified piece of chert, 33 small unmodified pebbles of quartz and four unmodified pieces of quartz crystal were also presented for analysis. The quartz derived from a pit with a possible burial deposit.

Methodology

All lithic artefacts were examined visually and catalogued using Microsoft Excel. The following details were recorded for each artefact which measures at least 20 mm in length or width: context information, raw material type, artefact type, cortex, artefact condition, length, with and thickness measurements, fragmentation and retouch. 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). Natural chunks were not analysed further.

Provenance and condition

The finds were recovered from a number the fill of a pit (23) in Area D and the fills of several pits (430, 700, 709 and 1016) and from a gully slot (911) in Area F. The artefacts survive in reasonably fresh (E2479:459:1 and E2479:861:1) and slightly rolled (E2479:1192:1 and E2479:1399:1-2) condition. All artefacts are complete.

Technology and morphology (Figs 47-49)

The lithics are a core (E2479:1192:1), a blade (E2479:459:1) and three retouched artefacts (E2479:861:1 and E2479:1399:1-2).

Cores

The core (E2479:1192:1) is a failed possible scalar core made on a small flint pebble. It measures 22 mm long, 18 mm wide and 9 mm thick. Scalar cores are generally associated with the second half of the Neolithic period (Woodman et al. 2006).

Blades

The chert blade (E2479:459:1) was recovered from the fill of a pit. It was produced on a core which rested on an anvil during reduction. The blade measures 40 mm in length, 16 mm in width and 10 mm in thickness. It probably also dates to the second half of the Neolithic period.

Retouched Artefacts:

The three retouched chert artefacts are a small convex end scraper (E2479:861:1), a double concave scraper (E2479:1399:1) and a barbed-and-tanged arrowhead roughout (E2479:1399:2). The convex end scraper was recovered from a pit fill. It is a crude example which was produced on a chunky platform flake. The scraper measures 32 mm long, 21 mm wide and 13 mm thick.

The remaining two retouched artefacts derive from the same pit fill (1399). The double concave scraper was most likely produced on a scalar or disc on core flake. One concavity is located on its distal end and another on its right edge. The scraper measures 30 mm in length, 33 mm in width and 7 mm in thickness. This artefact type is typically found in the second half of the Neolithic period.

The barbed-and-tanged arrowhead roughout was abandoned in its early stage. There is no evidence of bifacial retouch visible on it, but one hollow is already visible. It was produced on a similar type of flake as the convex end scraper and measures 23 mm long, 29 mm wide and 6 mm thick. The reason for its abandonment remains unknown. Small barbed-and-tanged arrowheads of this type are associated with Beaker settlements.

Dating

The assemblage from Ballywilliam Site 1 is typologically and technologically diagnostic and dates to the second half of the Neolithic, more precisely to the Beaker period. Thus, the assemblage predates the Middle Bronze Age house and suggests that the site had been previously used in the Late Neolithic period.

Conservation

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

Discussion

In Co. Tipperary, flint is only found in the glacial tills, while chert occurs locally in the form of smaller nodules and represents the dominant raw material used at most prehistoric sites in this region. The use of a limited single platform and a dominant bipolar technology on small sized pebbles and nodules is in parts the result of this availability. This regionally dominant split pebble bipolar/scalar reduction method was used particularly in the Late Neolithic and Early Bronze Age (O'Hare 2005).

Table 45: Composition of the lithic assemblage

Find No.	Area	Cut	Deposit	Material	Type	Condition	Cortex	Dimensions (mm)	Complete	Retouch
E2479:181:1	D	23 (pit)	181	Chert	Natural chunk					
E2479:181:2	D	23 (pit)	181	Chert	Natural chunk					
E2479:459:1	F	430 (pit)	459	Chert	Blade	Reasonably fresh	Yes	L 40, W 16, Th 10	Yes	No
E2479:861:1	F	709 (pit)	861	Chert	Retouched artefact	Reasonably fresh	Yes	L 32, W 21. Th 13	Yes	Proximal direct abrupt
E2479:1061:1	F	700 (pit)	1061	Quartz	Natural chunk					
E2479:1061:2	F	700 (pit)	1061	Quartz	Pebbles x 36					
E2479:1192:1	F	911 (gully slot)	1192	Flint	Core	Slightly rolled	Yes	L 22, W 18, Th 9	Yes	No
E2479:1399:1	F	1016 (pit)	1399	Chert	Retouched artefact	Slightly rolled	No	L 30, W 33, Th 7	Yes	Distal direct abrupt, right edge inverse semi-abrupt
E2479:1399:2	F	1016 (pit)	1399	Chert	Retouched artefact	Slightly rolled	No	L 23, W 29, Th 6	Yes	Proximal inverse abrupt, distal left edge direct semi-abrupt

Table 46: Stone tool assemblage

Find No.	Cut	Deposit	Material	Type	Condition	Dimensions (mm)	Complete
E2479:497:1	404 (ditch 525)	497	Schist (M Feely)	Hone stone	Weathered	L 56, W 22, Th 14	Yes
E2479:497:2	404 (ditch 525)	497	Schist (M Feely)	Hone stone	Weathered	L52, W 14, Th 7	No
E2479:497:3	404 (ditch 525)	497	Schist (M Feely)	Polished pebble	Slightly weathered	L 29, W 12, Th 6	Yes
E2479:497:4	404 (ditch 525)	497	Schist (M Feely)	Polished pebble	Slightly weathered	L 26, W 10, Th 7	Yes
E2479:497:5	404 (ditch 525)	497	Schist (M Feely)	Hone stone fragment	Slightly weathered	L 31, W 10, Th 8	No
E2479:563:2	514 (pit)	563	Sandstone	Rubbing/hammer stone	Burnt	L 98, W 56, Th 41	Yes
E2479:586:2	406 (ditch 525)	586	Sandstone	Rubbing/hammer stone	Burnt	L 139, W 65, Th 55	Yes
E2479:670:1	601 (furrow)	670	Sandstone	Rubbing stone	Burnt	L 75, W 74, Th 42	Yes
E2479:885:1	700 (pit)	885	Schist (M Feely)	Rubbing/hone stone	Weathered	L 216, W 75, Th 73	Yes
E2479:885:2	700 (pit)	885	Schist (M Feely)	Rubbing/hone stone	Weathered	L 162, W 56, Th 28	Yes
E2479:1060:2-3	700 (pit)	1060	Sandstone	Saddle quern	Burnt	L 310, W 300, Th 110	No
E2479:1085:1	835 (posthole)	1085	Sandstone	Rotary quern stone fragment	Burnt	L 229, W 234, Th 96	No

Find No.	Cut	Deposit	Material	Type	Condition	Dimensions (mm)	Complete
E2479:1085:2	835 (posthole)	1085	Sandstone	Quern stone fragment?	Heavily weathered	L 232, W 132, Th 101	No
E2479:1085:3	835 (posthole)	1085	Sandstone	Quern stone fragment	Burnt	L 215, W 175, Th 135	No
E2479:1375:1	1001 (pit)	1375	Sandstone	Rubbing/hammer stone	Burnt	L 94, W 80, Th 60	Yes
E2479:1376:1	1001 (pit)	1376	Sandstone	Rubbing stone	Burnt	L 70, W 58, Th 41	Yes
E2479:1376:2	1001 (pit)	1376	Sandstone	Rubbing/hammer stone	Burnt	L 67, W 41, Th 38	No
E2479:1376:3	1001 (pit)	1376	Quartzite	Rubbing stone fragment	Burnt	L 75, W 38, Th 30	No
E2479:1376:4	1001 (pit)	1376	Sandstone	Rubbing stone fragment	Burnt	L 67, W 56, Th 20	No
E2479:2552:1	2501 (slot)	2552	Sandstone	Stone disc	Burnt	L 69, W 66, Th 28	Yes
E2479:2650:1	-	2650	Sandstone	Rubbing/hammer stone	Burnt	L 52, W 41, Th 36	Yes

Table 47: Assemblage condition

Condition	Amount
Slightly Weathered	3
Weathered	4
Heavily Weathered	1
Burnt	13
Total	**21**

Table 48: Assemblage composition

Type	Amount
Rubbing Stone	11
Quern Stone	4
Hone Stone	3
Polished Pebble	2
Stone Disc	1
Total	**21**

Stone tools by Farina Sternke (Figs 50-52)

Summary

The stone tools from the archaeological excavation at E2479 Ballywilliam Site 1, Co. Tipperary are eleven various rubbing stones and rubbing stone fragments, two refitting saddle quern fragments, three rotary quern fragments, three hone stones, two small polished pebbles and a stone disc. The majority of stone tools were produced on sandstone. Most of the artefacts are typologically diagnostic, e.g. the saddle querns and many, if not all rubbing stone date to the Final Neolithic period or Early Bronze Age (possibly to the Beaker period). The rotary quern is related to an Iron Age or early medieval use of this site. The artefacts are almost certainly associated with a larger settlement which included activities such as food processing and metalworking activities.

Methodology

Twenty-one stone tools from the archaeological excavations at Ballywilliam Site 1 (E2479). All stone artefacts were examined visually and catalogued using Microsoft Excel. The following details were recorded for each artefact which measures at least 2 cm in length or width: context information, raw material type, artefact type, artefact condition, length, with and thickness measurements and fragmentation. The general typological and morphological classifications were based on Woodman et al. (2006). Natural chunks were not analysed further.

Quantification

The stone tools are fourteen modified pieces of sandstone, one modified piece of quartzite (E2479:1376:3) and six utilised pieces of what appears to be siltstone (subsequently identified by Dr Martin Feely as greenschistose-type rock) (Table 46-48).

Provenance and condition

With the exception of two finds (E2479:2552:1 and E2479:2650:1), all artefacts were recovered from Area F. Artefact E2479:2552:1 was found in Area G and E2479:2650:1 in Area H. The finds were recovered from the topsoil, three pit fills, three ditch slots, the fill of a furrow and the fill of a posthole. The artefacts survive in variable condition; nine artefacts are incomplete, with the majority being burnt (Table 47).

Technology/Morphology (Figs 50-52)

The stone tools can be divided into five groups (Table 48).

Rubbing Stones

Most of the eleven rubbing stones are made of very coarse sandstone and derive from pits 700 and 1001. Five rubbing stones and rubbing stone fragments (E2479:670:1, E2479:1375:1, E2479:1376:3-4 and E2479:2650:1) show wear on their entire circumference. Rubbing stones E2479:586:2 and E2479:1376:2 are smoothened on two opposed sides and two other examples (E2479:885:1 and E2479:885:2) are worn on two and four elongated sides and may actually be irregular hone stones. Stones E2479:563:2 and E2479:1376:1 only show minimal wear on one surface.

Five rubbing stones (E2479:563:2, E2479:586:2, E2479:1375:1, E2479:1376:2 and E2479:2650:1) were also used as hammer or pounding stones, as is evident from their impact wear on one or two pointed ends.

The majority of the rubbing stones range in length from 60 to 100 mm (Fig. 50). With the exception of the two possible hone stones (E2479:885:1-2), all rubbing stones are burnt and almost definitely

associated with food production, i.e. grinding etc (see below for a further discussion). Many may have been manos used in conjunction with quern stones and most likely date to the Final Neolithic or Early Bronze Age period (possibly Beaker).

Quern Stones

The assemblage contains five quern stone fragments (E2479:1060:2+3 and E2479:1085:1-3), two of which refit (E2479:1060:2+3) and are part of a Final Neolithic or Early Bronze Age (possibly Beaker) saddle quern. Quern stone fragments E2479:1085:1-3 may be parts of an Iron Age or early medieval rotary quern. The saddle quern fragments derive from pit 700 and the rotary quern fragments were excavated from the fill of a posthole (835). All querns and quern fragments are burnt and show wear on at least one surface.

Hone Stones

Two hone stones (E2479:497:1-2) and a hone stone fragment (E2479:497:5) were excavated from ditch slot 404. The stones show significant wear on two opposed sides. The complete examples measure between 50 mm and 60 mm in length (Fig. 50). These stones are clearly associated with metalworking and date to the Final Neolithic/Early Bronze Age (possibly Beaker) or Iron Age.

Polished Pebbles

Two small polished pebbles were recovered together with the hone stones from the same pit fill (497). They are almost identical in size measuring 29 mm and 26 mm long, 12 mm and 10 mm wide and 6 mm and 7 mm thick, respectively. Both are extensively polished on their entire surfaces. They probably functioned as ornaments, gaming pieces or some form of tokens.

Stone Disc

One sandstone stone disc (E2479:2552:1) was recovered at this site. It derives from the fill of slot 2501 in Area G and measures 69 mm long, 66 mm wide and 28 mm thick. It appears to have been produced on a former rubbing stone and its two flat sides are lightly smoothened. The disc most likely dates to the Iron Age or early medieval period.

Dating

The artefacts are typologically diagnostic. The saddle quern fragments and most of the rubbing stones date to the Late Neolithic/Early Bronze Age (Beaker period), while the rotary quern fragments and hone stones are most likely associated with the Iron Age or early medieval use of this site.

Conservation

Stone tools do not require specific conservation, but should be stored in a dry, stable environment. Preferably, each stone tool should be bagged separately and contact with other stone tools 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

The overall condition of the assemblage is poor as the majority of artefacts are burnt. This is not uncommon. O'Sullivan and Kelly (2008) have recently suggested that quern stones were deliberately smashed or "killed" and deposited when a settlement site was abandoned. As ethnographic data and recent research suggest (Campbell 1987; van Gjin and Verbaas 2009), this idea is neither new nor particularly limited to a specific chronological period. In fact, it is a practice which has its origins in

the Neolithic period, where quern stones were deliberately smashed, burnt and occasionally stained with red ochre prior to their deposition or abandonment (van Gjin and Verbaas 2009). Van Gjin and Verbaas (2009) have recently suggested that the staining of quern stones symbolises their bleeding and signifies their certain "death", perhaps a metaphor for the total abandonment of a settlement (see also Campbell 1987). As O'Sullivan and Kelly (2008) pointed out the reasons for the "killing" of quern stones and the abandonment of a settlement site could range from simple traditions to complex ritual behaviour. In this context, it is clear that other related tools such as the associated rubbing stones (manos) were treated in a similar manner.

Hand specimen petrology of hone stones by Dr Martin Feely

The specimens were studied using a Nikon SMZ800 binocular microscope and a Wards Hardness Pick Set. Samples E2479:497: 1 to 5 are similar (there are some variations in colour) in both shape and physical properties i.e. rather smooth rectangular in shape and are very soft fine grained, laminated stones. Sample E2479:885:2 is a larger smooth rectangular specimen but it too is similar to samples E247:497:1 to 5. Descriptions below are as a result quite repetitive.

E2479:497: 1
This sample measures ~5 x 2 cm it is smooth and rectangular in shape. It is fine grained with laminations <0.5 cm. This is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1 = talc … 10 = diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of < 2). This rock may also contain other soft silicate minerals such as talc and sericite.

E2479:497: 2
This sample measures ~5 x 1 cm it is smooth and rectangular in shape. It is a pale and fine grained with laminations <0.5 cm. This is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1= talc … 10 =diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of <2). This rock may also contain other soft silicate minerals such as talc and sericite.

E2479:497: 3
This sample measures ~2.5 x 1 cm it is smooth and rectangular in shape. It is a pale and fine grained with laminations <0.5 cm. It is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1= talc … 10 =diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of <2). This rock may also contain other soft silicate minerals such as talc and sericite.

E2479:497: 4
This sample measures ~2.5 x 0.75 cm it is smooth and rectangular in shape. It is fine grained with laminations <0.5 cm. This is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1= talc … 10 =diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of <2). This rock may also contain other soft silicate minerals such as talc and sericite.

E2479:497: 5
This sample measures ~3 x 0.75 cm is smooth and rectangular in shape. It is fine grained with laminations <0.5 cm. This is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1= talc … 10 =diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of <2). This rock may also contain other soft silicate minerals such as talc and sericite.

E2479:885:2
This sample measures ~15 x 5.5 cm is smooth and rectangular in shape. It is fine grained with laminations <0.5 cm. This is an extremely soft, fine grained (~ <1 mm) schist rich in the mineral chlorite. The rock is easily scratched using a special pen with a hardness of 2 (MOH's scale of mineral hardness e.g. 1= talc … 10 =diamond). The outstanding feature of this stone is its softness resulting from the physical nature of its constituent minerals –it is predominantly composed of green chlorite (a clay silicate mineral hardness of < 2). This rock may also contain other soft silicate minerals such as talc and sericite.

Summary

Samples E2479:497: 1, 4 and 5, and E2479:885:2 are all exactly the same of greenschistose type rock same laminations and softness similar to soapstone indeed talc maybe a significant component. Samples E2479:497: 2 and 3 are also similar in that they are paler in colour in fact they probably represent the paler laminations found in the other four. They have similar softness to these four and the colour represents different proportions of the silicates present. A fuller and more precise mineralogical diagnosis would require polarising light microscopy of thin sections.

Stone disc by Richard O'Brien

A stone disc (E2479:2552:1) was retrieved from fill 2552 of slot 2501, Area G. This thick sandstone disc is sub-angular in shape and measures 68-72 mm in diameter, 20-27 mm thick and weighs 194 g. The upper face is uneven with red staining on the surface, and black staining along one edge: here the lower face is flat and slightly smoothed. The edges are fresh but those on the upper face are more worn.

The Ballywilliam stone disc represented the larger form of stone discs found on sites in Ireland, with examples known from megalithic contexts throughout Ireland, Scotland, Wales, England and Brittany (O'Kelly 1951, 3 & 82). Two Scottish excavations produced useful comparable stone discs to Irish sites; the promontory fort of Hurly Hawkin dated to the Iron Age / early Roman occupation (Taylor 1982, 244–50 & figure 9), and the multi–phased prehistoric / early historic hillfort of Traprain Law (Cree and Curle 1922, 235). The Hurly Hawkin discs were divided into four types based on disc manufacture: regular, similar but irregular, roughly flaked and roughly chipped. Generally the discs were considered as part of a manufacturing process / pot-lid (for the large thin discs), or even special or ritual associations (Taylor 1982, 235). On the site each type occurred from the same levels and same areas and, the reliance on function based solely on manufacture was considered too restrictive (O'Brien 1993, 165)

At Traprain Law the excavators noted great variety in size and shape in the stone discs: unfortunately no weights were given for the discs. The smaller weights were classed as games / draughts pieces while apart from pot–lid no other function was attributed to the larger discs, of which polished and rough examples were found (Cree and Curle 1922, 235 & figure 27 6, 231). A smaller stone disc assemblage was also found at Ty–isaf Long Cairn in south Wales although no function was attributed to these (Grimes 1939, 132–30).

The largest assemblage of stone discs in Ireland came from the excavations on Garryduff I ringfort, Co. Cork. Of 98 stone discs found there were 74 definitive unperforated discs (O'Kelly 1962, 67, 86 & 89). O'Kelly concluded all could not represent unfinished whorls and were unlikely to be sling–stones, while the smaller discs may have been gaming counters (O'Kelly 1962, 90 & 113). An assemblage of six stone discs was found at Cahercommaun stone fort in Co. Clare although only three were contexted (Hencken 1938). These could be divided into two categories based on weight and size: Type A discs weighed from 129.2–150.9 g, measured from 75–82 mm, and from 5-13 mm in thickness; Type B discs weighed from 61–89.5 g, measured from 64–72 mm, and from 4-12 mm in thickness (O'Brien 1993, 180, table 8). On the basis of this typology the Ballywilliam disc would roughly fall into the Type A disc category.

On a more local level two similar stone discs were found from Carrigatogher (Harding) Site 6 (E2286), located east of Ballywilliam. These sandstone discs came from the fills within the central enclosure ditch at Carrigatogher (Harding): disc E2286:163:1 was smaller, thinner and heavier than the Ballywilliam disc: disc E2286:1560:1 was slightly larger, much heavier, and was roughly equated in thickness to the Ballywilliam disc. These stone discs would also fit the Type A stone disc category from Cahercommaun and fit the criteria suggested for stone weights / rough–outs excavated on Garryduff I ringfort in Co. Cork (O'Brien 1993, 225, table 37).

Conclusion

The function of such anomalous discs is still debateable but the likeliest function for this heavy disc is as a stone weight. There is also the potential of it being a rough–out for whorls / net / line sinkers, although there is no trace of a perforation on either face.

Iron slag and related high temperature debris by Lynne Keys

A small assemblage weighing just over 8 kgs was examined by eye and quantified on the basis of morphology. All slag was recovered from Area F. The site produced evidence for at least one smelting operation and some limited smithing.

Each slag or other material type in each context was weighed except for smithing hearth bottoms and furnace slag lumps, which were individually weighed and measured for statistical purposes (Table 49). During quantification a magnet was run through soil adhering to slags and thus some hammerscale was detected. Quantification data and details are given in Table 49 in which weight (wt.) is shown in grams, and length (len.), breadth (br.) and depth (dp.) in millimetres.

Ditch 525

A furnace slag lump (E2479:586:4) and two smithing hearth bottoms concreted together (E2479:586:3) were found in the fill of a slot (406) cut through the enclosure terminus. The only other slag was a small piece of undiagnostic iron slag. Slot 803 (fill 987) contained only one fragment of slag, probably part of a smithing hearth bottom.

Pits 505 and 506

Both these pits contained limited evidence for smithing. Pit 505 (fill 554) had one smithing hearth bottom and some undiagnostic iron slag, while pit 506 (fill 556) contained a fragment of a smithing hearth bottom.

Furrow 545

The fill (662) of this feature contained a fragment of smithing hearth bottom.

Table 49: Quantification of slag

Find	Cut	Deposit	Group	Sample	Comment	Identification	Weight (g)	Len (mm)	Br (mm)	Dp (mm)	Slag comment	Pcs
E2479:554:1	505	554				undiagnostic	198					
E2479:554:1	505	554				smithing hearth bottom	169	70	50	40		
E2479:556:1	506	556				smithing hearth bottom	257	0	0	40	fragment	1
E2479:586:1	406	586	525		77.21E 100.05N	undiagnostic	32					1
E2479:586:3	406	586	525			smithing hearth bottom	1472	140	130	50	two examples fused together; dimensions of one underneath are 140 mm; 80 mm; 30 mm	1
E2479:586:4	406	586	525			furnace slag	5190	210	190	100	^18^	1
E2479:662:1	545	662			54.81E 76.30N	smithing hearth bottom	130	70	40	30	fragment	1
E2479:987:1	803	987	525		71.40E 64.10N	undiagnostic	552			70	probably part of smithing hearth bottom	1
E2479:1061:3	700	1061		614		iron-rich undiagnostic	2					1
E2479:1250:2	-	1250				vitrified hearth lining	10					
E2479:1250:2	-	1250				iron	48					

Metal finds by Milica Rajic (Figs 53-54)

A total of seventeen metal finds were recovered during the course of the excavation at Ballywilliam Site 1 (Table 50, Figs 53-54). All seventeen finds are ferrous and, with the exception of a single artefact, all were recovered from Area C/F. The remaining find (E2479:352:1) was retrieved during testing from Area B.

Within enclosure 525, palisade trench 1112 yielded an iron shaft fragment (E2479:1188:1). The fragment is roughly ovoid in cross section, flattened and tapering to one end from 8 mm to 5 mm. The item measures 28 mm in length and 5 mm in thickness.

Fifty pits of industrial, domestic and unknown function were recorded within the enclosure (525) and three yielded metal finds (201, 745 and 919).

Pit 201 yielded a nail (E2479:251:1) and a spoon bit (E2479:253:2). The nail (E2479:251:1) is characterised by a shaft that is rectangular in cross-section, tapering from 6.5 mm to 3 mm. The head does not survive and the fragment measures 33.5 mm in length and 4.5 mm in thickness. The spoon bit (E2479:253:2) measures 120 mm in length and consists of a C-sectioned spoon-shaped terminal and a handle. The spoon is ovoid in shape and is 40 mm long, 18 mm wide and 5 mm thick. The handle is rectangular in cross section and tapers towards the spoon-shaped terminal both in width and thickness from 14.5 mm to 10 mm and from 11 mm to 5 mm respectively. The spoon bit, a woodworking tool, "would have been set in transverse wooden handles, and used to drill holes in wood ... the larger bits were ideal for drilling pegholes in structural timbers, or in the preliminary stages of cutting a mortice, whiles the smaller ones may have been used for furniture, panelling, and drilling tools handles prior to the insertion of tangs" (Goodall 1981, 53). Similar finds were assigned to the 12th to the late 13th century in Waterford (Scully 1997a, 469), Grand Parade, Cork (Hurley 1990, 66-7) and Skiddy's Castle and Christ Church, Cork (Scully 1997b, 172-3).

The lowest fill (1174) of pit 745 yielded six iron objects: a possible buckle frame (E2479:1174:1), a possible buckle or brooch frame (E2479:1174:2), a knife blade and tang fragment (E2479:1174:4), a shaft fragment (E2479:1174:8) and two unidentified finds (E2479:1174:3, E2479:1174:5). The possible buckle frame (E24979:1174:1) is a small and plain oval, flattened in cross section. A fragment of a pin loop survives. The buckle frame measures 22 mm in length, 14 mm in width and 2 mm in thickness. It is believed that buckles came to Ireland through the contact with the Anglo-Saxons in the 7th century (Laing 1975, 333; Hencken 1950, 81). A small unstratified buckle (739) from Lagore represents an elongated version of a simple type common in Anglo-Saxon cemeteries of the 7th century (Hencken 1950, 79, 81) and may be said to resemble the Ballywilliam buckle frame, though its material and dimensions are unknown. Also, a similar example was recovered during the excavations at Skiddy's Castle and Christ Church in Cork (Scully 1997b, 173, 179) but was not assigned to a particular century as "the dating of these simple buckles on stylistic grounds is particularly difficult" (ibid, 179). The simple, iron buckle recovered at Ballywilliam most likely had a utilitarian function, either on an item of clothing, such as a belt or a shoe, or in harness (Goodall 1990, 526). The possible buckle or brooch frame (E2479:1174:2) has a form of an iron ring that is rectangular in cross-section and measures 32 mm in diameter. Remains of what appears to be a pin loop survive at the thickest part of the ring. No further details or decorations are visible on this heavily corroded object and its exact function and date are uncertain.

The knife blade and whittle tang fragment (E2479:1174:4) is 51 mm long, 14.5 mm wide and 2 mm thick. The blade is triangular in cross-section and appears to have a straight cutting edge. The back is slightly curved. According to Goodall's classification of the whittle-tanged knives, it appears to belong to Type E, i.e. curved blade back and variously shaped cutting edge, with the date range from the 10th to the 15th century. Similar examples were found in Waterford (Scully 1997a, 454-7). The shaft fragment (E2479:1174:8) is irregular in cross-section and measures 12.5 mm in length and approximately 2 mm in width. Its dimensions and condition do not allow any further identification. The first of the two unidentified finds (E2479:1174:3) is a smallish iron fragment irregular in cross-

section and bent at one end. The bend may suggest that the fragment originated either in a buckle or brooch frame. However, it is also possible that the fragment is a pin shaft. Its dimensions are 13.5 mm x 3 mm x 2.5 mm. The second unidentified find (E2479:1174:5) recovered from deposit 1174 is a flattened iron fragment of irregular shape. The item has a perforation bored at angle and its date and function are unknown; it is 31 mm long, 29 mm wide and 5 mm thick.

A heavily encrusted and corroded iron nail fragment (E2479:1267:1) was recovered from fill 1267 of pit 919. The shaft is rectangular in cross-section and tapers from 9.2 mm to 6 mm. The head does not survive and the fragment measures 30.5 mm in length. The nail is possibly post-medieval in date.

Deposits 756 and 475, fills of post-medieval furrows 444 and 504 produced three heavily encrusted and corroded nail fragments (E2479:756:3, E2479:756:5, E2479:475:1) while the fills (473 and 754) of post-medieval ditches 413 and 627 yielded a heavily encrusted and corroded nail fragment (E2479:473:2) and an unidentified object (E2479:754:1). This unidentified object is heavily encrusted and heavily corroded in parts. It is flat, slightly curved and irregular in shape. One edge appears slightly everted.

In addition to these finds, Area C/F also yielded a topsoil find – a heavily encrusted and corroded horseshoe fragment (E2479:1250:6). Neither perforations nor nails are visible. The fragment measures 56 mm in length, 14 mm in width and 12.5 mm in thickness. It is most likely modern in date.

As already mentioned, the only find recovered from Area B is a knife blade fragment (E2479:352:1). The 95 mm long and 16.5 mm wide blade is triangular in cross-section and has a straight, parallel back and cutting edge. Although the tip does not survive, the blade most likely belongs to the Type C of Goodall's classification. This type is recorded prior to the 10th century and is found in limited numbers in late medieval contexts (Hurly et al. 2002, 454).

Table 50: Metal finds

Find No.	Cut	Deposit	Area	Type	Identification	Description	Conserved
E2479:251:1	201	251	C	Ferrous	Nail fragment	Heavily corroded iron nail. Head missing. Shaft rectangular in cross-section and tapering to one end. Length: 33.50 mm; max width: 6.50 mm, min width: 3 mm; thickness: 4.50 mm; weight: 2g	Y
E2479:253:2	201	253	C	Ferrous	Spoon bit	Heavily corroded iron spoon bit. Handle rectangular in cross section and tapering towards the spoon-shaped terminal. Spoon is C-sectioned and ovoid in shape. Overall length: 120 mm. Spoon - length: 40 mm; width: 18 mm; thickness: 5.50 mm. Handle - length: 80 mm; max width: 14.50 mm, min width: 10 mm; max thickness: 11 mm, min thickness: 5 mm; weight: 111g	Y
E2479:352:1	N/A	352	B	Ferrous	Knife blade fragment	Heavily corroded knife blade fragment. Triangular in cross-section. Straight, parallel back and cutting edge. Length: 95 mm; width: 16.50 mm; max thickness: 6.80 mm, min thickness: 3 mm; weight: 64g	Y
E2479:473:2	413	473	F	Ferrous	Nail fragment	Heavily corroded iron nail fragment. Rectangular, flattened head. Shaft rectangular in cross-section. Length: 32.50 mm; width: 9.50 mm; thickness: 2.50 mm. Head dimensions - length: 13 mm, width: 8 mm; weight: 4g	N
E2479:475:1	504	475	F	Ferrous	Nail fragment	Heavily corroded iron nail fragment. Headless. Shaft rectangular in cross-section and tapering to one end. Length: 43.50 mm; max width: 12 mm, min width: 4 mm; thickness: 8 mm; weight: 12g	N
E2479:754:1	627	754	F	Ferrous	Unidentified	Heavily corroded unidentified iron fragment that is heavily encrusted in parts. The object is flat, slightly curved and irregular in shape. One edge seems slightly everted. Max length: 76 mm, max length: 30 mm; max width: 45 mm, min width: 25 mm; thickness: 8 mm; weight: 112g	N
E2479:756:3	444	756	F	Ferrous	Nail fragment?	Heavily encrusted and corroded possible iron nail fragment in two co-joining pieces. Overall length: 29.50 mm; weight: 1g	N
E2479:756:5	444	756	F	Ferrous	Nail fragment?	Heavily encrusted and corroded possible iron nail fragment. Overall length: 21 mm; weight: 7g	N
E2479:1174:1	745	1174	F	Ferrous	Buckle frame?	Heavily corroded possible iron buckle frame. Plain oval frame. Flattened in cross-section. Portion of pin loop survives. Length: 22 mm; width: 14 mm; thickness: 2 mm; weight: 3g	Y
E2479:1174:2	745	1174	F	Ferrous	Buckle/brooch frame?	Heavily corroded iron ring. Possibly a buckle/brooch frame. Rectangular in cross section. Remains of a pin loop present at the thickest portion of the object. Diameter: 32 mm; width: 4 mm; max thickness: 6 mm, min thickness: 2 mm; weight: 5g	Y
E2479:1174:3	745	1174	F	Ferrous	Unidentified	Heavily corroded unidentified iron fragment. Possibly either a pin fragment or a buckle/brooch frame fragment. One end is bent. Irregular in cross section. Length: 13.50 mm; width: 3 mm; thickness: 2.50 mm; weight: <1g	Y

Find No.	Cut	Deposit	Area	Type	Identification	Description	Conserved
E2479:1174:4	745	1174	C	Ferrous	Knife blade and tang fragment	Heavily corroded knife blade and whittle tang fragment. Blade triangular in cross section. Slightly curved back. Length: 51 mm; width: 14.50 mm; thickness: 2 mm; weight: 9g	Y
E2479:1174:5	745	1174	F	Ferrous	Unidentified	Heavily corroded iron fragment. Flattened and irregular in shape. Perforation bored at an angle at one end. Length: 31 mm; width: 29 mm; thickness: 5 mm; weight: 7g	Y
E2479:1174:8	745	1174	F	Ferrous	Shaft fragment?	Heavily corroded possible pin shaft fragment. Irregular in cross section. Length: 12.50 mm; width/thickness: approx. 2 mm; weight: <1g	Y
E2479:1188:1	845	1188	F	Ferrous	Shaft fragment?	Heavily corroded possible shaft fragment. Roughly ovoid in cross section, flattened and tapering to one end. Length: 28 mm; max width: 8 mm, min width: 5 mm; thickness: 5 mm; weight: 4g	Y
E2479:1250:6	-	1250	F	Ferrous	Horseshoe fragment?	Heavily encrusted and corroded possible iron horseshoe fragment. Split thickness-wise. No perforations or nails remnants visible. Length: 56 mm; width: 14 mm; thickness: 12.50 mm; weight: 21g	N
E2479:1267:1	919	1267	F	Ferrous	Nail fragment	Heavily encrusted and corroded iron nail fragment. Head missing. Shaft rectangular in cross-section and tapering to one end. Length: 30.50 mm; max width: 9.20 mm, min width: 6 mm; thickness: 6.50 mm; weight: 1g	N

Table 51: Clay tobacco pipe catalogue

Find No.	Cut	Deposit	Identification	Dimensions (mm)							Pcs	Wgt (g)	Comment
				L	H	Cross-sec	Bore	Bowl		Spur			
								Th	Diam	L			
E2479:473:1	413	473	Bowl fragment		24			3			1	2	
E2479:753:1	625	753	Stem fragment	42		12 x 11	3				1	6	
E2479:756:1	444	756	Stem fragment	38		9 x 7	3				1	2	
E2479:756:2	444	756	Stem fragment	27		10 x 8	2				1	2	
E2479:887:1	725	887	Complete clay tobacco pipe	90	40		2	4	18		1	46	Stamped bowl and stem
E2479:887:2	725	887	Bowl with stem fragment	59	40	11	2	4	20		1	34	Stamped bowl
E2479:1250:1		1250	Bowl with stem fragment	110	10	11	2	5	18		2	45	Stamped bowl and stem

Clay tobacco pipe by Edel Ruttle (Fig. 55)

Nine pieces of clay tobacco pipe, representing seven finds, were examined (Table 51, Fig. 55). The material was collected by hand from five separate post-medieval contexts in Area F.

Find E2479:887:1 is a complete short clay tobacco pipe (albeit broken in two) with a 'BEN NEVIS CUTTY' stamp on the rear of the bowl. The stem is stamped with 'WEXFORD' on the right and 'W. MURPHY' on the left. The stem tip is also pinched in. Find E2479:1250:1 is an almost complete pipe, the tip is broken off, that is longer than E2479:887:1. The stem is also stamped with Wexford and W. Murphy indicating the two pipes were from the same manufacturer. The stamp on the rear of the bowl however differs stating 'WEXFORD CUTTY'. Find E2479:887:2 is a complete bowl with stem section; however the stamp on the bowl is illegible. One of the finds was a bowl fragment which, along with three stem fragments, had no diagnostic features.

At least two of the finds were manufactured in Wexford, one advertising Ben Nevis tobacco and the other Wexford tobacco. It is very likely that a third find, E2479:887:2, is also from the same manufacturer based on the size of the pipe. The pipes have the characteristics of the '*duidin*' Irish style pipe, short and stubby manufactured in the 19th century. It would be acceptable to think that a clay pipe making industry would have been established in Wexford in the 19th century as is evident in other towns such as Limerick, Cork and Waterford (Norton and Lane 2007, 441). Throughout Ireland the industry as a whole would have ceased by the early 20th century.

Post-medieval pottery by Edel Ruttle

A single sherd was analysed. The material was collected by hand from topsoil in Area F (1250).

Methodology

The sherd was identified visually and the results entered in a database detailing the *licence*, *context* and *finds* number; the *identification* of the fabric type; the diagnostic *description* i.e. rim, handle etc.; the *link* of certain sherds within and with other contexts and a *date.* The database is easily searchable for particular types of pottery, vessels parts etc.

Discussion

The single find is a creamware rim sherd (E2479:1250:5). This ware was made in factories in the United Kingdom, mainly in Staffordshire, from the late 18th century and was developed by Josiah Wedgwood to compete with porcelain. This mass produced tableware replaced tin glazed earthernware as the everyday tableware (Savage and Newman 1985, 88). Its proliferation in the archaeological record indicates that it was easily obtainable and inexpensive (Meenan 2007, 399-400).

Samples

Wood species identification by Susan Lyons

An on-site sampling strategy was implemented and wood samples from a possible trough feature in Area D were sampled for wood identification. A total of thee wood samples (32, 33 and 34) were identified. The wood identification analysis was carried out at the TVAS Ireland Ltd post-excavation facility located at Ahish, Ballinruan, Co. Clare.

Methodology

Wood species identifications were undertaken in accordance with Section 25 of the National

Monuments Act 1930, as amended by Section 20 of the National Monuments Amendment Act 1994, to alter an archaeological object.

A portion of each wooden element was cut to reveal an unexposed surface. Exposing a fresh surface would rid the wood of any degradation or possible fungal attack which may hinder species identification. Thin slivers were cut with a razor blade to obtain the three sectional planes (transverse, radial and tangential sections) necessary for microscopic wood identification. The thin sections were mounted onto a glass slide with a temporary water medium and sealed with a cover slip. Identifications were conducted under a transcident light microscope at magnifications of 40x to 400x where applicable. Wood species identifications were made using wood keys devised by Franklin and Brazier (1961), Schweingruber (1978) and the International Association of Wood Anatomists (IAWA) wood identification manuals by Wheeler, Bass and Gasson (1989).

Results

All three wood samples from Ballywilliam 1 Area D were identified as oak (*Quercus* sp.) (Table 53). Oak is a tall deciduous woodland tree, often growing in association with hazel and ash. Most oak species prefer damp non-calcareous soils on lowland or montane sites at altitudes up to 4,000 m (Gale and Cutler 2000). It is a tall deciduous woodland tree, often growing in association with hazel and ash. Oaks can reach a height of 40 metres and live for 1,000 years or more (Hickie 2002, 60). Of the 27 European species, pedunculate oak (*Quercus robur)* and sessile oak (*Quercus petraea)* are native to Ireland. Pedunculate oak is common on heavy clay and lowland soils whereas sessile oak thrives on the lighter loams characteristic of higher ground (Gale and Cutler 2000). The two native Irish oaks are usually distinguished by their acorns: the sessile oak has acorns with no stalks, while the pedunculate oak has acorns with long stalks (peduncles).

Table 53: Wood species results

Area	Deposit	Sample number	Description	Interpretation	Wood Species
D	75	32	Wood piece	Possible trough lining	*Quercus* sp. (oak)
D	75	33	Wood piece	Possible trough lining	*Quercus* sp. (oak)
D	75	34	Wood piece	Possible trough lining	*Quercus* sp. (oak)

The wood is easy to cleave both radially and tangentially and has provided one of the most important building materials since the prehistoric period (Gale and Cutler 2000). The heartwood timber is renowned for its durability but the paler sapwood is susceptible to beetle and fungal attack. The strength of the timber depends on the species and is influenced by climatic and edaphic factors (Edlin 1951). When burnt, oak charcoal, particularly the dense heartwood, has higher calorific values than most European woods and this can make for good long-lasting fuel (Gale and Cutler 2000).

Discussion

The wood species identified from what were interpreted as the remains of a trough lining associated with a *fulacht fia*, were identified as oak. Wood was a very important natural resource to prehistoric communities, who used this material for many indoor and outdoor purposes. Large timbers were used in the construction of houses, fencing, boats and wooden trackways and therefore were usually sourced close to the site to avoid problems with transportation and preparation of the material. Wood species would have been specifically chosen based on its quality of use, durability, strength and flexibility. The main wood of choice for such construction would have been oak.

Oak is also a common species used in the lining of a *fulacht fia* trough since it is resilient in waterlogged environments. Similar examples of oak lined troughs from *fulachtaí fia* have also been recorded from the Late Bronze Age sites at Cahiracon, Co. Clare (Dennehy 2007, 188-189), Persse Park, Co. Galway (O'Donnell 2007, 40), Derryfada 216 (Murray and O'Neill 2005, 243) and Killoran

240 (O'Neill 2005, 268) both in Co. Tipperary along with a trough recorded at nearby Annaholty Site 1 (E3326) (Lyons 2008) to name but a few.

Charred plant remains by Rosalind McKenna

Summary

Plant and charcoal remains have been examined from a series of sub-samples of occupation deposits from excavations at Ballywilliam Site 1 in 2006 and 2007. There were some rich assemblages of plants with evidence for a modest range of taxa likely to have been useful to the inhabitants of the site, including barley, wheat, oat, spelt and hazelnut. Charcoal was present in the majority of the samples, together with concentrations of hazel nutshell. The charcoal remains showed the exploitation of mainly oak and hazel woodland, with a little use of scrub. Overall, the samples represent the waste of domestic build-up and the resultant fires in order to dispose of this.

A programme of soil sampling was implemented during the excavation, which included the collection of soil samples from sealed contexts, ranging from 0.25L to 15L in size. The aim of the sampling was:

- To assess the type of preservation and the potential of the biological remains
- To record any human activities undertaken on the site – both domestic and industrial
- To provide information on the past environment of the area.

Methods

Following selection, subsamples of raw sediment from the selected samples were processed. The samples were examined in the laboratory, where they were described using a pro forma. The subsamples were processed by staff at TVAS Ireland using their standard water flotation methods. The flot (the sum of the material from each sample that floats) was sieved to 0.3 mm and air dried. As very little material floated, the heavy residue (the material which does not float) was washed through the same mesh, dried and additional charcoal or charred material was retrieved. The material was examined under a low-power binocular microscope at magnifications between x12 and x40. A four point semi quantitative scale was used, from '1' – one or a few specimens (less than an estimated six per kg of raw sediment) to '4' – abundant remains (many specimens per kg or a major component of the matrix). Data were recorded on paper and subsequently on a personal computer using a Microsoft Access database.

The flot was then sieved into convenient fractions (4, 2, 1 and 0.3 mm) for sorting and identification of charcoal fragments. Identifiable material was only present within the 4 and 2 mm fractions. A random selection of ideally 100 fragments of charcoal of varying sizes was made, which these were then identified. Where samples did not contain 100 identifiable fragments, all fragments were studied and recorded. This information is recorded with the results of the assessment in Tables 55-60 below. Identification was made using the wood identification guides of Schweingruber (1978) and Hather (2000). Taxa identified only to genus cannot be identified more closely due to a lack of defining characteristics in charcoal material.

Results

Charred plant macrofossils were present in 61 of the samples but were generally poorly preserved, and were lacking in most identifying morphological characteristics. The results of this analysis can be seen in Tables 54 below. The samples generally produced small assemblages of plant remains both in volume and diversity. The most commonly recorded macrofossil was indeterminate cereal, and 31 samples contained small numbers of charred cereal grains, many of which lacked identifying morphological characteristics. Where it was possible to ascertain identifications, oats, wheat and barley were all represented. This shows that the whole suite of cereal grains that could have been

utilised by the inhabitants of the area was indeed being used. Ten of the samples contained slightly larger assemblages of plant macrofossils, and again show the utilisation of all the available cereal grains, with barley being the most common remain. Oat was also recorded as the dominant species in several samples showing its important utilisation as a crop. Wheat dominated only a single sample. Hazelnut shell fragments were also present in small numbers in 29 samples.

Root / rootlet fragments were also present within 28 of the samples. This indicates disturbance of the archaeological features, and this may be due to the nature of some features being relatively close to the surface, as well as deep root action from vegetation that covered the site. This is further confirmed by the presence of earthworm egg capsules in three samples and insect fragments in four samples. An additional sample – 364 (ditch slot 832) contained thousands of goosefoot/orache seeds that were a modern contaminant, further indicating some disturbance of the archaeological features.

Charcoal fragments were present in one 241 of the samples, and mainly scored a '4' on the semi quantitative scale. Area A produced two samples, Area C produced four samples, Area D produced 24 samples, Area E produced ten samples, Area F produced 187 samples, Area G produced a single sample, Area H produced twelve samples and Area J also produced a single sample. The preservation of the charcoal fragments was relatively variable even within the samples. Some of the charcoal was firm and crisp and allowed for clean breaks to the material permitting clean surfaces where identifiable characteristics were visible. However, most of the fragments were very brittle, and the material tended to crumble or break in uneven patterns making the identifying characteristics harder to distinguish and interpret. Tables 55-60 below show the results of the charcoal assessment.

The total range of taxa comprises oak (Quercus), alder (Alnus), hazel (Corylus), ash (Fraxinus), hawthorn/apple/Sorbus-group (Pomoideae), elm (Ulmus) and Salix / Poplar (Salix / Populus). These taxa belong to the groups of species represented in the native Irish flora. A local environment with a relatively wide range of trees and shrubs is indicated from the charcoal of the site. As seen in Tables 55-60, oak, alder and hazel are by far the most numerous of the identified charcoal fragments, and it is possible that these were the preferred fuel woods obtained from a local environment containing a broader choice of species. With ash present in the environment, it is perhaps worth noting that oak is considerably more represented in the samples. Oak is probably the first choice structural timber, and with a local abundance it may have been used instead of ash, thereby providing more by-product fire fuel.

Generally, there are various, largely unquantifiable, factors that effect the representation of species in charcoal samples including bias in contemporary collection, inclusive of social and economic factors, and various factors of taphonomy and conservation (Théry-Parisot 2002). On account of these considerations, the identified taxa are not considered to be proportionately representative of the availability of wood resources in the environment in a definitive sense, and are possibly reflective of particular choice of fire making fuel from these resources. Bark was also present on some of the charcoal fragments, and this indicates that the material is more likely to have been firewood, or the result of a natural fire.

Areas A and H

These two areas overlapped and are discussed together. Area A produced two samples. One came from a stakehole and contained only oak, and one originated from a pit and was dominated by salix / poplar but also contained oak. Area H produced twelve samples from a range of deposits. Four samples originated from postholes, one of which contained only indeterminate remains and one which was mainly indeterminate with a few oak fragments. The other two samples were purely oak charcoal. Six samples came from deposits associated with pits, two of which contained only indeterminate remains. Three contained only oak charcoal and one was dominated by oak. A stakehole produced a single sample that contained only hazel charcoal. A single sample was also produced by a cremation burial and contained only oak charcoal.

Area D

Area D produced 24 samples, from a range of deposits. Troughs produced six samples, three of which were dominated by oak and three by hazel. Alder and ash were also recorded. Six samples originated in burnt stone deposits, three of which contained only unidentifiable material. One sample contained purely hazel, one sample was dominated by ash with hazel, and one samples was dominated by oak with hazel, alder and ash also recorded. Two samples were from pits – one contained purely ash and one was dominated by hazel with oak also present. Stakeholes produced seven samples, six of which contained only indeterminate remains, and one of which contained a mixture of hazel, ash and oak with a little Pomoideae. A linear feature produced two samples which were dominated by hazel with salix / poplar and ash also being recorded. A single sample originated from a peaty deposit, and contained purely ash.

Area E

Area E produced ten samples, eight of which originated from burnt stone deposits. Two of these samples contained only indeterminate material, one contained purely oak, one contained purely ash, two were dominated by hazel with oak also recorded and two were dominated by oak with hazel also present. Two samples originated from pits, with one containing only indeterminate material, another being dominated by oak with salix / poplar and hazel also present.

Area C and F

Area C produced four samples, two samples originated in pits and contained purely oak, one sample from a possibly modern hedgeline was mainly indeterminate but also contained some oak and a deposit from a linear feature produced a sample dominated by oak but also containing ash and hazel.

Area F, the largest area, produced 187 samples, from a range of different deposits. Thirty two samples originated in posthole fills, with five containing only indeterminate remains, and two being dominated by indeterminate remains. Fifteen contained purely oak, three contained purely hazel and one contained purely elm. Five samples were dominated by oak, with alder, hazel and salix / poplar also being recorded. A further sample was dominated by hazel.

Eighty five samples came from pits, five of which were purely indeterminate and six of which were dominated by indeterminate remains. Thirty two samples contained purely ash, nineteen samples contained purely hazel, three were purely salix / poplar, one contained purely elm, one purely oak and two purely ash. Eight were dominated by oak, three by hazel, three by salix / poplar and two by ash.

A single sample originated in a furrow and contained only indeterminate material. Stakeholes produced five samples, three were purely oak, one purely hazel and one dominated by hazel. Three samples originated in hearth deposits, one of which was indeterminate. One contained purely oak and one was dominated by hazel with oak also being present. Seven samples were from deposits associated with kiln features, two of which contained only indeterminate remains. Two samples contained purely oak and one purely salix / poplar. The other two samples were mainly indeterminate but with oak and salix / poplar also recorded. A single sample originated in a roothole and contained only oak charcoal. Sample from three gullies contained charcoal – one of which was purely hazel, one purely oak and one mainly oak with hazel also present.

Ditch 409 produced a single sample which contained only oak charcoal. Enclosure ditch 525 produced 24 samples, five of which contained only indeterminate remains, and three of which were dominated by indeterminate remains. Nine samples contained only oak, one only alder and two only salix / poplar. One sample was dominated by oak, one by alder and one contained an even amount of oak and salix / poplar charcoal. Palisade gully 705 produced a single sample which was dominated by ash with hazel charcoal also recorded.

Palisade gully 630 produced five samples, one of which contained only indeterminate remains. Two samples contained only hazel charcoal and one only oak charcoal. A further sample contained an even mixture of oak and salix / poplar. Palisade gully 640 produced a single sample containing only hazel.

Ditch 810 produced two samples, one of which contained only indeterminate remains. The other was mainly indeterminate charcoal, with oak and salix / poplar also being recorded. Ditch 940 produced a single sample which contained only oak charcoal.

Roundhouse 1003 produced ten samples, four of which were from postholes and contained only oak charcoal. A single sample came from a stakehole and contained only ash charcoal. Five samples originated in ring gully slots, four of which were dominated by oak and one by hazel.

Roundhouse 1105 produced three samples, two from postholes and one from a ring gully slot, all of which contained only oak charcoal. Gully 1112 produced two samples, one which contained only indeterminate remains, and on which was dominated by indeterminate remains with a few pieces of oak charcoal also recorded.

Area G

Area G produced a single sample from a ditch slot which contained only hazel charcoal.

Area J

Area J also produced a single sample from a spread which contained only oak charcoal.

Conclusion

The samples produced little environmental material of interpretable value, with the exception of the charcoal remains from 241 samples, and the plant macrofossils from 61 samples. The deposits from which the samples derive probably represent the domestic waste associated with fires.

The charcoal remains showed the exploitation of several species native to Ireland, with the prevalence of oak and hazel being selected and used as fire wood. Oak has good burning properties and would have made a fire suitable for most purposes (Edlin 1949). Oak is a particularly useful fire fuel as well as being a commonly used structural/artefactual wood that may have had subsequent use as a fire fuel (Rossen and Olsen 1985). Alder was also well represented in the samples. This wood burns quickly when used for firewood, but has been found suitable for charcoal production. This may indicate some small scale charcoal production, but given that it is not the most abundant taxa, may merely represent a selection of available firewood. Elm, salix / poplar and Pomoideae were also represented in many samples in small amounts.

The archaeobotanical evidence found in the samples shows the consistent predominance of barley. The samples associated with kiln 622 were dominated by oat, thus showing that oat was also a grain which was utilised in its own right as a crop. Oats and wheat were also present in low numbers in a number of samples, possibly indicating a more diverse exploitation of cereals. Only ten of the samples produced high concentration of remains.

Chaff was only present in four of the samples. Only 21 samples contained weed seeds, which were very sparse. The lack of weed seeds and chaff suggests that the cereal grain represented crops that had been threshed, cleaned and accidentally burnt. One possible explanation for the majority of the samples is that cereal processing waste containing some grain was used as kindling in fires. The oxidising conditions of these fires would then have resulted in the flimsy items of chaff and small weed seeds being entirely burnt away leaving the grain to become carbonised. The samples originating from the kiln feature produced no chaff, which shows that the samples were thoroughly removed from chaff – possibly indicating very high temperatures during the parching process. Another explanation

may be that the remains from the cereal was material that was over parched thus destroying all chaff fragments and leaving only the grains remaining – oat predominated with a small amount of charcoal.

The hazelnut shell fragments present in 29 of the samples were possibly the result of nuts being harvested from the oak/hazel woodland and their husks being added to fires as a method of waste deposition and added fuel.

Overall, the samples represent the waste of domestic build-up and the resultant fires in order to dispose of this. Numerous sites from this road scheme have produced similar material. It is thought to be problematic using charcoal and plant macrofossil records from archaeological sites, as they do not accurately reflect the surrounding environment. Wood was gathered before burning or was used for building which introduces an element of bias. Plant remains were also gathered foods, and were generally only burnt by accident. Despite this, plant and charcoal remains can provide good information about the landscapes surrounding the sites presuming that people did not travel too far to gather food and fuel.

The even distribution of oak charcoal throughout the sites on the scheme indicates that oak woodlands, probably with a major hazel component, grew along the route. The variety of other trees identified indicates that there were also mosaics of other woodlands habitats along the road scheme. There is a small amount of evidence for wetland taxa in the remains of alder, which was also found in the Gas Pipeline to the West (O'Donnell 2007) and along the N8 Cashel to Mitchelstown road scheme (McQuade et al. 2009).

Agricultural crops also provided a high portion of the charred material recovered from the sites, and were likely to have been the most important taxa utilised in these sites through time. The plant macrofossil results all show a utilisation of the major cereal crops available – wheat, barley, oats, spelt, and, in samples of a later date, also rye. The vast majority of cereal grains recovered were indeterminate specimens too damaged by carbonisation or taphonomic processes to identify further. Within the identified cereals, barley (*Hordeum* spp.) and oats (*Avena* spp.) were the prominent crops recovered. Most oat grains were not identifiable to species as they lacked the distinctive lemna bases necessary for positive species identification, and so could have been wild or cultivated. The remains found along the scheme are similar in composition to those found at sites from other road schemes in Ireland. Most other schemes record barley as being the dominant grain in assemblages, whereas the majority of the sites along this scheme that produced plant macrofossils, record the dominant species as wheat. This may merely be down to depositional and taphonomic processes whereby barley grains were less well preserved and have been recorded as indeterminate cereals. Unfortunately the small amount of cereal chaff was badly preserved and was unidentifiable to species level.

The environmental work from this site, along with the others from the road scheme, provides an important insight into the wood and plants gathered for consumption along the route. It is likely that when the results from all sites that were excavated along the route by the various different contractors are combined, a more meaningful and complete overview of charcoal and plant remains in this part of Ireland can be gained.

Recommendations

The samples have been assessed, and any interpretable data has been retrieved. No further work is required on any of the samples. Any material recovered by further excavations should be processed to 0.3 mm in accordance with standardised processing methods such as Kenward et al. (1980), and the English Heritage guidelines for Environmental Archaeology (2002).

Archive

All extracted fossils and flots are currently stored with the site archive in the stores at TVAS Ireland, along with a paper and electronic record pertaining to the work described here.

Table 54: Complete list of charred plant macrofossils taxa from Area F

	Cut	426	427	429	435	626	631	638	639	701	849	1005	1021	1025	1042
	Deposit	455	456	458	466	697	763	778	779	797	1159	1382	1457	1462	1484
	Sample No.	404	405	407	417	500	506	526	527	533	655	765	770	773	793
	Group No.	1105		1105								1003	1003	1003	1003
	Feature type	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole	P/hole
Corylus avellana L.	Hazel	5	5	1	6		6	2		1					
Fallopia convovulus (L.) A. Love	Black bindweed													1	
Rumex spp.	Dock											1			
Chenopodium spp / *Atriplex* spp.	Goosefoot/Orache									2				1	
BRASSICACEAE	Cabbage family	1									1	3			
Prunus spp.	Cherries	1													
FABACEAE	Pea family	1													
Carex	Sedge						1								
Avena sativa L.	Oat	4		5										2	3
Hordeum spp.	Barley	9		3		9	2		1		12	547	22	539	124
Triticum spp.	Wheat			2										11	
Indeterminate cereal		15		11			2			3	8	53	16	195	212
Unidentified		3			1										

Table 54 continued: Complete list of charred plant macrofossils taxa from Area F

	Cut	430	431	434	437	445	505	506	509	514	621	643	700	700	700	706	709	709	709
	Deposit	459	462	464	472	479	554	556	493	563	696	852	885	1060	1074	1055	861	1371	861/1371
	Sample No.	410	411	414	435	433	445	446	450	460	496	744	677	613	633	745	735	736	738
	Feature type	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit
Corylus avellana L.	Hazel	11	6			24		1		1			6	1	2	2	5	7	21
Rumex spp.	Dock						2												
Chenopodium spp / *Atriplex* spp.	Goosefoot/Orache						5		1										
Carex	Sedge		2		2				7										
Avena sativa L.	Oat		9				1		1		18	1			1				
Hordeum spp.	Barley		1																

Triticum spelta	Spelt		17		10				16										
Indeterminate cereal		2		3															
Indeterminate chaff fgts.							1												

Table 54 continued: Complete list of charred plant macrofossils taxa from Area F

	Cut	805	805	805	805	806	820	919	928	945	1001	1001	1001	1014	1016	1040
	Deposit	1155	1352	1353	1354	996	1064	1267	1285	1369	1375	1376	1379	1397	1450	1481
	Sample No.	651	724	725	726	628	618	705	715	734	714	739	742	759	767	787
	Feature type	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit	Pit
Corylus avellana L.	Hazel						2		1	3	41	1	2	5		
Rumex spp.	Dock	7														
Chenopodium spp / *Atriplex* spp.	Goosefoot/Orache	3						1								
BRASSICACEAE	Cabbage family	8		3	4						2					
Prunus spp.	Cherries	2														
Raphanus raphanistrum L.	Wild raddish						2									
Vicia faba	Broad bean				4											
Pisum sativum	Garden pea	1			3											
FABACEAE	Pea family	2														
Lapsana communis L.	Nipplewort				1											
Chrysanthemum segetum	Corn marigold	1		1	5											
Scirpus spp.	Wood club rush				1											
Carex	Sedge				18											
POACEAE	Grass Family			2												
Avena sativa L.	Oat	141	3	8	178		2	22								
Hordeum spp.	Barley	34	19	1	65	8		7			1		1		1	2
Triticum spp.	Wheat	503	3	16	128						3					
Indeterminate cereal		462	8	27	206	4		14			2					1
Indeterminate rachis internodes		2			1											
Indeterminate spikelet forks		44			11											
Indeterminate culm nodes		4		1	15											
Unidentified											1					

Table 54 continued: Complete list of charred plant macrofossils taxa from Area F

	Cut	622	622	622	622	622	622	742	945	1026	1018	1019	1022	1028	
	Deposit	973	975	978	979	980	983	993	1364	1466	1453	1454	1458	1468	1250
	Sample No.	590	592	595	596	597	600	612	733	774	777	778	779	776	798
	Group No.										1003	1003	1003	1003	
	Feature type	Kiln	Kiln	Kiln	Kiln	Kiln	Kiln	Hearth	S/hole	S/hole	RGS	RGS	RGS	RGS	Topsoil
Ranunculus subg. RANUNCULUS	Buttercups				2	3						1			
Corylus avellana L.	Hazel	1							1						14
Polygonum spp.	Knotgrass				1										
Rumex spp.	Dock			2									1		
Chenopodium spp / *Atriplex* spp.	Goosefoot/Orache	4		5		3					2	2	2		
BRASSICACEAE	Cabbage family	1		1		3								1	
Prunus spp.	Cherries			3	5	12									
Lapsana communis L.	Nipplewort	7		45	15	19									
Chrysanthemum segetum	Corn marigold				7	11									
Carex	Sedge			72	4	108									
POACEAE	Grass Family	38	1	94	14	19						1			
Avena sativa L.	Oat	10			4		1						6		
Hordeum spp.	Barley	41		31	5	10		14		2	60	136	712	6	
Triticum spp.	Wheat												17		
Indeterminate cereal											27	84	266	1	

Table 55: Charcoal - complete list of taxa recovered from Area A-H. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Areas A & H – Postholes				
Taxa	**Sample 1603 (2654) [2602]** 100+ fgts. max. size-12mm	**Sample 1610 (2655) [2603]** 12 fgts. max. size-10mm	**Sample 1604 (2657) [2605]** 19 fgts. max. size-9mm	**Sample 1606 (2658) [2606]** 50+ fgts. max. size-10mm
Oak	100	12	4	
Indet.			15	50

Areas A & H – Pits							
Taxa	**Sample 2 (52) [2]** 109 fgts. max. size-17mm	**Sample 1602 (2651) [2600]** 17 fgts. max. size-26mm	**Sample 1609 (2667) [2610]** 5 fgts. max. size-2mm	**Sample 1620 (2678) [2619]** 50+ fgts. max. size-19mm	**Sample 1621 (2679) [2619]** 39 fgts. max. size-7mm	**Sample 1628 (2685) [2623]** 21 fgts. max. size-10mm	**Sample 1630 (2687) [2623]** 100+ fgts. max. size-13mm
Oak	17			50	39	13	100
Salix / Poplar	83						
Indet.		17	5			8	

Areas A & H – Stakeholes		
Taxa	**Sample 1 (51) [1]** 22 fgts. max. size-4mm	**Sample 1627 (2683) [2621]** 25 fgts. max. size-13mm
Hazel		25
Oak	22	

Areas A & H – Cremation pit	
Taxa	**Sample 1611 (2663) [2608]** 96 fgts. max. size-11mm
Oak	96

Table 56: Charcoal - complete list of taxa recovered from Area D. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Area D - Troughs						
Taxa	**Sample 8** **(57) [6]** 42 fgts. max. size-12mm	**Sample 5** **(58) [6]** 17 fgts. max. size-11mm	**Sample 6** **(58) [6]** 50+ fgts. max. size-9mm	**Sample 11** **(58) [6]** 17 fgts. max. size-4mm	**Sample 13** **(58)[6]** 200+ fgts. max. size-18mm	**Sample 14** **(58) [6]** 38 fgts. max. size-14mm
Alder		3		5		
Hazel	7	5	9	8	26	33
Ash	3					5
Oak	25	9		4	74	
Indet.	7		41			

Area D – Burnt stone						
Taxa	**Sample 12** **(63)** 35 fgts. max. size-8mm	**Sample 15** **(63)** 200+ fgts. max. size-15mm	**Sample 7** **(80)** 5 fgts. max. size-10mm	**Sample 9** **(80)** 21 fgts. max. size-7mm	**Sample 10** **(80)** 13 fgts. max. size-6mm	**Sample 18** **(80)** 8 fgts. max. size-5mm
Alder		12				
Hazel	35	26		6		
Ash		8		11		
Oak		54				
Indet.			5	4	13	8

Area D – Pits		
Taxa	**Sample 17** **(68) [10]** 65 fgts. max. size-21mm	**Sample 30** **(181) [23]** 32 fgts. max. size-9mm
Hazel	46	
Ash		32
Oak	11	
Indet.	8	

Area D – Stakeholes							
Taxa	**Sample 19 (83) [13]** 5 wood fgts.	**Sample 20 (84) [14]** 100+ fgts. max. size-12mm	**Sample 24 (85) [15]** 16 wood fgts	**Sample 23 (86) [16]** 54 fgts. max. size-16mm	**Sample 25 (87) [17]** 20 wood fgts.	**Sample 22 (88) [18]** 18 wood fgts.	**Sample 27 (90) [20]** 19 wood fgts.
Hazel		32					
Ash		31					
Oak		29					
Pomoideae		8					
Indet.	5		16	54	20	18	19

Area D – Linear feature		
Taxa	**Sample 28 (76) [22]** 200+ fgts. max. size-27mm	**Sample 29 (76) [22]** 100+ fgts. max. size-14mm
Hazel	63	51
Ash	9	18
Salix / Poplar	28	22
Pomoideae		9

Area D – Peaty deposit	
Taxa	**Sample 21 (75)** 22 fgts. max. size-4mm
Ash	22

Table 57: Charcoal - complete list of taxa recovered from Area E. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Area E – Burnt stone & pits							
Taxa	**Sample 100 (150)** 29 fgts. max. size-14mm	**Sample 102 (150)** 15 fgts. max. size-18mm	**Sample 105 (150) [102]** 49 fgts. max. size-15mm	**Sample 112 (150)** 36 fgts. max. size-15mm	**Sample 113 (150)** 100+ fgts. max. size-19mm	**Sample 114 (151)** 7 fgts. max. size-9mm	**Sample 106 (153)** 80 fgts. max. size-20mm
Hazel			21	3	16	6	
Ash							80
Oak	29		7	22	33	1	
Indet.		15	21	11	51		
Taxa	**Sample 103 (154) [101]** 97 fgts. max. size-14mm	**Sample 108 (158) [104]** 41 fgts. max. size-14mm	**Sample 111 (156)** 9 fgts. max. size-2mm				
Hazel	6						
Oak	41						
Salix / Poplar	22						
Indet.	28	41	9				

Table 58: Charcoal - complete list of taxa recovered from Areas C & F. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Areas C & F – Postholes							
Taxa	**Sample 400 (450) [400]** 25 fgts. max. size-4mm	**Sample 401 (451) [401]** 77 fgts. max. size-10mm	**Sample 402 (453) [402]** 2 fgts. max. size-3mm	**Sample 405 (456) [427]** 85 fgts. max. size-17mm	**Sample 415 (460) [433]** 15 fgts. max. size-9mm	**Sample 417 (466) [435]** 45 fgts. max. size-13mm	**Sample 434 (471) [436]** 57 fgts. max. size-12mm
Alder				24			
Hazel					15		
Oak	25	69		61		81	21
Salix / Poplar						19	
Indet.		8	2				36
Taxa	**Sample 428 (491) [501]** 45 fgts. max. size-13mm	**Sample 429 (492) [502]** 65 fgts. max. size-8mm	**Sample 458 (571) [517]** 61 fgts. max. size-13mm	**Sample 456 (573) [519]** 37 fgts. max. size-12mm	**Sample 470 (652) [539]** 100+ fgts. max. size-19mm	**Sample 475 (659) [542]** 17 fgts. max. size-9mm	**Sample 476 (660) [543]** 24 fgts. max. size-10mm
Hazel	45					3	
Oak		65	61	37	100	14	24
Taxa	**Sample 479 (669) [600]** 41 fgts. max. size-11mm	**Sample 485 (677) [607]** 50+ fgts. max. size-12mm	**Sample 500 (697) [626]** 60 fgts. max. size-6mm	**Sample 506 (763) [631]** 1000+ fgts. max. size-25mm	**Sample 511 (771) [634]** 47 fgts. max. size-34mm	**Sample 526 (778) [638]** 53 fgts. max. size-9mm	**Sample 527 (779) [639]** 30 fgts. max. size-10mm
Oak	41	50		100		53	26
Elm					47		
Salix / Poplar							4
Indet.			60				
Taxa	**Sample 522 (776) [644]** 22 fgts. max. size-11mm	**Sample 533 (797) [701]** 56 fgts. max. size-6mm	**Sample 572 (950) [733]** 9 fgts. max. size-9mm	**Sample 573 (951) [734]** 34 fgts. max. size-10mm	**Sample 630 (1070) [829]** 7 fgts. max. size-5mm	**Sample 636 (1085) [835]** 100+ fgts. max. size-22mm	**Sample 637 (1085) [835]** 100+ fgts. max. size-17mm
Hazel			2				
Oak		56	7	34	7		
Indet.	22					100	100

Taxa	**Sample 679 (1085) [835]** 100+ fgts. max. size-9mm	**Sample 638 (1086) [836]** 4 fgts. max. size-7mm	**Sample 655 (1159) [849]** 100+ fgts. max. size-12mm	**Sample 749 (1367) [1004]** 50+ fgts. max. size-10mm	**Sample 764 (1452) [1017]** 100+ fgts. max. size-14mm	**Sample 782 (1475) [1034]** 43 fgts. max. size-8mm	
Hazel							
Oak	100	2	100	50	62	43	
Indet.		2			38		

Areas C & F – Pits							
Taxa	**Sample 201 (251) [201]** 50+ fgts. max. size-24mm	**Sample 202 (252) [202]** 300+ fgts. max. size-31mm	**Sample 204 (254) [203]** 100+ fgts. max. size-25mm	**Sample 410 (459) [430]** 2000+ fgts. max. size-25mm	**Sample 411 (462) [431]** 500+ fgts. max. size-32mm	**Sample 412 (462) [431]** 62 fgts. max. size-4mm	**Sample 409 (461) [432]** 28 fgts. max. size
Hazel	11			39		62	
Ash	5						
Oak	34	100	100	61	100		28
Taxa	**Sample 414 (464) [434]** 18 fgts. max. size-14mm	**Sample 435 (472) [437]** 27 fgts. max. size-14mm	**Sample 433 (479) [445]** 100+ fgts. max. size-21mm	**Sample 445 (554) [505]** 200+ fgts. max. size-19mm	**Sample 446 (556) [506]** 100+ fgts. max. size-19mm	**Sample 450 (493) [509]** 100+ fgts. max. size-14mm	**Sample 437 (552) [511]** 31 fgts. max. size-11mm
Hazel				26	22		
Oak	18	27	100	74	78		31
Salix / Poplar						41	
Indet.						59	
Taxa	**Sample 451 (564) [514]** 100+ fgts. max. size-32mm	**Sample 460 (563) [514]** 72 fgts. max. size-27mm	**Sample 471 (565) [515]** 52 fgts. max. size-14mm	**Sample 459 (570) [516]** 29 fgts. max. size-7mm	**Sample 472 (653) [540]** 6 fgts. max. size-10mm	**Sample 480 (661) [544]** 42 fgts. max. size-13mm	**Sample 489 (687) [618]** 12 fgts. max. size-9mm
Oak	100	72	52	29	6	42	
Salix / Poplar							12
Indet.							
Taxa	**Sample 490 (688) [619]** 6 fgts. max. size-8mm	**Sample 497 (690) [619]** 11 fgts. max. size-3mm	**Sample 491 (689) [620]** 9 fgts. max. size-6mm	**Sample 498 (691) [620]** 14 fgts. max. size-11mm	**Sample 499 (695) [621]** 25+ fgts. max. size-7mm	**Sample 496 (696) [621]** 84 fgts. max. size-19mm	**Sample 517 (775) [637]** 14 fgts. max. size-14mm
Hazel				14			8
Oak	6	11	2		6	84	6

Indet.			7		19		
Taxa	**Sample 744 (852) [643]** 13 fgts. max. size-9mm	**Sample 523 (784) [646]** 9 fgts. max. size-12mm	**Sample 677 (885) [700]** 100+ fgts. max. size-34mm	**Sample 559 (886) [700]** 18 fgts. max. size-4mm	**Sample 613 (1060) [700]** 100+ fgts. max. size-18mm	**Sample 614 (1061) [700]** 69 fgts. max. size-9mm	**Sample 631 (1072) [700]** 60 fgts. max. size-10mm
Hazel	13	2			100		
Ash		7					
Oak			100				
Salix / Poplar							60
Indet.				18		69	
Taxa	**Sample 633 (1074) [700]** 22 fgts. max. size-14mm	**Sample 745 (1055) [706]** 68 fgts. max. size-8mm	**Sample 735 (861) [709]** 37 fgts. max. size-11mm	**Sample 738 (861 / 1371) [709]** 100+ fgts. max. size-17mm	**Sample 736 (1371) [709]** 300+ fgts. max. size-22mm	**Sample 668 (1174) [745]** 100+ fgts. max. size-22mm	**Sample 669 (1175) [745]** 11 fgts. max. size-8mm
Hazel		42	37		100		
Oak	15	26		100		100	11
Salix / Poplar	7						
Taxa	**Sample 674 (1180) [745]** 3 fgts. max. size-9mm	**Sample 675 (1181) [745]** 10 fgts. max. size-10mm	**Sample 672 (1178) [746]** 46 fgts. max. size-15mm	**Sample 673 (1179) [746]** 50+ fgts. max. size-6mm	**Sample 651 (1155) [805]** 46 fgts. max. size-13mm	**Sample 724 (1352) [805]** 7 fgts. max. size-5mm	**Sample 725 (1353) [805]** 50+ fgts. max. size-6mm
Hazel					11		
Oak	3	10	46	50	23		
Salix / Poplar						7	11
Indet.					12		39
Taxa	**Sample 726 (1354) [805]** 100+ fgts. max. size-7mm	**Sample 628 (996) [806]** 19 fgts. max. size-8mm	**Sample 618 (1064) [820]** 1000+ fgts. max. size-29mm	**Sample 644 (1083) [834]** 48 fgts. max. size-12mm	**Sample 646 (1094) [844]** 6 fgts. max. size-7mm	**Sample 705 (1267) [919]** 100 fgts. max. size-13mm	**Sample 709 (1274) [925]** 20 fgts. max. size-7mm
Hazel	29						20
Oak			100	32	6	100	
Salix / Poplar		7		16			
Indet.	71	12					

Taxa	**Sample 710 (1275) [926]** 11 fgts. max. size-12mm	**Sample 711 (1276) [926]** 100+ fgts. max. size-19mm	**Sample 713 (1276) [926]** 200+ fgts. max. size-23mm	**Sample 712 (1277) [926]** 10 fgts. max. size-5mm	**Sample 715 (1285) [928]** 36 fgts. max. size-15mm	**Sample 730 (1283) [933]** 100+ fgts. max. size-23mm	**Sample 723 (1351) [939]** 100+ fgts. max. size-9mm
Hazel	11	100	100	10	36		
Oak							100
Indet.						100	
Taxa	**Sample 733 (1364) [945]** 100+ fgts. max. size-12mm	**Sample 734 (1369) [945]** 102 fgts. max. size-10mm	**Sample 605 (1373) [1000]** 100+ max. size-29mm	**Sample 714 (1375) [1001]** 100+ fgts. max. size-19mm	**Sample 739 (1376) [1001]** 111 fgts. max. size-12mm	**Sample 740 (1377) [1001]** 6 fgts. max. size-6mm	**Sample 741 (1378) [1001]** 13 fgts. max. size-10mm
Hazel	100		68	100	100		
Ash	100		68	100	100		
Oak		100	32			6	13
Indet							
Taxa	**Sample 742 (1379) [1001]** 8 fgts. max. size-4mm	**Sample 746 (1375) [1001]** 4 fgts. max. size-4mm	**Sample 747 (876) [1002]** 11 fgts. max. size-5mm	**Sample 750 (1383) [1006]** 75 fgts. max. size-12mm	**Sample 754 (1391) [1009]** 200+ fgts. max. size-26mm	**Sample 755 (1392) [1009]** 30 fgts. max. size-7mm	**Sample 758 (1393) [1010]** 13 fgts. max. size-7mm
Hazel							
Ash				56	100	30	
Oak	8			19			9
Indet.		4	11				4
Taxa	**Sample 756 (1271) [1013]** 32 fgts. max. size-6mm	**Sample 759 (1397) [1014]** 300+ fgts. max. size-9mm	**Sample 766 (1399) [1016]** 3 fgts. max. size-7mm	**Sample 767 (1450) [1016]** 9 fgts. max. size-9mm	**Sample 772 (1460) [1023]** 1 fgts. max. size-2mm	**Sample 780 (1472) [1032]** 100+ fgts. max. size-10mm	**Sample 786 (1481) [1040]** 100+ fgts. max. size-25mm
Hazel	18			2			100
Oak		100	3	7	1		
Elm						100	
Indet.	14						
Taxa	**Sample 787 (1481) [1040]** 200+ fgts. max. size-13mm	**Sample 794 (1485) [1040]** 100+ fgts. max. size-11mm	**Sample 795 (1481) [1040]** 100+ fgts. max. size-27mm	**Sample 608 (1050) [812]** 25 fgts. max. size-5mm			
Hazel	100	100	100				
Oak				18			

Indet.				7			

Areas C & F – Stakeholes							
Taxa	**Sample 532 (789) [647]** 7 fgts. max. size-12mm	**Sample 629 (1071) [830]** 50+ fgts. max. size-27mm	**Sample 783 (1477) [1037]** 100+ fgts. max. size-9mm	**Sample 784 (1478) [1038]** 100+ fgts. max. size-10mm	**Sample 785 (1479) [1039]** 18 fgts. max. size-19mm		
Hazel	4			100			
Oak		50	100		18		
Indet.	3						

Areas C & F – Hearths							
Taxa	**Sample 560 (788) [526]** 2 fgts. Max. size-3mm	**Sample 612 (993) [742]** 1000+ fgts. Max. size-22mm	**Sample 706 (1272) [923]** 51 fgts. Max. size-8mm				
Hazel			30				
Oak		100	21				
Indet.	2						

Areas C & F – Kilns							
Taxa	**Sample 590 (973) [622]** 100+ fgts. max. size-42mm	**Sample 592 (975) [622]** 7 fgts. max. size-5mm	**Sample 595 (978) [622]** 26 fgts. max. size-11mm	**Sample 596 (979) [622]** 8 fgts. max. size-2mm	**Sample 597 (980) [622]** 6 fgts. max. size-2mm	**Sample 600 (983) [622]** 25 fgts. max. size-11mm	**Sample 601 (984) [622]** 200+ fgts. max. size-17mm
Oak	100	7				11	
Salix / Poplar			4				100
Indet.			22	8	6	14	

Areas C & F – Gullies							
Taxa	**Sample 653 (1088) [838]** 20 fgts. Max. size-10mm	**Sample 654 (1093) [843]** 18 fgts. Max. size-4mm	**Sample 722 (1093) [843]** 5 fgts. Max. size-11mm				
Hazel	3	18	5				
Oak	17						

Areas F –Group 409 – Ditch slots							
Taxa	**Sample 481 (671) [602]** 126 fgts. Max. size-12mm						
Oak	100						

Areas C & F – Group 525 – Ditch slots							
Taxa	**Sample 447 (496) [404]** 2 fgts. max. size-3mm	**Sample 448 (497) [404]** 6 fgts. max. size-3mm	**Sample 432 (498) [405]** 4 fgts. max. size-4mm	**Sample 457 (588) [406]** 74 fgts. max. size-11mm	**Sample 524 (766) [417]** 2 fgts. max. size-10mm	**Sample 454 (568) [508]** 1 fgt. max. size – 8mm	**Sample 463 (581) [528]** 6 fgts. max. size-8mm
Alder				53		1	2
Oak		6	4		1		1
Salix / Poplar					1		
Indet.	2			21			3
Taxa	**Sample 466 (584) [528]** 32 fgts. max. size-16mm	**Sample 493 (692) [613]** 50+ fgts. max. size-22mm	**Sample 495 (694) [613]** 50+ fgts. max. size-7mm	**Sample 549 (864) [704]** 17 fgts. max. size-8mm	**Sample 550 (865) [704]** 8 fgts. max. size-12mm	**Sample 551 (866) [704]** 6 fgts. max. size-4mm	**Sample 561 (893) [731]** 17 fgts. max. size-2mm
Oak	22	50	50	4			
Salix / Poplar	4				8	6	
Indet.	4			13			17
Taxa	**Sample 603 (987) [803]** 43 fgts. max. size-10mm	**Sample 623 (1065) [828]** 15 fgts. max. size-5mm	**Sample 624 (1066) [828]** 52 fgts. max. size-6mm	**Sample 625 (1067) [828]** 22 fgts. max. size-4mm	**Sample 626 (1068) [828]** 5 fgts. max. size-2mm	**Sample 641 (1077) [831]** 11 fgts. max. size-4mm	**Sample 643 (1079) [831]** 23 fgts. max. size-9mm
Oak	6		52	22		11	23
Indet.	37	15			5		
Taxa	**Sample 650 (1091) [839]** 7 fgts. max. size-2mm	**Sample 659 (1153) [847]** 34 fgts. max. size-4mm	**Sample 660 (1154) [847]** 5 fgts. max. size-8mm				
Oak		34					
Indet.	7		5				

Areas C & F – Group 630 – Gully slots							
Taxa	**Sample 579 (961) [714]** 3 fgts. max. size-9mm	**Sample 581 (963) [716]** 3 fgts. max. size-4mm	**Sample 570 (954) [737]** 2 fgts. max. size-7mm	**Sample 728 (1355) [816]** 2 fgts. max. size-10mm	**Sample 727 (1095) [818]** 10 fgts. max. size-8mm		
Hazel				2	10		
Oak	2	3					
Salix / Poplar	1		2				

Areas C & F – Group 640 – Gully slots							
Taxa	**Sample 505 (698) [414]** 9 fgts. Max. size-5mm	**Sample 571 (889) [727]** 9 fgts. Max. size-6mm					
Hazel		9					
Oak	2						
Indet.	7						

Areas C & F – Group 705 – Gully slots							
Taxa	**Sample 541 (872) [718]** 9 fgts. max. size-7mm						
Hazel	2						
Ash	7						

Areas C & F – Group 810 – Ditch slots							
Taxa	**Sample 430 (595) [407]** 15 fgts. Max. size-4mm	**Sample 529 (684) [615]** 6 fgts. Max. size-5mm					
Oak		1					
Salix / Poplar		1					
Indet.	15	4					

Areas C & F – Group 940 – Ditch slots							
Taxa	**Sample 602 (985) [801]** 8 fgts. max. size-6mm						
Oak	8						

Areas C & F – Group 1003 – Roundhouse postholes and stakeholes							
Taxa	**Sample 765 (1382) [1005]** 100+ fgts. Max. size-24mm	**Sample 770 (1457) [1021]** 100+ fgts. Max. size-29mm	**Sample 773 (1462) [1025]** 100+ fgts. Max. size-25mm	**Sample 774 (1466) [1026]** 18 fgts. Max. size-8mm	**Sample 793 (1484) [1042]** 100+ fgts. Max. size-5mm		
Oak	100	100	100		100		
Ash				18			

Areas C & F – Group 1003 – Roundhouse ring gully slots							
Taxa	**Sample 777 (1453) [1018]** 28 fgts. max. size-5mm	**Sample 778 (1454) [1019]** 50+ fgts. max. size-22mm	**Sample 779 (1458) [1022]** 200+ fgts. max. size-17mm	**Sample 775 (1467) [1027]** 32 fgts. max. size-7mm	**Sample 776 (1468) [1028]** 15 fgts. max. size-8mm		
Hazel		50					
Oak	28		100	32	15		

Areas C & F – Group 1105 – Roundhouse postholes and ring gully							
Taxa	**Sample 404 (455) [426]** 200+ fgts. Max. size-21mm	**Sample 407 (458) [429]** 300+ fgts. Max. size-32mm	**Sample 492 (494) [507]** 37 fgts. Max. size-15mm				
Oak	100	100	37				

Areas C & F – Group 1112 – Gully slots							
Taxa	**Sample 695 (1189) [845]** 16 fgts. max. size-9mm	**Sample 697 (1254) [911]** 9 fgts. max. size-4mm					
Oak	2						
Indet.	14	9					

Areas C & F – Rootholes and furrows							
Taxa	**Sample 737 (1365) [946]** 107 fgts. max. size-14mm	**Sample 208 (257) [205]** 100+ fgts. max. size-6mm	**Sample 510 (756) [444]** 1 fgts. Max. size-8mm				
Oak	100	23					
Indet.		77	1				

Table 59: Charcoal - complete list of taxa recovered from Area G – Ditch slots. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Taxa	**Sample 1501 (2553) [2502]** 12 fgts. max. size-9mm
Hazel	9

Table 60: Charcoal - complete list of taxa recovered from Area J –Spreads. Taxonomy and nomenclature follow Schweingruber (1978). Numbers are identified charcoal fragment for each sample

Taxa	**Sample 1700 (2755)** 1000+ fgts. max. size-28mm
Oak	100

Radiocarbon determinations

Twenty-eight radiocarbon dates were obtained from a variety of contexts across excavations at Ballywilliam (Tables 61-65, Fig. 56). The use of a charred hazelnut shell and hazel charcoal in eighteen of the samples limits the possibility of the 'old wood effect' and such dates should therefore be an accurate reflection of the age of the deposits from which they were obtained. The remaining samples were taken from cereal grains, alder and two from oak. The calibration curve used was IntCal09 (Reimer et al. 2009) and the plot was created with OxCal v4.1.4 (Bronk Ramsey 2009).

The dates suggest that there are seven phases of activity represented at Ballywilliam Site 1. The archaeology of Area D dates to the Late Neolithic/Early Bronze Age (Table 61) while the activity in Area E is dated to the Middle Bronze Age (Table 62) with an early medieval date representative of later intrusive material. Neolithic, Early and Middle Bronze Age, Iron Age, early medieval and medieval activity was present in Area F (Table 63). A series of prehistoric dates from contexts within the ditch of the early medieval enclosure represent dates obtained from residual material (Table 64). Archaeological activity in Area H is Middle Bronze Age in date (Table 65).

Only those determinations thought to represent secure dates for the contexts to which they pertain have been plotted in Figure 56.

Table 61: Radiocarbon dates from Area D

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
UBA-13864	6	58	13	*Corylus* (hazel) charcoal	3853±27 BP	2 sigma (95.4%) Cal BC 2459-2274 (0.837) Cal BC 2255-2208 (0.163) 1 sigma (68.2%) Cal BC 2434-2421 (0.074) Cal BC 2404-2379 (0.163) Cal BC 2349-2281 (0.615) Cal BC 2249-2231 (0.115) Cal BC 2218-2213 (0.033)
UBA-13865	14	84	20	*Corylus (hazel) charcoal*	3805±26 BP	2 sigma (95.4%) Cal BC 2338-2322 (0.026) Cal BC 2318-2315 (0.002) Cal BC 2309-2192 (0.857) Cal BC 2179-2142 (0.115) 1 sigma (68.2%) Cal BC 2286-2247 (0.519) Cal BC 2243-2203 (0.481)

Table 62: Radiocarbon dates from Area E

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
UBA-13866	101	154	103	*Corylus* (hazel) charcoal	3299±25 BP	2 sigma (95.4%) Cal BC 1634-1505 (1.000) 1 sigma (68.2%) Cal BC 1610-1601 (0.127) Cal BC 1593-1532 (0.873)
UBA-13867	102	150	105	*Corylus* (hazel) charcoal	3266±34 BP	2 sigma (95.4%) Cal BC 1622-1454 (1.000) 1 sigma (68.2%) Cal BC 1607-1571 (0.379) Cal BC 1560-1547 (0.112) Cal BC 1540-1499 (0.509)

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
UBA-13868		150	113	*Corylus* (hazel) charcoal	910±22 BP	2 sigma (95.4%) Cal AD 1036-1185 (1.000) 1 sigma (68.2%) Cal AD 1046-1091 (0.596) Cal AD 1121-1140 (0.231) Cal AD 1148-1163 (0.173)

Table 63: Radiocarbon determinations from Area F and Area C

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
Beta-244827	1025	1462	773	Charred *Hordeum* (barley) grain	3200±40 BP	2 sigma (95.4%) Cal BC 1605-1578 (2.9%) Cal BC 1536-1401 (92.5%) 1 sigma (68.2%) Cal BC 1502-1432 (68.2%)
UBA-13869	426	455	404	Hazelnut shell	1186±22 BP	2 sigma (95.4%) Cal AD 775-894 (0.998) Cal AD 929-931 (0.002) 1 sigma (68.2%) Cal AD 782-789 (0.105) Cal AD 810-848 (0.489) Cal AD 853-883 (0.406)
UBA-13870	430	459	410	Hazelnut shell	3678±26 BP	2 sigma (95.4%) Cal BC 2140-1975 (0.998) Cal BC 1967-1966 (0.002) 1 sigma (68.2%) Cal BC 2133-2082 (0.627) Cal AD 2059-2025 (0.373)
UBA-13871	434	464	414	Indeterminate cereal grains	1193±22 BP	2 sigma (95.4%) Cal AD 775-891 (1.000) 1 sigma (68.2%) Cal AD 782-790 (0.121) Cal AD 809-876 (0.879)
UBA-13872	505	554	445	Indeterminate cereal grains	1213±30 BP	2 sigma (95.4%) Cal AD 694 -703 (0.015) Cal AD 706-748 (0.133) Cal AD 765-890 (0.852) 1 sigma (68.2%) Cal AD 775-870 (1.000)
UBA-13874	406	588	457	*Corylus / alnus* (Hazel/alder) charcoal	1183±22 BP	2 sigma (95.4%) Cal AD 776-894 (0.990) Cal AD 928-933 (0.010) 1 sigma (68.2%) Cal AD 782-789 (0.092) Cal AD 811-847 (0.484) Cal AD 854-886 (0.424)
UBA-13877	621	696	496	*Avena sativa* (oats) grains	1239±23 BP	2 sigma (95.4%) Cal AD 688-754 (0.483) Cal AD 757-869 (0.517) 1 sigma (68.2%) Cal AD 693-748 (0.623) Cal AD 764-781 (0.210) Cal AD 790-808 (0.167)

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
UBA-13878	718	872	541	Corylus (hazel) charcoal	3049±25 BP	2 sigma (95.4%) Cal BC 1403-1260 (0.997) Cal BC 1227-1224 (0.003) 1 sigma (68.2%) Cal BC 1383-1333 (0.611) Cal BC 1324-1292 (0.371) Cal BC 1277-1274 (0.018)
UBA-13879	727	889	571	*Corylus* (hazel) charcoal	2115±24 BP	2 sigma (95.4%) Cal BC 200-83 (0.896) Cal BC 80-54 (0.104) 1 sigma (68.2%) Cal BC 184-103 (1.000)
UBA-13880	622	978	595	*Avena sativa* (oats) grains	643±32 BP	2 sigma (95.4%) Cal AD 1282-1329 (0.441) Cal AD 1340-1396 (0.559) 1 sigma (68.2%) Cal AD 1291-1314 (0.423) Cal AD 1356-1388 (0.577)
UBA-13881	1000	1373	605	*Corylus* (hazel) charcoal	4998±29 BP	2 sigma (95.4%) Cal BC 3937-3873 (0.212) Cal BC 3809-3702 (0.788) 1 sigma (68.2%) Cal BC 3797-3712 (1.000)
UBA-13882	700	1060	613	*Corylus* (hazel) charcoal	1155±23 BP	2 sigma (95.4%) Cal AD 780-792 (0.046) Cal AD 803-904 (0.603) Cal AD 914-969 (0.351) 1 sigma (68.2%) Cal AD 784-787 (0.021) Cal AD 823-842 (0.140) Cal AD 861-899 (0.477) Cal AD 919-950 (362)
UBA-13883	805	1155	651	*Triticum* (wheat) grains	307±27 BP	2 sigma (95.4%) Cal AD 1490-1602 (0.756) Cal AD 1612-1649 (0.244) 1 sigma (68.2%) Cal AD 1521-1575 (0.682) Cal AD 1583-1590 (0.077) Cal AD 1623-1643 (0.241)
UBA-13884	745	1174	668	*Quercus* (oak) charcoal	1228±32 BP	2 sigma (95.4%) Cal AD 689-753 (0.305) Cal AD 760-884 (0.695) 1 sigma (68.2%) Cal AD 716-743 (0.241) Cal AD 768-828 (0.534) Cal AD 838-866 (0.225)
UBA-13885	845	1189	695	Quercus (oak) charcoal	1154±29 BP	2 sigma (95.4%) Cal AD 779-793 (0.055) Cal AD 801-908 (0.585) 1 sigma (68.2%) Cal AD 784-787 (0.021) Cal AD 823-841 (0.136) Cal AD 861-900 (0.407) Cal AD 918-963 (0.436)

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
UBA-13886	816	1355	728	*Corylus* (hazel) charcoal	2168±33 BP	2 sigma (95.4%) Cal BC 362-149 (0.951) Cal BC 140-112 (0.049) 1 sigma (68.2%) Cal BC 353-294 (0.559) Cal BC 229-219 (0.070) Cal BC 212-172 (0.372)
UBA-13887	709	1371	736	Hazelnut shell	4907±32 BP	2 sigma (95.4%) Cal BC 3761-3725 (0.094) Cal BC 3715-3641 (0.906) 1 sigma (68.2%) Cal BC 3701-3654 (1.000)
UBA-13888	1018	1453	777	*Hordeum* (barley) grains	3286±30 BP	2 sigma (95.4%) Cal BC 1658-1655 (0.003) Cal BC 1637-1495 (0.997) 1 sigma (68.2%) Cal BC 1608-1569 (0.517) Cal BC 1562-1523 (0.483)

Table 64: Radiocarbon dates from residual material derived from Ditch 525, Area F

Lab Code	Cut	Deposit	Sample	Sample Type	Radiometric age	Calendrical calibrations
Beta-244826	828	1066	624	Charred hazelnut shell	2050±40 BP	2 sigma (95.4%) Cal BC 174-Cal AD 28 (93.9%) Cal AD 39-50 (1.5%) 1 sigma (68.2%) Cal BC 146-141 (2.2%) Cal BC 111-2 (66.0%)
UBA-13873	508	568	454	*Alnus* (alder) charcoal	2928±25 BP	2 sigma (95.4%) Cal BC 1257-1234 (0.050) Cal BC 1215-1039 (0.946) Cal BC 1033-1029 (0.004) 1 sigma (68.2%) Cal BC 1194-1141 (0.471) Cal BC 1133-1110 (0.227) Cal BC 1103 -1074 (0.228) Cal BC 1065-1056 (0.074)
UBA-13875	528	581	463	*Corylus* (hazel) charcoal	4621±29 BP	2 sigma (95.4%) Cal BC 3511-3426 (0.709) Cal BC 3382-3349 (0.291) 1 sigma (68.2%) Cal BC 3496-3461 (0.693) Cal BC 3376-3360 (0.307)
UBA-13876	528	584	466	*Corylus* (hazel) charcoal	3329±37 BP	2 sigma (95.4%) Cal BC 1731-1718 (0.018) Cal BC 1692-1517 (0.982) 1 sigma (68.2%) Cal BC 1664-1648 (0.135) Cal BC 1644-1603 (0.399) Cal BC 1588-1534 (0.466)

Table 65: Radiocarbon dates from Area H

Lab Code	Cut	Deposit	Sample	*Sample Type*	Radiometric age	Calendrical calibrations
UBA-13889	2608	2663	1611	*Quercus* (oak) charcoal	3254±30 BP	2 sigma (95.4%) Cal BC 1610-1453 (1.000) 1 sigma (68.2%) Cal BC 1605-1575 (0.273) Cal BC 1556-1555 (0.007) Cal BC 1536-1493 (0.636) Cal BC 1474-1463 (0084)
UBA-13890	2619	2679	1621	*Corylus* (hazel) charcoal	3215±30 BP	2 sigma (95.4%) Cal BC 1600-1594 (0.009) Cal BC 1531-1420 (0.991) 1 sigma (68.2%) Cal BC 1505-1447 (1.000)

Discussion

The excavations at Ballywilliam Site 1, have revealed evidence of human occupation on the site dating from the early Neolithic to the medieval period. Seven separate phases of archaeological activity (excluding post-medieval and modern features) have been identified across the excavations in Area D, E, C/F, G and A/H. In contrast, Area B did not contain archaeological features, Area I contained evidence of post-medieval activity and the small-scale excavations in Area J produced little if anything of archaeological interest. The following discussion will focus on the prehistoric and early historic records from Areas F (including Area C), D, E, G and H (including A). The discussion is presented by phase rather than by area.

Phase 1 - Neolithic (4000-2300BC)

The earliest evidence of human occupation uncovered at Ballywilliam was revealed in Area F. Here, four pits each containing fragments of pottery vessels were excavated. The pottery, representative of carinated round bottomed bowls, is of the earliest type of Neolithic pottery known from Ireland. The well-made vessels from Ballywilliam retained evidence for burning on the inside, indicating the pots were domestic items, probably used in cooking. Such pottery is known from house sites as well as burial sites (specifically court tombs). Its occurrence in pits in Ballywilliam may be best interpreted as domestic refuse related to nearby, as yet unidentified settlement. Two radiocarbon dates from the features at Ballywilliam spanned 3937-3641 cal. BC, overlapping in the 38th century BC. Excavations elsewhere on the scheme have revealed several sites which contained similar occupation debris demonstrating that this part of Tipperary was the focus of habitation and settlement in the early Neolithic. In particular at Ballycuddy More Site 1 (E2483), 320 m to the north-east, a number of pits and postholes were excavated that produced fragments of at least 24 carinated bowls similar to those at Ballywilliam (Taylor 2011). The Early Neolithic activity at this site also appeared to have taken place during the 38th century BC and it is possible that the two sites were occupied simultaneously.

Other nearby sites on the scheme that yielded pottery of this date include E2482 Ballyhisky Site 2 (Ruttle 2010c) and E2287 Carrigatogher (Abbott) Site 1 (McNamara et al. 2012). Other examples were found further afield at Cooleen Site 1 (McNamara 2012). Prior to the N7 excavations, the closest assemblages of Early Neolithic carinated bowls were excavated at Lough Gur, Co. Limerick (Ó Ríordáin 1954; Grogan and Eogan 1987), a court tomb at Shanballyedmond, Co. Tipperary (O'Kelly 1958) and in the Cashel area of Co. Tipperary (Grogan and Roche 2006).

The cluster of sites in Ballywilliam, Ballycuddy More, Ballyhisky and Carrigatogher (Abbott) demonstrate settlement in this period along the important prehistoric routeway of the Kilmastulla River valley. The date of the activity, during the 38th century BC, corresponds well with recent

statistical analysis of radiocarbon dates that suggest the Neolithic in Ireland began either between 3850 and 3740 BC or between 3750 and 3680 BC, depending on which statistical model is used (Cooney et al. 2011, 663). It would appear that the features at Ballywilliam represent some of the earliest Neolithic settlement in Ireland, pre-dating the introduction of rectangular houses and pre-dating the large Neolithic enclosure at Tullahedy, 4.5 km to the north-west (Kelleher 2010; Cleary and Kelleher 2011).

A radiocarbon date from residual material in the early medieval enclosure ditch in Area F spanned the period 3511-3349 cal BC, suggesting that the area may have continued to be occupied later into the Neolithic.

Phase 2 - Late Neolithic/Early Bronze Age (2450-2200BC)

A *fulacht fia* with at least one trough and several pits represents the only late Neolithic/Early Bronze Age activity uncovered at Ballywilliam (Area D). It is probable that the *fulacht fia* represents a location used on multiple occasions for the same purpose, i.e. to heat water. The array of pits and stakeholes suggest repeated use of the site, possibly within a relatively short period of time. Fires appear to have been fuelled using a variety of wood-types (oak, hazel, ash and Pomoideae) with wood probably gathered locally and on an as-needed or ad hoc basis (Gannon 2012).

Fulachtaí fia or burnt stone mounds relate to the heating of water within pits or troughs using hot stones. This site type has become increasingly more frequent as result of road scheme excavations (McCarthy 2010) and demonstrates great variety in the number, type and size of associated features, namely pits, troughs, stakeholes, postholes and deposits. These sites are typically poor in artefacts and ecofacts (other than charcoal and stone) and this was the case at Ballywilliam. Whilst these types of sites are typically Middle or Late Bronze Age in date, they are also known to have been used from the Neolithic to the medieval periods (Grogan et al. 2007; Brindley et al. 1990).

Some late Neolithic/Early Bronze Age artefacts (Beaker pottery and lithics) were retrieved from pit 1016 within Area F, 300 m north of the activity in Area D. The pit appeared to be cut through a later roundhouse suggesting the finds represent residual material. Even though the objects may not represent original, primary deposits their presence further demonstrates a late Neolithic/Early Bronze Age presence within Ballywilliam.

Phase 3 - Early Bronze Age (2200-1600BC)

A single pit within Area F produced an Early Bronze Age date (2140-1966 cal. BC) and contemporary pottery fragments. The activity is seemingly isolated although there may be contemporary activity represented within the undated/un-phased archaeological features excavated at Ballywilliam. The pottery represents a Food Vessel, a type of ware typically associated with burials. The pit however lacked evidence for having been a burial. The pottery may represent an original deposit within a domestic rather than a burial context. A similar example is known from Windmill Site 34 on the N8 Cashel Bypass, Co. Tipperary, where Vase Food Vessel pottery was recovered from a pit date to 2129-1941 cal BC (UBA-13788) (R O'Brien pers. comm.)

Phase 4 - Middle Bronze Age (1600-1100BC)

Three excavation areas (A/H, E and F) yielded evidence for Middle Bronze Age occupation. The northernmost activity (Area A/H) contained the remains of a probable cremation cemetery and multiple cut features (pits, postholes and stakeholes) that suggest the location was the focus of activity in the 17th to 15th century BC. The cemetery appears to have been unenclosed and to have contained simple pit cut burials. Small quantities of cremated bone were present in three pits in Area A/H. A single adult human was identified with most of the bone recorded as mammal and not specifically human. The inclusion of small or token amounts of cremated bone within burials of the period is well documented and relates to how Middle Bronze Age people treated and (most probably) honoured the

dead. Other pits and cut features within Area A/H may be the product of ritual activities associated with these burials. The absence of artefacts and for example, animal bone or significant plant remains, with the exception of charcoal, limits their interpretation.

The cemetery in Area A/H may have served the families or community living to the south in Areas E and F. Here, reasonably contemporary occupation in the form of a roundhouse, a *fulacht fia* and related features were excavated. In Area E, the *fulacht fia* comprised a mound of burnt sandstone and charcoal of oak, willow and hazel; wood types most probably growing nearby. A series of pits, some of which presumably represent troughs or roasting pits, were scattered about the site. The burnt stone mound itself was most probably the result of multiple firing episodes but the absence of a definitive trough prevents estimation of the number of firings likely to have occurred. There were no finds or animal bone retrieved and the site may be best viewed as serving the settlement located approximately 500 m to the north.

Situated about 300 m south of the cemetery and 500 m north of the *fulacht fia* was a settlement (Area F). Here, a single roundhouse and an array of pits, postholes and stakeholes were excavated. Not all may be Middle Bronze Age but the presence of the roundhouse suggests that some if not many of these features may be contemporary with the habitation, cemetery and *fulacht fia*. The house, that produced radiocarbon dates of 1605-1401 and 1658-1495 cal. BC, had a simple ground plan – an outer wall was erected in a narrow foundation trench with an inner ring of roof supports. The simple entrance or doorway was located in the south-east and marked by a break in the wall trench and by posts occupying the trench termini. The house posts were built using oak which may also have been used in the outer wall; oak charcoal occurred in abundance within the foundation trench. Hazel charcoal was also present suggesting it too was used in wall construction; most likely as a wattle component. The house interior covered an area of 38 m^2, well within the range for houses of the period (Doody 2007, 91; Ginn and Rathbone 2012, 16-19).

The occupants of the house consumed barley; charred grains were retrieved from several of the house features. It is likely that barley was grown nearby but the possibility that it represents an introduced, traded product cannot be discounted. It is reasonable to assume that the inhabitants lived within a rural agricultural economy. The occurrence of other Middle Bronze Age settlements, also excavated on the scheme, demonstrates that the house at Ballywilliam represents one of probable network of homes and settlements nestled in the foothills of the Arra Mountains. Broadly contemporary settlements with roundhouses are known from Carrigatogher (Harding), Carrigatogher (Abbott) and Carrigatogher (Ryan) to the north-east of Ballywilliam (Hackett 2009a and b; McNamara et al. 2012; Mulcahy and Taylor 2012).

Phase 5 - Iron Age (700BC-AD450)

Two gullies or trenches suggest that on at least two occasions during the Iron Age, probably in the period 400-50BC, enclosures once surrounded a small summit later enclosed by the early medieval settlement enclosure. The Iron Age enclosures were incomplete as a result of erosion but appear to have defined similarly sized areas. The probable earlier gully (630) appeared to have held a palisade constructed from posts and/or planks; the later gully (640) did not retain evidence for uprights but it is probable it served this purpose.

The palisade trenches provided the only definitive evidence for Iron Age activity at Ballywilliam and consequently it is unclear whether the enclosures served domestic habitation needs or had another function. Of the many unphased features (e.g. pits and postholes) nearby, any number could be related to the Iron Age occupation of the site. Many were relatively small features with undiagnostic fills and/or finds or ecofacts and betray little about their original purpose.

Iron Age settlement evidence is notoriously difficult to identify in the archaeological record and a 2009 review states that just 30 Iron Age domestic or industrial structures were known in Ireland at that time (Becker 2009, 354). A small number of other sites on the N7 scheme yielded evidence for

occupation broadly contemporary with that at Ballywilliam. In general, however, the Iron Age is perhaps under-represented in the record which could be a product of discovery or reflect original low intensity settlement of the area. At Carrigatogher (Abbott) Site 1, the remains of a sub-circular building, metal working furnaces and slag suggest the Kilmastulla Valley was occupied during the closing centuries of the first millennium BC (McNamara et al. 2012). A circular house at Ballynahinch Site 2 was also dated to the middle part of the Iron Age (Scotland 2011a 158-9). Later in the 3rd-5th century AD, at the close of the Iron Age and several centuries later than the occupation at Ballywilliam, an enclosed settlement was erected at Sallymount Site 1, Co. Limerick (Clarke and Long 2010). The enclosure had an annex and retained evidence for domestic and industrial activities within its interior.

Phase 6 - Early medieval (AD450-1169)

In the late 7th/10th century AD, the summit at Ballywilliam was surrounded by a sub-circular settlement enclosure. Ringforts and/or cashels are the archetypal early medieval settlement form. Other (albeit similar) forms of enclosed settlement have in the last decade increased in numbers as result of archaeological mitigation in advance of major infrastructural schemes, particularly road construction. Examples include the sub-triangular enclosure from Newtown, Co. Limerick (Collins and Coyne 2003) and an enclosure with smithy at Cahircalla More, Co. Clare (Taylor 2012). For the most part such sites represent farmsteads most probably inhabited by an extended family. At Ballywilliam, evidence survived for at least one roundhouse, typical in plan and scale for the period. It is likely however, that more houses and other buildings (e.g. barns or byres and storehouses) once stood within the enclosure but traces of these have not survived, at least not in a recognisable form. Multiple phases of occupation and building construction are known from early medieval settlement sites with better preservation, e.g. Deer Park Farms, Co. Antrim (Lynn and McDowell 2011). The array of dates from Ballywilliam with date ranges between the late 7th and mid-10th centuries AD suggests the enclosure may have been inhabited over several generations.

The settlement was defined by an enclosing ditch, inner bank and an internal elaborate entrance. The bank appears to have been reveted, at least in the north-east, if not entirely. Parallels for this are known from Shane's Castle, Co. Antrim (Warhurst 1971) and Leggetsrath, Co. Kilkenny (Lennon 2006) where postholes and slot trenches marked the outer edge of the banks at these settlements. The scale of the enclosure is in keeping with enclosures of the period. The width and depth of the ditch (maximum 2.5 m and 1.5 m) suggests the settlement was well-defined. The construction of an inside bank, an inner palisade and an elaborate entrance that seems to have incorporated large gate and flanking fences suggests the site was well defended. Entrances from early medieval settlement enclosures are varied (O'Sullivan et al. 2010, 60-2) and poor preservation has resulted in a loss of detail from many sites. Nonetheless, the entrance at Ballywilliam is of a scale and form that suggests the inhabitants were concerned with security and protecting themselves and their property. Similarly elaborate entrance features have been recorded from a number of contemporary settlements including for example at Lisnagun, Co. Cork (O'Sullivan et al. 1998) and Ballycatteen, Co. Cork (Ó Ríordáin and Hartnett 1943). At Ballycatteen inner and outer entrances appear to have been rebuilt several times with gate and palisade trenches recorded.

The economy of the settlement at Ballywilliam was agricultural with barley best represented followed by oats and lastly wheat. Barley was the favoured cereal during the early medieval period typically followed by oats with wheat contributing less to the diet and economy (McCormick et al. 2011, 56–8). The quantities in which cereal grains occurred at Ballywilliam are relatively small and it is unclear if the inhabitants grew and/or traded cereals. A small animal bone assemblage was retrieved from Ballywilliam; conditions did not favour the preservation of bone and this may explain the small size of the assemblage. Nonetheless, from the recovered remains it is evident that beef and lamb/mutton were consumed. Cattle, sheep and pigs were the major meat providers during the early medieval. Presumably the inhabitants of Ballywilliam reared cattle and sheep/goats in neighbouring fields. It may be that the settlement formed part of a larger system of field and land division similar to that uncovered at Cahircalla More, Co. Clare (Taylor 2012).

Metalworking was also a feature at Ballywilliam although the best evidence for metalworking having taken place is indirect. A small quantity of iron slag, including furnace bottoms and smithing waste, suggests low-level or moderate amount of smithing took place. Further evidence for metalworking and/or craft is suggested by the hone stones recovered from the excavation. Iron working was widely practiced during the early medieval period with both blacksmiths and non-blacksmiths producing and repairing iron objects and tools (Comber 2008). Other finds reflect the agricultural basis for the local economy with quern stone fragments suggestive of on-site crop processing.

The artefact assemblage from Ballywilliam is limited largely to stone tools with hone stones and quern stones reflecting mundane utilitarian practices. That the inhabitants were interested also in personal ornamentation is reflected by the recovery of pieces of three shale bangles. The provenance of the shale is not known and it cannot be said if the bracelets represent locally manufactured items or traded goods. Bracelets of this type (which may or may not be made from lignite) are understudied and it is unclear if they can be used to infer the status of the settlement's inhabitants or potential links with the wider community and region. The royal site of Lagore produced lignite examples which may imply that such objects were the effects of the wealthy (Edwards 1996, 96).

The bracelets were retrieved from two pits and a posthole, one of which contained burnt human bone and it has been suggested above that the position of these features in relation to the roundhouse, entrance and enclosure ditch may afford the pits (and therefore bracelets) with some sort of ritual status. The bracelets may have formed part of special deposit related perhaps to building and/or settlement construction and occupation. Such an interpretation may seem more appropriate for a prehistoric rather than early medieval context but equally may not be ruled out entirely. Although cremation as a burial rite is rare in the early medieval period, it is not unknown and the practice of including personal items such as jewellery with burials also appears to have continued into this period, despite the disapproval of the Christian church (O'Brien 2003).

The elaborate entrance and erection of internal palisade trenches might afford relative high status on the occupants. In contrast, the food record, namely barley and oats is more in keeping with lower status consumers; the link between cereals and status has most recently been made by McCormick et al. (2011, 46).

Phase 7 - Medieval (AD1170-1546)

Medieval occupation of Ballywilliam is suggested by a dumb-bell shaped kiln and a number of pits. One pit yielded a spoon bit with parallels in the 12th/13th century, the kiln dates to late 13th/14th century AD and a second pit was dated to late 15th/mid-16th century AD. The dates suggest episodic activity occurred during the medieval period. Based on the available dating evidence, the enclosed settlement at Ballywilliam appears to have been occupied into the late 10th century. Traces of the enclosure may well have been visible in the landscape for some time after the settlement was abandoned or fell out of use. Given that all but one of the dated medieval features were located within the confines of the enclosure it is probable that the bank and ditch may have been visible, if not completely, at least in part. The medieval features no doubt relate to nearby contemporary occupation of the area.

The kiln was used to dry barley, with oats also occurring within the kiln fill. The dominance of barley shows continuity with its position as the favoured cereal in the early medieval period. The kiln fire was supplied using oak and willow/poplar; both most probably gathered locally for the purpose of drying grain. Recent research has shown that the rate of kiln construction declined from the start of the 9th century AD probably as a consequence of the increase in mill construction (McCormick et al. 2011, 32–4). The dated kiln from Ballywilliam demonstrates that despite this slow-down in construction, kilns were still being constructed in the medieval period. The kiln's location, at a remove from contemporary settlement,is also a feature of kiln building and use; segregating a kiln from dwellings and settlement can be viewed as a pragmatic response to the potential fire-hazard.

At Ballintotty Site 2, also excavated on this scheme, medieval use of the interior of an early medieval enclosure and its extension is seen as evidence of continuous occupation (Scotland 2011b). Some of the latest features on that site are two cereal-drying kilns approximately contemporary with the Ballywilliam example (ibid, 165).

Graves

The occurrence of a series of elongated pits, reminiscent of graves in scale, morphology and arrangement is a curious feature of the multi-period occupation of Ballywilliam. The probable graves are located on the line of the bank of the early medieval settlement. It is not clear whether they pre- or post-date the construction (and later destruction) of the bank. Deposits of bank slump within the ditch, particularly in the north demonstrate the erosion (or deliberate deposition?) of the bank into the ditch. The demise of the bank may have helped determine the location for the graves. The absence of human remains is unfortunate but presumably the graves would have held inhumation burials; typical of the early medieval and succeeding periods. However, the graves do not adhere to a strictly west-east alignment indicative of Christian burial. This may mean the burials represent early efforts at adopting a new burial rite (i.e. the switch from pagan cremation practices to Christian inhumation (O'Brien 2003)) or that the graves represent a separate tradition such as Viking burials or *cillín* where burials occurred outside of consecrated ground and not always in line with traditional Christian customs. A number of north-south graves (also lacking in skeletal remains) amongst an array of west-east graves at Carrigatogher (Harding) 6 (Taylor 2009) have been interpreted as possible Viking burials. That Vikings were in the wider area is attested to by their presence in Limerick and Killaloe both of which could have been reached by travelling through the Kilmastulla Valley.

Phase 8 - Post-medieval and later

The site at Ballywilliam retained evidence for plough furrows indicating the area was subject to intense ploughing that resulted in the truncation of archaeological deposits. The majority of plough furrows were aligned approximately north-west/south-east suggesting a shared origin which in this case is most probably early modern or later. A series of field ditches and drains also occurred across the excavation area, with several truncating the early medieval enclosure. These demonstrate local farming requirements related to land improvement and probably ownership.

Recommendations and further work

It is recommended that those portions of the site outside the CPO, notably the early medieval enclosure that extends into the field to the north-west of Area F, be entered into the RMP for County Tipperary.

The results of this excavation are intended for publication within an NRA Scheme Monograph due for publication in 2013. A summary of the findings has been submitted to *Excavations 2007.*

An accessible archive of primary records (Appendix 4) has been prepared for long term storage and will be kept at the offices of TVAS (Ireland) Ltd until such time as a State archive repository becomes available. The finds have been cleaned and conserved (where necessary), numbered, labelled, properly packed and will be deposited with the National Museum of Ireland in accordance with *Advice Notes for Excavators* (NMI 2010).

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TVAS Ireland Ltd
31st December 2012

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Appendix 1: Catalogue of features and deposits

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
1	51		A	Stakehole	1	-	4
2	52		A	Posthole	2	Bone	4
3	53		A	Stakehole	3	-	4
4	54		A	Stakehole	4	-	4
-	50		A	Topsoil	-	-	-
6	57, 58		D	Trough	5, 6, 8, 11, 13, 14	-	2
7	56		D	Drain	-	-	-
8	55		D	Drain	-	-	-
9	61		D	Stakehole	-	-	2
10	66, 67, 68		D	Pit	17	-	2
11	81		D	Drain	-	-	-
12	82		D	Pit	16	-	2
13	83		D	Stakehole	19	-	2
14	84		D	Stakehole	20	-	2
15	85		D	Stakehole	24	-	2
16	86		D	Stakehole	23	-	2
17	87		D	Stakehole	25	-	2
18	88		D	Stakehole	22	-	2
19	89		D	Stakehole	26	-	2
20	90		D	Stakehole	27	-	2
21	99, 182		D	Drain	-	-	-
22	76		D	Ditch?	28, 29	-	2
23	176, 178, 179, 180, 181		D	Pit	30	Lithic	2
24	184		D	Stakehole	31	-	2
-	59		D	Layer	-	-	2?
-	60		D	Natural geological deposit	-	-	-
-	62		D	Layer	-	-	
-	63		D	Layer	12, 15	-	2?
-	64		D	Layer	-	-	
-	65		D	Layer	-	-	
-	69		D	Layer	-	-	2?
-	70		D	Layer	-	-	2?
-	71		D	Layer	-	-	2?

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
-	72		D	Layer	-	-	2?
-	73		D	Layer	-	-	2?
-	74		D	Layer	-	-	2?
-	75		D	Layer	21, 32, 33, 34	-	2?
-	77		D	Layer	-	-	2?
-	78		D	Layer	-	-	2?
-	79		D	Layer	-	-	2?
-	80		D	Layer	7, 9, 10, 18	-	2?
-	91		D	Layer	-	-	2?
-	92		D	Layer	-	-	2?
-	93		D	Natural geological deposit	-	-	-
-	94		D	Layer	-	-	2?
-	95		D	Layer	-	-	2?
-	96		D	Layer	-	-	2?
-	97		D	Layer	-	-	2?
-	98		D	Natural geological deposit	-	-	-
-	177		D	Layer	-	-	2?
-	183		D	Layer	-	-	2?
100	-		E	Natural hollow	-	-	-
101	154, 155		E	Trough pit	103, 104	-	4
102	150		E	Pit	105	-	4
103	152		E	Pit	107	-	4
104	158, 159		E	Pit	108, 109	-	4
105	150		E	Pit	-	-	4
-	150		E	Main burnt stone deposit	100, 102, 112, 113	-	4
-	151		E	Layer	114	-	4
-	153		E	Layer	101, 106	-	4
-	156		E	Layer	111	-	4
-	157		E	Layer	110	-	4
-	160		E	Topsoil	-	-	-
201	251, 253		C	Linear feature	201	Metal, bone	7
202	252		C	Pit	202	Bone	?
203	254		C	Pit	204	Bone	?
204	255		C	Hedge line	205	-	?
205	256, 257		C	Hedge line	206, 208	-	-

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
206	251		C	Pit	-	-	6-7?
-	250		C	Topsoil	-	-	-
-	350		B	Topsoil	-	-	-
-	351		B	Gravel deposit	-	-	-
-	352		B	Number for unstratified find	-	Metal	-
400	450		F	Posthole	400	-	?
401	451, 452		F	Posthole	401	-	?
402	453		F	Posthole	402	-	?
403	454, 467, 468, 469, 658	525	F	Ditch slot	403, 418, 419, 420	-	6
404	496, 497, 499	525	F	Ditch slot	447, 448, 449	Stone	6
405	480, 481, 482, 495, 498	525	F	Ditch slot	425, 426, 427, 431, 432	-	6
406	585, 586, 587, 588, 597	525	F	Ditch slot	457	Slag, stone	6
407	595	810	F	Ditch slot	430	-	8
408	596	422	F	Ditch slot	408	-	8
411	463	409	F	Ditch slot	413	-	8
412	465	410	F	Ditch slot	416	-	8
413	473	410	F	Ditch slot	422	Clay tobacco pipe, metal	8
414	698	640	F	Gully slot	505	-	5
415	761, 762	525	F	Ditch slot	-	-	6
416	758	410/935	F	Ditch slot	509, 547	-	8
417	766, 767	525	F	Ditch slot	524, 525	-	6
418	782	640	F	Gully slot	520	-	5
419	783	640	F	Gully slot	521	-	5
421	785	810	F	Ditch slot	553	-	8
423	786, 787	525	F	Ditch slot	545, 552	-	6
424	791, 792, 793, 799, 850	525	F	Ditch slot	-	-	6
426	455	1105	F	Posthole	404	-	6
427	456		F	Posthole	405	-	?
428	457		F	Posthole	406	-	?
429	458	1105	F	Posthole	407	Bone	6
430	459		F	Pit	410	Lithic, pottery	2
431	462		F	Pit	411, 412	Bone	6
432	461		F	Pit	409	-	?
433	460		F	Posthole	415	-	?
434	464		F	Pit	414	Bone	6

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
435	466		F	Posthole	417	Bone	?
436	471		F	Posthole	434	Bone	?
437	472, 551		F	Pit	435, 436	Bone	?
440	478		F	Pit	423	-	?
441	483		F	Stakehole	-	-	?
442	484		F	Stakehole	-	-	?
443	485		F	Stakehole	-	-	?
444	756, 780		F	Furrow	510, 635	Clay tobacco pipe, metal, bone	8
445	479		F	Pit	433	Bone	?
446	486		F	Stakehole	424	-	?
447	487		F	Stakehole	-	-	?
448	488		F	Stakehole	-	-	?
449	489		F	Stakehole	-	-	?
500	490		F	Stakehole	-	-	?
501	491		F	Posthole	428	Bone	?
502	492		F	Posthole	429	Stone, bone	6
503	474		F	Furrow	-	-	8
504	475		F	Furrow	-	Metal	8
505	476, 554, 55		F	Pit	445	Bone, slag	6
506	477, 556		F	Pit	446	Bone, slag	6
507	494	1105	F	Ring gully	492	-	6
508	566, 567, 568, 569	525	F	Ditch slot	452, 453, 454, 455	-	6
509	493		F	Pit	450	Bone	6
510	550, 557, 558, 559, 560, 561	525	F	Ditch slot	439, 440, 441, 442, 443, 444	-	6
511	552		F	Pit	437	Bone	?
512	553		F	Pit	438	-	?
513	562		F	Stakehole	-	-	?
514	563, 564		F	Pit	451, 460	Bone, stone	1?
515	565		F	Pit	471	Bone	1?
516	570		F	Pit	459	Bone	?
517	571, 965		F	Posthole	458	Bone	?
518	572		F	Stakehole	-	-	?
519	573		F	Posthole	456	-	?
520	574		F	Posthole	-	-	?

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
521	575		F	Stakehole	-	-	?
522	576		F	Stakehole	-	-	?
523	577		F	Stakehole	-	-	?
524	579		F	Stakehole	-	-	?
526	788		F	Hearth	560	-	?
527	667, 668	930	F	Ditch slot	477	-	8
528	578, 580, 581, 582, 583, 584, 964	525	F	Ditch slot	461, 462, 463, 464, 465, 466	-	6
529	589		F	Stakehole	-	-	?
530	590		F	Stakehole	-	-	?
531	591		F	Stakehole	-	-	?
532	592		F	Stakehole	-	-	?
533	593		F	Stakehole	-	-	?
534	594		F	Stakehole	-	-	?
535	598		F	Posthole	467	-	?
536	599		F	Posthole	468	-	?
537	650		F	Pit	469	-	?
538	651		F	Stakehole	-	-	?
539	652		F	Posthole	470	Bone	?
540	653		F	Pit	472	Bone	?
541	656, 657		F	Pit	473, 474	-	?
542	659		F	Posthole	475	-	?
543	660		F	Posthole	476	-	?
544	654, 655, 661		F	Pit	480	Bone	1?
545	662		F	Furrow	-	Slag	8
546	470, 663		F	Stakehole	421	Bone	?
547	664		F	Stakehole	-	-	?
548	665		F	Stakehole	-	-	?
549	666		F	Posthole	-	-	?
600	669		F	Posthole	479	-	?
601	670		F	Furrow	-	Stone	8
602	671	409	F	Ditch slot	481	-	8
603	672	810	F	Ditch slot	482	-	8
604	673, 675	422	F	Ditch slot	483	-	8
605	674, 781	525	F	Ditch slot	488, 519	-	6
606	676		F	Furrow	484	-	8

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
607	677		F	Posthole	485	-	?
608	678		F	Posthole	-	-	?
609	679		F	Stakehole	-	-	?
610	680		F	Posthole	486	Bone	?
611	681		F	Posthole	-	-	?
612	682		F	Stakehole	487	-	?
613	692, 693, 694	525	F	Ditch slot	493, 494, 495	-	6
614	683	422	F	Ditch slot	528	-	8
615	684	810	F	Ditch slot	529	-	8
616	685		F	Pit	530	-	?
617	686, 795, 796		F	Pit	-	-	?
618	687		F	Pit	489	-	?
619	688, 690		F	Pit	490, 497	-	?
620	689, 691		F	Pit	491, 498	-	?
621	695, 696		F	Pit	496, 499	Stone, bone	6
622	972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 1362		F	Kiln	589, 590, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601	-	7
623	750		F	Stakehole	503	-	?
624	752	409	F	Ditch slot	478	-	8
625	753	422	F	Ditch slot	554	Clay tobacco pipe	8
626	697		F	Posthole	500	-	?
627	754	409	F	Ditch slot	501	Metal	8
628	755, 757	410	F	Ditch slot	502, 504	-	8
629	759, 760, 774	420	F	Ditch slot	514, 515, 516	-	8
631	763		F	Posthole	506	-	?
632	764		F	Furrow	507	-	8
633	765		F	Pit	508	-	?
634	771		F	Posthole	511	-	?
635	751		F	Stakehole	512	-	?
636	772		F	Stakehole	-	-	?
637	775		F	Pit	517	-	?
638	778		F	Posthole	526	Bone	?
639	779		F	Posthole	527	-	?
641	768, 769, 770, 1191		F	Pit	-	-	?
642	773		F	Posthole	513	-	?

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
643	852		F	Pit	744	-	?
644	776		F	Posthole	522	Bone	?
645	777		F	Stakehole	518	-	?
646	784		F	Pit	523	-	?
647	789		F	Stakehole	532	-	?
648	790	422	F	Ditch slot	531	-	8
649	794	420	F	Ditch slot	544, 582	-	8
700	880, 881, 882, 883, 884, 885, 886, 1060, 1061, 1072, 1074, 1290		F	Pit	555, 556, 557, 558, 559, 613, 614, 631, 633, 677, 678	Bone, stone, slag	6
701	797		F	Posthole	533	-	?
702	798	640	F	Gully slot	534	-	5
703	851	425	F	Ditch slot	535	-	8
704	862, 863, 864, 865, 866, 868, 869, 870, 871	525	F	Ditch slot	548, 549, 550, 551, 615, 616, 617	-	6
706	1055		F	Pit	745	-	?
707	855		F	Stakehole	536	-	?
708	856		F	Posthole	537	-	?
709	861, 1371		F	Pit	735, 736, 738	Lithic, pottery	1
710	857	525	F	Ditch slot	538	-	6
711	859, 879	630	F	Gully slot	-	-	5
713	867	409	F	Ditch slot	-	-	8
714	961	630	F	Gully slot	579	Bone	5
715	962	630	F	Gully slot	580	-	5
716	963	630	F	Gully slot	581	-	5
717	1360	630	F	Gully slot	-	-	5
718	872	705	F	Gully slot	541	-	6
719	873	630	F	Gully slot	540	-	5
720	874	422	F	Ditch slot	542	-	8
721	875	810	F	Ditch slot	543	-	8
722	878		F	Posthole	546	-	6
723	858	935	F	Ditch slot	539	-	8
724	877		F	Natural feature	-	-	-
725	887		F	Ditch slot	-	Clay tobacco pipe	8
726	1195, 1196, 1197	525	F	Ditch slot	689, 690, 691	-	6
727	889	640	F	Gully slot	571	-	5

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
728	890, 955	935	F	Ditch slot	568	-	8
729	891		F	Posthole	-	-	?
730	892	425	F	Ditch slot	569	-	8
731	893, 894, 895, 896, 897, 959	525	F	Ditch slot	561, 562, 563, 564, 565	-	6
732	898, 899	525	F	Ditch slot	-	-	6
733	950		F	Posthole	572	-	?
734	951		F	Posthole	573	-	?
735	952		F	Posthole	-	-	?
736	953		F	Posthole	-	-	?
737	954	630	F	Gully slot	570	-	5
738	1251	420	F	Ditch slot	-	-	8
739	999		F	Pit	-	-	8
740	956	705	F	Gully slot	574	-	6
741	957, 958	422	F	Ditch slot	575, 576	-	8
742	992, 993, 994		F	Hearth	612	-	?
743	960	640	F	Gully slot	578	-	5
744	1167, 1168		F	Pit	661, 662	-	6
745	1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1180, 1181		F	Pit	663, 664, 665, 666, 667, 668, 669, 670, 671, 674, 675, 676	Metal, bone	6
746	1178, 1179		F	Pit	672, 673	Bone	6
747	966, 970, 971	525	F	Ditch slot	585, 587, 588	-	6
748	967	930	F	Ditch slot	586	-	8
749	968	410	F	Ditch slot	583	-	8
800	969	935	F	Ditch slot	584	-	8
801	985, 1063	940	F	Ditch slot	602	-	8
802	986	940	F	Ditch slot	-	-	8
803	987, 988, 989, 990	525	F	Ditch slot	603	Slag	6
805	991, 1155, 1166, 1268, 1269, 1270, 1352, 1353, 1354		F	Pit	651, 724, 725, 726	-	7
806	995, 996		F	Pit	628	-	1-7
807	997		F	Furrow	607	-	8
808	1097, 1098, 1099, 1150	525	F	Ditch slot	680, 682, 683	-	6
809	1288	940	F	Ditch slot	-	-	8

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
811	998		F	Pit	-	-	8
812	1050		F	Pit	608	-	-
813	1051, 1052, 1053	525	F	Ditch slot	609, 610, 611	-	6
814	1054	630	F	Posthole	-	-	5
815	1056, 1057, 1058, 1059	525	F	Ditch slot	619, 620, 621, 622	-	6
816	1355	630	F	Gully slot	728	Bone	5
817	1295, 1296	630	F	Gully slot	718	-	5
818	1095	630	F	Gully slot	727	-	5
819	1062	640	F	Gully slot	-	-	5
820	1064		F	Pit	618	Bone	?
821	1096	630	F	Gully slot	-	-	5
823	1298	630	F	Stakehole	-	-	5
824	1297	630	F	Stakehole	-	-	5
825	1299	630	F	Stakehole	-	-	5
826	1350	630	F	Stakehole	-	-	5
827	1081	425	F	Ditch slot	-	-	8
828	1065, 1066, 1067, 1068, 1069	525	F	Ditch slot	623, 624, 625, 626, 627	-	6
829	1070		F	Posthole	630	-	?
830	1071		F	Stakehole	629	-	?
831	1075, 1076, 1077, 1078, 1079	525	F	Ditch slot	639, 640, 641, 642, 643	-	6
832	1080, 1084	525	F	Ditch slot	634	-	6
833	1356, 1357, 1358		F	Pit	-	-	?7
834	1083		F	Pit	644	Stone, bone	6
835	1085		F	Posthole	636, 637, 679	Stone	6
836	1086		F	Posthole	638	-	6
837	1087		F	Gully slot	652	-	?
838	1088		F	Gully slot	653	-	?
839	1082, 1089, 1090, 1091	525	F	Ditch slot	647, 648, 649, 650	-	6
840	1182	525	F	Ditch slot	685	-	6
841	1183, 1184	935	F	Ditch slot	686, 687	-	8
842	1092		F	Posthole	645	-	?
843	1093		F	Gully	654, 722	Bone	?
844	1094, 1156		F	Pit	646	-	1-4?
845	1188, 1189	1112	F	Gully slot	694, 695	Metal, bone	6

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
846	1186, 1187	1112	F	Gully slot	-	-	6
847	1151, 1152, 1153, 1154	525	F	Ditch slot	657, 658, 659, 660	-	6
848	1157, 1158	525	F	Ditch slot	-	-	6
849	1159		F	Posthole	655	-	?
900	1160		F	Posthole	-	-	?
901	1161		F	Trench	656	-	?
902	1162		F	Trench	-	-	?
903	1163		F	Posthole	-	-	?
904	1164		F	Trench	-	-	?
905	1165		F	Trench	-	-	?
906	1185	1112	F	Gully slot	-	-	6
907		1112	F	Same as 845 & 846	-	-	6
908	1190	630	F	Gully slot	684	-	5
909	1073	409	F	Ditch slot	632	-	8
910	1194	410	F	Ditch slot	688	-	8
911	1192, 1198, 1199, 1254, 1255, 1456	1112	F	Gully slot	696, 697	Lithic	6
912	1193	1111	F	Gully slot	-	-	6
913	1252, 1280		F	Pit	-	-	?
914	1253		F	Gully slot	698	-	6
915	1259, 1260, 1261	525	F	Ditch slot	702, 703, 704	-	6
916	1257, 1258	930	F	Ditch slot	700, 701	-	8
917	1256		F	Pit	699	-	?
918	1266	630	F	Gully slot	707	-	5
919	1267		F	Pit	705	Metal	?
920	1262		F	Furrow	-	-	8
921	1263	409	F	Ditch slot	-	-	8
922	1264		F	Furrow	-	-	8
923	1272		F	Pit	706	-	?
924	1273	409	F	Ditch slot	708	-	8
925	1274		F	Pit	709	-	1-7
926	1275, 1276, 1277		F	Pit	710, 711, 712, 713	Bone	1-7
927	1278, 1279	1111	F	Gully slot	-	-	6
928	1285, 1286		F	Pit	715	-	?
929	1291	940	F	Ditch slot	-	-	8
931	1281		F	Pit	-	-	?

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
932	1282		F	Pit	-	-	?
933	1283, 1284, 1359		F	Pit	730	-	6-7?
934	1265	525	F	Ditch slot	-	-	6
936	1488	941	F	Grave or pit	-	-	6-7?
937	1370		F	Furrow	-	-	8
938	1292, 1293, 1294	410	F	Ditch slot	719, 720, 721	-	8
939	1351		F	Pit	723	Bone	?
942	1361	941	F	Grave or pit	731	Bone	6-7?
943	1368		F	Posthole	732	-	?
945	1364, 1369		F	Pit	733, 734	Pottery	1
946	1365		F	Roothole	737	-	-
947	1366		F	Roothole	-	-	-
948	1489	941	F	Grave or pit	-	-	6-7?
949	1498		F	Gully slot	-	-	6
1000	1372, 1373, 1374, 1381, 1463, 1465		F	Pit	604, 605, 606, 748	Pottery	1
1001	1375, 1376, 1377, 1378, 1379, 1380, 1464		F	Pit	714, 739, 740, 741, 742, 743, 746	Stone, pottery, bone	1
1002	876		F	Pit	747	-	?
1004	1367		F	Posthole	749	-	?
1005	1382	1003	F	Posthole	765	-	4
1006	1383		F	Pit	750, 751	Bone	1?
1007	1384	1110	F	Ditch slot	752	-	8
1008	1385, 1386, 1387, 1388, 1389, 1390		F	Pit	753	-	?
1009	1391, 1392		F	Pit	754, 755	-	?
1010	1393		F	Pit	758	-	?
1011	1394, 1395		F	Pit	762, 763	-	?
1012	1396	1003	F	Posthole	757	-	4
1013	1271, 1289		F	Pit	756, 761	-	?
1014	1397		F	Pit	759	-	?
1015	1398		F	Roothole	760	-	-
1016	1399, 1450, 1451		F	Pit	766, 767, 768	Lithic, pottery	4
1017	1452		F	Posthole	764	-	?
1018	1453	1003	F	Ring gully slot	777	-	4
1019	1454	1003	F	Ring gully slot	778	-	4

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
1020	1455		F	Pit	769	-	?
1021	1457	1003	F	Posthole	770	-	4
1022	1458	1003	F	Ring gully slot	779	-	4
1023	1459, 1460		F	Pit	771, 772	-	?
1024	1461		F	Pit	-	-	?
1025	1462	1003	F	Posthole	773	-	4
1026	1466	1003	F	Stakehole	774	-	4
1027	1467	1003	F	Ring gully slot	775	-	4
1028	1468	1003	F	Ring gully slot	776	-	4
1029	1469		F	Stakehole	-	-	?
1030	1470		F	Stakehole	790	-	?
1031	1471		F	Posthole	791	-	?
1032	1472, 1482, 1486		F	Pit	780, 789, 797	-	?
1034	1474, 1475		F	Posthole	782	-	?
1035	1476	1003	F	Posthole	-	-	4
1036	1480		F	Stakehole	796	-	?
1037	1477		F	Stakehole	783	-	?
1038	1478		F	Stakehole	784	-	?
1039	1479		F	Stakehole	785	-	?
1040	1481, 1485		F	Pit	786, 787, 794, 795	-	?
1041	1483		F	Posthole	792	-	?
1042	1484	1003	F	Posthole	793	-	4
1043	1487	1003	F	Ring gully slot	-	-	4
1044	1490	941	F	Grave or pit	-	-	6-7?
1045	1491	941	F	Grave or pit	-	-	6-7?
1046	1492	941	F	Grave or pit	-	-	6-7?
1047	1493	941	F	Grave or pit	-	-	6-7?
1048	1494	941	F	Grave or pit	-	-	6-7?
1049	1495	941	F	Grave or pit	-	-	6-7?
1100	1496	941	F	Grave or pit	-	-	6-7?
1101	1497	941	F	Grave or pit	-	-	6-7?
1102	1499	410	F	Ditch slot	-	-	8
1103	1550		F	Pit	-	-	?
1104	1551		F	Gully slot	-	-	?
1106	1552		F	Gully slot	-	-	?

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
1107	1553		F	Posthole	-	-	?
1108	1554	1111	F	Gully slot	-	-	6
1109	888, 1555	420	F	Ditch slot	566, 567	-	8
-	853		F	Layer	-	-	1-4?
-	854		F	Layer	-	-	1-4?
-	1250		F	Topsoil	798	Clay tobacco pipe, slag, bone, pottery, metal	-
-	1287		F	Spread	717	-	?
2500	2551		G	Ditch slot	-	-	6?
2501	2552, 2553		G	Ditch slot	1500	Stone	6?
2502	2554, 2555, 2556		G	Ditch slot	1501, 1502, 1503, 1504	-	6?
-	2550		G	Furrow	-	-	8
2600	2651, 2652		H	Pit	1601, 1602	-	4
2601	2653		H	Posthole	1600	-	4
2602	2654		H	Posthole	1603	Bone	4
2603	2655		H	Posthole	1610	-	4
2604	2656		H	Posthole	1605	-	4
2605	2657		H	Posthole	1604	-	4
2606	2658, 2659		H	Posthole	1606, 1607	-	4
2607	2660, 2661, 2662		H	Pit	1613, 1614, 1615	-	4
2608	2663, 2664		H	Cremation burial - possible	1611, 1612	Bone	4
2609	2665		H	Pit	1631	-	4
2610	2666, 2667, 2669		H	Pit	1608, 1609	-	4
2611	2668		H	Stakehole	1616	-	4
2612	2670		H	Stakehole	-	-	4
2613	2671		H	Stakehole	-	-	4
2614	2672		H	Posthole	1617	-	4
2615	2673		H	Pit	1618	-	4
2616	2674		H	Pit	1624	-	4
2617	2675		H	Posthole	1625	-	4
2618	2676		H	Posthole	1626	-	4
2619	2677, 2678, 2679, 2680, 2681		H	Pit	1619, 1620, 1621, 1622, 1623	-	4
2620	2682		H	Stakehole	-	-	4
2621	2683		H	Stakehole	1627	-	4
2622	2684		H	Stakehole	-	-	4

Cut	Deposit	Group No	Area	Description	Sample	Finds	Phase
2623	2685, 2686, 2687		H	Pit	1628, 1629, 1630	Bone	4
-	2650		H	Topsoil	-	Stone	-
2700	2750, 2751, 2752, 2754		I	Ditch slot	-	-	8?
2701	2754		I	Ditch slot	-	-	8?
-	2753		I	Spread	-	-	8?
2702	2756		J	Burrow	-	-	-
-	2755		J	Spread	1700	-	8?

Appendix 2: Catalogue of finds

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
52:1	-	52		A	2	Bone	Burnt cortical bone fragments	4	<1
181:1	23	181		D		Lithic	Chert chunk	1	4
181:2	23	181		D		Lithic	Chert chunk	1	78
251:1	201	251		C		Metal	Iron nail	1	2
252:1	202	252		C	202	Bone	Burnt medium mammal bone fragment of distal articulation of phalanx and cortical bone	15	<1
253:1	201	253		C		Bone	Burnt cortical bone fragment	1	<1
253:2	201	253		C		Metal	12th/13th century iron spoon bit	1	111
254:1	203	254		C	204	Bone	Burnt large mammal rib fragment, medium/large mammal vertebral fragment and mainly cortical bone	14	<1
352:1	-	352		B		Metal	Medieval iron knife blade	1	64
458:1	429	458	1105	F	407	Bone	Burnt cattle left mandible hinge, fragment of mandible of medium/large mammal and mainly trabecular bone	ca70	6
459:1	430	459		F	410	Lithic	Late Neolithic chert blade	1	4
459:2	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:3	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:4	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:5	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition bodysherd	1	7
459:6	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:7	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:8	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:9	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	1
459:10	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	<1
459:11	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition fragment	1	2
459:12	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition crumbs	5	1
459:13	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition bodysherds	2	4
459:14	430	459		F		Pottery	Early Bronze Age Food Vessel of the Vase Tradition bodysherds	2	12
462:1	431	462		F		Bone	Burnt distal shaft of left large mammal humerus and several large mammal long bone fragments	7	26
462:2	431	462		F	412	Bone	Burnt cattle os malleolare, mainly large mammal cortical long bone fragments, some trabecular bone including fragments of probable large mammal tarsals and some fragments of flat bone	ca140	68
462:3	431	462		F	411	Bone	Small fragments of burnt cortical and trabecular bone	ca170	32

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
464:1	434	464		F	414	Bone	Burnt large mammal long bone fragments, small mammal long bone fragments and cortical and trabecular bone fragments	20	3
466:1	435	466		F	417	Bone	Burnt cortical and trabecular bone	2	<1
470:1	546	470		F	421	Bone	Burnt trabecular bone	2	<1
471:1	436	471		F	434	Bone	Burnt cortical and trabecular bone	9	<1
472:1	437	472		F		Bone	Burnt small sesamoid from medium mammal, cortical bone and large mammal long bone fragments	50	12
472:2	437	472		F	435	Bone	Burnt medium/large mammal long bone fragments and cortical bone	ca110	6
473:1	413	473	410	F		Clay tobacco pipe	Bowl fragment	1	2
473:2	413	473	410	F		Metal	Iron nail fragment	1	4
475:1	504	475		F		Metal	Iron nail fragment	1	12
476:1	505	476		F		Bone	Burnt sheep/goat centrotarsale, medium mammal long bone fragments, probable tibia shaft and trabecular bone fragments (probally from medium mammal)	7	2
477:1	506	477		F		Bone	Burnt cortical bone fragments	10	<1
479:1	445	479		F	433	Bone	Tiny burnt bone fragments	9	<1
491:1	501	491		F	428	Bone	Burnt cortical bone fragments	ca20	<1
492:1	502	492		F	429	Stone	Shale bracelet segment- split, 2 pcs co-joining (a-b) (5.5cm length/curved)	2	4
492:2	502	492		F	429	Bone	Burnt cortical bone fragments	ca40	<1
493:1	509	493		F		Bone	Burnt medium mammal rib fragment	1	<1
497:1	404	497	525	F	448	Stone	Beaker or Iron Age hone stone	1	24
497:2	404	497	525	F	448	Stone	Beaker or Iron Age hone stone	1	8
497:3	404	497	525	F	448	Stone	Polished pebble	1	2
497:4	404	497	525	F	448	Stone	Polished pebble	1	1
497:5	404	497	525	F	448	Stone	Hone stone fragment	1	2
552:1	511	552		F	437	Bone	Burnt small/medium mammal cortical bone fragments	7	<1
554:1	505	554		F		Slag	Smithing hearth bottom and undiagnostic slag	3	370
554:2	505	554		F	445	Bone	Burnt small mammal/bird long bone shaft and small/medium mammal flat bone fragments	8	<1
556:1	506	556		F		Slag	Smithing hearth bottom	1	257
556:2	506	556		F	446	Bone	Burnt large mammal rib fragments, medium mammal long bone fragments, medium mammal proximal articulation of second phalanx	50	13
563:1	514	563		F		Bone	Burnt medium and large mammal cortical bone fragments	7	1
563:2	514	563		F		Stone	Late Neolithic/Early Bronze Age rubbing/hammer stone	1	329

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
563:3	514	563		F	460	Bone	Burnt small mammal long bone fragments and large mammal cortical fragments	14	<1
565:1	515	565		F		Bone	Burnt medium mammal rib fragments and cortical bone fragments of medium and large mammals	ca65	7
570:1	516	570		F	459	Bone	Tiny burnt bone fragments	2	<1
571:1	517	571		F	458	Bone	Burnt cortical bone	5	<1
586:1	406	586	525	F		Slag	Undiagnostic slag	1	30
586:2	406	586	525	F		Stone	Late Neolithic/Early Bronze Age rubbing/hammer stone	1	684
586:3	406	586	525	F		Slag	Smithing hearth bottoms	1	1490
586:4	406	586	525	F		Slag	Furnace slag	1	5100
652:1	539	652		F	470	Bone	Burnt large mammal long bone fragments and cortical and trabecular bone fragments	32	6
653:1	540	653		F		Bone	Burnt cortical bone, including long bone fragments from large and medium mammals, trabecular bone fragments, medium mammal rib fragments, skull fragments and pig tooth fragment	131	32
661:1	544	661		F		Bone	Burnt cortical bone including long bone fragments from large mammal and some trabecular	ca 75	14
662:1	545	662		F		Slag	Smithing hearth bottom	1	130
670:1	601	670		F		Stone	Late Neolithic/Early Bronze Age rubbing stone	1	320
680:1	610	680		F	486	Bone	Burnt medium mammal cortical long bone fragments	12	<1
696:1	621	696		F		Stone	Shale bracelet segment, 2pcs co-joining (a-b)	2	2
696:2	621	696		F		Bone	Burnt cortical bone including long bone fragments from large mammal	13	3
753:1	625	753	422	F		Clay tobacco pipe	Stem fragment	1	6
754:1	627	754	409	F		Metal	Iron object - unidentified	1	112
756:1	444	756		F		Clay tobacco pipe	Stem fragment	1	2
756:2	444	756		F		Clay tobacco pipe	Stem fragment	1	2
756:3	444	756		F		Metal	Iron nail fragment?	2	1
756:4	444	756		F		Bone	Burnt cortical bone	8	<1
756:5	444	756		F		Metal	Iron nail fragment?	1	7
756:6	444	756		F	510	Bone	Burnt large mammal cortical long bone fragments	3	1
776:1	644	776		F		Bone	Burnt cortical bone	2	<1
776:2	644	776		F	522	Bone	Burnt medium/large mammal tooth root, cortical bone and flat bone fragments	42	1
778:1	638	778		F	526	Bone	Burnt cortical bone	14	<1

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
861:1	709	861		F		Lithic	Chert convex end scraper	1	7
861:2	709	861/ 1371		F	738	Pottery	Early Neolithic carinated bowl possible shoulder fragment (Vessel 2)	1	3
861:3	709	861/ 1371		F	738	Pottery	Early Neolithic carinated bowl shoulder fragment (Vessel 2)	1	2
861:4	709	861/ 1371		F	738	Pottery	Early Neolithic carinated bowl crumbs (Vessel 1)	4	4
861:6	709	861		F		Pottery	Early Neolithic carinated bowl large shoulder/bodysherd (Vessel 1)	1	56
861:7	709	861		F		Pottery	Early Neolithic carinated bowl bodysherds (Vessel 1)	4	42
861:8	709	861		F		Pottery	Early Neolithic carinated bowl bodysherds (Vessel 1)	2	26
861:9	709	861		F		Pottery	Early Neolithic carinated bowl bodysherds (Vessel 1)	2	9
861:10	709	861		F		Pottery	Early Neolithic carinated bowl shoulder fragments (Vessel 1)	2	7
861:11	709	861		F		Pottery	Early Neolithic carinated bowl fragments (Vessel 1)	2	4
861:12	709	861		F		Pottery	Early Neolithic carinated bowl fragments (Vessel 1)	2	5
861:13	709	861		F		Pottery	Early Neolithic carinated bowl bodysherds (Vessel 1)	4	12
861:14	709	861		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 1)	1	4
861:15	709	861		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 1)	1	2
861:16	709	861		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 1)	1	1
882:1	700	882		F	557	Bone	Burnt cortical bone	1	<1
882:2	700	882		F	678	bone	Burnt small/medium mammal cortical long bone fragments	13	<1
885:1	700	885		F		Stone	Late Neolithic/Early Bronze Age rubbing/hone stone	1	2239
885:2	700	885		F		Stone	Late Neolithic/Early Bronze Age rubbing/hone stone	1	421
887:1	725	887		F		Clay tobacco pipe	Complete clay tobacco pipe stamped with 'Ben Nevis Cutty', 'Wexford' and 'W Murphy', 19th century	1	46
887:2	725	887		F		Clay tobacco pipe	Bowl with stem fragment, bowl is stamped, 19th century	1	34
961:1	714	961	630	F	579	Bone	Burnt bone fragments	2	<1
987:1	803	987	525	F		Slag	Undiagnostic slag	1	558
1060:1	700	1060		F	613	Bone	Burnt cortical bone	ca15	<1
1060:2	700	1060		F		Stone	Late Neolithic/Early Bronze Age saddle quern fragment. Co-joins with 1060:3	1	4100
1060:3	700	1060		F		Stone	Late Neolithic/Early Bronze Age saddle quern fragment. Co-joins with 1060:2	1	6700
1061:1	700	1061		F	614	Stone	Quartz chunk	1	1
1061:2	700	1061		F	614	Stone	Quartz pebbles	36	4
1061:3	700	1061		F	614	Slag/Stone?	Iron rich undiagnostic	1	1
1061:4	700	1061		F	614	Bone	Burnt cortical bone and flat bone	4	<1
1064:1	820	1064		F	618	Bone	Burnt cortical bone	5	<1

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
1072:1	700	1072		F	631	Bone	Burnt cortical bone	4	<1
1083:1	834	1083		F		Stone	Shale bracelet fragment, split	1	5
1083:2	834	1083		F	644	Bone	Human pelvis fragment and possible tibia	26	7
1085:1	835	1085		F		Stone	Iron Age/Early Medieval rotary quern stone fragment	1	7200
1085:2	835	1085		F		Stone	Iron Age/Early Medieval possible rotary quern stone fragment	1	3400
1085:3	835	1085		F		Stone	Iron Age/Early Medieval rotary quern stone fragment	1	7800
1093:1	843	1093		F	722	Bone	Cattle molar tooth fragments	ca20	6
1174:1	745	1174		F		Metal	Iron buckle frame	2	3
1174:2	745	1174		F		Metal	Iron buckle or brooch frame	1	5
1174:3	745	1174		F		Metal	Iron object - unidentified	1	<1
1174:4	745	1174		F		Metal	10th to 15th century iron knife blade and whittle tang fragment	1	9
1174:5	745	1174		F		Metal	Iron object - unidentified	1	6
1174:6	745	1174		F	668	Bone	Burnt trabecular bone and small/medium mammal long bone fragments (could be animal or human)	64	5
1174:7	745	1174		F	676	Bone	Burnt sheep/goat proximal articulation of right radius, sheep/goat proximal articulation of right metacarpal, cattle astragalus fragment, cattle fragment of distal articulation of phalanx, medium mammal fragment of proximal articulation of tibia, medium mammal fragment of distal articulation of femur, medium mammal fragment of distal articulation of first phalanx, medium mammal small sesamoid, medium mammal cortical long bone fragments, some large mammal cortical long bone fragments, small mammal long bone fragments, some trabecular bone, medium mammal pelvis fragments, small/medium mammal rib fragments and skull fragments	ca400	170
1174:8	745	1174		F		Metal	Iron shaft fragment	1	<1
1178:1	746	1178		F	672	Bone	Burnt trabecular and cortical bone (could be animal or human)	12	<1
1188:1	845	1188	1112	F	694	Metal	Iron shaft fragment	1	4
1188:2	845	1188	1112	F	694	Bone	Burnt large mammal cortical long bone fragments	2	<1
1192:1	911	1192	1112	F		Lithic	Flint core	1	3
1250:1	-	1250		F		Clay tobacco pipe	Bowl with stem fragment stamped with 'Wexford Cutty', 'Wexford' and 'W Murphy', 19th century	2	45
1250:2	-	1250		F		Slag	Vitrified hearth lining and iron	14	57
1250:3	-	1250		F		Bone	Burnt cortical bone	2	<1
1250:4	-	1250		F		Bone	Burnt cortical bone	1	<1
1250:5	-	1250		F		Pottery	Creamware rim sherd	1	2
1250:6	-	1250		F		Metal	Iron horseshoe fragment	1	21
1267:1	919	1267		F		Metal	Iron nail fragment	1	1
1276:1	926	1276		F		Bone	Burnt cortical and trabecular bone	10	<1

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
1351:1	939	1351		F	723	Bone	Burnt medium and large mammal cortical and trabecular bone fragments	ca120	14
1355:1	816	1355	630	F		Bone	Burnt cortical bone	1	<1
1361:1	942	1361	941	F	731	Bone	Burnt cortical bone	7	<1
1369:1	945	1369		F	734	Pottery	Early Neolithic carinated bowl fragments (Vessel 3)	2	2
1371:1	709	1371		F	736	Pottery	Early Neolithic carinated bowl fragment (Vessel 1)	1	2
1371:2	709	1371		F	736	Pottery	Early Neolithic carinated bowl fragment (Vessel 2)	1	1
1371:3	709	1371		F	736	Pottery	Early Neolithic carinated bowl crumbs (Vessel 1)	8	3
1371:4	709	1371		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 1)	1	5
1372:1	1000	1372		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 3)	1	5
1372:2	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	5
1372:3	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	2
1372:4	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	3
1372:5	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	3
1372:6	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	1
1372:7	1000	1372		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	3	3
1373:1	1000	1373		F	605	Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	<1
1375:1	1001	1375		F		Stone	L ate Neolithic/Early Bronze Age rubbing/hammer stone	1	682
1375:2	1001	1375		F	714	Pottery	Early Neolithic carinated bowl rim fragment (Vessel 4)	1	5
1375:3	1001	1375		F	714	Pottery	Early Neolithic carinated bowl rim fragment (Vessel 4)	1	3
1375:4	1001	1375		F	714	Pottery	Early Neolithic carinated bow shoulder fragment (Vessel 4)	1	4
1375:5	1001	1375		F	714	Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	1
1375:6	1001	1375		F	714	Pottery	Early Neolithic carinated bowl crumbs (Vessel 4)	11	2
1375:7	1001	1375		F	746	Bone	Burnt small/medium mammal long bone fragments and cortical and trabecular bone	ca50	<1
1375:8	1001	1375		F	714	Bone	Burnt cortical and trabecular bone	ca20	<1
1375:9	1001	1375		F		Pottery	Early Neolithic carinated bowl fragments (Vessel 4)	3	8
1375:10	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	6
1375:11	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:12	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:13	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:14	1001	1375		F		Pottery	Early Neolithic carinated bowl shoulder fragment (Vessel 4)	1	2
1375:15	1001	1375		F		Pottery	Early Neolithic carinated bowl crumbs (Vessel 4)	15	8
1375:16	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	6
1375:17	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	5
1375:18	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	8
1375:19	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	3

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
1375:20	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	7
1375:21	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	7
1375:22	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	6
1375:23	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	6
1375:24	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	5
1375:25	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	4
1375:26	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:27	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:28	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:29	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	3
1375:30	1001	1375		F		Pottery	Early Neolithic carinated bowl bodysherd (Vessel 4)	1	7
1375:31	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	4
1375:32	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	3
1375:33	1001	1375		F		Pottery	Early Neolithic carinated bowl necksherd (Vessel 4)	1	2
1375:34	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:35	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	3
1375:36	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:37	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	1
1375:38	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:39	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:40	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:41	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:42	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:43	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:44	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:45	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:46	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:47	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	1
1375:48	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	2
1375:49	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	1
1375:50	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:51	1001	1375		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 4)	1	<1
1375:52	1001	1375		F		Pottery	Early Neolithic carinated bowl crumbs (Vessel 4)	20	10
1376:1	1001	1376		F		Stone	Late Neolithic/Early Bronze Age rubbing stone	1	232
1376:2	1001	1376		F		Stone	Late Neolithic/Early Bronze Age rubbing/hammer stone	1	170
1376:3	1001	1376		F		Stone	Late Neolithic/Early Bronze Age rubbing stone fragment	1	82

Find No	Cut	Deposit	Group No	Area	Sample No	Category	Description	No pieces	Weight (g)
1376:4	1001	1376		F		Stone	Late Neolithic/Early Bronze Age rubbing stone fragment	1	74
1381:1	1000	1381		F		Pottery	Early Neolithic carinated bowl rimsherd (Vessel 3)	1	4
1381:2	1000	1381		F		Pottery	Early Neolithic carinated bowl rim fragment (Vessel 3)	1	1
1381:3	1000	1381		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	<1
1381:4	1000	1381		F		Pottery	Early Neolithic carinated bowl fragment (Vessel 3)	1	1
1381:5	1000	1381		F		Pottery	Early Neolithic carinated bowl rimsherd (Vessel 3)	1	<1
1383:1	1006	1383		F	751	Bone	Burnt small/medium mammal flat bone plate fragments (could be animal or human)	26	1
1399:1	1016	1399		F		Lithic	Late Neolithic chert double concave scraper	1	3
1399:2	1016	1399		F		Lithic	Beaker chert barbed and tanged arrowhead roughout	1	3
1399:3	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker base-angle sherd (Vessel 5)	1	12
1399:4	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker base sherd (Vessel 5)	1	13
1399:5	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker base sherd (Vessel 5)	1	4
1399:6	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker base sherd (Vessel 5)	1	5
1399:7	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker fragment (Vessel 5)	1	3
1399:8	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker fragment (Vessel 5)	1	2
1399:9	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker base sherd (Vessel 5)	1	4
1399:10	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker fragment (Vessel 5)	1	1
1399:11	1016	1399		F		Pottery	Late Neolithic/Early Bronze Age Beaker crumbs (Vessel 5)	12	5
2552:1	2501	2552		G		Stone	Iron Age/Early Medieval stone disc	1	194
2650:1	-	2650		H		Stone	Late Neolithic/Early Bronze Age rubbing/hammer stone	1	105
2654:1	2602	2654		H	1603	Bone	Burnt small/medium mammal cortical bone fragments	15	<1
2663:1	2608	2663		H	1611	Bone	Burnt trabecular bone (could be animal or human)	60	4
2687:1	2623	2687		H	1630	Bone	Burnt human skull fragments, including possible mandible, petrous bone and teeth, ribs, pelvis, possible metacarpal, tibia and vertebral body	800	300

Appendix 3: Catalogue of samples

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
1	1	51		A	1	1	-	Y
2	2	52		A	2	2	Bone	Y
3	3	53		A	0.50	0.50	-	N
4	4	54		A	0.25	0.25	-	N
5	6	58		D	2	2	-	Y
6	6	58		D	2	2	-	Y
7		80		D	2	2	-	Y
8	6	57		D	3	3	-	Y
9		80		D	1	1	-	Y
10		80		D	1	1	-	Y
11	6	58		D	1	1	-	Y
12		63		D	1	1	-	Y
13	6	58		D	5	5	-	Y
14	6	58		D	2	2	-	Y
15		63		D	2	2	-	Y
16	12	82		D	-	-	-	-
17	10	68		D	1.50	1.50	-	Y
18		80		D	2	2	-	Y
19	13	83		D	0.25	0.25	Wood	N
20	14	84		D	0.25	0.25	-	Y
21		75		D	2	2	-	Y
22	18	88		D	0.10	0.10	Wood	N
23	16	86		D	0.10	0.10	Wood	N
24	15	85		D	0.50	0.50	Wood	N
25	17	87		D	0.50	0.50	Wood	N
26	19	89		D	0.50	0.50	-	N
27	20	90		D	0.50	0.50	Wood	N
28	22	76		D	2	2	-	Y
29	22	76		D	1	1	-	Y
30	23	181		D	2	2	-	Y
31	24	184		D	0.15	0.15	-	N
32		75		D	-	-	Wood sample	N
33		75		D	-	-	Wood sample	N
34		75		D	-	-	Wood sample	N
100		150		E	4	4	-	Y
101		153		E	2	2	-	N
102		150		E	4	4	-	Y
103	101	154		E	2	2	-	Y
104	101	154		E	-	-	-	-
105	102	150		E	4	4	-	Y
106		153		E	2	2	-	Y
107	103	152		E	2	2	-	N
108	104	158		E	2	2	-	Y
109	104	159		E	2	2	-	N
110		157		E	-	-	-	-
111		156		E	2	2	-	Y
112		150		E	4	4	-	Y
113		150		E	2	2	-	Y
114		151		E	2	2	-	Y
201	201	251		C	4.25	4.25	Wood	Y

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
202	202	252		C	3	3	Bone	Y
203					Cancelled	-	-	-
204	203	254		C	1.50	1.50	Bone	Y
205	204	255		C	-	-	-	-
206	205	256		C	-	-	-	-
207				C	Cancelled	-	-	-
208	205	257		C	0.25	0.2	-	Y
400	400	450		F	0.25	0.25	-	Y
401	401	451		F	0.25	0.25	-	Y
402	402	453		F	0.25	0.25	-	Y
403	403	454	525	F	-	-	-	-
404	426	455	1105	F	10	10	-	Y
405	427	456		F	2	2	-	Y
406	428	457		F	2	2	-	N
407	429	458	1105	F	12	12	Bone	Y
408	408	596	422	F	-	-	-	-
409	432	461		F	2	2	-	Y
410	430	459		F	15	15	Lithic	Y
411	431	462		F	12	12	Bone	Y
412	431	462		F	0.25	0.25	Bone	Y
413	411	463	409	F	-	-	-	-
414	434	464		F	4	4	Bone	Y
415	433	460		F	0.25	0.25	-	Y
416	412	465	410	F	-	-	-	-
417	435	466		F	2	2	Bone	Y
418	403	469	525	F	2	2	-	N
419	403	467	525	F	2	2	-	N
420	403	468	525	F	1	1	-	N
421	546	470		F	0.50	0.50	Bone	N
422	413	473	410	F	-	-	-	-
423	440	478		F	2	2	-	N
424	446	486		F	0.25	0.25	-	N
425	405	480	525	F	1.50	1.50	-	N
426	405	481	525	F	-	-	-	-
427	405	482	525	F	1.50	1.50	-	N
428	501	491		F	2	2	Bone	Y
429	502	492		F	2	2	Bone & stone	Y
430	407	595	810	F	1	1	-	Y
431	405	495	525	F	-	-	-	-
432	405	498	525	F	1.50	1.50	-	Y
433	445	479		F	2	2	Bone	Y
434	436	471		F	1.50	1.50	Bone	Y
435	437	472		F	2	2	Bone	Y
436	437	551		F	1	1	-	N
437	511	552		F	2	2	Bone	Y
438	512	553		F	1	1	-	N
439	510	550	525	F	2	2	-	N
440	510	557	525	F	2	2	-	N
441	510	558	525	F	2	2	-	N
442	510	559	525	F	2	2	-	N
443	510	560	525	F	2	2	-	N
444	510	561	525	F	2	2	-	N
445	505	554		F	4	4	Bone	Y
446	506	556		F	4	4	Bone	Y

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
447	404	496	525	F	2	2	-	Y
448	404	497	525	F	12	12	Stone	Y
449	404	499	525	F	12	12	-	N
450	509	493		F	2	2	-	Y
451	514	564		F	0.25	0.25	-	Y
452	508	566	525	F	2	2	-	N
453	508	567	525	F	1.50	1.50	-	N
454	508	568	525	F	1.50	1.50	-	Y
455	508	569	525	F	-	-	-	-
456	519	573		F	0.25	0.25	-	Y
457	406	588	525	F	0.25	0.25	-	Y
458	517	571		F	2	2	Bone	Y
459	516	570		F	2	2	Bone	Y
460	514	563		F	2	2	Bone	Y
461	528	578	525	F	-	-	-	-
462	528	580	525	F	-	-	-	-
463	528	581	525	F	1	1	-	Y
464	528	582	525	F	1.50	1.50	-	N
465	528	583	525	F	2	2	-	N
466	528	584	525	F	1	1	-	Y
467	535	598		F	0.25	0.25	-	N
468	536	599		F	0.25	0.25	-	N
469	537	650		F	2	2	-	N
470	539	652		F	1	1	Bone	Y
471	515	565		F	2	2	-	Y
472	540	653		F	2	2	-	Y
473	541	656		F	2	2	-	N
474	541	657		F	2	2	-	N
475	542	659		F	1.50	1.50	-	Y
476	543	660		F	0.50	0.50	-	Y
477	527	667	930	F	-	-	-	-
478	624	752	409	F	-	-	-	-
479	600	669		F	0.25	0.25	Bone	Y
480	544	661		F	2	2	-	Y
481	602	671	409	F	-	-	-	-
482	603	672	810	F	-	-	-	-
483	604	673	422	F	-	-	-	-
484	606	676		F	-	-	-	-
485	607	677		F	2	2	-	Y
486	610	680		F	2	2	Bone	N
487	612	682		F	1	1	-	N
488	605	674	525	F	-	-	-	-
489	618	687		F	4	4	-	Y
490	619	688		F	2	2	-	Y
491	620	689		F	2	2	-	Y
492	507	494	1105	F	2	2	-	Y
493	613	692	525	F	2	2	-	Y
494	613	693	525	F	2	2	-	N
495	613	694	525	F	2	2	-	Y
496	621	696		F	5	5	-	Y
497	619	690		F	1.50	1.50	-	Y
498	620	691		F	1.50	1.50	-	Y
499	621	695		F	2	2	-	Y
500	626	697		F	1.50	1.50	-	Y
501	627	754	409	F	-	-	-	-

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
502	628	755	410	F	-	-	-	-
503	623	750		F	0.25	0.25	-	N
504	628	757	410	F	-	-	-	-
505	414	698	640	F	6	6	-	Y
506	631	763		F	1	1	-	Y
507	632	764		F	-	-	-	-
508	633	765		F	1	1	-	N
509	416	758	410/935	F	-	-	-	-
510	444	756		F	2	2	Bone	Y
511	634	771		F	2	2	-	Y
512	635	751		F	0.10	0.10	-	N
513	642	773		F	2	2	-	N
514	629	759	420	F	-	-	-	-
515	629	760	420	F	-	-	-	-
516	629	774	420	F	-	-	-	-
517	637	775		F	0.25	0.25	-	Y
518	645	777		F	0.25	0.25	-	N
519	605	781	525	F	1	1	-	N
520	418	782	640	F	2	2	-	N
521	419	783	640	F	0.25-	0.25	-	N
522	644	776		F	0.25	0.25	Bone	Y
523	646	784		F	0.25	0.25	-	Y
524	417	766	525	F	1.50	1.50	-	Y
525	417	767	525	F	1.50	1.50	-	N
526	638	778		F	4	4	Bone	Y
527	639	779		F	2	2	Bone	Y
528	614	683	422	F	2	2	-	N
529	615	684	810	F	2	2	-	Y
530	616	685		F	2	2	-	N
531	648	790	422	F	-	-	-	-
532	647	789		F	0.25	0.25	-	Y
533	701	797		F	1.50	1.50	-	Y
534	702	798	640	F	3	3	-	N
535	703	851	425	F	-	-	-	-
536	707	855		F	0.25	0.25	-	N
537	708	856		F	0.25	0.25	-	N
538	710	857	525	F	2	2	-	N
539	723	858	935	F	-	-	-	-
540	719	873	630	F	4	4	-	N
541	718	872	705	F	1.50	1.50	-	Y
542	720	874	422	F	-	-	-	-
543	721	875	810	F	-	-	-	-
544	649	794	420	F	-	-	-	-
545	423	787	525	F	2	2	-	N
546	722	878		F	2	2	-	N
547	416	758	410/935	F	-	-	-	-
548	704	862	525	F	2	2	-	N
549	704	864	525	F	2	2	-	Y
550	704	865	525	F	1.50	1.50	-	Y
551	704	866	525	F	1.50	1.50	-	Y
552	423	786	525	F	-	-	-	-
553	421	785	810	F	-	-	-	-
554	625	753	422	F	-	-	-	-

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
555	700	880		F	2	2	-	N
556	700	881		F	2	2	-	N
557	700	882		F	2	2	Bone	N
558	700	885		F	2	2	-	N
559	700	886		F	2	2	-	Y
560	526	788		F	0.50	0.50	-	Y
561	731	893	525	F	10	10	-	Y
562	731	894	525	F	15	15	-	N
563	731	895	525	F	-	-	-	-
564	731	896	525	F	2	2	-	N
565	731	897	525	F	1	1	-	N
566	1109	888	420	F	-	-	-	-
567	1109	888	420	F	-	-	-	-
568	728	890	935	F	-	-	-	-
569	730	892	425	F	-	-	-	-
570	737	954	630	F	0.50	0.50	-	Y
571	727	889	640	F	4	4	-	Y
572	733	950		F	2	2	-	Y
573	734	951		F	2	2	-	Y
574	740	956	705	F	1.50	1.50	-	N
575	741	957	422	F	-	-	-	-
576	741	958	422	F	-	-	-	-
577					Cancelled	-	-	-
578	743	960	640	F	2	2	-	N
579	714	961	630	F	1	1	Bone	Y
580	715	962	630	F	0.50	0.50	-	N
581	716	963	630	F	2.50	2.50	-	Y
582	649	794	420	F	2	2	-	N
583	749	968	410	F	-	-	-	-
584	800	969	935	F	-	-	-	-
585	747	966	525	F	-	-	-	-
586	748	967	930	F	-	-	-	-
587	747	970	525	F	-	-	-	-
588	747	971	525	F	2	2	-	N
589	622	972		F	2	2	-	N
590	622	973		F	2	2	-	Y
591					Cancelled	-	-	-
592	622	675		F	2	2	-	Y
593	622	976		F	1.50	1.50	-	N
594	622	977		F	0.25	0.25	-	N
595	622	978		F	0.25	0.25	-	Y
596	622	979		F	0.25	0.25	-	Y
597	622	980		F	0.25	0.25	-	Y
598	622	981		F	0.25	0.25	-	N
599	622	982		F	0.25	0.25	-	N
600	622	983		F	1.50	1.50	-	Y
601	622	984		F	0.25	0.25	-	Y
602	801	985	940	F	2	2	-	Y
603	803	987	525	F	10	10	-	Y
604	1000	1372		F	2	2	-	N
605	1000	1373		F	2	2	Pottery	Y
606	1000	1374		F	0.50	0.50	-	Y
607	807	997		F	-	-	-	-
608	812	1050		F	2	2	-	Y
609	813	1051	525	F	1	1	-	N

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
610	813	1052	525	F	1	1	-	N
611	813	1053	525	F	1.50	1.50	-	N
612	742	993		F	2	2	-	Y
613	700	1060		F	2	2	Bone	Y
614	700	1061		F	2	2	Bone, stone & slag/stone?	Y
615	704	868	525	F	0.25	0.25	-	N
616	704	869	525	F	0.50	0.50	-	N
617	704	871	525	F	0.50	0.50	-	N
618	820	1064		F	2	2	Bone	Y
619	815	1056	525	F	10	10	-	N
620	815	1057	525	F	10	10	-	N
621	815	1058	525	F	10	10	-	N
622	815	1059	525	F	10	10	-	N
623	828	1065	525	F	10	10	-	Y
624	828	1066	525	F	10	10	-	Y
625	828	1067	525	F	10	10	-	Y
626	828	1068	525	F	10	10	-	Y
627	828	1069	525	F	10	10	-	N
628	806	996		F	2	2	-	Y
629	830	1071		F	0.50	0.50	-	Y
630	829	1070		F	2	2	-	Y
631	700	1072		F	1	1	Bone	Y
632	909	1073	409	F	-	-	-	-
633	700	1074		F	1.50	1.50	-	Y
634	832	1080/ 1084	525	F	1	1	-	Y
635	444	756		F	0.25	0.25	-	N
636	835	1085		F	4	4	-	Y
637	835	1085		F	1.25	1.25	-	Y
638	836	1086		F	2	2	-	Y
639	831	1075	525	F	15	15	-	N
640	831	1076	525	F	15	15	-	N
641	831	1077	525	F	15	15	-	Y
642	831	1078	525	F	15	15	-	N
643	831	1079	525	F	15	15	-	Y
644	834	1083		F	2	2	Bone	Y
645	842	1092		F	2	2	-	N
646	844	1094		F	2	2	-	Y
647	839	1082	525	F	-	-	-	-
648	839	1089	525	F	-	-	-	-
649	839	1090	525	F	1	1	-	Y
650	839	1091	525	F	2	2	-	Y
651	805	1155		F	8	8	-	Y
652	837	1087		F	2	2	-	N
653	838	1088		F	2	2	-	Y
654	843	1093		F	2	2	-	Y
655	849	1159		F	2	2	-	Y
656	901	1161		F	2	2	-	N
657	847	1151	525	F	-	-	-	-
658	847	1152	525	F	-	-	-	-
659	847	1153	525	F	1	1	-	Y
660	847	1154	525	F	1	1	-	Y
661	744	1167		F	2	2	-	N

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
662	744	1168		F	2	2	-	N
663	745	1169		F	1	1	-	N
664	745	1170		F	2	2	-	N
665	745	1171		F	0.25	0.25	-	N
666	745	1172		F	1.50	1.50	-	N
667	745	1173		F	1.50	1.50	-	N
668	745	1174		F	2	2	Bone	Y
669	745	1175		F	2	2	-	Y
670	745	1176		F	1.50	1.50	-	N
671	745	1177		F	1.50	1.50	-	Y
672	746	1178		F	2	2	Bone	Y
673	746	1179		F	0.25	0.25	-	Y
674	745	1180		F	0.25	0.25	-	Y
675	745	1181		F	2	2	-	Y
676	745	1174		F	0.05	0.05	Bone	N
677	700	885		F	0.05	0.05	-	Y
678	700	882		F	0.05	0.05	Bone	N
679	835	1085		F	0.25	0.25	-	Y
680	808	1097	525	F	-	-	-	-
681					Cancelled	-	-	-
682	808	1099	525	F	2	2	-	N
683	808	1150	525	F	2	2	-	N
684	908	1190	630	F	2	2	-	N
685	840	1182	525	F	-	-	-	-
686	841	1183	935	F	-	-	-	-
687	841	1184	935	F	-	-	-	-
688	910	1194	410	F	-	-	-	-
689	726	1195	525	F	-	-	-	-
690	726	1196	525	F	-	-	-	-
691	726	1197	525	F	2	2	-	N
692					Cancelled	-	-	-
693				F	Cancelled	-	-	-
694	845	1188	1112	F	2	2	Bone & metal	N
695	845	1189	1112	F	2	2	-	Y
696	911	1192	1112	F	0.25	0.25	-	N
697	911	1254	1112	F	0.25	0.25	-	Y
698	914	1253		F	0.25	0.25	-	N
699	917	1256		F	2	2	-	N
700	916	1257	930	F	-	-	-	-
701	916	1258	930	F	-	-	-	-
702	915	1259	525	F	2	2	-	N
703	915	1260	525	F	-	-	-	-
704	915	1261	525	F	-	-	-	-
705	919	1267		F	15	15	Bone	Y
706	923	1272		F	0.25	0.25	-	Y
707	918	1266	630	F	3.50	3.50	-	N
708	924	1273	409	F	-	-	-	-
709	925	1274		F	2	2	-	Y
710	926	1275		F	2	2L	-	Y
711	926	1276		F	2L	2	-	Y
712	926	1277		F	2	2	-	Y
713	926	1276		F	2	2	-	Y
714	1001	1375		F	15	15	Bone & pottery	Y

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
715	928	1285		F	1.50	1.50	-	Y
716					Cancelled	-	-	-
717		1287		F	-	-	-	-
718	817	1295	630	F	2	2	-	N
719	938	1292	410	F	-	-	-	-
720	938	1293	410	F	-	-	-	-
721	938	1294	410	F	-	-	-	-
722	843	1093		F	0.25	0.25	Bone	Y
723	939	1351		F	15	15	Bone	Y
724	805	1352		F	2	2	-	Y
725	805	1353		F	0.50	0.50	-	Y
726	805	1354		F	0.25	0.25	-	Y
727	818	1095	630	F	0.25	0.25	-	Y
728	816	1355	630	F	2	2	-	Y
729					Cancelled	-	-	-
730	933	1283		F	0.25	0.25	-	Y
731	942	1361		F	15	15	Bone	N
732	943	1368		F	2	2	-	N
733	945	1364		F	4	4	-	Y
734	945	1369		F	4	4	Pottery	Y
735	709	861		F	10	10	-	Y
736	709	1371		F	10	10	Pottery	Y
737	946	1365		F	2	2	-	Y
738	709	861 / 1371		F	10	10	Pottery	Y
739	1001	1376		F	2	2	-	Y
740	1001	1377		F	2	2	-	Y
741	1001	1378		F	2	2	-	Y
742	1001	1379		F	2	2	-	Y
743	1001	1380		F	2	2	-	N
744	643	852		F	2	2	-	Y
745	706	1055		F	2	2	-	Y
746	1001	1375		F	2	2	Bone	Y
747	1002	876		F	2	2	-	Y
748	1000	1381		F	2	2	-	N
749	1004	1367		F	2	2	-	Y
750	1006	1383		F	2	2	-	Y
751					Cancelled	-	-	-
752	1007	1384	1110	F	-	-	-	-
753	1008	1390		F	-	-	-	-
754	1009	1391		F	2	2	-	Y
755	1009	1392		F	2	2	-	Y
756	1013	1271		F	1	1	-	Y
757	1012	1396	1003	F	0.25	0.25	-	N
758	1010	1393		F	2	2	-	Y
759	1014	1397		F	0.25	0.25	-	Y
760	1015	1398		F	-	-	-	-
761	1013	1289		F	1.50	1.50	-	N
762	1011	1395		F	2	2	-	N
763	1011	1394		F	2	2	-	N
764	1017	1452		F	2	2	-	Y
765	1005	1382	1003	F	2	2	-	Y
766	1016	1399		F	4	4	-	Y
767	1016	1450		F	2	2	-	Y
768	1016	1451		F	2	2	-	N

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
769	1020	1455		F	2	2	-	N
770	1021	1457	1003	F	1	1	-	Y
771	1023	1459		F	2	2	-	N
772	1023	1460		F	2	2	-	Y
773	1025	1462	1003	F	2	2	-	Y
774	1026	1466	1003	F	0.25	0.25	-	Y
775	1027	1467	1003	F	0.25	0.25	-	Y
776	1028	1468	1003	F	0.25	0.25	-	Y
777	1018	1453	1003	F	2	2	-	Y
778	1019	1454	1003	F	2	2	-	Y
779	1022	1458	1003	F	2	2	-	Y
780	1032	1472		F	0.25	0.25	-	Y
781				F	Cancelled	-	-	-
782	1034	1475		F	0.25	0.25	-	Y
783	1037	1477		F	2	2	-	Y
784	1038	1478		F	2	2	-	Y
785	1039	1479		F	2	2	-	Y
786	1040	1481		F	0.05	0.05	-	Y
787	1040	1481		F	4	4	-	Y
788					Cancelled	-	-	-
789	1032	1482		F	2	2	-	N
790	1030	1470		F	0.05	0.05	-	N
791	1031	1471		F	0.25	0.25	-	N
792	1041	1483		F	0.25	0.25	-	N
793	1042	1484	1003	F	2	2	-	Y
794	1040	1485		F	0.05	0.05	-	Y
795	1040	1481		F	2	2	-	N
796	1036	1480		F	0.05	0.05	-	N
797	1032	1486		F	2	2	-	N
798	-	1250		F	0.05	0.05	-	Y
1500	2501	2551		G	2	2	-	N
1501	2502	2553		G	2	2	-	Y
1502	2502	2554		G	-	-	-	-
1503	2502	2555		G	-	-	-	-
1504	2502	2556		G	-	-	-	-
1600	2601	2653		H	1.50	1.50	-	N
1601	2600	2652		H	-	-	-	-
1602	2600	2651		H	1.50	1.50	-	Y
1603	2602	2654		H	2	2	Bone	Y
1604	2605	2657		H	2	2	-	Y
1605	2604	2656		H	2	2	-	N
1606	2606	2658		H	2	2	-	Y
1607	2606	2659		H	-	-	-	-
1608	2610	2666		H	0.25	0.25	-	N
1609	2610	2667		H	0.25	0.25	-	Y
1610	2603	2655		H	2	2	-	Y
1611	2608	2663		H	4	4	Bone	Y
1612	2608	2664		H	1.50	1.50	-	N
1613	2607	2660		H	1	1	-	N
1614	2607	2661		H	-	-	-	-
1615	2607	2662		H	-	-	-	-
1616	2611	2668		H	0.50	0.50	-	N
1617	2614	2672		H	0.25	0.25	-	N
1618	2615	2673		H	0.25	0.25	-	N
1619	2619	2677		H	-	-	-	-

Sample No	Cut	Deposit	Group No	Area	Volume sieved (L)	Volume floated (L)	Finds?	Charred plant remains?
1620	2619	2678		H	2	2	-	Y
1621	2619	2679		H	2	2	-	Y
1622	2619	2680		H	-	-	-	-
1623	2619	2681		H	1.50	1.50	-	N
1624	2616	2674		H	-	-	-	-
1625	2617	2675		H	2	2	-	N
1626	2618	2676		H	2	2	-	N
1627	2621	2683		H	0.25	0.25	-	Y
1628	2623	2685		H	2	2	-	Y
1629	2623	2686		H	2	2	-	N
1630	2623	2687		H	6	6	Bone	Y
1631	2609	2665		H	-	-	-	-
1700		2755		J	2	2	-	Y

Appendix 4: Archive contents

Category	Item	Quantity	Condition
Paper records	Number allocation sheet	6	Good
	Context index sheets	47	Good
	Context sheets	1071	Good
	Section index sheets	16	Good
	Plan keys	6	Good
	Sample index sheets	14	Good
	Level sheets	75	Good
	Find record sheets	4	Good
Plans	1:20 pre-ex plans (A2)	13	Good
	1:20 mid-ex plans (A2)	4	Good
	1:20 post-ex plans (A2)	82	Good
	1:50 pre-ex plan (A2)	1	Good
	1:100 pre-ex plans (A2)	10	Good
	1:100 post-ex plans (A2)	11	Good
	1:200 tie-in plans (A2)	4	Good
	1:250 pre-ex plan (A2)	1	Good
	1:250 post-ex plan (A2)	1	Good
Sections	Section sheets (A2)	38	Good
	1:10 section drawings (on those sheets)	319	Good
Photographs	Digital photographs	939	Digitally stored & backed-up

160000E

190000E

175000N

160000N

Nenagh
An tAonach

Broadford
Áth Leathan

Killaloe
Cill Dalua

Ballina
Beal an Átha

Birdhill
Birdhill
Cnocán an Eim Fhinn

O'Briensbridge
Droichead Uí Bhriain

Castleconnell
Caisleán Uí Chonaill

Newport
An Port Nua

Limerick
Luimneach

SITE

Arra Mountains
Sliabh Ara

Silvermine
Sliabh an Airgid
Mountains

Slievekimalta
or
Keeper Hill
Sliabh Coimeálta

SLIEVE FELIM
MOUNTAINS
Sliabh Eibhlinne

SLIEVEFELIM
MOUNTAINS
Sliabh
Eibhlinne

0 5km

N

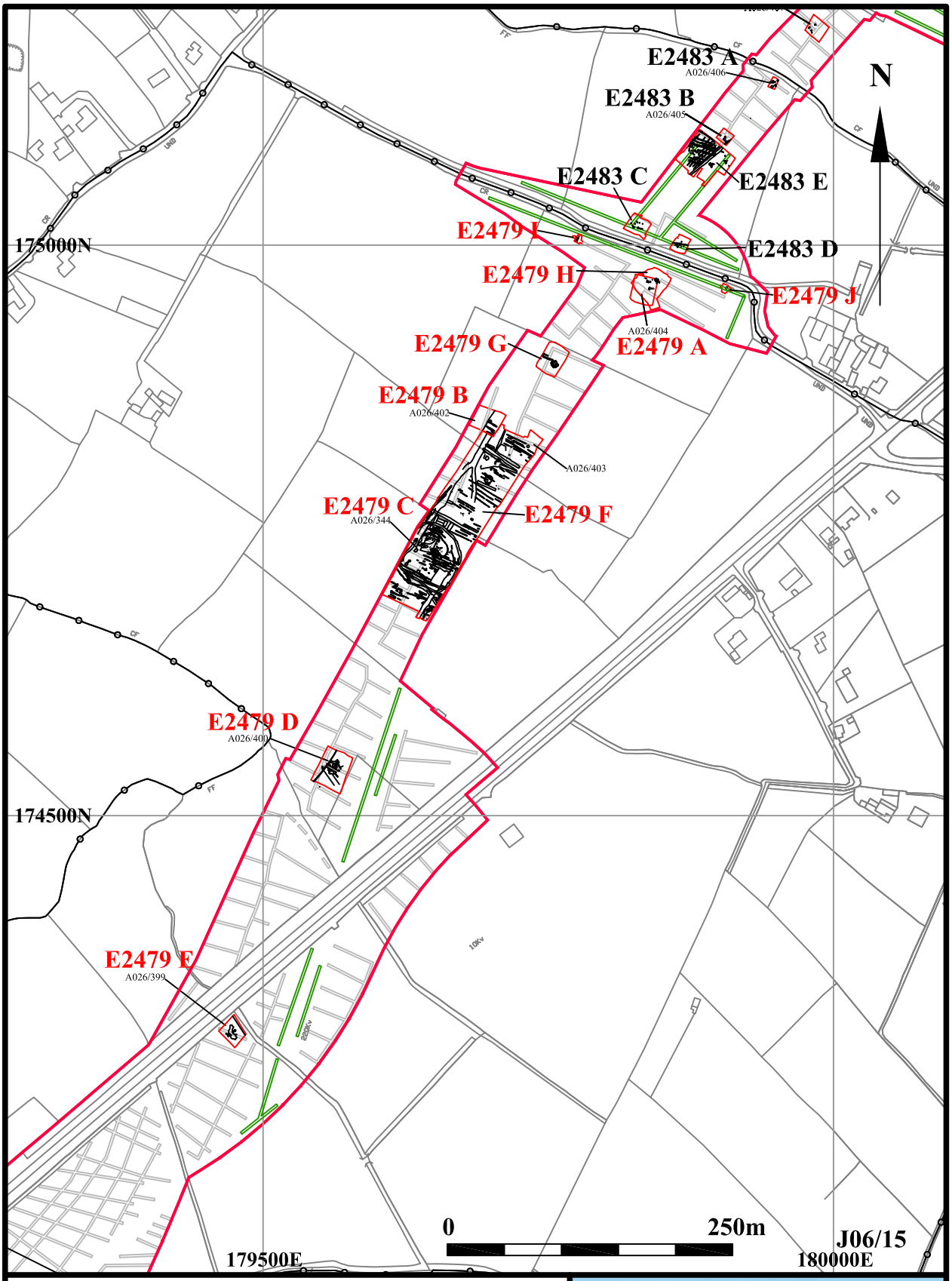
Londonderry
Larne
Donegal
Belfast
Sligo
Castlebar
Dundalk
Athlone
Galway
Dublin
Roscrea
Limerick
Kilkenny
Tralee
Waterford
Rosslare
Killarney
Cork

J06/15

N7 Nenagh to Limerick High Quality Dual Carriageway
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 1: Site Location

TVAS IRELAND LTD

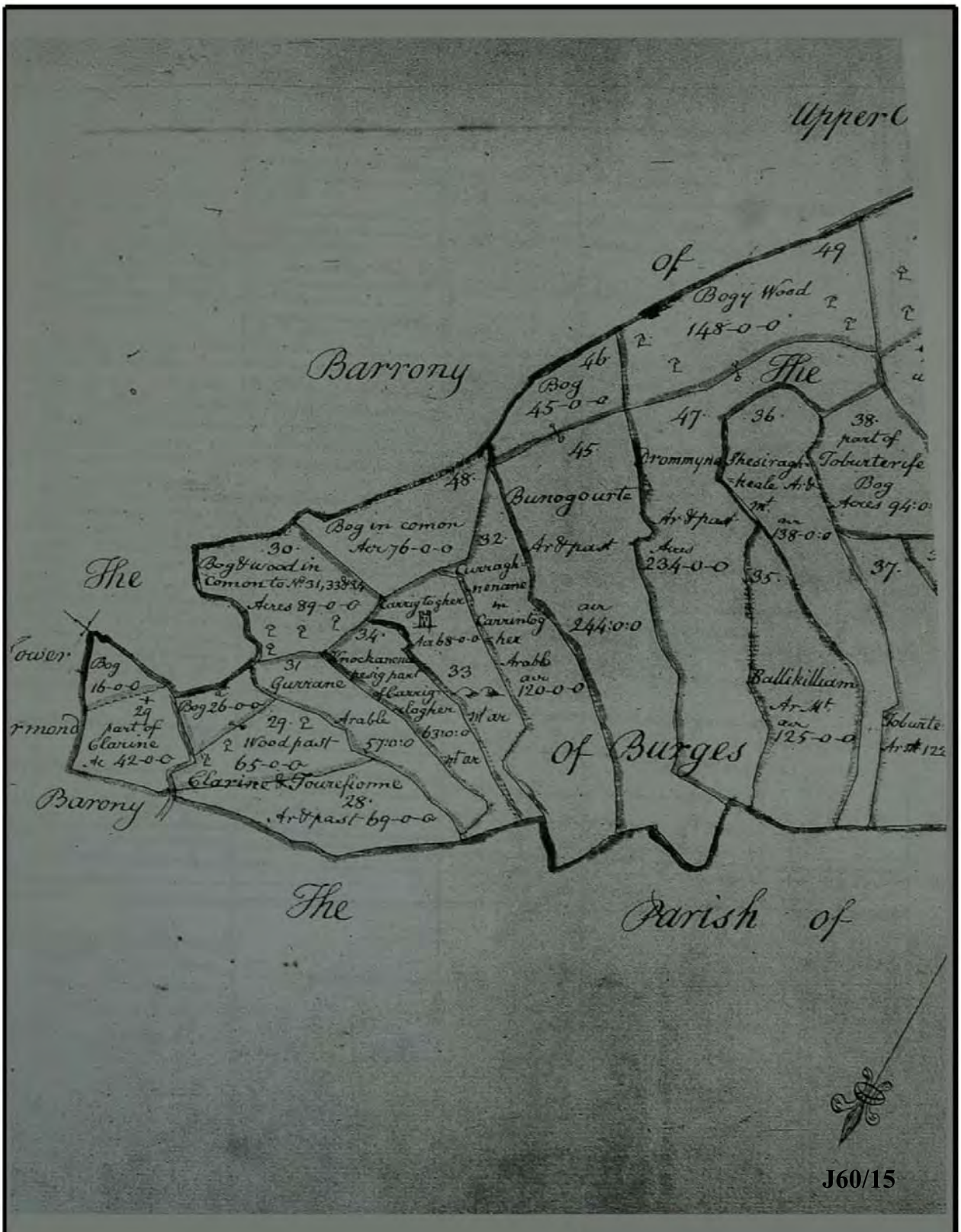


N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 2: Site location and test trenches

Scale 1:5000
Based on Ordnance Survey Ireland digital mapping

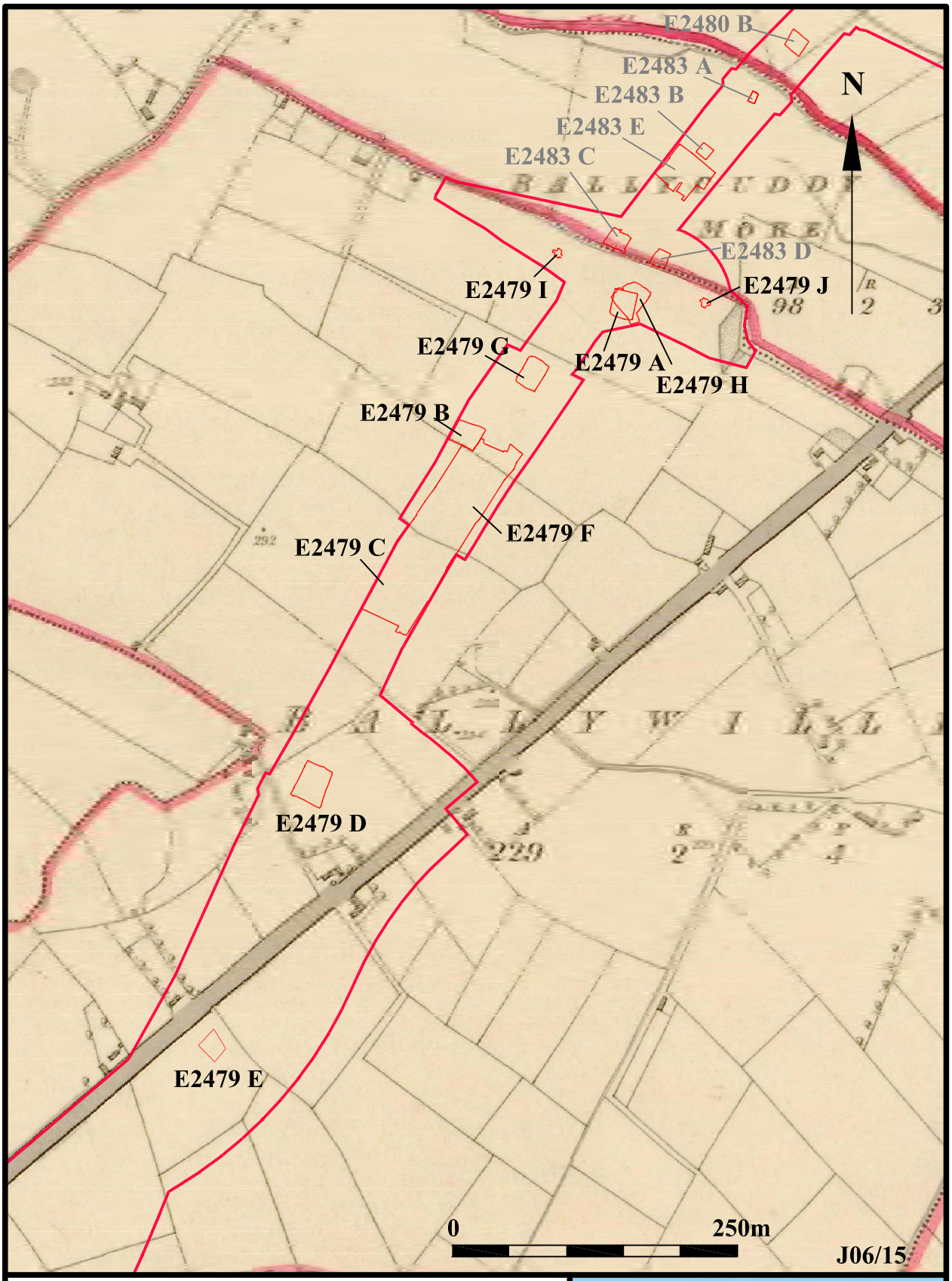
TVAS IRELAND LTD



N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 3: 1655-56 Down Survey Map Burges (Burgesbeg) Parish Part 1

TVAS IRELAND LTD

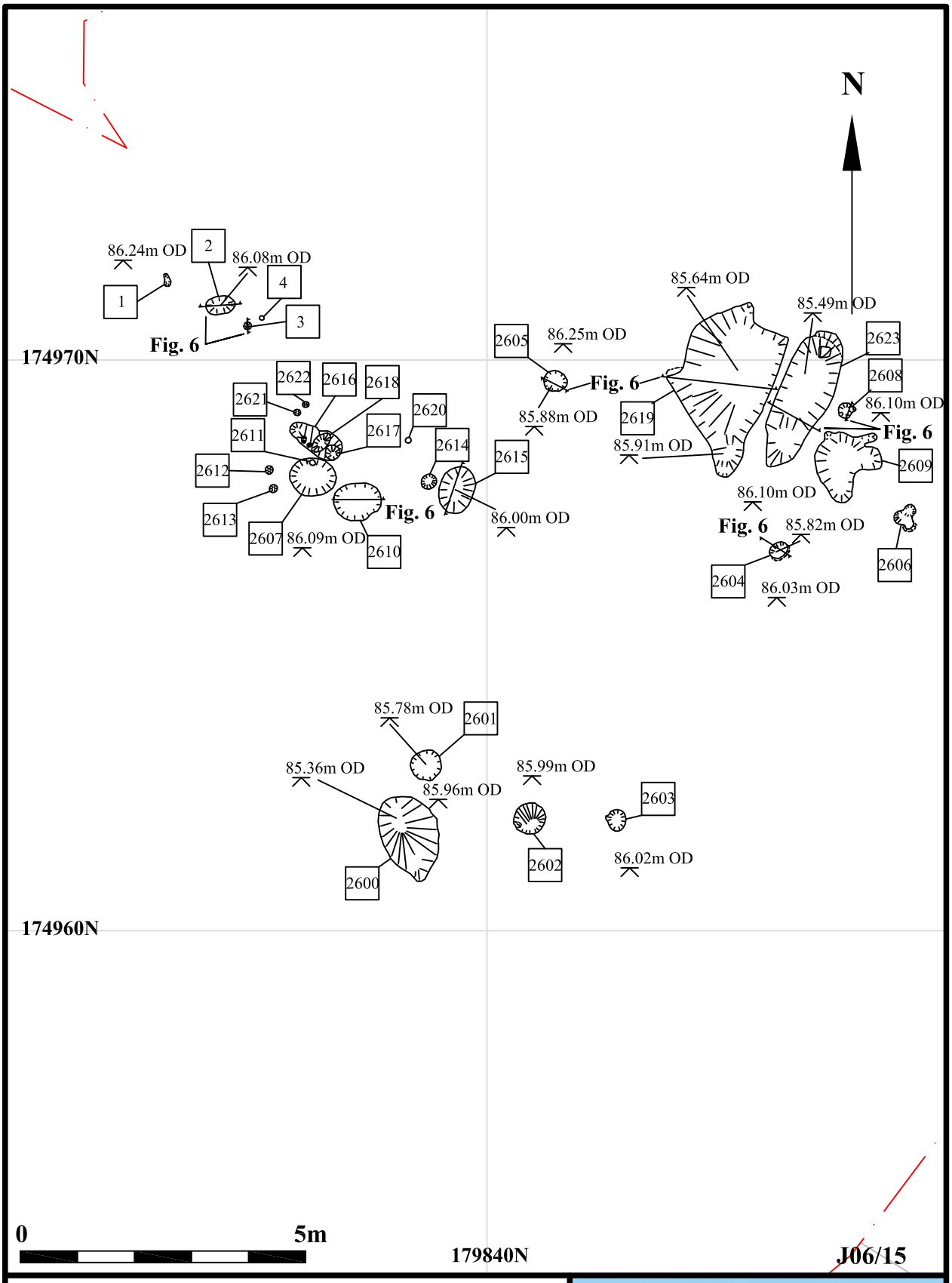


N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 4: Ordnance Survey 1st Edition Map, 1843

Scale 1:5000
Based on OS 1st Edition, Co. Tipperary Sheet 26, 6" to mile
LCCPermit: 2010/09/CCMA/Tipperary County Council

TVAS IRELAND LTD

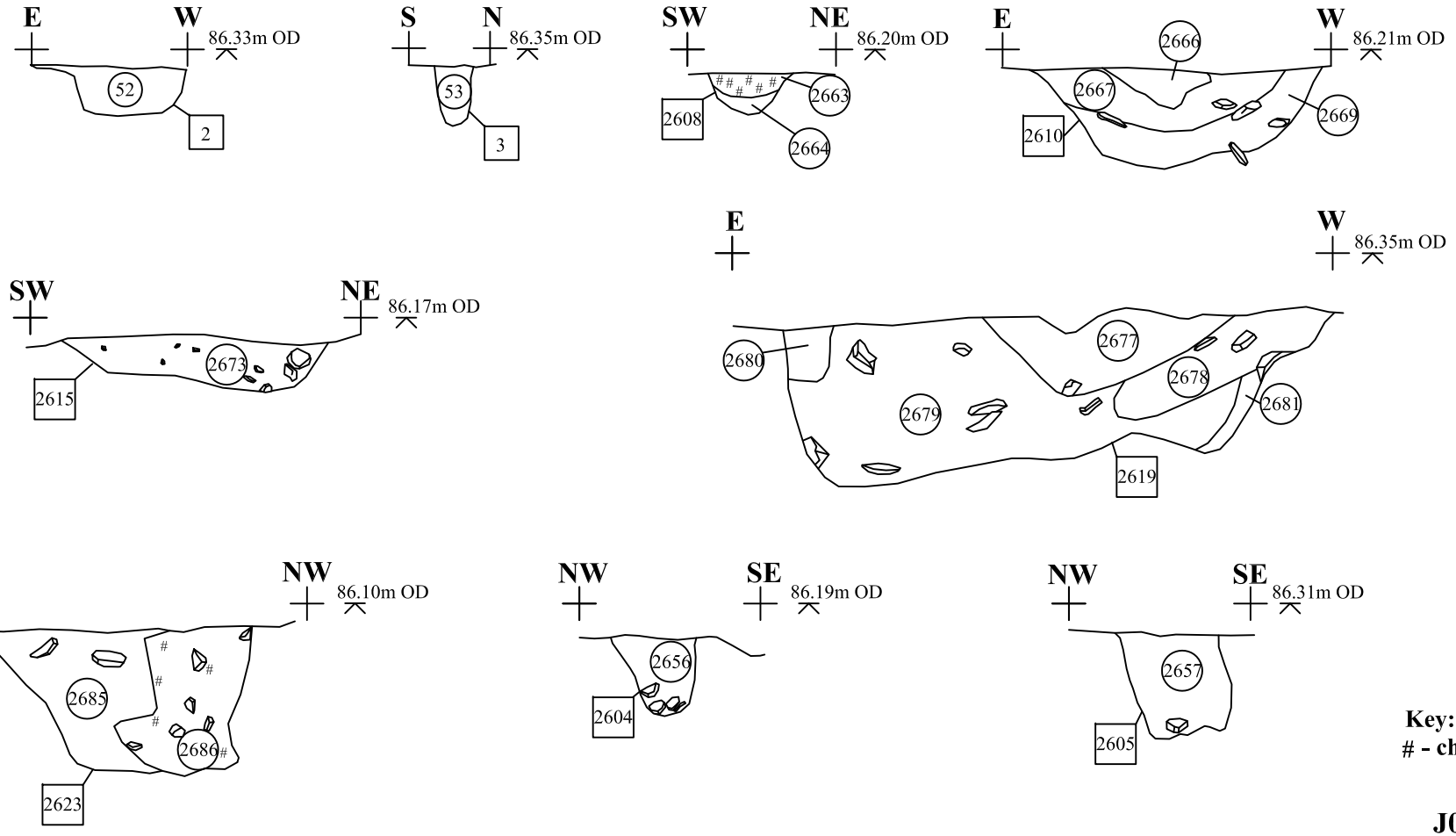


N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 5: Post-excavation plan of Areas A & H

Scale 1:100

TVAS IRELAND LTD



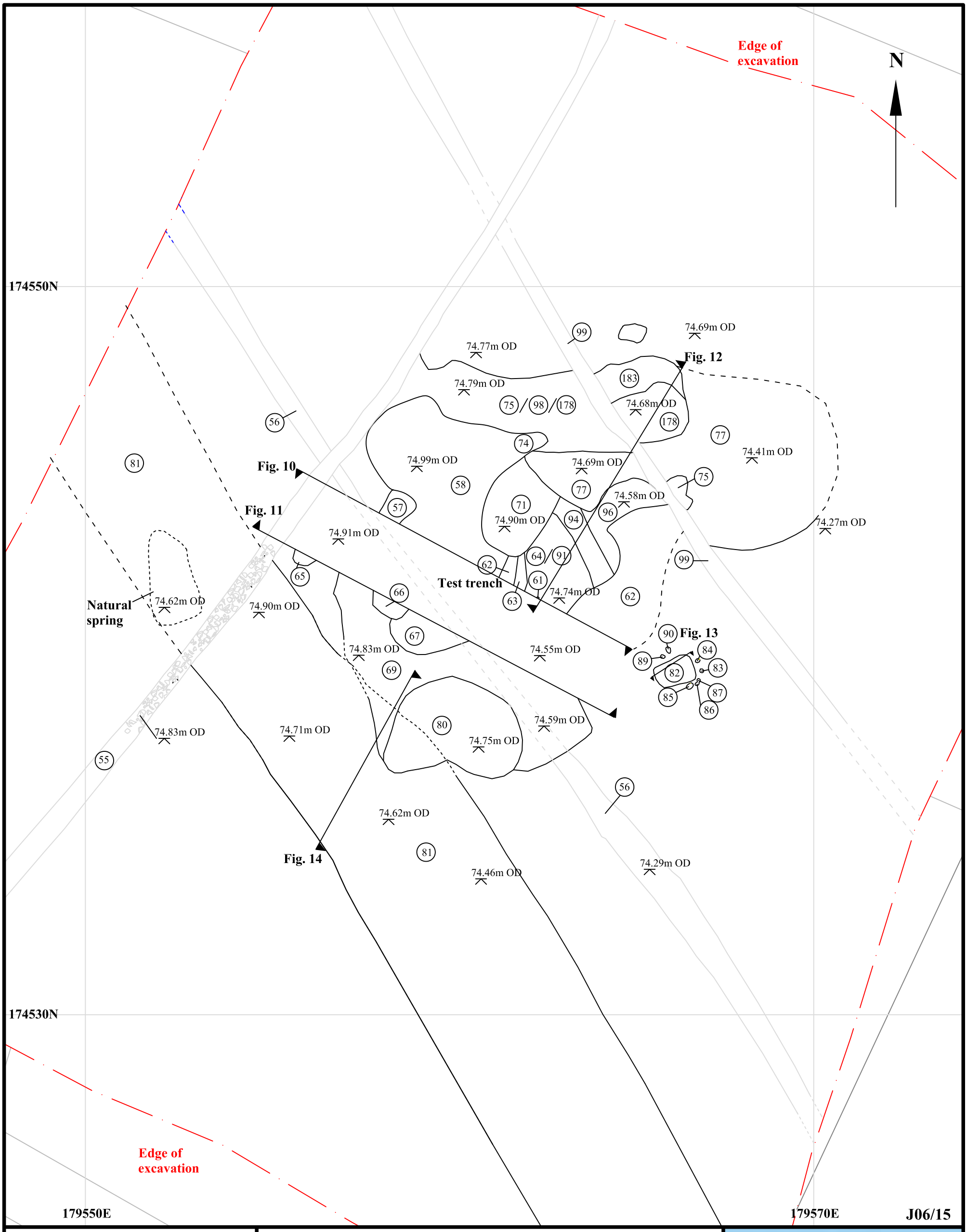
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 6: Sections of pit 2, stakehole 3, pits 2608, 2610, 2615, 2619 & 2623 and postholes 2604 & 2605, Area A&H

Scale: 1:20

TVAS IRELAND LTD



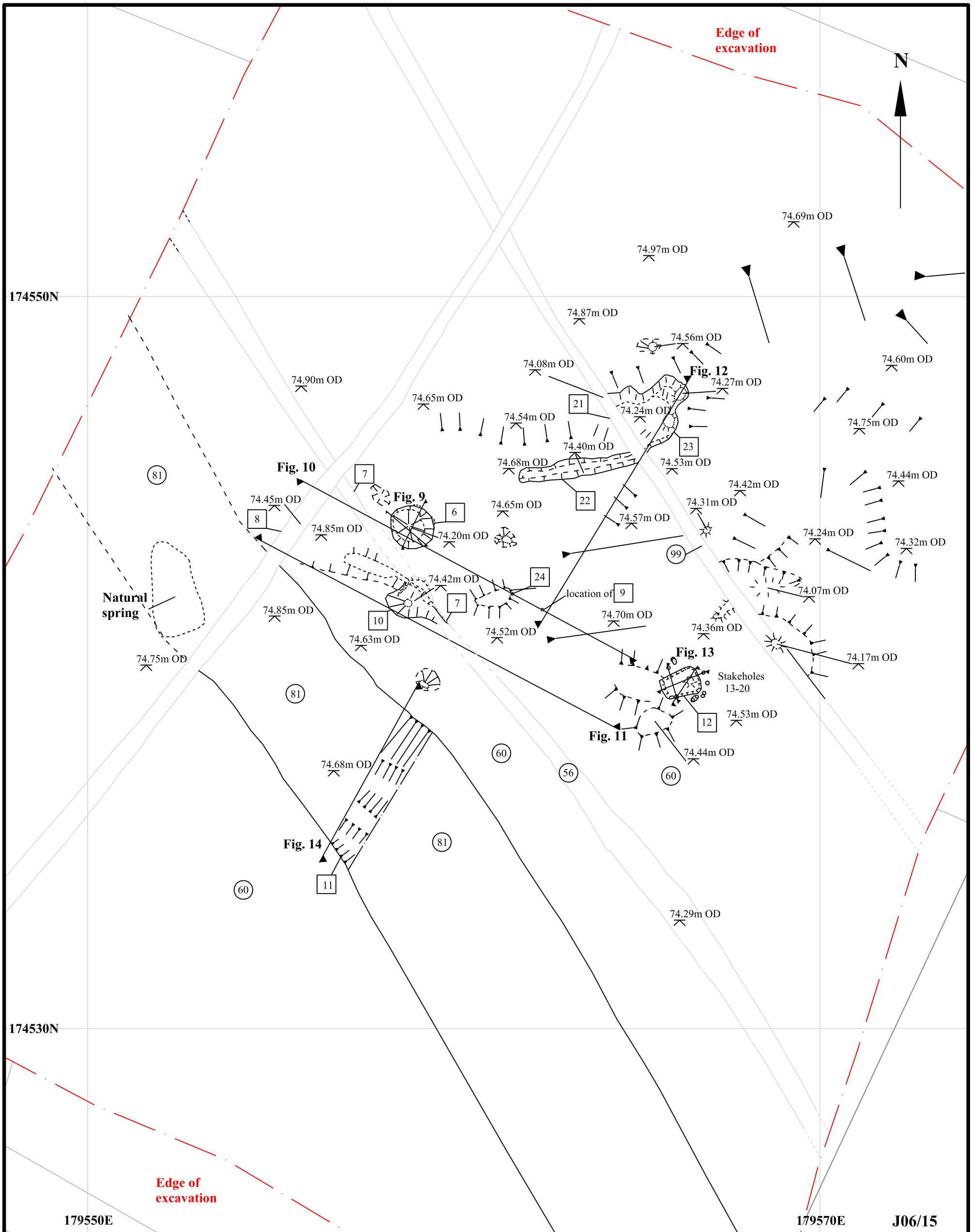
0 5m

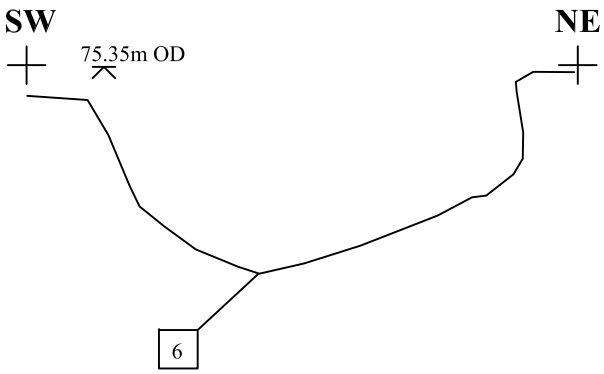
N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

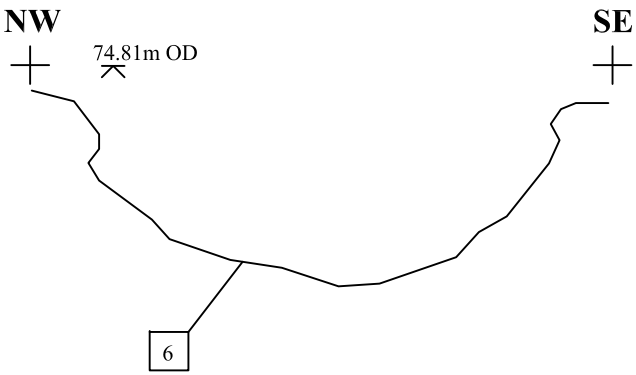
Figure 7: Pre-excavation plan of Area D

Scale: 1:100

TVAS IRELAND LTD


Edge of excavation
N
74.69m OD
74.97m OD
174550N
74.87m OD
74.56m OD
74.08m OD
74.60m OD
Fig. 12
74.90m OD
74.27m OD
74.65m OD
21
74.24m OD
74.54m OD
74.75m OD
74.40m OD
23
74.68m OD
74.53m OD
Fig. 10
7
74.44m OD
74.42m OD
Fig. 9
74.45m OD
74.31m OD
81
6
74.65m OD
8
74.57m OD
74.85m OD
74.20m OD
74.24m OD
74.32m OD
99
24
74.42m OD
location of 9
Natural spring
74.85m OD
7
74.70m OD
74.07m OD
10
74.52m OD
74.36m OD
74.63m OD
Fig. 13
74.17m OD
74.75m OD
Stakeholes 13-20
81
12
74.53m OD
Fig. 11
74.44m OD
60
74.68m OD
56
60
Fig. 14
81
11
60
74.29m OD
174530N
Edge of excavation
179550E
179570E
J06/15
0
5m
N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary
Figure 8: Post-excavation plan of Area D
Scale: 1:100
TVAS IRELAND LTD





J06/15

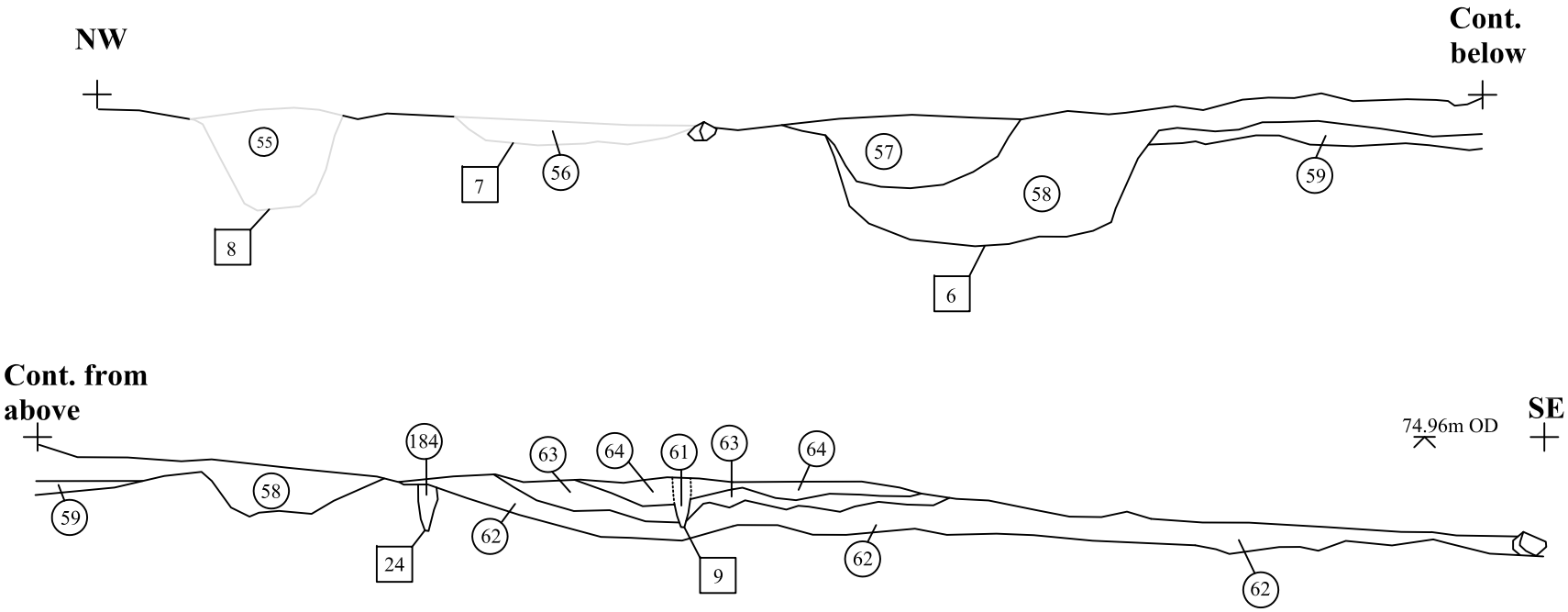
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 9: Profiles of trough 6, Area D

Scale: 1:20

TVAS IRELAND LTD



J06/15

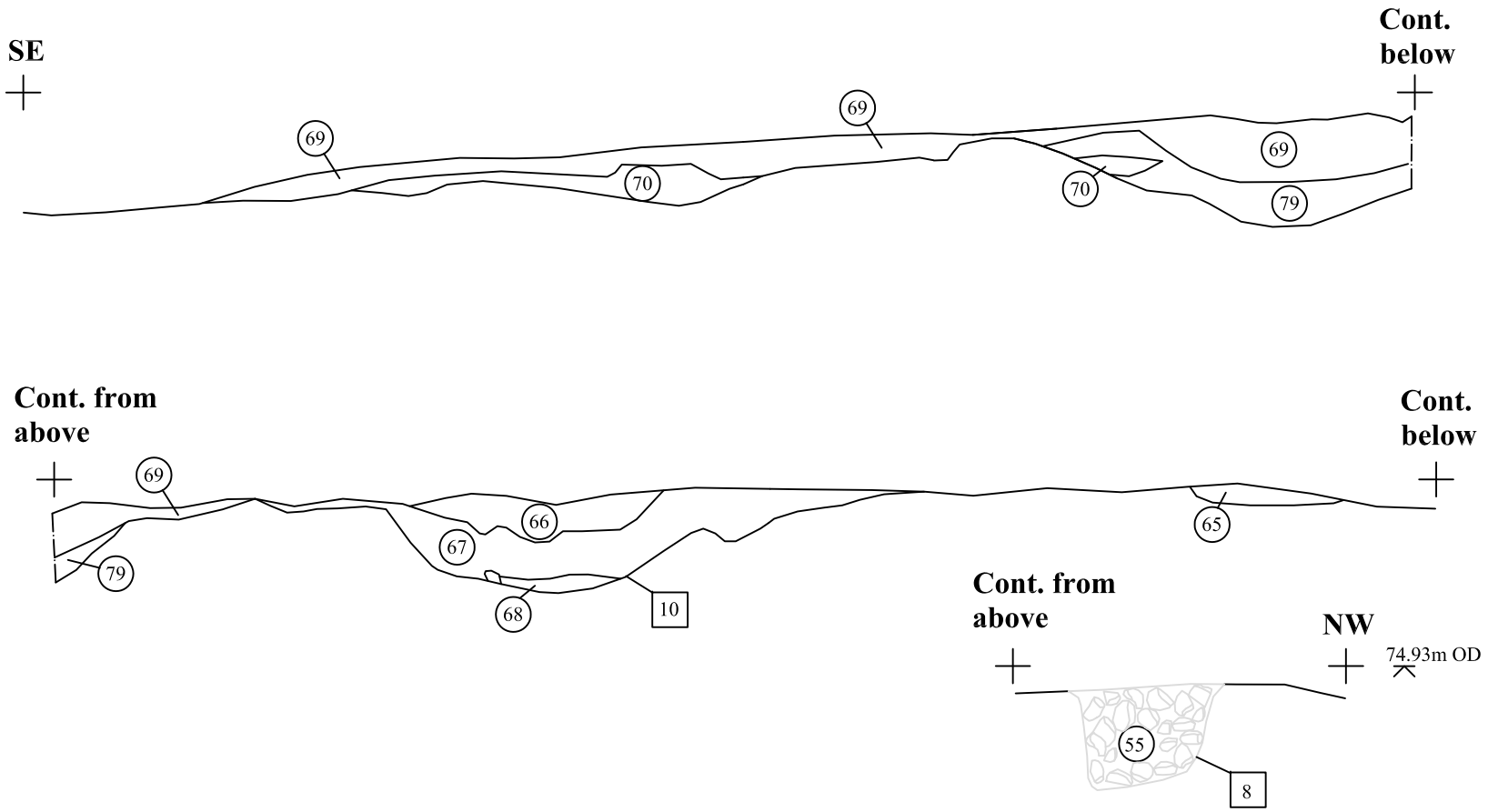
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 10: South-west facing section of slot through burnt stone spread, Area D

Scale: 1:25

TVAS IRELAND LTD



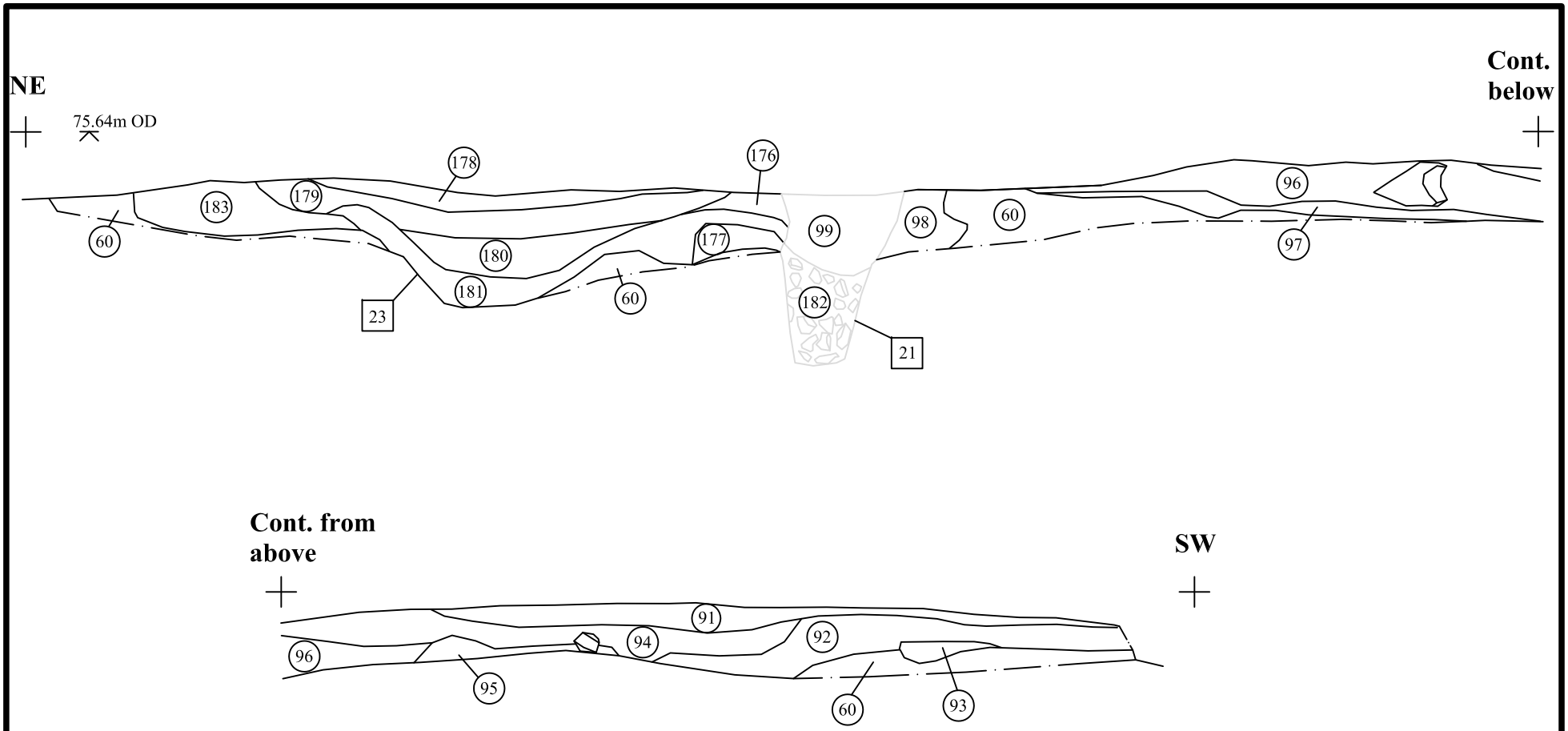
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 11: North-east facing section of slot through burnt stone spread, Area D

Scale: 1:25

TVAS IRELAND LTD



J06/15

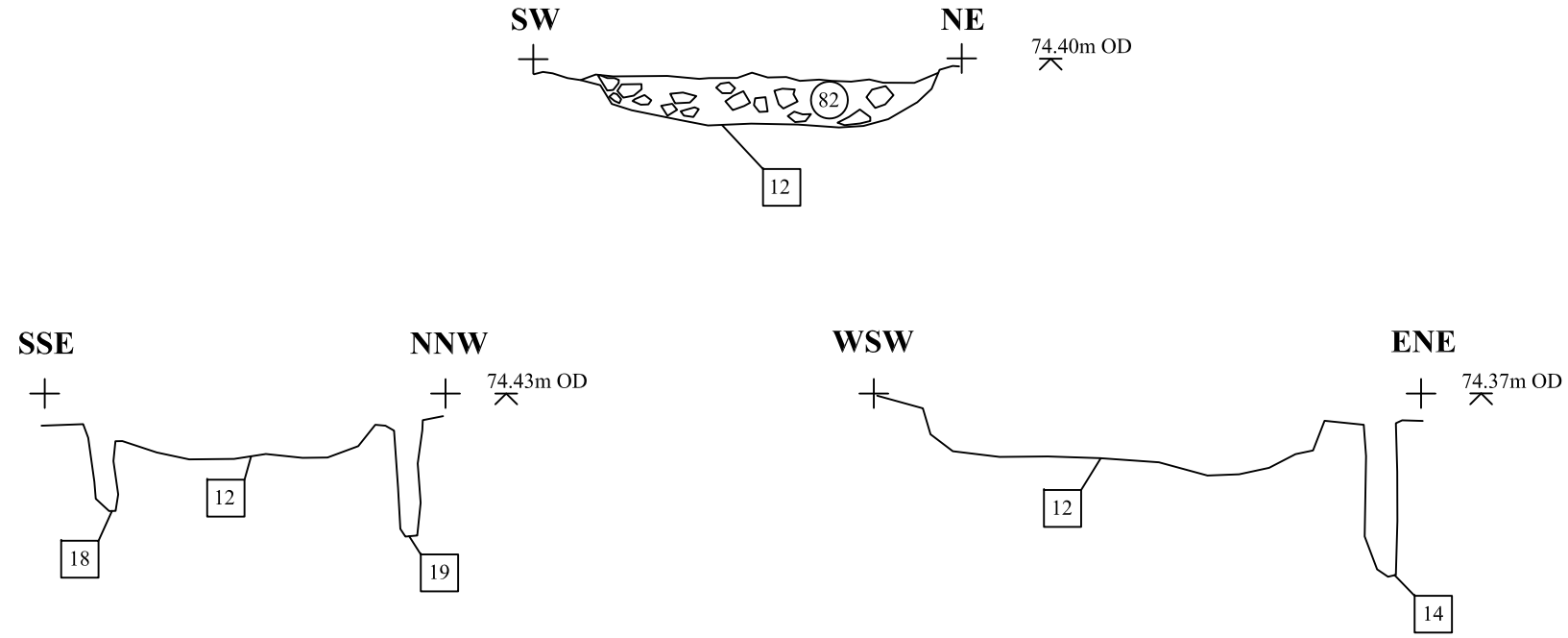
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 12: Section of pit 23 and drain 21, Area D

Scale: 1:20

TVAS IRELAND LTD



J06/15

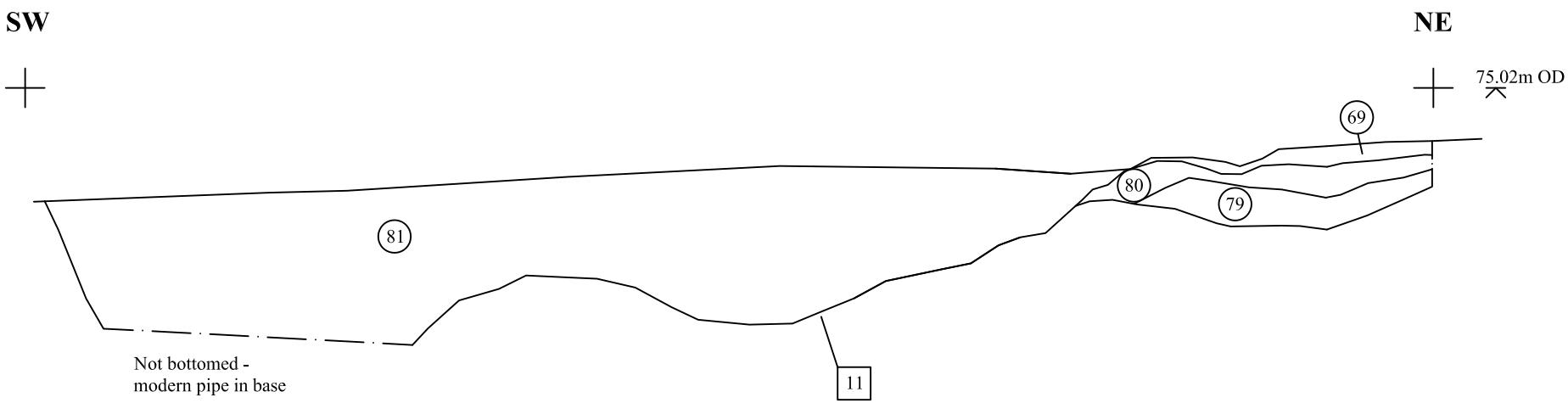
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 13: Section and profiles of pit 12 and stakeholes 18, 19 & 14, Area D

Scale: 1:20

TVAS IRELAND LTD



J06/15

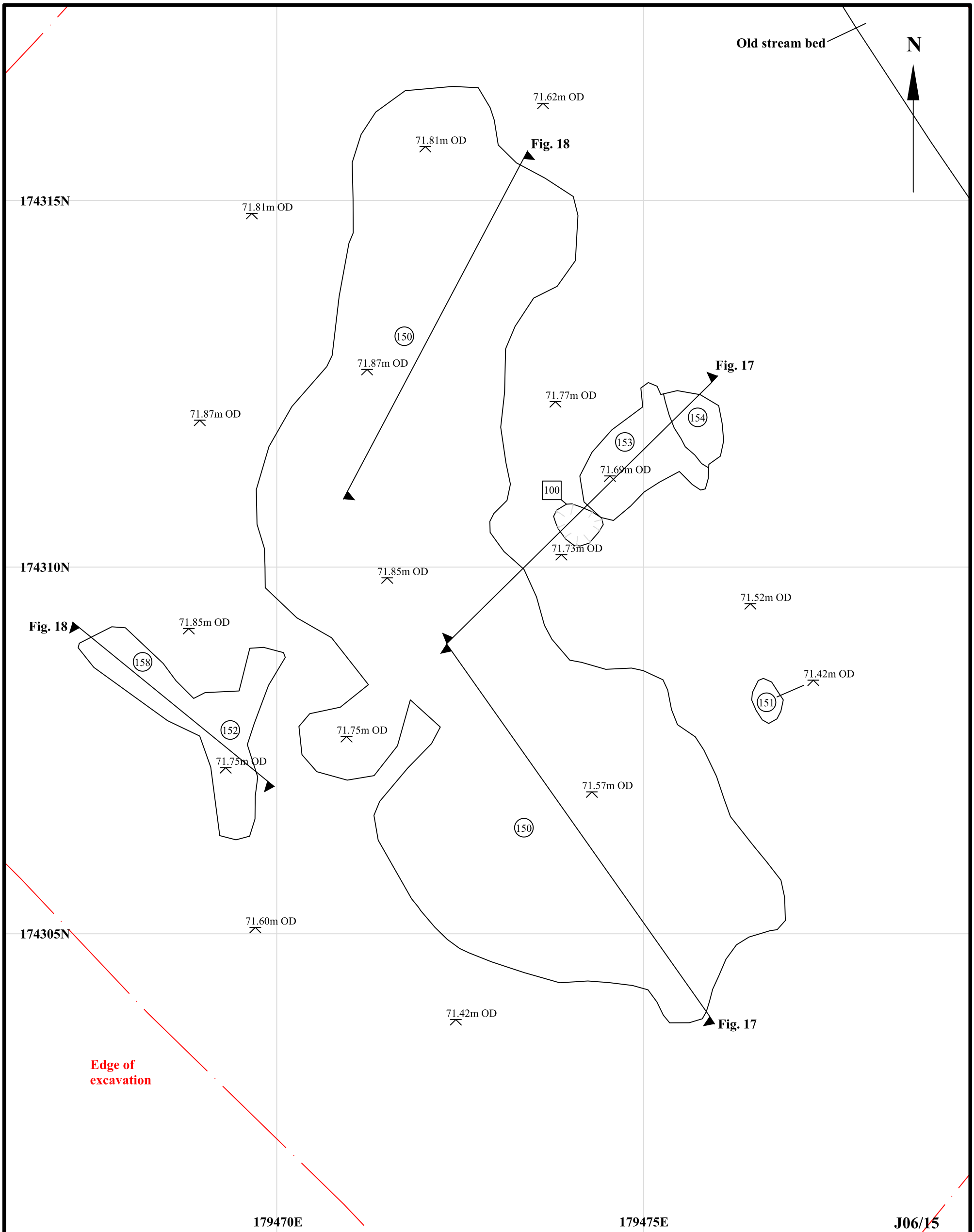
0 1m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 14: Section of modern drain 11 truncating burnt stone layers, Area D

Scale 1:25

TVAS IRELAND LTD



0 2m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 15: Pre-excavation plan of Area E

Scale: 1:50

TVAS IRELAND LTD

Old stream bed

N

Fig. 18

71.40m OD

102

71.75m OD

174315N

71.66m OD

71.85m OD

Fig. 17

Depressions

71.56m OD

101

71.42m OD

71.48m OD

71.72m OD

71.55m OD

100

174310N

Fig. 18

71.78m OD

105

104

71.63m OD

71.53m OD

103

71.52m OD

71.47m OD

Depression under 151

Depression under 152

Root activity under 150

71.64m OD

174305N

Edge of excavation

179470E

179475E

J06/15

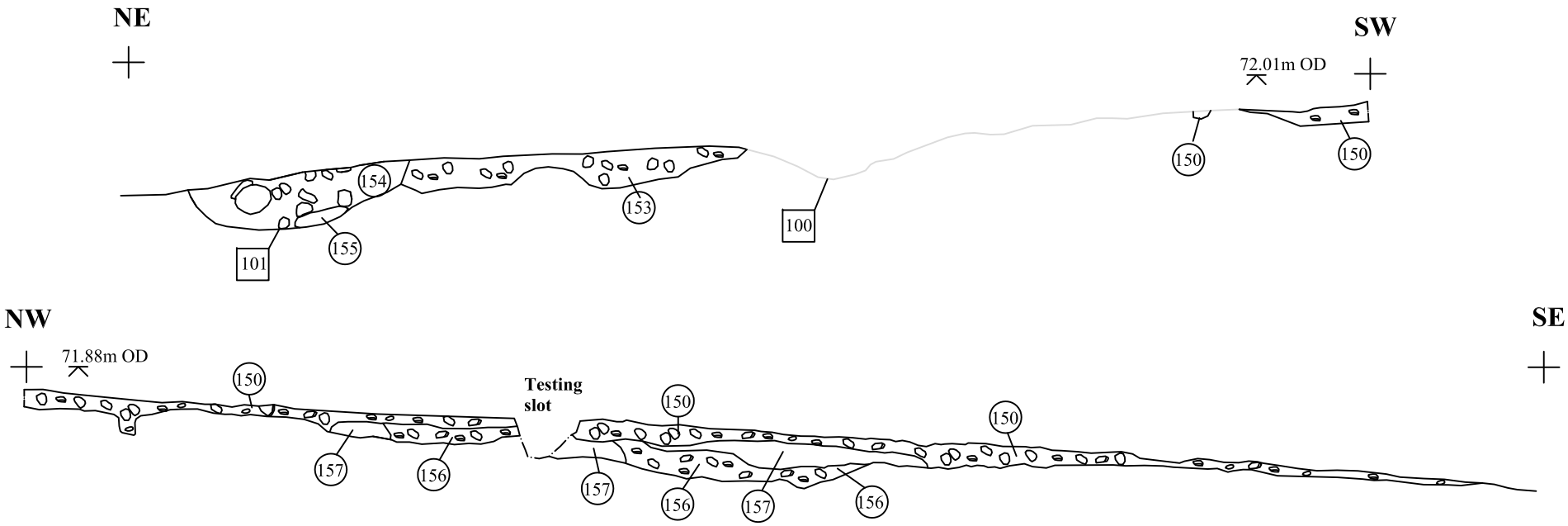
0 2m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 16: Post-excavation plan of Area E

Scale: 1:50

TVAS IRELAND LTD



J06/15

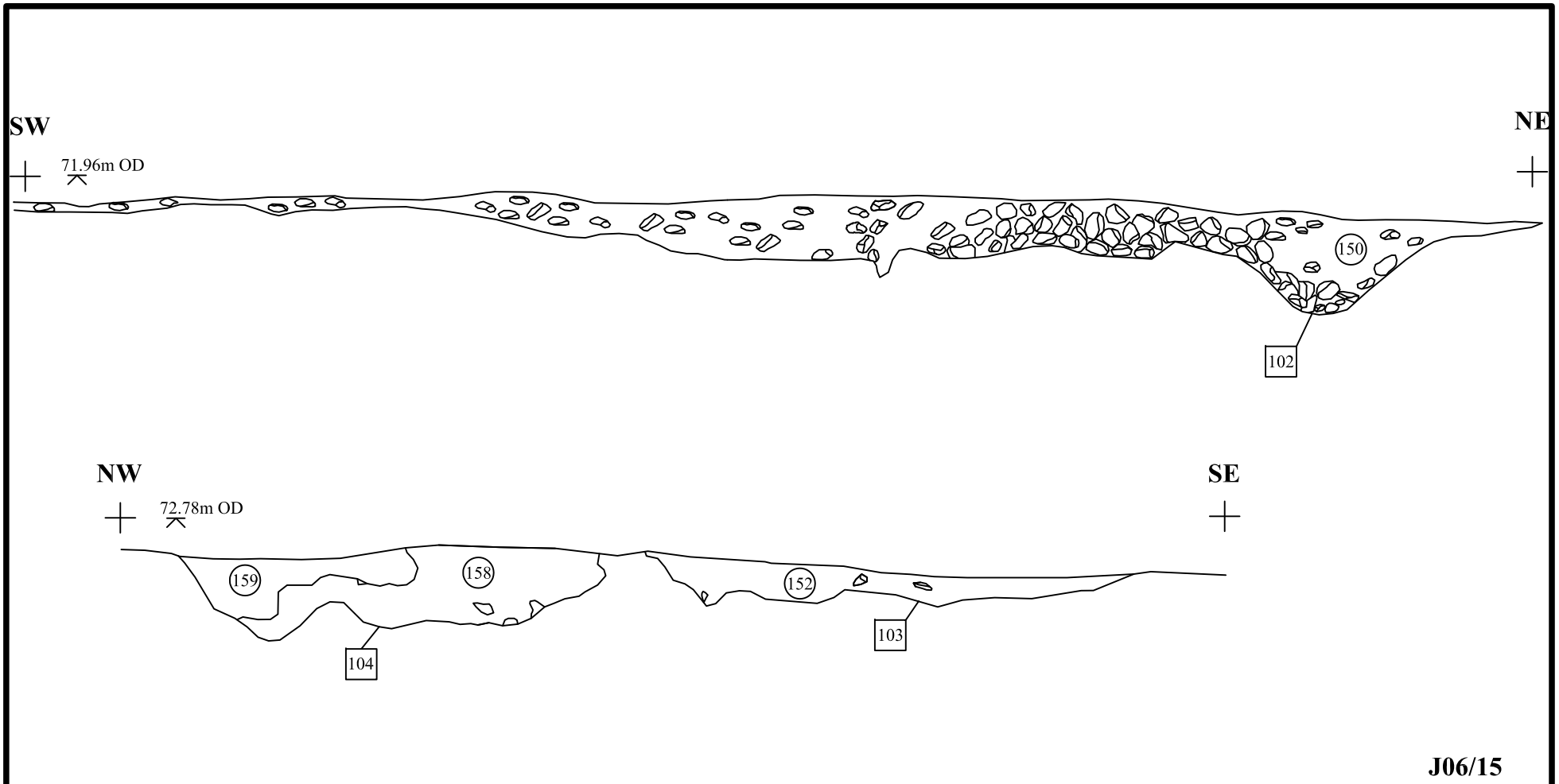
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 17: North-west facing section through feature 101, deposit 153, feature 100 and deposit 150 and south-west facing section of deposits 150, 156 & 157, Area E

Scale: 1:25

TVAS IRELAND LTD



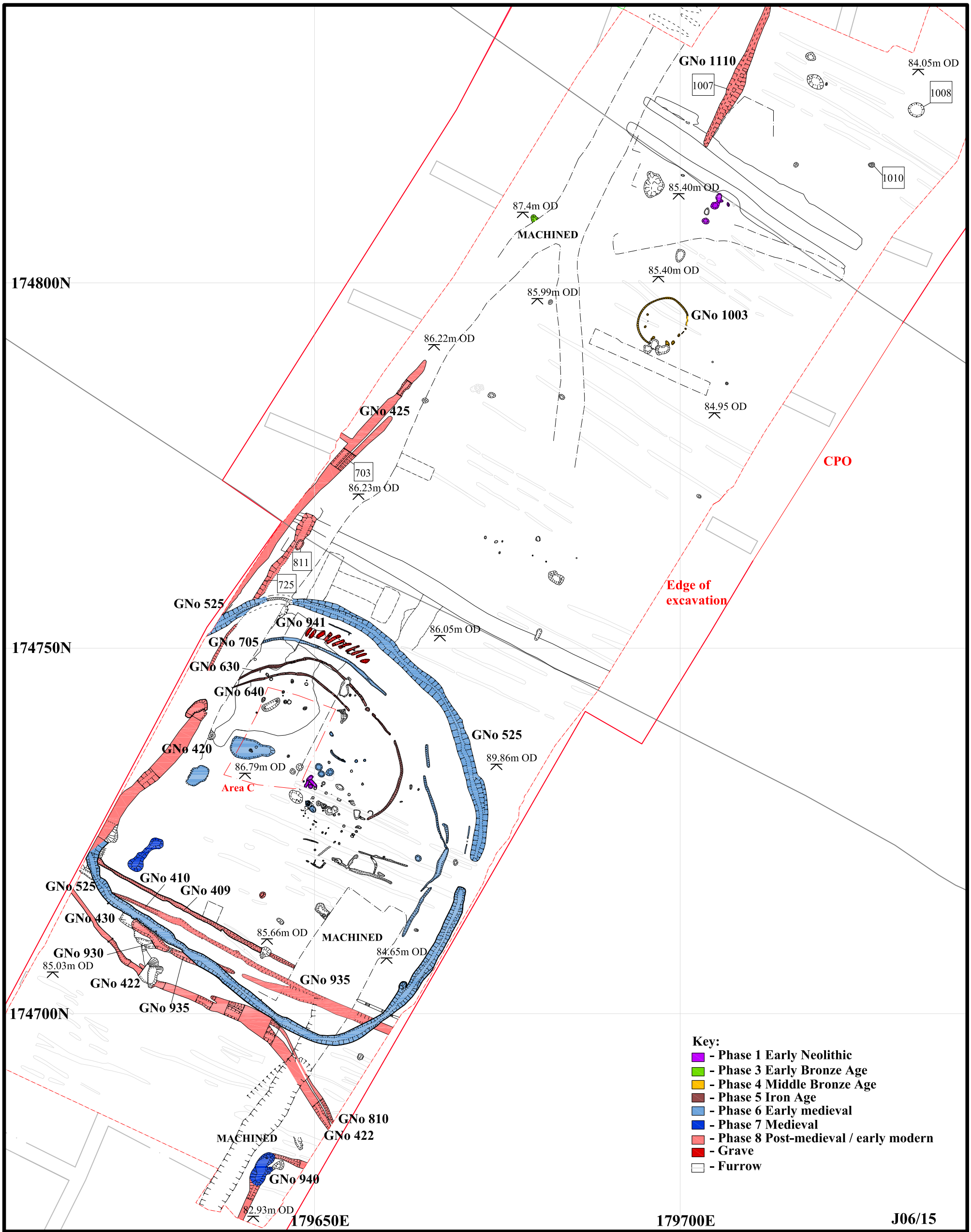
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 18: South-east facing section through deposit 150 and pit 102 and south-west facing section through pits 104 & 103, Area E

Scale: 1:20

TVAS IRELAND LTD


GNo 1110
1007
84.05m OD
1008
1010
85.40m OD
87.4m OD
MACHINED
85.40m OD
174800N
85.99m OD
GNo 1003
86.22m OD
84.95 OD
GNo 425
703
86.23m OD
CPO
811
725
GNo 525
GNo 941
Edge of excavation
86.05m OD
174750N
GNo 705
GNo 630
GNo 640
GNo 525
GNo 420
89.86m OD
86.79m OD
Area C
GNo 410
GNo 525
GNo 409
GNo 430
85.66m OD
MACHINED
84.65m OD
GNo 930
85.03m OD
GNo 935
GNo 422
GNo 935
174700N
GNo 810
GNo 422
MACHINED
GNo 940
82.93m OD
179650E
179700E
J06/15
Key:
- Phase 1 Early Neolithic
- Phase 3 Early Bronze Age
- Phase 4 Middle Bronze Age
- Phase 5 Iron Age
- Phase 6 Early medieval
- Phase 7 Medieval
- Phase 8 Post-medieval / early modern
- Grave
- Furrow
0
20m
N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary
Figure 19: Post-excavation plan of Area F
Scale: 1:500
TVAS
IRELAND
LTD

N

174820N

174800N

174780N

174760N

179660E

179680E

179700E

179720E

CPO

Edge of excavation

MACHINED

GNo 1110

GNo 1003

GNo 425

87.4m OD

85.57m OD

85.40m OD

84.05m OD

85.99m OD

85.28m OD

85.2m OD

86.22m OD

84.95m OD

86.23m OD

83.94m OD

86.05m OD

Fig. 21

Fig. 35

1007

1023

1013

1017

1014

1004

1000

1001

643

706

430

945

709

1002

1019

1018

1022

1027

1035

1028

1016

1043

1025

1021

1041

1020

1009

1011

1006

730

1024

1031

1039

1037

1038

1029

1040

1030

1036

1032

1034

742

Key:

- Phase 1 Early Neolithic
- Phase 3 Early Bronze Age
- Phase 4 Middle Bronze Age
- Phase 6 Early medieval
- Phase 8 Post-medieval / early modern
- Furrow

J06/15

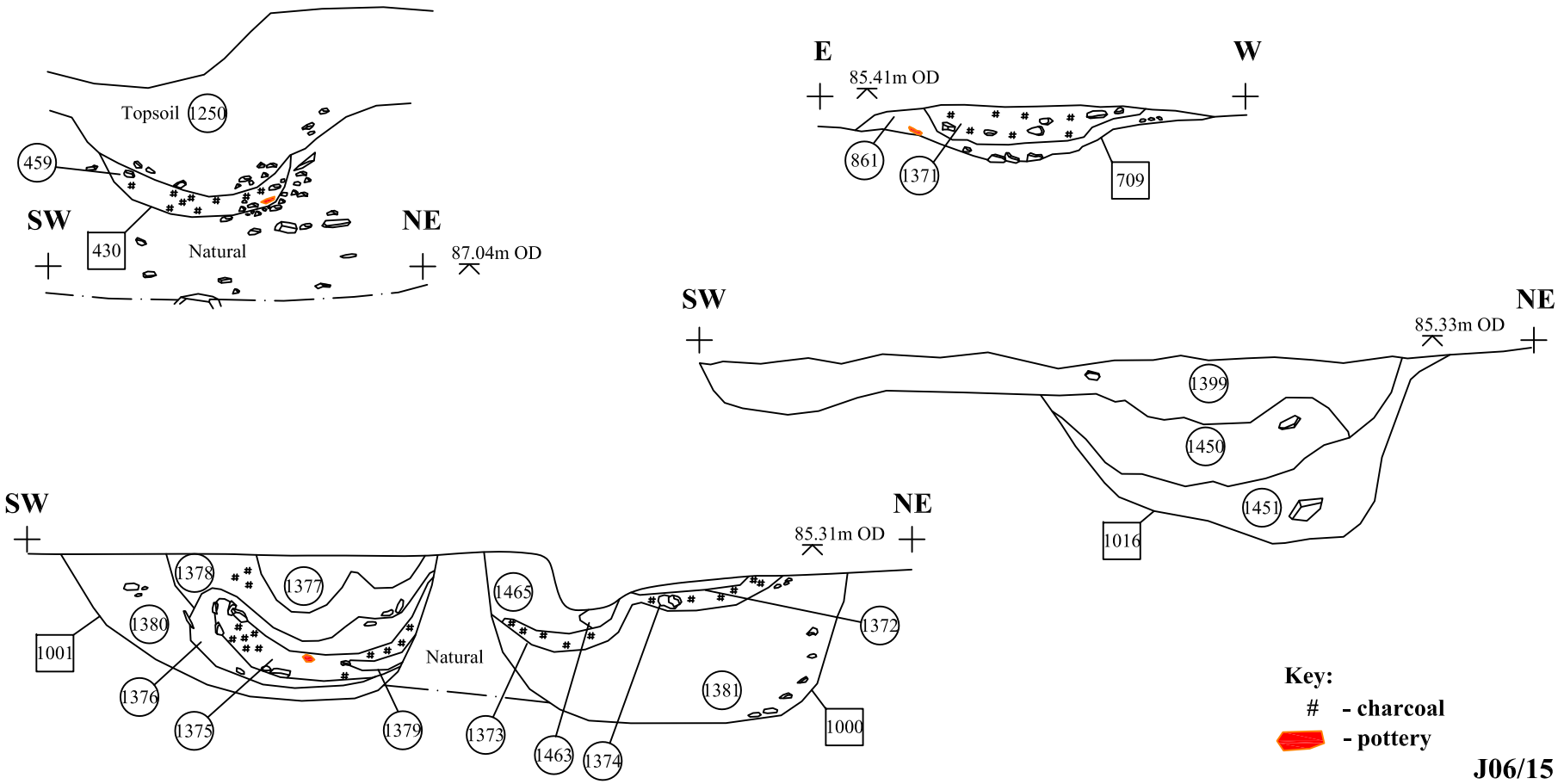
0 10m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 20: Northern half of Area F

Scale: 1:250

TVAS IRELAND LTD



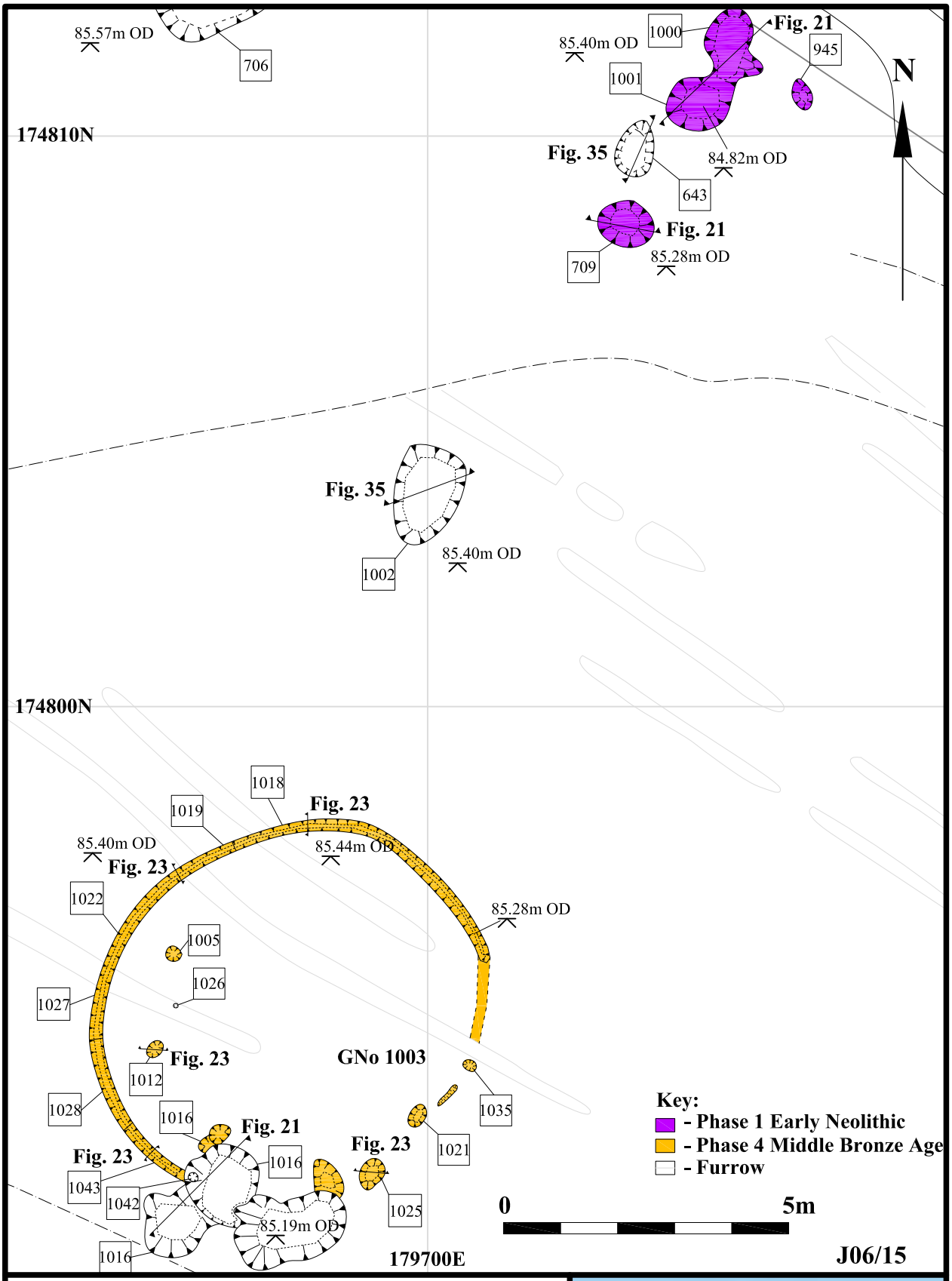
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 21: Sections of prehistoric pits 430, 709, 1000, 1001 and 1016, Area F

Scale: 1:20

TVAS IRELAND LTD

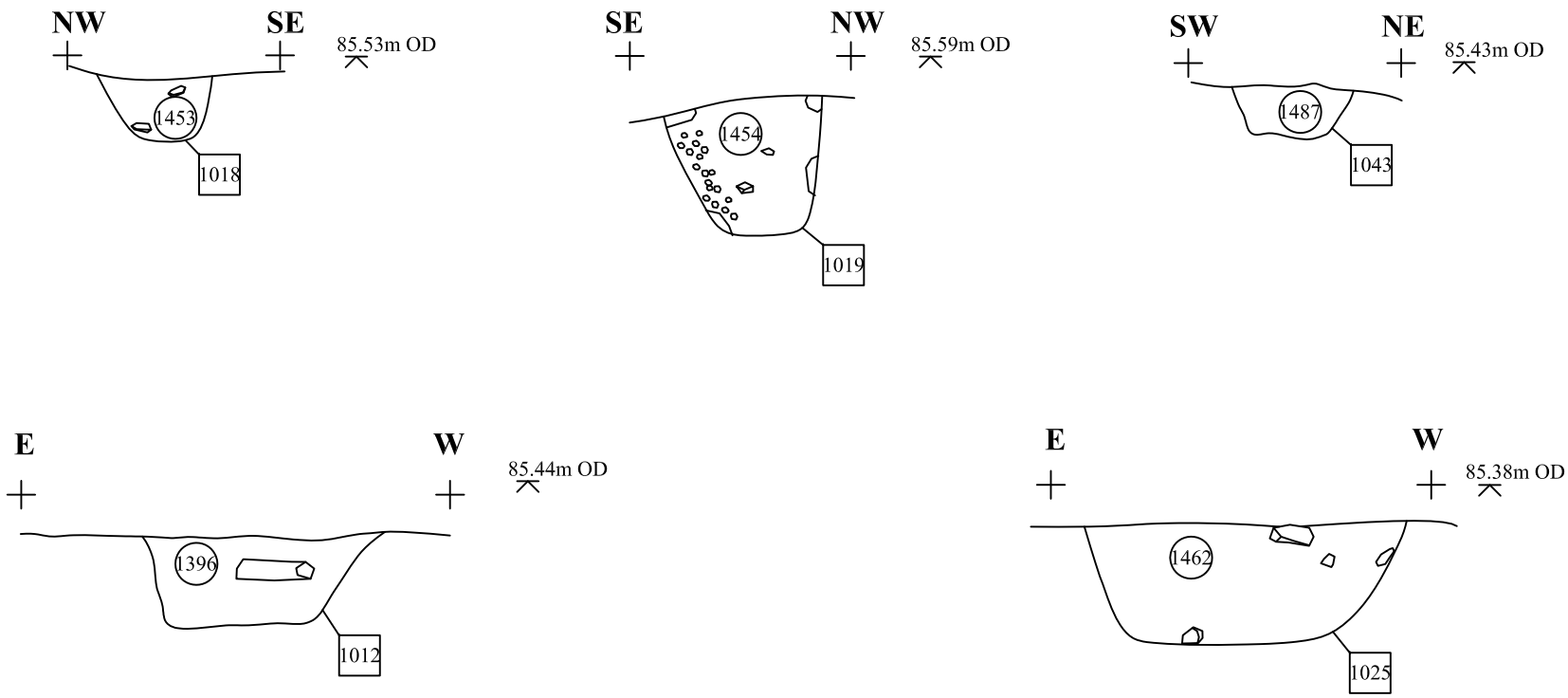


N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 22: Roundhouse 1003 and nearby pits, Area F

Scale: 1:100

TVAS IRELAND LTD



J06/15

0 0.5m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 23: Sections through slot trenches 1018, 1019 & 1043 and postholes 1012 & 1025, roundhouse 1003, Area F

Scale: 1:10

TVAS IRELAND LTD

N

174740N

174720N

174700N

174680N

179620E

179640E

179660E

GNo 425

GNo 525

GNo 630

GNo 640

GNo 941

GNo 705

GNo 420

GNo 1105

GNo 1111

GNo 1112

GNo 409

GNo 410

GNo 930

GNo 422

GNo 935

GNo 442

GNo 525

GNo 422

GNo 810

GNo 940

GNo 1111

GNo 1111

MACHINED

MACHINED

MACHINED

Area C

Test trench

Fig. 28

Fig. 31

Fig. 28

Fig. 37

Fig. 27

Fig. 28

Fig. 28

Fig. 37

Fig. 28

CPO

Edge of excavation

86.20m OD

86.79m OD

87.03m OD

86.56m OD

86.78m OD

85.62m OD

87.04mOD

85.94m OD

85.25m OD

86.94mOD

86.39mOD

85.03m OD

84.65m OD

84.76mOD

82.93m OD

424 827 732 528 831 403 832 854 725 815 813 404 405 739 738 853 641 700 745 744 746 629 828 912 508 911 731 510 649 806 1109 909 622 910 726 938 915 627 628 411 747 748 934 412 710 413 916 917 615 527 616 741 617 723 614 648 841 840 603 407 604 408 919 606 541 923 921 925 924 926 602 749 605 1102 416 624 613 713 621 803 808 847 927 406 423 800 728 421 704 415 848 417 625 839 526 721 720

Key:

- Phase 1 Early Neolithic
- Phase 5 Iron Age
- Phase 6 Early medieval
- Phase 7 Medieval
- Phase 8 Post-medieval / early modern
- Grave
- Furrow

J06/15

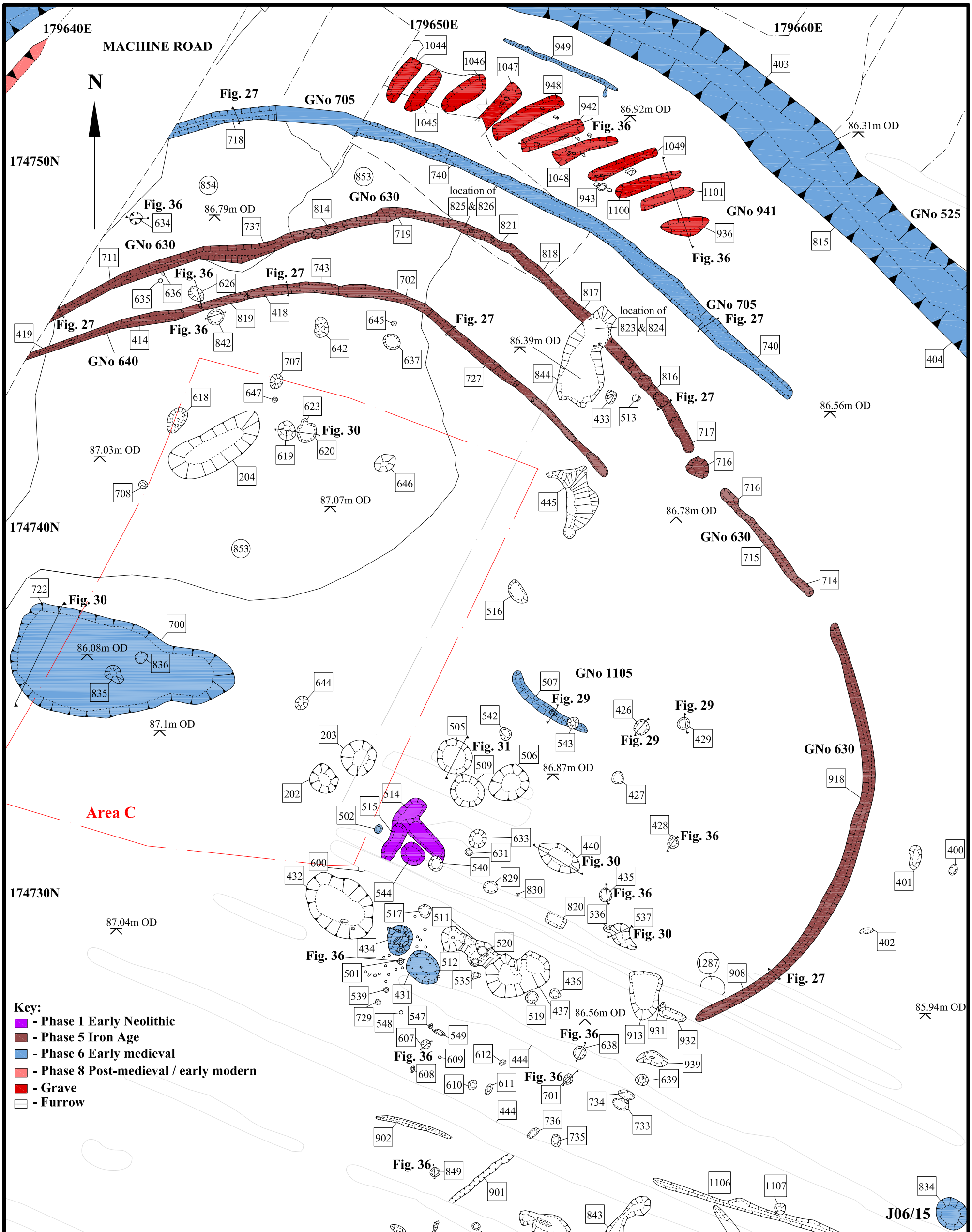
0 10m

N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 24: Southern half of Area F

Scale: 1:250

TVAS IRELAND LTD

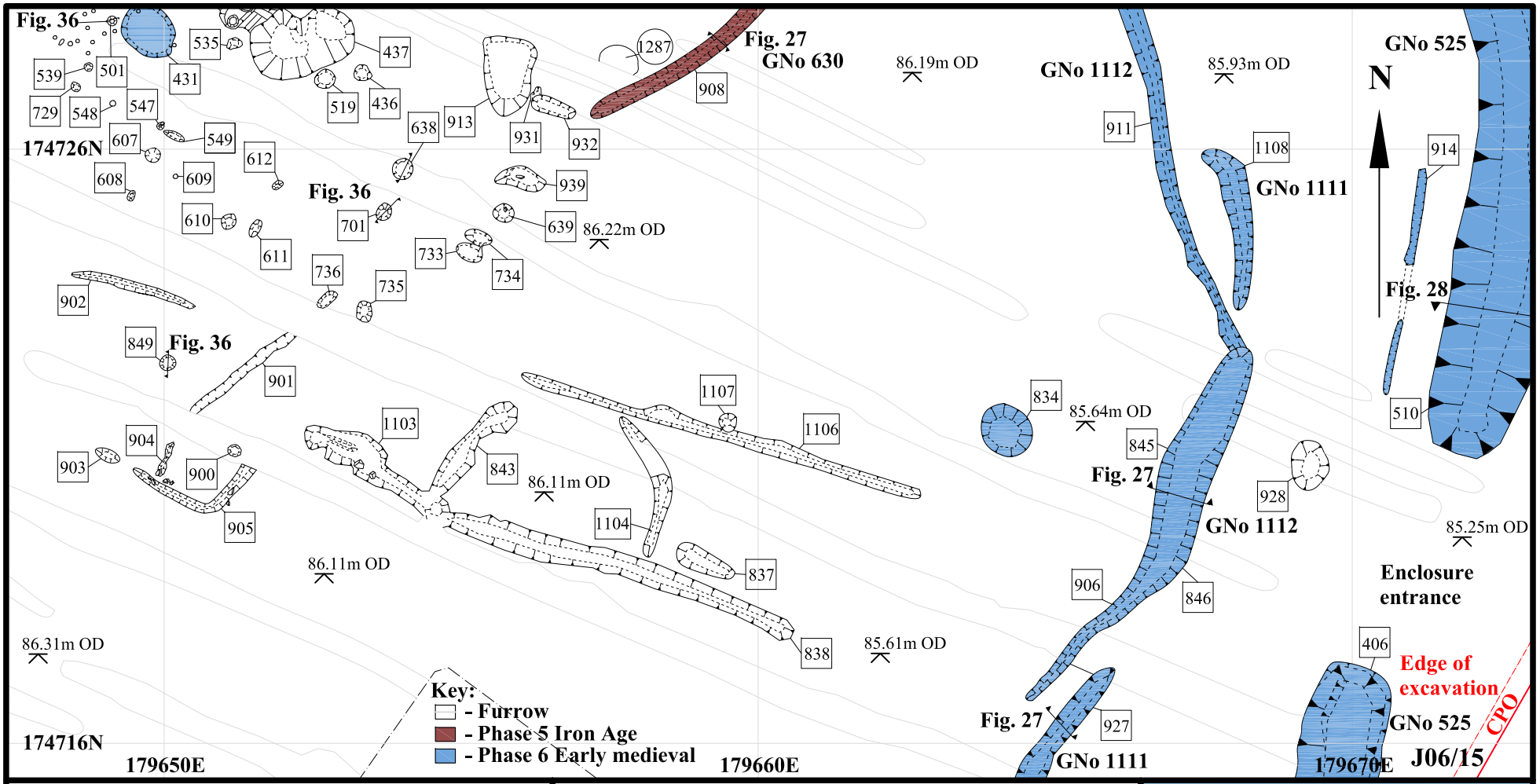


N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 25: Interior of enclosure 525, Area F

Scale 1:100

TVAS IRELAND LTD

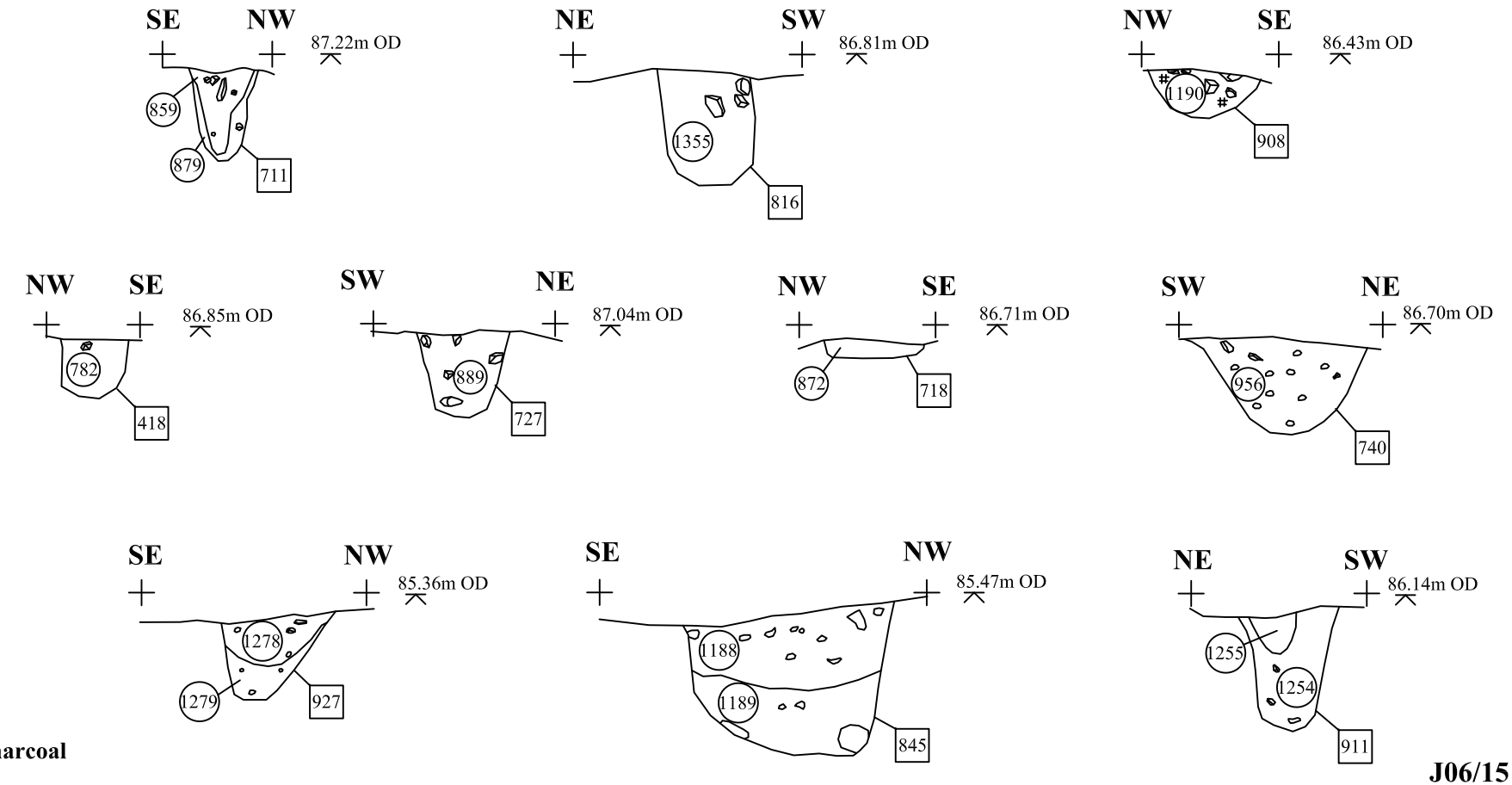


N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 26: Entrance and part of interior of enclosure 525, Area F

Scale 1:100

TVAS IRELAND LTD



J06/15

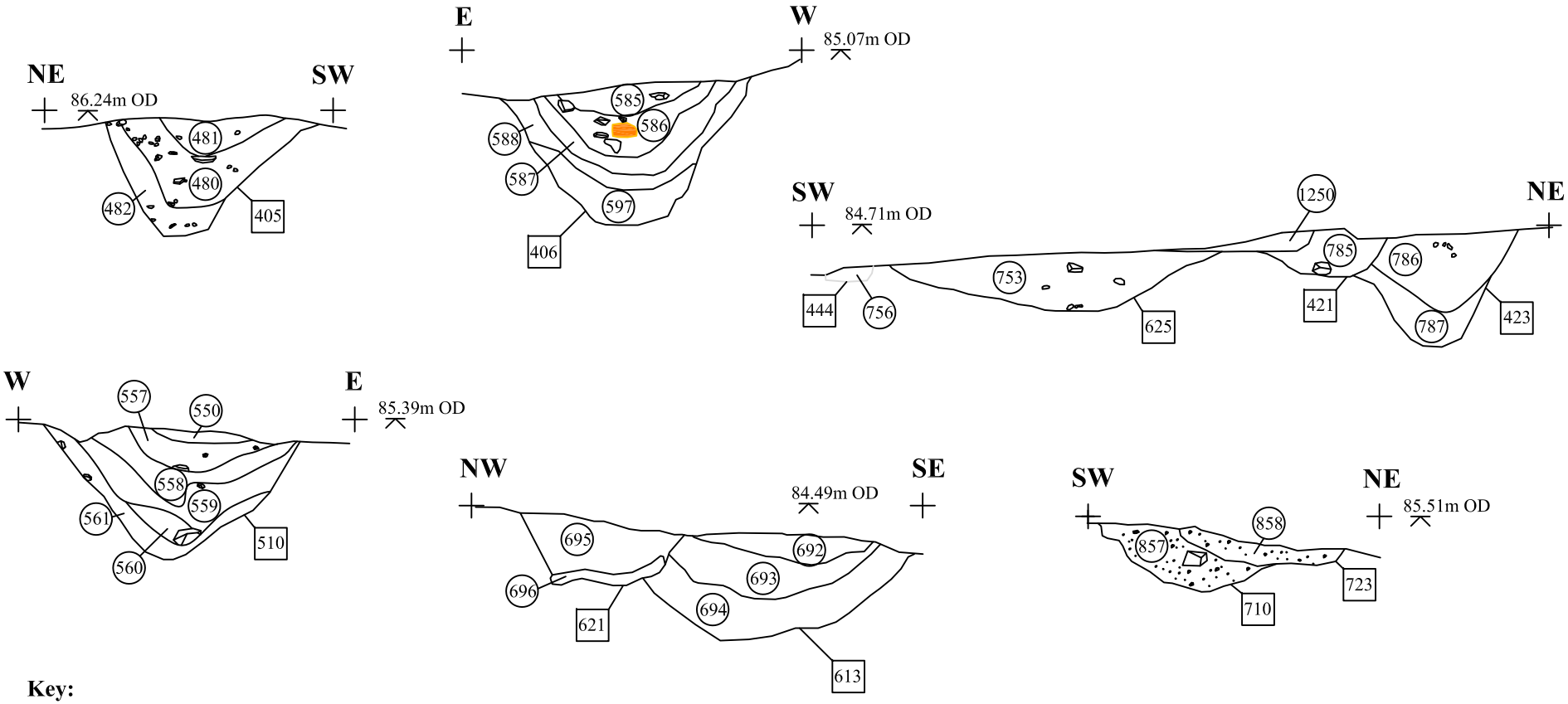
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 27: Sections of palisade trenches or gullies 630 (slots 711, 816 & 908), 640 (slots 418 & 727), 705 (slots 718 & 740), 1111 (slot 927) and 1112 (slots 845 & 911), Area F

Scale: 1:20

TVAS IRELAND LTD



J06/15

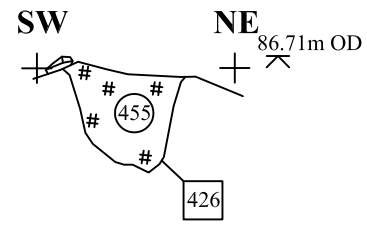
0 2m

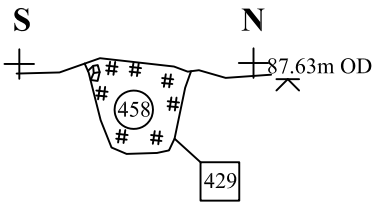
N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

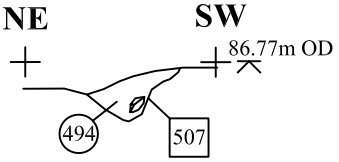
Figure 28: Sections of slots through enclosure ditch GNo 525, ditches 422 and 935 gully 810 and pit 621 Area F

Scale: 1:40

TVAS IRELAND LTD







Key:

 # - charcoal

0 **1m**

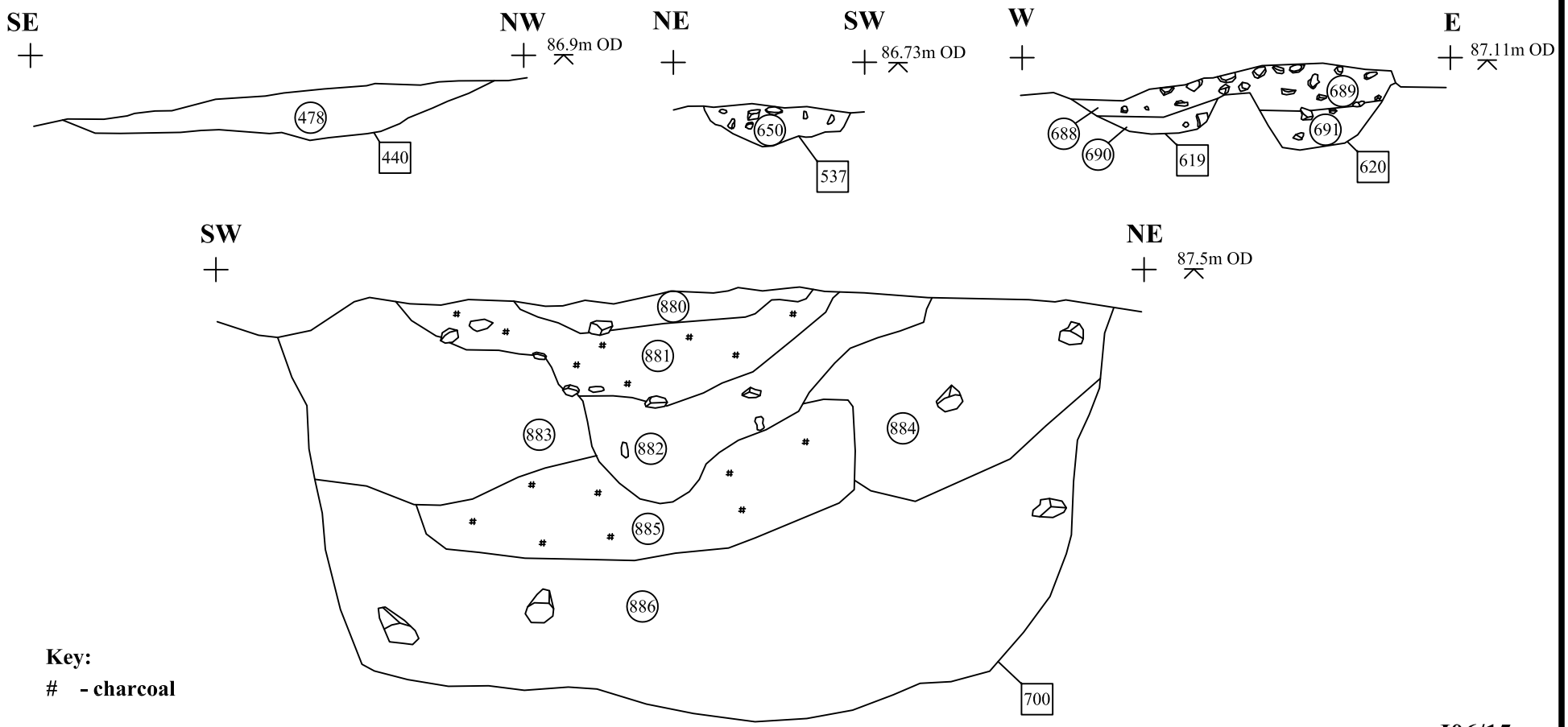
J06/15

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 29: Sections of postholes 426 & 429 and gully 507, roundhouse 1105, Area F

Scale: 1:20

TVAS IRELAND LTD



J06/15

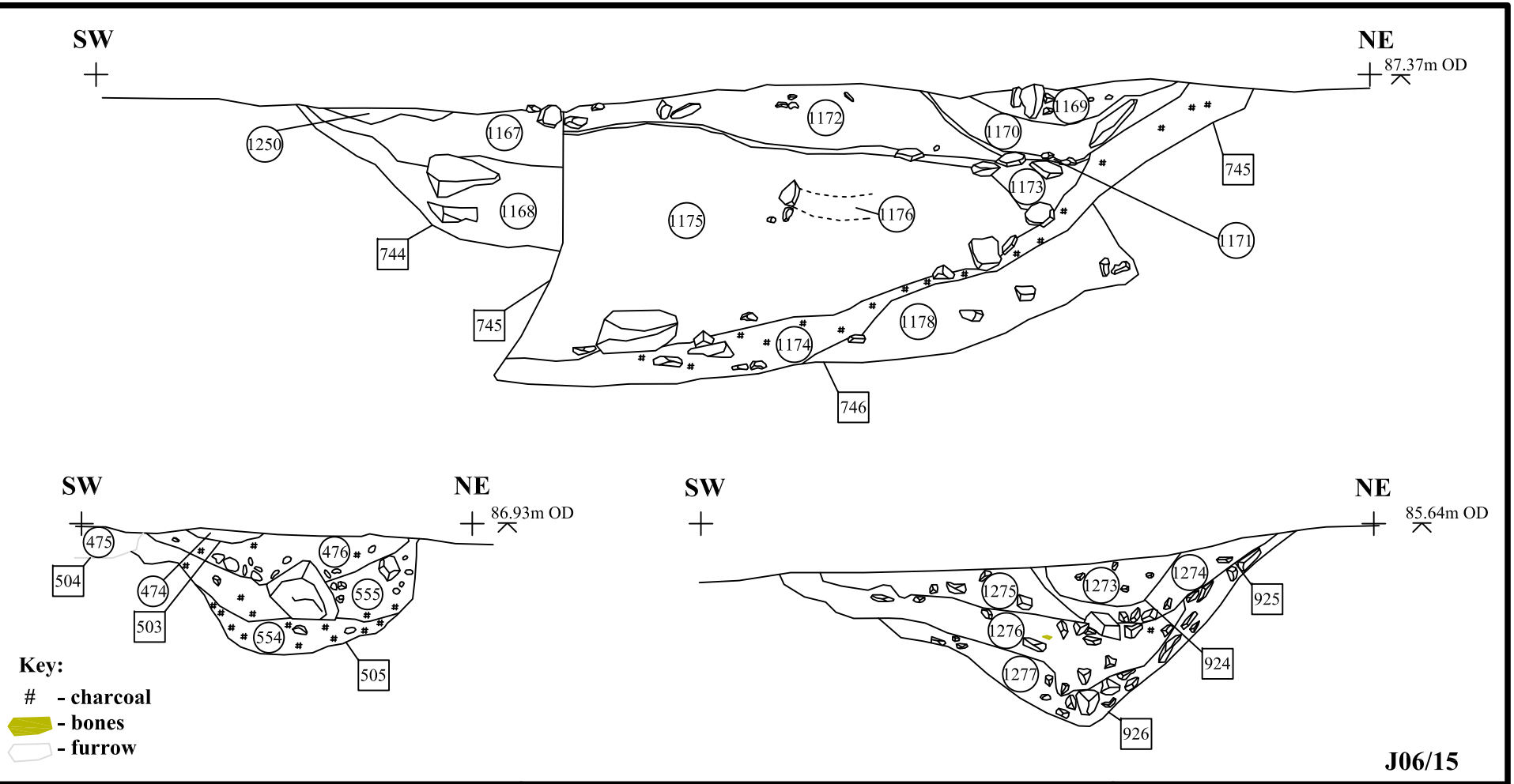
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 30: Sections of pits 440, 537, 619, 620 and 700, Area F

Scale: 1:20

TVAS IRELAND LTD



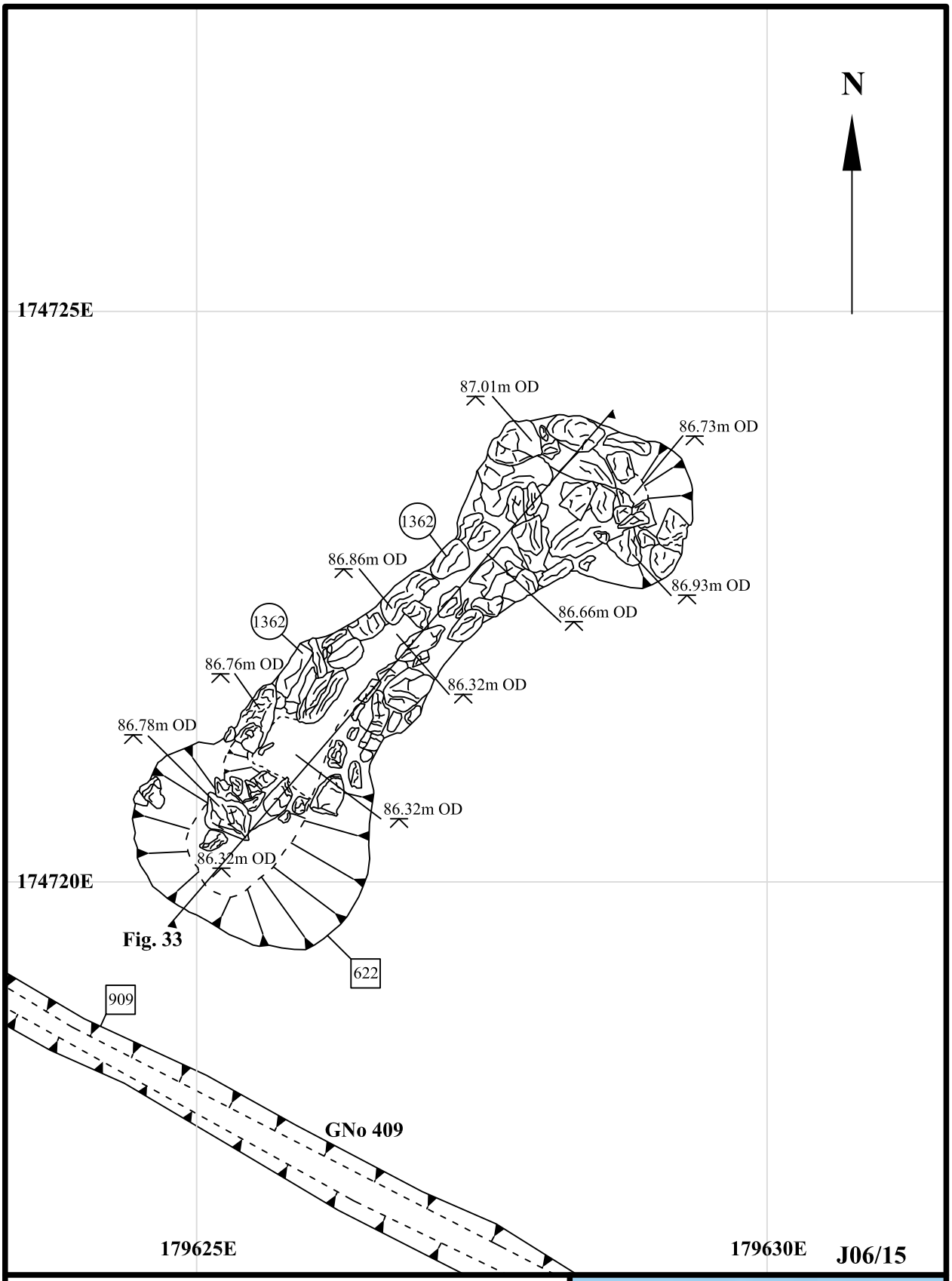
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 31: Sections of pits 744, 745, 746, 505, 925 and 926, Area F

Scale: 1:20

TVAS IRELAND LTD



N7 Nenagh-Limerick HQDC,
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 32: Mid-excavation plan of kiln 622

0 **1m**

Scale: 1:50

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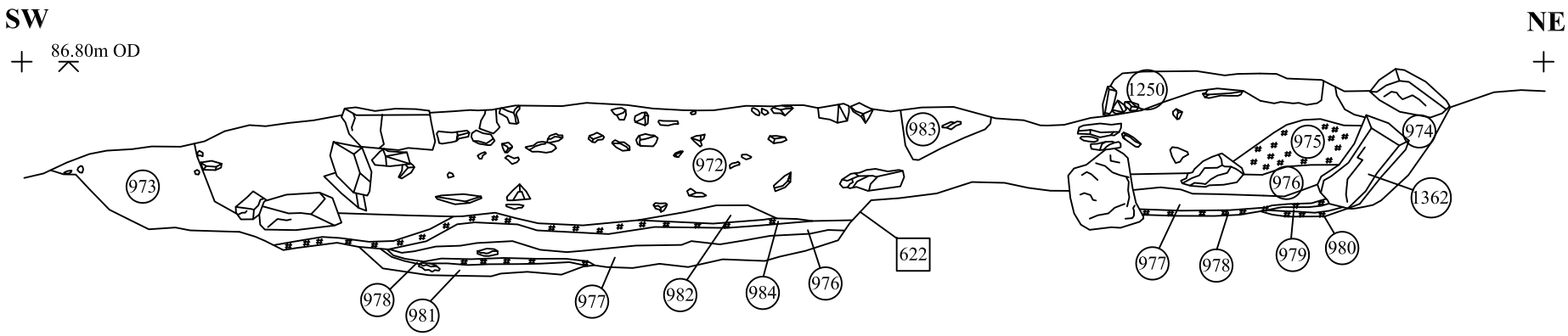

J06/15

0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 33: Section of kiln 622, Area F

Scale: 1:25

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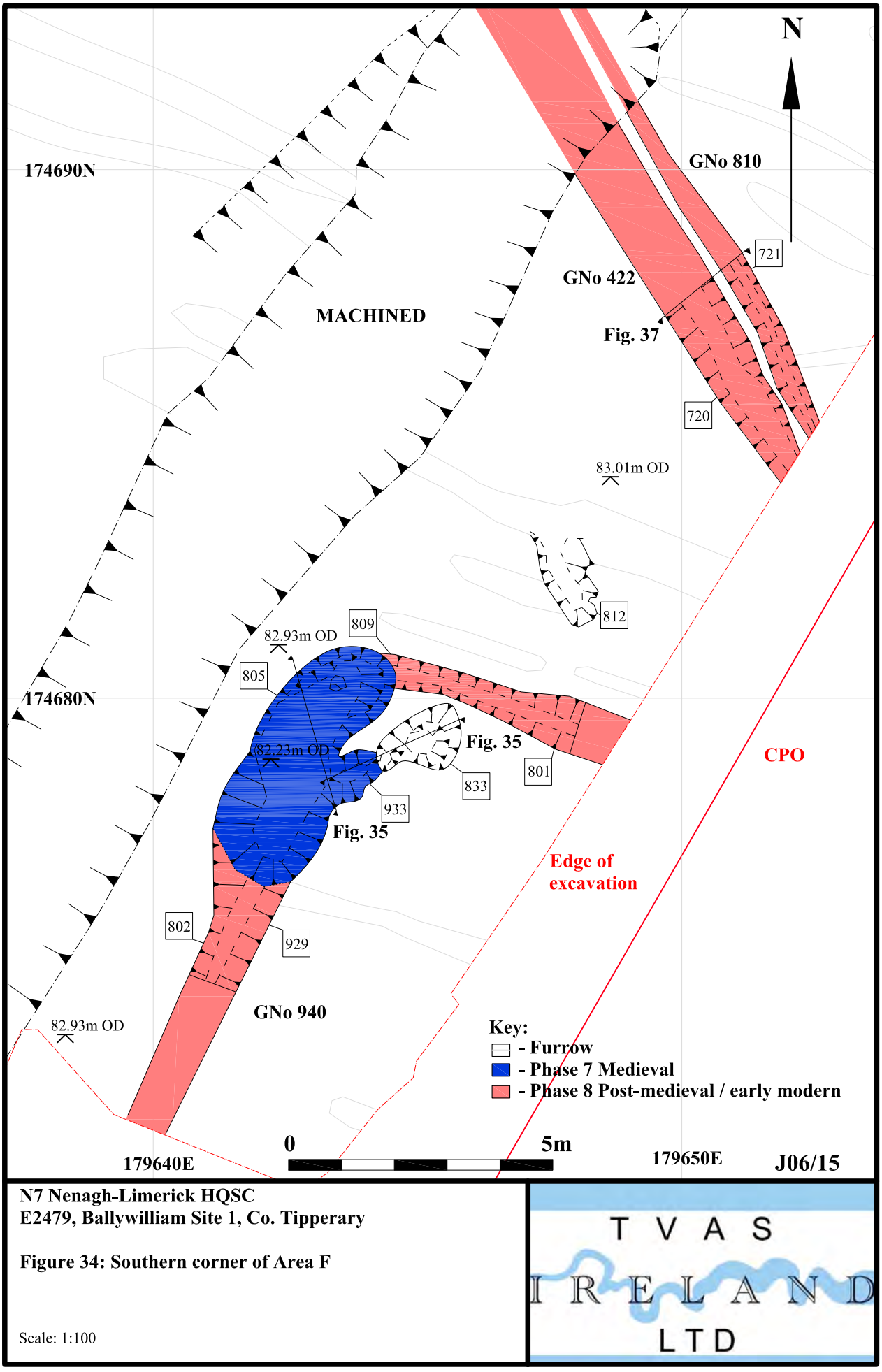
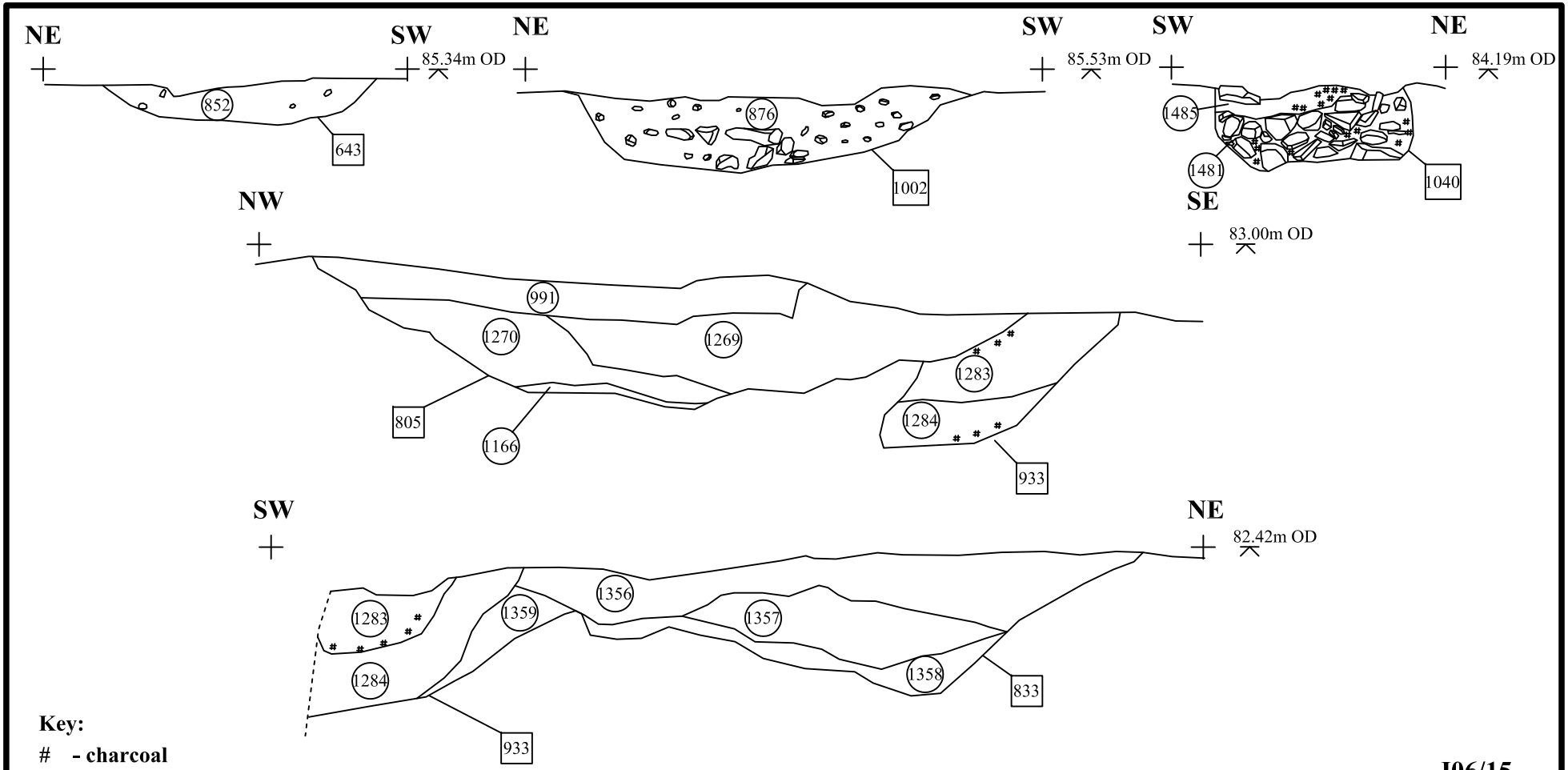


N7 Nenagh-Limerick HQSC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 34: Southern corner of Area F

Scale: 1:100

TVAS IRELAND LTD



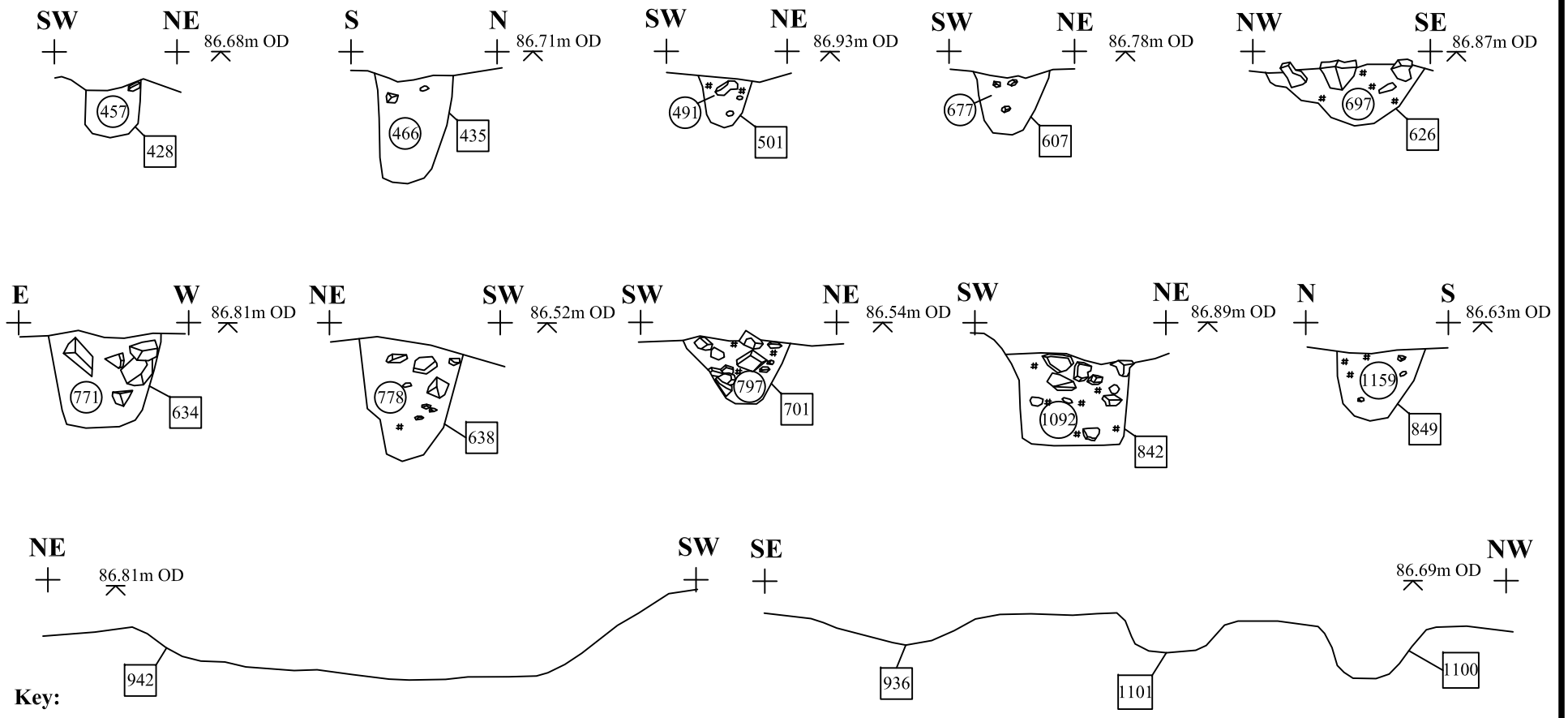
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 35: Sections of pits 643, 1002, 1040, 805, 933 and 833, Area F

Scale: 1:20

TVAS IRELAND LTD



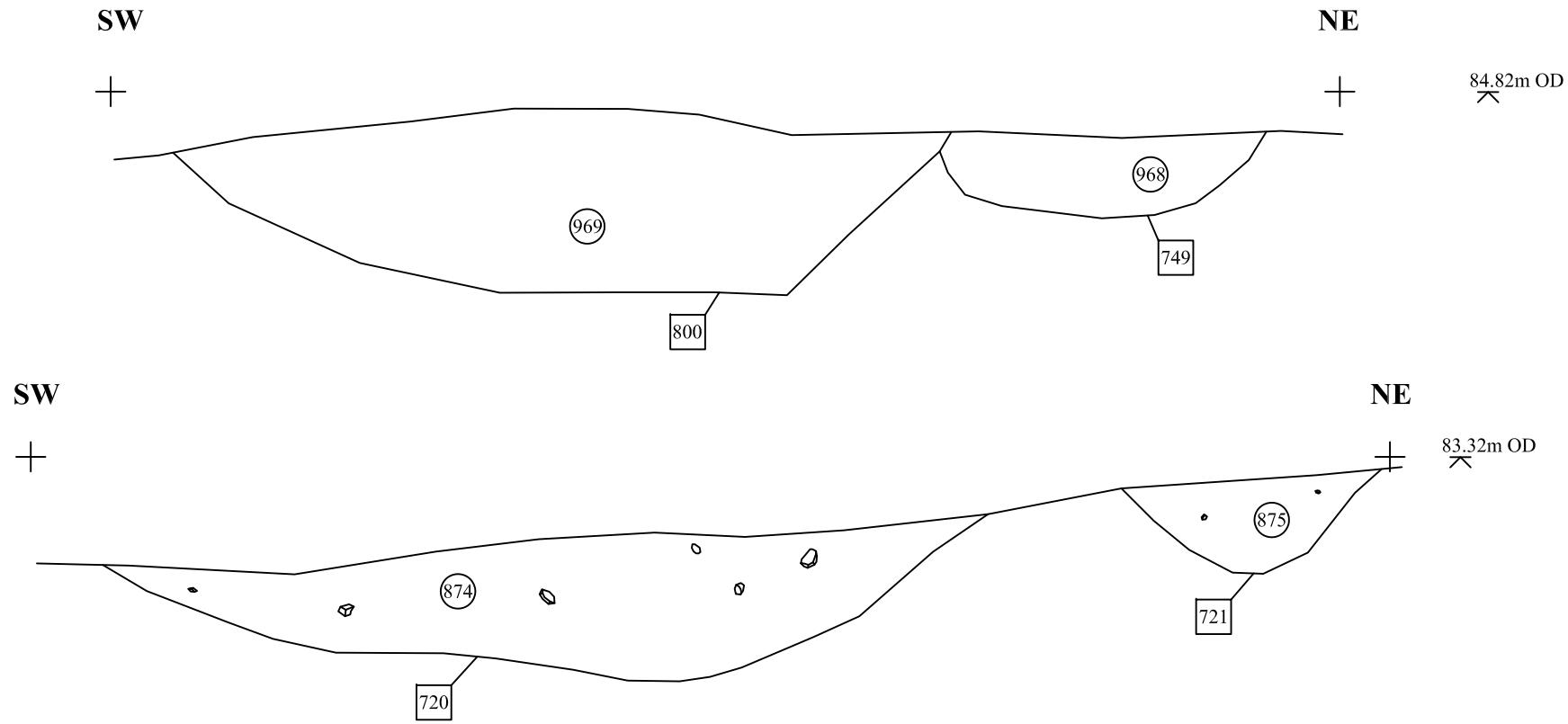
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 36: Sections of postholes 428, 435, 501, 607, 626, 634, 638, 701, 842 & 849 and graves 942, 936, 1101 & 1100, Area F

Scale: 1:20

TVAS IRELAND LTD



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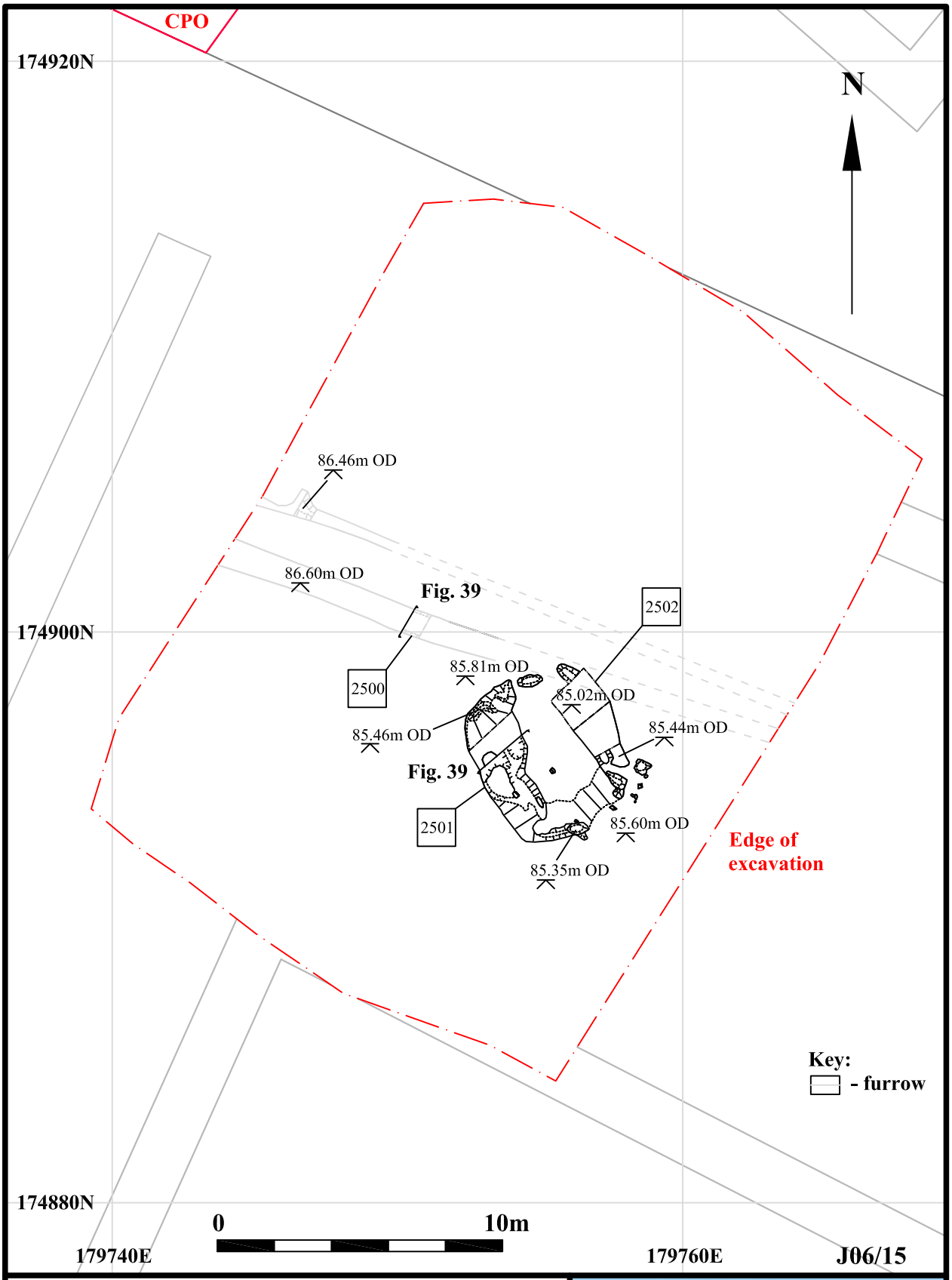
0 0.5m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 37: Sections of ditch 410 (slot 749), ditch 935 (slot 800), ditch 422 (slot 720) and ditch 810 (slot 721), Area F

Scale: 1:10

TVAS IRELAND LTD



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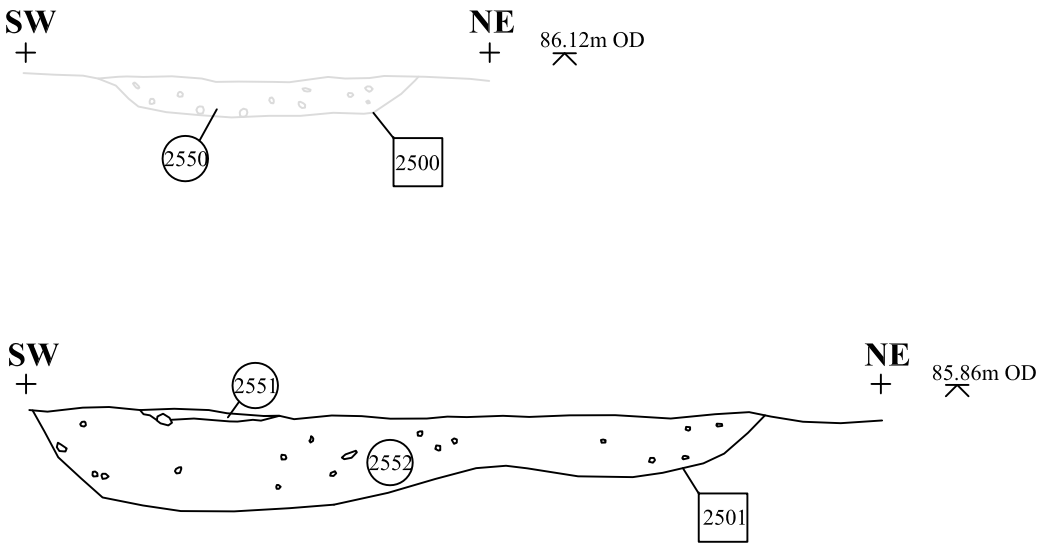
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 38: Plan of Area G

Scale: 1:200
Based on Ordnance Survey Ireland digital mapping

TVAS IRELAND LTD



J06/15

0 1m

N7 Nenagh-Limerick HQDC
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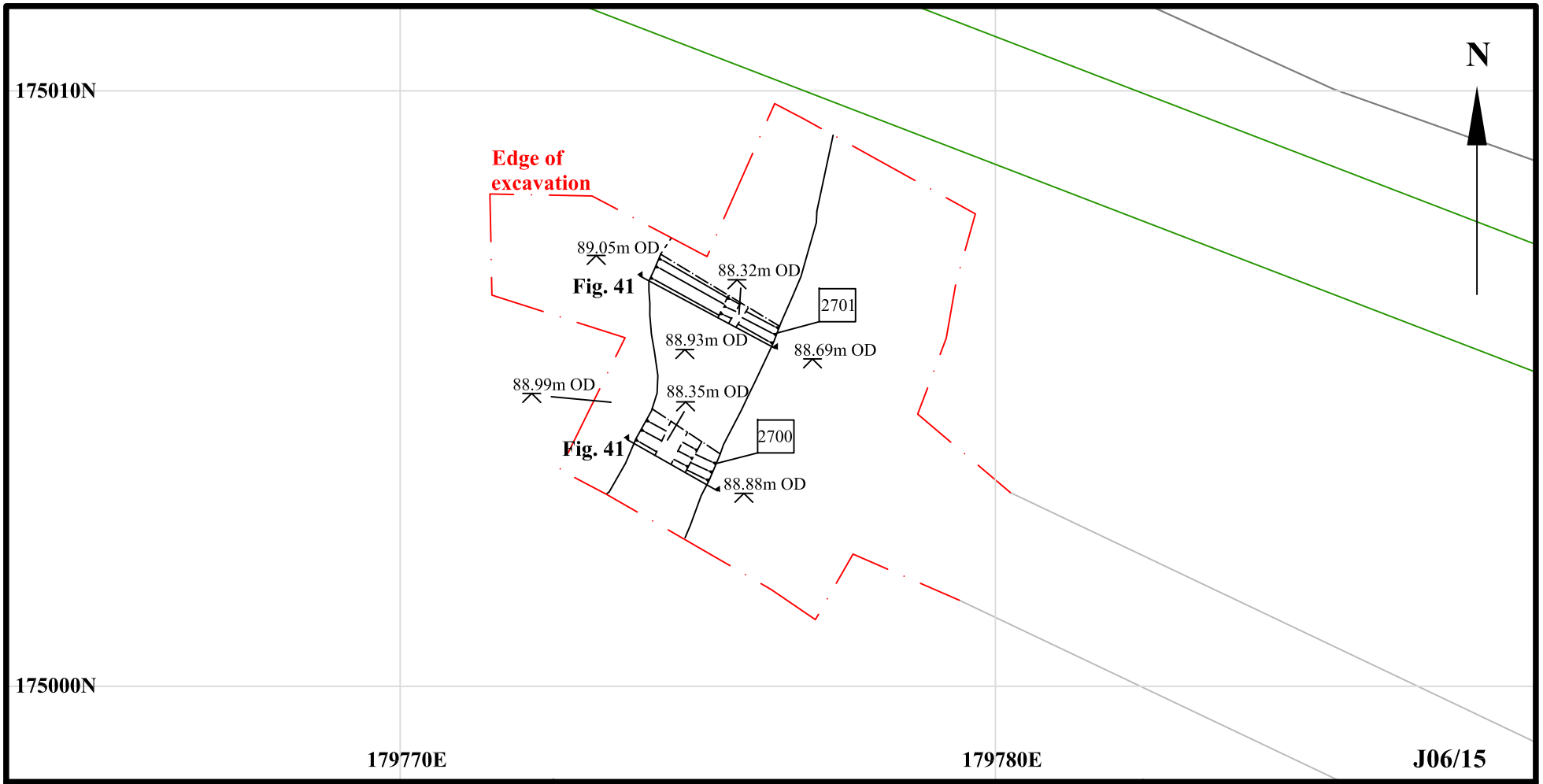
Figure 39: Sections of furrow 2500 and feature 2501, Area G

Scale: 1:20

TVAS IRELAND LTD



0 5m

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Figure 40: Plan of Area I

Scale: 1:100
Ordnance Survey Ireland digital maping
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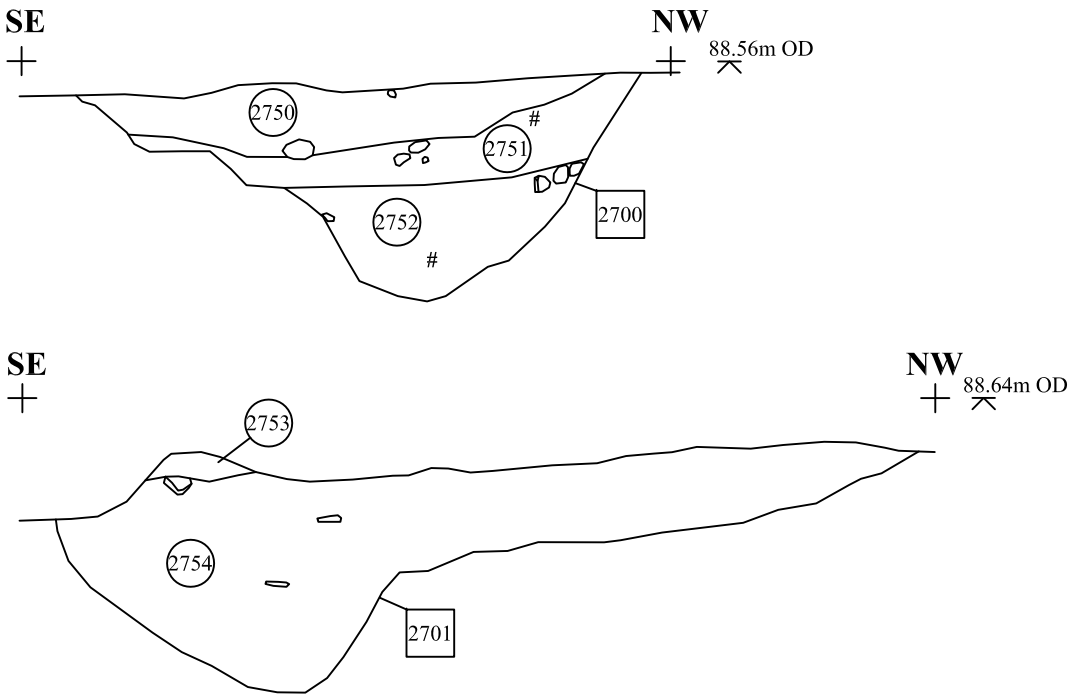


Key:
 # - charcoal

J06/15

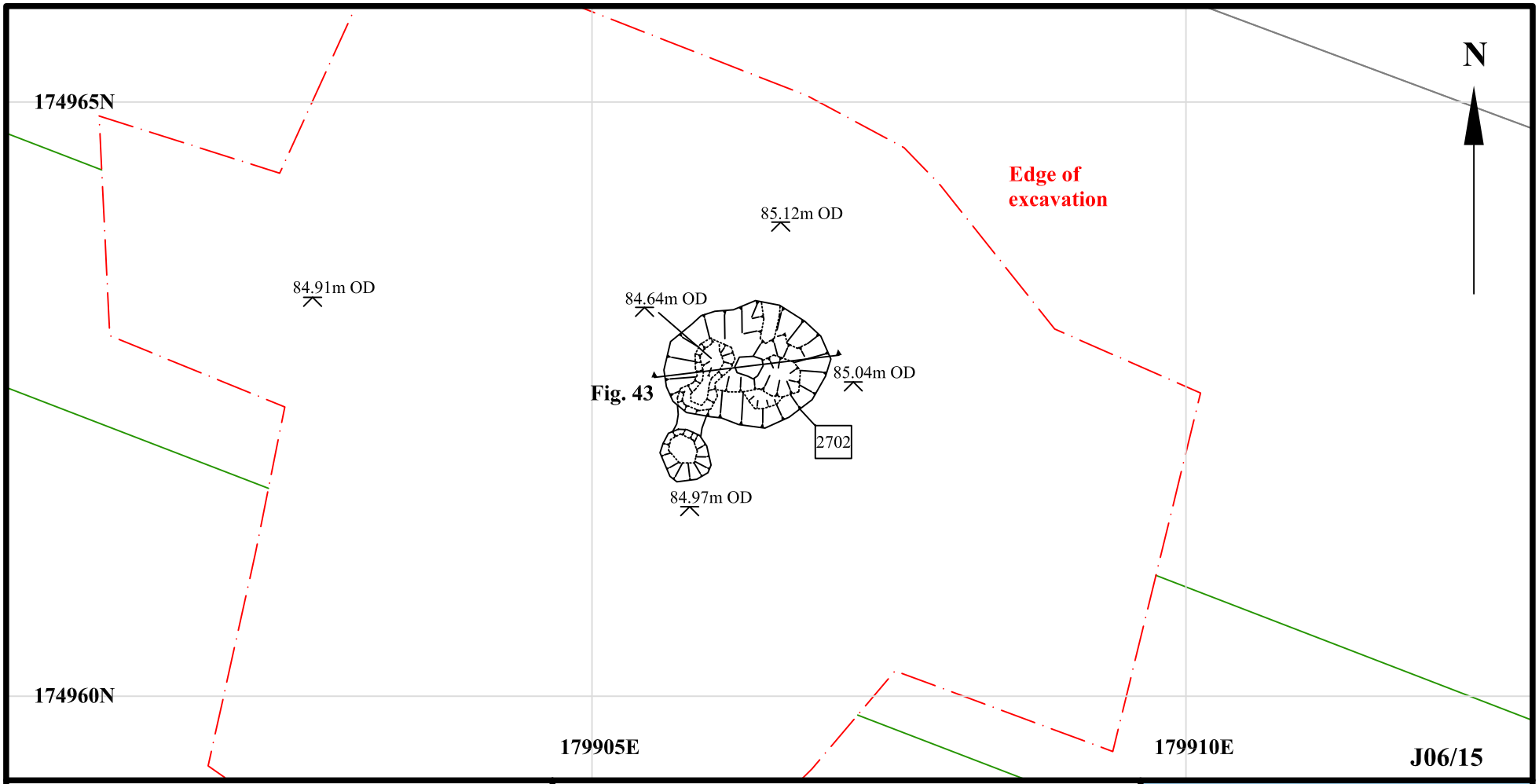
0 1m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 41: Sections of slots 2700 and 2701 through ditch, Area I

Scale: 1:20

TVAS IRELAND LTD



0 2m

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Figure 42: Plan of Area J

Scale: 1:50
Ordnance Survey Ireland digital maping
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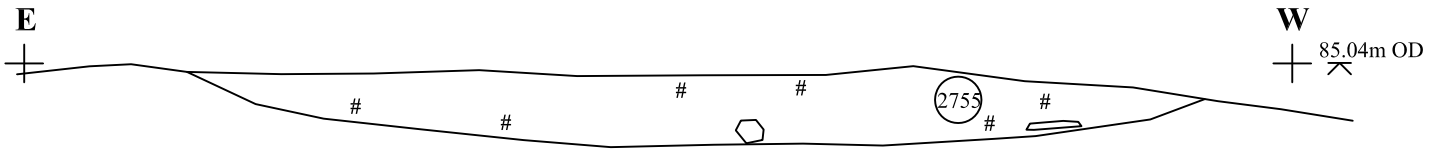

Key:
 # - charcoal

J06/15

0 0.5m

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 43: Section of spread 2755, Area J

Scale: 1:10

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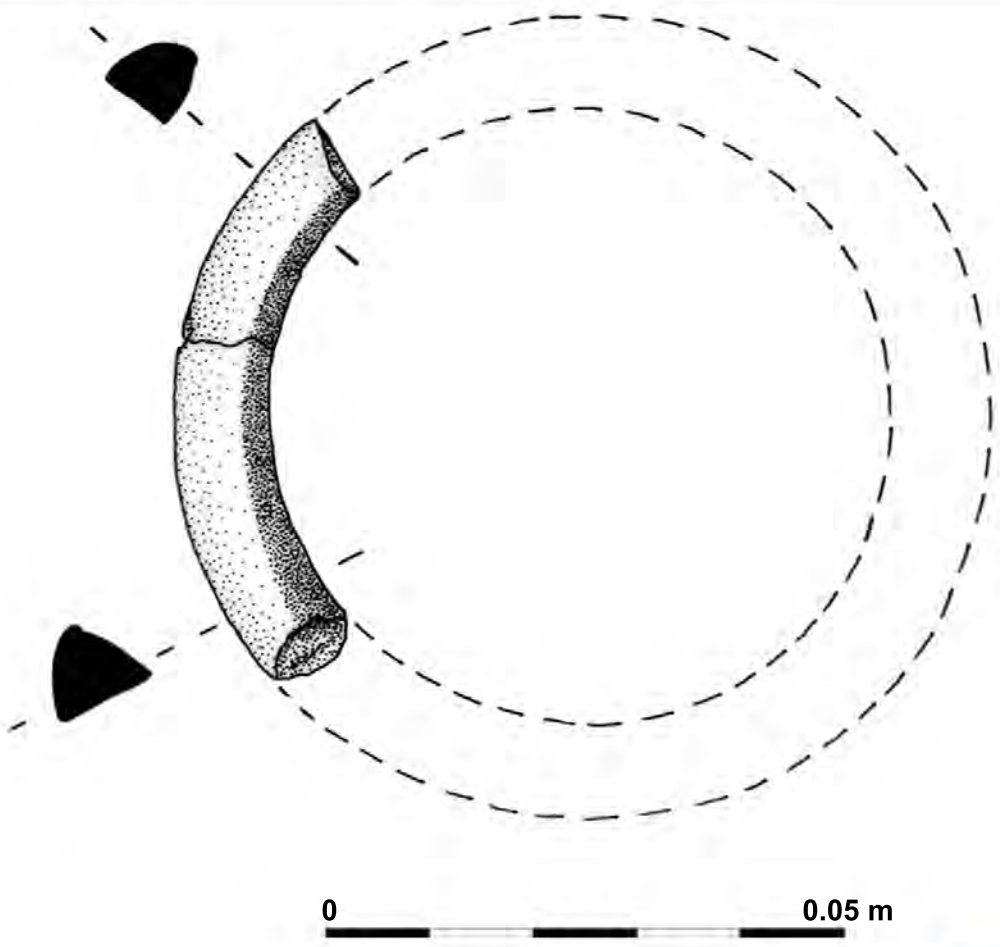

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E2479, Ballywilliam Site 1, Co. Tipperary

Figure 44: Bangle Fragment 1 (E2479:492:1)

Drawn by Astrid Nathan

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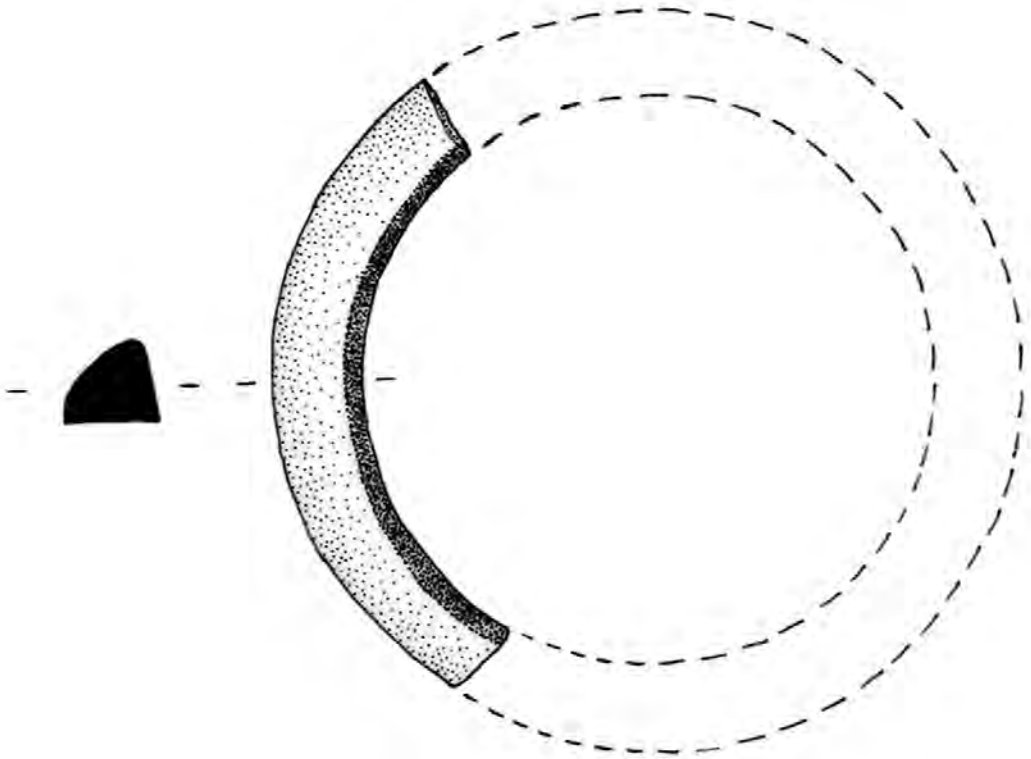

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Figure 45: Bangle Fragment 2 (E2479:1083:1)

Drawn by Astrid Nathan

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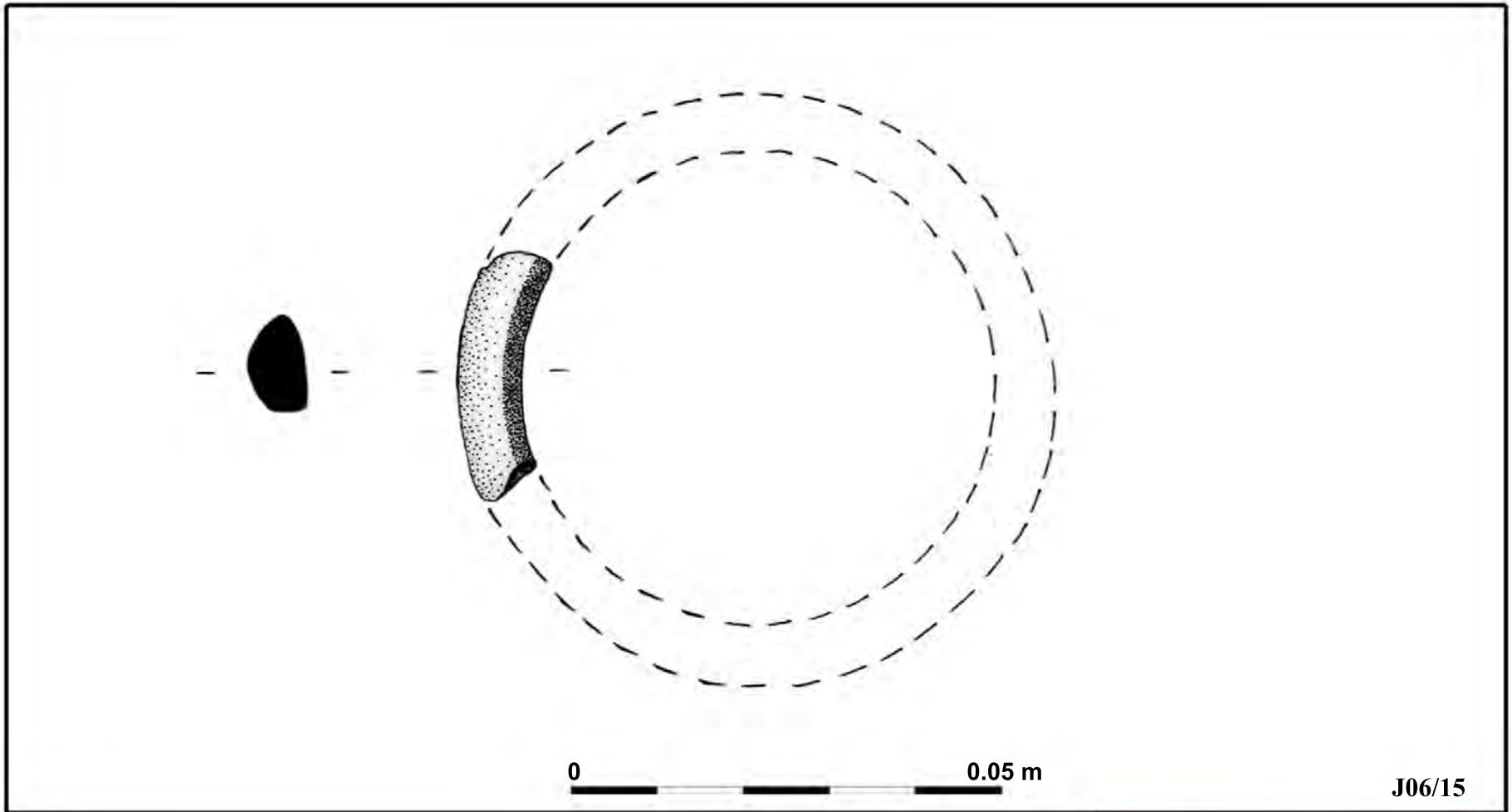

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Figure 46: Bangle Fragment 3 (E2479:696:1)

Drawn by Astrid Nathan

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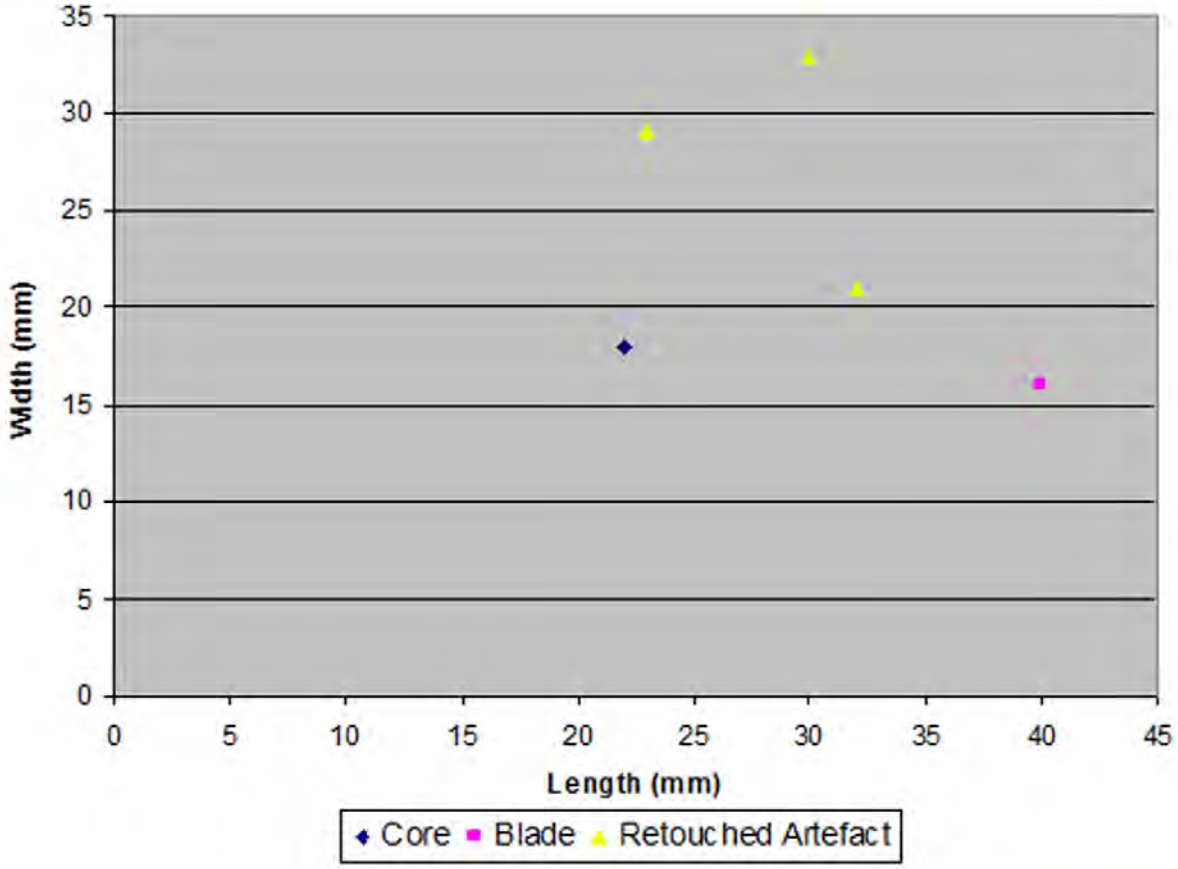

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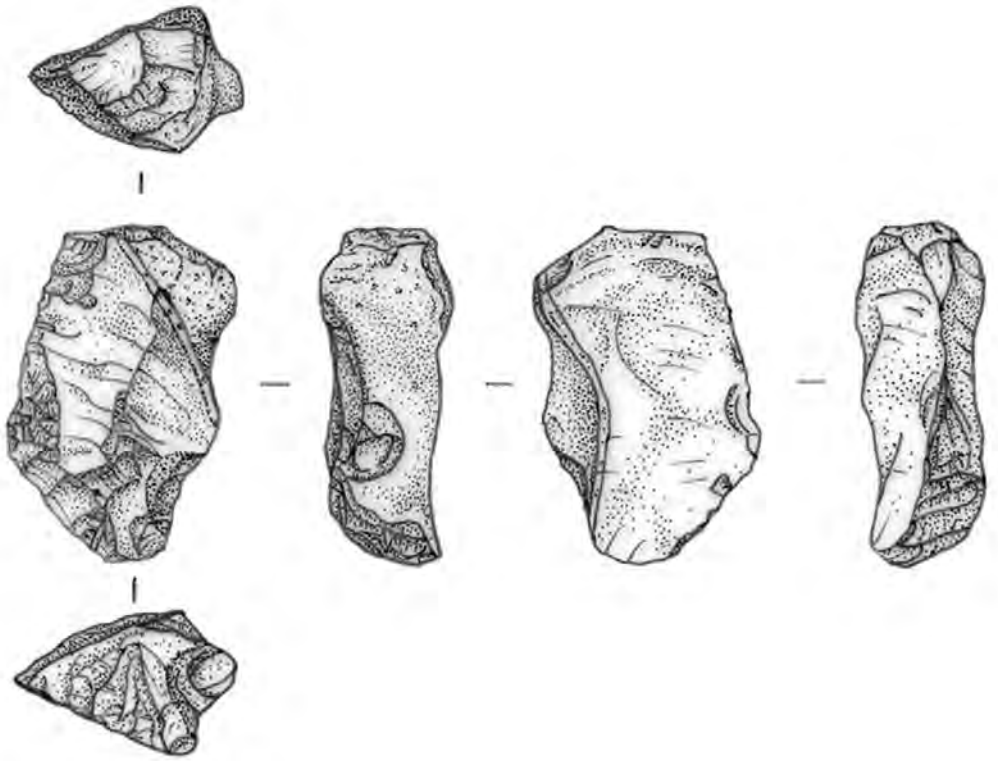
N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 47: Dimensions (mm) of the lithic assemblage

TVAS IRELAND LTD



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N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 48: Chert convex end scraper (E2479:861:1)

Drawn by Astrid Nathan

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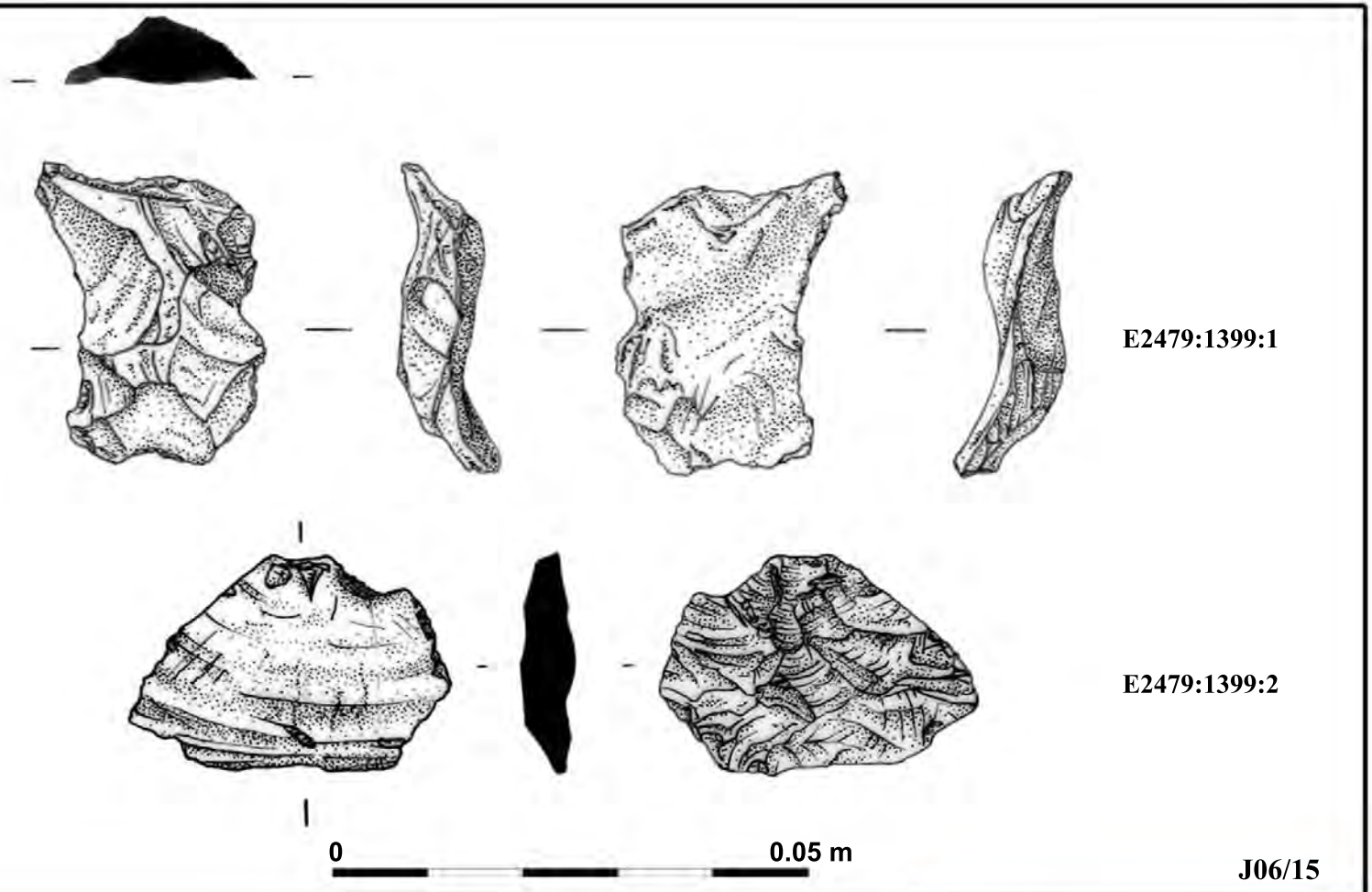

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 49: Lithic finds: Double concave scraper (E2479:1399:1) (Top) and barbed-and-tanged arrowhead roughout (E2479:1399:2) (Bottom)

Drawn by Astrid Nathan

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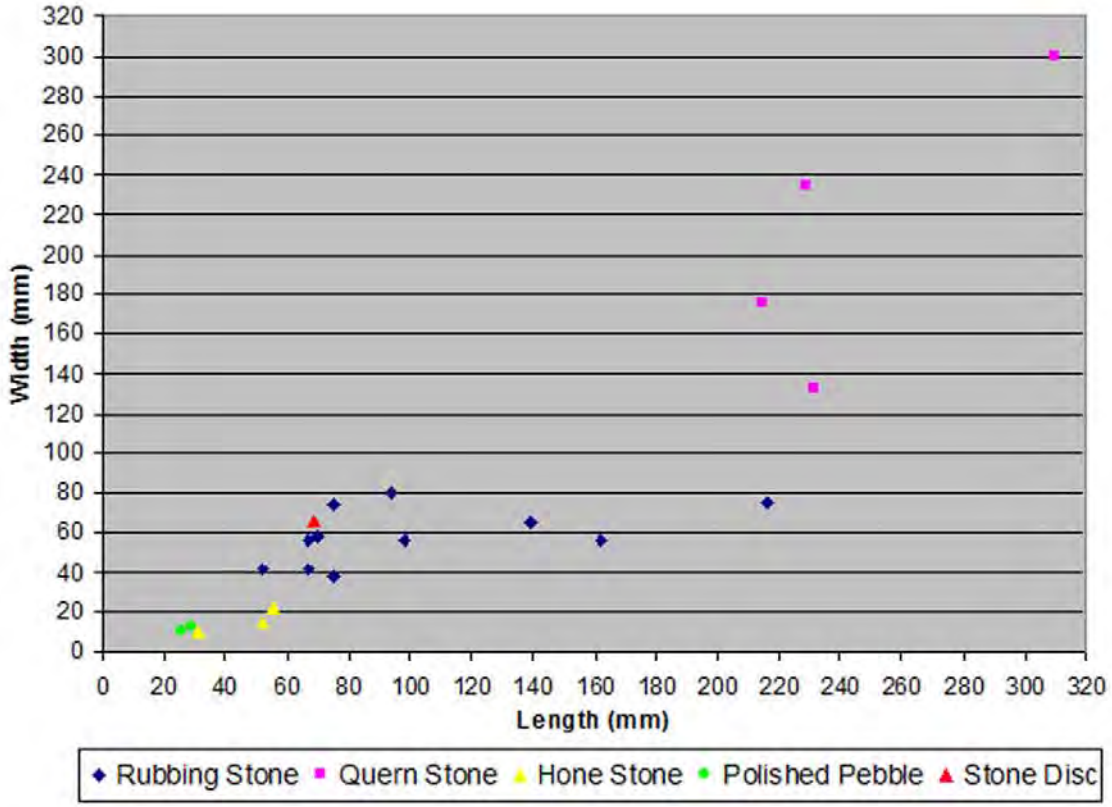

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Figure 50: Dimensions (mm) of the stone tool assemblage

TVAS IRELAND LTD

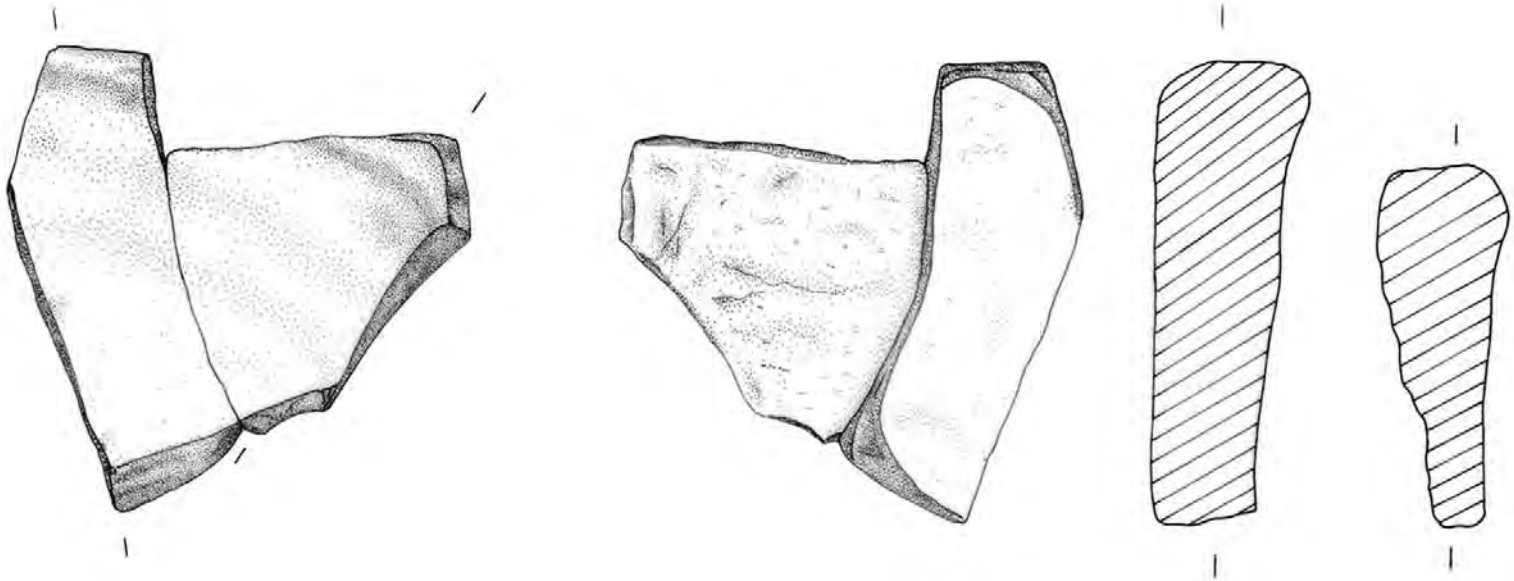

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Figure 51: Quern stone E2479:1060:2+3

Drawn by Astrid Nathan

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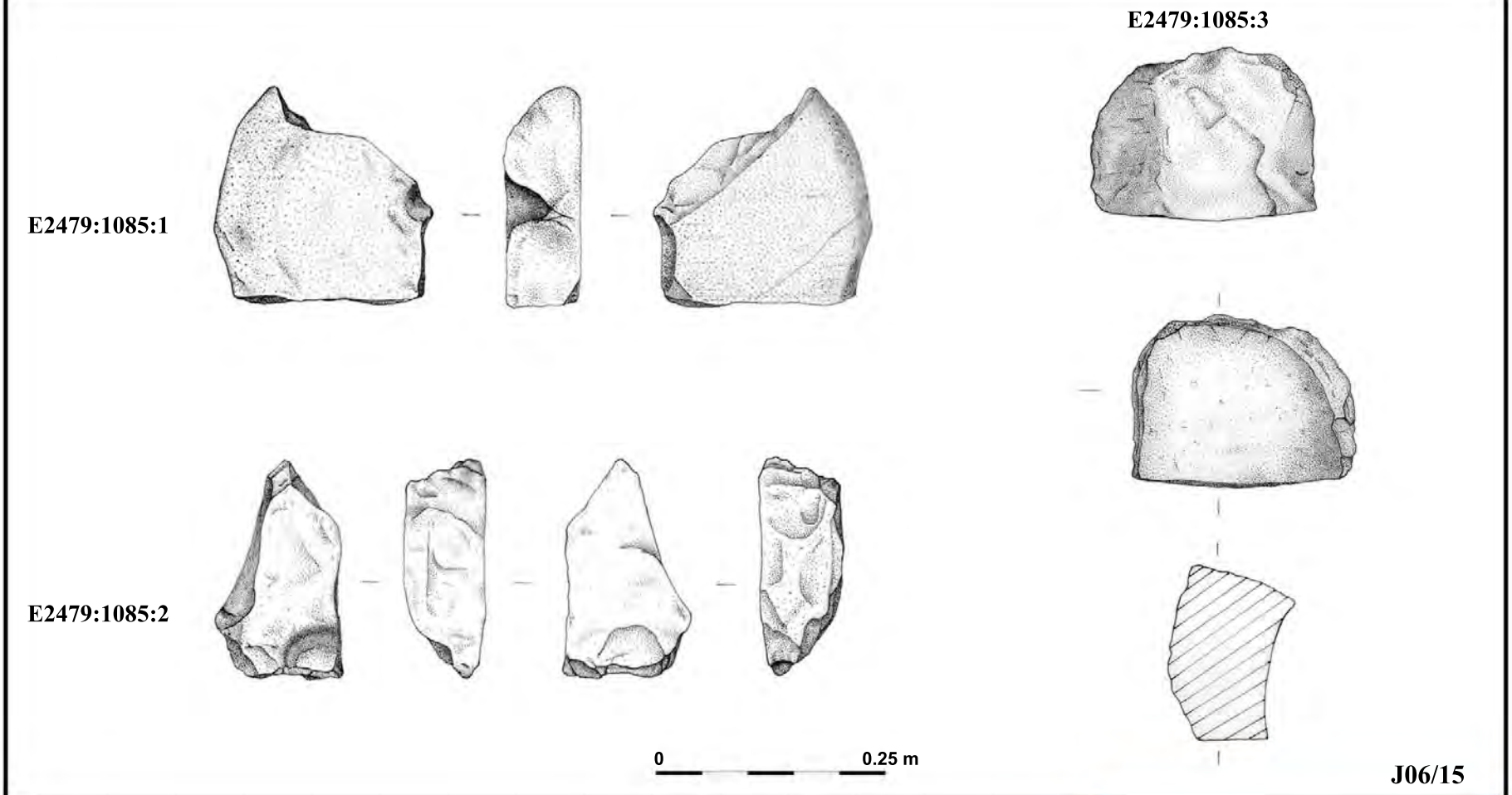

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Figure 52: Quern stone Fragments: E2479:1085:1 (Top); E2479:1085:2 (Bottom); E2479:1085:3 (Right)

Drawn by Astrid Nathan

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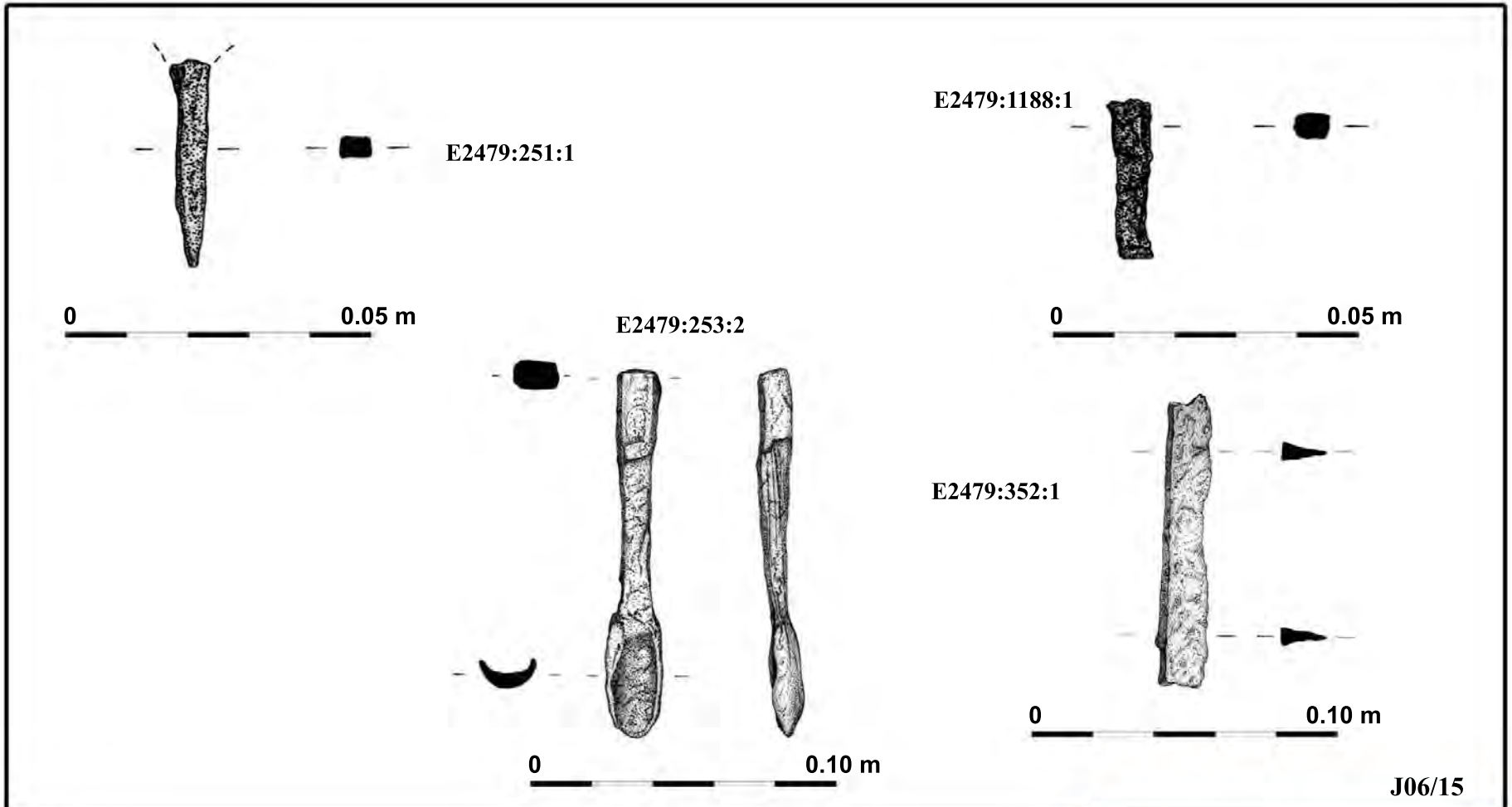

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Figure 53: Metal finds:Nail (E2479:251:1 (Top left); shaft fragment (E2479:1188:1) (Top right); spoon bit (E2479:253:2) (Bottom left) and knife blade (E2479:352:1) (Bottom right)

Drawn by Astrid Nathan

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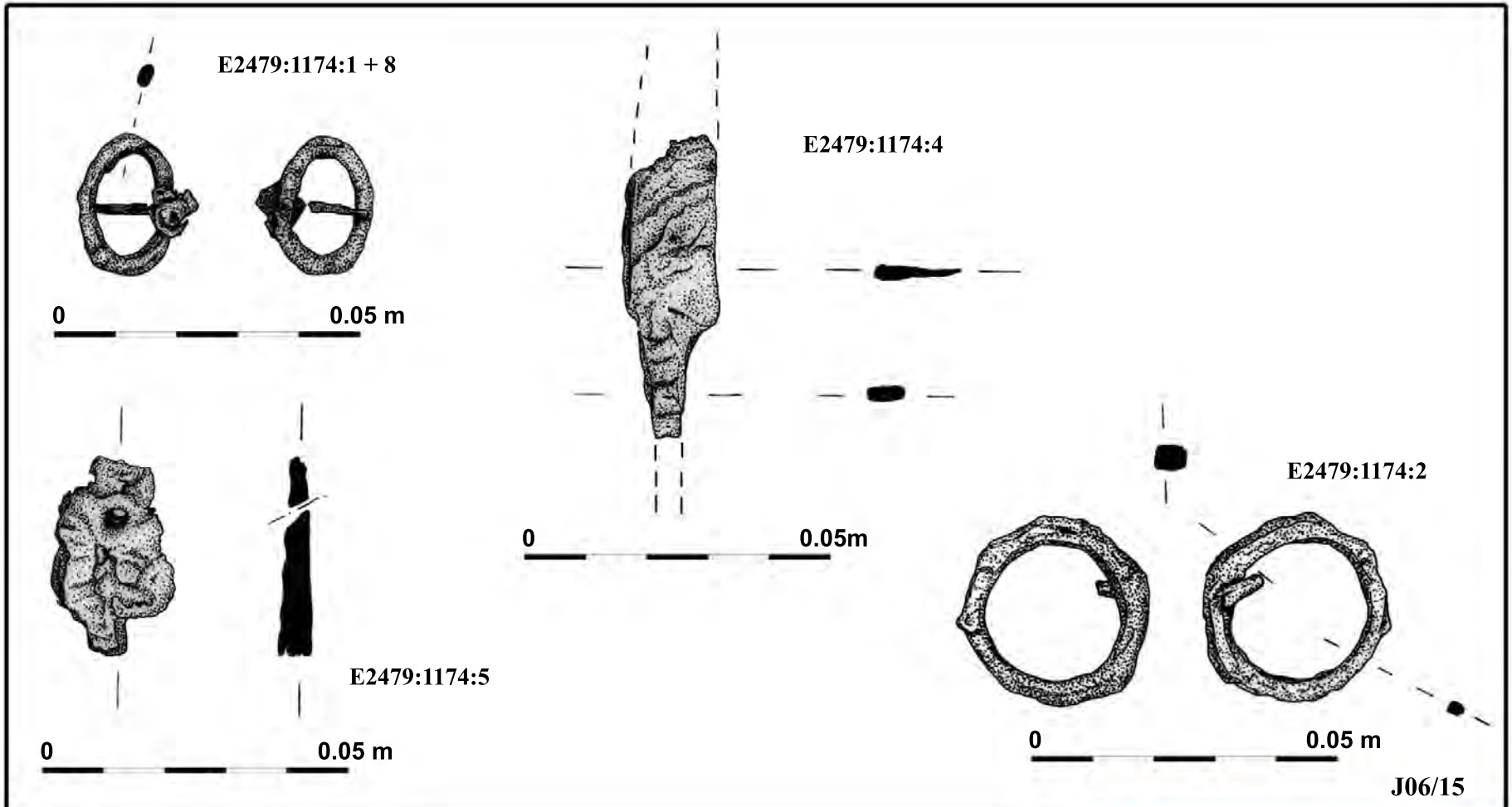

N7 Nenagh-Limerick HQDC
E2479, Ballywilliam Site 1, Co. Tipperary

Figure 54: Metal finds:Buckle frame (E2479:1174:1+8) (Top left); knife fragment (E2479:1174:4) (Top middle); unidentified object (E2479:1174:5) (Bottom left) and buckle fragment (E2479:1174:2) (Bottom right)

Drawn by Astrid Nathan

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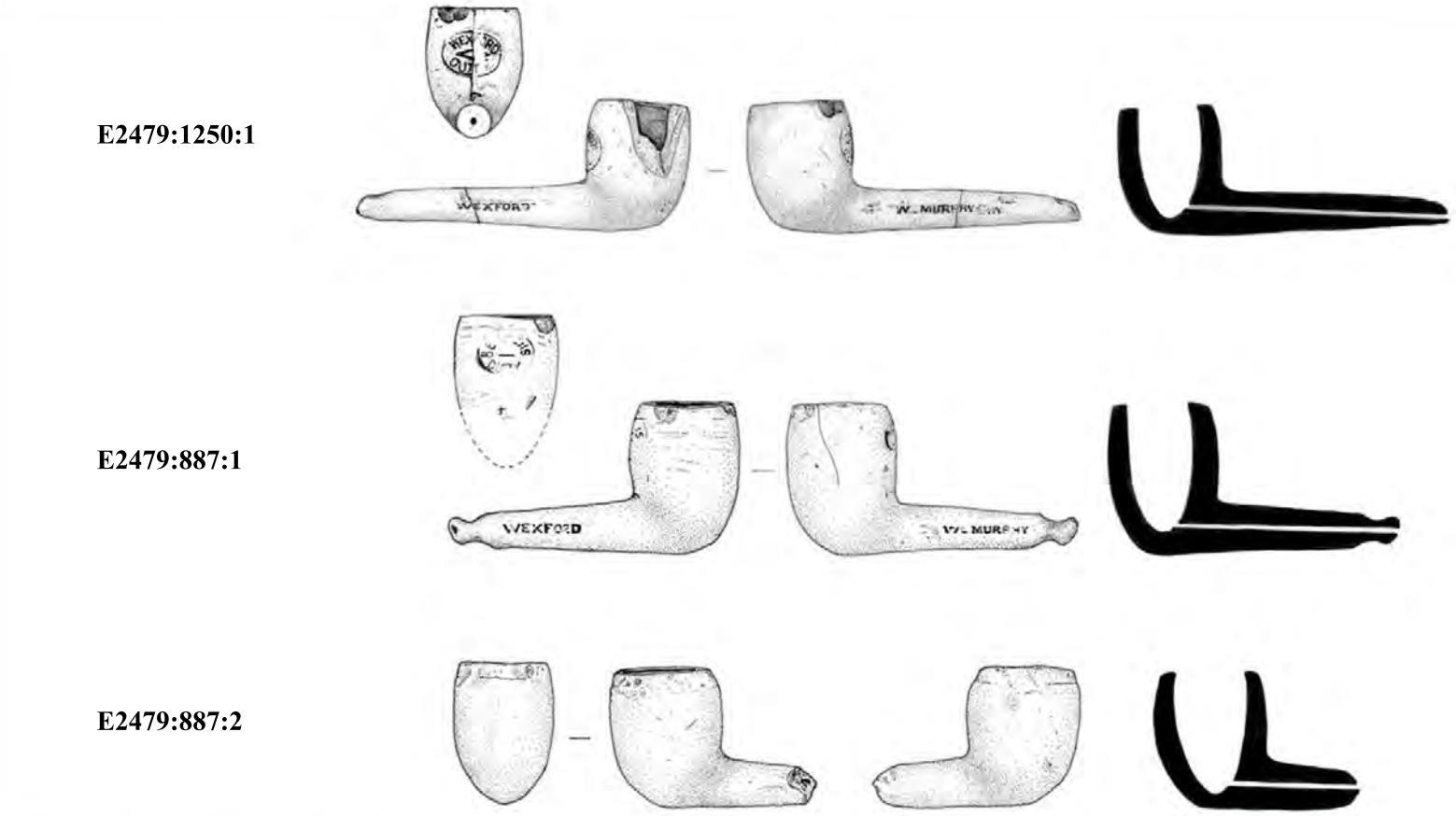

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Figure 55: Clay tobacco pipes

Drawn by Astrid Nathan

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Plate 1: Area H, fully excavated. Looking north-east. Scales 1m & 2m

Plate 2: Pit 2608, Area H. Looking north-west. Scale 0.5m

Plate 3: Pit 2610, Area H. Looking south. Scales 0.3m & 1m

Plate 4: Pit 2623, Area H. Looking south-west. Scales 0.5m, 1m & 2m

Plate 5: Area D, prior to excavation. Looking south-west

Plate 6: Area D during excavation. Looking south-east. Scales 0.5m, 1m, 2m

Plate 7: Trough 6 half excavated, Area D. Looking north-east.
Scales 0.5m & 1m

Plate 8: Trough 6 fully excavated, Area D. Looking north-west.
Scales 0.5m & 1m

Plate 9: Pit 12, fully excavated, Area D. Looking north-east. Scales 0.2m, 0.5m, 2x1m

Plate 10: Section through burnt stone deposits, Area D. Looking north-east. Scales 0.5m & 1m

Plate 11: Deposit 75 with timbers, Area D. Looking south-east. Scales 0.1m & 2x1m

Plate 12: Area D post-excavation. Looking north. Scales 0.5m, 1m, 2m

Plate 13: Area E prior to excavation. Looking north-west. Scales 3x1m, 2m

Plate 14: Trough 101, half-sectioned, Area E. Looking south-east. Scales 0.1m & 0.5m

Plate 15: Trough 101, fully excavated, Area E. Looking north-east. Scales 0.1m & 1m

Plate 16: Section through burnt stone deposits, Area E. Looking north-west. Scale 0.1m & 5m

Plate 17: Pit 709, Area F. Looking south. Scales 2x0.3m

Plate 18: Pit 1000, half-sectioned. Looking north-west. Scales 0.5m & 2m

Plate 19: Pit 430, Area F. Looking north-west. Scales 2 x 0.3m, 2 x 1m

Plate 20: Roundhouse 1003 during excavation, Area F. Looking north-west

Plate 21: Roundhouse 1003, fully excavated, Area F. Looking north-west. Scales 1m & 2m

Plate 22: Posthole 1021, roundhouse 1003, Area F. Looking west. Scales 0.1m & 0.3m

Plate 23: Enclosure, Area F. Looking south-west. Scales 2x2m.

Plate 24: Enclosure, Area F. Looking north-east.

Plate 25: Slot 831 through enclosure ditch 525, Area F. Looking north-west. Scales 1m & 2m

Plate 26: Slot 847 through enclosure ditch 525, Area F. Looking south. Scales 1m & 2m

Plate 27: Enclosure ditch 525 during excavation, Area F. Looking north-west. Scales 0.5m & 1m

Plate 28: Enclosure ditch 525 fully excavated, Area F. Looking north-west.

Plate 29: Palisade trenches 630 & 640, Area F. Looking east. Scales 0.5m &1m

Plate 30: Pit 700, Area F. Looking north-west. Scales 0.5m, 1m, 2m

E 2479

Plate 31: Kiln 622, Area F. Looking south-west. Scales 0.5m, 3x1m, 2m

Plate 32: Graves 941, Area F. Looking south-east. Scales 0.3m, 4x1m.

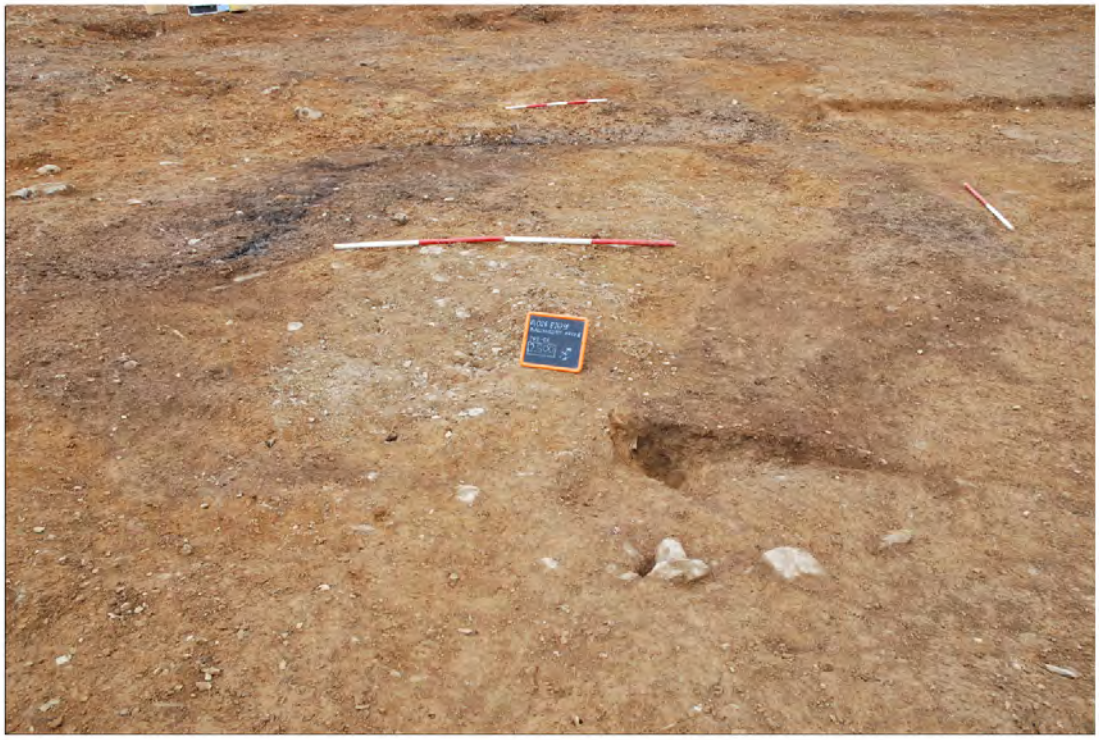

Plate 33: Horseshoe-shaped feature prior to excavation, Area G. Looking north-west. Scales 2x1m, 2m

Plate 34: Horseshoe-shaped feature during excavation, Area G. Looking south-east. Scales 0.5m, 1m, 2m.

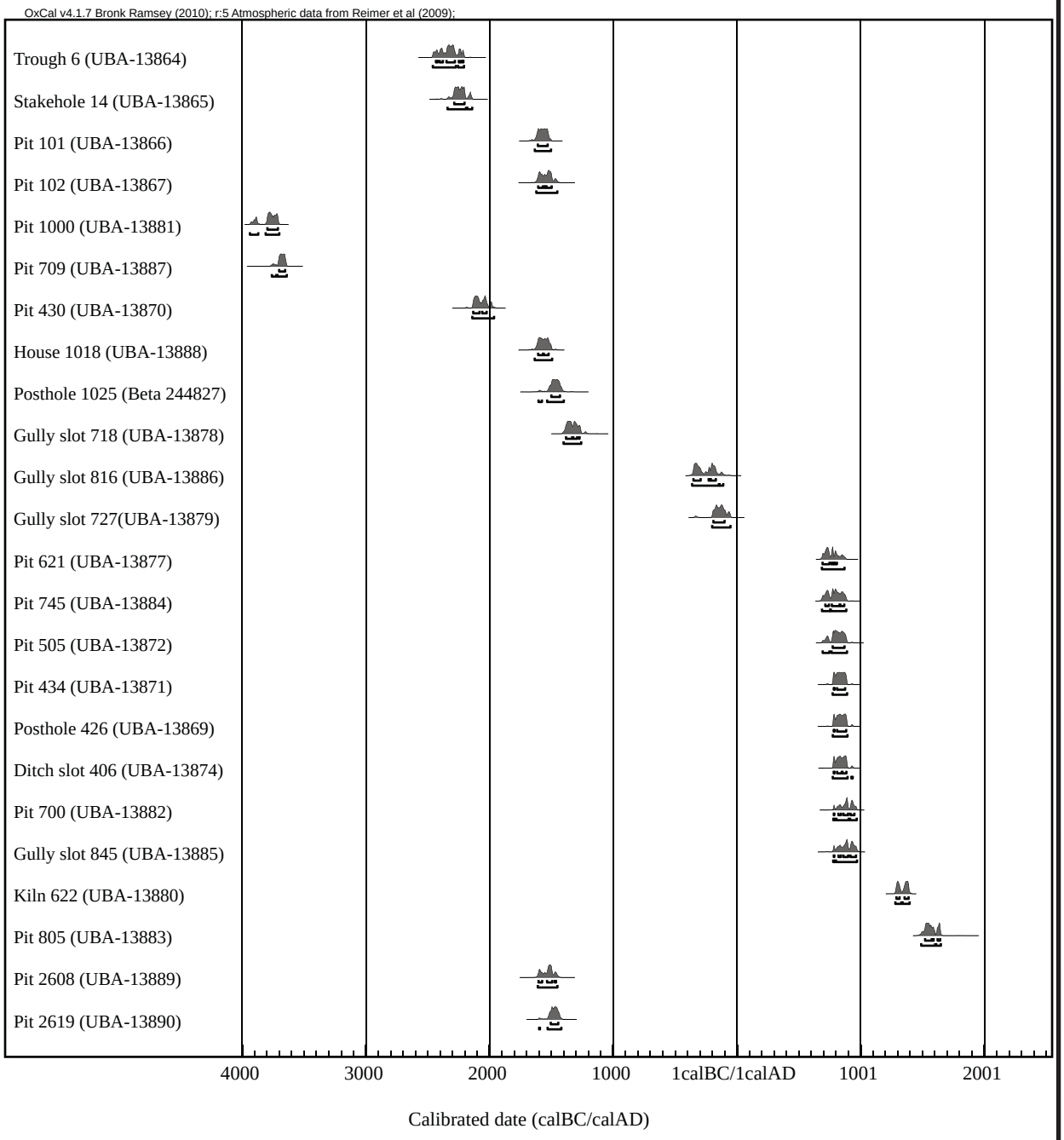

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Figure 56: Calibrated radiocarbon dates

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