N18 Ennis Bypass
and N85 Western Relief Road

Site AR100, Manusmore, Co. Clare

Final Archaeological Excavation Report

for Clare County Council

Licence No: 04E0187

by Graham Hull

Job J04/01

(NGR 137800 172333)

1st August 2006

N18 Ennis Bypass and N85 Western Relief Road
Site AR100, Manusmore, Co. Clare

Final Archaeological Excavation Report

for Clare County Council

Licence No: 04E0187

by Graham Hull
TVAS Ireland Ltd

Job J04/01

1st August 2006

Summary

Site name: N18 Ennis Bypass and N85 Western Relief Road, Site AR100, Manusmore, Co. Clare

Townland: Manusmore

Parish: Clareabbey

Barony: Islands

County: Clare

SMR/RMP Number: N/A

Planning Ref. No: N/A

Client: Clare County Council, New Road, Ennis, Co. Clare

Landowner: Clare County Council, New Road, Ennis, Co. Clare

Grid reference: 137800 172333 (OSI Discovery Series 1:50,000, Sheet 58. OS 6" Clare Sheet 42)

Naturally occurring geology: Pinkish clay with patches of yellowish orange sand

TVAS Ireland Job No: J04/01

Licence No: 04E0187

Licence Holder: Graham Hull

Report author: Graham Hull

Site activity: Excavation

Site area: 8693m^2

Sample percentage: 100%

Date of fieldwork: 9th February to 30th March 2004

Date of report: 1st August 2006

Summary of results: Twenty-seven cremation burial pits ranging in date from the late Neolithic to the Iron Age and associated with token deposits of pottery and lithics were excavated. Other features examined may indicate timber gravemarkers and possible structures associated with funerary activity.

Monuments identified: Prehistoric cremation cemeteries.

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: Kate Taylor ✓01.08.2006

N18 Ennis Bypass and N85 Western Relief Road, Site AR100, Manusmore, Co. Clare
Final Archaeological Excavation Report

By Graham Hull

Report J04/0lm

Introduction

This report documents the final results of an archaeological excavation of prehistoric cremation cemeteries (Site AR100) on the route of the N18 Ennis Bypass and N85 Western Relief Road at Manusmore, Co. Clare (NGR 137800 172333) (Fig. 1). The excavation forms part of the Ennis Bypass Archaeological Contract 6.

A preliminary archaeological report for this site was produced in May 2004 (Hull 2004).

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)

Project background

As part of the National Roads Authority scheme for upgrading the N18 Limerick to Galway Road, Clare County Council, in consultation with NRA Project Archaeologist Sébastien Joubert, requested a series of archaeological investigations along the route of the proposed Ennis Bypass and a Western Relief Road. The proposed scheme has an overall length of 21km and involves the construction of a 13.8km eastern bypass of Ennis from Latoon, north of Newmarket-on-Fergus, to Cragard, north of Barefield. The Western Relief Road is 7.1km long and is to link Killow and Claureen (Fig. 1).

A number of sites of archaeological interest were known to lie on the route of the new roads and the mitigation strategy agreed by the Project Archaeologist and the national licensing authorities for these sites was preservation by record, i.e. full archaeological excavation. Further sites, without surface expression, were located as the result of intensive test trenching along the course of the road (03E1291 Hull 2003 and 03E1293 Roger 2004). As preservation *in situ* was not a reasonable option, the resolution strategy for these new sites was also preservation by record.

The archaeological excavation and post excavation work were funded by Clare County Council through the National Roads Authority and part-financed by the European Union under the National Development Plan 2000-2006.

Location, topography and geology

The site was located in the townland of Manusmore, parish of Clareabbey, barony of Islands and lay approximately 6.5km south-east of Ennis town centre (the O'Connell Monument), 3km south-east of Clarecastle and was centred on NGR 137800 172333 (Figs 1 and 2).

The site was situated in a field that was located near the top of a south facing gentle incline. The natural geology was revealed at 8.5m above Ordnance Datum (OD) at the north of the site and at 7.5m OD at the south. Prior to the excavation the field was used as pasture.

The modern course of the Ardsollus River is located 120m to the south-east of the site.

The topsoil was 0.1m thick and overlay a disturbed plough horizon. The plough soil was a mixed deposit of brownish orange sandy silty clay with frequent to moderate gravel and limestone pieces. This soil varied in depth, being thinner at the top of the slope (0.2m) and thicker at the bottom of the slope (0.4m). The natural geological deposits were a pinkish clay with patches of yellowish orange sand.

Archaeological background

As part of the environmental assessment process for the road scheme, Clare County Council commissioned desk-based and walkover surveys that formed part of an Environmental Statement (Babtie Pettit 2000) and an archaeological study for the Environmental Impact Statement (Doyle 1999). A total of 36 sites of known or potential cultural heritage significance were identified along the entire route of the proposed Ennis Bypass and Western Relief Road.

Earthwork and geophysical survey were undertaken on potential archaeological sites and invasive testing and excavation took place in 2002 and 2003 on some of the above ground sites affected by the proposed road (Aegis 2002, IAC 2003, Geoquest 2002, Earthsound 2003).

A systematic programme of testing along the new road route, involving the mechanical excavation of a central linear trench with offsets, took place in Summer/Autumn 2003. Twenty-two previously unknown sites, including cremation cemeteries, burnt stone spreads, enclosures and brick clamps were found (03E1291 Hull 2003 and 03E1293 Roger 2004). Monuments dating from the Bronze Age to the modern period were found.

Earlier phases of archaeological intervention on newly constructed stretches of the N18 (Dromoland to Carrigoran), to the immediate south of this road project, have demonstrated that the locality has a rich range of prehistoric and later monuments (99E0350 Hull and Tarbett-Buckley 2001).

Recent archaeological work on the BGE Gas Pipeline to the West in the neighbourhood of the new road route has tended to support the picture of continuous human activity in Co. Clare from the Neolithic and even becoming intensive from the Bronze Age. A number of burnt stone spreads and burnt mounds were excavated near the route of the new road in the summer of 2002 (MGL 2002).

A probable prehistoric cremation cemetery was identified during testing (03E1291 Hull 2003, Plate 1). The location of the features on a south-facing slope, near a hilltop, would be relatively typical for Bronze Age funerary activity. This archaeological site was allocated the number AR100 and is the subject of this excavation report.

A second cremation cemetery was also excavated as part of this road project. This site was a similarly unenclosed cremation pit cluster that was radiocarbon dated to the Iron Age and was recorded 900m to the north-east (Hull 2006).

Excavation aims and methodology

A licence to excavate was granted to Graham Hull by the National Monuments Section of the Department of the Environment, Heritage and Local Government, in consultation with the National Museum of Ireland, on behalf of the Minister for the Environment, Heritage and Local Government. The licence number is 04E0187.

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 took place between 9th February and 30th March 2004 and was directed by Graham Hull, supervised by Astrid Lesley Nathan and assisted by Connor Conroy, Tim Dean, Elisabeth Dos Santos, Áine Kelly, Fiona McAuliffe, Frank Mulcahy, Jamie Parra Rizo and Edel Ruttle.

The excavation area was rectangular, centred on the archaeological features seen during testing and examined 8693m^2. Topsoil and overburden were removed by a 24 tonne, 360º, tracked machine, operated under direct and continuous archaeological supervision. The digger was fitted with a 6 foot toothless bucket and the spoil was dumped off-site by a dumper.

All features were hand-cleaned, half-sectioned, then fully excavated. Where cremation burials were recognised, these were excavated in plan by spits.

A full written, drawn and photographic record was made following procedures outlined in the TVAS Ireland Field Recording Manual (First Edition 2003).

Excavation results (Figs 3 to 11 and Plates 1 to 12)

A complete context list is given as Appendix 1.

Topsoil and ploughsoil were removed by machine. Topsoil (0.1m thick) overlay a disturbed plough horizon. The plough horizon was of variable depth being thinner at the north of the site (0.2m) and thicker at the south (0.4m). The plough soil was a mixed deposit of brownish orange sandy silty clay with frequent to moderate gravel and limestone pieces. Brick fragments and occasional 19th/20th century china fragments were also observed in the plough soil. The natural geological deposits were a pinkish clay with patches of yellowish orange sand (Plate 1).

Beneath the ploughsoil and cutting the geological deposits, a series of pits (or postholes) and linear features were observed (Fig. 3).

The linear features were plough scars and these truncated many of the earlier features, both vertically and horizontally. It is very likely that the ploughmarks were modern and the landowner reported ploughing during the 1940s. The ploughmarks were typically 0.4 to 0.5m wide, 0.15m to 0.2m deep and were up to 10m long. The bases of these agricultural features were very irregular. All the plough marks were orientated from north-west to south east with a single example at 90° to the others (feature 107 – Fig. 3).

Archaeological features were seen to be in three relatively discrete clusters: a northern group (Fig. 4), a southern group (Fig. 5) and a western group (Fig. 6).

A total of 63 pits or postholes were recorded and are described individually in Table 1 below.

Twenty-seven of the pits were dug for the burial of cremated human remains and a further five contained bone that may have been cremated. The burial pits were typically circular or sub-circular in shape having diameters in the order of 0.45m to 0.90m and mostly had vertical or near vertical sides onto concave or flat bases. These burial pits had a depth range of 0.07m to 0.4m with a typical depth of 0.12m. It was noted at excavation that many of the burial pits characteristically had well defined edges that probably indicated careful original digging. The amount of cremated bone in the pits varied from a few specks to handfuls of large diagnostic pieces.

Six pits contained what appeared to be metalworking slag and nine pits had worked tools made from flint or chert. Prehistoric pottery was found in seven pits. The pottery was only present in the southern pit cluster and the slag was only found in the northern cluster. Lithics were not found in the northern cluster.

Thirteen small features, many likely to be postholes were also found. Some of these features may have held timber uprights that served as grave markers (particularly features 30, 45 and 68). Other postholes may represent structures. The six postholes adjacent to cremation burial 137 (Fig. 5) might, for example, be the remains of a fence screening the grave.

Two small areas of burnt natural clay were also recorded (135 and 144, Fig. 5). These heat-reddened and oxidised patches of ground may be the result of natural fires but greater significance might be assumed as cremated bodies may have been burnt near the pits.

Two pits appear to have been dug to dispose of animal (?sheep) carcasses. Both pits 16 and 66 contained considerable quantities of semi-articulated bone and the relatively fresh appearance suggests a recent date.

Table 1: Pit descriptions

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
5	1.20 x 0.85 x 0.60	Irregular ovoid Steep inclined sides to pointed base.	Primary fill (21) dark brown sandy silt with 20% small limestone piece inclusions and charcoal flecks. Secondary fill (20) heat reddened sandy silt with 5% burnt small stones. Tertiary fill (4) brown silty sand with charcoal flecks and redeposited natural.	In situ burning. ?Hearth, ?bowl furnace, Figs 3 and 7, Plate 3
7	0.72 x 0.30 x 0.28	Ovoid Gently sloping sides onto a concave base Feature heavily truncated by machining	Singular fill (6) dark grey and black clayey, ashy sandy silt with frequent charcoal fragments and some fire cracked stones (diameter 0.05m)	Figs 4 and 7
9	0.90 x 0.50 x 0.12	Oval Very shallow inclined sides to a concave base	Singular fill (3) brown to black sandy silt with charcoal flecking. Burnt/cremated bone observed at excavation – not found in sieving	Possible cremation burial, Fig. 3
16	1.82 x 0.84 x 0.26	Sub-rectangular Gently sloping sides onto a flattish base	Singular fill (15) dark grey to black sandy silt with some charcoal flecking. Large amount of ?fresh articulated animal bone	?Modern animal burial. Bone and slag, Figs 4 and 10
23	1.20 x 0.80 x 0.25	Amorphous Gently sloping sides onto an irregular base	Singular fill (22) mid grey to blackish brown silty clay with 1% charcoal inclusion	
24	0.60 (diameter) x 0.40	Circular. Truncated at east by furrow Stepped and steep sided to a flattish base	Singular fill (13) mid brown with black flecking at top changing to pure black below. Sandy clay at top then ash/charcoal/large cremated bone fragments	Cremation burial, Fig. 4, Plate 2
25	0.47 (diameter) x 0.07	Sub-circular. Truncated centrally by furrow Vertical sides onto flat base	Singular fill (10) dark grey with black and white patches. Sandy ashy silt with frequent charcoal and cremated bone fragments	Cremation burial, Fig. 4
26	0.60 x 0.48 x 0.20	Sub-circular. Truncated by furrow Gently sloping sides onto a concave base	Singular fill (8) dark grey with black patches, clayey sandy silt with frequent charcoal fragments	Cremation burial, Fig. 4
27	0.90 x 0.87 x 0.31	Circular. Truncated by furrow Bowl-shaped	Singular fill (11) dark grey and black flecked clayey sandy silt with frequent charcoal fragments	Cremation burial, Fig. 4

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
30	0.20 (diameter) x 0.11	Circular Vertical sides and a concave base	Singular fill (12) brownish grey clayey sandy silt with moderate fragments of charcoal	?Posthole – grave marker, Fig. 4
33	1.00 x 0.90 x 0.22	Sub-circular. Truncated at east by furrow Sides very shallow incline to a flattish base	Singular fill (18) dark grey silty clay with high % of charcoal. Possible cremated (?burnt) bone	Possible cremation burial, bone and slag, Fig. 4
35	0.70 x 0.50 x 0.17	Sub-circular Vertical sides onto flat base	Singular fill (34) brownish grey silty sand with charcoal flecks and pieces	Cremation burial, Fig. 4
36	1.15 x 0.88 x 0.17	Oval Steep sides onto flattish base	Singular fill (19) black silty clay with 90% charcoal	Cremation burial and slag, Fig. 4
38	0.76 x 0.46 x 0.18	Sub-circular Gently sloping sides onto concave base. Part of group of four intercutting cremation pits	Singular fill (37) medium grey to black clayey silt with moderate charcoal fragments	Cremation burial and slag, Fig. 4
41	0.65 x 0.55 x 0.15	Ovoid Gently sloping sides onto a concave base	Fill (39) mid grey sandy clayey silt with moderate charcoal flecking. Lens (40) of charcoal and ash	Fig. 5
43	0.64 x 0.42 x 0.15	Sub-circular Bowl-shaped Cuts cremation pit 85	Singular fill (42) greyish black silty clay with charcoal and fire-cracked stone	Cremation burial and flint, Fig. 6
45	0.30 x 0.24 x 0.12	Sub-circular Bowl shaped	Singular fill (44) dark grey to black silty clay with fire heated stone and charcoal	?Posthole – grave marker, Fig. 6
50	0.54 x 0.45 x 0.12	Sub-circular Bowl-shaped Part of group of four intercutting cremation pits	Singular fill (14) mid grey to black clayey silt with moderate charcoal inclusions	Cremation burial, Fig. 4
52	0.70 x 0.62 x 0.20	Ovoid Gently sloping sides to flattish base	Singular fill (51) mid brown silty clay with charcoal flecking and Some small stones	Figs 4, 5 and 8
54	0.55 x 0.50 x 0.15	Sub-circular Gently sloping sides to flattish base	Singular fill (53) dark brown silty clay with some charcoal and small stone inclusions	Cremation burial, chert and slag, Fig. 4
56	0.49 x 0.44 x 0.23	Circular Near vertical sides to flattish base	Singular fill (55) mid brownish grey silty clay with charcoal flecking	Cremation burial, Fig. 4
59	0.46 (diameter) x 0.39	Circular Very steep sides onto concave base	Singular fill (58) greyish brown silty sand with charcoal flecking	Cremation burial and chert, Figs 4 and 5

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
61	0.44 x 0.35 x 0.12	Sub-circular Steep sides onto a flattish base Truncated by furrow	Singular fill (60) mid grey and black flecked clayey silt with some charcoal pieces	Cremation burial, Fig. 4
62	0.45 (diameter) x 0.11	Circular Bowl-shaped Part of group of four intercutting cremation pits. Truncated by furrow	Singular fill (64) grey to black silty clay with frequent charcoal	Cremation burial, Fig. 4
63	0.59 (diameter) x 0.11	Circular Bowl-shaped Part of group of four intercutting cremation pits. Truncated by furrow	Singular fill (65) grey to black silty clay with some charcoal	Cremation burial and slag, Fig. 4
66	1.50 x 1.20 x 0.45	Sub- circular Truncated by furrow at east Gradually inclined sides onto a flattish base	Singular fill (17) dark greyish brown silty clay with 30% small stones and 5% charcoal Lots of 'fresh' animal bone	?Modern animal burial pit, Figs 5 and 9
68	0.20 x 0.17 x 0.13	Circular Near vertical (undercut in places) sides onto concave base	Singular fill (67) dark greyish brown sandy silt with 2% charcoal	Cremation burial or ?posthole – grave marker, Fig. 4
73	0.63 x 0.61 x 0.28	Circular Gently sloping sides onto a concave base	Singular fill (76) dark brown to black silty sandy clay with 25% broken and burnt stones. Some charcoal	Prehistoric pottery and chert, Fig. 5
75	0.38 (diameter) x 0.10	Circular. Truncated at north by furrow Bowl-shaped	Singular fill (74) dark greyish brown clayey silt with occasional charcoal	?Posthole, Fig. 5
80	0.62 x 053 x 0.30	Sub-circular Gradually inclined sides onto a concave base	Singular fill (79) Brown sandy silt with some charcoal	Cremation burial and chert, Figs 5 and 7
82	0.85 x 0.40 x 0.14	Oval Gradually inclined sides onto an irregular base	Singular fill (81) brownish grey sandy clayey silt with charcoal fragments	Cremation burial, Fig. 5
85	0.80 x 0.43 x 0.15	Sub-circular Bowl-shaped Cut by cremation pit 43	Primary fill (86) mid greyish brown silty clay with no inclusions – ?natural silting Secondary fill (87) dark grey to black silty clay with charcoal	Flint and chert, Fig. 6

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
89	0.63 x 0.58 x 0.04	Sub-circular Very shallow – flat base Possibly truncated at topsoil stripping	Singular fill (88) mid brown clayey silt with charcoal flecks Tiny ?cremated bone flecks seen at excavation – not found at sieving	Possible cremation burial, Fig. 5
91	0.45 x 0.25 x 0.18	Sub-oval Bowl shaped	Singular fill (90) brownish grey sandy clayey silt with occasional charcoal flecking	?Posthole, Fig. 5
97	0.87 x 0.74 x 0.22	Sub-oval Truncated centrally by furrow Steep sides at west, shallower at east onto irregular base	Singular fill (96) black clayey silt with 10% charcoal and 20% small stones	Cremation burial, prehistoric pottery and chert, Fig. 5
98	0.85 x 0.67 x 0.30	Oval Truncated at north and south by furrows Sides steeper at east and west onto flattish base	Singular fill (99) blackish grey layer on top then sandy brown deposit below and greyish pink at base. Sandy silt with charcoal flecks and small stones	Cremation burial, prehistoric pottery and flint, Figs 5 and 11, Plate 5
109	0.96 x 0.56 x 0.28	Sub-oval Truncated at south-west by furrow Very steep sides onto concave base	Singular fill (108) mid brownish grey clayey silt with charcoal flecks	Cremation burial, , Figs 5 and 8
110	0.68 x 0.49 x 0.11	Sub-rectangular Truncated centrally by furrow Gradual sloping sides except at east which is vertical Base flattish	Singular fill (111) dark brownish grey sandy clay with 5% charcoal	Fig. 5
114	0.90 x 0.75 x 0.11	Oval Gently sloping sides to a flattish base	Singular fill (115) dark grey with black charcoal flecking. Clayey ashy silt with frequent charcoal flecks and pieces. Moderate inclusion of burnt sandstone. Prehistoric pottery ?burnt	Cremation burial, prehistoric pottery, Fig. 5
117	1.32 x 0.76 x 0.16	Sub-rectangular Steep-sided onto irregular base	Singular fill (116) dark brown sandy silt with charcoal fragments	Fig. 5
119	0.60 x 0.25 x 0.10	Sub-oval Bowl-shaped	Singular fill (118) brown to black sandy silt with some charcoal flecks	Fig. 5
121	0.85 x 0.40 x 0.10	Oval Truncated at east by furrow Bowl-shaped	Singular fill (120) mid to dark grey clayey sandy silt with frequent charcoal fragments and cremated bone pieces	Cremation burial, prehistoric pottery, Figs 5 and 7, Plate 6

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
123	0.94 x 0.69 x 0.27	Sub-oval Truncated at east by furrow Near vertical sides onto a flattish base Possibly recut by 2nd cremation pit	Fill (134) is at base of pit 123 and was a mid brownish grey clayey sandy silt with ashy texture and with frequent charcoal flecking Fill (122) is probably fill of recut and was a dark grey clayey sandy silt with frequent ash and charcoal flecks	Cremation burial(s) with possible recut, prehistoric pottery, Figs 5 and 8, Plate 7
125	0.36 x 0.32 x 0.17	Circular Truncated at west by furrow Bowl-shaped	Singular fill (124) mid brown clayey sandy silt with charcoal flecking Cremated bone flecks seen at excavation – not found at sieving	Possible cremation burial, Fig. 5
129	0.30 (diameter) x 0.08	Circular Steep sides onto a flattish base	Singular fill (128) mid grey clayey silt with occasional charcoal flecking. Cremated bone flecks seen at excavation – not found at sieving	Possible cremation burial, ?posthole – grave marker, Fig. 5
131	0.15 (diameter) x 0.15	Circular Vertical sides onto concave base	Singular fill (130) mid brown silty clay with 20% small stones and some charcoal pieces	?Posthole – grave marker, Fig. 5
133	0.32 x 0.27 x 0.15	Sub-circular Steep sides onto concave base	Singular fill (132) dark brown sandy silt with occasional charcoal flecks	?Posthole – grave marker, Fig. 5, Plate 8
137	1.15 x 0.46 x 0.17	Sub-oval Gently sloping sides onto an irregular base Truncated by furrow	Singular fill (136) dark brown silty sandy clay with 10% charcoal inclusion	Cremation burial, Fig. 5
139	0.48 x 0.40 x 0.32	Oval Steep sides onto concave base	Singular fill (138) dark brown sandy clay with charcoal and packing stones	?Posthole – grave marker, , Figs 5 and 7, Plate 8
141	0.980 x 0.65 x 0.12	Oval Truncated at east and west by furrows Steep sides onto flattish base	Singular fill (140) dark grey ashy sandy silt with frequent charcoal fragments	Cremation burial, Figs 5 and 10
142	0.60 x 0.52 x 0.20	Sub-circular Steep sides onto concave base	Singular fill (143) mid greyish brown sandy clay with 1% charcoal	Chert, Fig. 5, Plate 9
146	0.44 (diameter) x 0.13	Circular Steep sides onto concave base	Singular fill (145) light to mid greyish brown sandy silt with small stone inclusions (5%)	?Posthole, Fig. 5
147	0.20 x 0.15 x 0.08	Sub-circular Steep sides onto concave base	Singular fill (148) light brown sandy silt	?Posthole – grave marker, Fig. 5
150	0.20 (diameter) x 0.24	Circular Steep sides onto concave base	Singular fill (149) dark brown clayey silt	?Posthole – grave marker, Fig. 5
152	0.20 (diameter) x 0.22	Circular Steep sides onto concave base	Singular fill (151) dark brown silty clay with packing stones	?Posthole – grave marker, Fig. 5

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
154	0.94 x 0.74 x 0.12	Sub-circular Gently sloping sides onto a concave base	Singular fill (153) mid to dark brown silty sand with patches of orange. 5% charcoal. 'pottery' observed at excavation. Not seen at sieving or finds ??	Cremation burial, Fig. 5
156	0.30 x 0.20 x 0.18	Oval Steep sides onto concave base	Light brown sandy silt with charcoal flecks (few)	?Posthole – grave marker, Fig. 5
161	0.45 (diameter) x 0.23	Circular Bowl-shaped Truncated at east and west by furrows	Singular fill (162) mid brown to grey clayey silt with frequent charcoal	?Posthole – grave marker, Fig. 5
168	0.39 x 0.36 x 0.29	Sub-circular Truncated at south by furrow Steep sides onto concave base	Singular fill (167) mid greyish brown silty clay with 1% charcoal and 10% small stones	?Posthole – grave marker, Fig. 5, Plate 11
170	2.15 (diameter) x 0.14	Circular Gently sloping sides onto flattish base Truncated by furrows	Singular fill (169) darkish brown sandy silt with occasional charcoal and specks of ?cremated bone – not found at sieving	Figs 5 and 10, Plate 12
172	1.65 x 1.45 x 0.30	Sub-circular Steep sides onto flattish base Truncated by furrows	Singular fill (171) dark grey sandy silt with moderate charcoal fragment inclusions	Figs 5 and 11, Plates 4 and 10
174	0.75 (diameter) x 0.10	Circular Gently sloping sides onto concave base	Singular fill (173) mid greyish brown clayey silt with occasional charcoal	Prehistoric pottery, Fig. 5
176	0.50 (diameter) x 0.10	Circular Gently sloping sides onto concave base	Singular fill (175) mid greyish brown clayey silt with occasional charcoal	Fig. 5

Finds

A catalogue of finds is given as Appendix 2.

The finds have been cleaned and will be 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 1997).

The Prehistoric Pottery by Dr Tessa Machling

The larger pieces of pottery are illustrated as Figure 12 and Plate 14. The pottery was cleaned and conserved by ArchCon Labs.

Introduction

The pottery assemblage from AR100, Manusmore consists of 63 sherds (over half being smaller than 10mm diameter) weighing 80g, from eight contexts (see Table 2). All sherds are extremely abraded, with the maximum sherd size being 50mm (present in only one sherd and the majority being approximately 10mm diameter. The surfaces and interiors of the sherds show large numbers of voids, suggesting a leaching of fabric either after or prior to deposition. The extremely poor quality of the sherds would suggest that, although aggravated by the post-depositional environment, some element of this leaching was almost certainly initiated prior to deposition.

Table 2: Pottery assemblage totals and fabrics.

Find Nos	Cut	Deposit	Fabric	No. of Sherds	Weight (g)	Comments
04E0187:29	73	76	V1	1	2	x-section 6mm
04E0187:48	97	96	V1	1	1	
04E0187:51	98	99	V1	1	4	x-section 9mm
04E0187:53-4	107	106	V1/2	2	1	(conjoining) x-section 5mm
04E0187:56-63 & 04E0187:76	114	115	?	4	<1	Scraps
			V1	9	1	Scraps
			V1/2	10	25	x-section 9mm
04E0187: 65-75	114	115	V1	10	12	Scraps
			V1/2	2	2	Scraps
04E0187:78	121	120	V1	2	<1	Scraps
04E0187:80-84	123	122&134	V1/2	5	12	x-section 11mm
04E0187:90-1	174	173	?	c.8	<1	Scraps
			V1/2	8	17	1 sherd shows smoothed exterior, x-section 11mm
		TOTAL		**63**	**80g**	

All sherds, where identifiable, are body sherds with none showing any definitive form characteristics, although the single large sherd from pit 174 would appear to suggest an urn form. Due to the small size and severe abrasion of the sherds it is difficult to assign definite form types and dates, however as there has been little published material from this area of Ireland, even such a poor assemblage is important in both a regional and national context.

The assemblage was analysed and recorded following recommended guidelines for the analysis of prehistoric pottery (PCRG 1992). All sherds were assigned a fabric type after macroscopic examination and the use of a hand lens (x10 and x20 power), and the sherds were then counted and

weighed to the nearest whole gramme. Surface treatment, evidence of manufacturing technology, decoration etc. were also noted.

Results

Description of pottery fabrics

Only two possible fabric types were identified. It is probable that fabric V1/2 represents a variation within Fabric V1 but, without a higher number of larger identifiable form sherds, it is difficult to ascertain whether this is correct or not. However, the balance of probability suggests that this differentiation is an artificial separation, although for clarity, the two fabrics have been retained within this report.

In the descriptions below, the terms used to describe the size of inclusions are defined as follows: very fine (< 0.1mm), fine (0.1-0.25mm), medium (0.25-0.5mm), coarse (0.5-1mm), very coarse (1mm+). Terms used to describe the frequency of inclusions are defined thus, based on the density charts devised by Terry and Chilingar (1955): rare (1-3%), sparse (3-10%), moderate (10-20%), common (20-30%), very common (30-40%), abundant (40%+). A full description of the fabric series has been included below.

Fabric V1: A soft, irregularly fired fabric with moderate to common amounts of fine to very coarse irregular voids. Rare to sparse amounts of quartz sand, iron oxide, argillaceous material and mica can also be seen. Rare moderate to coarse grade flint/chert is also present. It would appear that the material that left the voids may have been added, with all other inclusion probably deriving from the source clay.

The sherds in this fabric have a wall thickness of between 6-9mm and are generally very abraded on the surface. The voids within this fabric would appear to have derived from removed/dissolved large angular particles and may be indicative of leached limestone (or even possibly bone: see Cleary 2000, 127) temper. However, negative HCl reactions might suggest another, as yet unidentifiable, origin.

A few of the voids appear linear in nature and may result from organic plant matter being used, however the small number of sherds that show one or two plant matter voids (only two) would suggest that this was not a primary constituent of the matrix and may instead represent accidental inclusion or deposition upon the surface during finishing of the vessel (see Surface Treatments below). This fabric was present in Contexts 76, 96, 99, 115 and 120.

Fabric V1/2: As has been stated above, this fabric is almost indistinguishable from fabric V1. However, several sherds within this fabric appeared to be finer than those of Fabric V1. It should however, be noted that sherds of this fabric appear to be slightly less abraded than those of Fabric V1, and so a level of artificial differentiation is probably occurring. The largest sherd of the assemblage was of Fabric V1/2 and shows evidence of smoothing on the exterior of the pot. The sherds of this fabric have a wall thickness ranging between 5mm-11mm. This fabric was present in Contexts 106, 115, 122/134 and 173.

A few sherds could not be assigned to a fabric group due their extremely small size, however, it is unlikely that they represent anything other than the fabrics noted above.

The large number of voids in the fabric is evidenced by the very low weight of the assemblage as a whole, with the majority of sherds weighing less than 1 gramme. Even the largest sherd, approximately 50mm diameter, from deposit 173 weighed only 6g.

Discussion of fabric

The fabrics found represent the Bronze Age, almost certainly the Later Bronze Age. Comparisons with sites in the vicinity is difficult as few sites have been examined within this area of Ireland and the paucity of pottery from this period and, in particular, from this assemblage makes any definite conclusions difficult. However, there are some similarities to other ceramics located in south-west Ireland.

In general, it would appear that the fabrics from Manusmore compare well with the assemblages from the region. Excavations across the region, for example at Clonfinlough, County Offaly (IAWU 1993, 42), Lough Gur (O'Riordain 1954, Cleary 2000), Knockadoon Hill (Cleary 2000, 128) and on the North Munster Project (Grogan 1995 and 1996), have also produced comparable coarsely gritted/void fabrics.

Resources for the pottery

It is generally accepted that if suitable resources can be found within 7-10km of a site, the pottery is said to be of local production (Arnold 1985). Clays that derive from outside this area can be treated as non-local.

The presence of common inclusion types such as probable limestone and quartz sand, mica and argillaceous material could suggest either a local or non-local source. However, the absence of any diagnostic, non-local inclusions and the presence of suitable clay resources close to the site makes a local resource likely.

Vessel forms

As has been stated above, the limited number and small size of the sherds makes any definite form assignment almost impossible, although it does seem likely that urn/jar type vessels are represented. The similarity of fabrics make it difficult to ascertain whether the assemblage represents more than one vessel, but from macroscopic differences in wall thickness, firing and fabric, it would appear that the assemblage may represent sherds from a number of vessels which were broken, mixed up and abraded long before deposition.

Surface treatments, decoration and residues

No decorated sherds were found in the assemblage. Surface treatment in the form of wiping, possibly using organic material such as grass, was seen on only one sherd from context 173. It is almost certain that the abrasion of the surfaces of each sherd is responsible for this apparent lack and it is possible that many more of the sherds showed comparable treatments prior to their erosion.

Discussion

Although small, the assemblage from Manusmore has added to the picture of ceramics available for this area of Ireland. The poor quality and small size of the sherds has made any secure analysis impossible, although fabric comparison with other local sites has pointed to a Later Bronze Age origin for the material.

Of particular interest, although causing problems for analysis, is the presence of so many abraded sherds with very eroded fabrics. Due to the fact that most sherds were found within secure pit contexts, it is likely that much of the physical abrasion of the sherds resulted prior to deposition. This raises the question of how this abrasion occurred and why these particular small sherds were selected for deposition. It would appear that the vessels that the pottery was derived from were broken and exposed to erosive conditions (probably on the surface) long before they were placed in the cremations

burials, and that the assemblage from Manusmore represents disparate sherds from perhaps several vessels.

In terms of method of deposition, the absence of larger and/or decorated sherds would suggest that any significant 'ritual' pottery deposition practice is unlikely to have occurred. However, intentional token deposition of ceramic material cannot be ruled out.

The lack of burning/refiring of sherds would suggest that they were not cremated with the bone but instead were deposited as an accessory to the burnt material. A further possibility, and potentially more likely scenario, is that the pottery ended up in the cremation pits accidentally and evidence an activity scatter in the general vicinity of the pits/burning areas: the sherds being scooped into the pits with soil from the surrounding area. However, without further evidence, the precise origin and deposition of these sherds is difficult to establish.

Lithics by Dr Steve Ford

A modest collection comprising 86 lithic items was examined. The material was recovered from both hand collected and sieved samples, the latter accounting for some of the minute finds recovered. Few contexts produced more than 10 items with the largest total being 24. The material includes items made from flint and fine grained chert only. The assemblage is detailed in the catalogue (Table 3).

Items of flint

Twenty-two items of flint were recovered. These comprise just 2 flakes, and 20 spalls (pieces less than 20mm x 20mm). Fourteen of the spalls are minute (<5mm) and were recovered from the same context. It is possible that they are retouch chips.

The flint flakes are illustrated as Figure 13 and finds 04E0187:17, 39 and 40 are shown as Plate 13.

Items of chert

Sixty-seven items of chert were recovered. These comprise 2 flakes, 3 lumps which have flaking traces but are not cores, *sensus stricto*, 6 spalls and 53 minute fragments (<5mm). The chert was not uniform of texture or colour with material comprising black and grey colours and with some variation in grain size. The lumps include one item weighing 39g but otherwise they weigh less than 8g; the flakes weigh less than 8g.

Table 3: Lithic Catalogue

Find No.	Cut	Deposit	Sample	Description	Weight	Dimensions
04E0187:17	43	42	-	Flint flake	2g	28x20mm
04E0187:20	54	53	17	9 fragments, 1 spall, chert	<1g	
04E0187:25	59	57	21	9 fragments dark chert including 3 spalls	<1g	11x3mm 7x2mm 10x10mm
04E0187:30	73	76	23	Chert spall and 2 fragments	<1g	13x5m
04E0187:31	80	79	25	Chert flake, broken	6g	35x23mm
04E0187:32	80	79	25	Chert lump not obviously flaked	39g	
04E0187:33	80	79	25	10 fragments, chert	<1g	
04E0187:37	85	87	-	Chert lump but flaked	8g	
04E0187:38	85	87	-	Chert flake, broken	3g	
04E0187:39	85	87	-	Chert lump. Some flaking traces otherwise just broken	15g	
04E0187:40	85	87	-	Intact flint flake, part cortical	2g	

Find No.	Cut	Deposit	Sample	Description	Weight	Dimensions
04E0187:41	87	85	28	21 fragments 2 minute spalls and 1 spall , all chert	<1g	18x13mm
04E0187:42	85	87	28	Flint spall	<1g	11x14mm
04E0187:43	85	87	28	Flint spall	<1g	10x6mm
04E0187:44	85	87	28	Flint spall	<1g	11x8mm
04E0187:45	85	87	28	Flint spall	<1g	15x9mm
04E0187:46	85	87	28	14 fragments flint, mostly spalls. ?Retouch chips	<1g	<5mm
04E0187:47	97	96	-	Flint? fragment, mostly cortical	<1g	
04E0187:50	98	99	-	Possibly flint, mostly cortical	<1g	
04E0187:88	142	143	44	3 minute chert fragments	<1g	

Discussion

This collection of lithic artefacts would appear to be typical of the prehistoric context of their recovery. That they are present on a prehistoric site at a time when metal tools are available should be neither surprising nor regarded as unusual as the properties of some flint tools can be superior to those of bronze (Ford et al 1984).

None of the contexts produced large quantities of lithic finds and there are too few pieces to merit metrical analysis or even to consider manufacturing technique, though it is assumed that a hard hammer was used. None of the items were chronologically distinctive in themselves. The presence of the chert lumps with some partial flake scars, and the concentration of what appear to be retouch chips, does though indicate on-site production.

The collection indicates a relatively restricted range of material types, with neither quartz nor hard rock sources represented and it is assumed that if flint and chert are available locally in the local glacial drift deposits (Briggs 1988) there was little wish to use less tractable materials such as quartz (Knight 1991) which is also likely to be present nearby.

Slag by Lynne Keys

Methodology

A very small assemblage of material was collected and identified as slag during sieving of soil samples collected during excavations at the above site. The material was examined by eye and categorised on the basis of morphology, with a magnet being used to test for hammerscale and other magnetic material. Each slag type in each context was weighed and details are given in Table 4 below.

Results

Table 4: Quantification of slag

Find No.	Cut	Deposit	Sample	Identification	Weight (g)	Comment
04E0187:4	16	15	20	Undiagnostic	1	
04E0187:11	33	18	10	Undiagnostic	1	
04E0187:13	36	19	9	Undiagnostic	12	
04E0187:16	38&63	37&65	13	Microslags	0	1 flake & 3 spheres
04E0187:21	54	53	17	Undiagnostic	2	
				Total weight =	16	

With the exception of the hammerscale from feature 38, the slag could not be assigned specifically to iron working and could have been produced by other high temperature activities. The amount is not significant enough to claim metalworking was taking place in the area.

Discussion

A tiny quantity of hammerscale, both flake and spheres, was present amongst the charcoal in cut 38 (fill 37). These micro-slags produced by the ordinary hot working of a piece of iron (flake) and high temperature welding to join two pieces of metal (spheres). Hammerscale, being so tiny, often remains in the area around the anvil and near the hearth when larger slag pieces have been cleared out of the smithy and dumped elsewhere. It is possible the charcoal found in pit 38 was brought from the vicinity of smithing activity with the hammerscale from that area being carried with it to the pit.

Human and animal bone by Sîan Anthony

Methodology

Bone from thirty contexts was examined (Table 5). A variety of deposit types were excavated including cremation burials and redeposited pyre debris or potentially cenotaph-type memorial deposits (McKinley 2000). The contexts were subject to whole-earth recovery and then wet-sieved to a 2mm fraction, all small pieces of bone were scanned rapidly as in many cases deposits only produced fragments under 1 or 2mm in size. The bones were not separated into size, so percentage fragmentation could not be calculated however the majority of fragments were under 2mm leaving a lack of recognisable pieces throughout the assemblage.

Human osteological analysis followed recommendations from McKinley (1994, 2000) and Brickley and McKinley (2004). Mammalian bones were identified using standard texts (Hillson 1992 and Getty 1975), all were rapidly scanned and bones damaged on excavation were rejoined and counted as one bone. Small amounts of cremated material were only identified as mammalian only, this does not preclude the possibility that some may be human but could not be readily identified as such. Where they are recognised as animal this is noted.

The majority of the cremated bones were relatively well preserved, although some deposits retained a slightly worn and chalky appearance, trabecular bone was poorly represented with general limb bones and skull pieces often noted. However this is more likely from the easily identifiable nature of these pieces rather than any recognisable pattern in deposition. It has been demonstrated that trabecular bone and easily recognised articular surfaces are lost in adverse soil conditions (Neilson-Marsh et al 2000).

The small amount of cremated material may be a result of truncation, sites where it is estimated that the original ground levels were truncated contained extremely shallow pits and postholes; much of the original deposit may simply not be recovered. However in some cases the weight of bone is unlikely to represent a true cremation burial deposit, often they are likely to represent redeposited pyre debris.

Results

A total of thirty-two assemblages of bone was examined from thirty deposits (Table 5). Three deposits produced mostly animal remains with some occasional fragments of human bone (pits 16, 33 and 66). Deposit 15 (pit 16) in particular produced large amounts of larger ungulate material including scapulae, skull mandible and various limb bones, several pieces could be identified as cattle. Pig was also identified by teeth and scapulae. Preservation of the faunal remains varied from good to very weathered material indicated differential treatment and disposal. No butchery marks were observed, this may be partially due to the varied condition of the bones. Only a few fragments from deposit 15 were burnt. Some pieces of human burnt bone were also identified from deposit 18 (pit 33) but these could not be identified to element and presumably represent mixed and redeposited pyre debris. A

cattle tibia was identified as juvenile as the distal epiphysis was unfused but no other ageable elements were present in the non-human animal assemblages.

The burnt material recovered from the 27 deposits identified as human cremation burials produced variable amounts of cremated bone, weighing between less than 1g and 530g. The majority of these deposits contained unidentifiable bone material although it does not preclude the possibility that they are all human material. It is likely that the majority of the deposits were disturbed, probably truncated. Fragmentation is heavy, the majority of pieces being under 2mm, although they were rapidly scanned, most were identifiable as mammalian only, maximum fragment size was taken on pre-sorted material, weight is taken of the total amount of cremated bone only. Degree of oxidisation is reflected in the colour of the bone, most were fully oxidised (white) indicating an efficient cremation at temperatures of over 600 Celsius, only small pieces were charred or a blue/ grey colour and this was generally reflected on the internal (trabecular) bone surface. No demographic information was available from observations.

Only five features contained identified human bone:

Pit 24 (deposit 13)
This is the most complete cremated sample of the site, weighing 530g it is closest to representing a complete human cremated body. Despite this it still only produced small amounts of identified elements including vertebrae, ribs, maxillary tooth sockets, maximum fragment size was 33mm. All bone was burnt white. Several pieces of skull contained suture lines that were all relatively open that could indicate an adult of younger age, however there are serious methodological reservations about using cranial suture closure for ageing individuals (Brickley and McKinley 2004) thus limiting inference based solely on this method.

Pit 36 (deposit 19)
Weighing only 31g, this assemblage produced some rare fragments of tooth enamel and a piece of radius fragment, the rest was extremely fragmented, the maximum fragment size being only 13mm. A notable observation was the differential burning noticed on some fragments, not all were burnt to a white, calcinated colour; many were only charred black and dark grey. This differentiation indicates a lower temperature on cremation, however as the elements could not be identified the interpretation of this observation is inhibited. It is possible that the cremation was only partial, or perhaps the fire was not tended to ensure complete oxidisation of the body.

Pits 38 and 63 (deposits 37 and 65)
Maximum fragment size was only 21mm, the sample of bone weighed only 24g. Identified elements include a phalange or metapodial shaft, a small tooth fragment, probably a small, lower incisor, and a partial petrous fragment with some scapulae blade.

Pits 50 and 62 (deposits 14 and 64)
This sample was extremely fragmented with over two thirds of the material measuring under 2mm, maximum fragment size was 25mm. The total weight was just 23g. Pelvic and scapulae blades were identified, as were skull pieces.

Pit 97 (deposit 96)
Only 17 pieces were identified from this deposit, weighing less than 1g. All were highly fragmented with a phalange shaft and two blade fragments identified. They do not represent a full burial, probably either pyre debris or a cenotaph deposit.

Discussion

Both the small amounts of bone recovered and archaeological context suggest severe amounts of truncation on the site, however this would still leave all but one of the deposits significantly short of

the average weight of expected human individuals (2500-3000g, McKinley 1994). This suggests that the deposits represent pyre debris or rather partial memorial burials.

Table 5: Catalogue of human and animal bone

Find Number	Cut	Deposit	Sample Number	Species	Pres.	Burnt?	Colour	Total	Weight (g)	Maximum fragment size (mm)	Comments
04E0187:1	-	1 (near pit 174)		Mammal		14	White	14	<1		Fragments
04E0187:2	16	15		Mixed animal	G			41	546		Cow, csz, pig, s/g pieces
04E0187:3	16	15	20	Mixed animal	P	11	White	38	37 + 3 crem		Csz and mammal pieces
04E0187:5	24	13	1	Human	E	43	White	43	530 (=363 unidentified + 105 limb + 62 skull	33	Rib, vertebrae, pelvis, skull fragments
04E0187:6	25	10	3	Mammal	E	31	White	31	2		Fragments
04E0187:7	26	8	4	Mammal		5	White	5	<1		Fragments
04E0187:8	27	11	5	Mammal		2	White	2	<1		Fragments
04E0187:9	33	18		Mixed animal	G			6	45		S/G, ssz and cow pieces
04E0187:10	33	18	10	Mixed	E	30	White	255	72 (= 47 + 15 pig teeth + 10 crem		Pig, mammal and human fragments
04E0187:12	35	34	7	Mammal	E	100	White	100	20		Fragments
04E0187:14	36	19	9	Human	E	100	Differ	100	31	13	Tooth fragments, radius fragments
04E0187:15	38&63	37&65	13	Human	E	100	White	100	24	21	Phalange/MP shaft, tooth fragments, skull, scapula and limb bones
04E0187:18	43	42	27	Mammal	E	2	White	2	<1		Fragments
04E0187:19	50&62	14&64	6	Human	E	100	White	100	23	25	Limb bones, skull, pelvis all very fragmented
04E0187:22	54	53	17	Mixed animal	E	8	White	8	<1	7	Fragments, ssz limb bones
04E0187:23	56	55	18	Mammal		4	White	4	<1		Fragments
04E0187:24	59	57	21	Mammal		8	White	9	<1		Fragments
04E0187:26	61	60	19	Mammal		4	White	4	<1	8	Fragments
04E0187:27	66	17		Mixed animal	P			22	137		Csz, cow and ssz pieces
04E0187:28	68	67	22	Mammal		5	White	5	<1	15	1 s/g tooth, rest mammal fragments
04E0187:34	80	79	25	Mammal	E	1	White	1	<1		Fragments
04E0187:35	82	81	26	Mammal		4	White	4	<1		Fragments
04E0187:36	85	87	28	Mammal	E	12	white	12	<1	12	Fragments, some ssz pieces?
04E0187:49	97	96	34	Human		17	White	17	<1		1 shaft, 2 flatter bones
04E0187:52	98	99	36	Mammal		8	White	8	<1		Fragments

Table 5: Catalogue of human and animal bone (continued)

Find Number	Cut	Deposit	Sample Number	Species	Pres.	Burnt?	Colour	Total	Weight (g)	Maximum fragment size (mm)	Comments
04E0187:55	109	108	31	Mammal		21	White	21	<1	8	
04E0187:77	114	115	35	Mammal		65	White	65	4	10	Mostly fragments, 4 larger chunks of limb bone, 1 smaller, thinner
04E0187:79	121	120	32	Mixed animal	E	33	White	33	5	11	S/G phalanges and tarsals, rest fragments
04E0187:85	123	122&134	33	Mammal	E	95	White	95	3	15	Fragments
04E0187:86	137	136	40	Mammal		4	White	4	<1		Fragments
04E0187:87	141	140	41	Mammal	E	24	White	24	1	12	Fragments
04E0187:89	154	153	45	Mammal	E	21	White	21	<1	7	Fragments

Pres. = preservation.
P = poor
G = good
E = excellent
csz = cattle size
ssg = sheep/goat sized

Samples

Bulk soil samples were taken from 41 contexts. Where cremated bone was seen to be present at the excavation stage a 100% sample was made. Other features were sampled at a lower percentage.

Forty of the samples were floated and wet sieved through a 300micron mesh and then through a 2mm mesh in order to recover charred plant material, cremated bone and small artefacts. Stone samples were retained in three instances. A catalogue of samples and results is given as Appendix 3.

Identification of stone samples by Dr Martin Feely

The stone was analysed in the hope of providing information regarding heating processes such as that from cremating bodies.

Methodology

TVAS delivered three plastic bags each containing three stone samples taken from a variety of deposits from site AR100, a cremation cemetery. The nine stone samples were identified using a Nikon incident light binocular microscope. Each stone sample in each sample bag has been given a letter and the description of each stone is matched below to that letter.

Results

Table 6: Rock types

Cut	Deposit	Sample	Identification
16	15	20	3 stones: Medium grained sandstone Carboniferous limestone Medium grained sandstone
76	73	24	3 stones: Medium grained sandstone Medium grained sandstone Medium grained sandstone
123	122/134	33	3 stones: Micaceous sandstone Medium grained sandstone Medium grained sandstone

Fragmentation of stones

I see nothing exceptional about the stone samples and the average size of each stone is quite small <100mm to pebble size. They represent material I would expect to encounter in glacial debris. I cannot say that they are smaller fragments of larger heated stones dropped into cold water.

Discussion

In general the stone samples from the Ennis Bypass are either sandstone or limestone. The sandstones are of three main types: a common sandstone, a micaceous variety which has visible “shiny” flakes mica and finally a pebbly variety like a fine conglomerate. The limestone samples all have visible fossiliferous material similar to that found in the Lower Carboniferous limestones of Ireland.

Additional “stone” varieties include fragments of the mineral calcite, quartz and fine grained igneous rocks. The sandstone samples most likely represent Devonian sandstones while there is little doubt that the limestone is Lower Carboniferous in age. This is not surprising as both geological periods are represented by rock exposures in the west and southwest of the country. Glacial debris commonly

contains disaggregated blocks of both rock types. The fragments of calcite and quartz probably formed part of geological structures termed veins, which transect existing rocks. The igneous varieties may represent samples of Carboniferous volcanic rocks but this is speculative.

Charred plant macrofossils and other remains by Val Fryer

Introduction

Samples for the extraction of the plant macrofossil assemblages were taken from pit fills across the excavated area, and 40 were submitted for assessment (Table 7). Of these samples, two (samples 5 and 8) were selected for quantification and the results of this analysis is also incorporated into the table.

Methods

The samples were floated and wet sieved by TVAS Ireland Ltd, and the flots were collected in a 300 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16, and the plant macrofossils and other remains noted are listed below in Table 7. Nomenclature within the table follows Stace (1997). Counts of cereal grains include only whole grains or embryo ends, and material was identified by comparison with modern reference specimens All plant remains were charred. The density of material within each assemblage is expressed in the tables as follows: x = 1 – 10 specimens, xx = 10 – 100 specimens and xxx = 100+ specimens.

Results

Plant macrofossils

Cereal grains/chaff, seeds and tree/shrub macrofossils were recorded at a low to moderate density from 22 samples. Preservation was moderately good, although some grains were puffed and distorted (possibly due to high temperatures during combustion) and much of the chaff was very fragmented. In addition, many macrofossils were heavily coated with fine silt particles.

Barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded. Although the table would appear to indicate that wheat (*Triticum* sp.) grains were particularly abundant within sample 5, the sample volume was large, giving a ratio of only 14 grains per litre of soil sampled. However, this still far exceeded the density of wheat noted within any of the contemporary assemblages (for example within sample 8, where the ratio was 0.8 grains per litre). All the grains were of an elongated ‘drop-form’ shape typical of either emmer (*T. dicoccum*) or spelt (*T. spelta*), and although much of the chaff could not be readily identified, the small number of glume bases within sample 8 were narrow and had similar characteristics to emmer. Barley (*Hordeum* sp.) grains were also recorded within several assemblages.

Seeds were extremely rare, occurring as single specimens in only three samples. Persicaria/pale persicaria (*Persicaria maculosa/lapathifolia*) was recorded from sample 14 and poorly preserved seeds of an indeterminate small legume (Fabaceae) and flax (*Linum* sp.) type were noted from samples 34 and 36 respectively. Grass (Poaceae) was recorded within samples 5 and 8.

Hazel (*Corylus avellana*) nutshell fragments were present in fifteen assemblages, and were common or abundant in samples 10, 13 and 18. Other tree/shrub macrofossils were rare, but sloe (*Prunus spinosa*) fruit stones were noted in samples 10 and 31, and a single elderberry (*Sambucus nigra*) ‘pip’ was recovered from sample1.

Charcoal fragments were common or abundant in most samples. Other plant macrofossils were rare, but did include pieces of charred root/stem and indeterminate tuber fragments.

Other materials

Small fragments of burnt bone were noted at a low to moderate density in only seven samples. The pieces of black 'cokey' or tarry material are probable residues of the combustion of organic remains at very high temperatures. Fragments of burnt stone were recorded from fourteen assemblages.

Discussion

Most assemblages from this site are reasonably uniform in composition, with charcoal being the principal component along with occasional cereal grains, seeds or nutshell fragments. The abundance of charcoal probably indicates that wood/charcoal was the main fuel used for the cremations, with up-rooted dried plant material possibly being used as kindling (cf. the tuber fragments and root/stem fragments). It is assumed that the grains, nutshell fragments and other plant remains are either present as offerings to the deceased or accidental inclusions within the pyre material.

However, two samples (5 and 8 – Table 7) are noticeably different and somewhat unusual. Both contain moderate to high densities of wheat grains, some wheat chaff and barley. Of all the contemporary assemblages studied as part of the Ennis Bypass scheme, these are the only two where wheat is predominant and also where wheat chaff is recorded. The high density of material present would appear to indicate that these are both deliberate deposits of burnt grain.

The unique nature of these assemblages makes accurate interpretation very difficult. The rarity of wheat grains within any of the other assemblages may indicate that it was an unusual commodity for the area, possibly imported on to the site for a specific purpose. It is, perhaps, unlikely to have been grown locally as wheat prefers a rich soil, and is not tolerant of salinity. The occurrence of grain within cremation deposits is not uncommon, and it is assumed that it may have been placed within the pyres as an offering to the deceased, perhaps the wheat was used may indicate some degree of status. Nutshell and fruit stones also frequently occur within cremations although in this instance, the low density of material recovered may indicate that the remains are derived from the use of hedge scrub as kindling or additional pyre fuel. The grass fruits could be indicative of material burnt *in situ* beneath a pyre.

Conclusions

In summary, most assemblages appear to be derived from fuel waste/pyre debris, with wood/charcoal being the principal fuel utilised. The density of grain within samples 5 and 8 almost certainly indicates that these are deliberate small deposits of charred material. These two pits (7 and 27) both appear to contain small cremation deposits, perhaps due to the inclusion of only token deposits of pyre material within certain of the feature fills. Both assemblages appear to be derived from material burnt alongside the cremations as offerings to the deceased and as such, both have contemporary parallels from sites in England (for example Brightlingsea, Essex (Murphy 1990) and Bixley and Caistor St. Edmund, Norfolk (Murphy 1992). The use of wheat is locally unusual, and may indicate material which was specifically imported from elsewhere.

Table 7: Charred plant macrofossils and other remains

Sample No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Cut No.	**24**	**5**	**25**	**26**	**27**	**50/62**	**35**	**7**	**36**	**33**
Deposit No.	**13**	**20/21**	**10**	**8**	**11**	**14/64**	**34**	**6**	**19**	**18**
Cereals										
Hodeum sp. (grains)	x				52+24cf			82+10cf		x
Triticum sp. (grains)					1736			26		x
(glume bases)					32			26		
(spikelet bases)								4		
T. dicoccum Schubl (glume bases)								6cf		
Cereal indet. (grains)	x				212	x		54	x	x
Herbs										
Large Poaceae indet.					4			2cf		
Small Poaceae indet.								2		
Tree/shrub macrofossils										
Corylus avellana L.	xcf				12fg	x	xcf	4fg	x	xx
Prunus spinosa L.					4fg					x
Sambucus nigra L.	x									
Other plant macrofossils										
Charcoal <2mm	xxx	xx	x	x	x	xxx	x	xxx	xxx	xx
Charcoal >2mm	xxx	xxx	x	x	xxx	xxx	xx	xxx	xxx	xxx
Charred root/stem	xx				x		x			
Indet.tuber	x									
Other materials										
Black porous 'cokey' material	x				x			x		
Black tarry material					x					x
Bone	xxb					xb			xb	xb
Burnt/fired clay	x									x
Burnt stone			xx			x	x	x	x	
Mineralised concretions									x	
Vitrified material					x			x		
Sample volume (litres)	**50**	**8**	**15**	**15**	**120**	**140**	**80**	**30**	**130**	**120**
Volume of flot (litres)	**0.4**	**<0.1**	**<0.1**	**<0.1**	**0.3**	**0.3**	**<0.1**	**0.2**	**0.2**	**0.2**
% flot sorted	**25%**	**100%**	**100%**	**100%**	**100%**	**50%**	**100%**	**50%**	**50%**	**50%**

Table 7: Charred plant macrofossils and other remains (cont.)

Sample No.	**12**	**13**	**14**	**17**	**18**	**19**	**20**	**21**	**23**	**24**
Cut No.	**9**	**38**	**41**	**54**	**56**	**61**	**16**	**59**	**73**	**73**
Deposit No.	**3**	**37**	**39/40**	**53**	**55**	**60**	**15**	**57**	**76**	**76**
Cereals										
Hodeum sp. (grains)		x								
Cereal indet. (grains)		x	x							
Herbs										
Persicaria maculosa/lapathifoila			x							
Tree/shrub macrofossils										
Corylus avellana L.		xx		x	xxx	x		x		
Other plant macrofossils										
Charcoal <2mm	xx	xxx	xxx	x	xx	x	x	x	xxx	x
Charcoal >2mm	xx	xxx	xxx	xx	xx	xx	x	xx	xxx	xx
Charred root/stem			x		x					
Other materials										
Black porous 'cokey' material									x	
Black tarry material						x				
Bone		xb			xb					
Burnt stone		x			x	x		x		
Mineralised concretions				x	x					
Vitrified material			x							
Sample volume (litres)	**10**	**70**	**8**	**15**	**25**	**15**	**10**	**15**	**25**	**0.5**
Volume of flot (litres)	**<0.1**	**0.2**	**0.2**	**<0.1**	**0.2**	**<0.1**	**<0.1**	**<0.1**	**0.3**	**<0.1**
% flot sorted	**100%**	**50%**	**50%**	**100%**	**50%**	**100%**	**100%**	**100%**	**50%**	**100%**

Table 7: Charred plant macrofossils and other remains (cont.)

Sample No.	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
Cut No.	**80**	**82**	**43**	**85**	**89**	**91**	**109**	**121**	**123**	**97**
Deposit No.	**79**	**81**	**42**	**87**	**88**	**90**	**108**	**120**	**122**	**96**
Cereals										
Hodeum sp. (grains)							x	x		
Cereal indet. (grains)		x						x		x
Herbs										
Fabaceae indet.										xcf
Tree/shrub macrofossils										
Corylus avellana L.	x	x					x			xcf
Prunus spinosa L.							xcf			
Other plant macrofossils										
Charcoal <2mm	x	x	xx	xx	x	x	x	xxx	x	x
Charcoal >2mm	xx	x	xxx	xxx	x	x	xx	xxx	xxx	xxx
Charred root/stem							x	x	x	x
Indet.tuber								x		
Other materials										
Black porous 'cokey' material								x		
Burnt stone	x	x					x			
Mineralised concretions				xx				xx		
Sample volume (litres)	**20**	**20**	**6**	**8**	**10**	**12**	**110**	**60**	**120**	**70**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**0.2**	**<0.1**	**<0.1**	**<0.1**	**0.1**	**0.2**	**0.2**
% flot sorted	**100%**	**100%**	**100%**	**50%**	**100%**	**100%**	**100%**	**100%**	**50%**	**50%**

Table 7: charred plant macrofossils and other remains (cont.)

Sample No.	**35**	**36**	**37**	**38**	**40**	**41**	**44**	**45**	**47**
Cut No.	**114**	**98**	**125**	**131**	**137**	**141**	**142**	**154**	**161**
Deposit No.	**115**	**99**	**124**	**130**	**136**	**140**	**143**	**153**	**162**
Cereals									
Hodeum sp. (grains)	x	x				x	xcf		
Cereal indet. (grains)	x	xcf				x			
Herbs									
Linum sp.		xcf							
Other plant macrofossils									
Charcoal <2mm	xx	xx	x	x	x	xx		xx	x
Charcoal >2mm	xxx	xxx	x	x	xx	xxx	xcf	xxx	x
Charred root/stem	x								
Indet.seeds						x			
Indet.tuber						x			
Other materials									
Bone				xb					
Burnt/fired clay	x								
Burnt stone						x		x	
Mineralised concretions	x								
Sample volume (litres)	**50**	**80**	**15**		**40**	**60**	**10**	**12**	
Volume of flot (litres)	**0.3**	**0.1**	**<0.1**	**<0.1**	**<0.1**	**0.2**	**<0.1**	**0.2**	**<0.1**
% flot sorted	**50%**	**100%**	**100%**	**100%**	**100%**	**50%**	**100%**	**50%**	**100%**

Charcoal by Simon Gannon

Introduction

Forty eight samples of charcoal fragments were retrieved from fifty three contexts from this site, a cremation cemetery. Identification of taxa of the retrieved charcoal may assist in the reconstruction of the local, contemporary woodland-environment and the use of the woodland resources by the people responsible for the archaeological features.

Methodology

In sorting fragments suitable for identification a guide size of at least 2mm in radial cross-section was used. From this sort 100% of fragments were analysed except for certain samples, containing an unusually large number of fragments, where sub-samples were taken, which are given in Analysis Results.

Initially the grain direction of the fragments was identified before fracturing across their transverse plains. Identifications were made under microscopic examination, in most cases. Further fractures were made to reveal radial and/or tangential plains in cases where identification was more difficult. Magnification of between x10 (hand lens) to x400 was used. To allow for identification of roundwood, heartwood, and sapwood overall age related structural elements of the fragments were also considered.

Reference material comprised a reference collection of charred samples of taxa and reference publications, *Microscopic Wood Anatomy* (Schweingruber 1990) and *The Identification of the Northern European Woods* (Hather 2000).

Analysis Results

The results are summarized in Table 8. Classification follows that of *Flora Europaea* (Tutin *et al* 1964-1980)). Certain related taxa cannot be securely differentiated on the basis of their anatomical characteristics and are assigned to their respective family groups as with the genera *Salix* and *Populus*, and the genera *Craetaegus, Malus* and *Sorbus.* Provisional identifications have been given in cases where the condition of the charcoal was degraded.

The various identifications of wood taxa were consistent with taxa from the following groups:

<u>Broadleaf taxa</u>
Betulaceae. *Alnus* sp., alder; *Betula* sp., birch
Corylaceae. *Corylus* sp., hazel
Fagaceae. *Quercus* sp., oak
Oleaeceae. *Fraxinus* sp., ash
Rosaceae.

Subfamily Pomoideae. *Craetagus* sp., hawthorn; *Malus* sp., apple; *Sorbus* spp., *Sorbus aucuparia,* rowan; *S. aria,* whitebeam; *S. hibernica,* Irish whitebeam, and other *Sorbus* species.

Prunus sp., *Prunus avium,* wild cherry; *P. spinosa,* blackthorn; *P. padus,* bird cherry.

Salicaceae. *Salix* sp., willow; *Populus* sp. poplar.
Ulmaceae. *Ulmus* sp., elm.

<u>Coniferous taxa</u>
Cupressaceae. *Taxus* sp. yew.

Discussion

Anatomical characteristics from charcoal fragments do not allow for identification of individual species in every case. Several species belong to groups of species, species of genera, of sub-families and of families that cannot be separated anatomically (Hather 2000, Schweingruber 1990). It is possible that a narrow range of species and, occasionally, one or two species can be indicated with a degree of confidence due to established factors, principally their native status and history of introduction by people (Huntley and Birks 1983, Mitchell 1995, Peterken 1996). The following section places the given charcoal based taxa identifications in the context of defined tree species allowing for implications related to their environmental characteristics and possible use by ancient peoples to be drawn. Reference works consulted include Goldstein *et al* 1984, Huntley and Birks 1983, Kelly 1998, Mitchell 1978, O'Sullivan 1996, Rackham 1976-90, Raftery 1996, Scannell and Synott 1987 and Tutin 1964-80.

Taxa descriptions

Alder

The sole native species is *Alnus glutinosa*, Common Alder, Irish fearnóg (family – Betulaceae).
Environment indications. Tolerant of nearly all soil types including relatively infertile soils, such as ironpan and peaty soils. Particularly tolerant of water logged conditions and is often a streamside tree. Has the ability to 'pioneer' into previously disturbed land. Native distribution throughout Ireland.
Uses in antiquity. A hardwood suitable for a variety of artefacts and smaller structural timber. Tends to harden when in contact with water and therefore suitable for making piles etcetera. It burns quickly when used for firewood but has been found suitable for charcoal production.

Ash

There is a single native species, *Fraxinus excelsior*, ash, fuinseog (family - Oleaceae).
Environmental indications. Requiring deep, fertile, moist but well drained, soils. Grows well in mixed stands when not shaded. Widespread throughout Ireland.
Uses in antiquity. A strong but elastic wood suitable for many purposes including structural timber (not where in prolonged contact with water or soil). Coppices readily. Burns well even when green, partly due to low water content.

Birch

There are two native species silver birch, *Betula pendula*, beith gheal and downy birch, *B. pubescens*, beith chlúmhach. (Family - Betulaceae).
Environmental indications Tolerating a wide range of habitats, preferring dry sandy soils, *B. pubescens* tolerant of wetter conditions. A light demanding species, not surviving under the mature canopy of woodlands. Pioneering well, invading cleared land and creating conditions suitable for other trees. *B. pubescens* is native to all of Ireland, *B. pendula* to west and central Ireland.
Uses in antiquity. Wood is not strong but flexible and tough although decays/ breaks down and burns out easily. Bark is waterproof and durable. Coppices quite well.

Blackthorn/ cherry

Here there are three native species, wild cherry, *Prunus avium*, crann silin; blackthorn, *Prunus spinosa*, draighean and bird cherry, *Prunus padus*, donnroisc. (Family - Rosaceae).
Environmental indications. Tolerant of most soils, preferring well-drained, acid, neutral and alkaline soils. Can grow in semi-shade, e.g. light woodland, or no shade, requiring moist soil. *P. spinosa* is common as a shrub in woods, can grow in semi-shade, scrub, often forming thickets, sometimes small trees. *P. spinosa* is a pioneer species, invading cultivated fields. Natural distribution throughout Ireland. *P. padus* native over more northern parts of Ireland.

Uses in antiquity. *P. avium* and *P. padus* produce a very hard wood and, when attaining good size, highly rated for timber. *P. spinosa* has very hard wood but often twisted, of no structural use but useful for small components and used as livestock barriers.

Hazel

There is a single native species, *Corylus avellana*, hazel, coll (family - Corylaceae).
Environmental indications. Botanically a shrub, but does not flower and fruit without sunlight, so is really a canopy tree preferring woodland edges and clearings though it bears moderate shade and is also found as understorey, typically in oak woodlands. Fairly tolerant of poor soils but does not grow on acid soils and preferring chalky, fertile, deep soil. Growing throughout Ireland.
Uses in antiquity. A tough and flexible wood, useful for small implements and small structural elements. Also grows easily in coppice-like form producing rods suitable for wattle and basketry type structures. Makes useful firewood.

Hawthorn/ *Sorbus*

The represented species is probably one or more of the following native members of the sub-family Pomoideae that includes several *Sorbus* species. (Family - Rosaceae).

Crab Apple, *Malus sylvestris*, cran fia-úll; hawthorn, *Crataegus monogyna*, sceach geal.
Environmental indications. Both species. Very rugged and adaptable to almost any climate and most soil types, requiring moist soil and can grow in semi-shade or no shade. Natural distribution throughout Ireland.
Uses in antiquity. Both species produce a very hard close grained wood, suitable for small implements such as mallets and splitting wedges. Both species make excellent fuel; *C. monogyna* can also make livestock barriers and is noted for being the hottest firewood.

Sorbus. One or more of the native group of at least six species that includes, the most widespread rowan, *Sorbus aucuparia*, caorthann, as well as whitebeam, *Sorbus aria*, fionncholl coiteann; and Irish whitebeam, *Sorbus hibernica*, fionncholl ghaelach.
Environmental indications. General. Very tolerant of soil quality generally, though requiring moist soil. Tolerating light shade, though fruiting better in a sunny position. Effective pioneer, Rowan natural to all of Ireland. Other *Sorbus* species native to Ireland have a much more restricted range within Ireland and elsewhere, with Irish whitebeam found only in Ireland.
Uses in antiquity. Heavy, close grained hard wood suitable for carving and useful for making bows, tool handles, mallet heads and, if sizable, beams etc. Coppices well.

Oak

There are two native species, pedunculate oak, *Quercus robur*, dair ghallda and sessile oak, *Quercus petraea*, dair ghaelach. (Family - Fagaceae).
Environmental indications. Broadly soil tolerant. *Q. robur* preferring alkaline or neutral soils rich in minerals, particularly damp clay soils and usually found in mixed woodland. *Q. petraea* preferring acid and lighter well drained soils, often in pure stands. Both species are naturally distributed throughout Ireland.
Uses in antiquity. Both species produce a hard wood resistant to abrasion and water degradation, particularly useful for structural timber and implements, poles and fencing. Woodland trees can be coppiced to produce stakes, straight poles etc.

Willow /poplar

The Salicaceae family provides various possible individual species, native to Ireland, including ten or more from the genera of willows and one from the genera of poplars.

Willow
There are ten or more willow species native to Ireland, though some having restricted range. Examples of the more widespread species being eared willow (*Salix aurita*), crann sníofa; goat willow (*Salix caprea*), sailchearnach; and grey willow (*Salix cinerea*), saileach liath.
Environmental indications. Extremely hardy and tolerant of a wide range of soils and habitats, often growing in, though not restricted to, wet places. Not tolerant of drought. *S. cinerea* and *S. purpurea* are not particularly shade tolerant, *S. caprea* is reputably more tolerant of shade. These are 'pioneer' species and can move into areas where the soil has been disturbed such as cleared woodland.
Uses in antiquity. Very tough and flexible wood useful for woven structures. Brittle branchwood not suitable as timber breaks violently when burnt. The stems are very flexible. Coppiceable, it can produce stout poles.

Poplar
Aspen, *Populus tremula*, crann creathach.
Environmental indications. Tolerant of poor soils growing on scrub, frequent on damp sites on hillsides, in rocky valley bottoms. A woodland tree where not under canopy. Moderately tolerant of drought as mature tree, not at all as a seedling. A short-lived pioneer tree. Native to Ireland.
Uses in antiquity. Wood is very soft with limited usefulness, of low flammability but making good charcoal.

Yew

The native species is yew, *Taxus baccata*, iúr (family - Taxaceae).
Environmental indications. Growing on limestone and chalk in woods and scrub, often occurring in dense shade of oak woods. Also can form pure stands in sheltered sites. Natural distribution throughout Ireland.
Uses in antiquity. A heavy, hard, durable, and elastic wood, resistant to water. Useful for structures, bows, tool handles etc. Makes good firewood.

Elm

The sole native species is *Ulmus glabra*, wych elm, leamhán sléibhe (family-Ulmaceae).
Environmental indications. Generally requiring non-calcareous top soil, can grow in heavy clay soil, needing moist but not waterlogged ground. Distribution throughout Ireland. Moderately shade tolerant.
Uses in antiquity. A hard, elastic, wood which is durable under water. Useful as structural timber, implements etcetera. Responds well to coppicing. The inner bark fibre can be used for ropes, mats etc.

The total range of taxa from AR100, Manusmore, comprises alder (*Alnus*), birch, (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), hawthorn/ apple/ *Sorbus*-group (Pomoideae), cherry/ blackthorn (*Prunus*), oak (*Quercus*), willow/ poplar (Salicaceae), yew (*Taxus*) and elm (*Ulmus*). These taxa belong to the groups of species represented in the native Irish flora and, conversely, non-native tree species such as lime (*Tilia*) and beech (*Fagus*) are not represented.

Prior to human influenced change, initiated in the Mesolithic, the post-glacial natural landscape of Ireland contained a widespread primeval *wildwood*, comprising a range of species as defined mainly by pollen studies (Rackham 1976-90, O'Connell 1990, Mitchell 1995). Growing human influence and environmental change brought about changes to the ratio and, to a lesser extent, the range of species in woodlands. Pollen diagrams indicate a rise in the presence of agriculture indicator plants at the expense of natural woodlands occurring from the early Bronze Age onward with a more marked agricultural expanse from the middle of the first millennium AD (O'Brien *et al* 2005, Parkes and Mitchell 2000 and Caseldine *et al* 1996). Small portions of the primeval wildwood persisted in post-agricultural Ireland but it mainly continued in altered form in *primary woodland*, areas that where always wooded but changed with human use, and in *secondary woodland*, where trees re-established after clearance for farmland development and which gradually became the commonest form of

woodland. (Huntley and Birks 1983, Rackham 1976-90, O'Connell 1990, Mitchell 1995, Peterken 1996).

The start of the period of human use of the site dates from the Bronze Age and by this time the local woodland environment may have become characterised by some of the elements of change outlined above. The first Irish decline of elm, *Ulmus*, considered to be mainly on account of woodland clearance, had started by as early as ca. 3900 B.C. in some areas and ca. 3500 B.C. in others (Caseldine *et al* 1996 and Brown *et al* 2005). At AR100 *Ulmus* is present, though in just two contexts each with one identified fragment, in cremation burial pit. 43 (sample 27) and in pit 85 (sample 28). The other Manusmore site with substantial taxa representation, AR102, also has a small quantity of *Ulmus* as several other sites on the Ennis Bypass AR106, AR121, AR126 and AR127. The native, Scots pine, *Pinus sylvestris* is not represented at AR100, a species dominant in western Irish primeval woods but already rare at the beginning of the Neolithic (Mitchell 1995 and O'Brien *et al* 2005).

As is seen in Table 8, certain taxa are particularly numerous in relative sample representation: ash (*Fraxinus*), hazel (*Corylus*) and hawthorn/ apple/ *Sorbus* group (Pomoideae). Oak (*Quercus*) and cherry/ blackthorn (*Prunus*) are also well represented. Ash (*Fraxinus*), hazel (*Corylus*) and oak (*Quercus*) are typically the most numerous taxa in sample representation from the other Ennis Bypass sites.

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). Within this spectrum there is also the possibility that the charcoal found in the AR100 burial contexts may have derived from wood specifically gathered for the purpose of burial. The sample prevalence, of ash (*Fraxinus*), hazel (*Corylus*), hawthorn/ apple/ *Sorbus* group (Pomoideae) and oak (*Quercus*), also generally seen at the other Ennis Bypass sites, may indicate that these particular taxa were preferred fuel woods obtained from a local environment containing a broader choice of species. Ash (*Fraxinus*), as noted above, is a particularly suitable wood for fire use with its properties of easy combustion. Hawthorn (*Crataegus monogyna)*, as a possible representative of Pomoideae, provides an especially hot firewood. Oak (*Quercus*) has a high calorific content making for excellent firewood. Hazel (*Corylus*) also makes for good firewood. Ash (*Fraxinus*), oak (*Quercus*) and hazel (*Corylus*) would also have been common structural wood in antiquity, as noted above. Their frequent presence as charcoal sample taxa, at this site and in general, may be due to some extent as by-products of the processes of tree felling, de-branching, cutting and possible subsequent reuse, additionally providing wood at lower outlay of energy than forays specifically for firewood gathering.

Conclusion

A varied woodland environment local to the site of AR100 is indicated by the range of taxa present in the samples. The identified taxa are consistent with the picture of wood use from most of the other Ennis Bypass sites. The charcoal of the site has probably derived from fire debris, and a particularly ready access to, and possible preference for ash (*Fraxinus*), hazel (*Corylus*), hawthorn/ apple/ *Sorbus* group (Pomoideae) and oak (*Quercus*), as fire fuel is indicated.

.

Table 8: Number of identified charcoal fragments per sample (r: roundwood; sh: nut shell)

Sample	Cut	Deposit	Context type	*Alnus*	*Betula*	*Corylus*	*Corylus/ Alnus*	*Fraxinus*	Pomoideae	*Prunus*	*Quercus*	Salicaceae	*Taxus*	*Ulmus*
1	24	13	Cremation	88	-	-	-	16	-	-	-	-	-	-
2	5	20 & 21	Pit + burning	-	-	-	-	1	-	-	6	-	-	-
3	25	10	Cremation	-	-	-	-	5	5	-	5	-	-	-
4	26	8	Cremation	-	-	-	1	-	-	-	2	-	-	-
5	27	11	Cremation	-	3	59	-	9	8	5	19	1	1	-
6	50 & 62	14 & 64	Cremations	-	-	29	-	49 (1r)	17 (1r)	-	2	-	-	-
7	35	34	Cremation	-	-	27	-	8	6	1	-	1	-	-
8	7	6	Pit fill	-	-	34 (1sh)	-	9	3	7	8	-	-	-
9	36	19	Cremation	-	-	21 (1sh)	-	36	27	15	2	-	-	-
10	33	18	Cremation?	-	2	15 (3sh)	-	13	30	18	13	2	-	-
12	9	3	Cremation?	-	-	21	-	-	2	2	1	-	-	-
13	38 & 63	37 & 65	Cremation	-	-	41 (21sh)	-	14	20	7	2	-	-	-
14	41	39 & 40	Cremation	-	-	57	-	3	-	-	-	-	-	-
17	54	53	Cremation	-	-	3	-	4	?1	-	1	-	-	-
18	56	55	Cremation	-	-	104 (101sh)	-	8	2r	1	1	-	-	-
19	61	60	Cremation	-	-	8 (2sh)	-	-	1	2	-	2	-	-
20	16	15	Pit fill	-	-	-	1	2	1	1	2	-	-	-
21	59	57	Cremation	-	-	11 (7sh)	-	7	2	-	?1	-	-	-
22	68	67	Cremation/marker	-	-	4 (3sh)	-	2	3	1	?1	-	-	-
23	73	76	Pit fill	-	-	8	-	30	19	-	44	-	2	-
24	73	76	Pit fill	-	-	-	1	33	2	-	5	-	4	-
25	80	79	Cremation	-	-	6 (1sh)	-	2	7	3	11	-	2	-
26	82	81	Cremation	-	-	-	-	1	4	1	1	-	-	-
27	43	42	Cremation	-	-	-	-	54	3	-	-	1	7	1
28	85	87	Pit fill	7	-	5	1	69	14	1	4	-	4	1
29	89	88	Cremation?	-	-	-	-	16	5	-	-	-	-	-
30	91	90	Post hole?	-	-	2	-	1	-	-	3	-	-	-
31	109	108	Cremation	-	2	6 (1sh)	-	8	6	1	1	-	-	-
32	121	120	Cremation	-	-	-	-	4	14	2	2	-	2	-
33	123	122,134	Cremation (s)	-	-	10	-	8	27	11	8	5	8	-
34	97	96	Cremation	-	-	2	-	13	35	22	5	3	2	-
35	114	115	Cremation	5	-	5	-	29	45	9	2	-	16	-
36	98	99	Cremation	-	-	11	6	33	44	7	2	-	2	-
37	125	124	Cremation	-	-	1	-	-	-	?1	-	-	-	-
39	131	130	Grave marker?	-	-	-	-	1	7 (2r)	-	-	5	-	-
40	137	136	Cremation	-	-	-	2	2	6	10	1	1	-	-
41	141	140	Cremation	-	-	-	1	3	23	2	4	1	2	-
44	142	143	Pit fill	-	-	-	2	-	-	2	4	-	-	-
45	154	153	Cremation	-	-	-	1	4	12	1	2	-	4	-
47	161	162	Grave marker?	-	-	-	-	4	1	-	3	-	-	-
48	100	101	Furrow	-	-	-	-	-	-	-	-	-	-	-

Radiocarbon dates

Six radiocarbon determinations were made by Beta Analytic Inc, Miami, Florida, from charcoal from the fills of pits (Table 9).

Table 9: Radiocarbon determinations

Sample material	Cut	Deposit	Sample	Lab code	Radiometric age	Calendrical calibrations
Charcoal Corylus	85	87	28	Beta-211582	3840±40 BP	2 sigma (95%) Cal BC 2450 to 2190 and Cal BC 2170 to 2150 1 sigma (68%) Cal BC 2340 to 2210
Charred Hazelnut	54	53	17	Beta-211581	2240±40 BP	2 sigma (95%) Cal BC 390 to 190 1 sigma (68%) Cal BC 380 to 350 and Cal BC 310 to 210
Charcoal Corylus	27	11	5	Beta-211580	2960±40 BP	2 sigma (95%) Cal BC 1300 to 1030 1 sigma (68%) Cal BC 1260 to 1110
Charred barley seeds	114	115	35	Beta-211583	2820±40 BP	2 sigma (95%) Cal BC 1060 to 880 1 sigma (68%) Cal BC 1010 to 920
Charcoal Corylus	36	19	9	Beta-207733	1870±40 BP	2 sigma (95%) Cal AD 60 to 240 1 sigma (68%) Cal AD 90 to 220
Charcoal Corylus	98	99	36	Beta-211584	2590±40 BP	2 sigma (95%) Cal BC 820 to 770 1 sigma (68%) Cal BC 800 to 780

The sample material was selected from short-lived tree species and from seeds and nuts to avoid the 'old wood effect'. The dates are therefore likely to fairly accurately reflect the backfilling of the pits. The features selected for dating represent those that contained artefacts (pottery, slag, cremated bone and cereal seeds) as well as attempting to represent the spatial distribution of the pit clusters.

The radiocarbon determinations indicate that human activity was taking place across the site from the Late Neolithic, through the Bronze Age, to the Late Iron Age – a span of some 2700 years.

Discussion

The excavation of Site AR100, Maunsmore, Co. Clare has produced evidence of prehistoric funerary activity. The bodies of those people buried at Manusmore in the prehistoric period, were probably cremated near the pits into which the remains were placed and in some cases additions to the burials were made. These offerings may have included small pieces of pottery, stone tools and food.

It is very likely that a significant degree of truncation, probably caused by modern ploughing has taken place across the site. Even so, there are a number of interesting observations that can be made regarding prehistoric burial practice.

Human burial is represented by twenty-seven pits in which cremated bone was deposited. The cremation burials seemingly form three clusters within unenclosed cemeteries, although the truncation may have removed potential ditches/gullies. These burials, based on the radiocarbon dating and the pottery typology, seem to have three chronological foci – the late Neolithic/early Bronze Age, the late Bronze Age and the Iron Age. Analysis of the bone shows that, despite the truncation noted across the site, the low weight of recovered cremated bone probably represents pyre debris or partial memorial burials.

Small amounts of pottery were found exclusively in the southern feature cluster (Fig. 5) and the probable late Bronze Age date given by Machling (above) and based on typology, is supported by the absolute radiocarbon determinations from pits 98 and 114. The ceramics may have been introduced

accidentally with the burials but also may be token deposits deliberately incorporated with the cremated remains.

Two pits (7 and 27) in the northern feature cluster (Fig. 4) have good evidence for the deliberate use of cereal as an offering to the deceased. This practice has many parallels from other excavated Irish prehistoric cremation burials (Penny Johnston *pers comm*.).

Some of the features contained bone that could be identified to a species other than human or the category 'mammal'. Of the dated features, cremated sheep or goat sized remains were recovered from pit 54 and possibly from pit 36. These features have been radiocarbon dated to 390 BC to 190 BC and AD 60 to AD 240 respectively. A parallel for cremated animal remains in a small pit from the later Iron Age/Early Christian transition has been excavated approximately 10km to the south-west at Ballycorrick, Co. Clare (Hull 2005). There, cremated sheep or goat and pig remains were found in a pit with a few cereal seeds and hazelnut shells. The Ballycorrick pit was radiocarbon dated to AD 450 to AD 640 and interpreted as the remains of a feast. The Manusmore pits - some with animal bone and cereal – may also indicate food consumption perhaps associated with funerals.

Slag was found in a discrete area (pits 16, 33, 36, 38, 63 and 54) within the northern feature cluster (Fig. 4). This material may have derived from smithing activity, perhaps associated with pit 38, or may have been produced by another high temperature activity – possibly funeral pyres. The wood charcoal analysis indicates that ash, hazel, hawthorn and oak were used as fire fuel and it would not be unreasonable to suggest that the charcoal was formed by pyres.

Not all of the features contained cremated bone. Lack of survival and recovery of tiny amounts of bone may be a possibility and some of the small features may have been postholes and might indicate the presence of timber structures or perhaps grave markers. Indeed, grave markers of some form are almost essential to explain the clustering of features observed on the site.

The funerary landscape of County Clare has been subject to considerable research and speculation and this new site has the potential to be meaningfully integrated into the corpus of knowledge (see for example Grogan 1995 and 1996 and Grogan and Condit 2000).

The North Munster Project has examined the later prehistoric landscape of south-east Clare in detail (Grogan 2005) and Manusmore falls within this study area. It has been noted that there are relatively few recognised funerary sites in the landblock and no definite early Bronze Age funerary pits in Co. Clare (Waddell 1990). However, two traditions of the middle-late Bronze Age have been identified – barrows and unmarked pit burials. The latter is, despite the low archaeological visibility, the much more common form in the Mooghaun area. The late Neolithic/early Bronze Age cremation burial identified in this excavation (AR100) at Manusmore is then, so far unique in the county.

Mount (1995) has noted that the recorded forms of burial in the early Bronze Age, include cists, barrows and pits and this may reflect social stratification at that time. The burials at Manusmore may then be of those individuals lower down in the prestige hierarchy.

The archaeological site AR102, excavated as part of this road scheme, 900m to the north-east (Hull 2006) includes Iron Age cremation burials in pits and the two sites (AR100 and AR102) may have been in use simultaneously in this period.

The relationship of the archaeological site to the nearby Ardsollus River is potentially significant. The modern river course is 120m to the south-east but archaeological test trenching (Hull 2003) and geological survey (GSI 2002) suggest that the burial site may have been much closer to water in the prehistoric period. Other undated, but almost certainly prehistoric, cremation burial pits and a ring gully have been excavated less than 1km to the south on the opposite side of the Ardsollus River in Latoon South and Ballyconneely townlands (Hull 2001 and Hull and Tarbett-Buckley 2001).

Archaeological potential off the road CPO

Many of the archaeological deposits excavated at Site AR100 were located at the eastern edge of the CPO and contemporary prehistoric funerary features will very probably be preserved off the road CPO to the east. It is also possible that associated settlement evidence could be found nearby.

Publication plan

A summary of the findings of the excavation has been submitted to *Excavations 2004*.

Copies of this final excavation report will be deposited with the Clare County Museum and the Local Studies Library, Ennis, Co. Clare

A summary article, describing the findings of this road project has been published in the local journal *The Other Clare* (Hull and Taylor 2005).

An illustrated information brochure describing the findings of this road project has been published by Clare County Council.

The stated aim of the National Roads Authority with regard to archaeological publication is clear, (O'Sullivan 2003) and it is anticipated that the results of this excavation will be disseminated as a component of a monograph dedicated to the archaeology of the Ennis Bypass. Publication is expected to take place in 2006/7 at the latest.

_____

Graham Hull MIFA MIAI
TVAS Ireland Ltd
1st August 2006

References

Aegis, 2002, F Coyne and T Collins, Archaeological test trenching investigations report, unpublished report

Arnold, D E, 1985, *Ceramic Theory and Cultural Process*, Cambridge University Press

Babtie Pettit Ltd, 2000, N18 Road Improvements Dromoland to Crusheen (including the Ennis Bypass), Environmental Impact Statement

Brickley, M, and McKinley, J (eds), 2004, *Guidelines to the Standards for Recording Human Remains*, IFA Paper no.7, Reading

Briggs, C S, 1988, Stone resources and implements in prehistoric Ireland: a review, *Ulster Journal of Archaeology* **51**, 5-20

Brown, A G, Hatton, J, O'Brien, C E, Selby, K A, Langdon, P G, Stuits, I and Caseldine, C J, 2005, Vegetation, landscape and human activity in Midland Ireland: mire and lake records from the Lough Kinale-Derragh Lough area, Central Ireland. *Vegetation History and Archaeobotany* **14**, Springer-Verlag, 81-98

Caseldine, C J, Hatton, J M, Huber, U, Chiverrell, R C and Woolley, N, 1996, 'Palaeoecological work at Corlea, 1992-1995', in B Raftery (ed), *Trackway excavations in the Mountdillon Bogs, Co. Longford 1985-1991. Dublin: Irish Archaeological Wetland Unit Transactions* Vo1. 3, Crannog, University College Dublin, 393-4

Cleary, R M, 2000, 'The Potter's Craft in Prehistoric Ireland with Specific Reference to Lough Gur, Co. Limerick', in A Desmond, G Johnson, M McCarthy, J Sheehan and E Shee Twohig (eds), *New Agendas In Irish Prehistory*, Wordwell, Bray, 119-34

DAHGI, 1999a, *Framework and Principles for the Protection of the Archaeological Heritage*, Department of Arts, Heritage, Gaeltacht and the Islands, Govt. of Ireland, Stationary Office, Dublin

DAHGI, 1999b, *Policy and Guidelines on Archaeological Excavation*, Department of Arts, Heritage, Gaeltacht and the Islands, Govt. of Ireland, Stationary Office, Dublin

Doyle, S, 1999, Archaeological study for EIS of proposed N18 Road Development, Dromoland to Crusheen (Ennis Bypass), Co. Clare, Archaeological Development Services report

Earthsound, 2003, J Bonsall, Archaeological geophysical survey of AR22, unpublished report

Ford, S, Bradley, R J, Hawkes, J and Fisher, P, 1984, 'Flint working in the metal age' *Oxford J Archaeol* **3**, 157–73

Geoquest, 2002, M J Noel, Geophysical survey of areas on the route of the proposed N18, unpublished report

Getty, R, 1975, *Sisson and Grossman's The Anatomy of the Domestic Animals*, 5th Edition, London

Goldstein, M, Simonetti, G, Watschinger, M, 1984, *Complete Guide to Trees and their identification*, MacDonald Illustrated

Grogan, E, 1995, 'North Munster Project' in *Discovery Programme Reports 2*, Royal Irish Academy, Dublin

Grogan, E, 1996, 'North Munster Project' in *Discovery Programme Reports 4*, Royal Irish Academy, Dublin

Grogan, E, 2005, The North Munster Project, Vol 1, The later prehistoric landscape of south-east Clare, Discovery Programme Monographs, 6, Wordwell, Bray

Grogan, E and Condit, T, 2000, 'The Funerary Landscape of Clare in Space and Time', in C Ó Murchadha, *County Clare Studies*, Clare Archaeological and Historical Society, Ennis, 9-29

GSI, 2002, Geological Survey of Ireland, Quaternary Deposits, Co. Clare, unpublished 1:50,000 map, GSI, Dublin

Hather, J G, 2000, *The identification of northern European woods*, Archetype, London

Hillson, S, 1992, *Mammal Bones and Teeth*, London

Hull, G, 2001, 00E0284, Archaeological Excavation N19/N19 Road Improvement Scheme, Ballycasey – Dromoland, Contract 1, Ballyconneely and Ballygirreen townlands, Co. Clare, AR 47/51, AR 48/50, AR 49, unpublished report, Valerie J Keeley Ltd

Hull, G, 2003, 03E1291, N18 Ennis Bypass Archaeological Test Excavations, Contract 4, Central Linear Trench with Offsets (Southern and Western Sections), Final Archaeological Assessment Report, TVAS Ireland report J03/12b

Hull, G, 2004, 04E0187, N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare, Preliminary Archaeological Excavation Report, TVAS Ireland report J04/01a

Hull G, 2005, Section 3, Gas Pipeline to the West, 02E1014, site 3/25/4, Ballycorick, Clandagad, Co. Clare, unpublished final archaeological report, Margaret Gowen and Co. Ltd

Hull, G, 2006, 04E0189, N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare, Final Archaeological Report, TVAS Ireland report J04/01o

Hull, G and Tarbett-Buckley, C, 2001, Archaeological Monitoring and Excavation, N18/N19 Road Improvement Scheme, Ballycasey – Dromoland, Contract 1, 99E0350, unpublished report, Valerie J Keeley Ltd

Hull, G and Taylor, K, 2005, 'Archaeology on the route of the Ennis Bypass', *The Other Clare*, Vol **29**, 35-41, Shannon Archaeological and Historical Society

Huntley, B and Birks, H J B, 1983, *An atlas of past and present pollen maps for Europe: 0-13000 years ago*, Cambridge University Press

IAC, 2003, E Connolly and D Nelis, Report on archaeological testing on the N18 Ennis Bypass, unpublished preliminary report

IAWU, 1993, *Excavations at Clonfinlough, County Offaly*. Irish Archaeological Wetland Unit, Transactions, Volume **2**

Kelly, F, 1998, *Early Irish Farming*, Dublin Institute of Advanced Studies

Knight, J, 1991, Vein quartz, *Lithics* **12**, 37-56

McKinley, J I, 1994, 'The Anglo-Saxon cemetery at Spong Hill, North Elmham, part VIII: the cremations', *E Anglian Archaeol* **69**

McKinley, J I, 2000, 'The Analysis of Cremated Bone', in M Cox, and S Mays (eds) *Human Osteology,* 403–21, London

MGL, 2002, Gas Pipeline to the West, Section 3, Archaeological Excavations, unpublished final reports, Margaret Gowen & Co, Ltd, Glenageary, Co. Dublin

Mitchell, A, 1978, *Collins Field Guide: Trees of Britain & Northern Europe, 2nd Ed*.

Mitchell, F J G, 1995, 'The dynamics of Irish post-glacial forests' in J R Pilcher and S Mac an tSaoir (eds), *Wood, Trees and Forests in Ireland*, Royal Irish Academy, Dublin, 13-22

Mount, C, 1995, 'New Research on Irish Early Bronze Age Cemeteries', in J, Waddell and E, Shee Twohig (eds), *Ireland in the Bronze Age, Proceedings of the Dublin Conference, April 1995*, Govt. of Ireland, 97-112

Murphy, P, 1990, Moverons Farm, Brightlingsea, Essex: carbonised plant remains from a Bronze Age cemetery, *Ancient Monuments Laboratory Report* **122/90**, English Heritage, London

Murphy, P, 1992, Norwich Southern Bypass: Plant remains from Beaker, Bronze Age, Iron Age, Romano-British and Late Saxon contexts, *Ancient Monuments Laboratory Report* **20/92**, English Heritage, London

Neilson-Marsh, C, Gernaey, A, Turner-Walker, G, Hedges, R, Pike, A and Collins, M, 2000, 'The chemical degradation of bone', in M Cox, and S Mays (eds) *Human Osteology,* 403–21, London

NMI, 1997, Advice Notes for Excavators, unpublished guidelines, National Museum of Ireland, Dublin

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

O'Brien, C, Selby, K, Ruiz, Z, Brown, A, Dinnin, M, Caseldine, C, Langdon, P and Stuijts, I, 2005, *A sediment-based multiproxy palaeoecological approach to the environmental archaeology of lake dwellings (crannogs), central Ireland.* The Holocene **15,5**, 707-719

O'Connell, M, 1990, 'Origins of Irish lowland blanket bog', in G J Doyle (ed), *Ecology and conservation of Irish peatlands*, Royal Irish Academy, Dublin, 49-71

O'Riordain, S P, 1954, Lough Gur Excavations: Neolithic and Bronze Age House on Knockadoon, *PRIA* **56C**, 297-459

O'Sullivan, A, 1996, 'Neolithic, Bronze Age and Iron Age Woodworking Techniques', in B Raftery (ed) *Trackway Excavations in the Mountdillon Bogs, Co. Longford 1985-1991. Irish Archaeological Wetland Unit Transactions* Vol. 3. Crannog, University College Dublin.

O'Sullivan, J (ed), 2003, *Archaeology and the National Roads Authority*, NRA, Dublin

Parkes, H M and Mitchell, F J G, 2000, Vegetation History at Clonmacnoise, Co. Offaly. Biology and Environment, *PRIA* **100B** (No 1), 35–40

Peterken, G F, 1996, *Natural Woodland, Ecology and Conservation in Northern Temperate Regions*, Cambridge

Prehistoric Ceramics Research Group, 1992, *The study of Later Prehistoric Pottery:Guidelines for analysis and Publication*, Occasional Paper **2**

Rackham, O, 1976-1990, *Trees and Woodland in the British Landscape. The Complete History of Britain's Trees, Woods and Hedgerows*, J M Dent

Raftery, B (ed), 1996, *Trackway Excavations in the Mountdillon Bogs, Co. Longford 1985-1991. Irish Archaeological Wetland Unit Transactions* Vol. 3, Crannog, University College Dublin

Roger, T, 2004, 03E1293, N18 Ennis Bypass Archaeological Test Excavations, Contract 3, Central Linear Trench with Offsets (Northern Section), Moore Group Ltd, Draft Preliminary Archaeological Assessment Report

Scannell, M J P and Synott, D M, 1987, *Census Catalogue of the Flora of Ireland.* Stationary Office, Dublin

Schweingruber, F H, 1990, *Microscopic Wood Anatomy*, Swiss Federal Institute for Forest, Snow and Landscape Research

Stace, C, 1997, *New Flora of the British Isles*, Second edition, Cambridge University Press

Terry, R D and Chilingar, G V, 1955, Summary of 'Concerning some additional aids in Studying Sedimentary Formations' by M S Shvetsov. *Journ. Sedimentary Petrology*, **25**, No.3, 229-234

Théry-Parisot, I, 2002, 'Gathering of firewood during the Palaeolithic' in S Thiébault (ed), *Charcoal Analysis, Methodological Approaches, Palaeoecological Results and Wood Uses*, BAR International Series 1063

Tutin, T G, Heywood, V H, Burges, N A, Valentine, D H (eds), 1964-1980, *Flora Europaea*, Volumes 1-5, Cambridge University Press

Waddell, J, 1990, *The Bronze Age Burials of Ireland*, Galway University Press

Appendix 1: Catalogue of features and deposits

Context No.	Description	Sample No.	Finds
1	Topsoil	-	Cremated bone (?from 173)
2	Natural	-	-
3	Fill of 9	12	-
4	Tertiary fill of 5	-	-
5	Pit	-	-
6	Fill of 7	8	-
7	Pit	-	-
8	Fill of 26	4	Cremated bone
9	Pit	-	-
10	Fill of 25	3	Cremated bone
11	Fill of 27	5	Cremated bone
12	Fill of 30	-	-
13	Fill of 24	1	Cremated bone
14	Fill of 50	6	Cremated bone
15	Fill of 16	20	Bone, slag
16	Pit	-	-
17	Fill of 66	-	Bone
18	Fill of 33	10	Bone, slag
19	Fill of 36	9	Cremated bone, slag
20	Secondary fill of 5	2	-
21	Primary fill of 5	2	-
22	Fill of 23	-	-
23	Pit	-	-
24	Pit	-	-
25	Pit	-	-
26	Pit	-	-
27	Pit	-	-
28	Fill of 29	-	-
29	Furrow	-	-
30	Pit	-	-
31	Fill of 32	-	-
32	Furrow	-	-
33	Pit	-	-
34	Fill of 35	7	Cremated bone
35	Pit	-	-
36	Pit	-	-
37	Fill of 38	13	Cremated bone, slag
38	Pit	-	-
39	Fill of 41	14	-
40	Fill of 41	14	-
41	Pit	-	-
42	Fill of 43	27	Cremated bone, flint
43	Pit	-	-
44	Fill of 45	-	-
45	Pit	-	-
46	Fill of 47	-	-
47	Furrow	-	-
48	Fill of 49	-	-
49	Furrow	-	-
50	Pit	-	-
51	Fill of 52	-	-
52	Pit	-	-
53	Fill of 54	17	Cremated bone, chert, slag
54	Pit	-	-

Appendix 1: Catalogue of features and deposits (continued)

Context No.	Description	Sample No.	Finds
55	Fill of 56	18	Cremated bone
56	Pit	-	-
57	Secondary fill of 59	21	Cremated bone, chert
58	Primary fill of 59	-	-
59	Pit	-	-
60	Fill of 61	19	Cremated bone
61	Pit	-	-
62	Pit	-	-
63	Pit	-	-
64	Fill of 62	6	Cremated bone
65	Fill of 63	13	Cremated bone, slag
66	Pit	-	-
67	Fill of 68	22	Cremated bone
68	Pit	-	-
69	Furrow	-	-
70	Fill of 69	-	-
71	Furrow	-	-
72	Fill of 71	-	-
73	Pit	-	-
74	Fill of 75	-	-
75	Pit	-	-
76	Fill of 73	23, 24	Pottery, chert
77	Fill of 78	-	-
78	Furrow	-	-
79	Fill of 80	25	Cremated bone, chert
80	Pit	-	-
81	Fill of 82	26	Cremated bone
82	Pit	-	-
83	Fill of 84	-	-
84	Same as 66	-	-
85	Pit	-	-
86	Primary fill of 85	-	-
87	Secondary fill of 85	28	Cremated bone, flint, chert
88	Fill of 89	29	-
89	Pit	-	-
90	Fill of 91	30	-
91	Pit	-	-
92	Same as 106	-	-
93	Same as 107	-	-
94	Fill of 95	-	-
95	Furrow	-	-
96	Fill of 97	34	Cremated bone, pottery, chert
97	Pit	-	-
98	Pit	-	-
99	Fill of 98	36	Cremated bone, pottery, flint
100	Furrow	-	-
101	Fill of 100	48	-
102	Furrow	-	-
103	Fill of 102	-	-
104	Fill of 105	-	-
105	Furrow	-	-
106	Fill of 107	-	Pottery
107	Furrow	-	-
108	Fill of 109	31	Cremated bone

Appendix 1: Catalogue of features and deposits (continued)

Context No.	Description	Sample No.	Finds
109	Pit	-	-
110	Pit	-	-
111	Fill of 110	-	-
112	Furrow	-	-
113	Fill of 112	-	-
114	Pit	-	-
115	Fill of 114	35	Cremated bone, pottery
116	Fill of 117	-	-
117	Pit	-	-
118	Fill of 119	-	-
119	Pit	-	-
120	Fill of 121	32	Cremated bone, pottery
121	Pit	-	-
122	Secondary fill of 123	33	Cremated bone, pottery
123	Pit	-	-
124	Fill of 125	37	-
125	Pit	-	-
126	Fill of 127	-	-
127	Stone socket	-	-
128	Fill of 129	38	-
129	Pit	-	-
130	Fill of 131	39	-
131	Pit	-	-
132	Fill of 133	-	-
133	Pit	-	-
134	Primary fill of 123	33	Cremated bone, pottery
135	Burnt natural	-	-
136	Fill of 137	40	Cremated bone
137	Pit	-	-
138	Fill of 139	-	-
139	Pit	-	-
140	Fill of 141	41	Cremated bone
141	Pit	-	-
142	Pit	-	-
143	Fill of 142	44	Chert
144	Burnt natural	-	-
145	Fill of 146	-	-
146	Pit	-	-
147	Pit	-	-
148	Fill of 147	-	-
149	Fill of 150	-	-
150	Pit	-	-
151	Fill of 152	-	-
152	Pit	-	-
153	Fill of 154	45	Cremated bone
154	Pit	-	-
155	Fill of 156	-	-
156	Pit	-	-
157	Fill of 158	-	-
158	Furrow	-	-
159	Furrow	-	-
160	Fill of 159	-	-
161	Pit	-	-
162	Fill of 161	47	-

Appendix 1: Catalogue of features and deposits (continued)

Context No.	Description	Sample No.	Finds
163	Furrow	-	-
164	Fill of 163	-	-
165	Fill of 166	-	-
166	Furrow	-	-
167	Fill of 168	-	-
168	Pit	-	-
169	Fill of 170	-	-
170	Pit	-	-
171	Fill of 172	-	-
172	Pit	-	-
173	Fill of 174	-	Pottery
174	Pit	-	-
175	Fill of 176	-	-
176	Pit	-	-

Appendix 2: Catalogue of finds

Find No	Cut	Deposit	Sample No	Category	Description	No pieces	Weight (g)
1	-	1 (near pit 174)	-	Bone	Cremated bone fragments	14	<1
2	16	15	-	Bone	Bone Fragments	41	546
3	16	15	20	Bone	Bone, cremated bone fragments(3g)	38	40
4	16	15	20	Slag	Fragments	2	1
5	24	13	1	Bone	Cremated bone fragments (human)	Hundreds	530
6	25	10	3	Bone	Cremated bone fragments	31	2
7	26	8	4	Bone	Cremated bone fragments	5	<1
8	27	11	5	Bone	Cremated bone fragments	2	<1
9	33	18	-	Bone	Bone Fragments	6	45
10	33	18	10	Bone	Bone, cremated bone fragments(10g) (mixed)	255	72
11	33	18	10	Slag	Fragments	6	1
12	35	34	7	Bone	Cremated bone fragments	100	20
13	36	19	9	Slag	Fragments	ca35	13
14	36	19	9	Bone	Bone, cremated bone fragments (human)	100	31
15	38&63	37&65	13	Bone	Cremated bone fragments (human)	100	24
16	38&63	37&65	13	Slag	Fragments ?including microslag	7	<1
17	43	42	-	Lithic	Flint worked piece	1	1
18	43	42	27	Bone	Cremated bone fragments	2	<1
19	50&62	14&64	6	Bone	Cremated bone fragments (human)	100	23
20	54	53	17	Lithic	Chert debitage	10	<1
21	54	53	17	Slag	Fragments	ca. 60	3
22	54	53	17	Bone	Cremated bone fragments	8	<1
23	56	55	18	Bone	Cremated bone fragments	4	<1
24	59	57	21	Bone	Cremated bone fragments	9	<1
25	59	57	21	Lithic	Chert debitage	9	<1
26	61	60	19	Bone	Cremated bone fragments	4	<1
27	66	17	-	Bone	Fragments	22	137
28	68	67	22	Bone	Cremated bone fragments	5	<1
29	73	76	23	Pottery	Sherd	1	2
30	73	76	23	Lithic	Chert debitage	3	<1
31	80	79	25	Lithic	Chert worked piece	1	5
32	80	79	25	Lithic	Chert ?worked piece	1	37
33	80	79	25	Lithic	Chert debitage	10	<1
34	80	79	25	Bone	Cremated bone fragments	1	<1

Appendix 2: Catalogue of finds (continued)

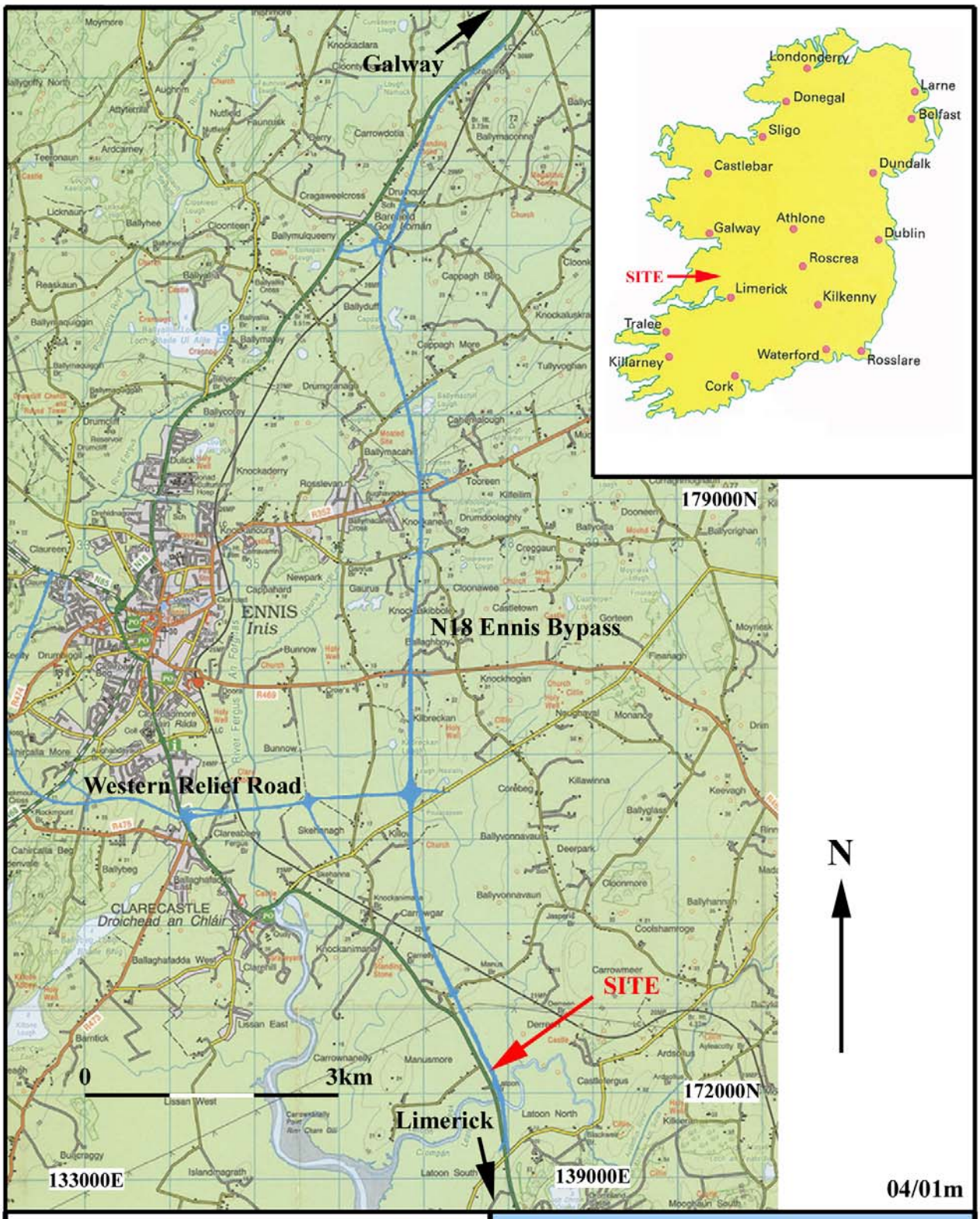
Find No	Cut	Deposit	Sample No	Category	Description	No pieces	Weight g)
35	82	81	26	Bone	Cremated bone fragments	4	<1
36	85	87	28	Bone	Cremated bone fragments	12	<1
37	85	87	-	Lithic	Chert worked piece	1	8
38	85	87	-	Lithic	Chert worked piece	1	2
39	85	87	-	Lithic	Chert worked piece	1	15
40	85	87	-	Lithic	Flint worked piece	1	1
41	85	87	28	Lithic	Chert debitage	24	1
42	85	87	28	Lithic	Flint worked piece	1	<1
43	85	87	28	Lithic	Flint worked piece	1	<1
44	85	87	28	Lithic	Flint worked piece	1	<1
45	85	87	28	Lithic	Flint worked piece	1	<1
46	85	87	28	Lithic	Flint debitage	16	<1
47	97	96	-	Lithic	Chert worked piece	1	1
48	97	96	34	Pottery	Sherd	1	1
49	97	96	34	Bone	Cremated bone fragments (human)	17	<1
50	98	99	-	Lithic	Flint worked piece	1	<1
51	98	99	36	Pottery	Sherd	1	4
52	98	99	36	Bone	Cremated bone fragments	8	<1
53	107	106	-	Pottery	Fragment	1	<1
54	107	106	-	Pottery	Fragment	1	<1
55	109	108	31	Bone	Cremated bone fragments	21	<1
56	114	115	-	Pottery	Sherd	1	6
57	114	115	-	Pottery	Sherd	1	6
58	114	115	-	Pottery	Sherd	1	2
59	114	115	-	Pottery	Sherd	1	2
60	114	115	-	Pottery	Sherd	1	3
61	114	115	-	Pottery	Sherd	1	<1
62	114	115	-	Pottery	Sherd	1	2
63	114	115	-	Pottery	Sherd	1	2
64	114	115	-	Pottery	Crumbs	7	2
66	114	115	35	Pottery	Sherd	1	2
67	114	115	35	Pottery	Sherd	1	1
68	114	115	35	Pottery	Sherd	1	<1
69	114	115	35	Pottery	Sherd	1	<1

Appendix 2: Catalogue of finds (continued)

Find No	Cut	Deposit	Sample No	Category	Description	No pieces	Weight g)
70	114	115	35	Pottery	Sherd	1	<1
71	114	115	35	Pottery	Sherds, pieces co-joined	2	<1
72	114	115	35	Pottery	Sherd	1	<1
73	114	115	35	Pottery	Sherd	1	<1
74	114	115	35	Pottery	Sherd	1	<1
75	114	115	35	Pottery	Sherd	1	<1
76	114	115	35	Pottery	Crumbs	9	1
77	114	115	35	Bone	Cremated bone fragments	65	4
78	121	120	32	Pottery	Crumbs	2	<1
79	121	120	32	Bone	Cremated bone fragments	33	5
80	123	122&134	33	Pottery	Sherd	1	<1
81	123	122&134	33	Pottery	Sherd	1	2
82	123	122&134	33	Pottery	Sherd	1	<1
83	123	122&134	33	Pottery	Sherd	1	2
84	123	122&134	33	Pottery	Sherd	1	5
85	123	122&134	33	Bone	Cremated bone fragments	95	3
86	137	136	40	Crem bone	Fragments	4	<1
87	141	140	41	Bone	Cremated bone	24	1
88	142	143	44	Lithic	Chert debitage	3	<1
89	154	153	45	Bone	Cremated bone fragments	21	<1
90	174	173	-	Pottery	Sherds, pieces co-joined	2	12
91	174	173	-	Pottery	Crumbs	10	6

Appendix 3: Catalogue of samples

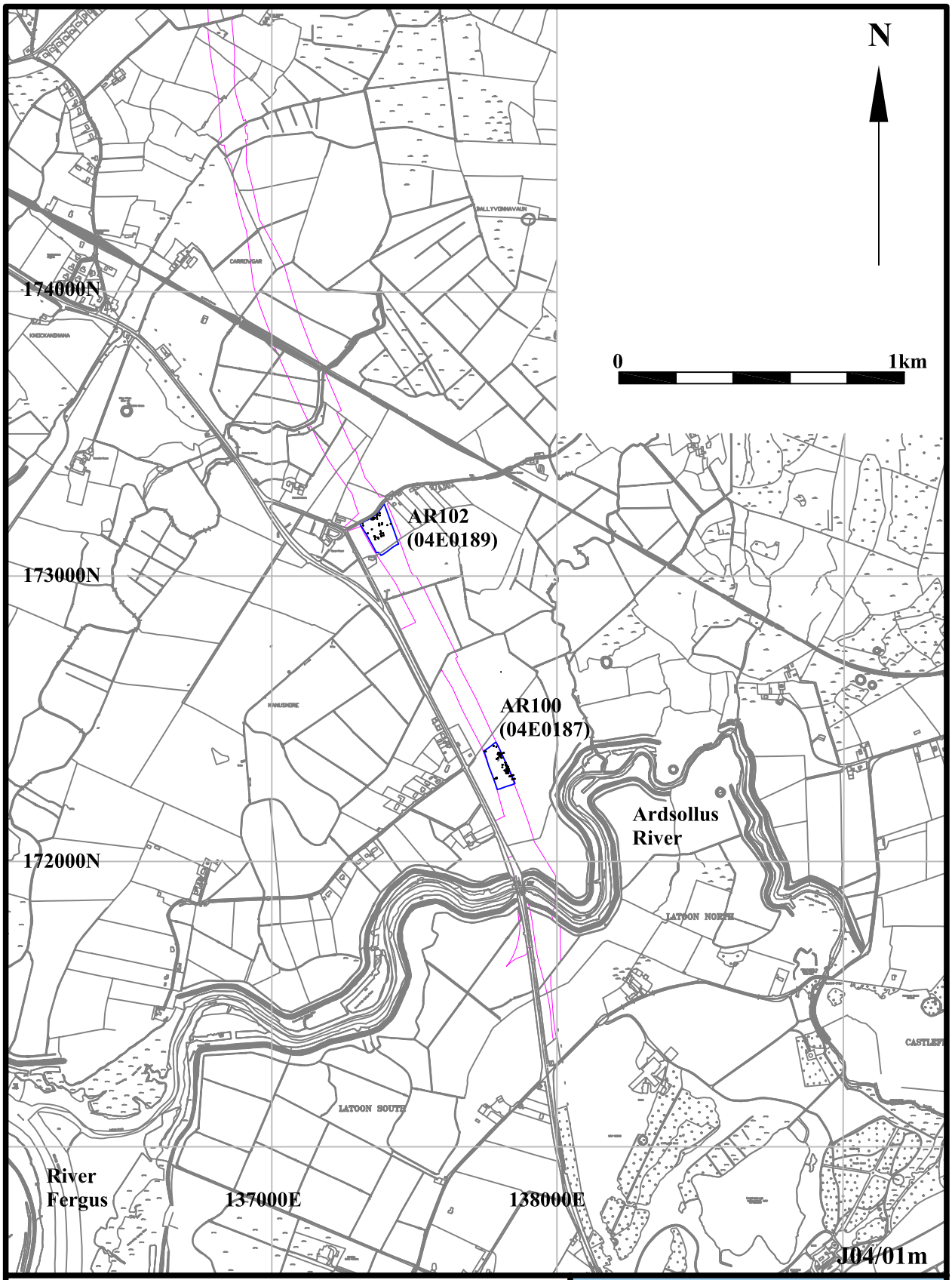
Sample No	Cut	Deposit	Volume sieved (L)	Volume floated (L)	Finds?
1	24	13	50	50	Cremated bone
2	5	20&21	8	8	None
3	25	10	15	15	Cremated bone
4	26	8	15	15	Cremated bone
5	27	11	120	120	Cremated bone
6	50&62	14&64	140	140	Cremated bone
7	35	34	80	80	Cremated bone
8	7	6	30	30	None
9	36	19	130	130	Slag; cremated bone
10	33	18	120	120	Slag; unburnt & ?cremated bone
11	-	-	-	-	Not used
12	9	3	10	10	None
13	38&63	37&65	70	70	Slag; cremated bone
14	41	39&40	8	8	None
15	-	-	-	-	Not used
16	-	-	-	-	Not used
17	54	53	15	15	Slag; chert; cremated bone
18	56	55	25	25	Cremated bone
19	61	60	15	15	Cremated bone
20	16	15	10	10	Slag; unburnt bone
21	59	57	15	15	Chert; cremated bone
22	68	67	6	6	Cremated bone
23	73	76	25	25	Pottery; chert
24	73	76	0.5	0.5	None
25	80	79	20	20	Chert; cremated bone
26	82	81	20	20	Cremated bone
27	43	42	6	6	Cremated bone
28	85	87	8	8	Flint; chert; cremated bone
29	89	88	10	10	None
30	91	90	12	12	None
31	109	108	110	110	Cremated bone
32	121	120	60	60	Metal; cremated bone
33	123	122&134	120	120	Pottery; cremated bone
34	97	96	70	70	Pottery; cremated bone
35	114	115	50	50	Pottery; cremated bone
36	98	99	80	80	Pottery; cremated bone
37	125	124	15	15	None
38	129	128	not found		None
39	131	130	-	-	None
40	137	136	40	40	Cremated bone
41	141	140	60	60	Cremated bone
42	-	-	-	-	Not used
43	-	-	-	-	Not used
44	142	143	10	10	Chert
45	154	153	12	12	Cremated bone
46	-	-	-	-	Not used
47	161	162	-	-	None
48	100	101	-	-	None



N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare
04E0187

Figure 1: Site location

TVAS IRELAND LTD



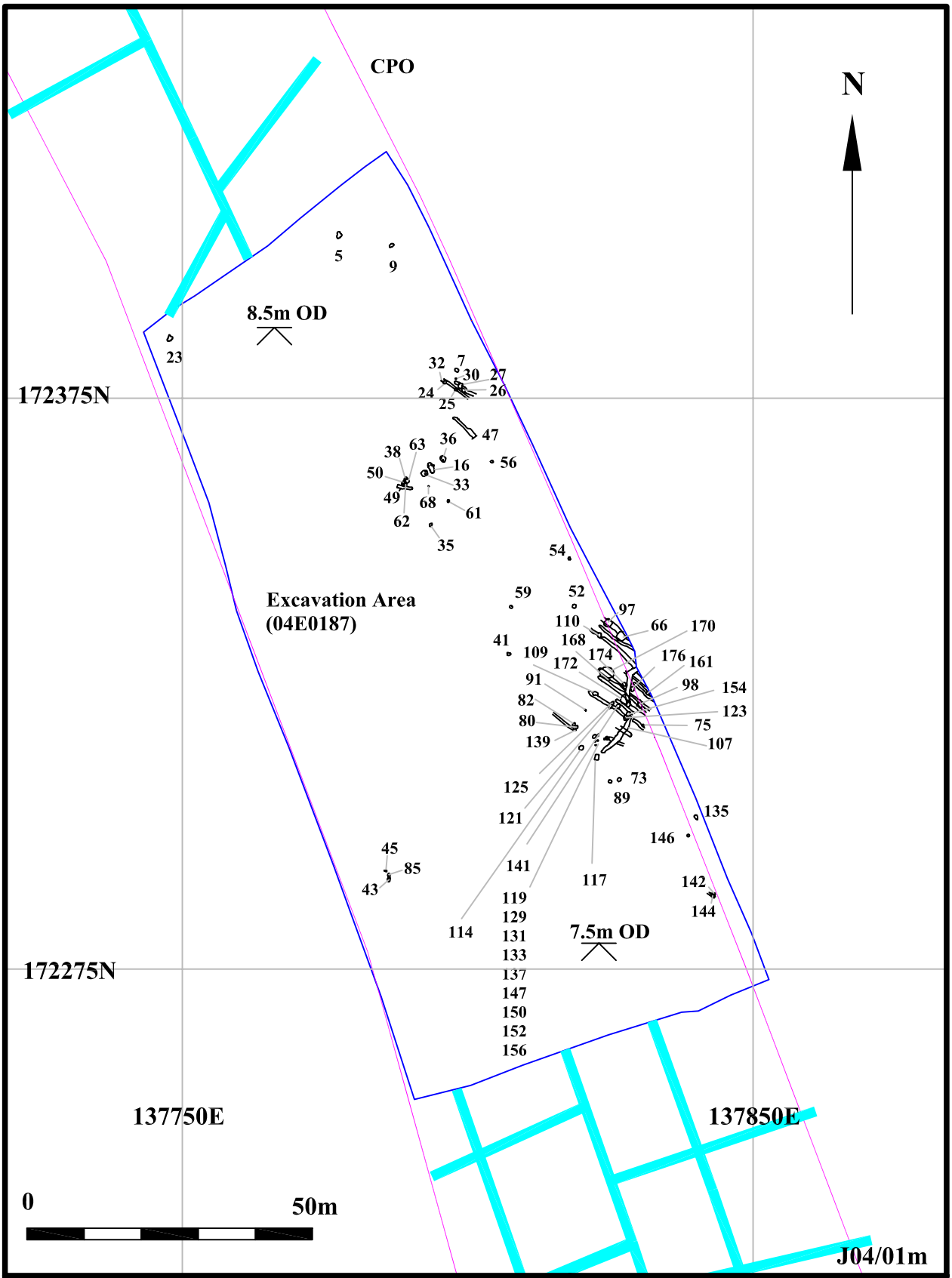
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 2: Site location within local landscape

Scale 1:20000. OSI Licence: AR0049406

TVAS IRELAND LTD



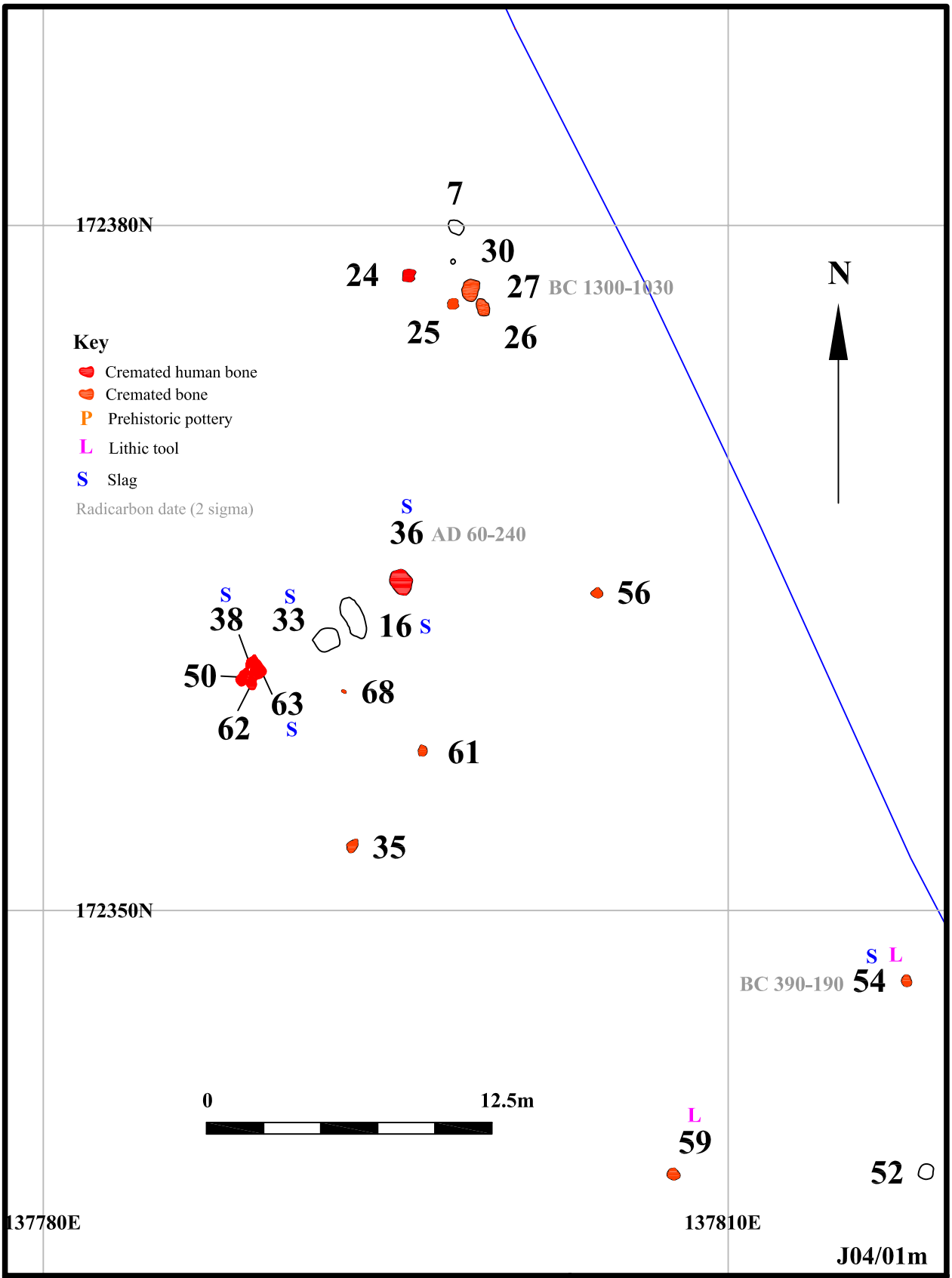
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 3: Location of all features.
Showing test trenches (03E1291)

Scale 1:1000. OSI Licence: AR0049406 Copyright OSI & Govt. of Ireland

TVAS IRELAND LTD



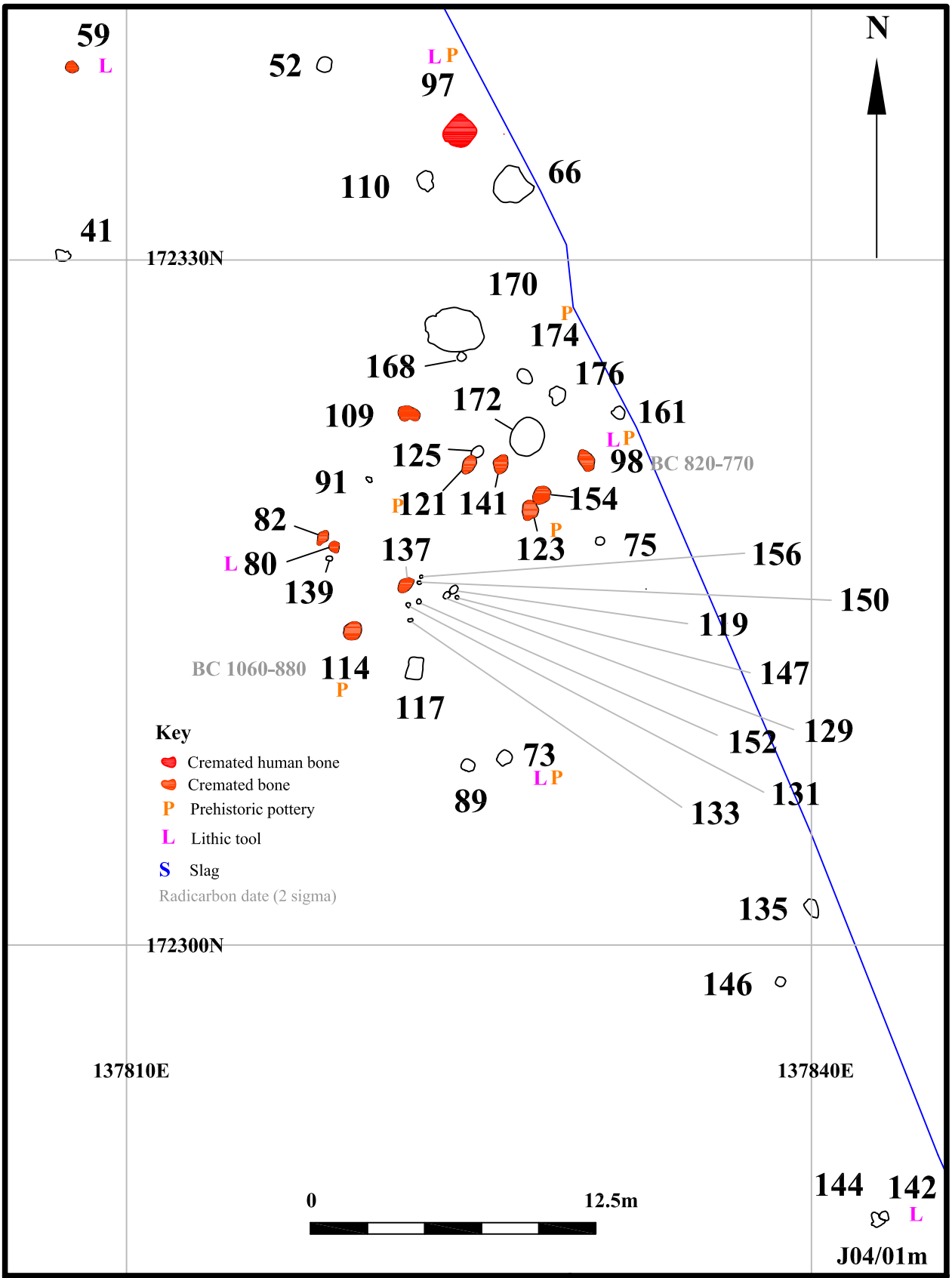
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 4: Archaeological features (northern cluster)

Scale 1:250

TVAS IRELAND LTD



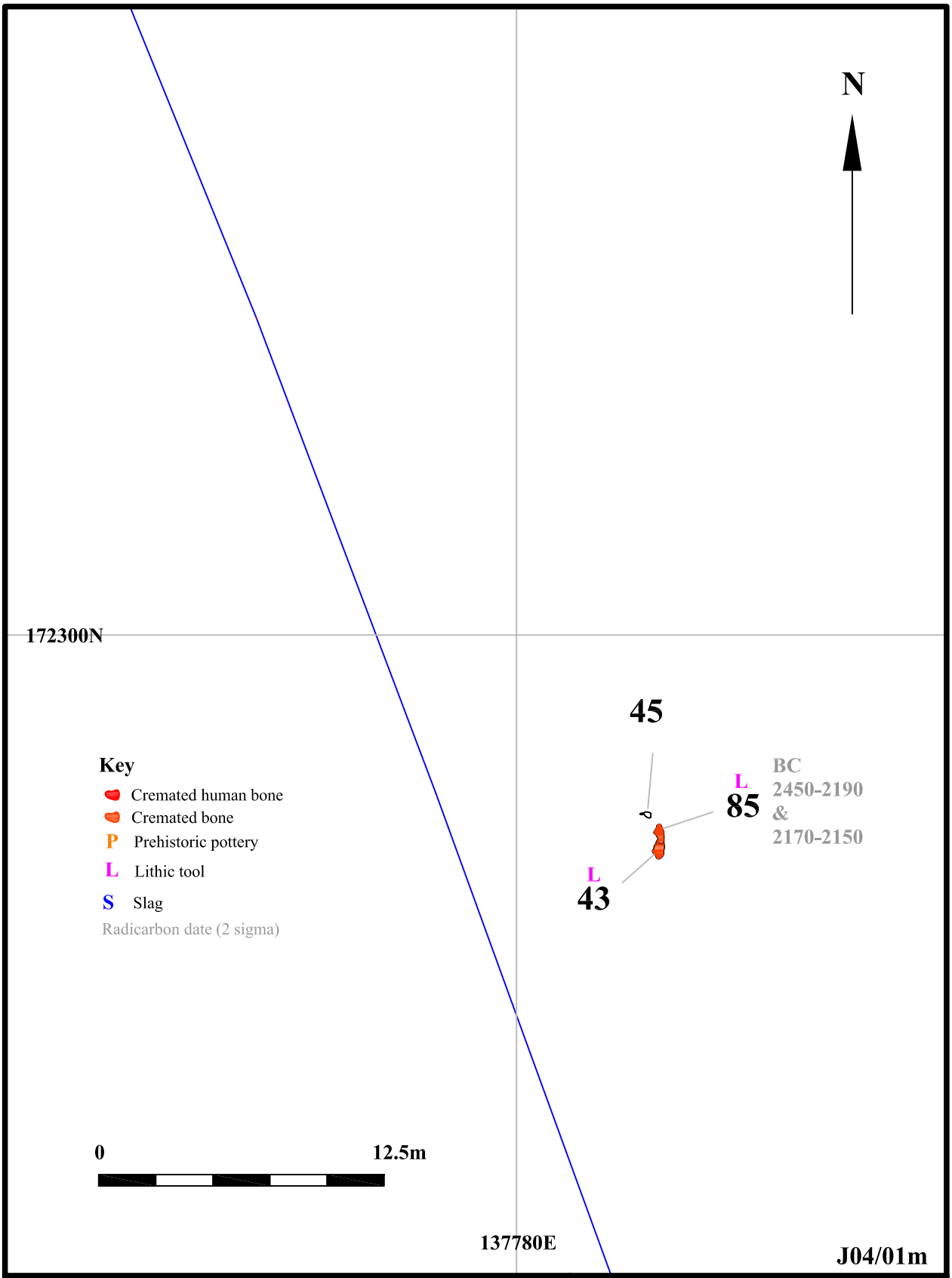
N18 Ennis Bypass, AR100, Manusmore, Co. Clare

04E0187

Figure 5: Archaeological features (southern cluster)

Scale 1:250

TVAS IRELAND LTD



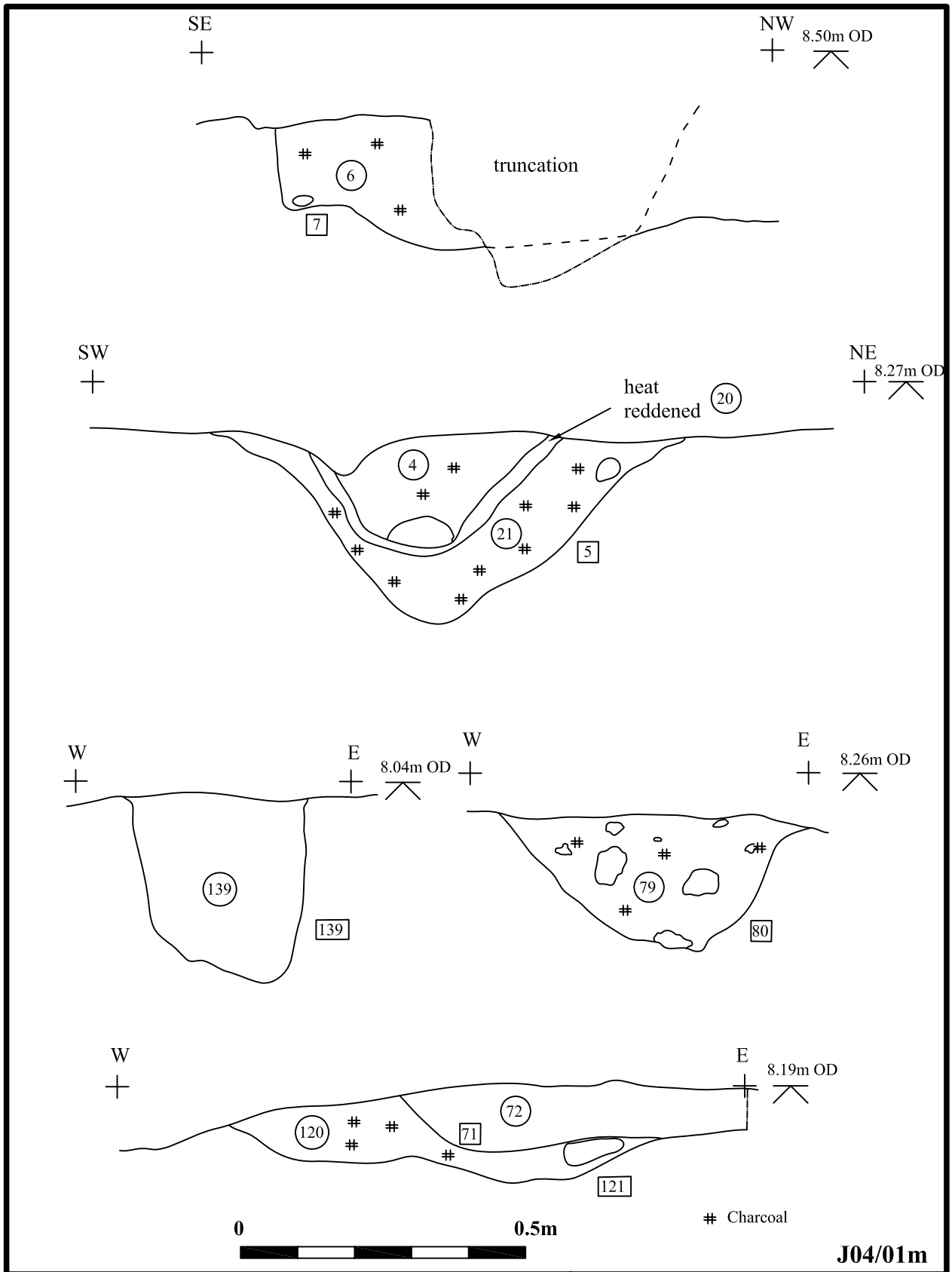
N18 Ennis Bypass, AR100, Manusmore, Co. Clare

04E0187

Figure 6: Archaeological features (western cluster)

Scale 1:250

TVAS IRELAND LTD



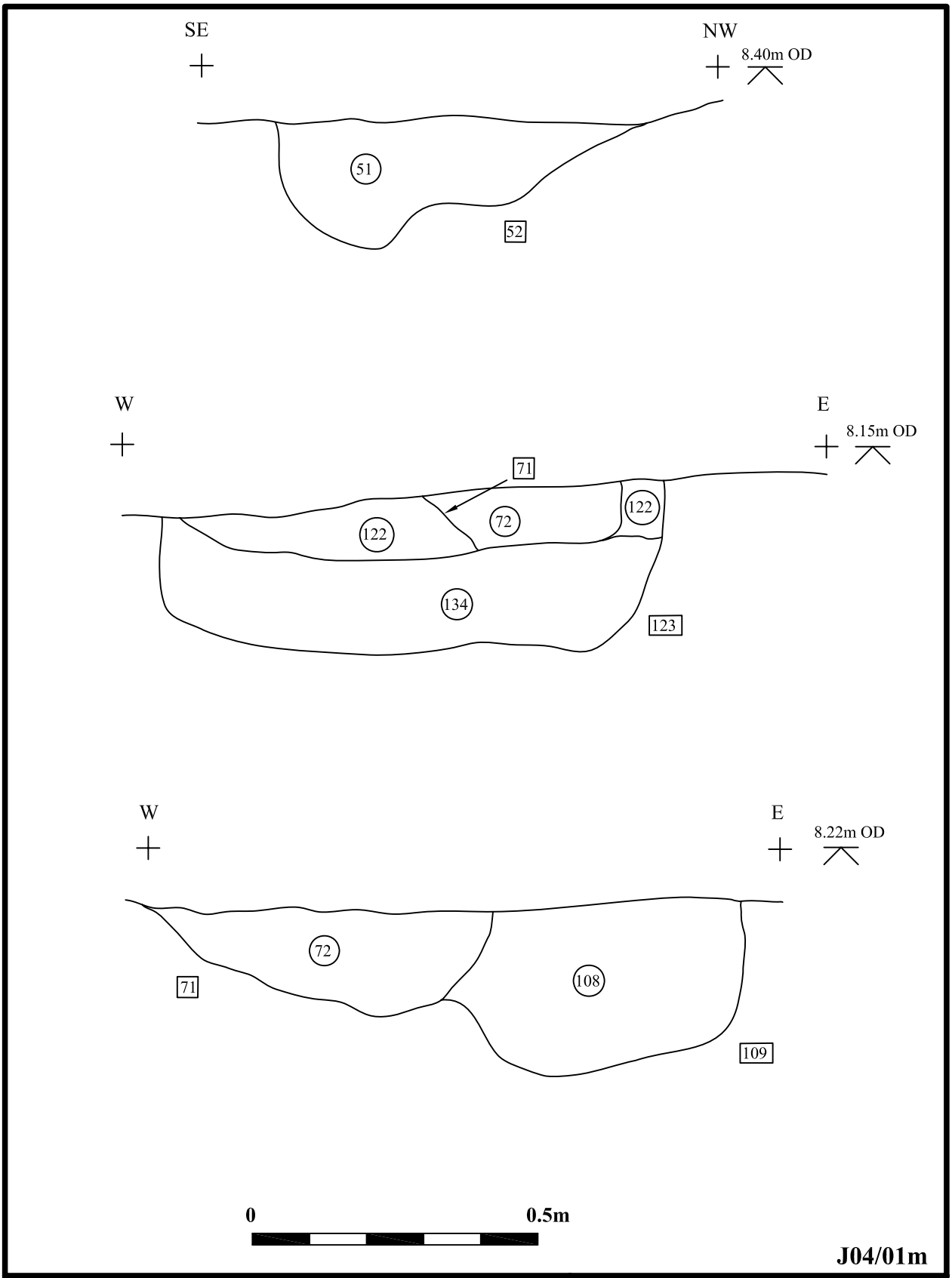
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 7: Sections of features 7, 5, 139, 80, 121 and 71

Scale 1:10

TVAS IRELAND LTD



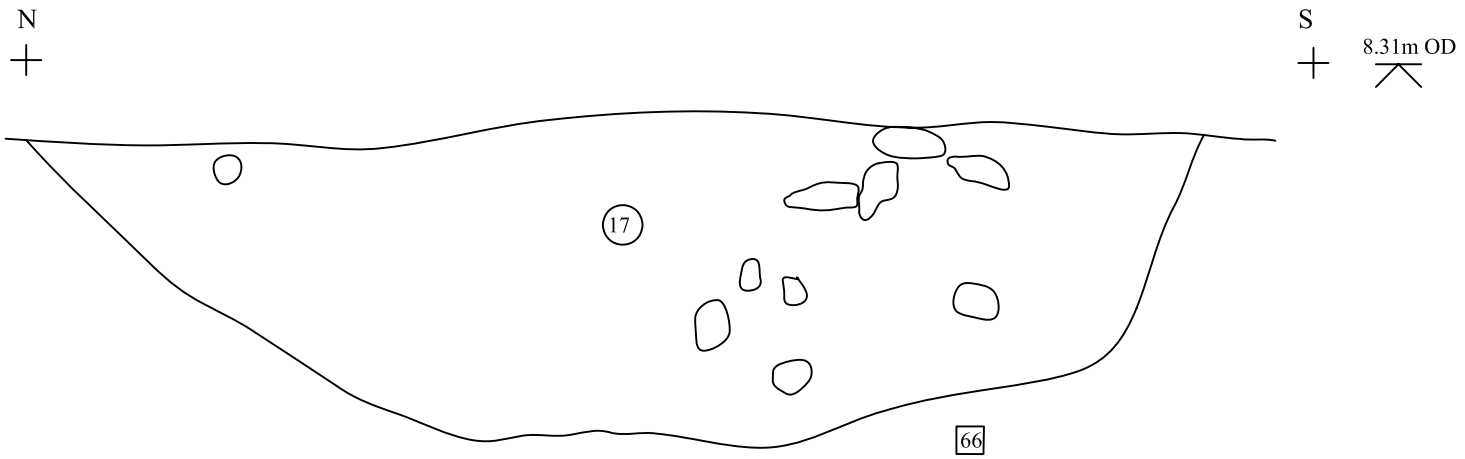
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 8: Sections of features 52, 71, 123 and 109

Scale 1:10

TVAS IRELAND LTD



J04/01m

0 0.5m

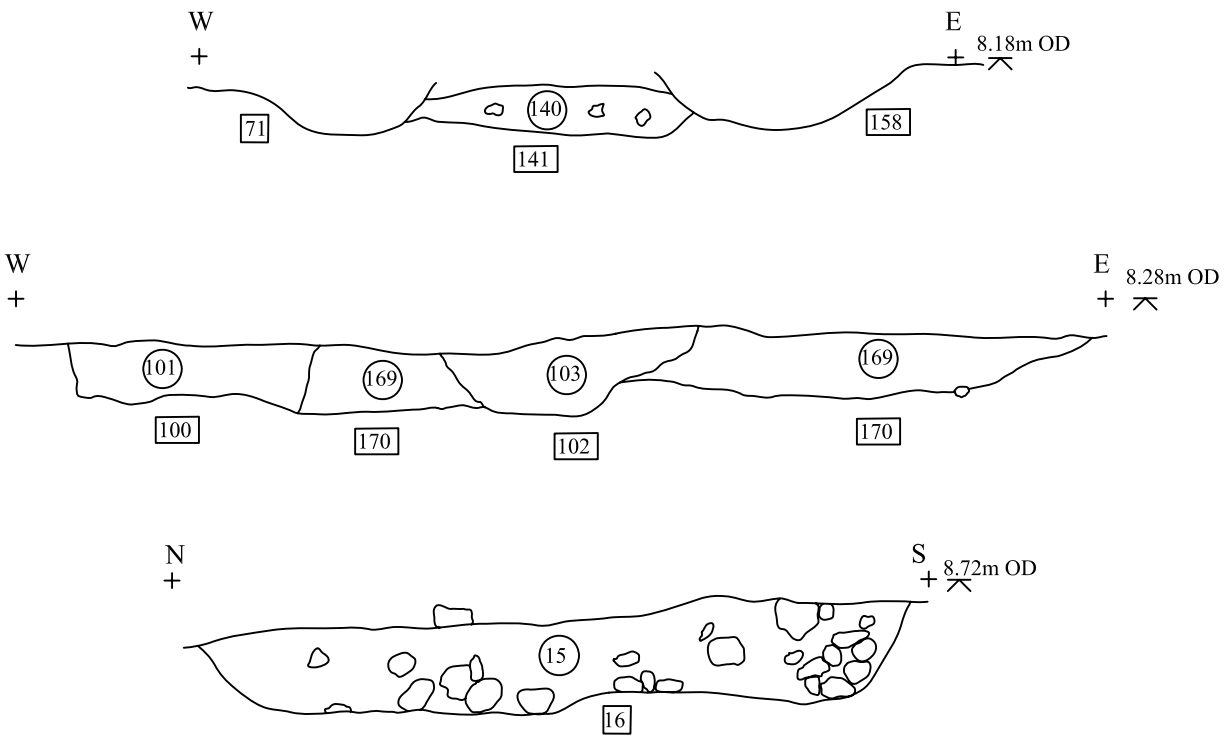
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 9: Section of feature 66

Scale 1:10

TVAS IRELAND LTD



J04/01m

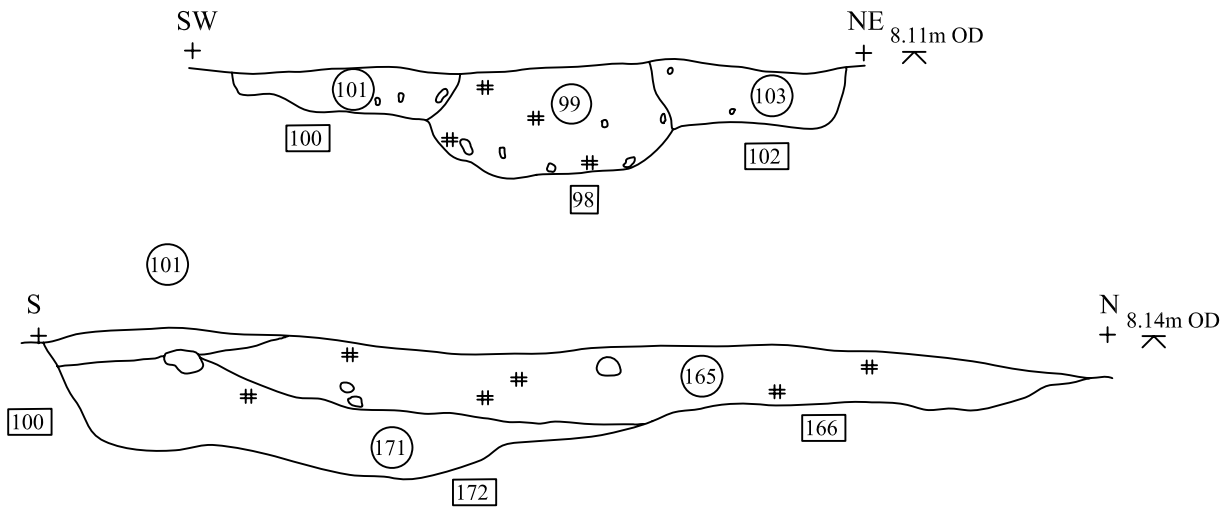
0 1m

N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 10: Sections of features 71, 141, 158, 100, 170, 102, 16
Scale 1:20

TVAS IRELAND LTD



J04/01m

0 1m

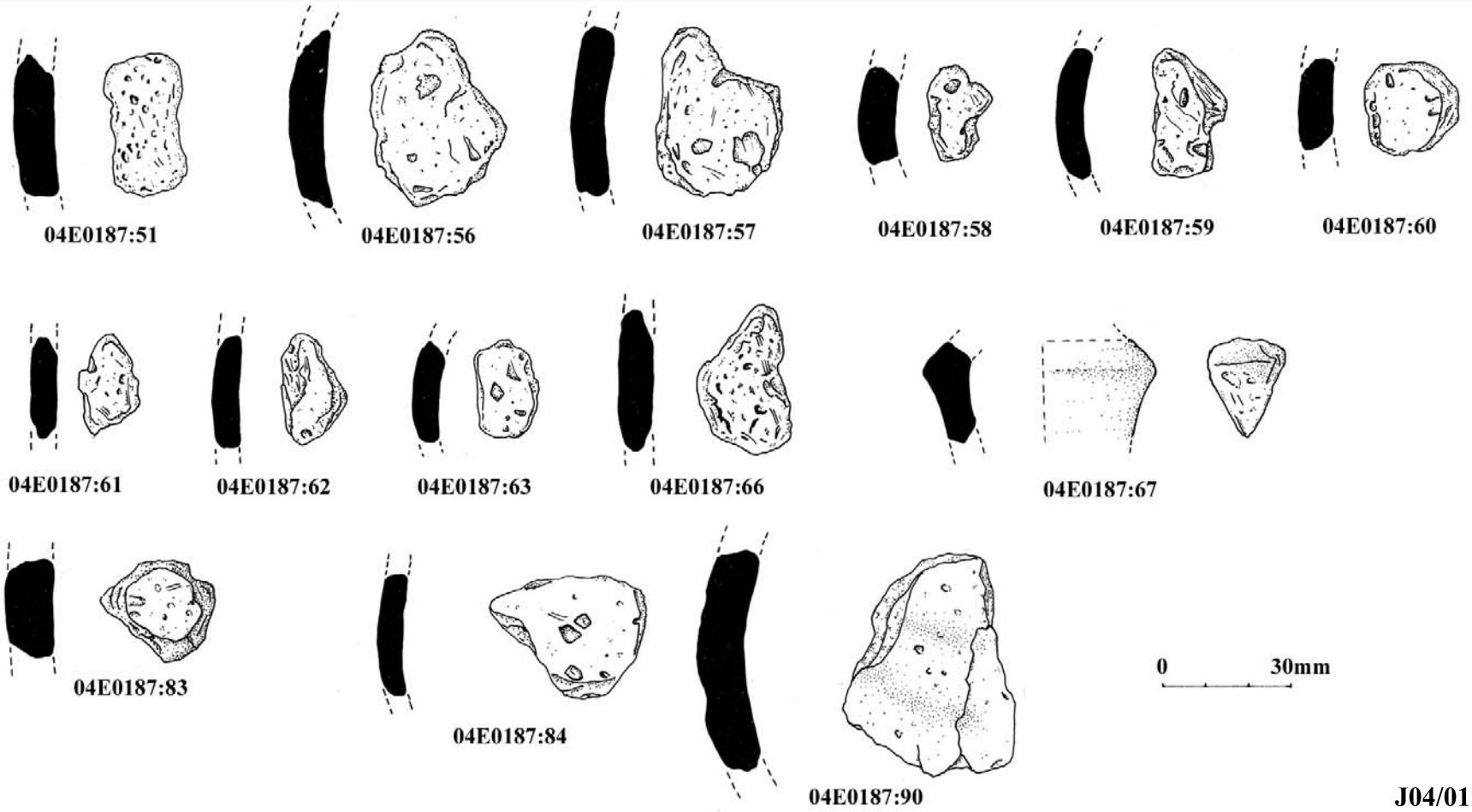
N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare

04E0187

Figure 11: Sections of features 100, 98, 102, 166 and 172

Scale 1:20

TVAS IRELAND LTD

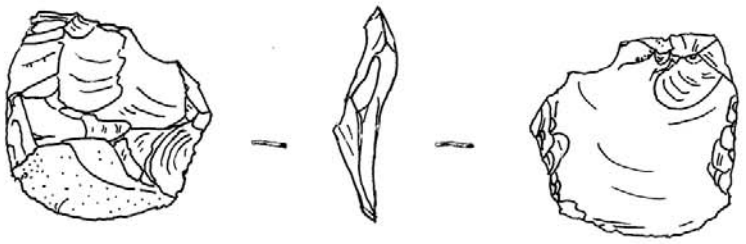


N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare, 04E0187

Figure 12: Prehistoric pottery

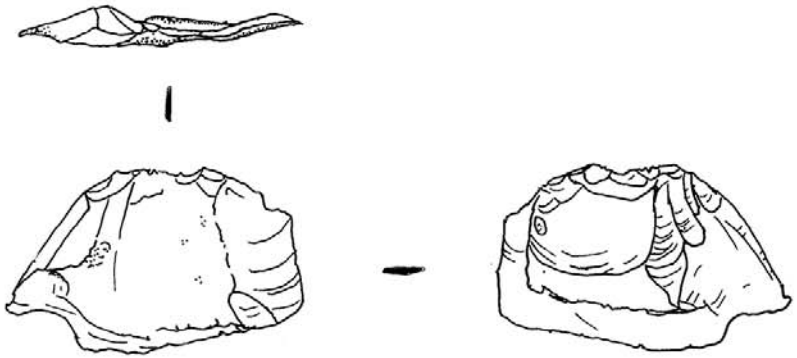
Drawn: Astrid Nathan

TVAS IRELAND LTD



04E0187:40 Flint flake, pit 85, fill 87

04E0187:17 Flint flake, pit 43, fill 42



0 50mm

J04/01m

N18 Ennis Bypass, Site AR100, Manusmore, Co. Clare, 04E0187

Figure 13: Flint flakes from pits 43 and 85

Drawn Astrid Nathan

TVAS IRELAND LTD

Plate 1: Site AR100 during testing (03E1291). Looking north

Plate 2: Pit 24, fully excavated. Looking south-west. Scales 1m and 0.2m

Plate 3: Pit 5. Looking south-east. scale 0.5m

Plate 4: Pit 172. Looking east. Scale 0.5m

Plate 5: Pit 98 showing truncation by furrows 100 and 102. Looking north-west. Scales 1m, 0.5m and 0.1m

Plate 6: Pit 121. Looking north-east. Scale 1m

Plate 7: Pit 123. Looking north. Scale 1m

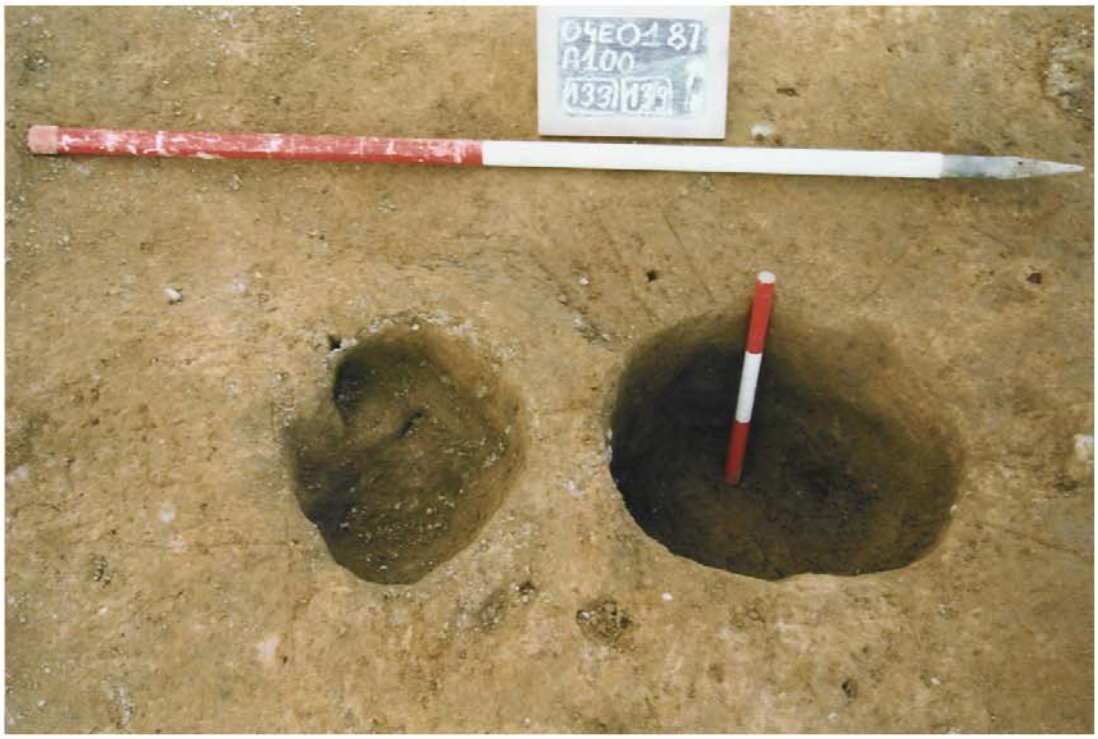


Plate 8. Pits/postholes 133 and 139. Loking north. Scales 1m and 0.3m

Plate 9: Pit 142 and oxidised clay 144 (left). Looking north-west. Scales 1m and 0.3m

Plate 10: Furrow 166 (sectioned along length) cutting Pit 172 (right). Looking north. Scales 1m and 0.2m

Plate 11: Pit 168. Looking west. Scale 0.2m

Plate 12: Pit 170. Looking north. Scale 1m

Plate 13: Selected lithics

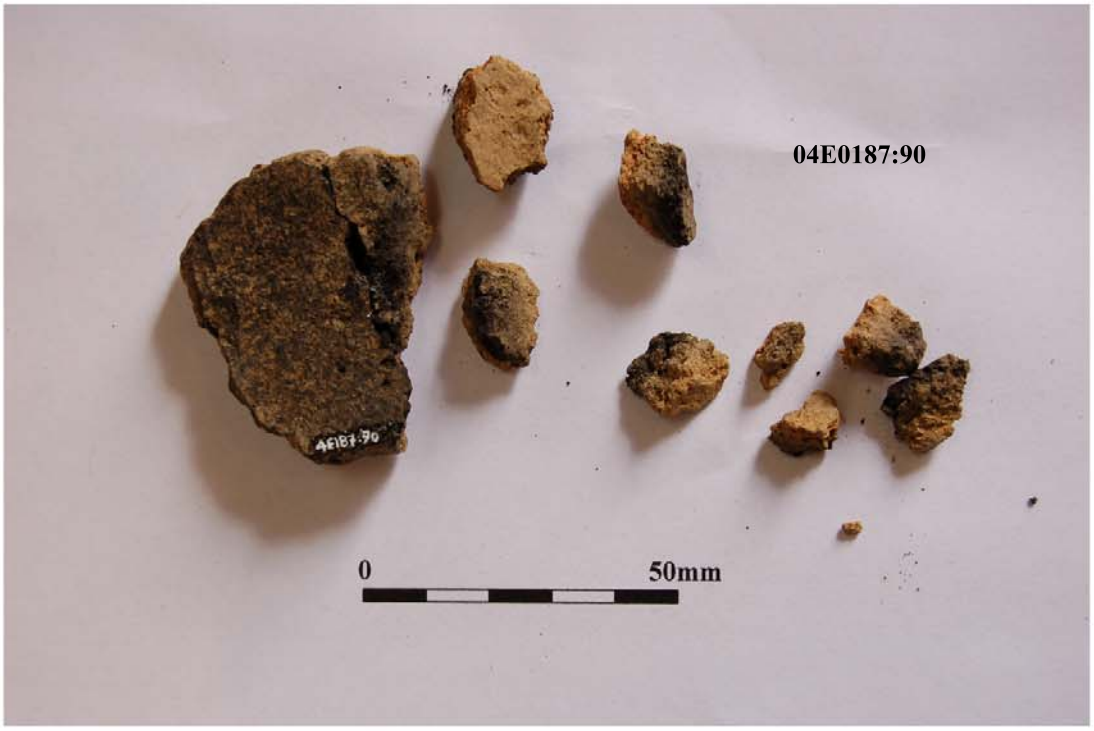


Plate 14: Representative prehistoric pottery