N18 Ennis Bypass
and N85 Western Relief Road

Site AR102, Manusmore, Co. Clare

Final Archaeological Excavation Report

for Clare County Council

Licence No: 04E0189

by Graham Hull

Job J04/01

(NGR 137380 173160)

1st August 2006

N18 Ennis Bypass and N85 Western Relief Road
Site AR102, Manusmore, Co. Clare

Final Archaeological Excavation Report

for Clare County Council

Licence No: 04E0189

by Graham Hull
TVAS Ireland Ltd

Job J04/01

1st August 2006

Summary

Site name: N18 Ennis Bypass and N85 Western Relief Road, Site AR102, 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: 137380 173160 (OSI Discovery Series, 1:50,000, Sheet 58. OS 6" Clare Sheet 42)

Naturally occurring geology: Orangish brown boulder clay with limestone pieces

TVAS Ireland Job No: J04/01

Licence No: 04E0189

Licence Holder: Graham Hull

Report author: Graham Hull

Site activity: Excavation

Site area: 14100m^2

Sample percentage: 100%

Date of fieldwork: 1st March to 2nd April 2004

Date of report: 1st August 2006

Summary of results: Cremation burial pits dating to the late Bronze Age/ early Iron Age transition and to the later Iron Age were found. A pit containing charred barley and possibly representing Early Christian food preparation/cooking was excavated.

Monuments identified: Prehistoric cremation cemeteries and Early Christian food preparation hearth.

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 AR102, Manusmore, Co. Clare
Final Archaeological Excavation Report

By Graham Hull

Report J04/0lo

Introduction

This report documents the final results of an archaeological excavation of a probably unenclosed prehistoric cremation cemetery and later features (Site AR102) on the route of the N18 Ennis Bypass and N85 Western Relief Road at Manusmore, Co. Clare (NGR 137380 173160) (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 6km south-east of Ennis town centre (the O'Connell Monument), 2.5km south-east of Clarecastle and was centred on NGR 137380 173160 (Figs 1 and 2).

The site was situated in a field that was located near the top of a small hill and was on a south facing gentle incline. The field was used as pasture prior to the excavation.

Topsoil (0.15m to 0.2m thick) was seen to overly plough soil (0.2m to 0.3m thick). These deposits were on top of naturally deposited orangish brown boulder clay. The natural geology was recorded at 13.6m above Ordnance Datum (OD) at the north of the site and at 11.5m above OD at the south

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 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 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). This archaeological site was allocated the number AR102 and is the subject of this excavation report.

A second cremation cemetery was also excavated as part of this road project. This similarly unenclosed pit cluster was recorded 900m to the south-west (AR100, 04E0187 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 04E0189.

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 1st March and 2nd April 2004 and was directed by Graham Hull, supervised by Edel Ruttle and assisted by Connor Conroy, Elisabeth Dos Santos, Aine Kelly, Fiona McAuliffe, Frank Mulcahy, Astrid Lesley Nathan, Jamie Parra Rizo and Kate Taylor.

The excavation area was rectangular, centred on the archaeological features seen during testing and examined 14100m^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, and then fully excavated.

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 9 and Plates 1 to 11)

A complete context list is given as Appendix 1.

Topsoil and ploughsoil were removed by machine. The topsoil was 0.15m to 0.2m thick and overlay plough soil (0.2m to 0.3m thick). These deposits were on top of naturally deposited orangish brown boulder clay. Frequent plough scars, mostly orientated with the slope of the land, cut the natural geology. A plough headland was noted at the north end of the field. A headland is a slight linear ridge formed by the space needed for the horse (or tractor) team to turn.

Beneath the ploughsoil and cutting the geological deposits, a series of pits and postholes were observed (Fig.3). The archaeological features were in two relatively discrete clusters: a northern group (Fig. 4) and a southern group (Fig. 5). Many of the pits were shallow, and in light of the plough scarring, it is likely that many of the features have been truncated. The landowner's father stated that the field had been ploughed in the mid 20th century.

A total of 37 pits or postholes were recorded. Five of these pits were dug for the burial of cremated human remains and a further three pits may have been for burial. A field boundary ditch of relatively modern date (Feature 88, Plate 11) and a palaeochannel (Feature 68, Plate 10) that pre-dated some of the cremation pits were also recognised (not illustrated).

The pits were roughly circular or oval in shape and were typically in the order of 0.5m to 1m across and 0.3 to 0.5m deep. The pits are described below in tabular form.

Table 1: Pit descriptions

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
1	0.45 x 0.34 x 0.20	Sub-oval Vertical sides, irregular base	2. Loose-medium compaction, light brown silty sand. Small limestone pieces. Frequent charcoal flecking	Plate 7
3	0.40 (diameter) x 0.35	Circular Steeply sloping sides to pointed base	4. Loose compaction, mid brown clayey silt. Small limestone pieces. Charcoal concentration at top of feature	Possible posthole Fig. 6 Plate 8
5	0.35 x 0.27 x 0.10	Sub-oval Gently sloping sides to flattish base	6. Loose compaction, light brown silty sand with occasional charcoal flecking	
7	0.50 x 0.33 x 0.18	Sub-oval Gently sloping sides to flattish base	8. Medium compaction, mid-light brown silty sand with small limestone pieces and occasional charcoal flecking	
9	0.50 x 0.42 x 0.30	Sub-circular Steep sides to flat base	10. Medium compaction, mid brown silty sand with occasional charcoal flecking	Fig. 6 Recorded in testing (03E1291 Hull) as Feature 2
11	1.18 x 0.70 x 0.23	Sub-oval Steep sides to irregular base. Possible post hole in base	12. Loose-medium compaction dark brown silty sand with some small limestone pieces. Dense concentration of charcoal at base of pit. Iron slag recovered at sieving	In situ burning evident on surrounding geology. Dense charcoal deposit at base of pit and slag indicate metal working. Fig. 6
13	0.59 x 0.58 x 0.29	Circular Sides steeply stepping down to flattish base	14. Medium compaction, grey to brown silty sand with moderate concentration of small limestone pieces. Moderate charcoal present with most at upper part of fill. Possible cremated bone thought to be observed in excavation at lower levels in pit. No cremated bone recovered at post-ex despite using 300micron sieve	?Cremation burial. Fig. 8 Plate 2
15	1.61 x 1.59 x 0.33	Circular Gently sloping sides to flattish base	17. Primary fill. Loose compaction, black charcoal layer 0.05m thick, lining base of pit. 16. Secondary fill. Loose-medium compaction, greyish brown silty sand with occasional charcoal flecking. Iron slag recovered at sieving	In situ burning evident on surrounding geology. Dense charcoal deposit at base of pit and slag indicate metal working. Fig. 7 Plate 6

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
18	1.48 x 1.22 x 0.40	Sub-circular Gently sloping sides. Concave base. Truncated by furrow 22 at north	19. Primary fill. Loose compaction, black charcoal layer, 0.05m thick across base of pit. 20. Secondary fill. Densely compacted mixed hue (black, white and light brown) silty sands with charcoal inclusions. Seemingly deliberately tamped down on top of burnt layer 19. 23. Tertiary fill. Loose compaction, light greyish brown silty sand with occasional flecks of charcoal.	In situ burning evident on surrounding geology. Dense charcoal deposit at base of pit may indicate metal working.
24	0.62 x 0.44 x 0.10	Oval NW side steep, SE side shallow. Base concave	26. Primary fill. Loose compaction, light brown silty sand with moderate charcoal inclusions. 0.05m thick. 25 Secondary fill. Loose compaction, black and charcoal rich with cremated bone. 0.05m thick	Cremation burial. Fig. 8 Plate 4 Recorded in testing (03E1291 Hull) as Feature 4
27	0.84 x 0.50 x 0.15	Oval Gently sloping sides to a flattish base	28. Loose compaction, light brown silty sand with occasional small limestone pieces and moderate charcoal inclusions. Evidence of *in situ* burning (oxidised geology). Charred cereal seeds recovered at sieving	Plate 3
29	0.82 x 0.38 x 0.34	Sub-oval N&S sides gentle, E&W sides steep. Flattish base	30. Loose compaction, light brown silty sand with occasional charcoal flecking	
31	0.66 x 0.38 x 0.56	Sub-oval Steeply sloping sides t a concave base	32. Loose compaction, mid brown silty sand with occasional charcoal flecking. Modern nail found in fill	Modern nail in fill
33	0.98 x 0.66 x 0.22	Sub-oval S&W sides steep, N&E sides less steep. Base flattish	34. Loose compaction, mid brown silty sand with occasional small limestone pieces and charcoal inclusions	
35	0.48 x 0.44 x 0.10	Circular Concave profile	36. Medium compaction, mid greyish brown silty sand with cremated bone, ash and charcoal inclusions	Cremation burial. Fig. 8

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
38	0.82 x 0.68 x 0.36	Sub-circular Steep sides onto a flattish base	37. Medium compaction, mid greyish brown silty sand with occasional charcoal inclusions	Recorded in testing (03E1291 Hull) as Feature 5
40	0.82 x 0.60 x 0.10	Oval Gently sloping sides to a flattish base	39. Loose compaction, greyish brown silty sand with occasional charcoal flecking	
41	1.25 x 1.17 x 0.44	Sub-circular Steep sides to irregular base. Truncated to south by furrow 43	42. Loose-medium compaction, greyish brown silty sand with occasional small limestone pieces and charcoal flecking	
45	0.44 (diameter) x 0.32	Circular Steeply sloping sides to concave base	46. Loose compaction, light brownish silty sand with occasional charcoal flecking	Possible posthole
47	0.98 x 0.88 x 0.14	Sub-circular Gently sloping sides to a flattish base	48. Loose compaction, greyish brown silty sand with small limestone pieces and charcoal flecking	
49	0.60 x 0.56 x 0.40	Sub-circular Steeply sloping sides to a concave base	50. Loose-medium compaction, mid brown silty sand with occasional small limestone pieces	
51	0.22 (diameter) x 0.17	Circular Vertical sides and a concave base	52. Loose compaction, mid brown silty sand with occasional charcoal flecking	Possible posthole
55	0.76 x 0.56 x 0.14	Sub-oval Steep sides and a concave base	56. Loose compaction, greyish brown silty sand with charcoal flecking	
57	1.46 x 1.42 0.25	Sub- oval Gently sloping sides onto a flattish base	59. Primary fill. Loose compaction, blackish brown silty sand with high charcoal concentration. Layer 0.12m thick and extended across pit base. Some oxidisation of geology indicates *in situ* burning. 58. Loose-medium greyish brown silty sand with small limestone pieces. 0.13m thick. Seemed to be deliberate backfill to tamp burning below.	Fig. 6 Plate 5

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
60	1.00 x 0.82 x 0.37	Sub-circular Steep sides sloping down to irregular concave base	63. Primary fill. Loose mid-dark greyish brown slightly sandy clayey silt with charcoal flecking. 62. Secondary fill. Medium compaction, mixed hue, mid to pale grey and orange, clayey silty sand with infrequent limestone and charcoal pieces and flecks. 61. Tertiary fill. Loose compaction, mid to dark greyish brown clayey silt with limestone and sandstone pieces. Some charcoal flecking	Plate 9 Recorded in testing (03E1291 Hull) as Feature 8
65	0.66 x 0.50 x 0.12	Sub-oval Sides gently sloping to a flattish base	64. Loose compaction, black/reddish brown/mid grey clayey silty sand. Frequent charcoal fragments and moderate to occasional small limestone pieces. Possible cremated bone thought to be observed in excavation. No cremated bone recovered at post-ex despite using 300micron sieve	?Cremation burial. Fig. 8
67	1.50 x 0.80 x 0.24	Sub-oval Sides gently slope down to a flattish base. Truncated at south by furrow	66. Loose-medium compaction mid brown sandy clay with small limestone piece inclusions and charcoal flecking	
72	0.50 (dia) x 0.45	Circular Steep to vertical sides. Flattish base with depression at west	71 Medium compaction, blackish grey with some reddish orange and yellow patches, clayey, ashy, silty sand. Redeposited natural also present. Frequent large charcoal fragments and occasional fire-cracked limestone and sandstone pieces. ?Cremated bone mostly located in small depression in base of pit. Very light ?slag recovered at sieving = ?fuel slag	?Cremation burial. Fig. 9
73	0.58 x 0.36 x 0.26	Oval Steep sides sloping down to concave base. Poorly defined due to root/furrow disturbance at S and large rock	74. Medium compaction, mid greyish brown silty sand with occasional small limestone pieces and charcoal flecks.	

Pit No.	Dimensions (m) (length x width x depth)	Plan Profile	Fill No. and description	Comments
76	0.48 (dia) x 0.30	Circular Vertical sides and a flat base.	75. Medium compaction, black and heat reddened clay and ashy silt. Charcoal chunks and pieces of cremated bone. Very light ?slag recovered at sieving = ?fuel slag	Cremation burial. Fig. 9 Recorded in testing (03E1291 Hull) as Feature 6
78	0.43 x 0.26 x 0.07	Oval Vertical sides and slightly concave base. Truncated at east by furrow 80	77. Medium compaction, light to medium greyish black clayey silty sand. Moderate inclusion of charcoal and cremated bone	Cremation burial. Fig. 9
82	0.60 x 0.35 x 0.34	Oval Sides sloping down steeply to an irregular base	81. Medium compaction, dark brown sandy clay with ashy consistency. Small limestone pieces and frequent charcoal and cremated bone	Cremation burial. Fig. 9
84	0.95 x 0.66 x 0.18	Oval Vertical sides, concave base – deeper at south	83. Medium compaction, mid to light grey sandy clayey silt with occasional charcoal flecking and frequent small limestone pieces	Recorded in testing (03E1291 Hull) as Feature 7
93	0.12 x 0.10 x ?	Sub-circular Found in testing 03E1291. Not relocated	97.Mid-dark brown sandy silt with charcoal flecking	Recorded in testing (03E1291 Hull) as Feature 3
94	0.32 x 0.25 x ?	Sub-oval Found in testing 03E1291. Not relocated	98. Mid-dark brown sandy silt with charcoal flecking	Recorded in testing (03E1291 Hull) as Feature 1
95	0.28 (dia) x ?	Circular Found in testing 03E1291. Not relocated	99. Mid-dark brown sandy silt with charcoal flecking	Recorded in testing (03E1291 Hull) as Feature 10
96	0.35 x 0.28 x ?	Sub circular Found in testing 03E1291. Not relocated	100. Mid-dark brown sandy silt with charcoal flecking	Recorded in testing (03E1291 Hull) as Feature 9

Finds

Ten finds were recovered from excavated features (Appendix 2). Cremated bone accounted for five (possibly six) of the finds. Micro slag and fuel ash slag was found in four features but this material does not necessarily indicate that metalworking took place on the site.

The finds have been cleaned, 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).

Slag by Lynne Keys

An extremely tiny quantity (52g) of material identified as slag was recovered during sieving of soil samples collected during excavations. The material was examined by eye and categorised on the basis of morphology. Details are given in Table 2 below.

None of the slag could be identified with either iron smelting or smithing, and some may have been produced by other high temperature activities. Fuel ash slag is a very lightweight, highly porous, light grey-brown residue produced by a high temperature reaction between alkaline fuel ash and siliceous material such as a clay lining or surface. It can be produced by any high temperature activity where these two constituents are present including domestic hearths, accidental fires, and even cremations.

Table 2: Catalogue of slag

Find No.	Cut	Deposit	Sample	Identification	Weight (g)	Comment
04E0189:1	11	12	2	micro-slags	20	runs
04E0189:2	15	16 & 17	10	undiagnostic	2	
04E0189:6	72	71	19	fuel ash slag	20	
04E0189:8	76	75	20	undiagnostic	10	
				total weight =	**52**	

It cannot be said with certainty that the slag was produced by metalworking. The quantities in each deposit are very small and the fuel ash slag and runs could almost certainly be produced by the fuel and any silica (such as clay) present. If objects of metal were also burnt this might contribute to the production of a slag. Then again it could be, as with site AR100 (Keys 2006), that the charcoal was brought from an area where metalworking was taking place and that tiny amounts of slag were carried with it.

Human and animal bone by Sîan Anthony

Methodology

Bone from six contexts was examined. A variety of deposit types was 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 less than 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

Five contexts produced human cremated bone, varying in weight between less than 1g and 66g (Table 3). The bone was generally in good condition with no exfoliation and no eroded chalky appearance. Most were very fragmented, however, with the majority being unidentifiable fragments under 2mm in length. The small fragment size severely hinders interpretation of the site. No demographic information was available from observations.

Pit 24 (deposits 25 and 26)
This feature produced the largest amount of cremated bone (66g). All was highly oxidised and the maximum fragment size was just 21mm. Identified elements were skull pieces including part of the occiput and a fragment of the petrous bone and occasional limb bones.

Pit 35 (deposit 36)
Only 31 fragments were identified weighing 11g, maximum fragment size was 25mm. The only identifiable limb bone pieces were ulna shafts.

Pit 76 (deposit 75)
A larger number of identified elements were observed in this deposit including a phalange, metacarpal shafts, scapula, skull pieces and limb bones (mostly upper limb pieces). Despite this only approximately 100 fragments were recovered weighing 38g. The rest of the pieces were extremely fragmented but with differential amounts of burning indicating different temperatures burnt on different parts of the body mostly achieved on unidentified trabecular bone fragments.

Pit 78 (deposit 77)
Only 13 small fragments weighing less than 1g were recovered, all were unidentifiable and most measured under 2mm, the maximum fragment size remained at 11mm. All fragments were highly oxidised and probably represent redeposited pyre debris.

Pit 82 (deposit 81)
Approximately 40 pieces of bone weighing 26g were recovered from this deposit. All were oxidised and highly fragmented with one humerus pieces identified to element. Maximum fragment size reached only 28mm while the majority of fragments were under 2mm in length.

One deposit produced only non-human animal bone.

Pit 72 (deposit 71)
This deposit was wholly comprised of faunal remains, approximately 60% of which were burnt, ranging from black charring to complete white oxidisation. Only 56 pieces of bone weighing 23g were collected but they include juvenile pig teeth, vertebrae from a small ungulate, ribs and skull pieces. It is possible that some of the more fragmented burnt bones include human remains.

Discussion

This assemblage is similar to cremated deposits located at nearby site AR100 (Anthony 2006). Most features produced only small amounts of bone and the majority of the bones are highly fragmented. Almost all fragments are completely oxidised indicating high temperature burning on the pyre. The exception was the material from pit 76, which showed evidence of small amounts of differential temperature on small fragments indicating a lower temperature.

Table 3: Bone Catalogue

Find Number	Cut	Deposit	Sample No.	Species	Pres.	Colour	Total	Weight (g)	Maximum fragment size (mm)	Comments
04E0189:3	24	25&26	4	Human	G	White	205	66	21	Skull, limb bones, fragments
04E0189:4	35	36	7	Human	G	White	31	11	25	Ulna and limb bones
04E0189:5	72	71	19	Mixed animal	E	Differ	56	8 + 15 crem		1 unburnt fragment, 1pig tooth, rest fragments
04E0189:7	76	75	20	Human	G	Differ	99	38		Human, phalange, metacarpal shafts, scapula, skull, limb bones and fragments
04E0189:9	78	77	21	Human	E	White	13	<1	11	Fragments
04E0189:10	82	81	22	Human	G	White	41	26	28	Humerus and fragments

Samples

Bulk soil samples were taken from 22 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.

The samples have been 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. A catalogue of samples and results is given as Appendix 3.

Charred plant macrofossils and other remains by Val Fryer

Introduction

Samples for the extraction of the plant macrofossil assemblages were taken from across the excavated area, and 17 were submitted for assessment. One of these samples (9) was selected for quantification and the results of this analysis are incorporated into the assessment.

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 on Tables 3-6. Nomenclature within the tables follows Stace (1997). All plant remains were charred. Within the table, the plant macrofossils have been categorised as cereals, herbs and other plant macrofossils, and the presence of other material types has also been noted. Counts of cereal grains include only whole grains or embryo ends, and material was identified by comparison with modern reference specimens. 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

The results are here described by material; although Tables 4-6 are presented by feature type.

Plant macrofossils

Cereal grains, weed seeds and tree/shrub macrofossils were recorded, generally at very low densities, from seven samples. Preservation was moderately good, although some grains were puffed and distorted, possibly as a result of high temperatures during combustion.

Oat (*Avena* sp.) and barley (*Hordeum* sp.) grains formed the principal components of the assemblage within sample 9, with barley being particularly abundant (100 grains per litre of soil sampled). A small number of asymmetrical lateral grains of six-row barley (*H. vulgare*) were recorded, although most grains had become too puffed and distorted during charring for accurate identification. Chaff was rare, but the fact that wild oat (*A. fatua*) floret bases, with their diagnostic 'sucker-mouth' basal abscission scars, were recorded may indicate that the oats were present as contaminants of a main barley crop. Similarly, the few wheat (*Triticum* sp.) grains recovered were possibly present as volunteer weeds from a previous cropping regime. Grain was also recorded from four of the cremation pits.

Weed seeds only occurred at a very low density in sample 9, but all were of common segetal species, namely black bindweed (*Fallopia convolvulus*) and wild radish (*Raphanus raphanistrum*). It is probably of note that all were of similar size to the grains. Such seeds would not have been easily removed from batches of cereal, and would either have required hand picking, or would have been tolerated as contaminants of the grain.Tree/shrub macrofossils including a sloe (*Prunus spinosa*) fruit stone and hazel (*Corylus avellana*) nutshell fragments were present in six samples, and those from sample 22 were removed for C14 analysis along with a small number of cereal grains.

Charcoal fragments formed the principal component of most assemblages, with pieces larger than 5mm being common in samples 15 and 19. Other plant macrofossils were exceedingly rare, although small pieces of charred root/stem were noted in samples 2, 7 and 22.

Other remains

Small fragments of burnt bone were recorded from four of the possible cremation pits along with pieces of vitrified material and black 'cokey' and tarry concretions which are almost certainly derived from the combustion of organic remains at very high temperatures.

Table 4: Charred remains from pits

Sample No.	**2**	**10**	**11**	**12**	**14**	**15**	**17**
Cut No.	**11**	**15**	**55**	**57**	**18**	**18**	**33**
Deposit No.	**12**	**16/17**	**56**	**58/59**	**19**	**20**	**34**
Tree/shrub macrofossils							
Prunus spinosa L.				x			
Other plant macrofossils							
Charcoal <2mm	xx	xxx	x	xx	xx	x	xxx
Charcoal >2mm	xxx	xxx	x	xxx	xxx	xx	xxx
Charcoal >5mm						xx	
Charred root/stem	x						
Other remains							
Burnt stone					x		
Sample volume (litres)	**10**	**45**	**25**	**10**	**10**	**0.5**	**8**
Volume of flot (litres)	**0.2**	**2**	**<0.1**	**0.1**	**0.7**	**0.1**	**<0.1**
% flot sorted	**50%**	**<10%**	**100%**	**100%**	**12.50%**	**100%**	**100%**

Table 5: Charred remains from cremation pits

Sample No.	**3**	**4**	**7**	**18**	**19**	**20**	**21**	**22**
Cut No.	**13**	**24**	**35**	**65**	**72**	**76**	**78**	**82**
Deposit No.	**14**	**25/26**	**36**	**64**	**71**	**75**	**77**	**81**
Cereals								
Avena sp. (grains)							xcf	
Hordeum sp. (grains)	xcf			x				xcf
Cereal indet. (grains)	x							x
Tree/shrub macrofossils								
Corylus avellana L.	x			x	x			x
Prunus sp. (fruit stone frag.)							x	
Other plant macrofossils								
Charcoal <2mm	xx	xxx		xxx	xx		xx	xx
Charcoal >2mm	xxx	xxx	xx	xxx	xxx	xxx	xx	xxx
Charcoal >5mm					xxx			
Charred root/stem			x					x
Indet.seed							x	
Other materials								
Black porous 'cokey' material				xx				
Black tarry material				x				
Bone		xb			xb	xb		xb
Burnt stone		x						x
Vitrified material				x	x	x	x	x
Sample volume (litres)	**15**	**25**	**12**	**25**	**25**	**40**	**15**	**35**
Volume of flot (litres)	**0.1**	**0.2**	**<0.1**	**0.1**	**0.4**	**0.1**	**<0.1**	**0.2**
% flot sorted	**100%**	**50%**	**100%**	**100%**	**25%**	**100%**	**100%**	**50%**

b = burnt, cf = chaff

Table 6: Charred remains from Pit 27

Sample No.		**9**
Cut No.		**27**
Deposit No.		**28**
Cereals	**Common name**	
Avena sp. (grains)	Oat	366
(floret bases)		2
A. fatua L. (floret bases)	Wild oat	2
Hordeum sp. (grains)	Barley	1000
H. vulgare L. (asymmetrical lateral grains)	Six-row barley	10
Triticum sp. (grains)	Wheat	2cf
Cereal indet. (grains)		82
Herbs		
Fallopia convolvulus (L.)A.Love	Black bindweed	2
Raphanus raphanistrum (siliqua frag.)	Wild radish	6
Other plant macrofossils		
Charcoal <2mm		xx
Charcoal >2mm		xx
Other materials		
Black porous 'cokey' material		x
Sample volume (litres)		**10**
Volume of flot (litres)		**0.1**
% flot sorted		**100%**

Discussion

For the purposes of this discussion, the material will be dealt with by context type.

Pit fills (Table 4)

With the exception of a single sloe fruit stone, a small piece of burnt stone and a fragment of charred stem, the seven pit assemblages are entirely composed of charcoal fragments. The origins of this material are not known, but the restricted nature of the assemblages may indicate that they are derived from fuel residues, with wood/charcoal being the principal fuels used.

Cremation pit fills (Table 5)

A total of eight samples were taken from the fills of possible cremation pits, and of these only four appear to contain fragments of burnt bone. Although charcoal forms the principal component of the assemblages, grains, nutshell and fruit stone fragments are also recorded, and it is considered most likely that these are either derived from offerings to the deceased or from hedge brush and/or cereal processing waste which may have been utilized as kindling for the pyres.

Possible food preparation hearth (Table 6)

A single sample was taken from the fill of pit 27, a feature associated with an area of in situ burning, which has been tentatively identified by the excavator as a corn drying pit/oven. This sample was fully quantified. The occurrence of a deposit of prime grain within an area of *in situ* burning could be indicative of catastrophic destruction during cereal drying/storage, accidental spillage during culinary preparation or the burning of spoiled grain. Although showing signs of obvious burning, pit 27 contained no traces of a structure which may have functioned as an oven and it is, therefore, difficult to see how the grains may have been burned during drying. Similarly, although some features on site were severely truncated, pit 27 appears to have been too shallow for a storage pit, and the absence of

evidence for an above ground structure probably makes it unlikely that the grain was destroyed in a granary fire. As none of the grains showed obvious signs of germination, it is again unlikely that the assemblage represents cereals spoiled as a result of inappropriate storage conditions. It is, therefore, most likely that the grains were spilled during culinary preparation, with the *in situ* burning being indicative of a shallow hearth. Barley was the only cereal which was consistently used as a whole grain, either within soups and stews or toasted, and this assemblage would, therefore, be consistent with dietary refuse. Barley was almost certainly of great importance to the local population, as it is a salt tolerant plant which would have adapted easily to cultivation within a coastal area.

Conclusions

In summary, the abundance of charcoal within the pit fills may indicate that fuel residues are a common component of the assemblages. The occurrence of grains and nutshell fragments within the cremation pits might suggest that either food items were being burnt with the deceased, or that hedge scrub and/or cereal processing waste was being used as kindling. Parallels for this latter practice are known from a number of contemporary sites in lowland Britain. The assemblage from pit 27 may well be derived from material spilled during the preparation of food within a small hearth. Barley was obviously of great importance to the local economy during the seventh to tenth centuries, and was well suited to local soil conditions.

Analysis of Charcoal by Simon Gannon

Introduction

Eighteen samples of charcoal fragments were retrieved from seventeen contexts from this site, a cremation cemetery and industrial area. 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, none being identified in these samples.

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 7. Classification follows that of *Flora Europae* (Tutin *et al* 1964-80). 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:

Broadleaf taxa
Betulaceae. *Alnus* sp., alder
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.

Table 7: Number of identified charcoal fragments per sample

Sample	Cut	Deposit	Context type	*Alnus*	*Betula*	*Corylus*	*Corylus / Alnus*	*Fraxinus*	Pomoideae	*Prunus*	*Quercus*	Salicaceae	*Taxus*	*Ulmus*
2	11	12	Pit fill	-	-	9	-	-	-	-	111	-	-	-
3	13	14	?Cremation	-	-	1 (sh)	15	1	-	-	14	-	-	-
4	24	25 & 26	Cremation	-	-	-	-	-	-	-	52	-	-	-
6/17	33	34	Pit fill	-	-	13	-	-	-	-	1	-	-	4
7	35	36	Cremation	-	-	-	-	-	-	-	2	-	-	-
9	27	28	Pit fill	-	-	21	-	-	1	1	-	-	-	-
10	15	16 & 17	Metal working	-	-	32	-	-	5	-	67	-	-	-
11	55	56	Metal working	-	-	1	-	-	-	4	-	-	-	2
12	57	58 & 59	Pit fills	-	-	-	-	-	-	-	15	-	-	-
14	18	19	Pit fill	-	-	24	-	-	2	-	87	-	-	-
15	18	20	?Metal working	-	-	25	-	-	-	-	45	-	-	-
18	65	64	?Cremation	-	-	34 (3sh)	-	-	-	-	2	6	-	5
19	72	71	?Cremation	-	-	-	-	-	-	-	130	-	-	-
20	76	75	Cremation	-	-	1	-	1	2	-	109	-	-	-
21	78	77	Cremation	2	-	4	-	-	2	1	2	-	-	-
22	82	81	Cremation	-	-	23 (2sh)	-	12	22	3	39	5	-	-
23	67	66	Pit fill	-	-	5	-	-	-	-	7	-	-	1

(sh: nut shell)

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 (Schweingruber 1990 and Hather 2000). 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, Peterken 1996 and Scannell and Synott 1987). 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 *et al* 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.

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 etcetera. 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 AR102, Manusmore, comprises alder (*Alnus*), hazel (*Corylus*), ash (*Fraxinus*), hawthorn/ apple/ *Sorbus*-group (Pomoideae), cherry/ blackthorn (*Prunus*), oak (*Quercus*), willow/ poplar (Salicaceae) 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.

Generally, there are various, largely unquantifiable, factors that effect the representation of species in charcoal samples including bias in contemporary collection, inclusive of social and economic factors, and various factors of taphonomy and conservation (Théry-Parisot 2002). On account of these considerations the identified taxa are not considered to be proportionately representative of the availability of wood resources in the environment in a definitive sense and are possibly reflective of particular choice of fire making fuel from those resources.

A local environment with a relatively wide range of trees and shrubs is indicated from the charcoal of this site. As is seen in Table 7 oak (*Quercus*), and hazel (*Corylus*) are by far the most numerous of the identified charcoal fragments, these taxa are also generally common at the other Ennis Bypass sites, and it is possible that these particular taxa were preferred fuel woods obtained from a local environment containing a broader choice of species. With ash (*Fraxinus*) present in the environment it is perhaps worth noting that oak (*Quercus*) is considerably more represented in the samples. Oak (*Quercus*) is probably the first choice structural timber for most circumstances for reasons outlined above, with an local abundance it may have been used instead of ash (*Fraxinus*) thereby providing more by-product fire fuel.

Table 7: Number of identified charcoal fragments per sample

Sample	Cut	Deposit	Context type	*Alnus*	*Betula*	*Corylus*	*Corylus / Alnus*	*Fraxinus*	Pomoideae	*Prunus*	*Quercus*	Salicaceae	*Taxus*	*Ulmus*
2	11	12	Pit fill	-	-	9	-	-	-	-	111	-	-	-
3	13	14	?Cremation	-	-	1 (sh)	15	1	-	-	14	-	-	-
4	24	25 & 26	Cremation	-	-	-	-	-	-	-	52	-	-	-
6/17	33	34	Pit fill	-	-	13	-	-	-	-	1	-	-	4
7	35	36	Cremation	-	-	-	-	-	-	-	2	-	-	-
9	27	28	Pit fill	-	-	21	-	-	1	1	-	-	-	-
10	15	16 & 17	Metal working	-	-	32	-	-	5	-	67	-	-	-
11	55	56	Metal working	-	-	1	-	-	-	4	-	-	-	2
12	57	58 & 59	Pit fills	-	-	-	-	-	-	-	15	-	-	-
14	18	19	Pit fill	-	-	24	-	-	2	-	87	-	-	-
15	18	20	?Metal working	-	-	25	-	-	-	-	45	-	-	-
18	65	64	?Cremation	-	-	34 (3sh)	-	-	-	-	2	6	-	5
19	72	71	?Cremation	-	-	-	-	-	-	-	130	-	-	-
20	76	75	Cremation	-	-	1	-	1	2	-	109	-	-	-
21	78	77	Cremation	2	-	4	-	-	2	1	2	-	-	-
22	82	81	Cremation	-	-	23 (2sh)	-	12	22	3	39	5	-	-
23	67	66	Pit fill	-	-	5	-	-	-	-	7	-	-	1

(sh: nut shell)

Conclusion

A varied woodland environment local to the site of AR102 is indicated by the range of taxa present in the samples and the identified taxa are consistent with the picture of wood use from most of the other Ennis Bypass sites. Most archaeological charcoal has been created as a consequence of the deliberate use of fire, and for this site the charcoal remains would not appear to have another likely cause. The commonly preferred fuel species oak (*Quercus*) and hazel (*Corylus*) are particularly represented.

Radiocarbon dates

Four radiocarbon determinations were made by Beta Analytic Inc, Miami, Florida, from charcoal from the fills of pits (Table 8).

Table 8: Radiocarbon determinations

Sample material	Cut	Deposit	Sample	Lab code	Radiometric age	Calendrical calibrations
Charcoal Corylus	82	81	22	Beta-207734	2350±40 BP	2 sigma (95%) Cal BC 500 to 460 and Cal BC 430 to 380 1 sigma (68%) Cal BC 410 to 390
Charcoal Corylus	11	12	2	Beta-211585	2190±40 BP	2 sigma (95%) Cal BC 380 to 160 1 sigma (68%) Cal BC 360 to 280 and Cal BC 240 to 190
Charred barley seeds	27	28	9	Beta-211586	1220±40 BP	2 sigma (95%) Cal AD 690 to 900 1 sigma (68%) Cal AD 770 to 880
Charcoal Pomoideae	76	75	20	Beta-211587	2460±40 BP	2 sigma (95%) Cal BC 780 to 410 1 sigma (68%) Cal BC 760 to 620 and Cal BC 590 to 420

The sample material was selected from short-lived tree species and from seeds 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 slag or cremated bone as well as attempting to represent the spatial distribution of the pit clusters.

The radiocarbon determinations indicate that human activity was taking place on the site in both the Iron Age and in the Early Christian period.

Discussion

The excavation of Site AR102, Manusmore, Co. Clare has produced evidence of cremation burial, in pits, dating to the late Bronze Age/early Iron Age transition. A hearth, dating to the Early Christian period, with indications of food preparation was also found. Other features on the site, typically small pits, are likely to be related to funerary activity in the prehistoric period.

Prehistoric cremation burials

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 at least five (and as many as eight) pits, into which cremated bone was deposited. The cremation burials seemingly form an unenclosed cremation cemetery, although the truncation caused by modern ploughing may have removed potential ditches/gullies. The bodies of

those people buried at Manusmore in the prehistoric period, were probably cremated near the pits into which the remains were placed. This is evidenced by a low density vesicular and glassy fuel ash slag that was found in considerable quantity in two of the pits associated with cremation burial (pits 72 and 76). This material was probably formed at the same time as human bodies were burnt. Fuel ash slag can occur at relatively low temperatures when silicates (such as clay) are mixed with fluxing compounds (alkalis such as burnt timber) (Jones 2001, 21-2). The analysis of the bone supports the notion that after burning on a pyre, only some of the cremated remains (memorial burial) were gathered for deposition in the pits as, despite the truncation of many of the features, the low weight of bone present in the pits is likely to represent redeposited pyre debris.

No artefacts were found with the burials, but this may only mean that these have not survived. However, grains, nutshell and fruit stone fragments were found, and it is possible that these may have been derived from offerings to the deceased. Alternatively, these edibles may have been incorporated in the burial pits as hedge brush and/or cereal processing waste that was utilized as kindling for the pyres.

The pyres themselves may well have been fuelled, in the main, by oak - a dense wood that produces high combustion temperatures. It is interesting to note however, that the bones in pit 76, even though oak was the predominant species of charcoal, showed evidence of lower temperature action.

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 prehistoric 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. 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 radiocarbon results from the short-lived tree species from pits 82 and 76 that contained positively identified human bone are important as there are extremely few securely-dated parallels (from radiocarbon or artefacts) in the late Bronze Age/early Iron Age transition between the years 800 BC and 400 BC (Tiernan McGarry UCD forthcoming and *pers. comm.*). Another small group of cremation burials seemingly dating to this transition period were excavated as part of this road project at Killow, 2km to the north-west (AR104, Taylor 2006)

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, though of a later date, be of those individuals lower down in the prestige hierarchy.

The archaeological site AR100, excavated as part of this road scheme, 900m to the south-west (Hull 2006) includes late Neolithic/early Bronze Age and also Iron Age cremation burials in pits and the two sites (AR100 and AR102) may have been in use simultaneously in this later period.

The topographic location of the archaeological site may be significant. The burials were placed on the south-facing slope of relatively high ground in a generally level landscape overlooking the Ardsollus River. The modern river course is 1km 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 within 2km the south on the opposite side of the Ardsollus River in Latoon South and Ballyconneely townlands (Hull 2001 and Hull and Tarbett-Buckley 2001).

Early Christian activity

Feature 27 is very likely to have been a hearth used for the preparation of food in the time range between the 7th and 9th centuries AD. The main component of the, presumably spoiled, meal was barley and it is also possible that apple and cherry may have been part of the cooking event. It is likely that there would have been a habitation relatively close to the cooking site. The settlement type commonly associated with the second half of the first millennium AD is the semi-defended farmstead - or ringfort - and there are a number of these dwelling sites within a kilometre of the pit. A pit that showed similar accidental charring of oats and barley during food preparation and dated to the 7th century AD was excavated at Knockbrack, Co. Kerry (Hull and Taylor forthcoming).

Archaeological potential off the road CPO

The cremation burials and other features excavated within the road CPO as Site AR102 formed relatively discrete clusters. There is, however, reasonable potential for further similar archaeological deposits to have survived in the same field but off the road CPO.

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

Anthony, S, 2006, 'Human and animal bone' in G Hull, 04E0187, N18 Ennis Bypass and N85 Western Relief , Site AR100, Manusmore, Co. Clare, unpublished Final Archaeological report, TVAS Ireland report J04/01m

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

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

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, 200, Quaternary Geology of County Clare, unpublished 1:50,000 map, Geological Survey of Ireland, 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, 04E0189, N18 Ennis Bypass, Site AR 102, Manusmore, Co. Clare, unpublished Preliminary Archaeological report, TVAS Ireland report J04/01c

Hull, G, 2006, 04E0187, N18 Ennis Bypass and N85 Western Relief , Site AR100, Manusmore, Co. Clare, unpublished Final Archaeological report, TVAS Ireland report J04/01m

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

Hull, G and Taylor, K, forthcoming, Archaeological sites on the route of the N21 Castleisland to Abbeyfeale Road Improvement Scheme, Co. Kerry (Kerry Archaeological and Historical Society Journal)

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

Jones, D, 2001, *Archaeometallurgy*, English Heritage

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

Keys, L, 2006, 'Slag' in G Hull, 04E0187, N18 Ennis Bypass and N85 Western Relief , Site AR100, Manusmore, Co. Clare, unpublished Final Archaeological report, TVAS Ireland report J04/01m

McGarry, T, forthcoming, Irish Late Prehistoric Burial Practices: continuity, developments and influences, *Trowel* **XI**, UCD, Dublin

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*.

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

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'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

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

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, 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

Taylor, K, 2006, Site AR104, 04E0191, Killow, Co. Clare, N18 Ennis Bypass and N85 Western Relief Road, unpublished Final Archaeological report, TVAS Ireland report 04/01q

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

Appendix 1: Catalogue of features and deposits

Context No.	Description	Sample No.	Finds
1	Pit/posthole	-	-
2	Fill of 1	-	-
3	Pit/posthole	-	-
4	Fill of 3	-	-
5	Pit/posthole	-	-
6	Fill of 5	-	-
7	Pit	-	-
8	Fill of 7	-	-
9	Pit (same as testing 03E1291 cut 2)	-	-
10	Fill of 9	1	-
11	Pit	-	-
12	Fill of 11	2	Slag
13	Pit (?cremation)	-	-
14	Fill of 13	3	-
15	Pit	-	-
16	Secondary fill of 15	10	Slag
17	Primary fill of 15	10	Slag
18	Pit	-	-
19	Primary fill of 18	14	-
20	Secondary fill of 18	15	-
21	Fill of 22	-	-
22	Furrow	-	-
23	Tertiary fill of 18	-	-
24	Pit (cremation) (same as testing 03E1291 cut 4)	-	-
25	Secondary fill of 24	4	Cremated bone
26	Primary fill of 24	4	Cremated bone
27	Pit	-	-
28	Fill of 27	9	-
29	Pit	-	-
30	Fill of 29	-	-
31	Pit	-	-
32	Fill of 31	5	Nail
33	Pit	-	-
34	Fill of 33	6, 17	-
35	Pit (cremation)	-	-
36	Fill of 35	7	Cremated bone
37	Fill of 38	-	-
38	Pit (same as testing 03E1291 cut 5)	-	-
39	Fill of 40	16	-
40	Pit	-	-
41	Pit/tree bole	-	-
42	Fill of 41	-	-
43	Furrow	-	-
44	Fill of 43	-	-
45	Pit/posthole	-	-
46	Fill of 45	-	-
47	Pit/tree bole	-	-
48	Fill of 47	13	-
49	Pit/posthole	-	-

Appendix 1: Catalogue of features and deposits continued

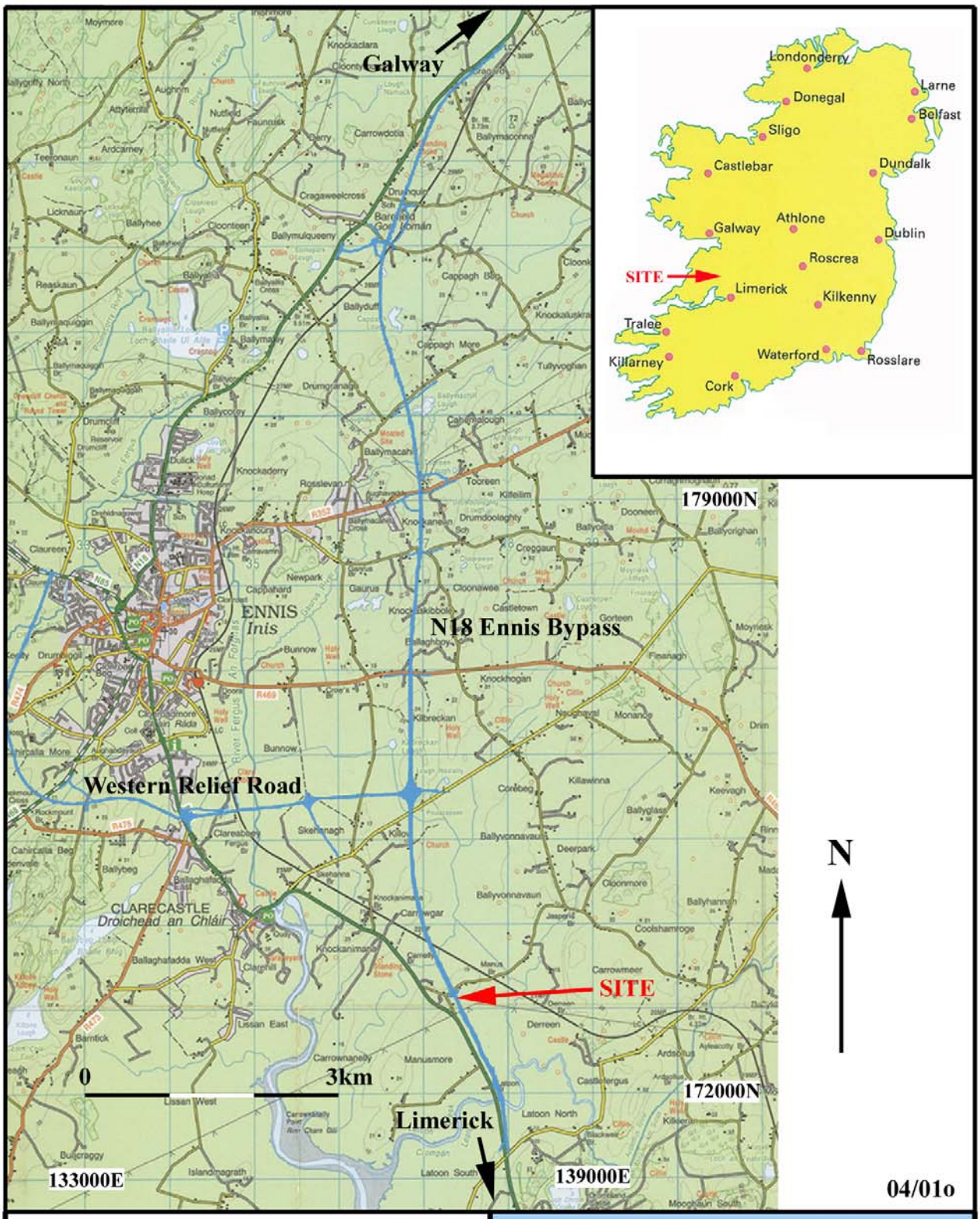
Context No.	Description	Sample No.	Finds
50	Fill of 49	-	-
51	Pit/posthole	-	-
52	Fill of 51	-	-
53	Root disturbance	-	-
54	Fill of 53	8	-
55	Pit	-	-
56	Fill of 55	11	-
57	Pit	-	-
58	Secondary fill of 57	12	-
59	Primary fill of 57	12	-
60	Pit (same as testing 03E1291 cut 8)	-	-
61	Tertiary fill of 60	-	-
62	Secondary fill of 60	-	-
63	Primary fill of 60	-	-
64	Fill of 65	18	-
65	Pit (?cremation)	-	-
66	Fill of 67	-	-
67	Pit	-	-
68	Palaeochannel	-	-
69	Secondary fill of 68	-	-
70	Primary fill of 68	-	
71	Fill of 72	19	?Cremated bone; slag
72	Pit (?cremation)	-	-
73	Pit	-	-
74	Fill of 73	-	-
75	Fill of 76	20	Cremated bone; Slag
76	Pit (cremation) (same as testing 03E1291 cut 6)	-	-
77	Fill of 78	21	Cremated bone
78	Pit (cremation)	-	-
79	Fill of 80	-	-
80	Furrow	-	-
81	Fill of 82	22	Cremated bone
82	Pit (cremation)	-	-
83	Fill of 84	-	-
84	Pit (same as testing 03E1291 cut 7)	-	-
85	Not used	-	-
86	Field boundary ditch (modern)	-	-
87	Fill of 85	-	-
88	Pit/ditch terminus (same as 86)	-	-
89	Primary fill of 88	-	-
90	Secondary fill of 88	-	-
91	Same as 89	-	-
92	Not used	-	-
93	Stakehole (same as testing 03E1291 cut 3)	-	-
94	Posthole (same as testing 03E1291 cut 1)	-	-
95	Posthole (same as testing 03E1291 cut 10)	-	-
96	Posthole (same as testing 03E1291 cut 9)	-	-

Appendix 2: Catalogue of finds

Find No	Cut	Deposit	Group No	Sample No	Category	Description	No pieces	Weight
1	11	12		2	Slag	Fragments & microslag	ca 50	20
2	15	16&17		10	Slag	Fragments & microslag	20	2
3	24	25&26		4	Bone	Cremated bone fragments (human)	205	66
4	35	36		7	Bone	Cremated bone fragments (human)	31	11
5	72	71		19	Bone	Bone, cremated animal bone fragments (15g)	56	23
6	72	71		19	Slag	Fragments - not iron slag	ca 80	20
7	76	75		20	Bone	Cremated bone fragments (human)	99	38
8	76	75		20	Slag	Fragments - not iron slag	ca 160	174
9	78	77		21	Bone	Cremated bone fragments (human)	13	< 1
10	82	81		22	Bone	Cremated bone fragments (human)	41	26

Appendix 3: Catalogue of samples

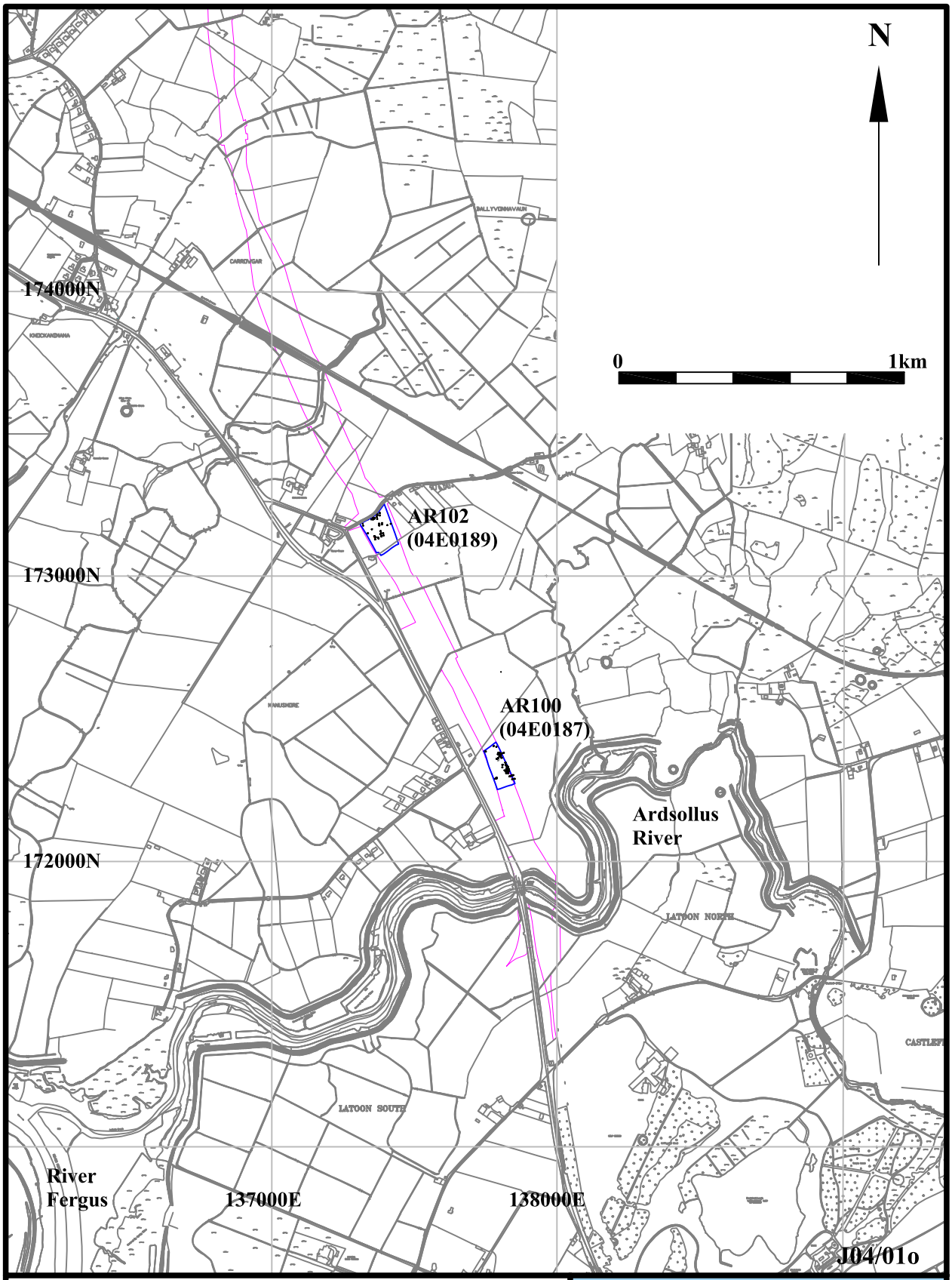
Sample No	Cut	Deposit	Volume sieved (L)	Volume floated (L)	Finds?
1	9	10	10	10	None
2	11	12	10	10	Slag
3	13	14	15	15	None
4	24	25 + 26	25	25	Cremated bone
5	31	32	-	-	Not sieved
6	33	34	6	6	None
7	35	36	12	12	Cremated bone
8	53	54	-	-	Not sieved
9	27	28	10	10	None
10	15	16 + 17	45	45	Slag
11	55	56	25	25	None
12	57	58 + 59	10	10	None
13	47	48	-	-	Not sieved
14	18	19	10	10	None
15	18	20	0.5	0.5	None
16	40	39	-	-	Not sieved
17	33	34	8	8	None
18	65	64	25	25	None
19	72	71	25	25	Bone; slag
20	76	75	40	40	Cremated bone; slag
21	78	77	15	15	Cremated bone
22	82	81	35	35	Cremated bone
23	67	66	-	-	None



N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare
04E0189

Figure 1: Site location

TVAS IRELAND LTD



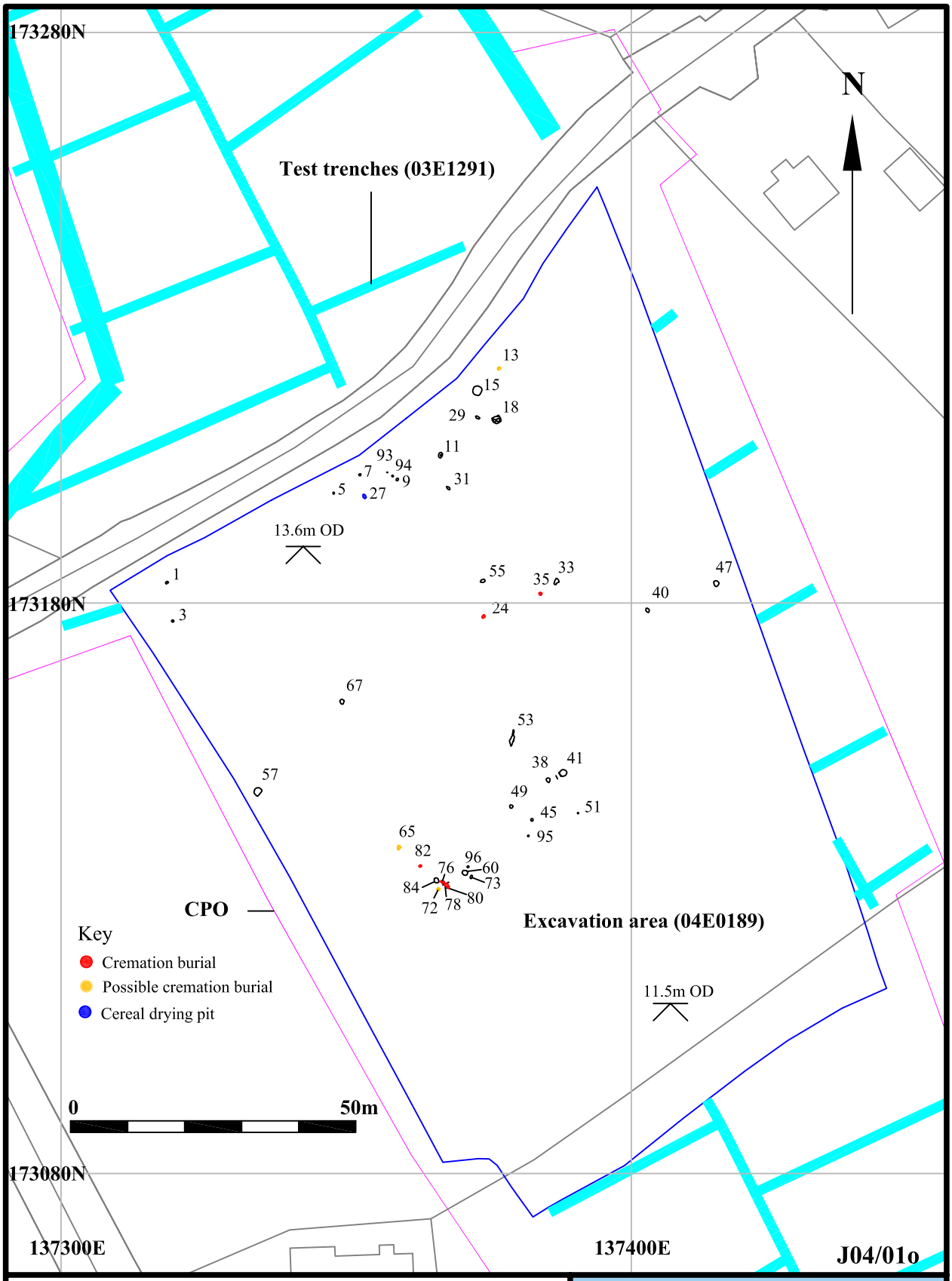
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

04E0189

Figure 2: Site location within local landscape

Scale 1:20000. OSI Licence: AR0049406
CopyrightOSI & Govt. of Ireland

TVAS IRELAND LTD



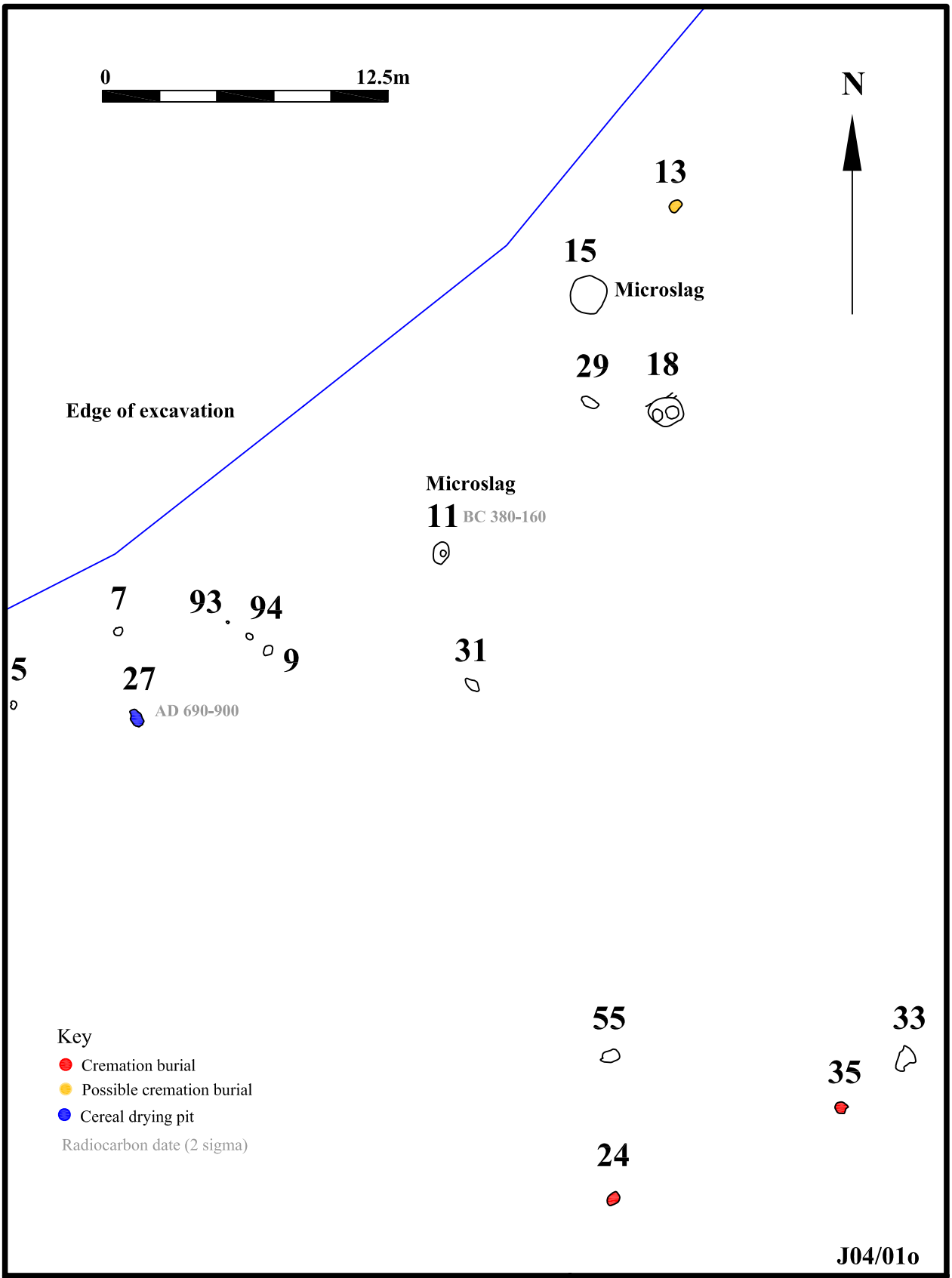
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

04E0189

Figure 3: Plan showing excavation area (04E0189), all archaeological features and test trenches (03E1291)

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

TVAS IRELAND LTD



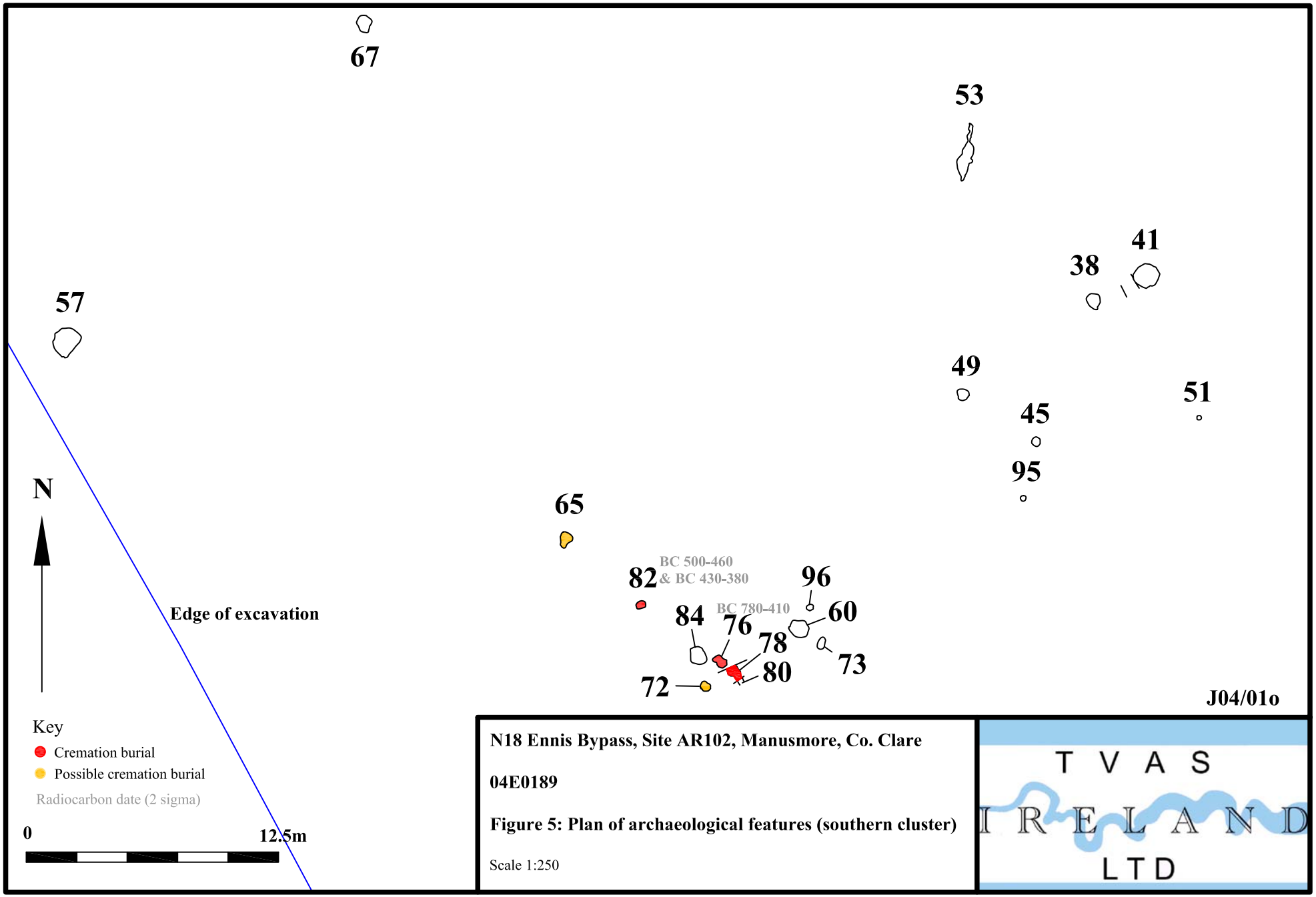
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

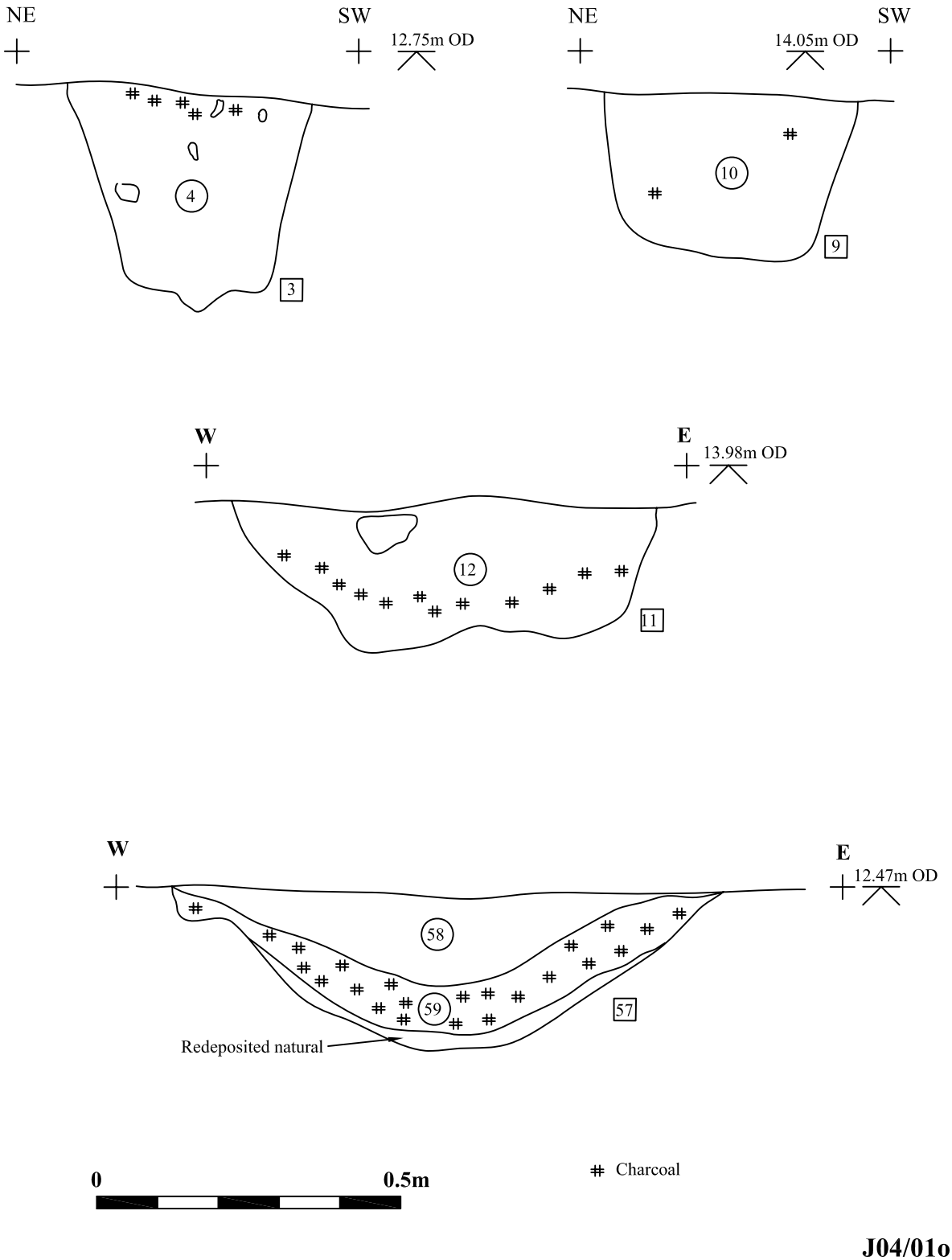
04E0189

Figure 4: Plan of archaeological features (northern cluster)

Scale 1:250

TVAS IRELAND LTD


67
53
41
38
57
49
51
45
95
N
65
BC 500-460
& BC 430-380
82
96
84
BC 780-410
76
60
78
73
80
72
Edge of excavation
J04/01o
Key
Cremation burial
Possible cremation burial
Radiocarbon date (2 sigma)
0
12.5m
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare
04E0189
Figure 5: Plan of archaeological features (southern cluster)
Scale 1:250
TVAS
IRELAND
LTD



J04/01o

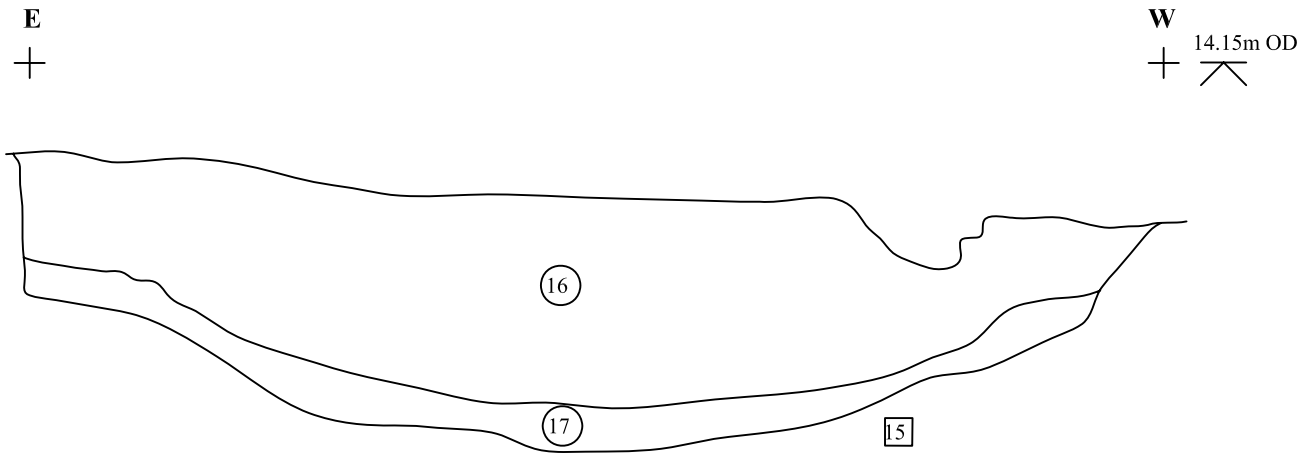
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

04E0189

Figure 6: Sections of features 3, 9, 11 and 57

Scale 1:10

TVAS IRELAND LTD



J04/01o

0 0.5m

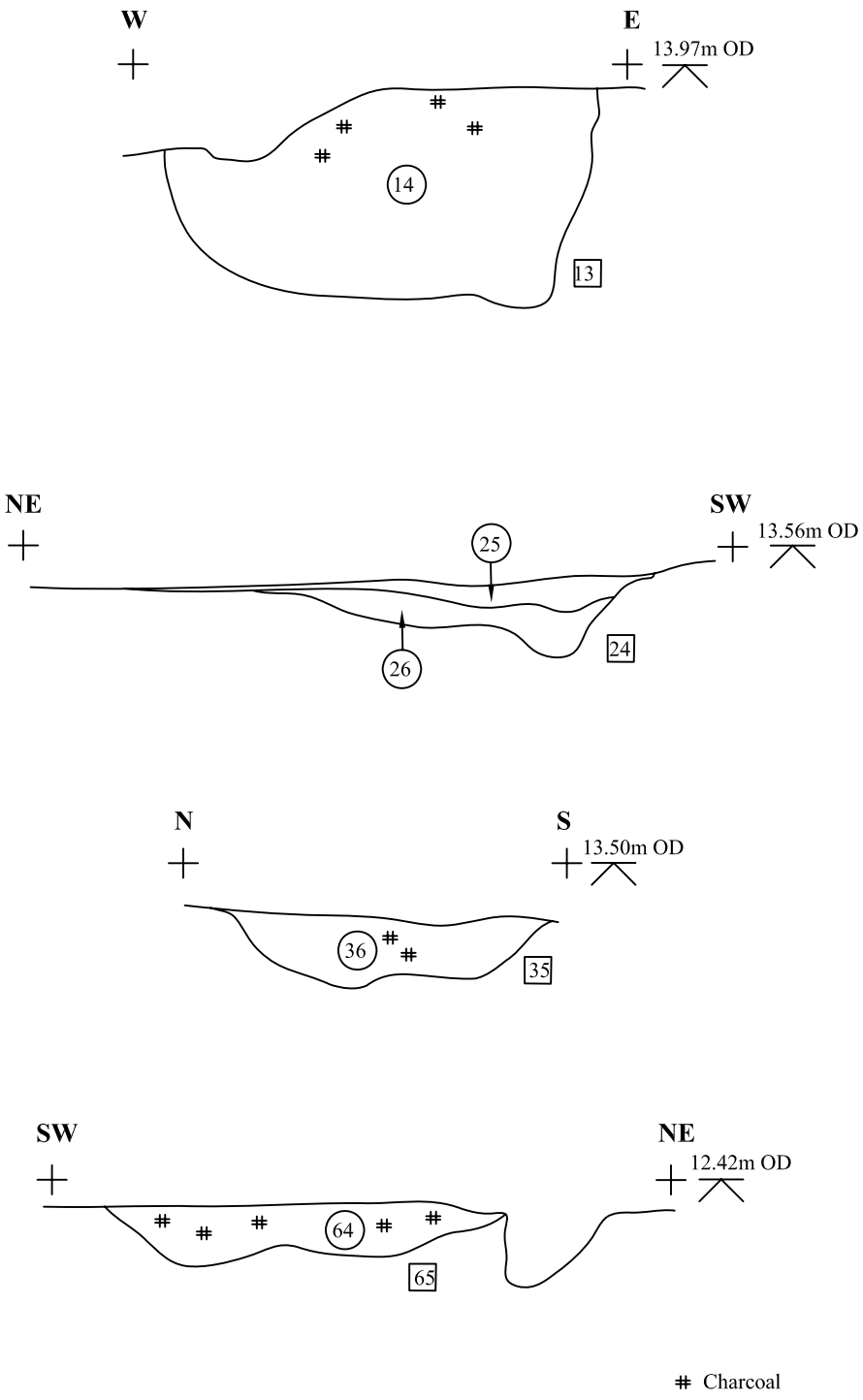
N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

04E0189

Figure 7: Section of feature 15

Scale 1:10

TVAS IRELAND LTD



J04/01o

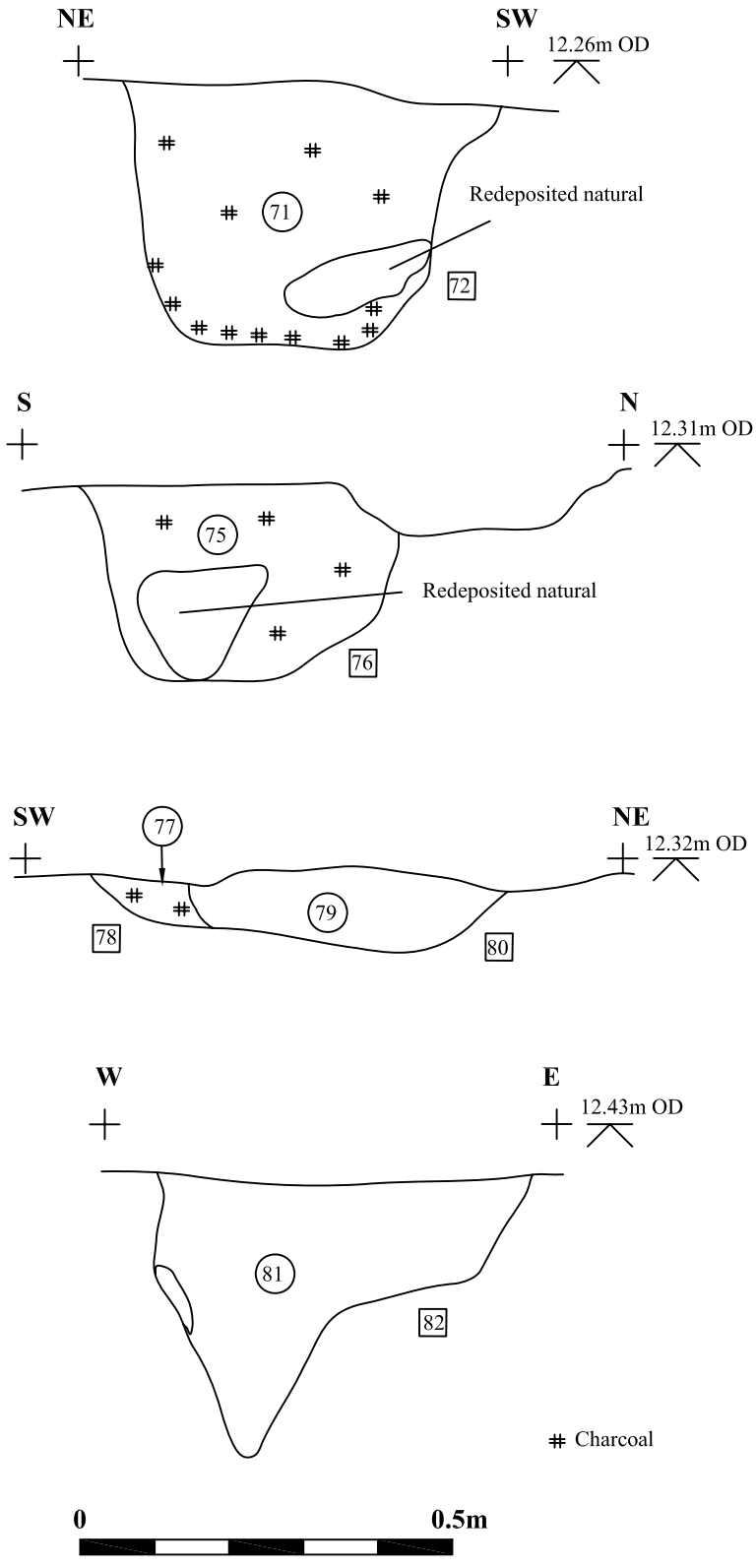
N18 Ennis Bypass, Site AR102 Manusmore, Co. Clare

04E0189

Figure 8: Sections of features 13, 24, 35 and 65

Scale 1:10

TVAS IRELAND LTD



J04/01o

N18 Ennis Bypass, Site AR102, Manusmore, Co. Clare

04E0189

Figure 9: Sections of features 72, 76, 78 and 82

Scale 1:10

TVAS IRELAND LTD

Plate 1. Site AR102 in local landscape. Looking south-west

Plate 2. Possible cremation pit 13. Looking north-west. Half-sectioned. Scales 0.5m and 0.3m

Plate 3. Pit 27, half- sectioned. Looking south-west. Scales 1m and 0.1m

Plate 4. Cremation pit 24, half-sectioned. Looking west. Scales 0.5m and 0.1m

Plate 5. Pit 57, half-sectioned. Looking north-east. Scales 0.5m and 0.3m

Plate 6. Pit 15, half-sectioned. Looking south-east. Scale 1m

Plate 7. Pit 1, half-sectioned. Looking south-east. Scales 0.5m and 0.2m

Plate 8. Pit 3, half-sectioned. Looking south-east. Scales 0.5m and 0.2m

Plate 9. Pit 60, half-sectioned. Looking south. Scales 0.5m and 0.3m

Plate 10. Slot across Palaeochannel 68. Looking north-east. Scales 1m

Plate 11. Field boundary terminus 88. Looking north-east. Scales 1m, 0.5m and 0.2m