

Date: October 2009
Client: Offaly County Council
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**N52 Tullamore Bypass:
 Final Report on archaeological excavations at Ballynasrah, E2493,
 in the townland of Ballynasrah, Co. Offaly**

By: Lyndsey Clark & Tom Janes
 Ministerial Direction No: A033
 National Monuments Section Registration No: E2493
 Director: Tom Janes
 Chainage: 12505 - 12525
 NGR: 34500/27550



transport21
progress in motion



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1 Summary

This report presents the results of archaeological investigations carried out on behalf of Offaly County Council as part of the Advance Archaeological Works Contract for the N52 Tullamore Bypass. The work was undertaken under Ministerial Direction A033 and National Monuments Section Registration No E2493 in the townland of Ballynasrah, Co. Offaly. The NMS no E2493 was allocated to all general testing work undertaken on the scheme, and to three sites discovered and fully excavated during this phase (Appendix 7). The Minister for the Environment, Heritage & Local Government, following consultation with the National Museum of Ireland, directed that Tom Janes of Headland Archaeology Ltd should proceed with archaeological excavation.

Archaeological testing carried on this site in August 2006 revealed two features of archaeological significance. These consisted of one furnace feature (003) and one hearth feature (005), both of which contained charcoal and slag fragments and displayed *in situ* burning. The site was fully excavated during the test excavation phase.

2 Introduction (Figure 1)

The scheme involves the proposed construction of the N52 Tullamore Bypass, between the townlands of Cloghanbane and Ardan in Co. Offaly. The proposed scheme will consist of the construction of a bypass around the town of Tullamore. It is to consist of 11.5km of standard single carriageway and 2.5km of wide single carriageway road. It will also involve the construction of seven at-grade roundabout junctions, priority junctions and seven new major structures, including four river crossings, one canal crossing and one railway crossing. The project is funded by the Irish Government and the European Union, through Offaly County Council/National Roads Authority and under the National Development Plan 2000-2006. Headland Archaeology Ltd. was commissioned by Offaly County Council to undertake the works.

An Environmental Impact Statement was prepared in 2004, with the Cultural Heritage Assessment for the route contained within Section 3.8. The EIS was prepared by Babbie Pettit.

3 Site Description & Historical Background (Figure 2)

Site E2493 was located approximately 1.5 km north of Tullamore town, in the townland of Ballynasrah at National Grid Reference 34500/27550. One monument was identified in the adjoining townland of Ardan and has been listed in the Record of Monuments and Places as 'a poorly preserved bivallate ringfort' (RMP OF017-002). This site was situated approximately 500 m west of this excavation at Ballynasrah. A prominent ridge, which formed part of the Esker Riada, was situated immediately to the south, while the surrounding land comprised low lying gently undulating farmland. This was under pasture at the time of testing.

The Ordnance Survey Name Books list Ballynasrah as Ballynastragh alias Tynnacross. The latter comes from the Irish *Tigh na croise*, "house of the cross". Alternate names and spellings are given as: Tinnecrosse, Ballynassrah or Tinnycross, Balleneshragh, Ballynastrogh also Tynnecross, Teneicross, Ballynastragh also Tynnecross, Tinecross, Tennycross, Ballinasrah, and Lands of Tinnycross. The townland is described as lying with the road from Tullamore to Tyrellspass south of the Silver River and bordering the parish of Durrow. The townland is described as having a very considerable portion occupied by brushwood and rough pasture,

with the remainder as arable and tillage land. A farmhouse near the eastern end is described as being named “pigeon house”.

The townland of Ballyasrah contains four RMP sites: OF009-022001, an enclosure; OF009-022002, a mound; OF009-023, a fortified house; and OF009-023001, a bawn. The stronghold is also listed in the Archaeological Inventory of County Offaly (entry 868, OS 19:14:5). It is described as being situated in pasture-land south of the Silver River. It was the residence of the de Renzys in the late 17th century and was called Tinnycross, which remains an alternate name for this townland (Archaeological Inventory of Co. Offaly, 156). The site remains consist of a bawn wall and one flanking tower of a former semi-fortified dwelling (ibid.). Hollow House, a ruined single-story and thatched early Georgian farmhouse, dating to approximately 1800, is located on the site of an earlier dwelling (ibid.). A dovecote at the front of the house and a round-arched gateway with triangular pediment and spiral finials are features of the Georgian building phase (ibid.).

The first edition Ordnance Survey map shows a large portion of the middle of the townland covered in the above mentioned brushwood. The only structures visible are a very small number of houses located in the vicinity of what is described as a “castle in ruins”, most likely the stronghold described above. Accordingly, Griffiths Valuation of 1848-1864 lists only 10 leases, one of which was vacant. All the leases listed include houses and only six include land. One lease also lists a corn mill and kiln. The total area of the leases is given as 510 acres 2 P 28 R with an annual valuation of £259 10s.

4 Aims and Methodology

The objective of the work was to preserve by record any archaeological features or deposits in advance of the proposed road construction. Topsoil stripping of the site was conducted using a 360° tracked machine fitted with a 1.9m wide ditching (toothless) bucket. A total area of 153 m² was exposed. The monitoring was carried under constant supervision by a qualified archaeologist. The resulting surface was cleaned and all potential features investigated and excavated by hand. Archaeological contexts were recorded by photograph and on *pro forma* record sheets. Plans and sections were drawn at an appropriate scale. Registers are provided in the Appendices. Ordnance Datum levels and feature locations were recorded using Penmap and an EDM. Environmental bulk samples were taken from any deposits which were deemed potentially suitable for analysis or dating.

5 Excavation Results (Figures 3 & 4)

Excavation revealed that site E2493 (Ballynasrah) comprised a possible furnace feature (003) and a possible hearth feature (005).

Furnace Feature (003) (Plates 1 & 3)

This feature was sub-circular in plan and measured 0.40 m (northeast–southwest) by 0.30 m (northwest-southeast) and was 0.40 m in depth. The sides and base of the cut were oxidised, indicating that *in situ* burning had occurred. The primary fill (007) within the cut consisted of brown-black, charcoal-rich sandy-silt, which contained moderate amounts of burnt clay and occasional pieces of ferrous slag. This fill measured 0.30 m in depth. Directly overlying this was a deposit of yellow-orange burnt sandy-clay (004), which measured 0.10 m in depth and contained moderate inclusions of charcoal flecking and fragments.

Hearth Feature (005) (Plates 2 & 3)

This second feature was located 0.20 m to the southwest of feature (003). It measured 0.29 m in diameter and 0.13 m in depth and was circular in plan. Evidence of *in situ* burning was also identified within this pit. Its fill (006), a black, charcoal-rich silt deposit, contained occasional pebbles, burnt clay and ferrous slag inclusions.

6 Discussion

The *in situ* burning identified in both pit features (003) and (005), along with the charcoal and ferrous slag inclusions of their fills, indicate that small-scale metalworking was undertaken on site E2493 (Ballynasrah).

A typological comparison can be made between the features excavated at Ballynasrah, and similar features excavated nearby at Ardan 3 (Clarke & Janes, 2008). Charcoal samples recovered from Ardan 3 returned Iron Age dates. Consequently, an Iron Age date is suggested for the metalworking activity at Ballynasrah.

Possible Furnace Feature (003)

The morphology of pit (003) suggests that it represented the remains of a furnace. Furnaces were typically the structure used to hold ore, as metal was extracted from it. The main method of smelting iron was known as the bloomery process, whereby charcoal was placed in a furnace and preheated. Roasted ore and charcoal were then added to the top, while bellows were used to pump air into the base of the furnace. The iron ore was then reduced to form iron metal while the impurities from the ore reacted to form slag.

The temperature that was achieved during the bloomery process would rarely exceed 1250°C, too low to melt the plain iron generally produced; however, in the area around the blowing holes the temperature would be significantly higher. Here liquefied slag would separate from the solid iron particles and flow to the bottom of the furnace. The iron particles would then join to form a spongy lump known as the bloom, which would later be removed

The presence of slag from within a feature may indicate a failed smelting attempt which caused the furnace to be abandoned (Jones 2001). The presence of slag within (003) may be evidence of such a failed smelting attempt and subsequent abandonment of the feature.

The archaeological remains of furnaces rarely survive to any height as the majority of the structure, which was typically cylindrical in shape with walls at least 0.20 m thick to reduce

heat loss, was usually above ground. This part of the furnace was predominantly made from clay and because it was exposed to high temperatures the clay was sometimes partially vitrified (Jones 2001). The presence of burnt clay within fill (004) may be suggestive of the collapse of such a clay superstructure.

Environmental samples were taken from context (004) and (007), however the charcoal fragments included within proved to be too abraded to secure a sample for radiocarbon dating. No other macro remains were present in the retent and flot material.

Possible Hearth Feature (005)

The shallower nature of (005) in comparison to (003) suggests it may have been a hearth rather than a furnace. After the smelting process the resulting bloom needed further refining to remove trapped slag before it was suitable for forging. The primary stages of refining the bloom involved hammering it while it was hot to combine the metal and to expel the slag. The resulting iron stock would then undergo secondary smithing to produce the required artefacts. Smithing took place in a hearth, predominantly made from clay filled with charcoal. A blast of air was used to obtain a high temperature in order to forge the metal. Because they were exposed to high temperatures, the clay was sometimes partially vitrified (Jones 2001).

An environmental sample was taken from context (006), however the charcoal fragments included within proved to be too abraded to secure a sample for radiocarbon dating. No other macro remains were present in the retent and flot material.

The development of iron-working in Ireland is thought to have occurred around 500 BC, with early bloomeries usually located near to the source of the ore (Tylecote 1976). Bog ore could simply be dug out of the natural landscape rather than mined (Jones 2001) and would have been readily available in the Offaly region.

7 Bibliography

Archaeological Inventory of County Offaly. 1997. Caimin O'Brien and P. David Sweetman (compilers), Stationers Office: Dublin.

Clarke, L. and Janes, T. 2008. *Final Report on Archaeological Excavations at Ardan 3 E2493, in the townland of Ardan, Co. Offaly* Headland Archaeology, unpublished client report

Excavations Bulletin, Isabell Bennett (ed) (accessed at www.excavations.ie)

Griffiths Valuation, 1848-1864

Jones, D.M. (Ed) 2001. *Centre for Archaeological Guidelines, Archaeometallurgy*.
http://www.english-heritage.org.uk/upload/pdf/cfa_archaeometallurgy2.pdf

Tylecote, R. F. 1976. *A History of Metallurgy*, Institute of Materials, London.

National Inventory of Architectural Heritage (accessed at www.buildingsofireland.ie)

1840 Ordnance Survey of County Offaly at 1:10,560. Sheet 9. First edition: surveyed 1838

Ordnance Survey Name Books (King's County)

Record of Monuments and Places (accessed at www.archaeology.ie)

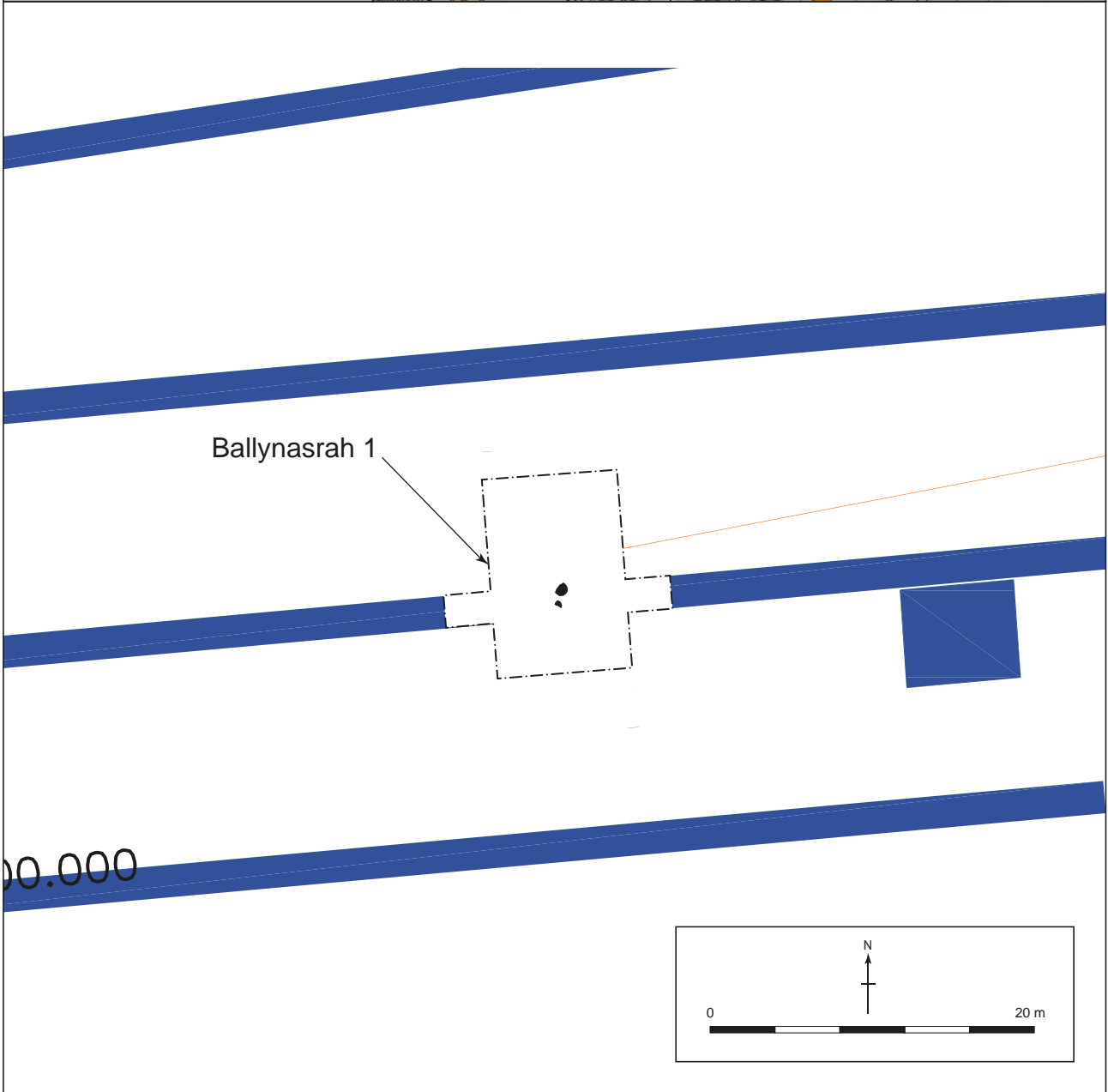


Figure 1 - N52 Tullamore Bypass: E2493 Ballynasrah, Site location



Reproduced from 1912 Ordnance Survey of Ireland, Second Edition, Six Inch to One Mile map (not to scale), Offaly Sheets 8, 9, 16, 17, 24 and 25.
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Bypass route is shown broken due to warp of scanned RMP's, this represents a best-fit.

Figure 2 - N52 Tullamore Bypass: E2493 Ballynasrah, RMP Extract

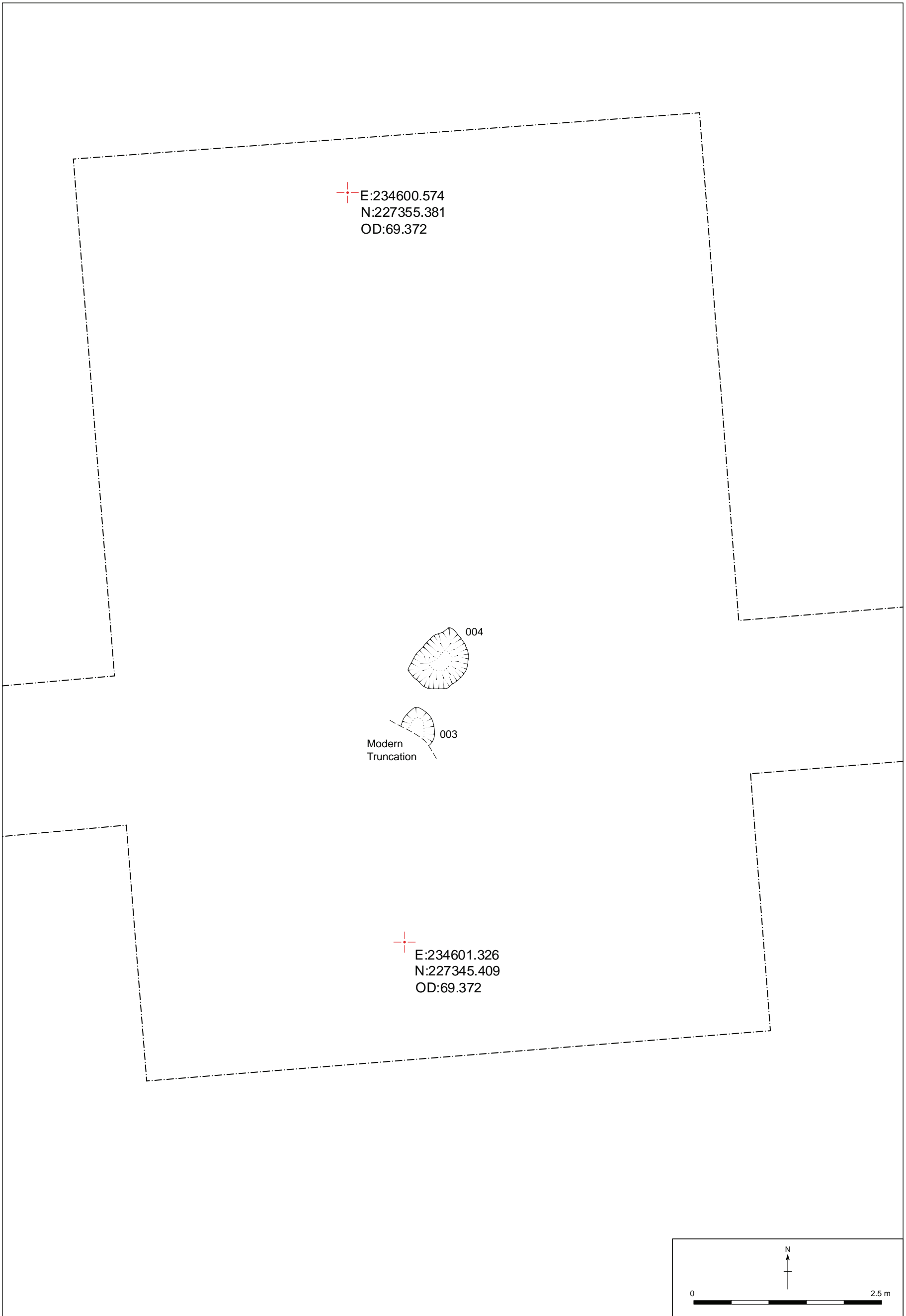


Figure 3 - N52 Tullamore Bypass: E2493, Ballynasrah: Site plan

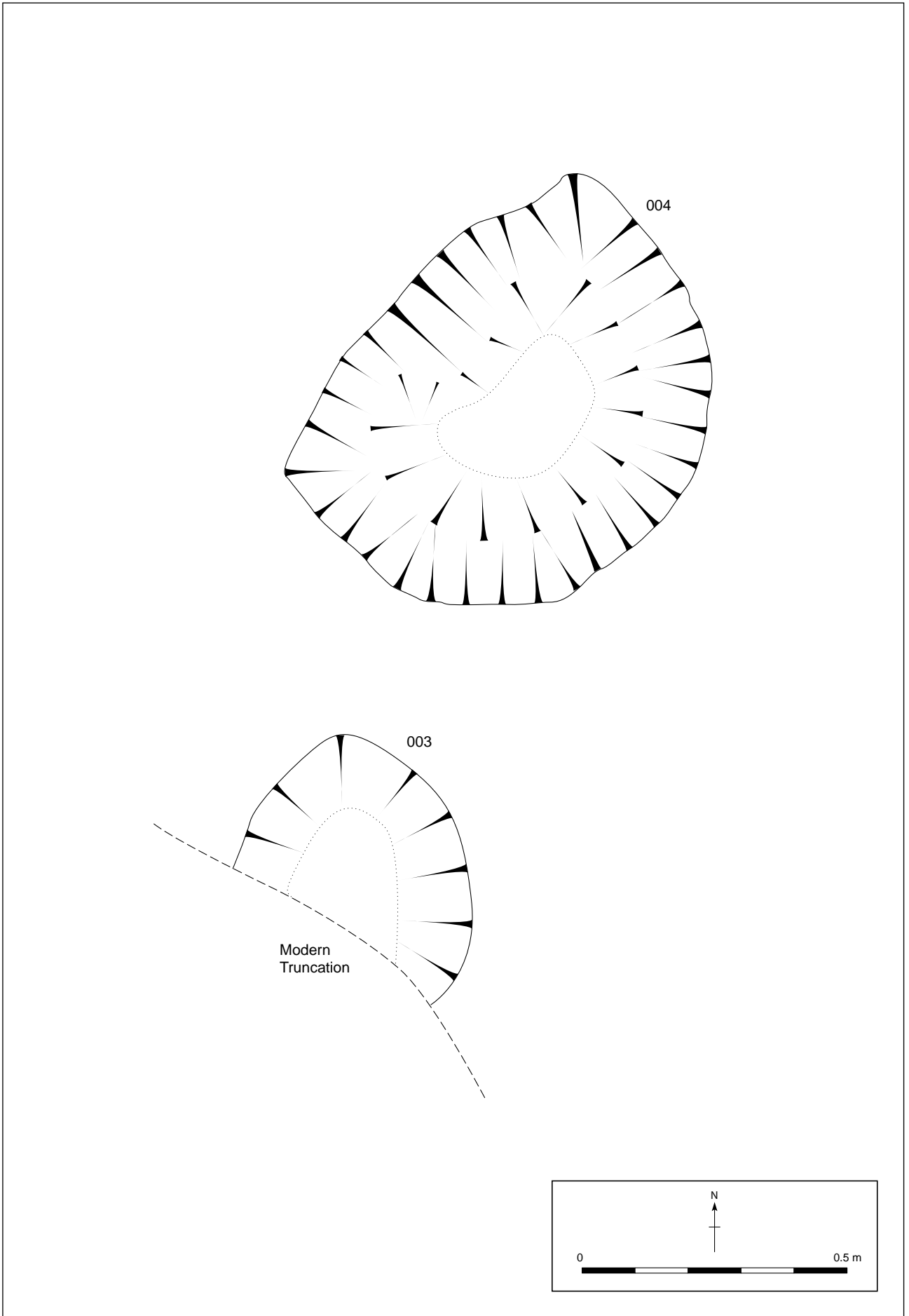


Figure 4 - N52 Tullamore Bypass: E2493, Ballynasrah: Plan of features (003) and (005)



Plate 1 - Mid-excavation of pit (003), facing east



Plate 2 - Mid-excavation of small pit (005), facing west.



Plate 3 - Post-excavation of pits (003) and (005)

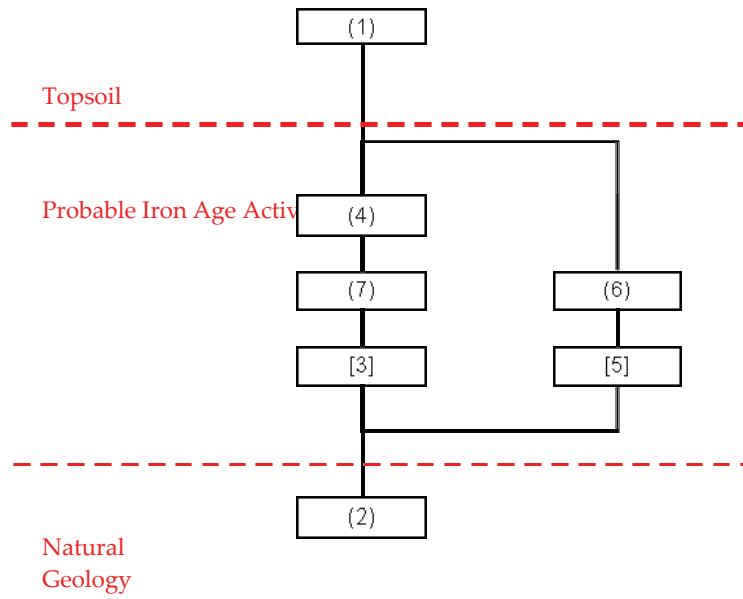
Appendix 1 Context Register

C	Type	Fill Of	Filled By	D (m)	W (m)	L (m)	Description	Interpretation
1	Deposit	n/a	n/a	0.15	Site-wide	Site-wide	Mid-brown silty clay	Topsoil
2	Deposit	n/a	n/a	n/a	Site-wide	Site-wide	Grey gravel	Natural
3	Cut	n/a	(04) (07)	0.40	0.30	0.40	Small sub-circular cut of probable furnace with steep sloping sides and sharp break of slope at top and bottom. Base tapered to a blunt point. Filled by (04) (07)	Furnace feature
4	Deposit	(003)	n/a	0.10	0.30	0.40	Yellow-orange burnt sandy clay with moderate amount of charcoal flecks and fragments. Above (007), below (001) possibly associated with (005)	Possible collapse of furnace superstructure. Top fill of furnace feature
5	Cut	n/a	(06)	0.12	0.28	0.29	Circular pit with steep sloping sides and sharp break of slope at top and bottom. Concave base. Filled by (006), possible related to probable furnace (003).	Hearth feature
6	Deposit	(005)	n/a	0.12	0.28	0.29	Black, charcoal rich silt deposit within metal working pit (005). Moderate to loose compaction with occasional pebbles and burnt clay. Slag recovered.	Fill of hearth

C	Type	Fill Of	Filled By	D (m)	W (m)	L (m)	Description	Interpretation
7	Deposit	(003)	n/a	0.30	0.20	0.29	Brownish-black, charcoal rich sandy silt. Moderate amount of burnt clay, occasional pieces of slag.	Primary fill of furnace feature.

Appendix 2 Stratigraphic Matrix

Appendix 2 - Stratigraphic Matrix



Appendix 3 Sample Register

Sample	Context	Description
1	004	Upper fill of probable furnace (003), burnt clay
2	007	Basal fill of probable furnace (003), with slag fragments
3	006	Charcoal rich fill of pit (005)
4	005	Ferrous slag

Appendix 4 Photographic Register

Shot	Type	Facing	Description
1	Pre-ex	V	G12 F12 T8 (003)
2	Pre-ex	V	G12 F12 T8 (005)
3	Mid-ex	W	G12 F12 T8, w-facing section of (005) (006)
4	Mid-ex	E	G12 F12 T8, e-facing section of (003) (004)
5	Mid-ex	E	G12 F12 T8, e-facing section of (003) (004)
6	Post Ex	V	G12 F12 T8 (003) (005)
7	Post Ex	V	G12 F12 T8 (003) (005)
8	Post Ex	V	G12 F12 T8 (003) (005)
9	Post Ex	V	G12 F12 T8 (003) (005)
10	-	-	G12 F12 working shots
11	-	-	G12 F12 working shots

Appendix 5 Drawing Register

Dwg	Type	Area	Scale	Description
1	Plan		1:50	Pre-ex plan of metal working pits (003) and (005), T14
2	Plan		1:20	Post-ex plan of metal working pits (003) and (005), T14

Appendix 6 Environmental Samples Assessment

Karen Stewart, Headland Archaeology

Introduction

Four samples were taken during excavation of the site at Ballynasrah. Three of these were processed in order to recover material of archaeological interest.

Methodology

Samples of approximately 10 L were taken on site under the direction of environmental archaeologist Susan Lyons. Samples were processed in laboratory conditions using a standard flotation method (cf. Kenward *et al*, 1980). The floating debris (flot) was collected in a 250 µm sieve and, once dry, scanned using a binocular microscope. Any remaining material in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. This was then sorted by eye and any material of archaeological significance removed. All plant macrofossil samples were analysed using a stereomicroscope at magnifications of x10 and up to x100 where necessary to aid identification. Identifications were confirmed using modern reference material and seed atlases including Cappers *et al* (2006).

Results

The results of the environmental assessment of the samples are presented below in Tables 1 (retent sample results) and 2 (flotation sample results).

Table 1: Composition of retents

Sample number	Context number	Retent vol. (L)	Wood charcoal	
			Qty	AMS
1	004	2	+	
2	007	1	+	
3	006	1	++	

Key: += rare, ++= occasional, +++= common and ++++= abundant

AMS= Accelerator Mass Spectrometry

*= sufficient for AMS dating

Table 2: Composition of flots

Sample Number	Context Number	Total flot Vol. (ml)	Charcoal Quantity	AMS
1	004	20	+	
2	007	15	+	
3	006	10	++	

Key: += rare, ++ = occasional, +++ = common and ++++ = abundant

* = sufficient sized charcoal for identification and AMS dating

Plant Remains

Charcoal was noted in the retent and flot sample results for all samples. No sample contained charcoal of a sufficient quantity or quality to enable AMS (Accelerated Mass Spectrometry) dating.

Discussion

Very little environmental material was recovered from these samples. Though charcoal was recovered from all samples, it was in very small amounts, and very abraded. It is thus difficult to ascertain whether it is the result of human deposition or natural action such as wind or rainwash.

References

Cappers R.T.J., Bekker R.M. and Jans J.E.A (2206) *Digital seed atlas of the Netherlands* (Barkhuis Publishing and Groningen University Library, Groningen).

Kenward, H.K., Hall, A.R. and Jones, A.K.G (1980). A tested set of techniques for the extraction of plant and animal microfossils from archaeological deposits. *Science and Archaeology* 22, 3-15.

Appendix 7 All Sites Excavated on Road Scheme

Ardan 1	E2847
Ardan 2	E2846
Ardan 3	E2493*
Ballynasrah	E2493*
Cloncollog 1	E2849
Cloncollog 2	E2850
Clonminch	E2851
Mucklagh 1	E2845
Mucklagh 2	E2844
Puttaghan	E2493*
Screggan 2	E2848

*Fully excavated during Centreline Testing under Ministerial Direction A033 and NMS
Registration No. E2493