N6 KINNEGAD – ATHLONE SCHEME PHASE 2: KILBEGGAN TO ATHLONE DUAL CARRIAGEWAY

SITE A016/046; E3274: MOYALLY 1

FINAL REPORT

ON BEHALF OF WESTMEATH COUNTY COUNCIL

26 JUNE 2009

IAC Irish Archaeological Consultancy

PROJECT DETAILS

Project Reference No.	WH/00/112
Project	N6 Kinnegad – Athlone Road Scheme: Phase 2, Kilbeggan – Athlone Dual Carriageway
Ministerial Direction Reference No.	A016/046
NMS Registration Number	E3274
Excavation Director	David Bayley
Senior Archaeologist	Shane Delaney
Consultant	Irish Archaeological Consultancy Ltd, 120b Greenpark Road, Bray, Co. Wicklow
Client	Westmeath County Council
Site Name	Moyally 1
Site Type	Ringfort and Associated Features
Townland	Moyally
Parish	Kilmanaghan
County	Offaly
NGR (Easting)	E221040
NGR (Northing)	N237791
Chainage	16100
Height m OD	79m OD
RMP No.	N/A
Excavation Start Date	23 January 2006
Excavation Duration	25 Days
Report Type	Final
Report Date	April 2009
Report By	David Bayley

ACKNOWLEDGMENTS

This report has been prepared by Irish Archaeological Consultancy Ltd on behalf of Westmeath County Council and the National Roads Authority in advance of the construction of the N6 Phase 2: Kilbeggan to Athlone Dual Carriageway Scheme.

The excavation was carried out in accordance with the Directions of the Minister for the Environment, Heritage and Local Government (DOEHLG), in consultation with the National Museum of Ireland (NMI) issued under Section 14 of the National Monuments Acts 1930–2004.

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ABSTRACT

Irish Archaeological Consultancy Ltd (IAC), funded by Westmeath County Council (WCC) and the National Roads Authority (NRA), undertook an excavation in the townland of Moyally, Co. Offaly at the site of Moyally 1 in advance of the proposed N6 Phase 2: Kilbeggan to Athlone Dual Carriageway Scheme (Figure 1). The following report describes the final results of archaeological fieldwork at that site. The area was fully excavated by David Bayley under Ministerial Direction A016/046 and NMS Registration Number E3274 issued by the DOEHLG in consultation with the National Museum of Ireland. The fieldwork took place between 23 January and 24 February 2006, after initial topsoil stripping commencing 3 January 2006.

Moyally 1 comprised part of a ringfort ditch and bank and three isolated, external features. Of these isolated features, a pit C7, produced a Neolithic date (2872–2629 BC - 2 Sigma) indicating that there was Neolithic activity in the area.

Most of the early medieval ringfort was outside the CPO, with only a 39m long arc of the ditch within the CPO. An internal bank was created with the upcast material from the digging of the ditch, surviving to a maximum depth of 0.45m. The finds recovered from the ditch fills not only indicate an early medieval date for the occupation of the ringfort but also indicate that the ringfort was probably still in use during the initial period of silting of the ditch, with the relatively sterile nature of the upper silting fills possibly indicating the abandonment of the ringfort. AMS radiocarbon dating of cow bone recovered from the primary fill of the ditch returned a 2 Sigma calibrated date of AD 770–980, dating it to the early medieval period.

CONTENTS

List of Figures

List of Plates

1 INTRODUCTION

1.1 General

This final archaeological report describes the results of the excavation carried out at the site of Moyally 1 in the townland of Moyally, Co. Offaly (Figures 1 and 2; Plate 1) as part of an archaeological mitigation programme associated with the N6 Phase 2: Kilbeggan to Athlone Dual Carriageway Scheme. Archaeological fieldwork was carried out under ministerial direction by David Bayley of Irish Archaeological Consultancy Ltd (IAC Ltd) and was funded by WCC & NRA under the National Development Plan 2000–2006, 2007–2013 and the EU Structural fund.

Moyally 1 was identified as a result of archaeological assessment undertaken by IAC Ltd. in August 2005 (Ministerial Direction No A016/029, NMS Registration No. E3273). All features identified during the assessment phase (enclosing ditch and raised platform) were subsequently re-identified and the site was fully excavated during the full resolution phase of the project which took place between 23 January and 24 February 2006 with a team of 1 director, 1 supervisor and 20 site assistants.

The site was located in gently undulating pastureland at a height of 79m OD c. 0.75km to the south of the existing N6, c. 1.5km southeast of Moate town (Offaly OS sheet 1). To the east (c. 150m) was the RMP site Moyally Castle (OF001-002) an archaeological complex containing the castle, its bawn and associated earthworks. Moyally 1 had not been previously identified and was not a recorded monument.

The site was assigned the following identification data:

Site Name: Moyally 1; Ministerial Direction No.: A016/046; NMS Registration No. E3274; Route Chainage (Ch): 16100; NGR: 221040/237791.

1.2 Proposed Development

The proposed N6 Kinnegad–Athlone Scheme is to be constructed in two phases. The Phase 2 Kilbeggan–Athlone scheme will consist of a dual carriageway that will run for a distance of approximately 29km. The location of the route is predominantly to the south of the existing N6 and there will be access to the local road network through the seven grade separated junctions located at Athlone, Farnagh, Moate and Kilbeggan. The cross-section of the mainline consists of 2m wide verges, 2.5m wide hard shoulders, 7m wide two-lane carriageways and a 3m wide central reserve. This central reserve will accommodate 1m hard strips and a safety barrier. In addition to the mainline dual carriageway there is a further 0.3km of standard dual carriageway to the south of Athlone Interchange to connect to the existing N6 and 1.2km to the south of Kilbeggan Interchange to connect to the existing N52.

1.3 Archaeological Requirements

The archaeological requirements for the N6 Kilbeggan to Athlone Dual Carriageway Scheme, are outlined in the Ministerial Directions issued to Westmeath County Council by the Minister for Environment, Heritage and Local Government under Section 14A (2) of the National Monuments Acts 1930–2004 and in the terms of the contract between Westmeath County Council and Irish Archaeological Consultancy Ltd. These instructions form the basis of all archaeological works undertaken for this development. The archaeological excavation works under this contract are located between the townlands of Kilbeggan South, Co. Westmeath and Creggan Lower, Co. Westmeath.

The proposed N6 was subjected to an Environmental Impact Assessment, the archaeology and cultural history section of which was carried out by Sheila Lane and

Associates and presented in 2003. The Record of Monuments and Places, the Sites and Monuments Record, Topographical files, aerial photography, the Westmeath Archaeological Urban Survey and literary sources were all consulted. One phase of geophysical survey was also conducted at selected sites along the proposed route by Target Archaeological Geophysics. As a result of the paper survey, field inspections and geophysical survey, a number of potential sites were recorded in proximity to this section of the overall route alignment.

Advance archaeological testing was completed by IAC Ltd and excavation of the sites identified during testing was conducted by IAC Ltd on behalf of Westmeath County Council.

1.4 Methodology

The topsoil was reduced to the interface between natural subsoil and topsoil using a 20 tonne mechanical excavator equipped with a flat toothless bucket under strict archaeological supervision. The remaining topsoil was removed by the archaeological team with the use of shovels, hoes and trowels in order to expose and identify the archaeological remains. A site grid was set up at 10m intervals and was subsequently calibrated to the national grid using GPS survey equipment.

All features were subsequently fully excavated by hand and recorded using the single context recording system with plans and sections being produced at a scale of 1:50, 1:20 or 1:10 as appropriate.

A complete photographic record was maintained throughout the excavation. Digital photographs were taken of all features and of work in progress. These photos were supplemented by specialist aerial photographs.

An environmental strategy was devised at the beginning of the excavation. Features exhibiting large amounts of carbonised material were the primary targets.

In the instances where artefacts were uncovered on site they were dealt with in accordance with the guidelines as issued by the NMI and where warranted in consultation with the relevant specialists. All artefacts, ecofacts and paper archive are currently stored in IAC offices, Lismore, Co Waterford and will ultimately be deposited with the National Museum of Ireland.

Radiocarbon dating of the site was carried out by means of AMS (Accelerator Mass Spectrometry) dating of identified and recommended charcoal and animal bone samples. All calibrated AMS dates in this report are quoted to 2 Sigma.

All excavation and post excavation works were carried out in consultation and agreement with the Project Archaeologist, the National Monuments Section of the DOEHLG and the National Museum of Ireland.

2 EXCAVATION RESULTS

The early medieval ringfort constituted the main phase of activity identified at Moyally 1 defined by a portion of ringfort ditch. A prehistoric phase of activity was identified here by an isolated pit located outside the enclosure. This pit dated to the late Neolithic and is some indication of prehistoric activity in the general area.

Detailed descriptions of contexts are listed in Appendix 1. The site matrix is detailed in Figure 9.

2.1 Phase 1: Natural Drift Geology

The dominant bedrock geology identified along the corridor of the proposed route are Lower Carboniferous rocks, mainly limestone lithologies, which overlay Devonian Old Red Sandstone rocks. Carboniferous volcanic rocks were also identified as being present locally in the form of sills passing through the bedrock sequences (Riada Consult, 2003). The underlying geology of the area is overlain by occasional moraines and small glacial hillocks covered by grey brown podzolic soils.

The subsoil C2 above bedrock encountered at Moyally 1 was uniform across the site and consisted of mottled clay.

2.2 Phase 2: Neolithic Activity

2.2.1 Small Pit C7 with Some Burning

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
7	N/A	0.66m	0.45m	0.15m	Circular, vertical sides, flat base.	Cut of pit.
8	7	0.43m	N/A	0.08m	Mid brown silty clay.	Upper fill of pit.
11	7	0.28m	N/A	0.24m	Orange/red oxidised silty clay.	Upper fill of pit.
12	7	0.42m	N/A	0.10m	Dark brown / black 99% charcoal.	*In situ* burnt fill of pit.
13	7	0.62m	N/A	0.08m	Mid brown silty clay.	Base fill of pit.

Finds: None

Interpretation:
The Neolithic activity comprised a small pit (Figures 4, 7 and 9; Plate 6) with evidence of *in situ* burning. This was located external to, and WSW of the ringfort. Nothing to indicate a function for this pit was recovered. A small piece (1g) of oak charcoal (*Quercus* sp.) (O'Carroll, Appendix 2.3) recovered from fill C12 was sent for AMS dating. This sample returned a date of 4144 +/- 24 BP (UBA 9152, Appendix 2.4). The 2 Sigma calibrated result from this sample produced a date of 2872–2629 BC. This dates the pit to the late Neolithic period.

2.3 Phase 3: Ringfort ditch cut and bank

2.3.1 Cut of Ringfort Ditch C3

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
3	N/A	37m	4.44m	1.96m	Arc of ringfort ditch within the CPO.	Ringfort ditch.

Finds: None

Interpretation:
The ringfort ditch C3 (Figures 4 and 5; Plates 2, 3, 9 and 10) was circular in plan, but only an arc of 39m was within the CPO. The projected internal diameter of the ditch

would be c. 30m. Ditch C3 was V-shaped in profile and survived to a maximum width of 4.44m and a maximum depth of 1.96m. The internal bank was created with upcast material from the creation of the ditch.

2.3.2 Ringfort Bank

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
32	N/A	N/A	2.4m	0.26m	Firm orangey brown clay spread.	Bank deposit.
33	N/A	N/A	2.6m	0.32m	Orange/grey clayey silt spread.	Bank deposit.
34	N/A	N/A	2.66m	0.36m	Mottled grey clayey silt spread.	Bank deposit.
35	N/A	N/A	2.7m	0.22m	Brown clayey silt spread.	Bank deposit.
36	N/A	N/A	0.52m	0.16m	Light brown/grey clayey silt.	Bank deposit.
37	N/A	N/A	0.12m	0.1m	Dark brown clayey silt.	Bank deposit.
38	N/A	N/A	1.26m	0.13m	Mottled yellow, brown, grey clay.	Bank deposit.
39	N/A	N/A	3.52m	0.25m	Mid brown mottled silty clay.	Bank deposit.
40	N/A	N/A	0.64m	0.13m	Yellow/light brown clayey silt.	Bank deposit.
41	N/A	N/A	0.22m	0.08m	Firm orangey grey clay.	Bank deposit.
42	N/A	N/A	2.28m	0.16m	Light brown/grey clay spread.	Bank deposit.
43	N/A	N/A	2.11m	0.2m	Mottled brown/yellow/orange clay.	Bank deposit.
44	N/A	N/A	2.44m	0.16m	Mottled grey/brown clayey spread.	Bank deposit.
45	N/A	N/A	0.56m	0.18m	Mottled brown/yellow/orange clay.	Bank deposit.
46	N/A	N/A	0.23m	0.16m	Yellow silty clay spread.	Bank deposit.
47	N/A	N/A	2.14m	0.45m	Mottled yellow and grey silty clay.	Bank deposit.

Finds: None

Interpretation:
The internal bank (Figures 4 and 6; Plate 4) was created by the re-deposition of material from the ditch as it was being excavated. It survived up to a maximum depth of 0.45m. The inner edge of the bank was outside the CPO. The stratigraphy is described in Figure 9, the matrix.

2.4 Phase 4: Infilling of Ditch

2.4.1 Primary Natural Silting

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
20	3	N/A	1.23m	0.23m	Mid brown/orange silty sand.	Natural silting of ditch.
25	3	N/A	0.8m	0.15m	Dark brown clayey silt.	Natural silting of ditch.
28	3	N/A	1.80m	0.2m	Light brown silty sand.	Natural silting of ditch.
55	3	N/A	0.98m	0.37m	Orangey/brown sandy clay.	Natural silting of ditch.

Finds: None

Interpretation:
The basal fills of the ditch appear to be the result of natural silting along the sides and base of the ditch cut soon after it was dug (Figure 5).

2.4.2 Deliberate Backfilling – Base Fills

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
10	3	N/A	3.1m	0.36m	Dark brown/yellow clayey sand.	Occupational fill.
52	3	N/A	1.8m	0.6m	Mid brown/grey silty sand.	Occupational fill.
54	3	N/A	1.8m	0.46m	Grey/brown clayey silt.	Occupational fill.

Finds: None

Interpretation:
These three contexts comprise the base contexts of the ringfort ditch and are probably the result of occupational/refuse deposits during the use of the ringfort. They generally comprise greyish brown clayey silt of between 0.36m–0.6m (Figure 5). Animal bone was recovered from C10 from which a small piece of cow bone was chosen for AMS dating. This bone sample returned a date of 1120 +/- 40 BP (Beta 249542, Appendix 2.4). The 2 Sigma calibrated result from this sample produced a date of Cal AD 770–980, placing it in the early medieval date range.

Analysis of the animal bone recovered revealed that the sample contained bones from six animal species. The animals identified were: cattle, sheep/goat, dog, pig, horse and possibly deer. Cattle dominated the assemblage along with other domesticated meat-producing animals such as sheep/goat and pig. Together these animals constituted 90.3% of all the bones identified to species. There were also a range of other domesticated animals like dog and horse present in the material. Wild animals were represented by one possible deer antler fragment (Lofqvist, Appendix 2.5).

2.4.3 Natural Silting of the Ditch

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
9	3	N/A	1.85m	0.22m	Dark greyish brown clayey sand.	Fill of ring ditch.
17	3	N/A	2.12m	0.26m	Mid brown silty clay.	Fill of ringfort ditch.
18	3	N/A	3.4m	0.42m	Mid brown/yellow silty sand.	Fill of ringfort ditch.
19	3	N/A	2.1m	0.3m	Mid brown/red clayey sand.	Fill of ringfort ditch.
22	3	N/A	2.4m	0.3m	Mid brown/grey clay.	Fill of ringfort ditch.
23	3	N/A	3.6m	0.3m	Mid brown/orange clayey silt.	Fill of ringfort ditch.
24	3	N/A	2.2m	0.2m	Mid brown/grey clayey silt.	Fill of ringfort ditch.
26	3	N/A	2.4m	0.4m	Mid brown with grey flecks.	Fill of ringfort ditch.
27	3	N/A	3.2m	0.2m	Mid brown/yellow silty sand.	Fill of ringfort ditch.
29	3	N/A	2.12m	0.32m	Mid grey/brown sandy clay.	Fill of ringfort ditch.
30	3	N/A	3.05m	0.36m	Light brown sandy clay.	Fill of ringfort ditch.
31	3	N/A	0.67m	0.2m	Mid brown clayey silt.	Fill of ringfort ditch.
49	3	N/A	2.40m	0.2m	Mid brown/grey coarse sand.	Fill of ringfort ditch.
50	3	N/A	1.80m	0.3m	Mid brown sandy clay.	Fill of ringfort ditch.
51	3	N/A	1m	0.2m	Mid brown medium-coarse sand.	Fill of ringfort ditch.
53	3	N/A	1.91m	0.33m	Dark brown/grey silty sand.	Fill of ringfort ditch.
56	3	N/A	0.9m	0.2m	Light grey/yellow sandy clay.	Fill of ringfort ditch.
59	3	0.65m	0.5m	0.03m	Black silty charcoal rich clay.	Fill of ringfort ditch.

Finds:

Context	Find Number	Material	Period	Description
C27	E3274:27:1	Copper alloy	Early med	Hinge – possible end of belt
C27	E3274:27:2	Bone	Early med?	Notched flat bone
C27	E3274:27:3	Iron	Early med	Perforated iron plate
C49	E3274:49:1	Iron	Early med	Ringed-pin

Interpretation:
These fills appear to be a result of natural silting of the ditch over a period of time. The finds recovered from C27 and C49 would indicate that the ringfort was still occupied during the initial period of silting. This would be supported by the recovery of animal bone from the silting fills. The uppermost silting fills (C18, C26 and C30)

were quite sterile and may indicate the abandonment of the ringfort. This abandonment may coincide with the construction of Moyally castle, and it could be that the ringfort ceased to be a dwelling place and may have been used as a stock enclosure instead. Find E3274:49:1 (Figure 8; Plates 11 and 12) has been identified as a probable iron ringed-pin, most likely belonging to the plain-ringed, loop-headed group of ringed pins, as this was the most common form in iron. These date from the fifth or sixth century AD to Anglo-Norman times (Johnson, Appendix 2.2). Find E3274:27:3 is a perforated iron plate fragment (Johnson, Appendix 2.2). Find E3274:27:1 (Figure 8) is an incomplete, plain copper alloy buckle plate made from a rectangular piece of folded copper alloy sheet metal. It would have been used to attach the belt buckle frame to the strap, neither of which survives. This type of plate was in use during the medieval period (Johnson, Appendix 2.2).

2.5 Phase 5: Isolated Archaeological Features

2.5.1 Posthole C5

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
5	N/A	0.28m	0.27m	0.43m	Circular, vertical sides, flat base.	Cut of posthole.
6	5	0.28m	0.27m	0.43m	Mid greyish brown sandy clay.	Fill of posthole.

Finds: None

Interpretation:
Isolated posthole (Figures 4 and 7; Plate 5) external to the ringfort positioned to the southwest. Nothing to indicate a purpose or date for this feature was identified.

2.5.2 Small Pit C14 with Burnt Clay

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
14	N/A	0.39m	0.25m	0.31m	Steep, concave sides and base.	Cut of small pit.
15	14	0.39m	0.25m	0.31m	Light pink/red clay.	Fill of small pit.

Finds: None

Interpretation:
Isolated small pit (Figure 4; Plate 7) with some possible evidence of fire reddened clay, external to the ringfort lying to the west.

2.6 Phase 6: Post Medieval Activity

2.6.1 Deliberate Backfilling of Ringfort Ditch

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
4	3	37m	4.4m	0.92m	Dark brown and yellow fine sand.	Tertiary fill of ditch.
21	3	N/A	1.5m	0.2m	Light brown silty sand with grey flecks.	Tertiary fill of ditch.

Finds:

Context	Find Number	Material	Period	Description
C4	E3274:4:1	Ceramic	Modern	Modern sherd

Interpretation:
Comprised mostly of fill C4 with C21 as a minor layer (Figure 5). It appears that land improvements took place and the field was levelled with C4 used to bring the level of the ditch to the surrounding ground level. The ceramic find indicates a post-medieval

date for this. The pottery has been identified as a piece of transfer printed ware, possibly illustrating the tops of trees in one of the many landscape scenes popular in this ware (McCutcheon, Appendix 2.1).

2.6.2 Linear Feature C48

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
48	N/A	12.75m	1.6m	0.24m	Gently sloped sides, concave base.	Cut of linear feature.
57	48	12.75m	1.55m	0.13m	Grey/yellow sandy clay.	Fill of linear feature.
58	48	12.75m	1.3m	0.12m	Mid yellow/grey sandy silt.	Fill of linear feature.

Finds: None

Interpretation:
Linear feature (Figure 4; Plate 8), external to the ringfort, positioned to the southwest. The feature is possibly a field boundary or ditch and probably late in date and not associated with the other isolated features.

2.7 Phase 7: Topsoil

2.7.1 Topsoil C1

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
1	N/A	N/A	N/A	0.4m	Mid brown silty clay.	Topsoil

Finds:

Context	Find Number	Material	Period	Description
C1	E3274:1:1	Ceramic	Modern	Glazed china
C1	E3274:1:2	Metal	Modern	Iron ring
C1	E3274:1:3	Metal	Modern	Blade
C1	E3274:1:4	Glass	Unknown	N/A

Interpretation:
This represents the topsoil that sealed all of the archaeological deposits and features on site. The topsoil had a depth of c. 0.4m. Four finds were located during excavation, three of definite modern date with one glass find of unknown date. The pottery sherd E3274:1:1 is a piece of German stoneware, from the Westerwald region and decorated with incised patterns in cobalt blue on grey salt glazed stoneware. This dates to the later 17th century and may have been part of a jug (McCutcheon, Appendix 2.1). Metal ring E3274:1:2 has been identified as an elongated oval iron loop, with a rectangular section, 11x 13 mm. The object is bent slightly inwards at mid-point. It is in fair condition, with a fine to heavy soil coating. The metal blade E3274:1:3 has been identified as an incomplete whittle-tanged knife (Figure 8). These objects were in use throughout the medieval and into the post-medieval period. The glass sherd E3274:1:4 is a small body sherd from a post-medieval green glass bottle (Johnson, Appendix 2.2).

3 SYNTHESIS AND DISCUSSION

3.1 Landscape Setting

The new route of the N6 runs from south of Kilbeggan town to east of Athlone Co. Westmeath, crossing through the northern part of Co. Offaly for approximately 7.5km of its entire length. The landscape of this area is comprised of generally flat to undulating terrain. The underlying geology of the area is dominated by carboniferous limestone and is overlain by occasional glacial features such as moraines and eskers. The eskers dominate to the north and south of most of the route, with moraines featuring along parts of the western section toward Athlone. The soil cover varies considerably across the scheme, passing through soil complexes, grey brown podzols, boglands and alluvial deposits. The area is drained by the River Shannon through its tributaries, the Brosna, Boor, Cloghatanny and Gageborough rivers.

The site at Moyally 1 was located 2km southeast of Moate town in a gently undulating field (79m OD). The underlying geology of the area is carboniferous limestone, which is overlain with occasional small glacial hillocks, forming a gently undulating low-lying landscape. Soil cover in this area consists of grey brown podzolics of the Patrickswell series. A bog is located in the northern part of the townland and lies 200m northeast of the site (80m OD). A smaller bog is located 1km to the southwest of the site in Lurgan/Culleenagower/Newtown/Cloghanamina townlands (6" OS map 1834–1842). A small stream was recorded 350m north of the site on the 25" OS map (1887–1913).

3.2 Archaeological Landscape

The Neolithic landscape

Apart from the publication of archaeological inventories in some midland counties, such as Offaly (O'Brien and Sweetman 1997) for example (there is no archaeological inventory for Co. Westmeath) and peatland surveys by the Irish Archaeological Wetland Unit (for example Moloney *et al.* 1993) our knowledge of the prehistoric archaeology of the midlands is limited. We are reliant on data stored at the RMP (see Appendix 3) and information from a limited number of excavations within Westmeath and Offaly. This road scheme joins a number of recent large-scale commercially-driven archaeological excavations, most notably the gas pipeline to the west (Grogan *et al.* 2007) which runs mostly parallel a short distance to the north of the N6, but unfortunately evidence for Neolithic settlement remains relatively minor in this region.

The majority of sites along the pipeline were middle-to-late Bronze Age in date while there was also a small number of early Bronze Age sites (most of them burnt mounds or related sites). Early to middle Neolithic sites were absent while only a very small number were dated to the late Neolithic period: the most striking example being the Grooved Ware timber circle at Whitewell, Co. Westmeath, approximately 15km northeast of Kilbeggan (Phelan 2007, 359–50). The heavy soils and generally marginal landscape which the N6, and certain parts of the pipeline, traverse was unsuited to early farmers hence the lack, to date, of early or middle Neolithic archaeological evidence. The Whitewell circle may have links with the passage tomb cemetery at Loughcrew, Co. Meath, approximately 37km to the northeast (Grogan *et al*. 2007, 137). Other late Neolithic activity in the region includes the site of Brackin, Co. Westmeath, where a Carrowkeel bowl was found, and the possible passage tomb 11km to the southeast of Whitewell at Croghanhill, Co. Offaly. Also, a carved stone ball found at the Hill of Uisneach was possibly imported from the Orkneys (Grogan *et al*. 2007, 138).

Further west towards Athlone there are very few Neolithic monuments and the closest to the N6 is a portal tomb at Mihanboy on the western edge of the town (Murtagh 2000, 9). Recent archaeological surveys on the bogs in Offaly have revealed Neolithic activity, for example Cloncreen bog (McDermott 2002) and Mountlucas bog (Moore 2002), but they are far removed from the N6 excavations. Therefore, the small number of late Neolithic sites revealed along the N6, including this pit at Moyally 1, Moyally 5 and two sites at Ardballymore (1 and 2), are an important reminder that, despite the absence of early to middle Neolithic monuments, at least low level late Neolithic settlement occurred in this region.

The early medieval landscape

From east to west the N6 passes in proximity to the towns of Kilbeggan, Clara, Moate and Athlone. The name Kilbeggan may have derived from Saint Beccan who was associated with the town in the sixth century AD (McCormack 2006, 5). The site of St Beccan's monastery occupies the vicinity of the current graveyard and Protestant Church in the town. A later monastery was constructed by the Cistercians, close to Saint Beccan's site, in AD 1150 (Masterson 2004). Both of these monastic foundations lay in proximity to the River Brosna and it is likely that the town developed from this point. A number of recorded RMP sites testify to early medieval monastic activity in Kilbeggan and include an ecclesiastical site (WM038-017001), graveyard (WM038-017002) and church (WM038-017006). A recent geophysical survey has identified the footprint of the Cistercian monastery and excavations nearby have revealed a large cemetery (possibly of early medieval date) a cereal-drying kiln, pits and ditches (Hayden 2003; Sweetman 2004).

A number of enclosure sites (OF008-006) and possible enclosures (OF008-005 & OF008-014) are recorded within the small town of Clara, Co. Offaly; some of which may represent early medieval ringforts. Excavations at Ballicknahee, near Clara, revealed at least 17 extended inhumation burials of possible early medieval date (Murphy 1998). Research undertaken to study the regional distribution of ringforts in the barony of Kilcoursey, Co. Offaly has revealed a high density of ringforts in the area with 0.41 per km squared (Stout 1998, 33). Kilcoursey is the smallest barony in Offaly and the only one in the county to be impacted upon by the N6. Excavations at Cappydonnell Big (Coughlan 2009) have revealed a large multi-period enclosure located in proximity to several ringforts at Ballynakill Big (OF002-023, OF002-032 & OF002-033) to the south and at Kilbeg (WM037-001 & WM037-004) to the east.

The nearest recorded early medieval monument at Moate, Co. Westmeath is a ringfort to the west at Tullaghnageeragh (WM030-108), however the sites in closest proximity are castles dating to the later medieval period. A significant excavation, c. 11km to the ENE of Moate, at Gneevebeg uncovered an enclosed cemetery of probable early medieval date in addition to cereal-drying kilns, a ballaun stone and a number of pits and ditches (Wallace 2002).

The largest of the towns along the N6, Athlone, is situated on the banks of the River Shannon in Co. Westmeath. By the ninth century AD the territory to the immediate west of Athlone was occupied by the *Delbna Nuadat* and the region to the east was inhabited by a vassal tribe of the southern *Uí Néill* called the *Bregmine* who gave title to the barony of Brawny (Murtagh 2000, 9). Archaeological evidence in the form of five decorated grave slabs, dating between the middle eighth to 10th century indicates that an unrecorded ecclesiastical site was situated in Athlone at this time (Murtagh 2000, 11). Little is known about the development of Athlone west of the Shannon but the surviving castle, probably constructed in the 13th century, was possibly built on the site where the castle of the *Uí Conchobhair* stood in the early 12th century (Sullivan 1997); although the precise location of the castle is unknown

(Murtagh 2000, 13). Recent excavations in Athlone have failed to locate any trace of early medieval activity; instead they have revealed later activity dating mainly to the late middle ages and post medieval period.

The north midlands, through which the N6 traverses, is described by Stout (1997, 77) as having a high-density of ringforts. Research undertaken to study the regional distribution of ringforts in the barony of Kilcoursey, Co. Offaly has revealed a high density of ringforts in the area with 0.41 per km squared (Stout 1998, 33). Kilcoursey is the smallest barony in Offaly and the only one in the county to be impacted upon by the N6.

The Hill of *Uisneach* located c. 14km to the NNW of Kilbeggan is often referred to as a central axis point or place of assembly of high importance, due to its location in *Mide* (Schot 2006, 41). During the early medieval period it was thought to hold contemporary significance with Tara and many mythological and annalistic tales refer to the area as one of territorial and spiritual consequence. Reanalysis of the excavations undertaken by MacAlister and Praeger in the 1920s at Rathnew, a figure of eight shaped enclosure at the Hill of *Uisneach*, has highlighted activity during the late Iron Age and early medieval period. It has been suggested that the conjoined bivallate ringfort with associated structures and souterrain may have functioned as a royal seat of the *Clann Cholmáin* further adding to the political and religious significance of this landscape (*ibid*. 65).

Crannógs also feature significantly in this region and include those excavated by Hugh Hencken during the 1920s at Ballinderry I, Co. Westmeath (Hencken 1936) and Ballinderry II, Co. Offaly (Hencken 1942), located c. 2km north east and ENE respectively from Moate. Recently, the excavated evidence from both crannógs has been reinterpreted by Ruth Johnson (1999) at Ballinderry I and Conor Newman (2002) at Ballinderry II. These crannógs are centrally located in relation to many important early medieval ecclesiastical centres, such as Clonmacnoise, Gallen, Bealin, Durrow, Rahan and Inchbofin (Johnson 1999, 24).

Ballinderry I (WM030-118), located in the barony of Clonlonan, has been interpreted as a high status early medieval site with evidence for craft working, agriculture, trade, hunting or warfare and domestic and leisure activities (Johnson 1999). The tenth century Ballinderry game-board is thought to be the most striking piece of decorated wood of this period found outside Dublin and certainly adds to the significance of the settlement. The artefactual evidence for Hiberno-Scandinavian influence at Ballinderry I is strong and it has been suggested that this may be associated with a rise in the military and economic strength of the *Clann Cholmáin* in the region (Johnson 1999, 67). Newman's reassessment of the early medieval activity at Ballinderry II (OF001-001), located in the barony of Kilcoursey, revealed evidence for high status deer hunting, killing and feasting (Newman 2002). The abundance of deer bone and antler in the faunal assemblage and presence of c. 11 circular wicker structures are associated with numerous high quality artefacts dating to the sixth and seventh centuries. Artefacts including pins with zoomorphic design, sherds of E ware and gaming pieces indicate possible trade with northern Europe (Newman 2002, 111).

A more recent excavation of a crannóg was undertaken at Newtownlow, in the barony of Moycashel a short distance to the northeast of Kilbeggan (Bourke 1984, 1985). At Coolure, on Lough Derravaragh also within the barony of Moycashel, a crannóg was the focus of a recent archaeological survey, environmental investigation and artefactual and landscape research (O'Sullivan *et al* 2007). Historically, the impact of the Vikings in the region and specifically on Lough Ree is well summarised

by Alfred Smyth (1979, 246–53). Ballaghkeeran Little, in the barony of Clonlonan, has been suggested as the location of a possible *longphort* site (Fanning 1983).

Excavations of ecclesiastical sites are rare in the archaeological record but a monastic enclosure was partially excavated at Clonfad, close to Lough Ennel, Co. Westmeath (Stevens 2006, 8–11). The findings revealed that a variety of industrial and craft activities occurred on the site including extensive evidence for ironworking and non-ferrous metalworking, notably the production of handbells, and bone working. Another ecclesiastical site excavated at Kilpatrick, located in the most northern barony of Westmeath in Fore, also revealed evidence for bone, antler and ironworking (Swan 1976, 89–96; 1994/95, 1–21).

Moyally 1

The rath/ringfort at Moyally 1 was the only one discovered on the N6 between Kinnegad and Athlone however this is not surprising given that the road avoided much of the best land and both upstanding and recorded monuments. The region that the N6 traverses, the north midlands, is described by Stout (1997, 77) as having a high-density of raths and it has been shown that rath builders utilised the best pockets of good soils even in areas where marginal landscapes occurred (Barrett and Graham 1975, 39). A ringfort (WM030-115) and two enclosures (OF001-005 and WM030-114) are located 370m north, 800m southeast and 900m north of Moyally 1 respectively (Figure 2). The high status early medieval settlement sites of Ballinderry I (WM030-118) and II (OF001-001) discussed above are located c. 1.6km north and 1.2km NNE of Moyally 1. Artefactual evidence dates the later phase of habitation at Ballinderry II from the late sixth century (Newman 2002, 109) however the Ballinderry game board and several high quality ring pins date activity at Ballinderry I to the tenth century. The basal fill of the ditch at Moyally returned a 2 Sigma date range of AD 770–980 (Beta 249542, Appendix 2.4) making the enclosure contemporaneous with Ballinderry I. The significance and status of Ballinderry I and II during the early medieval period would have had a definitive influence on the settlement of the surrounding area.

The diameter of the Moyally rath, at 30m, is typical of the size of the majority of raths across the country (Barrett 1980, 42; Edwards 1990, 14). The small number of finds is also a common feature of rath excavations. Artefacts from the majority of univallate raths tend to be small in number and are usually dominated by utilitarian items. Iron artefacts, where they survive, consist of knives, needles and nails. Stone and bone functional items consist of rotary querns, hone stones, flints, spindle whorls and needles. Personal and dress items are rarer and are represented by copper-alloy and iron ringed pins, glass beads and bracelets, lignite bracelets and bone combs and pins. Common finds also include iron slag and animal bone. It is also worth pointing out that although Moyally rath was only partially excavated this is true for many rath excavations and the overall impression of the site would not be altered significantly had it been fully investigated.

A number of raths – including Croom, Co. Limerick (Shee-Twoig 1977), Curraheen 1, Co. Cork (Danaher and Cagney 2004), Lackan, ‘Quinn’s rath’, Co. Wicklow (O’Connor 1944) and Lusk, Co. Dublin (Giacometti 2006) – are possible parallels because they were all located on relatively productive agricultural soils and produced a range of finds, although low in number, that showed that the occupants were engaged in small-scale farming. These people were self-sufficient farmers living a very modest lifestyle in which pastoral farming and, in some cases to a lesser extent, tillage supplied their dietary needs. Iron tools were mended – and sometimes made - to assist in the day-to-day running of the farm whilst the presence of only a few dress or personal items shows they did not have access to portable wealth or prestige

items. Also, animal bone was retrieved, but not in great numbers, indicating that they had enough to eat and get by. The lack of any internal features at Moyally is probably offset by the fact that only a small section of the interior was excavated.

3.3 Archaeological Typology Background (Raths/Ringforts)

Raths or ringforts are enclosed farmsteads dating to the early medieval period. The majority are univallate, surrounded by one ditch and bank, but some are surrounded by two and, to a lesser extent, three enclosing ditches and banks and are known as bivallate and trivallate raths respectively (for example Garranes, Co. Cork, Ó Ríordáin 1942). Another morphological variation consists of the platform or raised rath – the former resulting from the construction of the rath on a naturally raised area (for example Big Glebe, Co. Derry, Lynn 1988) while the latter's height resulting from prolonged occupation over many centuries (for example Rathmullan, Co. Down, Lynn 1981/82). Many raths are circular or oval in shape but they also occur plentifully as D-, pear- and sub-rectangular-shaped enclosures (Kinsella 2007).

Many raths are situated on valley sides and on the brow of drumlins whilst avoiding low-lying terrain and the uplands (Stout 1991, 206; 1997, 106–7). Various local and regional studies have shown that the majority of raths occur between 30m and 200m OD and are rarely found above or below these altitudes. In Skibbereen, Co. Cork, 80% of surviving raths are located below 120m and are most densely distributed between 60m and 120m (Fahy 1969). In the Lisleagh area of Co. Cork and Munster generally, raths are sited in elevated positions between 60m and 120m (Monk 1998, 40). They avoid areas below 30m in the Dingle area and in south Donegal and are most densely occupied in the former between 30m and 60m and in Dingle between 60m and 90m (Bartlett and Graham 1975, 38–9). Finally, the most recent study of rath locations in Northwest Ulster has revealed similar findings (Kerr 2007).

While raths, for the most part, avoid the extreme low and uplands, they also show a preference for the most productive soils (Stout 1997, 107). Evidence from the above local and regional studies further supports this view as raths generally avoid unproductive highland and peaty lowland soils (Bartlett and Graham 1975, 39; Fahy 1969; Kerr 2007, 76–9). Stout (1997, 107) argues that raths were deliberately located to avail of soils best suited to pasture while Kerr (2007) has developed this idea to suggest that platform and raised raths were positioned in areas more suited to tillage unlike typical univallate raths.

The dating of raths has been a cause of contention (see Limbert 1996 for his argument that they have their origins in the Iron Age) but Stout (1997, 24) has shown that the majority were occupied from the beginning of the seventh until the end of the ninth centuries, covering a 300-year period. Kerr's (2007, 99) recent research has revealed that raised and platform raths are slightly later in date and were constructed between approximately the mid-eighth and mid-tenth centuries AD.

Raths were essentially early medieval enclosed farmsteads. The majority were simple univallate enclosures, surrounded by a bank and ditch, which enclosed a number of domestic and agricultural structures. Excavations (for general overviews see Comber 2008; Edwards 1990, 6–33; Mallory and McNeill 1991, 181–248; Mytum 1992; Proudfoot 1961, 94–122; Stout 1997) and historical research (Kelly 1997) has revealed houses, out-buildings and artefacts that typically illustrate a range of activities associated with self-sufficient farmers, their families and retainers. A smaller number of raths were high-status sites and are archaeologically differentiated from the majority by an increased quantity and quality of artefacts, noticeably items of adornment, evidence for non-ferrous metalworking and, in some cases, by their larger size and scale of defences (Kinsella 2007). Recent excavations, in advance of

major developments, is challenging accepted traditional discourse on the function and role of raths throughout the early middle ages and it is now becoming evident that they were constructed in a variety of shapes and sizes, were situated in many differing landscape settings and they were occupied by a range of people from the lowest to the highest social grades (Kinsella 2007; 2008, 98–103).

3.4 Discussion

3.4.1 Phase 1: Natural Deposits

This phase represents the natural subsoil, which was cut or sealed by all subsequent archaeological features. For the purposes of recording on-site this phase of activity was allocated the context number C2. At the site of Moyally 1 the subsoil was uniform throughout consisting of a yellowish brown silty sandy clay.

3.4.2 Phase 2: Neolithic Activity

This phase represents a small isolated pit located external to the ringfort ditch, lying to the WSW. There was evidence of some *in situ* burning in the pit, but the precise function of the pit was not determined. AMS radiocarbon dating of a small piece of oak charcoal produced a 2 Sigma calibrated date of 2872–2629 BC (UBA 9152, Appendix 2.4), which dates this feature to the late Neolithic.

3.4.3 Phase 3: Ringfort Ditch Cut and Bank

This phase represents the main construction phase of the ringfort. As the ditch was being excavated the bank was being created by re-deposition of the natural subsoil on the inner edge of the ditch. The ringfort ditch C3 was circular in plan, but only an arc of 39m was within the CPO. The internal diameter of the ditch would be c. 30m. The ditch was V-shaped in profile and survived to a maximum width of 4.44m and a maximum depth of 1.96m. The internal bank was created by the re-deposition of material from the ditch as it was being excavated. It survived up to a maximum depth of 0.45m. The inner edge of the bank was outside the CPO.

3.4.4 Phase 4: Infilling of Ditch

This phase represent the initial backfilling of the ringfort ditch. The primary natural silting would have occurred shortly after the ditch cut was completed. These silt layers were sealed by occupation layers and further natural silting layers which indicate an early medieval date for the use of the ringfort. AMS Radiocarbon dating on a piece of cow bone recovered from occupation fill C10 returned a 2 Sigma calibrated date of AD 770–980 (Beta 249542, Appendix 2.4), placing the occupational fills in the early medieval period. The finds indicate that the ringfort was still in use during the initial period of silting of the ditch, but the relatively sterile nature of the upper silting fills could indicate the abandonment of the ringfort. The ringfort may have ceased to have been a dwelling place and may have become a stock enclosure. Analysis of the bone assemblage has identified that cattle, sheep/goat, dog, pig, horse and possibly deer were present on site. Cattle dominated the assemblage along with other domesticated meat-producing animals such as caprinae and pig. There were also a range of other domesticated animals like dog and horse present in the material. Wild animals were represented by one possible deer antler fragment (Lofqvist 2007, Appendix 2.5).

3.4.5 Phase 5: Isolated Archaeological Features

This phase represents two isolated features (C5 and C14) external to the ringfort ditch. No dating evidence was recovered during the excavation but it has been assumed that they are contemporary with the use of the ringfort.

3.4.6 Phase 6: Post-Medieval Activity

This group represents the latest phase of human activity on the area excavated. It is comprised of the final backfilling of the ringfort ditch and a linear feature. The ringfort ditch was deliberately filled in order to bring it up to the surrounding ground level, probably during post-medieval land improvement works. The exact function of the linear feature is unknown but is probably a hedge or field boundary. The feature continued to the southwest beyond the limits of the site.

3.4.7 Phase 7: Topsoil

This phase represents the topsoil that sealed all of the archaeological deposits and features on site. Finds recovered from this phase of activity include modern metal, ceramic and glass objects of no archaeological significance.

The only archaeologically significant sherd of pottery (E3274:1:1) was recovered during soil sieving. This medieval sherd is a base sherd of Dublin-type ware with splashes of glaze on the exterior and comes originally from a jug dating to the 13th century (McCutcheon, Appendix 2.1).

4 CONCLUSIONS

Moyally 1 comprised part of a ringfort/rath ditch and bank and three isolated, external features. One of the isolated pit features C7 produced a calibrated radiocarbon date placing it within a late Neolithic date range; 2872–2629 BC. Most of the ringfort was preserved outside the CPO, with only a 39m long arc of the ditch lying within the CPO. An internal bank was identified, created from the upcast material from the digging of the ditch, and survived to a maximum depth of 0.45m. Animal bone from the basal fill of the ditch returned a 2 Sigma date range of AD 770–980. The finds recovered from the ditch fills indicate an early medieval date for the occupation of the ringfort. The finds indicate that the ringfort was probably still in use during the initial period of silting of the ditch, but the relatively sterile nature of the upper silting fills may indicate the abandonment of the ringfort. The ringfort/rath at Moyally is positioned within an important early medieval landscape which includes the crannogs at Ballinderry a short distance to the north.

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PLATES

Plate 1: E3274: Mid-excavation aerial view of site, facing east

Plate 2: E3274: Ditch C3, mid-excavation, facing northeast

Plate 3: E3274: Ditch C3, post-excavation, facing south

Plate 4: E3274: Mid-excavation of bank showing C39, facing north

Plate 5: E3274: Posthole C5, mid-excavation, facing northeast

Plate 6: E3274: Pit C7, mid-excavation, facing northwest

Plate 7: E3274: Post-excavation of C14, small pit with burnt clay, facing south

Plate 8: E3274: Mid-excavation of site with C48, post-medieval linear feature, in foreground, facing east

Plate 9: E3274: Post-excavation of site showing excavated ditch, facing northwest

Plate 10: E3274: Moyally 1 landscape, facing northeast

Plate 11: E3274: Ringed-pin 49:1 (front)

Plate 12: E3274: Ringed-pin 49:1 (rear)

APPENDIX 1 CATALOGUE OF PRIMARY DATA

Appendix 1.1 Context Register

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
1	N/A	N/A	N/A	0.4	Topsoil	Mid brown silty clay.	Modern iron loop or link; partial whittle tang knife blade; post-medieval green glass sherd; 17th century Westerwald pottery sherd
2	N/A	N/A	N/A	N/A	Natural drift geology.	Mottled clay with grey-orange colour.	N/A
3	N/A	37	4.44–3.32	1.96–1.42	Cut of curvilinear ringfort ditch.	Circular ditch – NW arc within the CPO. Gradual to non-perceptible slope at top, sides sloping to concave with some stoniness in areas. Irregular to flat base.	N/A
4	3	37	4.4 max	0.92–0.12	Fill of ringfort ditch.	Dark brown and yellow fine sand.	Transfer printed ware pottery sherd
5	N/A	0.28	0.27	0.43	Cut of posthole.	Circular cut, vertical sides, irregular flat base.	N/A
6	5	0.28	0.27	0.43	Fill of posthole.	Mid greyish brown sandy clay.	N/A
7	N/A	0.66	0.45	0.15	Cut of small pit.	Circular cut, vertical sides, irregular flat base.	N/A
8	7	0.43	N/A	0.08	Fill of small pit.	Mid brown silty clay.	N/A
9	3	N/A	1.85	0.08–0.22	Fill of ringfort ditch.	Dark brown with a greyish hue clayey sand, frequent small stone inclusions, loose compaction.	N/A
10	3	N/A	3.1	0.36	Fill of ringfort ditch.	Dark brown/yellow clayey sand, frequent stone and occasional charcoal fleck inclusions, firm compaction.	N/A
11	7	0.28	N/A	0.24–0.03	Fill of small pit.	Orange/red oxidised silty clay.	N/A
12	7	0.42	N/A	0.1–0.02	Fill of small pit.	Dark brown / black 99% charcoal with slight trace of silty clay.	N/A
13	7	0.62	N/A	0.08	Fill of small pit.	Mid brown silty clay.	N/A
14	N/A	0.39	0.25	0.31	Cut of fire reddened clay patch.	Oval cut, steep, slightly concave sides onto pointed concave base.	N/A
15	14	0.39	0.25	0.31	Fill of fire reddened clay patch.	Light pink/red clay.	N/A
16	-	-	-	-	N/A	N/A	N/A
17	3	N/A	2.12	0.08–0.26	Fill of ringfort ditch.	Mid brown silty clay, moderate gravel and occasional small stone inclusions, firm compaction.	N/A
18	3	N/A	3.4	0.16–0.42	Fill of ringfort ditch.	Mid brown/yellow silty sand, occasional large stone inclusions, loose compaction.	N/A

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
19	3	N/A	2.1	0.3	Fill of ringfort ditch.	Mid brown/red clayey sand, occasional small stone inclusions, firm compaction.	N/A
20	3	N/A	1.23	0.23	Fill of ringfort ditch.	Mid brown/orange silty sand with occasional small stone inclusions loose compaction.	N/A
21	3	N/A	1.5	0.2	Fill of ringfort ditch.	Light brown silty sand with grey flecks.	N/A
22	3	N/A	2.4	0.3	Fill of ringfort ditch.	Mid brown/grey clay frequent gravel inclusions, firm compaction.	N/A
23	3	N/A	3.6	0.3	Fill of ringfort ditch.	Mid brown/orange clayey silt with medium-sized stone inclusions concentrated at S side of fill, firm compaction.	N/A
24	3	N/A	2.2	0.2	Fill of ringfort ditch.	Mid brown/grey clayey silt with medium-sized stones concentrated at S-side of fill, firm compaction.	N/A
25	3	N/A	0.8	0.15	Fill of ringfort ditch.	Dark brown clayey silt frequent small stone inclusions (20%) firm compaction.	N/A
26	3	N/A	2.4	0.4	Fill of ringfort ditch.	Mid brown with grey flecks, frequent small stones, occasional charcoal fleck and gravel inclusions.	N/A
27	3	N/A	3.2	0.2	Fill of ringfort ditch.	Mid brown/yellow silty sand, occasional large stone inclusions, firm compaction.	Bronze belt buckle, notched flat bone, iron plate.
28	3	N/A	1.8	0.2	Fill of ringfort ditch.	Light brown with grey flecks silty sand, with natural iron panning occasional small stone inclusions loose compaction.	N/A
29	3	N/A	2.12	0.32	Fill of ringfort ditch.	Mid grey/brown sandy clay occasional small stone and charcoal fleck inclusions. Loose compaction.	N/A
30	3	N/A	3.05	0.36	Fill of ringfort ditch.	Light brown with grey/yellow hue sandy clay occasional medium-sized stones loose compaction.	N/A
31	3	N/A	0.67	0.2	Fill of ringfort ditch.	Mid brown clayey silt 20% gravel inclusions, firm compaction.	N/A
32	N/A	N/A	2.4	0.26-max	Bank deposit.	Orangey/brown firmly compacted clay with occasional small stone inclusions.	N/A
33	N/A	N/A	2.6	0.32 max	Bank deposit.	Orange/grey clayey silt, no inclusions medium/firm compaction.	N/A
34	N/A	N/A	2.66	0.36 max	Bank deposit.	Mottled grey clayey silt with orange with grey and brown patches, occasional small stone inclusions, medium/firm compaction.	N/A
35	N/A	N/A	2.7	0.22-max	Bank deposit.	Brown clayey silt with grey patches, occasional small stone inclusions, firm compaction.	N/A
36	N/A	N/A	0.52	0.16	Bank deposit.	Light brown/grey clayey silt, no inclusions, loose compaction.	N/A
37	N/A	N/A	0.12	0.1	Bank deposit.	Dark brown clayey silt, no inclusions, loose compaction.	N/A

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
38	N/A	N/A	1.26	0.13	Bank deposit.	Mottled yellow, brown and grey clay, occasional small stone inclusions, firm compaction.	N/A
39	N/A	N/A	3.52	0.25	Bank deposit.	Mid brown with orange and yellow clay/silt, natural iron panning and occasional small stone inclusions, soft/loose compaction.	N/A
40	N/A	N/A	0.64	0.13	Bank deposit.	Yellow/light brown clayey silt, no inclusions, loose compaction.	N/A
41	N/A	N/A	0.22	0.08	Bank deposit.	Grey with orange hue clay, no inclusions, firm compaction.	N/A
42	N/A	N/A	2.28	0.16	Bank deposit.	Light brown/grey clay with natural iron panning, firm compaction.	N/A
43	N/A	N/A	2.11	0.2	Bank deposit.	Mottled light brown/yellow/orange clayey silt, firm compaction.	N/A
44	N/A	N/A	2.44	0.16	Bank deposit.	Mottled grey/brown clayey silt, no inclusions medium compaction.	N/A
45	N/A	N/A	0.56	0.18	Bank deposit.	Mottled light brown/yellow/orange clayey silt, occasional small stone inclusions firm compaction.	N/A
46	N/A	N/A	0.23	0.16	Bank deposit.	Yellow silty clay, no inclusions, firm compaction.	N/A
47	N/A	N/A	2.14	0.45	Bank deposit.	Mottled yellow and grey silty clay, no inclusions, firm compaction.	N/A
48	N/A	12.75m exposed	1.6–0.75	0.24–0.04	Cut of linear feature – post medieval.	Linear cut, SW–NE orientation, very gentle sloping sides, concave base.	N/A
49	3	N/A	2.4	0.2	Fill of ringfort ditch.	Mid brown/grey medium-coarse sand.	Probable early medieval ring pin.
50	3	N/A	1.8	0.3	Fill of ringfort ditch.	Mid brown sandy clay.	N/A
51	3	N/A	1	0.2	Fill of ringfort ditch.	Mid brown medium-coarse sand.	N/A
52	3	N/A	1.8	0.6	Fill of ringfort ditch.	Mid brown/grey silty sand, frequent gravel and stone inclusions, loose compaction.	N/A
53	3	N/A	1.91	0.33	Fill of ringfort ditch.	Dark brown/grey silty sand.	N/A
54	3	N/A	1.8	0.46	Fill of ringfort ditch.	Grey/brown clayey silt, freq (70%) stone inclusions ranging from gravel to large stones. Loose compaction.	N/A
55	3	N/A	0.98	0.37	Fill of ringfort ditch.	Brown with an orange hue sandy clay 5% gravel inclusions loose compaction.	N/A
56	3	N/A	0.90	0.2	Fill of ringfort ditch.	Light grey/yellow sandy clay.	N/A
57	48	12.75 exposed	1.55–0.85	0.1–0.02	Fill of linear feature – function unclear.	Grey/yellow sandy clay.	N/A
58	48	12.75 exposed	1.3–0.89	0.12–0.04	Fill of linear feature –post medieval.	Mid yellow/grey sandy silt.	N/A
59	3	0.65	0.5	0.03	Fill of ringfort ditch.	Black silty clay with reddish clay and frequent charcoal inclusions.	N/A

Appendix 1.2 Finds Catalogue

Registration Number	Context	Item No.	Simple Name	Full Name	Material	No. of Parts	Description
E3274:1:1	C1	1	Pottery sherd	Post-medieval	Pottery	1	17th century Westerwald sherd
E3274:1:2	C1	2	Iron Object	Iron ring, modern	Metal	1	Iron loop or link-modern
E3274:1:3	C1	3	Knife	Blade	Metal	1	Partial whittle tang knife blade. Conserved.
E3274:1:4	C1	4	Glass	Bottle sherd	Glass	1	Post-medieval green glass sherd
E3274:4:1	C4	1	Pottery	Modern	Pottery	1	Transfer printed ware sherd
E3274:27:1	C27	1	Bronze object	Hinge – possible end of belt, early med	Bronze	1	Buckle panel. Conserved.
E3274:27:2	C27	2	Bone object	Notched flat bone, early med?	Bone	1	
E3274:27:3	C27	3	Iron plate	Perforated iron plate	Iron	1	Incomplete, rectangular-shaped iron plate with un-even edges and off-centre 4x4mm perforation. Conserved.
E3274:49:1	C49	1	Ringed-pin	Ringed-pin, early med	Metal	1	Ringed-pin. Conserved.

Appendix 1.3 Catalogue of Ecofacts

A total of 15 bulk soil samples were taken during the course of excavation at this site. Of these, 3 were processed by means of flotation and sieving through a 250/300µm mesh. The resulting retrieved samples of this process are listed below. In addition to this, a total of 10 animal bone samples were hand retrieved on site.

1.3.1 Animal bone

Context number	Sample number	Feature	Sample weight (g)
C10	9	Fill of ringfort ditch	452g
C9	12	Fill of ringfort ditch	25g
C10	13	Fill of ringfort ditch	284g
C26	14	Fill of ringfort ditch	323g
C55	19	Fill of ringfort ditch	3.3g
C16	20	N/A	258g
C27	21	Fill of ringfort ditch	131g
Un-stratified	22	Various ditch fills	1854g
C27	23	Fill of ringfort ditch	73g
C4	24	Fill of ringfort ditch	70g
Un-stratified	25	Various ditch fills	1006g

1.3.2 Charcoal

Context number	Sample number	Feature	Sample weight (g)
C12	5	Fill of small pit	184.7g

1.3.3 Shell

Context number	Sample number	Feature	Sample weight (g)
C55	19	Fill of ringfort ditch	0.4g

Appendix 1.4 Archive Checklist

Project: N6 Kilbeggan – Athlone	**Irish Archaeological Consultancy Ltd**	
Site Name: Moyally 1		
NMS Number: E3274		
Ministerial Direction No.: A016/046		
Site director: David Bayley		
Date: 31 October 2008		
Field Records	**Items (quantity)**	**Comments**
Site drawings (plans)	9	
Site sections, profiles, elevations	19	
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books	2	
Site registers (folders)	6	
Survey/levels data (origin information)	c. 200	
Context sheets	59	
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	206	
Photographs (print)	0	
Photographs (slide)	0	
Finds and Environ. Archive		
Flint/chert	0	
Stone artefacts	0	
Pottery (specify periods/typology)	0	
Ceramic Building Material (specify types eg daub, tile)	1	Two Modern ceramic pieces
Metal artefacts (specify types - bronze, iron)	5	The ringed-pin (49:1), the knife (1:3), the pierced plate (27:3) and the copper alloy buckle (27:1) have all been conserved. Conservation report is included with objects in museum box.
Glass	1	One of unknown date
Other find types or special finds (specify)	1	Notched bone
Human bone (specify type eg cremated, skeleton, disarticulated)	0	
Animal bone	1	One notched bone piece
Metallurgical waste	0	
Enviro bulk soil (specify no. of samples)	25	
Enviro monolith (specify number of samples and number of tins per sample)	0	
Security copy of archive	1	On IAC Server

Appendix 1.5 Copy of Registration No. Document from DoEHLG

National Monuments
Acts (1930-2004)
Ministerial Directions
Record Number for
archaeological activity

AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT, HERITAGE
AND LOCAL GOVERNMENT

File: A16/46 Direction No. A16

Registration Number: E3274

Directions have been issued to Murty Hanly on behalf of Westmeath County Council in order to regulate archaeological activities carried out on N6 Kilbeggan to Athlone (Phase 2).

Application having been duly made to me by Mr. David Bayley of Irish Archaeological Consultancy, 9 Albert Terrace, Meath Road,, Bray,, Co. Wicklow.

For a registration number to record excavation at the site of Moyally A16/46 being part of the townland of MOYALLY in the County of Offaly.

This registration is not an archaeological licence or consent but it is issued solely for archive purposes and to allow for the material from the activity to be registered with the National Monuments Service and the National Museum.

Signed ..... 20 February 2007

Appendix 1.6 Copy of Ministerial Direction Document

Section 14A(2) National Monuments Acts 1930-2004

Directions to Westmeath County Council for the carrying out of archaeological works on the N6 Kinnegad to Athlone dual carriageway road scheme (Phase 2 * Kilbeggan to Athlone).

1. Introduction

The project is an approved road development, having been approved by An Bórd Pleanála on 26th March 2004.

The development will consist of a dual carriageway that will run for a distance of approximately 57.5km.

In line with recommendations in the Environmental Impact Assessment for the scheme, archaeological investigations included site specific testing followed by a centreline test trench with staggered offsets. The request for directions has an attached strategy document that covers the proposed resolution works

These directions relate to Phase 2 works and are issued following the receipt by the Minister of reports on the testing work carried out in Phase 1.

2. Directions

All aspects of the archaeological works should be conducted in accordance with provisions of the policy and advice notes on archaeological excavations issued by the Department and in line with the provisions of the Code of Practice agreed with the National Roads Authority. Archaeological works shall be carried out in accordance with the Strategy for Proposed Works submitted with the application seeking Directions.

3. Project Archaeologist

The Project Archaeologist appointed for the road development should ensure that the archaeological works are carried out in accordance with the terms of the directions.
· Any changes to the agreed method statement for the excavations should be submitted to the National Monuments Section for approval.
· Any proposal to change any named director of a specific excavation should firstly be notified to the National Monuments Section for approval.

4. Conduct of Archaeological Excavations:

a) The archaeological excavations should be carried out in accordance with the specifications set out in the strategy document submitted to the Minister.
b) The National Monuments Section should be notified of the commencement date of the works on site.
c) The names of the archaeological consultants, including site directors should be submitted to the National Monuments Section in advance of the works commencing.

d) Where necessary the layout of the archaeological trenches should be adjusted to include additional archaeological features and deposits or areas of archaeological potential.
e) All archaeological objects recovered in the course of the test excavations should be treated and conserved in line with the advice notes and guidelines issued by the National Museum of Ireland.
f) A report on the progress of the archaeological works shall be submitted to the National Monuments Section every 4 weeks.

5. Record Number for the scheme:

The record number for the recording of archaeological works is A016/000. Sub-numbers may be allocated by the Project Archaeologist to the additonal works. These numbers should be notified to the National Monuments Section for agreement with full details of the archaeological works involved.

6. Detection Device:

Detection devices may be used as appropriate in the course of archaeological works to recover archaeological objects. Details of proposed methodologies should be notified to the National Monuments Section.

7. Reports:

1. A report on the results of the archaeological excavations should be submitted to the National Monuments Section within 4 weeks of the completion of the works on site. Should additional time be required to complete the report the National Monuments Section should be notified before the expiration of the 4-weeks period. A copy of the report should be sent to the National Museum of Ireland.
2. A summary of the excavation results for the site should be published in the Excavations Bulletin for the year when works are undertaken.

8. National Monuments (Subsection 14A(4)):

If during the carrying out of the archaeological excavations a site should prove to be a National Monument within the meaning of the National Monuments Acts (1930-2004) all works should stop and the National Monuments Section should be informed immediately.

9. Inspection of Works

Officers, servants or agents of the Minister may inspect the archaeological works at any time and full co-operation should be given to them in carrying out the inspections.

APPENDIX 2 SPECIALIST REPORTS

THE POST-MEDIEVAL POTTERY FROM MOYALLY 1, CO. OFFALY (A016/046)

CLARE MCCUTCHEON MA MIAI

Five sherds of pottery were presented for study. The site is described as a ringfort ditch and the contexts containing pottery are described as topsoil C1 and deliberate backfilling C4 of the ditch C3. The fifth sherd was recovered later during soil processing from the site and is an un-contexted find, also from the enclosing ditch. This latest sherd is the only medieval piece from the site. It is a base sherd from a glazed jug, in Dublin-type ware, with splashes of glaze on the exterior. These would have dropped from another vessel, probably also a jug, during the firing process when many vessels were stacked on each other in the kiln. The sherd dates broadly to the thirteenth century while two sherds of Dublin-type fineware, dating to the later thirteenth century (McCutcheon 2000, 120–23), were recovered from the ditch at Moyally Castle (A016/015).

Two sherds were recovered from the topsoil, the first a fragment of a cup handle in creamware and the second a part of a lid edge in blue shell-edged pearlware.

The third piece was recovered as a loose find, a piece of transfer printed ware, possibly illustrating the tops of trees in one of the many landscape scenes popular in this ware.

The final sherd is a piece of German stoneware, from the Westerwald region and decorated with incised patterns in cobalt blue on grey salt glazed stoneware. This dates to the later 17th century and may have been part of a jug.

References:

McCutcheon, C 2000 'The medieval pottery of Dublin: some dates and new names' in S. Duffy (ed.), *Medieval Dublin I*: *Proceedings of the Friends of Medieval Dublin Symposium 1999*. 117–25. Dublin.

THE N6 KILBEGGAN-ATHLONE ROAD PROJECT

THE SMALL FINDS FROM A016-046 E3274 MOYALLY 1

CATHERINE JOHNSON

The site itself was part of a ringfort ditch, which had naturally silted up. The finds consist of two sherds of modern pottery (not included in this report), a post medieval bottle glass sherd and five metal objects, including a ringed pin and a buckle plate, both of medieval date. The metal is in poor condition and the objects are almost all incomplete.

Glass

The glass assemblage consists of a single sherd from a post medieval bottle.

E3274:001:4 (*topsoil*) is a small body sherd from a green glass bottle. L.40 mms. W. 30 mms. T. 7.5mms.

Metal

Iron

The iron artefacts are almost all in poor condition, with a surface coating of grit and corrosion products. The identification of the metal objects is based on visual inspection and x-ray.

Ringed pin

An iron ringed pin **49:1** was recovered from the fill of the ringfort ditch. A radio-carbon date from the primary ditch fill has been calibrated at AD 789–900 (1 Sigma) and AD 770–980 (2 Sigma). The pin belongs to the plain-ringed, loop-headed group of ringed pins and was the most common form in iron. The fact that simple iron rods were used to fashion these objects made them particularly suitable for smithing (Fanning 1994, 15). This form is long lived. It occurs both in pre-Viking and Viking contexts, from Irish sites dating from the fifth or sixth century A.D, such as Rathinaun crannog, Lough Gara, Co Sligo, to Anglo-Norman times (*ibid.* 16). On the Dublin sites, the majority of plain-ringed loop-headed pins date from circa 925 to 975 (*ibid.* 18).

E3274:49:1 (*ringfort ditch fill*) is a grit encrusted plain ringed, loop-headed ringed pin in poor condition. The round-sectioned, non-tapering shank is broken above the point and the end is looped over a complete circular ring, which is lying against the shank. Because of its condition, an X-ray was used to confirm identification. Overall L. 75 mms. Shank D. 5.5 mms. Ring D. 21 mms. T. 9 mms.

Loop or link

E3274:1:2 (*topsoil*) is an incomplete elongated oval iron link, with a rectangular section, 11x 13 mms. The object is bent slightly inwards at mid-point and is broken at one end. It is in fair condition, with a fine to heavy soil coating. Overall L.118 mms. Overall W. 51 mms.

Knife blade

1:3 is an incomplete whittle-tanged knife. These objects were in use throughout the medieval and into the post-medieval period (Goodall 1990, 835) and are regularly found in the course of archaeological excavation. At Temple Bar West, Dublin, for example, whittle-tanged knives were found in contexts ranging from the mid 9th century to the post-medieval period, with the majority dating from the late 9th to late 10th century (Johnson forthcoming). The Moyally example came from the topsoil.

E3274:1:3 (*topsoil*) is an incomplete tanged knife. The object has an incomplete tang, with a rectangular section. The blade has a straight back, which curves down to the tang and a rectangular section. The cutting edge and blade tip are broken away. Overall L.131 mms. Tang: L.42 mms. W. 7 mms. T. 6 mms. Blade: L. 88 mms. W. 33 mms. T. 5 mms.

Pierced plate

The following unidentified iron object came from the same early medieval context which produced a copper alloy buckle plate (27:1). It has a square piercing and may be part of a fitting.

E3274:27:3 (*fill from base of ditch*) is an incomplete, slightly tapering rectangular-shaped iron plate, with uneven edges and an off-centre 4 x 4 mms perforation. Surface coating of soil and corrosion products. L. 43 mms. W. 22 mms. T. 7 mms.

Copper alloy

Buckle plate

The following object is made from a rectangular piece of folded copper alloy sheet metal. It would have been used to attach the buckle frame to the strap, neither of which survives. This type of plate was in use during the medieval period (Egan and Pritchard 1991, 55).

E3274:27:1 (*fill from base of ditch*) is an incomplete, plain copper alloy buckle plate, in two large and numerous small fragments. The plate is folded and has holes for two small copper alloy rivets, one of which is *in situ.* The folded end has a notch for a crudely made wire pin with a rectangular section. This is incomplete and has broken away from the plate. The object is in poor condition, with bronze disease and corrosion products on the surface. L. 34 mms. W. 20 mms. Overall T. 10 mms. Rivet head D. 3.5 mms. L. 6 mms. Pin L. 1mms. T. 1 mm.

Bibliography

Egan , G and Pritchard, F 1991 'Dress Accessories', *Medieval finds from excavations in London.* HMSO, London.

Fanning, T 1994 'Viking Age ringed pins from Dublin' *National Museum of Ireland Medieval Dublin Excavations 1962–81,* Ser B **4**, Royal Irish Academy, Dublin.

Goodall, I H 1990 'Knives' in M. Biddle *Object and economy in Medieval Winchester,* Winchester Studies, **7**ii (2 vols.), Oxford.

Johnson, C (forthcoming) 'The metal finds', in L. Simpson (ed.), *Archaeological excavations at Temple Bar West, Dublin.*

CHARCOAL IDENTIFICATIONS

N6 KINNEGAD – ATHLONE SCHEME
PHASE 2: KILBEGGAN TO ATHLONE
DUAL CARRIAGEWAY

MINISTERIAL DIRECTION NUMBER: A016/046
NMS REGISTRATION NUMBER: E3274
MOYALLY 1

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Introduction

One sample was submitted for analysis from a Neolithic dated pit. The charcoal was sent for species identification prior to ^{14}C dating and also to give an indication of the range of tree species, which grew in the area at the time of use of the site. Charcoal analyses may provide information on the utilization of certain species for various functions. Wood used for fuel at pre-historic sites would generally have been collected at locations close to the site. Therefore charcoal identifications may, but do not necessarily, reflect the composition of the local woodlands. Larger pieces of charcoal, when identified, can provide information regarding the use of a species for certain structural requirements or particular functions.

This site is located in the townland of Moyally, County Offaly, c. 1.5km east of Moate, County Westmeath. The archaeological excavation was carried out by Irish Archaeological Consultancy Ltd on behalf of Westmeath County Council and the National Roads Authority in advance of the construction of the N6 Phase 2: Kilbeggan to Athlone Dual Carriageway Scheme.

The site comprised part of a ringfort ditch and bank and three isolated, external features. The majority of the ringfort was outside the CPO, with only a 39m long arc of the ditch contained within the CPO. The internal diameter of the ringfort was 30m. The ditch was V-shaped in profile, with a maximum width of 4.4m and a maximum depth of 1.96m. An internal bank was created surviving to a maximum depth of 0.45m. Finds recovered from the ditch fills indicate an early medieval date for the occupation of the ringfort.

Three isolated features were recorded situated external to the ringfort ditch. The three features consisted firstly of a posthole located southwest of the ringfort, secondly a small pit with evidence of burning located west-southwest of the ringfort and thirdly a second pit with evidence of fire reddened clay, lying to the west of the ringfort. No dating evidence was recovered during the excavation of the three isolated features but it has been assumed that they are contemporary with the use of the ringfort.

The sample analysed was retrieved from **C12**, a pit dated to CAL 2872–2629 BC (2 Sigma) a Neolithic/early Bronze age date. The function of this pit is unknown.

Methods

The process for identifying wood, whether it is charred, dried or waterlogged is carried out by comparing the anatomical structure of wood samples with known comparative material or keys (Schweingruber 1990). The identification of charcoal material involves breaking the charcoal piece along its three sections (transverse, tangential and radial) so clean sections of the wood pieces can be obtained. This charcoal is then identified to species under a Nikon SMZ800 zoom stereomicroscope at magnifications x 10–190 and a transmitted light compound microscope at magnifications of x 10–400. By close examination of the microanatomical features of the samples the species were determined. The diagnostic features used for the identification of charcoal are micro-structural characteristics such as the vessels and their arrangement, the size and arrangement of rays, vessel pit arrangement and also the type of perforation plates. The charcoal samples were identified by weight and fragment count whereby each species was grouped together and a total weight and fragment count was obtained.

Results

Table 1: Results from charcoal identifications

Site Number	Context Number	Context Type	Sample Number	Species	Comment
A016/46	12	Fill of small pit	5	Oak (10g*, 50f*)	Cal 2872–2629BC

* = grammes
* = fragment count

Discussion & Conclusions

Oak (*Quercus* sp) was the only taxon identified from the charcoal remains from the late Neolithic/early Bronze Age pit **C12**. The function of the pit is unknown therefore it is difficult to attribute a use to the charcoal identified from the pit. As there was only one taxon present in the pit the activities associated with that pit may represent a single episodic event.

Oak is a dense wood and burns to a high temperature. It also makes good firewood when dried and will grow in wetland areas when conditions are dry. Oak also has unique properties of great durability and strength. Sessile oak (*Quercus petraea*) and pedunculate oak (*Quercus robur*) are both native to and common in Ireland. The wood of these species cannot be differentiated based on its microstructure. Pendunculate oak is found on heavy clays and loams particularly where the soil is of alkaline pH. Sessile oak is found on acid soils often in pure stands and although it thrives on well-drained soils it is also tolerant of flooding (Beckett 1979, 40–41). Both species of oak grow to be very large trees (30–40m) and can live to an age of about 400 years.

The oak identified suggests that there was a supply of oak in the surrounding environment in the late Neolithic/early Bronze Age.

Further analysis, discussions and comparisons of results will form part of a final integrated charcoal and pollen study of the sites and the surrounding environment on this scheme which is being undertaken as part of the authors PHD thesis. These results will be published accordingly.

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RADIOCARBON DATING RESULTS FOR MOYALLY 1

CHRONO LABORATORY, QUEENS UNIVERSITY BELFAST AND BETA ANALYTICAL, RADIOCARBON DATING LABORATORY, FLORIDA

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^{14}CHRONO

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Queens University Belfast
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Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification: UBA-9152
Date of Measurement: 2008-05-19
Site: A016/046 Moyally Co.Offaly
Sample ID: S5 C12
Material Dated: Oak
Pretreatment: AAA
Submitted by: IAC

^{14}C Date: 4144±24
AMS δ^{13}C: -18.7

Information about radiocarbon calibration

```
RADIOCARBON CALIBRATION PROGRAM*
CALIB REV5.0.2
Copyright 1986-2005 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv
```

```
S5 C12
UBA-9152
Radiocarbon Age BP    4144 +/-    24
Calibration data set: intcal04.14c                  # Reimer et al. 2004
  % area enclosed       cal AD age ranges             relative area under
                                                    probability distribution
  68.3 (1 sigma)      cal BC 2864- 2835                     0.221
                             2817- 2806                     0.073
                             2759- 2717                     0.331
                             2712- 2665                     0.345
                             2644- 2639                     0.029
  95.4 (2 sigma)      cal BC 2872- 2831                     0.194
                             2822- 2629                     0.806
```

```
 References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, C Bertrand, PG Blackwell,
  CE Buck, G Burr, KB Cutler, PE Damon, RL Edwards, RG Fairbanks, M Friedrich,
  TP Guilderson, KA Hughen, B Kromer, FG McCormac, S Manning, C Bronk Ramsey,
  RW Reimer, S Remmele, JR Southon, M Stuiver, S Talamo, FW Taylor,
  J van der Plicht, and CE Weyhenmeyer (2004), Radiocarbon 46:1029-1058.

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE:  Cal ages and ranges are rounded to the nearest year which
       may be too precise in many instances.  Users are advised to
       round results to the nearest 10 yr for samples with standard
       deviation in the radiocarbon age greater than 50 yr.
```

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-21.8:lab. mult=1)

Laboratory number: **Beta-249542**

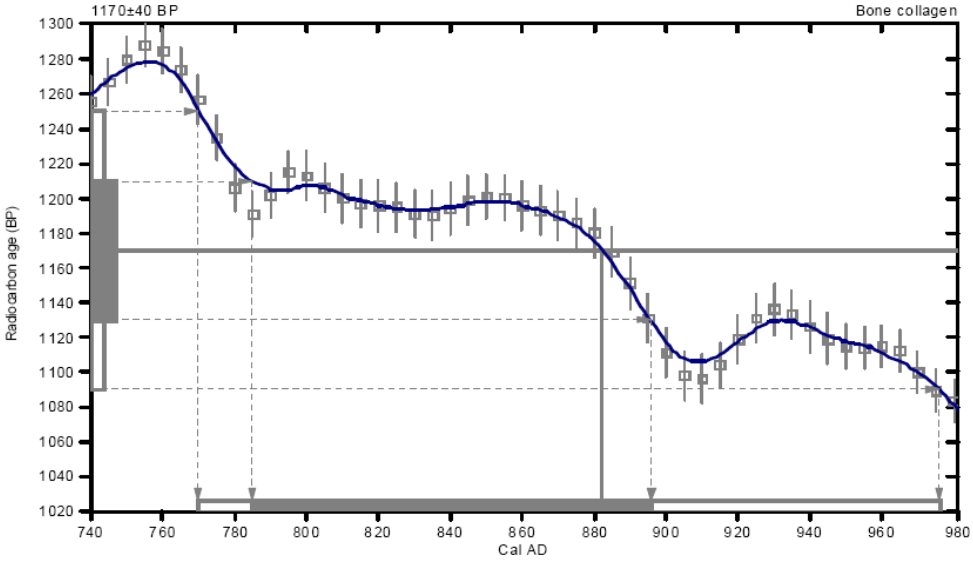
Conventional radiocarbon age: **1170±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 770 to 980 (Cal BP 1180 to 970)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 880 (Cal BP 1070)

1 Sigma calibrated result: (68% probability) Cal AD 780 to 900 (Cal BP 1160 to 1050)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 249542	1120 +/- 40 BP	-21.8 o/oo	1170 +/- 40 BP

SAMPLE : E3274C10S9
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (bone collagen): collagen extraction: with alkali
2 SIGMA CALIBRATION : Cal AD 770 to 980 (Cal BP 1180 to 970)

OSTEOARCHAEOLOGICAL REPORT
OF
ANIMAL BONES
FROM A016/046 MOYALLY 1,
N6 ATHLONE TO KILBEGGAN ROAD SCHEME
COUNTY OFFALY

MOORE GROUP

ANIMAL BONE REPORT PREPARED FOR IAC LTD

AUTHOR: CAMILLA LOFQVIST,
OSTEOARCHAEOLOGICAL SERVICES SECTION

DATE: SEPTEMBER 2007

Non Technical Summary

This report describes the results of the osteoarchaeological analysis of animal bones retrieved during archaeological work carried out at A016/046 Moyally 1 along the N6 Athlone to Kilbeggan Road Scheme, Co. Offaly. The author undertook the bone analysis for Moore Group (MOORE) on behalf of the client, IAC Ltd.

The bone analysis was commissioned in order to get an osteoarchaeological aspect of the development site and to see if the bone material could provide additional information on the interpretation of the site. The purpose is also to broaden the understanding of animal consumption and animal husbandry at the site, through the osteological study of the animal remains.

A total of 542 fragments from 431 anatomical units were retrieved. The bones were in a generally poor condition and had a total weight of 4,479g. The sample contained bones from six animal species. The animals identified were: cattle, sheep/goat, dog, pig, horse and possibly deer. Due to difficulty in differentiation, sheep and goat bones have been analysed as one group (caprinae).

Introduction

The Osteoarchaeological Services Section of Moore Group was commissioned to undertake an osteoarchaeological analysis of disarticulated animal bones retrieved during archaeological work at A016/046 Moyally 1, N6 Athlone to Kilbeggan Road Scheme, Co. Offaly. The osteoarchaeological analysis was carried out on behalf of IAC Ltd.

General osteological information

The purpose of this report is to broaden the understanding of animal consumption and animal husbandry at the site, through the osteological study of the animal remains. The aim is to use the bones as a means of archaeological interpretation of the site, either to support suggested theories or to point to other possible interpretations of the cultural heritage. As the osteological materials contain a large quantity of information; it is important from the start, to define the type of information that is going to be collected. The data gathered from this report was based on five different variables:

- Species distribution
- Anatomical distribution
- Age distribution
- Sex ratios and size variations
- Cut-/gnaw-marks and disease distribution.

In order to enable comparisons between the different materials it is important to be consistent in the use of analysis methods. If this is not fulfilled, the results would be impossible to compare. The osteological methods used in this report are presented in the section below.

Methodology

Identification of the bones was made by reference to Sisson and Grossman *The anatomy of the Domestic Animals* (Getty 1975), Schmid *Atlas of Animal bones* (1972), Hillson *Teeth* (1996), During´s *Bildkompendium i Animalosteologi* (unpubl) and a comparative collection of bones belonging to the author. A systematic bird bone identification was made by reference to Cohen & Serjeantson *A Manual for the Identification of Bird bone from Archaeological Sites* and where possible, the bones were identified to family level.

During analysis of the material, all fragments were counted and identified to species, anatomical unit, part of anatomical unit, side and fusion stage. Pathology and cut/gnaw marks were also examined. Quantification was based on three methods:

NISP: Number of Identified Specimens. Indicates the total number of fragments found. The NISP is decided by different factors like the age of the animal, the size of the animal and how well the preservation was at the place where the bones were deposited.

MNI: Minimum Number of Individuals. Indicates the minimum number of individuals from every species that were present in the material. The MNI is calculated on the specimen of the most abundant skeletal element present, taking left and right side in consideration, as well as looking at the age of the animal. However, it is important to point out that MNI is only an estimate.

MNE: Minimum Numbers of Elements. Indicates the minimum number of anatomical units that are present and what side they are from. MNE is used to calculate MNI and is used in the Fusion data tables. To allow for a young individual to grow the bones from a juvenile at birth are made up of several different parts. When the individual gets older the different parts grow together and form one bone. The parts of the bone grow together at different age-stages and this makes it possible to estimate the age of an animal. This means that three bone fragments can be part of the same bone element. For example: Proximal and distal epiphyses fused with the diaphysis. To avoid getting a higher MNE all loose epiphyses have to be paired with all unfused diaphysis.

Age is based on fusion data and tooth eruption. Habermehl (1961) and Silver (1969) have been used to determine stages of fusion while Schmid (1972) and Hillson (1996) have been used to determine tooth eruption data. It should be noted that bone elements from juveniles are often under-represented in bone materials, because they are very fragile and very easy to break.

Different formula are used to calculate Estimated Shoulder Heights (ESH) for the different species. Matolsci (1970) and Fock (1966) are used to estimate height of withers for cattle while Teichert (1975) is used for sheep.

The average height of withers and average weight of the meat-producing animals has increased from Bronze Age to Modern time. For example, cattle during medieval times had an average height of 1.05m but by the late 18th century had this increased to an average height of 1.35m (Davis, 1987:178; tab 8:7). Along with size, the average weight of the animals had increased. The dressing-out weight for cattle and caprinae is 50% of the animal's total, live weight. The dressing-out weight for pig is 80% of the animal's total weight (McCormick, 1997:200). The size figures of cattle are based on Davis (1987:178; tab 8:7).

The genders of the animals are estimated from measurements of the horncore and the coxae. For cattle, Armitage & Clutton Brock (1976) is used for the estimation based on the horncore and Vretemark (1997) for the estimation based on the coxae. For caprinae Vretemark (1997) is used for the coxae. For pig and horse, the upper and lower Canine teeth are used to determine the sex.

The bones were searched for traces of gnawing, cut marks and pathology. The gnaw marks give information about how exposed the bones were after being discarded. A high percentage of bones with traces of gnawing indicates that the bones were left exposed so animals like dogs, rats and other scavengers had access to the bones.

The cut marks can give valuable information about how the carcasses were butchered. These marks can also give information about if the animals were kept for their milk, as a source of meat, or if they played an important part in industrial production of for example hide or bone objects.

Result

Five-hundred-forty-two bone fragments with a total weight of 4,479g were submitted for examination. These were examined and identified to species when possible.

From these, a total of 264 fragments (48.7%) were not possible to identify to species as the bones were too fragmented. The remaining 278 fragments (51.3%) from 167 anatomical units (e.g. two fragments of the same femur were counted as a MNE of one) were identified and divided into species (Table 1).

The total number of individual pieces of bone (NISP), anatomical units (MNE) and the total weight identified to species

Species	No of frag	Frag in %	MNE	Weight in g	Weight in %
Fragments identified to species	278	51.3%	167	3944.0	88.1%
Unidentified fragments	264	48.7%	264	535.0	11.9%
Total:	542	100%	431	4,479.0	100%

Table 1. Total NISP, MNE and weight identified to species.

Bones from six animal species were identified in the material: *Bos taurus* (cattle), *Ovis aries/Capra hircus* (sheep/goat), *Canis familiaris* (dog), *Sus domesticus* (pig), *Equus caballus* (horse) and *Cervus* (deer) (Table 2, Appendix 1).

Sheep (Ovis) and goat (Capra) are difficult to distinguish from each other. For this reason, and due to the fragmented condition of the bones, these two species have been analysed together as one group (Caprinae). However, it is indicated in old Irish law-texts that the goat was never common and that the animal never played an important roll in the animal husbandry during early Irish farming (Kelly, 1998:78).

Showing the total number of fragments (NISP), total number of anatomical elements (MNE), total number of individuals (MNI) and total weight for all species present.

Species	NISP	NISP in %	MNE	MNE in %	MNI*	MNI in %	Weight	Weight %
Cattle	217	78.06%	124	74.25%	7	44%	3,395	86.08%
Sheep/goat	21	7.55%	18	10.78%	2	13%	142	3.60%
Dog	21	7.55%	11	6.59%	2	13%	59	1.50%
Pig	13	4.68%	8	4.79%	3	19%	111	2.81%
Horse	5	1.80%	5	2.99%	1	6%	214	5.43%
Deer	1	0.36%	1	0.60%	1	6%	23	0.58%
Grand Total:	278	100%	167	100%	16	100%	3,944.0	100%

Table 2. NISP, MNE, MNI and weight for all species. (*MNI=Minimum Number of Individuals)

The condition of the bone was in general bad and only occasional tooth, tarsal or phalanges were complete. The average weight per fragment of the 278 fragments identified to species was 14.2g. The average weight of the unidentified fragments was only 2g per fragment. This illustrates the high fragmentation of the unidentified fragments.

Sixty-six (66) of the fragments had cut-marks while 13 fragments had traces of gnawing, mainly by dog. Four displayed traces of pathological changes (Table 3).

Table display the total number of fragments with cuts, gnaw or pathology per species and per unidentified fragments							
Species	**Cut**	**Cut in %**	**Gnaw**	**Gnaw in %**	**Path**	**Path in %**	**Total**
Cattle	41	62.1%	6	42.2%	3	60.0%	50
Sheep/goat	3	4.5%	5	38.5%	1	20.0%	9
Dog	0	0.0%	0	0.0%	0	0.0%	0
Pig	0	0.0%	0	0.0%	0	0.0%	0
Horse	2	3.0%	0	0.0%	1	20.0%	3
Deer	0	0.0%	0	0.0%	0	0.0%	0
Unidentified	20	30.3%	2	15.4%	0	0.0%	22
Grand Total:	66	100%	13	100%	5	100%	84

Table 3. Number of fragments with cut/gnaw marks or pathology.

Cattle; Bos

Cattle dominated the assemblage at Moyally 1 in terms of bone fragments (NISP) and MNE present on the site. In total, 217 bone fragments from 124 bone elements were retrieved. The total weight of the cattle bone came to 3,395g (c. 86% of the bones identified to species) and the MNI was 7; three adult, three semi-adults and one juvenile (Table 2).

The age at which the cattle were slaughtered was estimated from fusion data and on the basis of the tooth eruption and wear of the teeth in the mandible. This data indicated that one individual was a juvenile of c. 6 months while three individuals were yearlings of c. 1–1.5 years and three were adults (c. 4–8 years). However, the fusion and tooth eruption data did not support the presence of any old mature adults of 8^{+} years on the site.

The animals reaching the highest age were in general the milk cows. However, a few bulls were also kept for breeding along with a few draft animals. The oxen were usually taken into work at four years of age and were on average used for four years before the animals were fattened and slaughtered (Trow-Smith, 1957:70, Vretemark, 1997:175). Remodelling of the bone along with formation of bony outgrowths on the cattle acetabulum and scapula is thought to be evidence for cattle being used to pull ploughs. The excessive strain causes the bones of the working animal to develop a condition called osteoarthritis or a degenerative joint disease (Davis, 1995:178).

In the rural economy it was milk production that was of primary importance and consequently the majority of animals kept were milk cows. The older cows gilded the most and the best milk, which was then used to produce products like butter. The meat production was only of secondary importance as it was the result of replacing older animals by younger individuals, removing juveniles which weren't needed as draught-oxen or when young milk cows weren't producing enough milk. Therefore, in rural bone material there is a tendency towards cattle being more evenly divided between the different age categories, while in urban material there is a predominance towards older animals. The reason for this is that it was more profitable for outside producers to send mature or semi mature animals to the market in town.

Only two bone fragments could be used in an estimation of sex and they were both from cows. There were no complete bones which could be used in a stature estimation.

Forty-one fragments (18.9% of the total number of cattle bone) displayed cut-marks, two of these, a costae and a coxae fragment exhibited fine cuts. One individual, a cow, had most likely been killed by a blow to the forehead, implied by a perforation to

the frontal bone (Plate 1) while the remainder of the bone in general were chopped up diaphyses indicating that these animals had been slaughtered.

Plate 1. Forehead of a cow, with arrow indicating perforation caused by blow to the frontal bone.

Six fragments (c. 2.7% of the total number of bone from cattle) exhibited traces of gnawing. Two fragments had traces of both cut and of gnawing. One of these, a tibia displayed gnawing most likely caused by a dog while the second fragment, an ulna displayed traces consistent with gnawing by a rodent (rat). A further four fragments exhibited traces of gnawing which, judging from the pointed tooth imprints, were caused by a dog. This low percentage of bone with gnawing could indicate that the bones were deposited in a location were scavengers, like dogs and rats, had a limited access to the cuts. However, the bone fragments were in a general poor condition so it is possible that the percentage of bones with gnawing was higher. Three fragments displayed pathologies, whereof one was a dental pathology. The two remaining fragments were both rib fragments, one displaying traces of inflammation of the periosteum (periostitis). The second fragment was very small and it had an area of new bone on the lateral end, possibly indicating an active infection or an area of trauma where the animal might have received a blow.

Sheep/goat; Ovis/Capra

Twenty-one fragments of caprinae were retrieved from Moyally 1. The total weigh of the caprinae bones were 142g. The MNI was 2; one semi-adult and one juvenile individual (lamb). The semi-adult was c. 2 years old while the juvenile was younger than 18months. One fragment could be used in a sex estimation revealing the presence of at least one male (ram) on the site.

Three long bone fragments had been chopped up and five fragments displayed traces of gnawing, the pointy tooth imprints indicating they were caused by a dog. One fragment displayed traces of both cut and gnaw, possibly indicating that the animal had been butchered and possibly had being cooked. This food debris was

then discarded, thereby being exposed to scavengers like, for example, dogs (Plate 2).

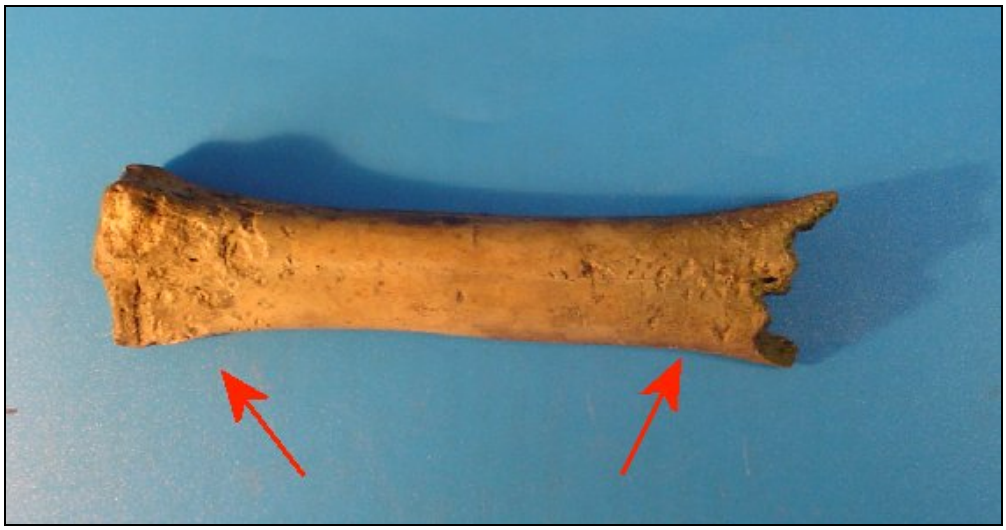


Plate 2. Metacarpal displaying traces of gnawing.

One fragment displayed traces of pathology. This distal epiphysis of a humerus exhibited a bony outgrowth (osteophyte) most likely associated with a degeneration of the joint cartilage.

Dog; Canis
Twenty-one fragments of dog from 11 anatomical units were retrieved from Moyally 1. The total weight came to 59g and the MNI could only be determined to two; both adults. One of these individuals was a young adult of a larger breed while the second was a smaller breed of approximate Jack Russell size. A very worn tooth indicate the presence of an older adult.

Pig; Sus
Thirteen fragment of pig from eight anatomical units were retrieved. The total weight of these came to 111g and the MNI was three; two semi-adults of 2–2,5 years of age and one juvenile of c. 1 year. All fragments, a part from an ulna, came from the skull or mandible. A tusk fragment reveal the presence of a boar.

Horse; Equus
Five bone fragments of horse with a total weight of 214g were retrieved. The fragments were three teeth, a ph1 and a distal tibia fragment and were in a general poor condition. The diaphysis of the tibia seems to have been cut up while the phalanx displayed traces of fine cuts. This phalanx also had rough muscle attachments suggesting this individual had been a working horse, possibly used as a draught-horse or for carrying loads.

Deer; Cervus
One fragment, of a very poor and damaged condition, was identified as a possible antler fragment of a deer. The weight of this fragment was 23g.

Unidentified fragments
Two-hundred-sixty-four (264) fragments with a total weight of 535g were not possible to identify to species. Twenty of these fragments displayed traces of having been cut

up, whereof two also displayed traces of gnawing by a dog. The unidentified fragments were in a generally very poor and fragmented condition.

Summary

A total of 542 fragments from 431 anatomical units were retrieved. The bones were in a generally poor condition and had a total weight of 4,479g. Of the 542 fragments, a total of 264 fragments (48.7%) were not possible to identify to species as the bones were too fragmented. The remaining 278 fragments (51.3%) from 167 anatomical units were identified and divided into species.

The sample contained bones from six animal species. The animals identified were: cattle, sheep/goat, dog, pig, horse and possibly deer. Cattle dominated the assemblage along with other domesticated meat-producing animals such as caprinae and pig. Together these animals constituted 90.3% of all the bones identified to species. There were also a range of other domesticated animals like dog and horse present in the material. Wild animals were represented by one possible deer antler fragment. However, this fragment was in a much deteriorated condition.

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Appendix 1 Bone database

Bag	Sample No	Context	Animal	Element	Part of element	NISP	MNE	Side	Pr epi	P 1/3	M 1/3	D 1/3	Di epi	J	M/F	C	G	P	Burnt	Descr C/P/G	Meas	Comment	Weight
1	-	27	Bos	Mandible	Mand, M2, alv, ramus	7	1	Sin	-	-	-	-	-	J	-	-	-	1	-	P:uneven wear on cusps	-	e=26-27=c. 1.5yrs	52
1	-	27	Bos	Tibia	Prox dia+epi frag	4	1	Sin	F	1	-	-	-	-	-	1	1	-	-	C:cut up P:gnaw on epi=dog?	-	-	48
1	-	27	Unid	Unid	Frag	3	3	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	15
2	2	27	O/C	Radius	Diaph frag	1	1	Dx	-	1	1	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	-	-	16
3	12	9	Bos	Humerus	Dist dia frag	1	1	Dx	-	-	-	1	-	-	-	1	-	-	-	C:chopped up	-	-	25
4	14	26	Bos	Femur	Prox epi frag	1	1	Dx	F	-	-	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	-	-	15
4	14	26	Bos	Tibia	Dist dia frag	2	1	Dx	-	-	-	Unf	-	J	-	1	-	-	-	C:chopped up	-	Fuse at 2-2.5yrs	15
4	14	26	Bos	Mc	Prox dia+epi frag	1	1	Sin	F	1	1	-	-	-	-	1	-	-	-	C:chopped up	Y	Bp:60.59	85
4	14	26	Bos	Coxae	Acet, ilium frag	6	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55
4	14	26	Bos	Coxae	Acet, pubis frag	3	1	Dx	-	-	-	-	-	-	-	1	-	-	-	C:one w fine cuts	-	Bad cond	18
4	14	26	Unid	Unid	Frag	11	11	-	-	-	-	-	-	-	-	2	1	-	-	C:2 cut up,G:one w g by dog	-	-	40
5	25	-	Bos	Scapula	Glen cav,collum frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
5	25	-	Bos	Radius	Prox dia+epi frag	1	1	Sin	F	1	-	-	-	-	-	1	-	-	-	C:chopped up	-	Bad cond	32
5	25	-	Bos	Mt	Dist dia+epi frag	1	1	-	-	-	-	1	F	-	-	1	-	-	-	C:chopped up	Y	Bd:46.23	32
5	25	-	Bos	Tarsal	Ct-frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
5	25	-	Bos	Tibia	Diaph frag	1	1	Sin	-	-	1	1	-	-	-	1	-	-	-	C:chopped up	-	Bad cond	50
5	25	-	Bos	Ve cerv	Proc art frag	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bad cond	5
5	25	-	Equus	Dens	Max, M1	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	Slightly damaged	40
5	25	-	Equus	Ph1	Fairly complete	1	1	Dx	F	1	1	1	F	-	-	1	-	1	-	C:pos fine cuts.P:muscl att=rough	Y	GL:81.6,Bp:56.04	49
5	25	-	Sus	Mandible	P4,M1-3,alv	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	d,g,e,b=29=c. 2.5yrs	31
5	25	-	Sus	Mandible	Proc art frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
5	25	-	Canis	Mandible	Mand,C,P4,M1,ramus,alv	4	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	Young adult	18
5	25	-	Canis	Mandible	Mand,C,P4,ramus,alv	4	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	Young adult	13
5	25	-	Canis	Ve cerv	Atlas frag	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bad cond	5
5	25	-	Canis	Tibia	Prox dia+epi frag	1	1	Dx	F	1	-	-	-	-	-	-	-	-	-	-	-	Fairly small=terrier size	4
5	25	-	Canis	Humerus	Prox epi frag	1	1	Dx	F	1	-	-	-	-	-	-	-	-	-	-	-	-	3
5	25	-	O/C	Dens	Mand, M3	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	c=31-33=c. 2yrs	5
5	25	-	O/C	Radius	Diaph frag	1	1	Dx	-	-	1	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	-	-	3
5	25	-	Unid	Unid	Frag	15	15	-	-	-	-	-	-	-	-	3	-	-	-	C:3 cut up	-	Bad cond	46
6	9	10	Bos	Mandible	Mand,dp3,dp4,M1,alv	8	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	f,1/2=4=c. 6mnts	25
6	9	10	Bos	Tarsal	Astragalus	2	1	Dx	-	-	-	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	-	Bad cond	25
6	9	10	Bos	Scapula	Glen cav,collum frag	2	1	Sin	F	1	1	-	-	-	-	-	-	-	-	-	-	Bad cond	40
6	9	10	Bos	Ve lumb	Corpus, na frag	1	1	-	F	1	1	1	C/F	-	-	-	-	-	-	-	-	Fuse at 7-9yrs	49
6	9	10	Bos	Femur	Prox dia+epi frag	1	1	Sin	F	1	-	-	-	-	-	-	-	-	-	-	-	-	27
6	9	10	Bos	Femur	Dist dia+epi frag	1	1	Dx	-	-	-	1	F	-	-	-	-	-	-	-	-	Bad cond	90
6	9	10	Bos	Radius	Dist dia+epi frag	4	1	Sin	-	-	-	1	F	-	-	2	-	-	-	C:chopped up	-	Bad cond	70
6	9	10	Bos	Mt	Prox dia+epi frag	1	1	Dx	F	1	1	1	-	-	-	-	-	-	-	-	-	Bad cond	83
6	9	10	Canis	Dens	Mand, M1	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	Worn, mature	4
6	9	10	Bos	Costae	Corpus frag	5	5	Sin	-	-	-	-	-	-	-	1	-	1	-	C:one w fine cuts, P:lat end-osteophyt	-	-	39
7	22	3	Bos	Ve cerv	Axis frag-dens	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Bad cond	51
7	22	3	Bos	Ve cerv	Proc art+corpus frag	2	1	-	-	-	1	1	F	-	-	-	-	-	-	-	-	Bad cond	18

Bag	Sample No	Context	Animal	Element	Part of element	NISP	MNE	Side	Pr epi	P 1/3	M 1/3	D 1/3	Di epi	J	M/F	C	G	P	Burnt	Descr C/P/G	Meas	Comment	Weight
7	22	3	Bos	Ve lumb	Spina	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
7	22	3	Bos	Skull-temp	Meatus	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
7	22	3	Bos	Mandible	Mand,P2,dp4,M1,M2,alv	6	1	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	h,h,b=21=c. 1.5yrs	40
7	22	3	Bos	Dens	Mand,dp4	1	1	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	h=12-24=6-18mts	5
7	22	3	Bos	Dens	Max, dp4	1	1	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	-	5
7	22	3	Bos	Mandible	Angulus frag	2	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
7	22	3	Bos	Radius	Prox dia+epi frag	1	1	Sin	F	1	1	-	-	-	-	-	-	-	-	-	-	-	78
7	22	3	Bos	Tibia	Dist dia frag	1	1	Dx	-	-	-	1	F	-	-	1	-	-	-	C:chopped up	Y	Bd:53.34	39
7	22	3	Bos	Tibia	Dist dia frag	2	2	Sin	-	-	-	1	F	-	-	1	-	-	-	C:one chopped up	-	-	35
7	22	3	Bos	Humerus	Dist epi frag	1	1	Sin	-	-	-	-	1	-	-	-	-	-	-	-	-	-	14
7	22	3	Bos	Humerus	Dist epi frag	1	1	Dx	-	-	-	1	-	-	-	-	-	-	-	-	-	Bad cond	11
7	22	3	Bos	Tarsal	Calcaneus frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
7	22	3	Bos	Tarsal	Astragalus	1	1	Dx	-	-	-	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	Y	GLl:59.54,GLm:55.5,Bd:37.67	29
7	22	3	Bos	Mc	Prox dia+epi frag	1	1	Sin	F	1	1	1	Unf	J	-	-	-	-	-	-	-	Bad cond.Fuse 2-2.5yrs	56
7	22	3	Bos	Mt	Diaph frag	2	2	Sin	-	1	1	1	-	-	-	2	-	-	-	C:chopped up	-	Bad cond	95
7	22	3	Bos	Mp	Dist dia+epi frag	1	1	-	-	-	-	1	F	-	-	-	-	-	-	-	-	-	6
7	22	3	Bos	Skull-max	Tub mallare	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	Bad cond	6
7	22	3	Bos	Coxae	Acet+ischii-frag	3	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	35
7	22	3	Bos	Coxae	Acet+ischii-frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
7	22	3	Bos	Scapula	Collum frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	23
7	22	3	Bos	Scapula	Collum+spina frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	15
7	22	3	Equus	Dentes	Max,P3+P4	2	2	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	33
7	22	3	Sus	Skull	Frag	2	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	9
7	22	3	Sus	Dens	Mand, Canine frag	1	1	-	-	-	-	-	-	-	M	-	-	-	-	-	-	Tusk frag=boar	2
7	22	3	O/C	Mandible	Inter alv frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
7	22	3	O/C	Mandible	Inter alv frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	8
7	22	3	O/C	Tibia	Diaph frag	-	-	Dx	-	-	-	1	-	-	-	1	-	-	-	C:chopped up	-	-	5
7	22	3	Cervus?	Skull-front	Cornu-frag	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	In very bad cond. Pos deer	23
7	22	3	Unid	Unid	Frag	19	19	-	-	-	-	-	-	-	-	7	-	-	-	C:7 chopped up	-	In bad cond	84
8	14	26	Bos	Skull	Front,temp,occip frag	25	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95
9	25	3	Bos	Skull	Front,cornu proc	1	1	B	-	-	-	-	-	-	F	1	-	-	-	C:pos killed by blow to forhead	Y	44:124.0,45:37.97,46:35.25=cow	150
9	25	3	Bos	Coxae	Acet+ilium frag	1	1	Sin	-	-	-	-	-	-	F	1	-	-	-	C:chopped up	-	Cow	125
9	25	3	Bos	Ve lumb	Proc artic cran	1	1	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	10
9	25	3	Bos	Costae	Collum,corpus frag	1	1	Sin	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	25
9	25	3	Bos	Costae	Corpus frag	1	1	Dx	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	20
9	25	3	Sus	Ulna	Fairly complete	1	1	Dx	-	Unf	1	1	-	J	-	-	-	-	-	-	-	Fuse at 3-3.5yrs	17
9	25	3	O/C	Scapula	Glen cav,collum frag	1	1	Dx	-	-	-	-	-	J	-	-	-	-	-	-	-	Very small=juv	5
9	25	3	O/C	Mc	Prox epi+diaph frag	1	1	Dx	F	1	1	1	-	-	-	-	1	-	-	G:prox epi gnawed off-pointy=dog	Y	Bp:23.15. Pos juv	19
9	25	3	O/C	Mc	Diaph frag	1	1	-	-	1	1	1	-	-	-	1	1	-	-	C:chopped up, G:gnaw-pos dog	-	-	9
9	25	3	Unid	Unid	Frag	1	1	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	5
9	25	3	Bos	Ve cerv	Axis-Dens frag	1	1	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped in half	-	-	20

Bag	Sample No	Context	Animal	Element	Part of element	NISP	MNE	Side	Pr epi	P 1/3	M 1/3	D 1/3	Di epi	J	M/F	C	G	P	Burnt	Descr C/P/G	Meas	Comment	Weight
9	25	3	Bos	Mt	Dist dia+epi frag	1	1	Sin	-	-	-	1	F	-	-	1	-	-	-	C:chopped up	Y	Bd:50.8	49
9	25	3	Bos	Ulna	Diaph frag	2	2	Dx	-	1	1	-	-	-	-	1	1	-	-	C:one chopped up,G:1 gnaw-rodent	-	-	71
9	25	3	Bos	Costae	Corpus frag	8	6	-	-	-	-	-	-	-	-	6	-	1	-	C:6 chopped up.P+C=1 w perostitis=healed	-	-	117
9	25	3	O/C	Dens	Mand, dp3	1	1	Dx	-	-	-	-	-	J	-	-	-	-	-	-	-	Younger then 18mts	1
9	25	3	Unid	Unid	Frag	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
10	19	55	Bos	Ve cocc	Frag	1	1	-	F	1	1	-	-	-	-	-	-	-	-	-	-	-	4
10	19	55	Unid	Unid	Frag	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
11	24	4	Bos	Ve cerv	Proc artic cran	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	12
11	24	4	O/C	Humerus	Dist dia+epi frag	1	1	Dx	-	-	1	1	F	-	-	-	-	-	-	-	Y	Bd:31.82. Bad cond	20
11	24	4	Sus	Mandible	Mand,dp4+M1+alv	3	1	Dx	-	-	-	-	-	J	-	-	-	-	-	-	-	f,b=8-9=c.1yr	6
11	24	4	Unid	Unid	Frag	9	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	32
12	23	27	Bos	Tibia	Crista	1	1	Sin	-	1	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	13
12	23	27	O/C	Humerus	Dist epi frag	1	1	Sin	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2
12	23	27	Canis	Femur	Diaph frag	1	1	Sin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3
12	23	27	Canis	Femur	Diaph frag	2	1	Dx	-	-	1	-	-	-	-	-	-	-	-	-	-	-	5
12	23	27	Canis	Ve lumb	Corpus,proc art frag	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Fragmented cond	2
12	23	27	Bos	Tibia	Dist epi frag	2	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	5
12	23	27	Unid	Unid	Frag	115	115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Very fragmented	41
12	23	27	Canis	Ve lumb	Spina+proc art caud	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
13	13	10	Bos	Scapula	Corpus+spina frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	14
13	13	10	Bos	Mandible	Mand,dp4,alv	2	1	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	h=13-21=c. 1-1.5yrs	10
13	13	10	Bos	Tarsal	Astragalus	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	28
13	13	10	Bos	Mt	Prox dia+epi frag	3	1	Dx	F	1	1	-	-	-	-	-	-	-	-	-	-	In bad cond	75
13	13	10	Equus	Tibia	Dist dia+epi frag	1	1	Dx	-	-	-	1	F	-	-	1	-	-	-	C:pos chopped up dia	-	In bad cond	92
13	13	10	Unid	Unid	Frag	15	15	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	In bad cond	65
14	22	3	Bos	Mandible	Mand, M2,proc art	2	1	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	b=18-21=c. 1-1.5yrs	20
14	22	3	Bos	Dentes	Mand,P3,M1	2	2	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	j=32-41=3-6yrs	20
14	22	3	Bos	Dentes	Mand,dp4,M1,mol frag	3	3	Dx	-	-	-	-	-	J	-	-	-	-	-	-	-	j,b=8=6-12mths	22
14	22	3	Bos	Dentes	Mand,M2,M3	2	2	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	g,g=38-39=c. 3-4yrs	43
14	22	3	Bos	Mandible	Inter alv frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
14	22	3	Bos	Mandible	Alv frag	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	8
14	22	3	Bos	Dens	Max, M1	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	19
14	22	3	Bos	Skull-front	Front+cornu frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	6
14	22	3	Bos	Tarsal	Calcaneus frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	30
14	22	3	Bos	Tarsal	Astragalus	2	2	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	30
14	22	3	Bos	Coxae	Ischii+acet frag	2	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	22
14	22	3	Bos	Humerus	Dist diaph frag	2	1	Sin	-	-	-	1	F	-	-	2	-	-	-	C:chopped up	-	In bad cond	46
14	22	3	Bos	Humerus	Dist dia+epi frag	3	1	Dx	-	-	-	1	F	-	-	3	-	-	-	C:chopped up dia	-	In bad cond	60
14	22	3	Bos	Sacrum	Basis	1	1	-	F	1	-	-	-	-	-	-	-	-	-	-	-	In bad cond	15
14	22	3	Bos	Ph1	Complete	1	1	-	F	1	1	1	F	-	-	-	-	-	-	-	-	-	15
14	22	3	Bos	Ph2	Fairly complete	1	1	-	F	1	1	1	F	-	-	-	-	-	-	-	-	In very bad cond.	5
14	22	3	Bos	Mp	Dist epi frag	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	In bad cond	17

Bag	Sample No	Context	Animal	Element	Part of element	NISP	MNE	Side	Pr epi	P 1/3	M 1/3	D 1/3	Di epi	J	M/F	C	G	P	Burnt	Descr C/P/G	Meas	Comment	Weight
14	22	3	Bos	Scapula	Corpus frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	10
14	22	3	Bos	Humerus	Dist epi frag	2	1	Sin	-	-	-	-	1	-	-	-	-	-	-	-	-	-	8
14	22	3	Bos	Tibia	Diaph frag	3	1	Dx	-	1	1	-	-	-	-	2	-	-	-	C:2 chopped up	-	In bad cond	38
14	22	3	O/C	Mandible	Ang,proc musc+art,intera	4	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
14	22	3	O/C	Coxae	Acet+ilium frag	1	1	Dx	-	-	-	-	-	-	M	-	1	-	-	G:gnaw -pointy=dog	-	Ram	5
14	22	3	O/C	Femur	Prox epi	1	1	Sin	F	-	-	-	-	-	-	-	-	-	-	-	-	-	3
14	22	3	Unid	Unid	Frag	28	28	-	-	-	-	-	-	-	-	4	1	-	-	C:4 with cut, G:1 w gnaw-dog	-	-	108
14	22	3	Bos	Dentes	Mand,two dp4	2	2	Dx	-	-	-	-	-	J	-	-	-	-	-	-	-	j=8-29=c.1-2.5yrs	15
14	22	3	Bos	Dens	Mand,M3	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	d=34-38=3-4yrs	25
14	22	3	Bos	Dentes	Max,dp4,M1	2	2	Sin	-	-	-	-	-	J	-	-	-	-	-	-	-	-	20
14	22	3	Bos	Dens	Max,M1	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
14	22	3	Bos	Mandible	Alv,ramus,interalv,pr art	8	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	In bad cond	43
14	22	3	Bos	Skull-front	Front+cornu frag	1	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
14	22	3	Bos	Skull-front	Front+cornu frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27
14	22	3	Bos	Radius	Prox dia+epi frag	1	1	Dx	F	1	-	-	-	-	-	1	-	-	-	C:pos chopped up dia	-	In bad cond	22
14	22	3	Bos	Ulna	Diaph frag	2	1	Sin	-	1	1	-	-	-	-	-	-	-	-	-	-	In bad cond	33
14	22	3	Bos	Humerus	Dist dia+epi frag	2	1	Dx	-	-	-	1	F	-	-	-	-	-	-	-	-	In bad cond	46
14	22	3	Bos	Humerus	Dist epi frag	1	1	Sin	-	-	-	1	F	-	-	-	-	-	-	-	-	In bad cond	35
14	22	3	Bos	Mc	Dist dia frag	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	In bad cond	5
14	22	3	Bos	Radius	Prox dia frag	1	1	Dx	-	1	1	-	-	-	-	1	-	-	-	C:prob chopped up	-	In bad cond	15
14	22	3	Bos	Tibia	Prox dia frag	1	1	Dx	-	1	1	-	-	-	-	1	-	-	-	C:chopped up	-	In bad cond	14
14	22	3	Bos	Tarsal	Frag	2	2	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
14	22	3	O/C	Mandible	Inter alv frag	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
14	22	3	O/C	Humerus	Dist dia+epi frag	1	1	Sin	-	-	-	1	F	-	-	1	-	1	-	C:pos cut up,P:osteophyt=common	-	-	7
14	22	3	Sus	Mandible	Mand, M2,alv	1	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	c,V=22=c. 2yrs	26
14	22	3	Sus	Mandible	Mand, alv+mol frag	3	1	Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17
14	22	3	Unid	Unid	Frag	14	14	-	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	In bad cond	67
15	20	16	Bos	Mandible	Mand,M1,ram,ang,p art	5	1	Sin	-	-	-	-	-	-	-	-	-	-	-	-	-	k=35-44=3-8yrs	115
15	20	16	Bos	Scapula	Corpus frag	1	1	Dx	-	-	-	-	-	-	-	1	-	-	-	C:chopped up	-	-	49
15	20	16	Bos	Tarsal	Astragalus frag	1	1	Sin	-	-	-	-	-	-	-	-	1	-	-	G:gnaw -pointy=dog	-	-	30
15	20	16	Bos	Ve lumb	Corpus+proc art caud	1	1	-	-	-	-	Unf	-	-	-	-	-	-	-	-	-	Fuse at 7-9yrs	35
15	20	16	O/C	Radius	Diaph frag	1	1	Sin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	5
15	20	16	Unid	Unid	Frag	25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24

APPENDIX 3 LIST OF RMP SITES IN THE AREA

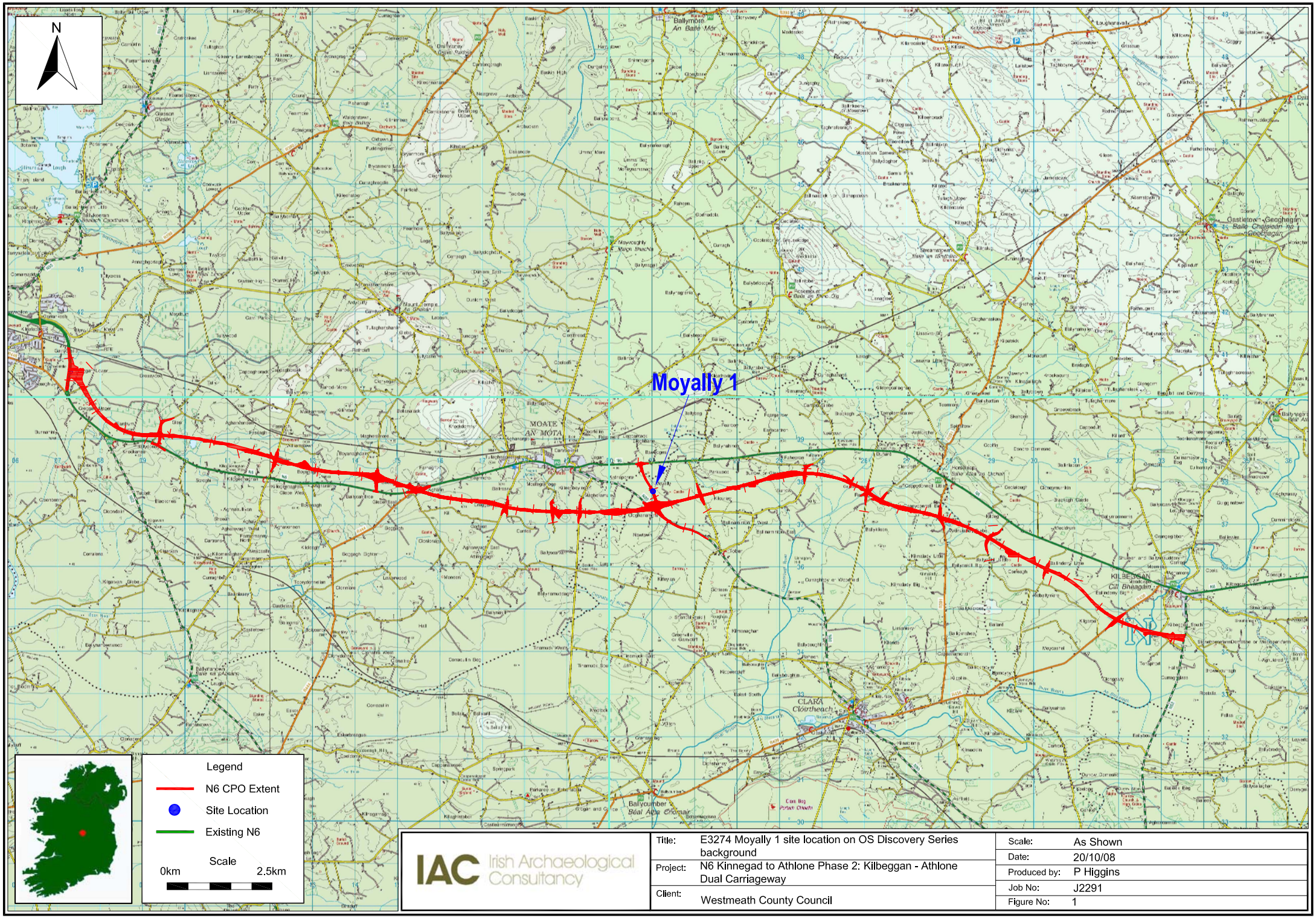
RMP No	Description
WM030-114	Enclosure site
WM030-115	Ringfort - Rath
OF001-001	Crannóg site
OF001-00201	Tower house and bawn
OF001-00202	Earthworks
OF001-003	Mound (possible)
OF001-004	De-listed
OF001-005	Enclosure

See Figure 2 for location.

APPENDIX 4 LIST OF N6 SCHEME SITE NAMES

Site Name	Ministerial Direction No.	NMS Registration Number
Seeoge 2	A016/007	E2635
Moyally 7	A016/015	E2643
Kilcurley 1	A016/019	E2647
Cappydonnell Big 1	A016/025	E2653
Ardballymore 2	A016/028	E2656
Creggan lower 1	A016/030	E2658
Creggan lower 2	A016/031	E2659
Williamstown 1	A016/032	E2660
Williamstown 3	A016/033	E2661
Williamstown 4	A016/034	E2662
Boyanaghcalry 1	A016/035	E2663
Seeoge 1	A016/036	E2664
Aghafin 1	A016/037	E2665
Cregganmacar 1	A016/038	E2666
Cregganmacar 2	A016/039	E2667
Cregganmacar 3	A016/040	E2668
Curries 1	A016/041	E2669
Curries 2	A016/042	E2670
Culleenagower 1	A016/043	E2671
Moyally 2	A016/044	E2672
Moyally 1	A016/046	E3274
Moyally 3	A016/047	E2674
Moyally 5	A016/048	E2675
Moyally 6	A016/049	E2676
Tober 1	A016/051	E2677
Burrow or Glennanummer 1	A016/052	E2678
Burrow or Glennanummer 2	A016/053	E2679
Burrow or Glennanummer 3	A016/054	E2680
Russagh 4	A016/055	E2681
Russagh 1	A016/056	E2682
Russagh 2	A016/057	E2683
Russagh 3	A016/058	E2684
Kilbeg 1	A016/059	E2688
Kilbeg 2	A016/060	E2689
Kilbeg 4	A016/062	E2691
Kilbeg 5	A016/063	E2692
Kilbeg 6	A016/064	E2693
Kilbeg 7	A016/065	E2694
Correagh 1	A016/066	E3374
Ballinderry Little 1	A016/067	E2695
Ardballymore 1	A016/068	E2696
Kilgaroan 1	A016/069	E2697
Kilgaroan 2	A016/070	E2698
Kilgaroan 3	A016/071	E2699
Kilgaroan 4	A016/072	E2700
Kilgaroan 6	A016/074	E2702
Ballinderry Big 1	A016/076	E3275
Ballinderry Big 2	A016/077	E3276
Ballinderry Big 3	A016/078	E3277
Tonaphort 1	A016/079	E3278
Tonaphort 2	A016/080	E3279
Tonaphort 3	A016/081	E3280
Kilbeggan South 1	A016/082	E3281

Site Name	Ministerial Direction No.	NMS Registration Number
Kilbeggan South 2	A016/083	E3282
Kilbeggan South 3	A016/084	E3283
Cregganmacar 4	A016/085	E2703
Williamstown 2	A016/086	E2704
Kilbeg 8	A016/087	E3966



IAC Irish Archaeological Consultancy

Title:	E3274 Moyally 1 site location on OS Discovery Series background
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council

Scale:	As Shown
Date:	20/10/08
Produced by:	P Higgins
Job No:	J2291
Figure No:	1

N

CAPPANTACK

CLOGHBANE

FEARBOY

OF001-001

WM030-114

LEGAN
(ED MOATE)

BAWNOGES

BALLYNAHINCH

MOYALLY

PARKWOOD

ARDNAPONRA

WM030-115

MOYALLY

PARKWOOD

Moyally 1
A016:046

KILLEENBOYLEGAN

MAGHERAMURRY

OF001-003

MOYALLY
Maigh Eille

Moyally 2

Moyally 7

OF001-002

Kilcurley 1

KILCURLEY
Cill Choirill

Moyally 3

Moyally 6

Tober 1

Moyally 4

Moyally 5

CULLEENAGOWER
CULLEENAGOWER

Culleenagower 1

OF001-005

TOBER
An Tobar

CLOGHANAMINA
Tulchán na Muimhneach

OF001-004
DE-LISTED

TOBER
An Tobar

NEWTOWN
Dúchoill
ED GORTEEN
An Goirtín

Legend

N6 CPO Line

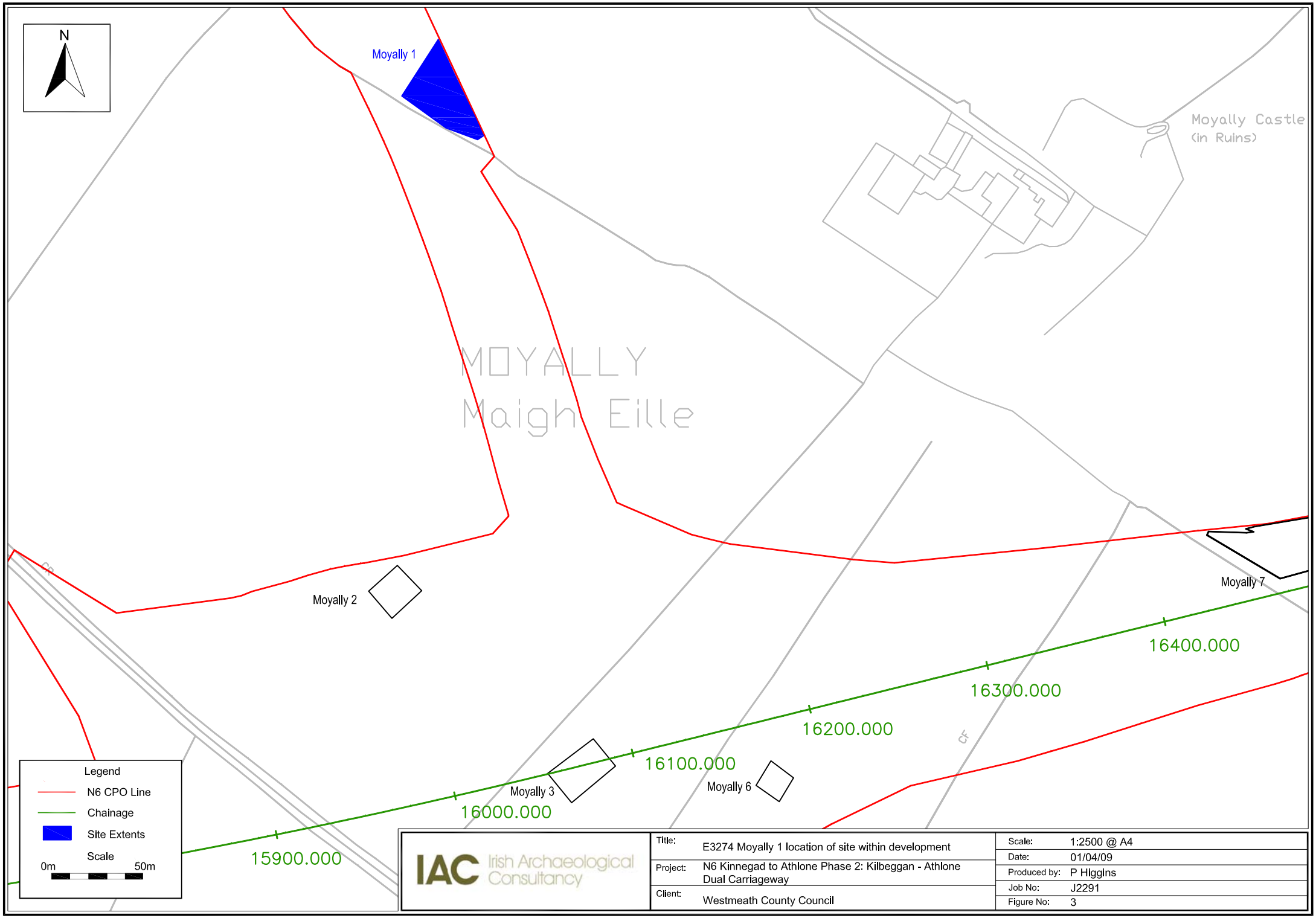
RMPs

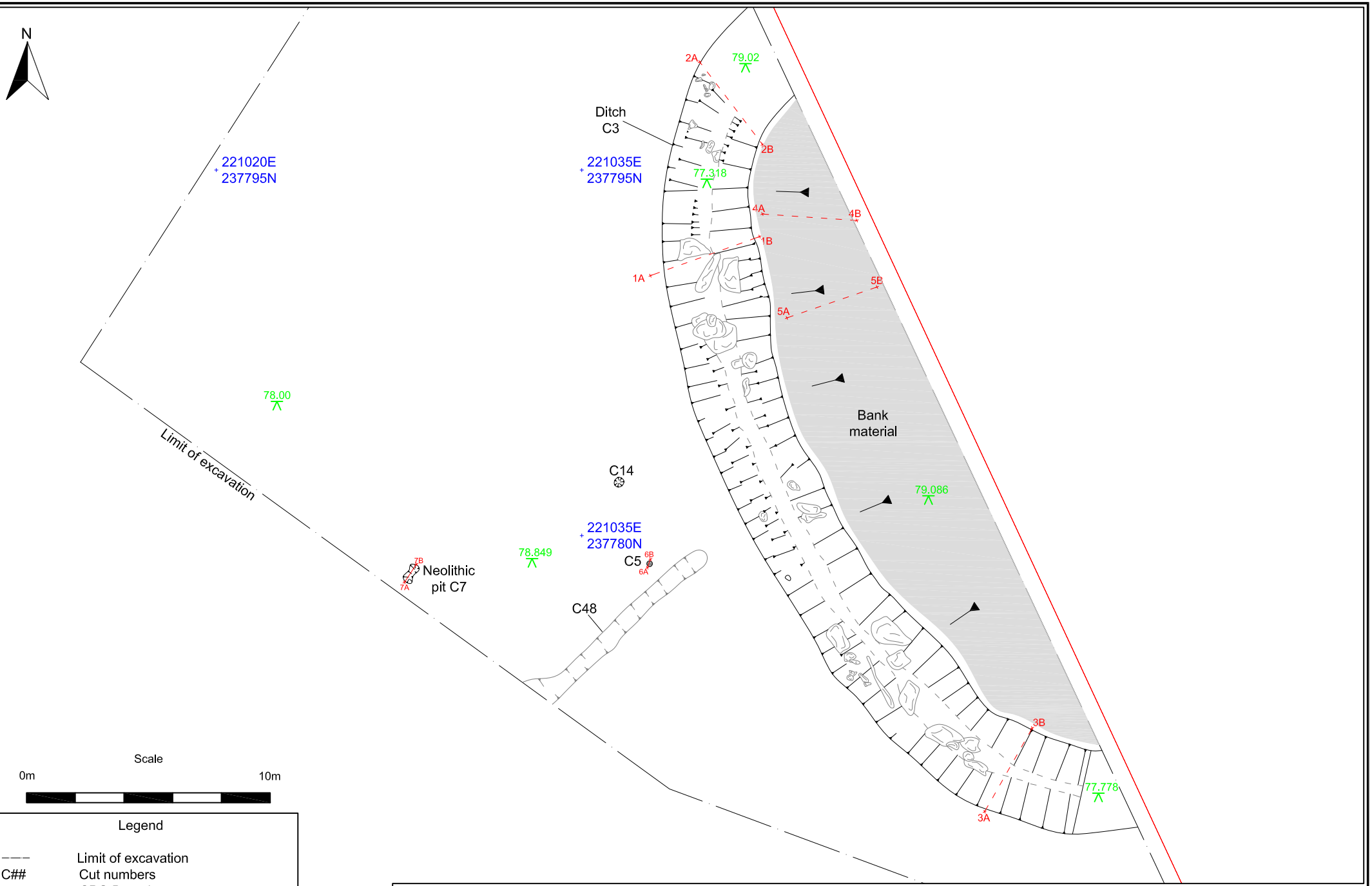
Scale

0m 250m

Title:	E3274 Moyally 1 showing RMPs with OS background		
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway		
Client:	Westmeath County Council		
Scale:	1:10000 @ A3	Job No:	J2291
Date:	01/04/09	Figure No:	2
Produced by:	P Higgins		

IAC Irish Archaeological Consultancy

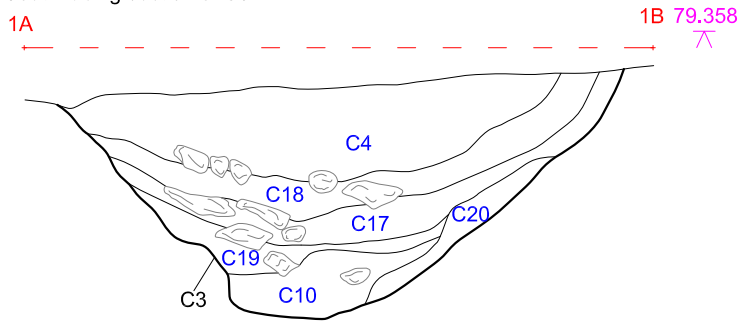

N
Moyally 1
Moyally Castle
(in Ruins)
MOYALLY
Maigh Eille
Moyally 2
Moyally 7
16400.000
16300.000
16200.000
16100.000
16000.000
15900.000
Moyally 3
Moyally 6
CF
Legend
N6 CPO Line
Chainage
Site Extents
Scale
0m
50m
IAC Irish Archaeological Consultancy
Title: E3274 Moyally 1 location of site within development
Project: N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client: Westmeath County Council
Scale: 1:2500 @ A4
Date: 01/04/09
Produced by: P Higgins
Job No: J2291
Figure No: 3



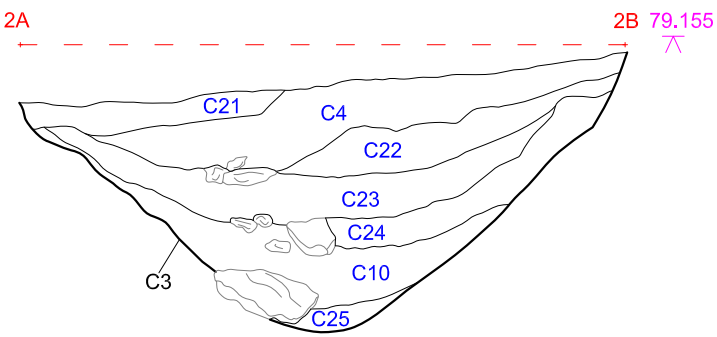
IAC Irish Archaeological Consultancy

Title:	E3274 Moyally 1 post-excavation plan
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council
Scale:	1:200 @ A4
Date:	01/04/09
Produced by:	G Kearney
Job No:	J2291
Figure No:	4

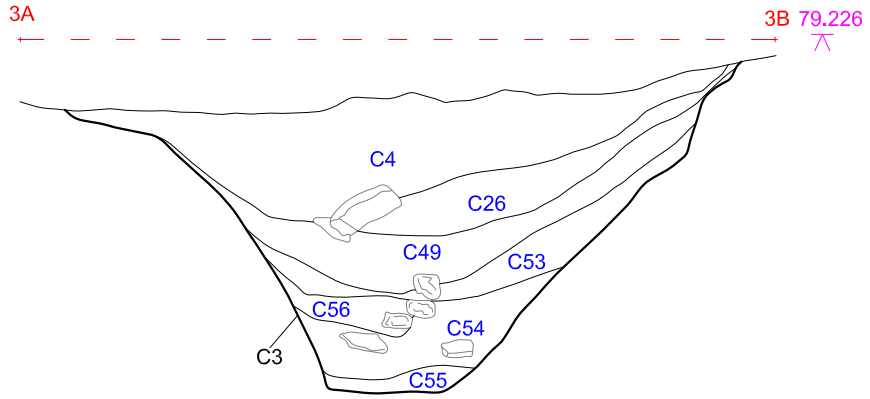
Moyally 1
South facing section of C3



Moyally 1
Southwest facing section of C3



Moyally 1
Southeast facing section of ditch C3



Scale

0m 2.5m

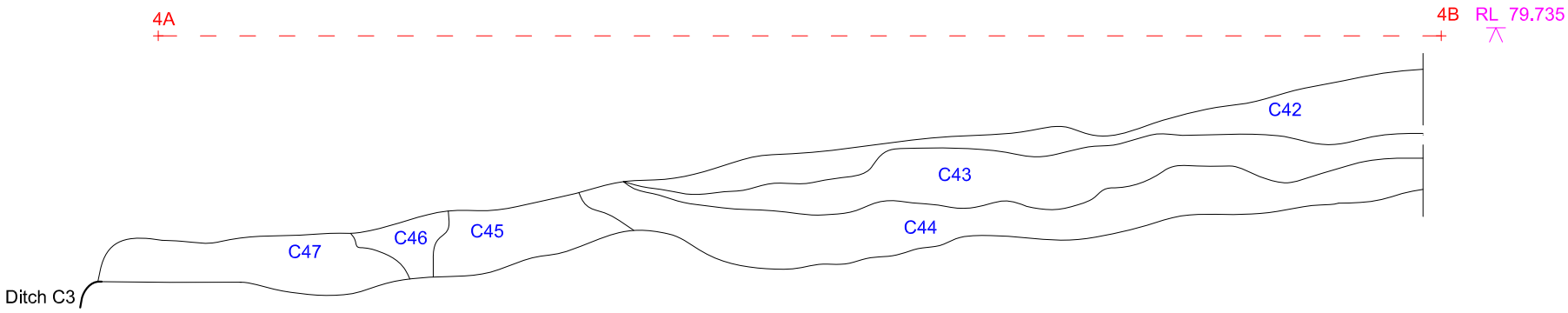
Legend

C##	Cut numbers
C##	Fill Numbers
	Stones
###.##	Reduced Levels

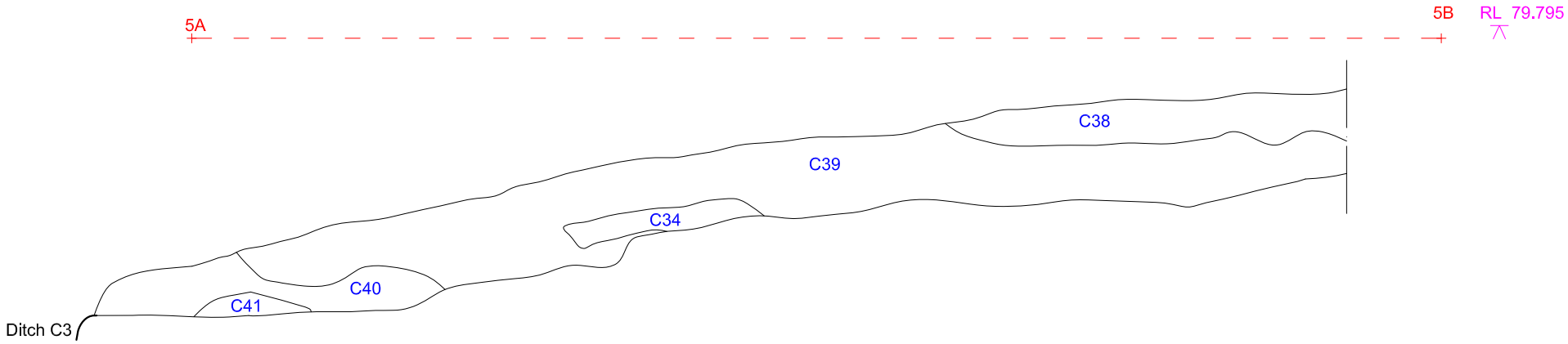
IAC Irish Archaeological Consultancy

Title:	E3274 Moyally 1 sections of ditch
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council
Scale:	1:50 @ A4
Date:	01/04/09
Produced by:	G Kearney
Job No:	J2291
Figure No:	5

Moyally 1
South facing section



Moyally 1
Southeast facing section



Scale

0m 1m

Legend

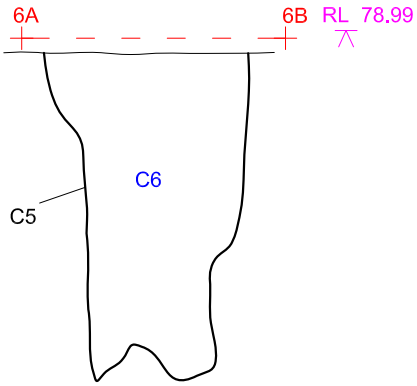
C##	Fill Numbers
###.##	Reduced Levels

IAC Irish Archaeological Consultancy

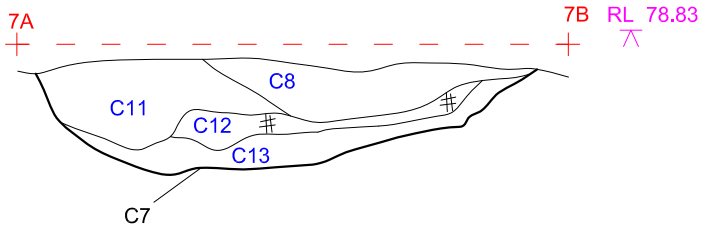
Title:	E3274 Moyally 1 sections of bank
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council

Scale:	1:20 @ A4
Date:	01/04/09
Produced by:	G Kearney
Job No:	J2291
Figure No:	6

Moyally 1
Southeast facing section of posthole C5



Moyally 1
Southeast facing section of pit C7



Scale

0m 0.5m

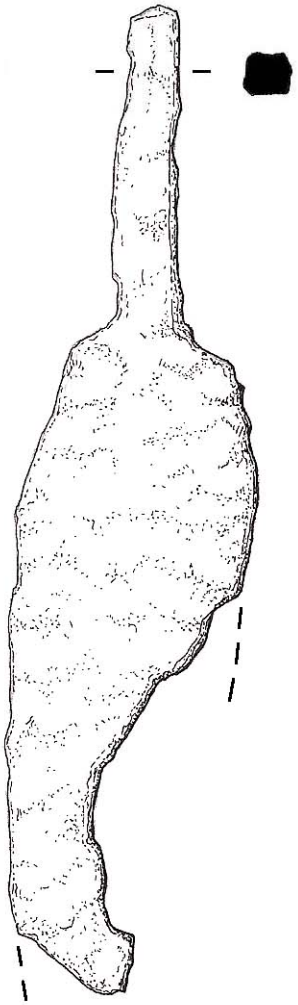
Legend

C##	Cut numbers
C##	Fill Numbers
#	Charcoal
###.##	Reduced Levels

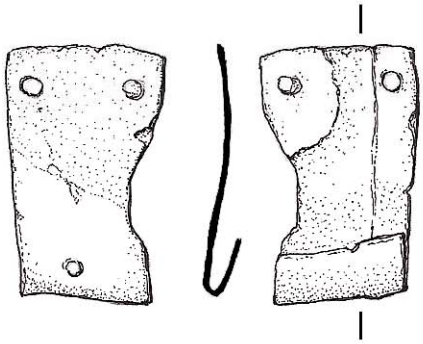
IAC Irish Archaeological Consultancy

Title:	E3274 Moyally 1 sections of C5 and C7
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council
Scale:	1:10 @ A4
Date:	01/04/09
Produced by:	G Kearney
Job No:	J2291
Figure No:	7

E3274:1:3



E3274:27:1



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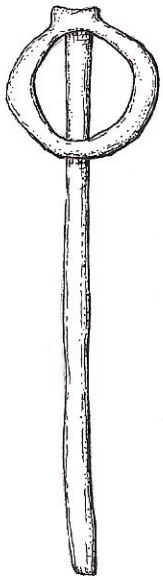
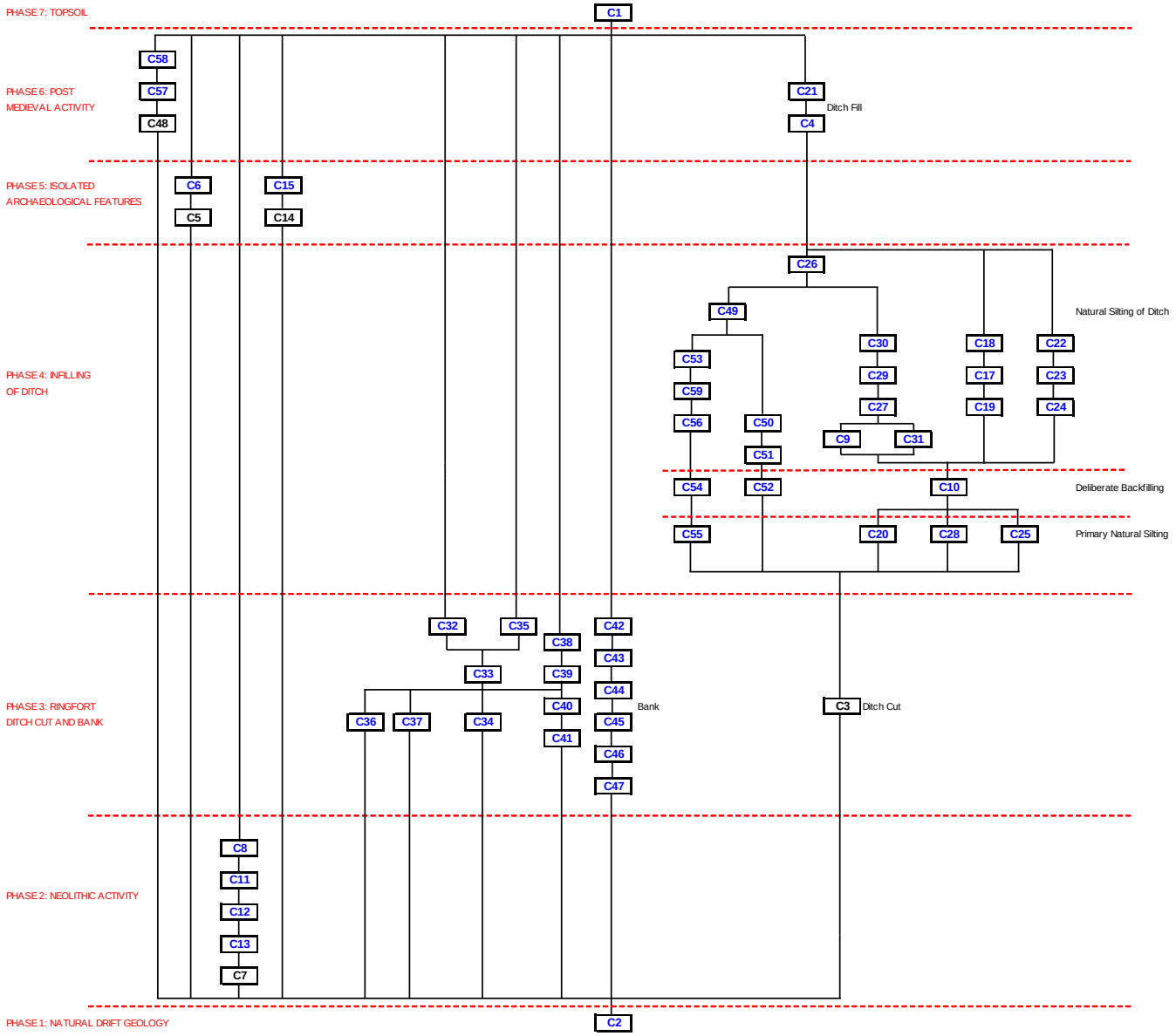


IAC Irish Archaeological Consultancy	Title: E3274 Moyally 1 illustrations of E3274:1:3, E3274:27:1 and E3274:49:1	Scale:	1:1 @ A4
		Date:	01/04/09
	Project: N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway	Produced by:	G Kearney
		Job No:	J2291
	Client: Westmeath County Council	Figure No:	8



IAC Irish Archaeological Consultancy

Title:	E3274 Moyally 1 matrix
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council

Scale:	N.T.S.
Date:	01/04/09
Produced by:	G Kearney
Job No:	J2291
Figure No:	9