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

SITE A016/041; E2669: CURRIES 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.	A016/041
NMS Registration Number	E2669
Excavation Director	Patricia Lynch
Senior Archaeologist	Shane Delaney
Consultant	Irish Archaeological Consultancy Ltd, 120b Greenpark Road, Bray, Co. Wicklow
Client	Westmeath County Council
Site Name	Curries 1
Site Type	Early Medieval Charcoal Production Kilns
Townland	Curries
Parish	Kilcleagh
County	Westmeath
NGR (Easting)	E218317
NGR (Northing)	N237299
Chainage	13260
Height m OD	62.3m OD
RMP No.	N/A
Excavation Start Date	20 March 2006
Excavation Duration	10 days
Report Type	Final
Report Date	26 June 2009
Report By	Patricia Lynch

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 Curries at the site of Curries 1, in advance of the 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 Patricia Lynch under Ministerial Direction (A016/041) and NMS Registration Number E2669, issued by the DOEHLG in consultation with the National Museum of Ireland. The fieldwork took place in March 2006.

The excavation at Curries 1 revealed the remains of two charcoal production kilns indicating probable small scale rural industrial activity during the early medieval period. A sample of oak brushwood from one of these features (C3) produced a 2 Sigma date of AD 773–968 and a sample of alder taken from the basal deposit C4 of another produced a 2 Sigma date of AD 783–994. A post-medieval to modern phase of activity was also identified consisting of the remains of seven agricultural plough furrows. No artefacts were recovered from the site.

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1 INTRODUCTION

1.1 General

This final archaeological report describes the results of the excavation carried out at the site of Curries 1 in the townland of Curries, Co. Westmeath (Figures 1 and 2) as part of an archaeological mitigation program associated with the N6 Phase 2: Kilbeggan to Athlone Dual Carriageway Scheme. Archaeological fieldwork was carried out under ministerial direction by Patricia Lynch for Irish Archaeological Consultancy Ltd (IAC Ltd) and was funded by Westmeath County Council & the National Roads Association under the National Development Plan 2000–2006, 2007–2013 and the EU Structural fund.

Curries 1 was identified as a result of archaeological assessment undertaken by IAC Ltd. in August 2005 (Ministerial Direction No. A016/029, NMS Reg. No. E3273). All features identified during the assessment phase (a possible structural/habitation area comprising three pits, a curvilinear ditch and furrows) were subsequently re-identified and the site was fully excavated during the full resolution phase of the project which took place between 20 to 31 March 2006 with a team of 1 director, 1 supervisor and 9 site assistants.

The site was located in flat pastureland at a height of 62.3m OD to the south of the existing N6, c. 1km south of Moate (Westmeath OS sheet 036). Site A016/041 was not noted in the EIS. Two CHS were identified, however, in its immediate vicinity. CHS 128, a possible earthwork, was identified at Ch. 13060, to the west and CHS 26, a mound, was identified at Ch. 13100, to the northwest of the site. Curries 1 had not been previously identified and was not a recorded monument.

The site was assigned the following identification data:

Site Name: Curries 1; Ministerial Direction No.: A016/041; NMS Registration No.: E2669; Route Chainage (Ch): 13260; NGR: 218317/237299.

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 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.

An environmental strategy was devised at the beginning of the excavation. Where relevant 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 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

Detailed descriptions of contexts are listed in Appendix 1. The site matrix is detailed in Figure 6.

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 Curries 1 was uniform across the site and consisted of a firm yellow clay.

2.2 Phase 2: Early Medieval Activity

One clear archaeological phase was recorded (Figure 6). This consisted of two pits and a burnt spread interpreted as the remains of charcoal production kilns.

2.2.1 Burnt Spread/Charcoal Production Kiln C3

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
3	N/A	1.3	1	0.11	Black silty sand, high charcoal content	Charcoal pro. Kiln

Finds: None

Interpretation:
This context represents the remains of a shallow charcoal rich deposit located in close proximity to charcoal production kiln C40, at the south of the site (Figures 4, 5; Plates 2, and 5). This probably represents the truncated remains of a charcoal production kiln. A charcoal sample, identified as oak brushwood (*Quercus* sp.) (O'Carroll, Appendix 2.1), retrieved from the deposit C3 returned a date of 1174+/-32 BP (UBA 8592). The 2 Sigma calibrated result of this sample produced a date range of AD 773–968, placing it within the early medieval period (Appendix 2.2).

2.2.2 Charcoal Production Kiln C40

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
4	C40	1.12	1.28	0.08	Charcoal layer	Primary charcoal fill
39	C40	0.76	1.16	0.1	Dark grey silty clay, charcoal, pebbles	Fill of pit
40	N/A	1.21	1.28	0.14	Sub-circular cut, gradual sides and flat base	Charcoal pro. Kiln cut

Finds: None

Interpretation:
This charcoal production kiln was defined by a sub-circular cut (C40) containing two fills (C4 and C39) and was located in close proximity to kiln C3 (Figures 4, 5; Plate 4). The primary fill (C4) was a charcoal layer which was deposited around the edges of the cut. The secondary fill (C39) was washed-in clay, probably a post-abandonment deposit.

A sample of the charcoal deposit was identified as a mixture of 2% oak (*Quercus* sp.), 3% hazel (*Corylus avellana*), 10% alder (*Alnus* sp.), and 85% willow (*Salix* sp.) (O'Carroll, Appendix 2.1). A charcoal sample from C4, identified as alder (*Alnus* sp.),

returned a date of 1122+/-32 BP (UBA 8593, Appendix 2.2). The 2 Sigma calibrated result of this sample produced a date of AD 783–994, placing it within an early medieval date range. It is highly possible that this feature and C3 are associated due to the dating evidence and their close proximity. The high charcoal content and the shape of the cut indicate that it may have been a charcoal production kiln.

2.2.2 Pit C33

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
14	C33	1.6	1.15	0.63	Brown gritty clay	Fill of pit
33	N/A	1.6	1.15	0.63	Square cut, steep sides, irregular base	Square pit

Finds: None

Interpretation:
Pit C33 was located to the northeast of the charcoal production kilns described above (Figures 4, 5; Plate 3). The pit was square in plan and contained a single fill C14 consisting of sterile brown gritty clay. This pit was isolated and had little in common with the kiln typology identified with C3 and C40.

2.3 Phase 3: Post-Medieval Activity

2.3.1 Plough Furrows C26, C27, C28 and C42

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
5	C27	4.05	0.38	0.2	Light brown clayey soil, pebbles	Furrow
8	C28	4.15	0.48	0.08	Medium brown clayey soil, pebbles	Fill of furrow
9	C26	9	0.45	0.1	Dark brown sandy clay	Fill of furrow
19	C42	5	0.6	0.12	Light brown gritty clay, pebbles	Fill of furrow
26	N/A	9	0.45	0.1	Linear cut gradual sides, concave base	Furrow
27	N/A	4.05	0.38	0.2	Linear cut steep sides, irregular base	Furrow
28	N/A	4.15	0.48	0.08	Linear cut gradual sides, curved base	Furrow
42	N/A	5	0.6	0.12	Linear cut gradual sides, irregular base	Furrow

Finds: None

Interpretation:
These represent the remains of a collection of modern agricultural plough furrows identified to the east and north of the site (Figure 4). Each furrow contained a single fill. These furrows did not appear to truncate any of the known archaeological features on the site and are not of any particular archaeological significance. They represent the latest activity associated with this site

2.4 Phase 4: Topsoil

2.4.1 Topsoil

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

Finds: None

Interpretation:
Phase 4 represents the topsoil that sealed all of the archaeological deposits and features at Curries 1.

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 Curries 1 was located 1km south of the town on Moate on the side of an eastern sloping gravel ridge (62.3m OD). The underlying geology of the area is carboniferous limestone, which is overlain by small glacial hillocks to the north of the site. The site was located on Patrickswell/Baggotstown soil complexes covering a generally flat terrain apart from the occasional small hill. A small bog was situated 250m to the southwest of the site in Gorteen/Curries/Ballynamuddagh townlands (6"OS map 1834–1842). While the bog in Moategranoge/ Ballyscartan/ Culleenagower/ Lurgan townlands lay 700m southeast of the site (6"OS map 1834–1842). Smaller areas of wetland were situated 100m to the west in the townland of Moategranoge. The Cloghatanny River was located 30m to the east.

3.2 Archaeological Landscape (Early Medieval)

From east to west the N6 passes in proximity to the towns of Kilbeggan, Clara, Moate and Athlone. This stretch of landscape corresponds with a probable medieval routeway leading from the secular hub of Kilbeggan to that of Athlone, which is thought by some to represent the *Slighe Mhór* (O Lochlainn 1940, 471).

Kilbeggan, or *Cill Bheagáin*, derives its name from St 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 significant excavation, c. 5km to the north of Kilbeggan, at Gneevebeg uncovered an enclosed cemetery of probable early medieval date in addition to cereal-drying kilns, a bullaun stone and a number of pits and ditches (Wallace 2002).

The north midlands, through which the N6 traverses, is described by Stout (1997, 77) as having a high-density of ringforts and enclosures. 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 2009a) 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.

An early medieval enclosure was excavated at Moyally 1 (Bayley 2009a) 400m south of a ringfort (WM030-115) and near two enclosures (WM030-114 and OF001-005), indicating a continuance of settlement and activity c. 2km southeast of Moate. 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. As Moate develops into a settlement of status in the later medieval period it is thought that there must have been a preceding focus of activity here during the early medieval of possible ecclesiastic origin due to the presence of a bullaun stone (WM030-117) and burial ground (WM030-113).

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 tenth centuries, indicates that an unrecorded ecclesiastical site was situated in Athlone at this time (Murtagh 2000, 11). Athlone is associated with a battle in AD 894 between the Connachtmen and the men of Meath meanwhile Lough Ree, to the north, was repeatedly the focus of Viking activity between AD 922 and 937 (*ibid*.). 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); of which the precise location 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 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 northeast 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, 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, 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 1980/84).

Excavations of ecclesiastical sites are rare in the archaeological record but a monastic enclosure was partially excavated at Clonfad, 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).

Early medieval Curries 1

Excavations at Curries 1 revealed evidence for two charcoal production kilns and an isolated pit. This site was adjacent to Curries 2 c. 100m to the east, where a group of charcoal production kilns and a metalworking furnace was dated to the 10th to 12th Century AD (Lynch 2009b).

A number of definite kilns of this type have been uncovered along the N6 Kilbeggan to Athlone road scheme. A large rectangular charcoal production kiln at Kilbeggan South 3 (C12), measuring 2.97m x 1.85m x 0.3m (length x width x depth), displayed evidence for a heat-scorched base and sides and its primary fill contained charcoal-rich material with a number of large well preserved pieces of carbonised wood (Coughlan 2009b). A sample of charcoal (elm) from this fill returned a 2 Sigma date range of AD 1157–1251. The upper fill contained mixed clays and this possibly represents the collapse of the superstructure after the kiln had gone out of use. An even larger oval-shaped charcoal production kiln from the same site (C19), 3.3m x 1.96m x 0.05m also produced a charcoal-rich primary fill with large well preserved pieces of carbonised wood and evidence for intense *in-situ* burning (*ibid*.). A similar 2 Sigma date of AD 1052–1217 was obtained from charcoal (young oak) within the primary fill. At Ballinderry Big 3, a large rectangular-shaped charcoal production kiln (C12), 2.78m x 1.14m x 0.18m, displayed evidence for a scorched base and its primary fill consisted of over 50% charcoal inclusions (Lynch 2009a). Charcoal (oak

branch) from this fill returned a 2 Sigma date of AD 896–1014. Another, as yet undated, large oval example (C26), measuring 3.6m x 1.8m x 0.82m, was excavated at Culleenagower 1 (Whitty 2009). Smaller examples were also utilised such as the circular kiln at Kilgaroan 1 (C7), 1.2m x 1.5m x 0.25m, which had oxidised edges and frequent charcoal lump inclusions in both its primary and upper fills (Bayley 2009b). This charcoal production kiln was dated between the middle sixteenth and middle seventeenth centuries.

Other examples found along the scheme include two large sub-rectangular charcoal production pits at Monganstown 1 – on Section 1 between Kinnegad and Tyrellspass – which returned radiocarbon dates between the late ninth and early eleventh centuries (Lehane and Johnston 2007) and at Stonehousefarm 3 – Section 2 between Tyrellspass and Kilbeggan – that included oval and rectangular types. The primary fill of the latter was charcoal-rich and included large pieces of charred wood (McDermott 2004).

The main charcoal production kiln at Curries 1 (C40) is similar to a number of features along the N6 that are recorded as rectangular or oval with heat-scorched sides and bases and moderate to high amounts of charcoal within their fills. Examples include C13 at Ballinderry Big 3 that was dated to AD 779–940 (Lynch 2009a), C19 at Russagh 4 (0.91m x 1.4m x 0.08m), which returned a 2 Sigma date of AD 994–1153 (O'Carroll 2009), and C4, a rectangular example at Tonaphort 3, that was dated to 2 Sigma AD 777–970 (Coughlan 2009c). Finally, two features (C6 & C11) that were intensively heat-scorched and contained high levels of charcoal were excavated at Kilbeggan South 1 (Coughlan 2009d). The former returned a 2 Sigma date of AD 877–984 while the latter was dated between the middle 11th and early 13th centuries. It is likely that these features represent charcoal production kilns even though some only contained moderate amounts of charcoal. The positive identification of previous examples, such as Hardwood 3, Co. Meath (Carlin *et al* 2008, 101), was due to the survival of charred wood and this is also true of certain kilns on the N6 including those at Kilbeggan South 3. However, this was the result of the kilns' abandonment, possibly due to the charcoal becoming wet and therefore useless, whereas the charcoal from successful kilns would have been retrieved leaving only the heat-scorched pit, low levels of charcoal, and various soil, including clay, inclusions that survive in the archaeological record today.

It appears that the majority of charcoal production kilns date to the latter part of the early medieval period into the early part of the later Middle Ages and the findings on the N6 broadly mirror the findings from other dated kilns (Carlin *et al* 2008; Kenny 2007). It is also apparent that these industrial features were located a safe distance away from settlement sites and in areas close to the required natural resources such as wood and bogland.

3.2 Archaeological Typology Background (Charcoal Production Kilns)

Charcoal production kilns were essential to the ironworking process as charcoal was produced as a fuel in the smelting and forging stages. Very little was know about archaeological charcoal production before 20 years ago (Tylecote 1986, 225) and this has changed little since (O'Sullivan and Harney 2008, 198). However, there has been an ever increasing discovery of such sites during the boom in development-led archaeology and excavations of charcoal production kilns are beginning to feature in recent publications (Carlin *et al* 2008; Grogan *et al* 2007; Hull and Taylor 2006).

An unpublished paper by Niall Kenny (2007) has identified approximately 100 charcoal production kilns in Ireland that range in plan from rectangular, oval and circular, with sub-variations of these, and there is an approximate equal amount of

each type. It appears, on current evidence, that the classic type are large and rectangular in plan such as Hardwood 3, Co. Meath for example, where long carbonised pieces of oak were found along the axis of the kiln that made up almost 100% of the deposit (Carlin *et al* 2008, 101; Illus. 5.8b, 102). The rectangular kilns tend to be larger than oval and circular types with an average length of 2.5m but they can also be as long as 4m (Kenny 2007, 14–5). The oval kilns tend to be shallower than the other types while the circular examples are usually smaller but deeper compared to rectangular and oval charcoal production kilns (*ibid.,* 15).

Charcoal production kilns are identifiable archaeologically as earth-cut pits, with charcoal-rich fills, and evidence for extensive *in-situ* burning along the base and sides (Carlin *et al* 2008, 101; Kenny 2007, 15). Those discovered along the M4 were rectangular or sub-rectangular in plan (Carlin *et al* 2008), whereas Kenny (2007) has also identified circular and oval types. However, it is important to stress that charcoal production kilns, such as Hardwood 3 and Kilmaniheen West 10 and 12, Co. Kerry (Hull and Taylor 2006, 29–30), were recognisable because the carbonised wood had survived *in-situ* upon excavation. These kilns were abandoned possibly due to the charcoal becoming wet which left it useless as a fuel. Successful kilns would not leave abundant charcoal within their primary fills so would appear archaeologically as heat-scorched pits probably containing only moderate amounts of charcoal. This, therefore, conveys the problems positively identifying charcoal production kilns as many charcoal yields will have been previously removed.

The majority of charcoal production kilns are located away from settlements and close to resources required for the primary ironworking processes such as bog and woodlands. Large quantities of tress were required for charcoal production and, similarly, large quantities of iron ore – available within surrounding bogs (Mytum 1992, 230; Raftery 1994, 147) – were needed during the smelting process. Therefore, it made sense, logistically and for safety reasons, for charcoal production kilns to be situated a distance from dwellings and farms and close to available raw materials. Kenny's (2007, 20–2) research has also shown that the majority of kilns are located on sloping and agriculturally unproductive ground and drainage was probably an important factor because it was imperative to keep the charcoal dry.

Radiocarbon dates are beginning to emerge from a number of charcoal production kilns and possible examples. Of those dated, the majority appear to date to the latter part of the early medieval period. The kilns at Hardwood 3, Rossan 3, Ardnamullan and Newcastle 2, excavated along the M4, returned radiocarbon dates between the eighth and thirteenth centuries (Carlin *et al* 2008, 88). The dates appear to converge at a point between the eleventh and twelfth centuries. Kilns at Kilmaniheen West, Co. Kerry and Barefield, Co. Clare also returned radiocarbon dates spanning the latter part of the early medieval period (Hull and Taylor 2006). A circular kiln at Mondaniel 2, Co. Cork was dated to AD 1420–1640 (Kenny 2007, 18) but, on current evidence, charcoal production kilns generally date to the latter part of the early medieval period into the early years of the later middle ages. Therefore, it appears that charcoal production was at its most prolific during these years but dating of further features may alter this picture.

Charcoal is the material produced from the incomplete combustion of wood and was used as an effective fuel – much more so than wood or turf for example – during the smelting and forging stages of ironworking. It was produced through the placement of wood – mainly oak – against a vertical post in earth-cut pits that were covered by layers of straw or bracken and were then sealed by a layer of earth or turf. The post was removed and the kiln was subsequently ignited as the wood was roasted to produce the charcoal over a number of days (Carlin *et al* 2008, 89–91). This was a

labour intensive process that required careful supervision and plentiful raw materials and the identification of increasing number of charcoal production kilns emphasises that it was a much more widespread industrial activity than previously considered and that it was an essential component of the iron production process.

3.4 Discussion

One main phase of archaeological activity was identified at Curries 1, early medieval charcoal production kilns. The specific archaeological context of the site and its phases are described in detail below.

3.4.1 Phase 1: Natural Deposits

This phase represents the natural subsoil, which was cut or sealed by all subsequent archaeological features. The subsoil C2 above bedrock encountered at Curries 1 was uniform across the site consisted of a brown/yellow sandy silt of moderate to firm compaction.

3.4.2 Phase 2: Early Medieval Activity

Phase 2 represents the remains of features uncovered that are associated with the primary phase of activity on-site. A total of 3 features were identified consisting of two charcoal production kilns and an isolated pit.

The two charcoal production kilns were located in the southern half of the excavation area (Figures 3, 4; Plates 2, 4 and 5). Charcoal production kiln C40 (1.21m x 1.28m x 0.14m) contained two fills C4 and C39. The primary fill (C4) represented the residual remains of the charcoal at the base and edges of the cut. A sample of the charcoal deposit was identified as a mixture of 2% oak (*Quercus* sp.), 3% hazel (*Corylus avellana*), 10% alder (*Alnus* sp.), and 85% willow (*Salix* sp.) (O'Carroll, Appendix 2.1). A sample of alder was selected for dating and returned a calibrated 2 Sigma date range of AD 783–994 (UBA 8593, Appendix 2.2).

The adjacent truncated charcoal rich deposit C3 (1.3m x 1m x 0.11m) represented the truncated remains of a charcoal production kiln. The charcoal identified was 100% oak (O'Carroll, Appendix 2.1). A sample identified as oak brushwood, was extracted for dating and returned a calibrated 2 Sigma date range of AD 773–968 (UBA 8592, Appendix 2.2), contemporary with kiln C40.

The isolated pit C33 contained a single fill (C14) consisting of medium brown gritty clay of medium compaction containing frequent pebble inclusion. The function of this feature is unknown, as there do not seem to be any further features in the immediate vicinity of it nor any significant indicators of functionality such as *in-situ* burning.

Oak and alder were the preferred choice of fuel as indicated by the specialist results. Oak was the preferred fuel of choice for this feature type but when not available other species may have been used, as suggested by the taxa identified from kiln C40.

The Curries 1 charcoal production kilns are two of a large number of this feature type identified during this project including examples at Curries 2 c. 100m to the east dated to (AD 989–1148). Further to the east and south of Kilbeggan town at Kilbeggan South 3 examples were excavated dating to AD 1052–1251. At Ballinderry Big 3 (also south of Kilbeggan town) an example dated to AD 779–940, Russagh 4 produced one dating to AD 994–1153 and at Tonaphort 3 another dated to AD 777–970 (all dates quoted to 2 Sigma).

As with all charcoal production kilns the positive identification of these features are generally of those that 'failed'. Meaning, that as their function was to produce

charcoal for use as fuel in metalworking furnaces or cereal drying kilns, the fact that the charcoal was not removed means that the charcoal was not useful. It is generally believed that in this case the charcoal became wet before the process finished and the remaining charcoal was left within the kiln. To avoid this it was preferable to locate these on well-drained soils/geology, such as the gravel ridge at Curries.

3.4.3 Phase 3: Post-medieval and Modern Activity

Phase 3 represents the remains of features interpreted as being related to modern agricultural activity on the site consisting of seven plough furrows. These features are not archaeological in nature but are useful in helping to determine the sequencing of archaeological events on-site.

3.4.2 Phase 4: Topsoil

This phase represents the topsoil that sealed all of the archaeological deposits and features on site.

4 CONCLUSIONS

Curries 1 was a small rural industrial site dating to eight to tenth Centuries AD. The remains of two charcoal production kilns were identified. Charcoal production kilns are often found associated with metalworking furnaces, which require the charcoal for fuel. The kilns are generally located away from major settlement foci and are instead found close to the source of the raw material (woodland). Oak charcoal is the most common wood species identified in kilns of this type. The features identified at Curries 1 are located immediately 100m west of Curries 2 which was a small industrial site representing the remains of charcoal production kilns and a metalworking furnace, however this site was slightly later in date (10th to 12th Centuries AD). This may be an indication that this location, the gravel ridge, was revisited over many centuries for small scale rural industrial activity.

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PLATES

Plate 1: E2669: Pre-excavation of site, facing south

Plate 2: E2669: Spread C3, pre-excavation, facing north

Plate 3: E2669: Northeast facing section of C26 and C33, facing southwest

Plate 4: E2669: South facing section of C40, facing north

Plate 5: E2669: South facing section of spread C3, facing north

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	N/A	Topsoil	Mid brown sandy clay.	N/A
2	N/A	N/A	N/A	N/A	Subsoil	Light brown medium sand.	N/A
3	N/A	1.3	1	0.11	Charcoal production kiln	Charcoal.	N/A
4	C40	1.12	1.28	0.08	Charcoal deposit	Charcoal.	N/A
5	C27	4.05	0.38	0.2	Fill of furrow	Light brown clayey soil, pebbles.	N/A
6	-	-	-	-	Non-Archaeological		N/A
7	-	-	-	-	Non-Archaeological		N/A
8	C28	4.15	0.48	0.08	Fill of furrow	Medium brown clayey soil, pebbles.	N/A
9	C26	9	0.45	0.1	Fill of furrow	Dark brown sandy clay.	N/A
10	-	-	-	-	Non-Archaeological		N/A
11	-	-	-	-	Non-Archaeological		N/A
12	-	-	-	-	Non-Archaeological		N/A
13	-	-	-	-	Non-Archaeological		N/A
14	33	1.6	1.15	0.63	Fill of pit	Medium brown gritty clay of medium compaction. <10% pebble inclusions.	N/A
15	-	-	-	-	Non-archaeological		N/A
16	-	-	-	-	Non-archaeological		N/A
17	-	-	-	-	Non-archaeological		N/A
18	-	-	-	-	Non-archaeological		N/A
19	C42	5	0.6	0.12	Fill of furrow	Light brown gritty clay, pebbles.	N/A
20	-	-	-	-	Non-archaeological		N/A
21	-	-	-	-	Non-archaeological		N/A
22	-	-	-	-	Non-archaeological		N/A
23	-	-	-	-	Non-archaeological		N/A
24	-	-	-	-	Non-archaeological		N/A
25	-	-	-	-	Non-archaeological		N/A
26	N/A	9	0.45	0.1	Furrow	Linear feature with gradual sides and curved base.	N/A
27	N/A	4.05	0.38	0.2	Furrow	Linear feature with steep sides and irregular base.	N/A
28	N/A	4.15	0.48	0.08	Furrow	Linear feature with gradual sides and curved base.	N/A
29	-	-	-	-	Non-archaeological		N/A

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Finds
30	-	-	-	-	Non-archaeological		N/A
31	-	-	-	-	Non-archaeological		N/A
32	-	-	-	-	Non-archaeological		N/A
33	N/A	1.6	1.15	0.63	Square pit	Square feature with steep sides and irregular base.	N/A
34	-	-	-	-	Non-archaeological		N/A
35	-	-	-	-	Non-archaeological		N/A
36	-	-	-	-	Non-archaeological		N/A
37	-	-	-	-	Non-archaeological		N/A
38	-	-	-	-	Non-archaeological		N/A
39	40	0.76	1.16	0.1	Upper fill of charcoal production kiln	Sub-circular with soft dark grey silty clay. Inclusions of pebbles, charcoal and some burnt stone.	N/A
40	N/A	1.21	1.28	0.14	Charcoal production kiln	Sub-circular feature with gradual sides and flat base.	N/A
41	-	-	-	-	Non-archaeological		N/A
42	N/A	5	0.6	0.12	Furrow	Linear feature with gradual sides and irregular base.	N/A

Appendix 1.2 Catalogue of Artefacts

There were no artefacts recovered from this site.

Appendix 1.3 Catalogue of Ecofacts

A total of 3 bulk soil samples were taken during the course of excavation at this site. Of these all 3 were processed by means of flotation and sieving through a 300µm mesh. The resulting retrieved samples of this process are listed below.

1.3.1 Charcoal

Two charcoal samples were recovered following floatation.

Context number	Sample number	Feature	Sample weight (g)
3	1	Charcoal deposit/charcoal production kiln	167.8g
4	2	Fill of pit C40	114.7g

Appendix 1.4 Archive Checklist

Project: N6 Kilbeggan – Athlone	**Irish Archaeological Consultancy Ltd**	
Site Name: Curries 1		
NMS Registration Number: E2669		
Ministerial Direction Number: A016/041		
Site director: Patricia Lynch		
Date: 17 September 2008		
Field Records	**Items (quantity)**	**Comments**
Site drawings (plans)	2	Digitised
Site sections, profiles, elevations	16	Digitised
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books	0	
Site registers (folders)	1	Digitised
Survey/levels data (origin information)	40	Reduced
Context sheets	30	Digitised
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	27	On IAC Server
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)	0	
Metal artefacts (specify types - bronze, iron)	0	
Glass	0	
Other find types or special finds (specify)	0	
Human bone (specify type eg cremated, skeleton, disarticulated)	0	
Animal bone	0	
Metallurgical waste	0	
Enviro bulk soil (specify no. of samples)	3	
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: Direction No. A16

Registration Number: E2669

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 Ms. Patricia Lynch of c/o ADS Ltd,, Windsor House,, 11 Fairview Strand,, Fairview, Co. Dublin.

For a registration number to record excavation at the site of Curries 041 being part of the townland of in the County of Westmeath.

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 .....

31 October 2006

Website: www.environ.ie

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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

Appendix 2.1 Charcoal and Wood ID Report – Ellen O'Carroll

Appendix 2.2 Radiocarbon Dating Results – QUB Laboratory

CHARCOAL IDENTIFICATIONS

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

MINISTERIAL DIRECTION NUMBER: A016/041
NMS REGISTRATION NUMBER: E2669
CURRIES 1

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Introduction
Two samples were submitted for analysis. The charcoal was sent for species identification prior to AMS radiocarbon 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 Curries, c. 1km south of Moate town, Co. 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 at Curries 1 consisted of a burnt spread which measured 1.31m long by 1m wide and 0.11m deep, charcoal rich pit with dimensions of 1.21m long by 1.28m wide and 0.14m deep, an isolated pit and numerous plough furrows. No finds were recovered during the course of the excavation.

The samples analysed were retrieved from C3, a deposit with a 2 Sigma calibrated date range of AD 773–968 and the fill of a charcoal rich pit C4 produced a 2 Sigma calibrated result of AD 783–994. These are probable charcoal production kilns.

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.

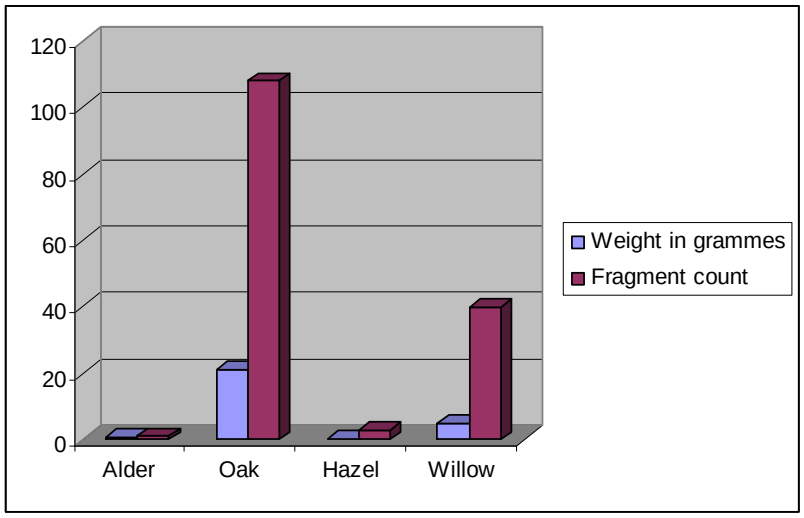
Results

Table 1: Results from charcoal identifications

Site Number	Context Number	Context Type	Sample Number	Species	Comment
A016/41	4	spread	2	alder (0.6g*, 1f*), oak (0.1g, 4f), hazel (0.2g, 3f), willow (5g, 40f)	Extracted 0.6g of alder for dating - Cal AD 783–994
A016/41	3	Fill of pit	1	All oak (20g, 100f)	Very fast oak growth at start and then slows down-coppice-6yrs. Cal AD 773–968

* = grammes
* = fragment count

Table 2: Results from charcoal identifications



Discussion & Conclusions

Oak, willow, hazel and alder in that order were identified from the spread and the pits.

Oak (*Quercus* sp) was the only taxon identified from the charcoal remains from the early medieval dated spread C3. The function of the pit is unknown therefore it is difficult to attribute a use to the charcoal identified from the pit. The presence of such large quantities of oak, comprising mainly of brushwood, may point towards an industrial function for 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 is very suitable for charcoal production. 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 early medieval period. The oak was possibly selected from a coppiced wood. A coppice tree is where the tree is cut down at its base and as a consequence several new shots or straight growing trees will grow out of this one stump. The use of quickly renewable oak coppiced trees would have been the most efficient method of sustaining a continuous supply of fuel for use in these charcoal production pits.

Willow dominated at the medieval dated spread C4 although smaller quantities of hazel, alder and oak were also present. A function for this spread is also not determined as yet therefore it is also difficult to attribute a function to the identified charcoal from C4. The hazel is a small dryland tree or shrub while the alder and willow shrub/trees are generally associated with a wetter environment.

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
CURRIES 1

CHRONO LABORATORY, QUEENS UNIVERSITY BELFAST

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^{14}CHRONO

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Queens University
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Radiocarbon Date Certificate

Laboratory Identification:	UBA-8592
Date of Measurement:	2008-03-20
Site:	A016/41 Curries
Sample ID:	S1 C3
Material Dated:	Brushwood
Pretreatment:	AAA
Submitted by:	IAC

^{14}C Date: 1174±32

AMS δ^{13}C: -33.1

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
```

```
S1 C3
UBA-8592
Radiocarbon Age BP    1174 +/-    32
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 AD 780- 791                        0.108
                             806- 892                        0.892
  95.4 (2 sigma)      cal AD 773- 902                        0.850
                             915- 968                        0.150
```

```
 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.
```

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-8593
Date of Measurement:	2008-03-20
Site:	A016/41 Curries
Sample ID:	S2 C4
Material Dated:	Alder
Pretreatment:	AAA
Submitted by:	IAC

^{14}C Date: 1122±32
AMS δ^{13}C: -29.1

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
```

```
S2 C4
UBA-8593
Radiocarbon Age BP   1122 +/-   32
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 AD 891- 905                        0.173
                            911- 971                        0.827
  95.4 (2 sigma)     cal AD 783- 788                        0.006
                            814- 844                        0.037
                            858- 994                        0.958
```

```
 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.
```

APPENDIX 3 LIST OF RMP SITES IN THE AREA

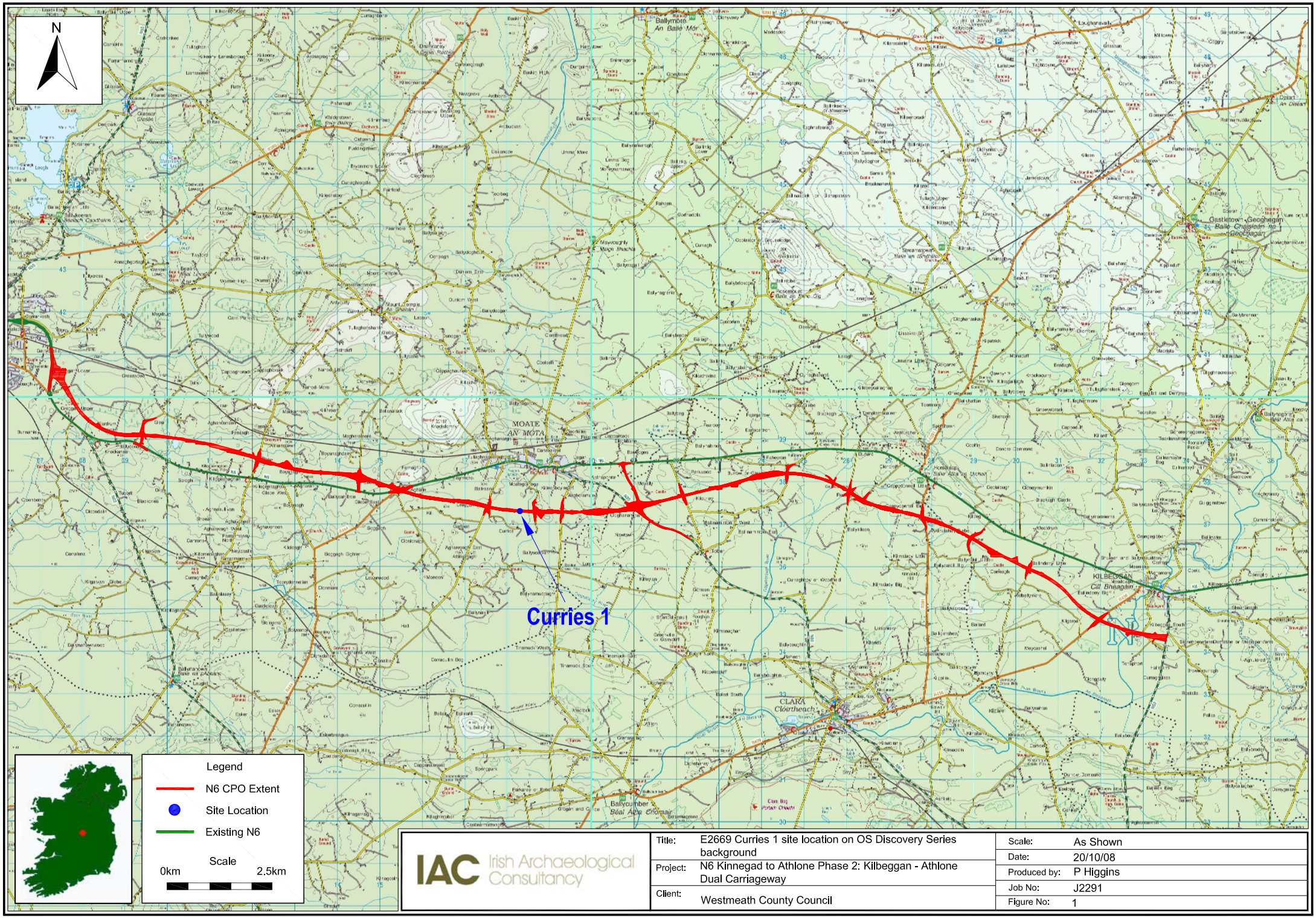
RMP No	Description
WM030-107	Ringfort
WM030-108	Ringfort
WM030-109	Castle – unclassified
WM030-111	Motte and Bailey
WM030-112	Castle
WM030-11201	Sheela-na-gig
WM030-11202	Architectural fragment
WM030-113	Cemetery
WM030-117	Bullaun stone
WM036-019	Bullaun stone
WM036-021	Ringfort
WM036-022	Earthwork site
WM036-030	Ringfort
WM036-034	Mound
WM036-043	Earthwork site

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

Site Name	Ministerial Direction No.	NMS Registration Number
Kilbeggan South 1	A016/082	E3281
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:	E2669 Curries 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

WM030-107

WOM30-108

WM030-109

WM030-113

WM030-117

WM030-112

WM030-111

Cregganmacar 1

Cregganmacar 2

Cregganmacar 3

Cregganmacar 4

Curries 1

Curries 2

Culleenagower 1

WM036-019

WM036-021

WM036-043

WM036-030

WM036-034

WM036-022

TULLAGHNAGEERAGH

LEGAN (ED MOATE)

BALTRASNA

AGHAFIN

KILLEENBOYLEGAN

MAGHERAMURRY

CREGGANMACAR

KILL

GORTEEN

CURRIES

AGHAREVAGH EAST

ATTIMURTAGH

BALLYSCARVAN

Legend

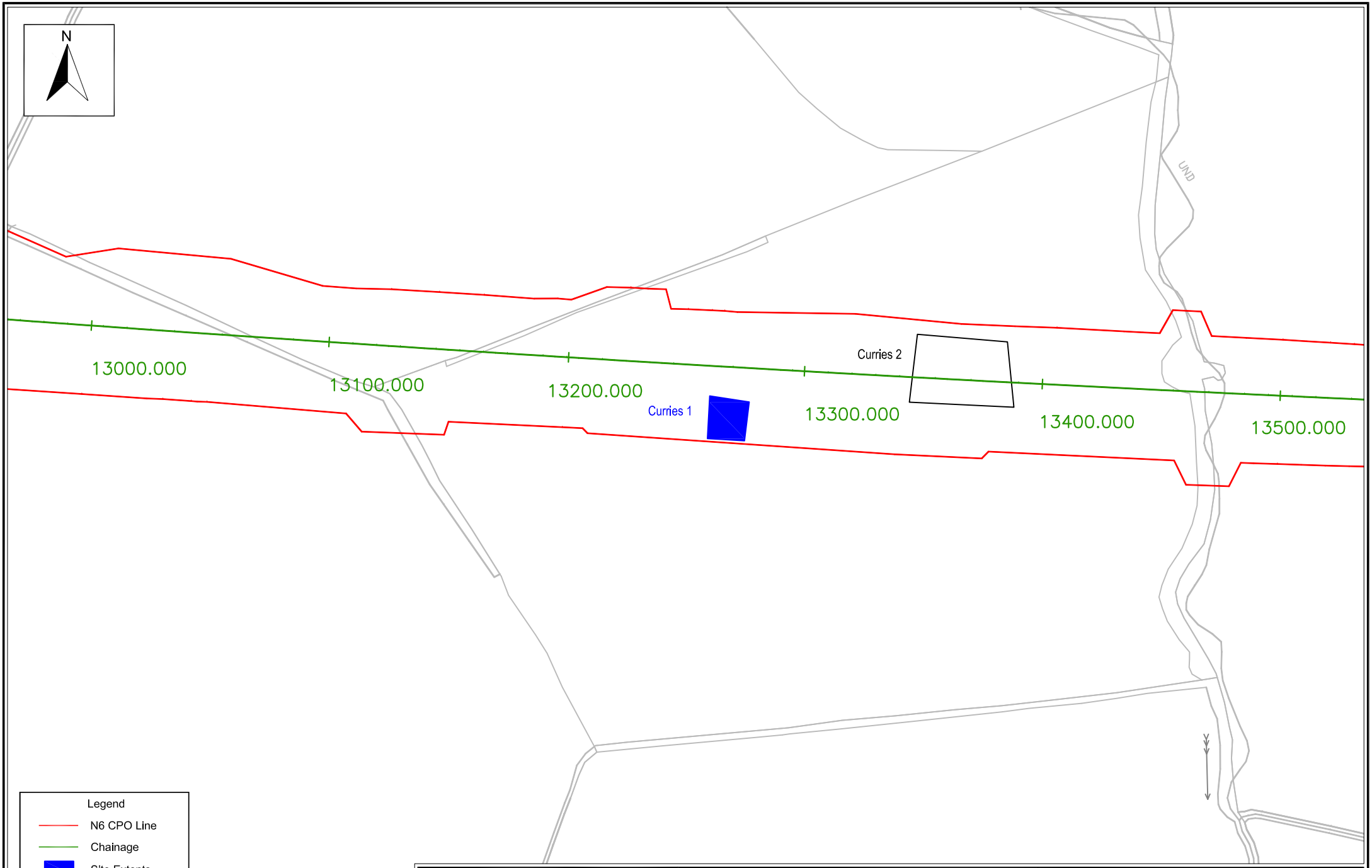
N6 CPO Line

RMPs

Scale

0m 250m

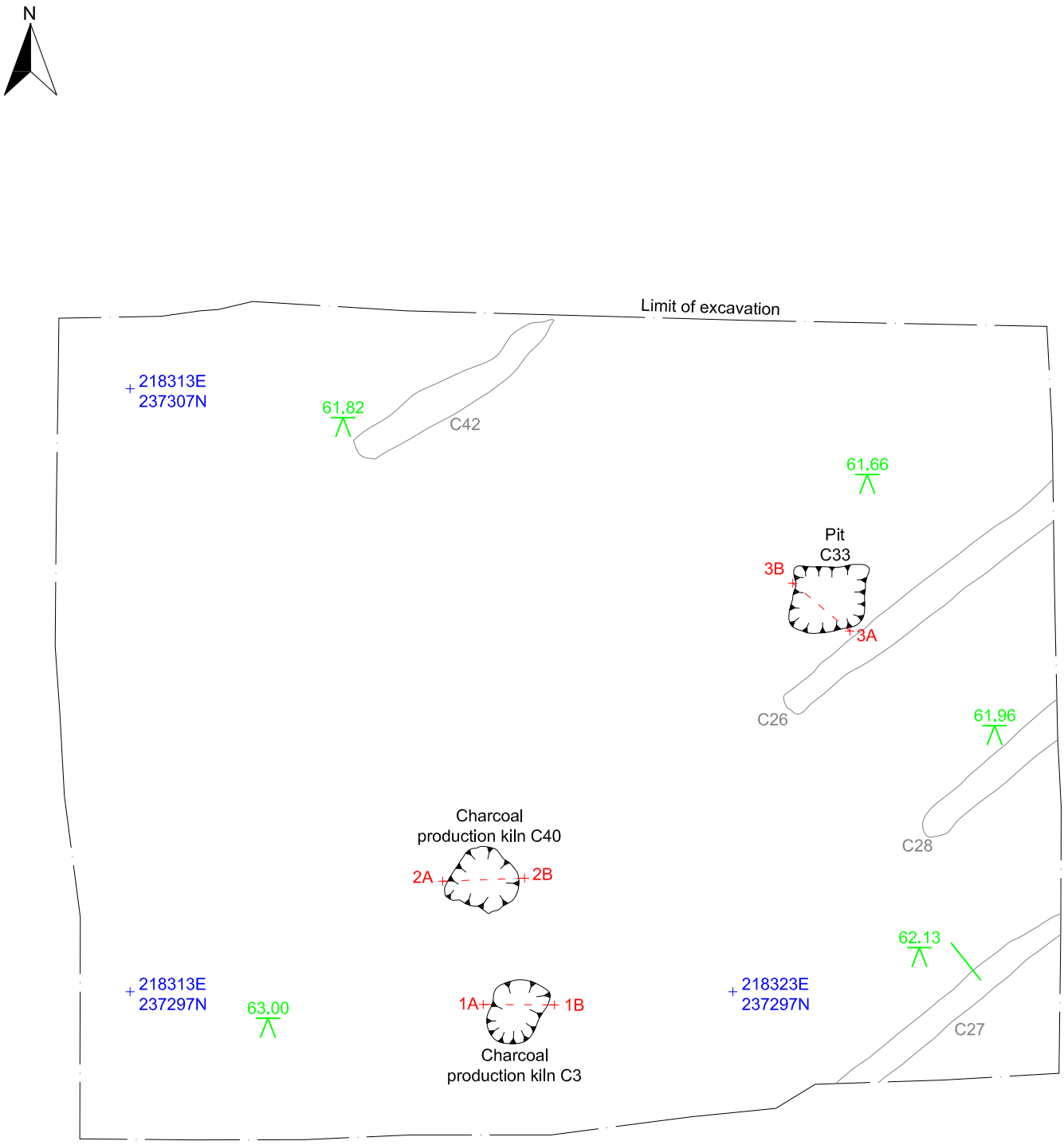
Title:	E2669 Curries 1 showing RMPs with OS background		
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway		
Client:	Westmeath County Council		
Scale:	1:10000 @ A3	Job No: J2291	IAC Irish Archaeological Consultancy
Date:	23/10/08	Figure No: 2	
Produced by:	P Higgins		



IAC Irish Archaeological Consultancy

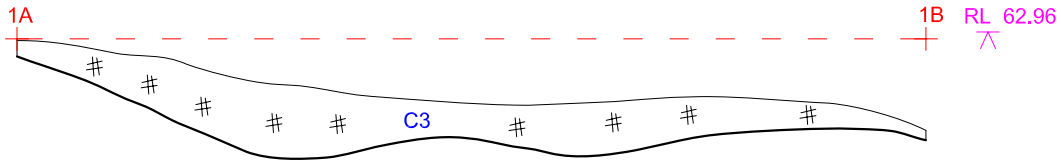
Title:	E2669 Curries 1 location of site within development
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council

Scale:	1:2000 @ A4
Date:	24/10/08
Produced by:	P Higgins
Job No:	J2291
Figure No:	3

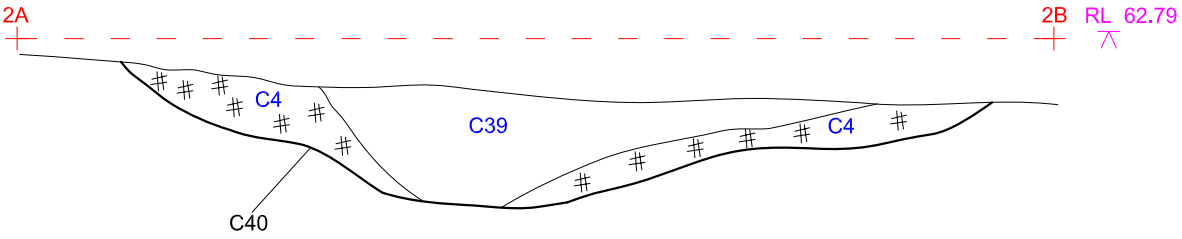


IAC Irish Archaeological Consultancy	Title: E2669 Curries 1 post-excavation plan	Scale:	1:100 @ A4
	Project: N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway	Date:	03/11/08
		Produced by:	G Kearney
	Client: Westmeath County Council	Job No:	J2291
		Figure No:	4

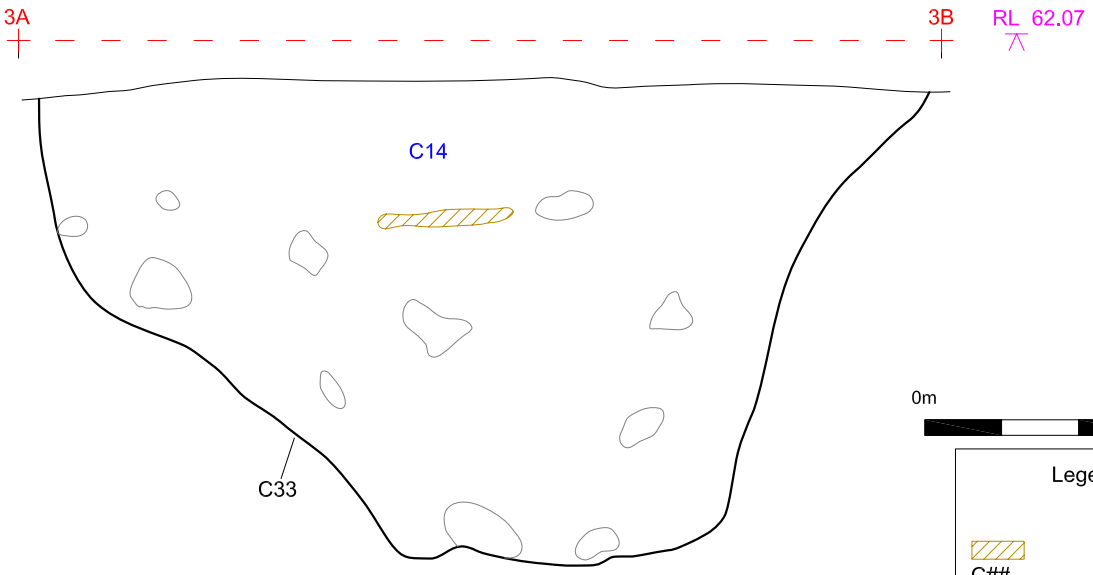
Curries 1
South facing section of C3



Curries 1
South facing section of C40



Curries 1
Northeast facing section of C33



Scale
0m 0.5m

Legend

	Possible Burnt Clay
C##	Cut numbers
C##	Fill Numbers
	Stone
#	Charcoal
###.##	Reduced Levels

IAC Irish Archaeological Consultancy

Title:	E2669 Curries 1 sections
Project:	N6 Kinnegad to Athlone Phase 2: Kilbeggan - Athlone Dual Carriageway
Client:	Westmeath County Council
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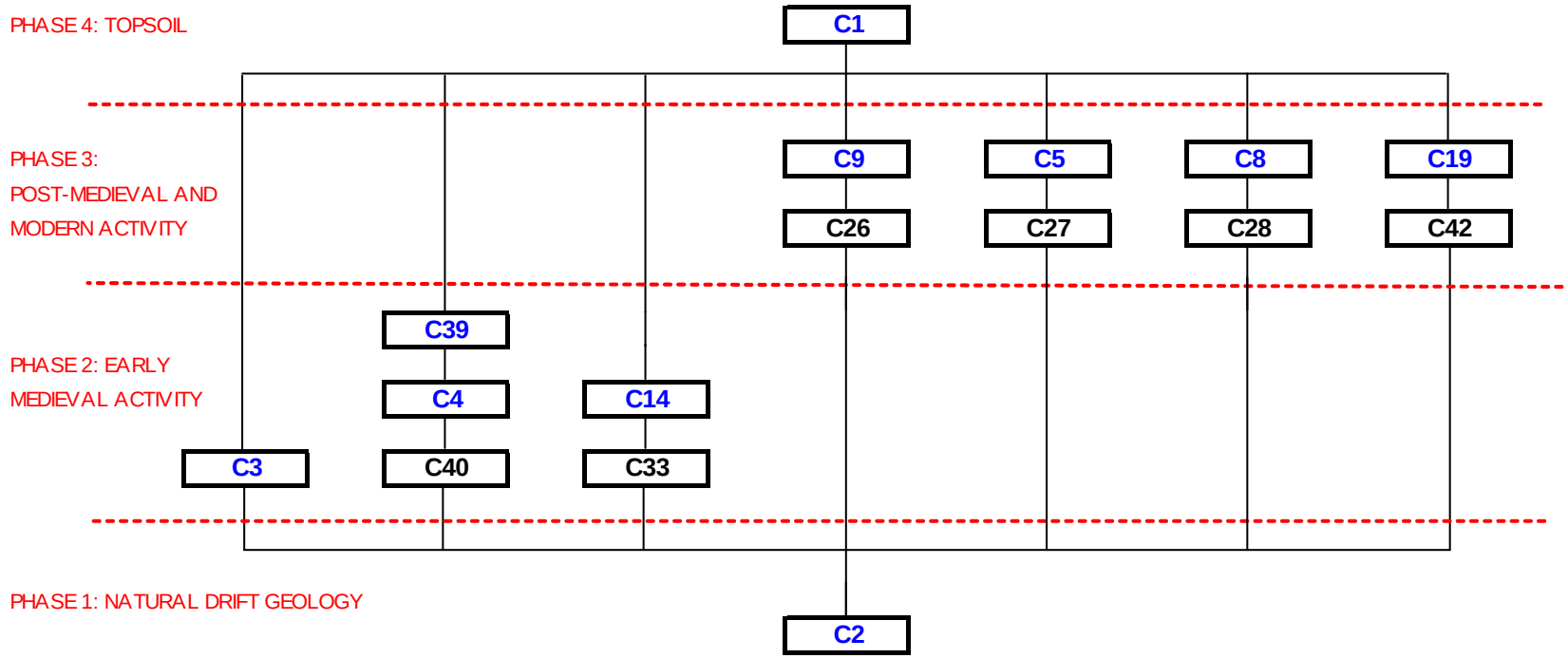
Job No:	J2291
Figure No:	5



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			Job No: J2291
			Figure No: 6