

**N7 CASTLETOWN TO NENAGH
ROAD IMPROVEMENT SCHEME
CONTRACT 2 (DERRINSALLAGH TO CASTLEROAN):**

**ADVANCE ARCHAEOLOGICAL WORKS
PHASE 3 ARCHAEOLOGICAL EXCAVATIONS**

**Final report
Castleroan 3, Co. Offaly
Excavation Number E3581**

**Archaeological Consultancy: Valerie J Keeley Ltd, Brehon House, Kilkenny Road,
Castlecomer, Co Kilkenny**

**Senior Archaeologist: Eamonn Cotter
Excavation Director: Tori McMorran
Final Report Author: Paul Stevens**

Date: May 2011



Aerial view of site. Looking northwest (Photo: StudioLabs).



Project name: **N7 Castletown to Nenagh (Castleroan to Derrinsallagh)
Road Improvement Scheme
Contract 2 (Derrinsallagh to Castleroan)**



Client: **Laois County Council**



Direction number: **A038**

Site Name: **Castleroan 3**

Excavation Number: **E3581**



Townland: **Castleroan, Co Offaly.**

Parish: **Dunkerrin**

OS 6 inch sheet: **OF45**



National Grid Ref: **207289 / 183778**

Chainage: **17.080**

SMR Reference: **None**

Report type: **Final report**

Report Status: **Draft**



Archaeological Consultancy: **Valerie J Keeley Ltd,
Brehon House,
Kilkenny Road,
Castlecomer,
Co Kilkenny**

Job No.: **1310-06-300**

Senior Archaeologist: **Eamonn Cotter**

Excavation Director: **Tori McMorran**

Report Author: **Paul Stevens**

Date: **May 2011**



SUMMARY

Valerie J. Keeley Ltd. was commissioned by Laois County Council and the National Roads Authority to undertake archaeological works along 18.1km (Contract 2) of the 35km long N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) road improvement scheme (EIS approved in November 2005). The scheme runs from the eastern junction of the present N7 Nenagh Bypass, North Tipperary and ties in with the M7/M8 Portlaoise-Castletown scheme to the south of Borris-in-Ossory in County Laois. The DoEHLG Direction Number is A038.

Contract 2 comprises the eastern half of the scheme and runs from Castleroan (Offaly), through parts of North Tipperary to Clonagooden (County Laois).

This report outlines the final results of the archaeological excavation of one site excavated along the route. It was located in the townland of Castleroan, Co. Offaly, 6 inch OS sheet OF45, NGR 207289,183778, Chainage 17.080. The excavation was conducted by Tori McMorrán under Direction No. A038, and Excavation no. 3581, for Valerie J Keeley Ltd, from Monday the 9th of July to Friday the 27th of July, 2007.

Two areas were excavated on this site, excavation of Area 1 produced evidence of early Iron Age, iron-smelting and ore-roasting. This included a possible clay, low-shaft furnaces, radiocarbon dated to cal BC 210-40 (SUERC-31025), two ore-roasting pits and several deposits and spreads of waste material. A total of 22.15 kg of metallurgical residues was recovered, exclusively from features in Area 1. This area also produced a residual chert lithic projectile and chunk, and a number of later but undated agricultural features, including furrows, post-holes and a linear ditches that ran north-south across the area.

Area 2 comprised the poorly-preserved remains of a post-medieval building, not present on the 1st or 2nd edition OS mapping. Archaeological remains included a possible post-medieval house with an internal drain, and several possibly un-associated pits/ post-holes. The structure was truncated to the southeast, and was probably rectangular in form, measuring up to 12m in length by *c.* 9m in width, aligned northwest-southeast and alongside but set 3m-back from the present road course. The dwelling was probably clay and stone-built, with lime mortared finish. The northwestern floor plan of the structure contained a truncated stone-lined drain, orientated north-south that possibly continued beyond the building. The interior also contained had two features, one a possible hearth pit situated at the northern end of the drain.

CONTENTS

SUMMARY	i
LIST OF FIGURES	iii
LIST OF PLATES	iii
LIST OF ILLUSTRATIONS	iv
LIST OF TABLES	iv
1.0 INTRODUCTION	1
2.0 BACKGROUND	3
3.0 METHODOLOGY	14
4.0 FINAL RESULTS	16
5.0 CONCLUSIONS / SYNTHESIS	29
6.0 ACKNOWLEDGEMENTS	33
7.0 BIBLIOGRAPHY	34
8.0 ARCHIVE INDEX SHEET	37
APPENDIX A: LIST OF CONTEXTS	39
APPENDIX B: LIST OF FINDS	44
APPENDIX C: SAMPLE PROCESSING RESULTS	45
APPENDIX D: LIST OF DRAWINGS	47
APPENDIX E: LIST OF PHOTOGRAPHS	49
APPENDIX F: SITE MATRIX	56
APPENDIX G: METALLURGICAL RESIDUES BY A. WALLCE	58
APPENDIX H: RADIOCARBON DATING	64
FIGURES AND PLATES	

LIST OF FIGURES

- Figure 1 Location of Castleroan 3 on the N7 Castletown to Nenagh, Contract 2, shown on the Discovery Series Mapping.
- Figure 2 Location of Castleroan 3 on the N7 Castletown to Nenagh, Contract 2, shown on OS Mapping.
- Figure 3 Castleroan 3, location map showing Areas 1 & 2
- Figure 4 Post-excavation plan of Castleroan 3, Area 1.
- Figure 5 Sections of iron-working feature C56, C29 & C27, Area 1.
- Figure 6 Post-excavation plan of Castleroan 3, Area 2.
- Figure 7 South facing section of hearth (C09, C10). Area 2.

LIST OF PLATES

- Plate 1 Aerial view of Castleroan 3, Area 1 & 2. Looking north-northwest (Photo: StudioLabs).
- Plate 2 Detail of Castleroan 3, Area 1 & 2. Looking northwest (Photo: StudioLabs).
- Plate 3 Area 1. Pre-excavation of iron-furnaces & postholes. Looking west.
- Plate 4 Area 1. Pre-excavation of smelting furnace C29. Looking west.
- Plate 5 Area 1. Section of Bowl Furnace (C23, C61, C62, C63 & C29). Looking west.
- Plate 6 Area 1. Section of Bowl Furnace (C23, C61, C62, C63 & C29). Looking west.
- Plate 7 Area 1 Pre excavation of Linear Dump (C49, C56), cut by furrows. Looking north.
- Plate 8 Area 1. Section of linear-dump (C49, C56). Looking east.
- Plate 9 Area 1. Post-excavation of linear-dump (C56). Looking west.
- Plate 10 Area 2. Wall footing & drain (C21, C20, C19, C11 & C17). Looking southeast.
- Plate 11 Area 2. Pre-excavation of pit (C11, C12). Looking north.

Plate 12	Area 2. Pre-excavation of hearth dump (C9, C10). Looking west.
Plate 13	Area 2. Section of ditch (C3, C14). Looking west.
Plate 14	Area 2. Pre-excavation of posthole (C7, C8). Looking west.

LIST OF ILLUSTRATIONS

Illus. 1	Fine chert arrowhead of likely kite/leaf-shaped form (E3581:1:1).
----------	---

LIST OF TABLES

Table 1	Potential sites noted in the EIS in the Castleroan area.
Table 2	Catalogue of lithic artefacts.
Table 3	Assessment of the plant remains from Castleroan 3, Co. Offaly (E3581)
Table 4	Charcoal identified in advance of radiocarbon dates from Castleroan 3, Co. Offaly (E3581)
Table 5	Comparative data on furnace dimensions, residue quantities and dates from several other Iron Age smelting furnaces.
Table 6	Catalogue of Metallurgical Residues
Table 7	Table of Radiocarbon dates for Castleroan 3 (Excavation No. E3581).

1. INTRODUCTION

1.1 Introduction

The N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) Road Improvement Scheme comprised in total the construction of approx 35km of dual carriageway. The scheme commenced from a junction on the present N7 Nenagh Bypass to the east of Nenagh, Co Tipperary, and ran in an east-northeast direction for 35.2km of centreline chainage to tie in to the M7/M8 Portlaoise to Castletown PPP Scheme south of Borris-in-Ossory, Co Laois. The route comprised approximately 191 hectares.

Valerie J Keeley Ltd was appointed by Laois County Council to conduct a programme of archaeological investigations along one portion of the scheme, designated Contract 2. Contract 2 consisted of approx 18km of dual-carriageway, from Ch17.080 – 35.200, between the townlands of Castleroan, Co Offaly and Derrinsallagh, Co Laois. The archaeological works comprised three phases: **Phase 1**-test trenching of the route; **Phase 2**-excavation of sites identified in Phase 1; **Phase 3**-post-excavation archive creation and report writing. Phase 1 of these works, Archaeological Test Trenching, was carried out in the spring of 2007 (Valerie J Keeley Ltd, 2007, 2008). Phase 2 was carried out in July 2007 to July. The DoEHLG Direction Number is A038.

This report describes the final results of Phase 3: the archaeological excavation and post-excavation analyses of a site, identified in Phase 1, in the townland of Castleroan, Co. Offaly.

1.2 Description of scheme and contracting situation

The proposed N7 Castletown to Nenagh national road scheme started from a junction on the present N7 Nenagh Bypass to the east of Nenagh, North Tipperary and runs for 35.2km of centreline chainage, plus all link roads and minor roads within the boundaries of the scheme as shown on the contract drawings, to tie in to the M7/M8 Portlaoise-Castletown PPP Scheme to the south of Borris-in-Ossory in Co Laois. The lead County for project management was Co Laois. Archaeological services were supplied under two contracts, performed in three phases.

- CONTRACT 1 ran from Ch00.500 – 17.080.
- CONTRACT 2 ran from Ch17.080 – 35.200

These works were divided into Phase 1 (Investigation), Phase 2 (Excavations and surveys) and Phase 3 (Reporting and Analysis). All phases were undertaken in accordance with Ministerial Directions issued by the DoEHLG.

The archaeological works included, but were not limited to, the following:

- Archaeological investigation and reporting of known sites,
- Archaeological investigation and reporting of the remainder of the route to identify any previously unknown sites,

- Architectural heritage and water / river surveys and reporting,
- Rescue excavation works including archaeological excavation, post-excavation analyses and reporting to publication standard.

1.3 Summary of previous work on or referring to the Scheme

- Laois County Council, 2001, *N7 Castletown to Nenagh: Constraints Report*
- Laois County Council, 2001, *N7 Castletown to Nenagh: Route Selection Report*
- Laois County Council, 2005, *N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Environmental Impact Statement*
- Laois County Council, 2006, 'N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Advance Archaeological Works Contract 1 and Contract 2' prepared by Kildare County Council and the National Roads Authority
- Valerie J Keeley Ltd, 2007, *N7 Castletown to Nenagh Road Improvement Scheme, Contract 2, Phase 1 Trial trenching and townland boundary surveys*

1.4 Summary of previous work referring to the site and environs

- Valerie J Keeley Ltd, 2007, *N7 Castletown to Nenagh Road Improvement Scheme, Contract 2, Phase 2 Architectural survey of buildings and structures to be affected by the scheme*
- Valerie J Keeley Ltd, 2007, *N7 Castletown to Nenagh Road Improvement Scheme, Contract 2, Phase 2 Underwater survey*
- Valerie J Keeley Ltd, 2008, *N7 Castletown to Nenagh Road Improvement Scheme, Contract 2, Phase 2 Preliminary Assessment Report, Castleroan 3*

1.5 Affected site type(s)

One previously recorded site was to be affected by the proposed route, possible ringfort (TN017-031) at Camlin townland. Several areas of archaeological potential were noted along the route in the EIS. The areas of potential were tested during Phase 1 and any relevant sites were excavated in Phase 2 of these works.

1.6 Statutory protections

No sites with statutory protections are affected by the scheme.

2. BACKGROUND

The N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) Road Improvement Scheme runs for 35.2km of centre line chainage, from the present N7 Nenagh Bypass, east of Nenagh, North Tipperary to the M7/M8 Portlaoise-Castletown PPP Scheme, south of Borris-in-Ossory, Co. Laois.

2.1 Topography & Geology

The underlying bedrock throughout the plain is Carboniferous limestone with occasional erosion resistant blocks, such as the knoll that forms the Devil's Bit. The bedrock is sealed by glacially deposited sediments, which in poorly drained regions tend to support tracts of raised bog. The greater proportion of the plain however supports well-drained farmland, the majority of it dairy farming pasture interspersed with marshy areas around low lying flood plains of minor rivers. Over its length of the route the crosses the Rivers Nore, Ollatrim and Quinn.

The topography of the N7 Castletown to Nenagh road scheme is characterised by contrasting landforms of the Silurian hills known as the Devil's Bit Mountains to the west, the Black Hill and Timoney hills to the east, with tracks of undulating pasture and raised bog in the centre, including the Timoney Bog and Monaincha Bog, which drain both eastward into the River Nore, and form part of the larger midland peatland bog-chain that once ran from Littleton in the south to the Bog of Allen in the north. Roscrea, to the immediate north of the scheme, is overlooked by the southern slopes of the Slieve Bloom mountains.

The 'bite' itself comprised two outliers of encliffed Old Red Sandstone composed mostly entirely of pebble conglomerate with occasional lenses of medium to coarse red or less commonly white sandstone. These hills which rise gradually to elevations over 304m (1000 ft) high, and fall away to the east onto drift covered Old Red Sandstone and Lower Limestone formations which merge with the extensive bogland running between Monaincha in the northeast and Templeouhy in the south. This bogland is interspersed with fluvio-glacial drifts which rise above the surface of the bog.

2.1.1 Natural topography, geology and hydrology of the Castleroan area

The landscape of the area consists of gently rolling land between 121m OD and 154m OD with glacial drift over solid bedrock. The area is crossed by a small, ditched stream at CH. 17100, which forms the county boundary between Offaly and Tipperary North. From here the route passes along the side of a gentle terrace with views to the north. There are no areas of wetland or drained wetland. Land use is currently grassland for stock and silage with occasional fields of arable agriculture. The fields are mostly bounded by hedgerows accompanied by earthen banks and ditches.

The site was located on the east side of the main Templemore to Dunkerrin road. It was divided from the road by hedgerows of mature shrubs, bramble, hazel and trees including mountain ash. The site gently slopes from the west towards to east. Mature trees and shrubs are located on the east side of the boundary beside a small north flowing stream. The location is within a roughly rectangular field on a north south axis which was previously used as pasture and grassland

2.2 Historical Background

While the scheme as a whole comprises an essentially artificial geographic unit, defined by townlands traversed by the N7 road corridor, the central section can be readily placed in a historical / geographical context as they lie entirely within the pre-Norman territory of the *Eile Tuiscert* (Ely O'Carroll) and the modern Barony of Ikerrin. Olioll Ollum, King of Munster, founded Ely (Eile) in the third century AD. Ely of south Offaly and north Tipperary was then formally established into baronies by the Anglo-Normans of the 12th century AD. The kings of Ely were known as the O'Carroll (Uí Chearbhaill) until wiped out by Williamite forces at the end of the 17th century AD.

The Barony of Ikerrin

The northern and western boundary of Ikerrin barony coincide with the County Offaly border, whilst its eastern extent is formed by the Laois County boundary, and to the south the barony borders that of *Eliogarty* Barony. Ikerrin comprises an area of 28,620 Ha (69,805 acres), and is a roughly triangular shape in plan, with Roscrea to the north, Templemohy to the southeast and the Devil's Bit in the southwest. Its territory is divided into 168 townlands which are in 12 parishes (Stout 1984).

The Devil's Bit range and Monaincha bog, in the south and the Slieve Bloom in the north created an obstacle to travel which channeled all east / west traffic through the narrow pass between these features. The growth of Roscrea is directly linked to its position at a pass on this important line of communication (*ibid.*).

The Rivers Nore and Suir rise in the northeastern slopes of the Devil's Bit Mountains and take different courses through Ikerrin. The Nore runs on a north / east course through Monaincha bog whilst the river Suir runs on a east / west course and then turns in a southerly direction to form the Barony boundary at the eastern side of Templemore. The third river the Bunnow is a tributary of the Little Brosa and runs on an east / west course through Roscrea, originally forming a natural defence for the eastern curtain wall of Roscrea Castle.

Much of the agriculturally suitable land in Ikerrin is at present under pasture with limited tillage occurring on land within the environs of Templemore.

2.2.1 Early origins

The historic period in Ireland begins with the arrival of writing in the early medieval period, concurrent with the spread of Christianity. Little can be definitively stated about the internal geographic boundaries and political structures of Ireland prior to this time and indeed until about the eight century AD, although we can project known

early medieval divisions back to the near proto – historic period. The earliest traditional division of the country was into two halves along a boundary that ran roughly from Dublin to Galway (Byrne 2001, 168). The north was Leth Cuinn (Conn's Half) and the south was Leth Moga (Mugs Half). Conn was the progenitor of the Connachta, a tribal grouping from whom the later rulers of Connaught and Ulster claimed descent, while Mug was believed to be the first of the Eoganachta, from whom the kings of Munster and Leinster claimed descent. The two halves of Ireland were more cultural than they were political, but it is from then that the very real polities of the Fifths of Tara (Mide), Ulster, Connaught, Leinster and Munster emerge. Each Fifth was a conglomeration of sub – provincial kingdoms under the suzerainty of a provincial over – king. Munster itself was subdivided into Fifths; *Aurmumu* (Ormond) east Munster, *Taudmumu* (Thomand) north Munster, *Medón Muman* mid Munster, *Desmumu* (Desmond) south Munster and *Iarmumu* west Munster (*ibid.* 165).

The two separate independent kingships of *Eile Deiscert* and *Eile Tuiscert* were separated by a ready made boundary in the Derryville/Littleton Bog Complex. The Eile Ui Chearbhaill or Ely O'Carroll (*Eile/Eile Tuiscert*) centered in the Birr / Roscrea area and Eile Ui Fhogartaigh or Eliogarty (*Eile Deiscert*) in North Tipperary.

The earliest reference to two *Eili* is from 967 AD, when it is recorded that a Munster army lead by Mathgamain mac Cennitig, the King of Munster and of Cashel (originally King of the Dal Cais and *Taudmumu* and elder brother of Brian Ború) was composed of units from the two *Eili*, the *Deisi* and the *Imhar* of Waterford (O'Donovan 1840 vol. II, 692). They took to the field against a Leinster army composed of Dublin Vikings and the *Osraighi*, in Ossory (possibly southwest Offaly or northwest Kilkenny).

Eile claim to be descended from Cian, son of Oilliol Ollum, King of Munster in the third century. The Eile are commemorated in the Gaelic names of places as far apart as Bri Eile (Croghan Hill) in North Offaly and Durlas Eile (Thurles) and Bearnan Eile (Devil's Bit Mountain in North Tipperary). It appears that the people of Eile were pushed southwards in the fifth century, by the expansion of the Southern Ui Neill. In the mid tenth century the southern part of Eile became a separate entity called *Eile Deiscert* (Southern Ely) under the kingship of the O'Fogarta/Ui Fhogartaigh (O'Fogartys) (precise boundaries unknown; majority of the modern barony of Eliogarty). The northern part of Eile became *Eile Tuiscert* (Northern Ely) under the kingship of Ui Chearbhaill (O'Carrolls). Eile Ui Chearbhaill or Ely O'Carroll settled in South Offaly and North Tipperary in the Birr, Roscrea area and Eile Ui Fhogartaigh or Eliogarty in North Tipperary.

2.2.2 Early medieval

Slighe Dála

Roscrea lies on the *Slighe Dála*: the major routeway that passed from 'Tara', through Ormond to North Kerry. This was one of the five ancient roadways of Ireland. The route almost certainly passed through Roscrea (as a pinch-point between the Slieve Bloom mountains to the north and the Devil's Bit Mountains to the south). From Roscrea the routeway possibly circled the base of Devil's Bit Mountain in the direction of Toomevara. However,

from Toomevara this route may have continued in the direction of Silvermines (avoiding Nenagh) and Limerick. However, it was common for major roads that run along the base of mountain ranges to have a parallel equivalent road running across the hills themselves (high road vs low road).

In the seventh century, two important religious centres were established, one on the island of Lough Cré associated initially with St. Canice of Aghaboe and St. Cronan's monastery in Roscrea which was sited near the Slighe Dála. The Annals of the Four Masters and the Annals of Ulster give a succession of abbots in Roscrea from 800 AD to 1154 AD. This area was in the mainstream of the highly developed craftsmanship in book illumination, metalworking and stone carving which was appearing in many of the monasteries in the country by the late seventh century. The Book of Dimma was written in St. Cronan's monastery in the latter part of the eighth century. It is a copy of the Four Gospels. One of the more important ornament types being produced by the metal workers at this time was the pseudo-pennanular brooches, and in the Roscrea Brooch. The brooch was manufactured by a metalworker with a competency in casting and engraving in silver. Many of the fine patterns found in contemporary metalwork were translated into stone on the cross slabs and the Roscrea Pillar by stone carvers from this area. Roscrea was subjected to a series of Viking raids culminated in the Battle of Roscrea, 942 AD.

2.2.3 Later medieval

By the 12th century, Romanesque ornament is built into churches and stone crosses continued to be erected, incorporating depictions of crucified Christ.

Northeast Tipperary was one of the last major regions to be colonized by the Normans, and there is scant contemporary documentation for the process involved in securing the area. Having received the grant of Ikerrin in AD 1185, Theobald Walter made haste to secure his gains and a band of early Norman fortifications on the western side of the barony demonstrate their probable line of attack. The Normans had advanced as far north as Roscrea by AD 1212, where they erected a castle recorded in the Annals of the Four Masters for that year. This placed them in a strategic position to control movements along the *Slighe Dála*. The early fortification referred to in the Annals of the Four Masters was replaced by a stone castle c. AD 1280 and remained in Royal hands until AD 1315 when it was granted to the newly created Earl of Carrick, Edmund Butler.

Small enclaves of Norman settlement represented by the distribution of moated sites within the environs of Templemore and the northwestern slopes of the Devil's Bit Mountains were more likely to be associated with the manors of Thurles and Dunkerrin respectively. The remaining lands of Ikerrin were held by the O'Meaghers, who maintained their independence of the Butler manor and indeed came to the fore in the shadow of the Norman settlement.

2.2.4 Late medieval / post-medieval

Norman power as portrayed by the Butlers dominated the northern part of Ikerrin until the 17th century. During the late medieval period a series of tower houses (including Rathnaveoge Castle) were built across the region, probably in response to Sir Henry Sidney's visit in 1567 where he recorded a state of lawlessness and abuse.

The ongoing nature of low-scale warfare throughout north Munster in the late medieval period created a political and military unstable society for Anglo-Irish and Gaelic areas alike. A physical manifestation of this was the proliferation of tower houses constructed in the 15th and 16th centuries, with multiple strongholds built in each lordship. The scale of the conflict between Ormond and Desmond can be seen in the largest densities of tower houses in the country in counties Limerick (Desmond), Kilkenny and Tipperary (Ormond) (Marnane 2003, 220). The comparatively large number of such strongholds in the area may also be due to the fact that the Ormond and Desmond escaped the Elizabethan plantations of the early 16th century.

The second half of the 16th century saw the most dramatic political change in Ireland since the submission of the Irish Kings to Henry II. In the 1540's Henry VIII instituted wide scale administrative and ecclesiastic reforms in Ireland including the Reformation of the church, and a new Irish policy of Surrender and Regrant; through which the Gaelic lordship of Thomand became the earldom of Thomand (Lennon 2005, 145–166). The definitive symbol of this period of transformation was the change in title of Irish crown territory from the Lordship of Ireland to the Kingdom of Ireland in 1541. The new found English interest in Ireland also meant the projection of direct influence on what for centuries had been semi-autonomous Anglo-Irish earldoms and a diminution of the independence of Gaelic lords. The interference in feudal Irish society, in addition to forced Anglicisation and opposition to the Reformation caused simmering resentment against the crown that spilled over into the unsuccessful Desmond Rebellions of 1569–73 and 1579–83. The result of the rebellions was the creation of the Presidency of Munster in 1576 and the crown confiscation of Desmond land in Munster in 1586 (Marnane 2003 247–266; Lennon 2005, 210–231).

The defeat of the second Geraldine rebellion in the south of Ireland at the close of the 16th century was followed swiftly by one led from the north of the country – The Nine Years War, during which Ormond lands in Tipperary were attacked by the Earl of Tyrone's forces, as were most pro-crown settlements in Munster. The ultimate failure of the Desmond and O'Neill rebellions and subsequent Flight of the Earls was followed by a period of relative peace and increased English settlement on confiscated lands. Ormond loyalty to the crown was to prove disastrous when it and The Confederacy of Kilkenny allied itself with Charles I in the 1640's English Civil War.

However during the sixteenth century the English policy of "Surrender and Regrant" put the O'Carrolls under considerable strain at a time when they were torn apart by family feuds and sometimes in conflict with neighbouring septs. They lost power steadily in the seventeenth century as Ely O'Carroll was shired in 1605, later attached to Kings County (Offaly) and then their lands were confiscated for the Jacobean and Cromwellian plantations.

Unlike the relatively organized military Desmond rebellions which preceded it, 1641 was more typified by sectarian conflict and the brutal activities of the Roundhead army. The ruthless suppression of this rebellion by Oliver Cromwell led to a massive confiscation of rebel Catholic property and the ethnic cleansing of their former owners (To Hell or Connacht). The unparalleled land seizures, larger in scope than the first Anglo – Norman period of settlement, were facilitated by the commissioning of the Civil and Down Surveys which mapped out lands to be divided up amongst a new wave of English settlers.

The Williamite War of 1689–1691 was the last formal war in Ireland. Its conclusion following the Treaty of Limerick in 1691 was marked by a mass exodus of Irish soldiers and commanders to the continent and with them left the last vestiges of autonomous Irish military strength (Murphy 1994, 23). The following centuries saw the death of Gaelic Ireland and the firm establishment of English law and governance across the country. The process of forced Anglicisation and subjugation of the majority of the Catholic population continued apace throughout the eighteenth century. The popular uprising of 1798 had a minimal effect on Tipperary however the famine of the 1840's led to a wide scale depopulation of the region, more through emigration than starvation.

2.3 Archaeological Background

2.3.1 Known archaeological record

The general region is a landscape rich in archaeological heritage, with archaeological site types ranging from prehistoric to historic periods. These include sites of castles, earthworks, enclosures, ringforts, barrows, *fulachta fiadh*, burnt mounds, a souterrain, a motte, a church & graveyard, a tower house, site of mill and furrows/cultivation ridges.

A review of the topographic files of the National Museum of Ireland revealed 19 artefacts are catalogued in the museum files as recovered from the general vicinity of this scheme (Loais Co Co 2005, Appendix 13.9). These include Bronze objects (spearhead, flat axe and palstave), an iron spearhead and two stone axes all from the River Nore, near Coolrain; two Bronze palstaves, and a sculptured stone from Timoney Park; a wooden bowl from Timoney; a Bronze axe head with stopridge and a number of polished stone axes from Busherstown, a spindlewhorl and upper mill stone from Newtown, a stone spindle whorl and polished axehead from Castletown and a Bronze Axehead from Rockforest; finally bog butter in a wooden container was recorded at Glenahilty (*ibid.*). This collection of stray finds from the area demonstrates the significance of the Bronze Age and early medieval periods to the study area. This is borne out by the character of the upstanding and known archaeological monuments within the same study area.

There is one National Monument along the route of the N7 road scheme (Rathnaveoge Castle, tower house (RMP TN17-033). However, over 20 archaeological sites along the route are listed in the Record of Monuments and Places (RMP), and a further 87 sites of archaeological significance were identified during the course of the

Environmental Impact Statement (EIS) undertaken for the entire road scheme (Contracts 1 & 2). A total of 18 assessment areas (eight within Contract 2) were investigated further by archaeological testing and geophysical survey over the course of 2006-7. As a result 28 archaeological sites were identified for resolution; ranging from Bronze Age burial, settlement to early medieval ringforts and settlement /cemetery sites, prehistoric charcoal pits and burnt mounds / *fulachta fiadh*, to post-medieval lime kilns. In addition, 52 townland boundaries recorded and 12 watercourses were identified and fully recorded (Loais Co Co , 2005).

Prehistoric

Little evidence is known from this period in the region. The earliest evidence of settlement in the midlands is the remains of Mesolithic habitation dating from *c.* 6500 BC at Lough Boora, County Offaly. This is of particular relevance to our study area, as the setting for Mesolithic habitation at Lough Boora mirrors that of our study area at that time – a landscape of esker ridges on the shores of a Derg-Ree-Allen super-lake.

One of the most significant prehistoric sites in the vicinity of this scheme is the henge, standing stone, urn burial at Newtown or Skirk (RMP LA021-021) on high ground overlooking the eastern end of the scheme. Another major (possible) site in the area is the alignments known as the Timoney Stones. This large spread of standing stones and stone covers an area of over 1.5km² (Timoneyhills, Co. Tipperary; RMP TN018-012), and lies 1km south of middle of the scheme. However, Geraldine Stout (1984), thought these were probably not a result of extensive prehistoric activity but rather the result of 19th century field clearances.

In addition, one potential prehistoric barrow (mounds) at Boola, Co. Tipperary (*EIS* site 32), and three potential Bronze Age burnt mounds/spreads (*fulachta fiadh*) at Rockforest, Rathnaveoge Upper and Moneygall, Co. Tipperary (*EIS* sites 17, 36 & 69) were also identified from field survey for the proposed road. One enclosure at Rockforest (*EIS* site 13; RMP ref. TI018-011) and three potential enclosures at Rockforest, Ballykelly, Timoney & Castleroan, Co. Tipperary (*EIS* sites 11, 14, 18 & 40), were identified by either aerial survey or through cartographic sources.

Medieval

Six early medieval ringforts or potential ringforts are known from the study area in Camlin (3), Boola, Rathnaveoge Lower and Castleroan townlands, Co. Tipperary (*EIS* Sites 21-23, 28, 31 37 & 42; RMP ref.s TN017-031, 030 & 038). In addition, one contemporary souterrain was revealed from field survey and local knowledge at Glanbeha (*EIS* Site 26). The site of two recorded later medieval castles are located at Glanbeha and Rathnaveoge Lower, Co. Tipperary (RMP ref. TN017-028, -033; *EIS* Sites 24 & 38). The latter representing a late medieval tower house. In addition, Glanbeha, Co. Tipperary also contained the site of an undated mill.

2.3.2 Recent archaeological work

Approx. 20km south of this scheme, an archaeological research project was carried out in between 1996-8, at Derryville bog, located on the Tipperary NR, Laois and Kilkenny county boundaries. Work was undertaken for the Lisheen (Lead/Zinc) mine, and revealed over 200 unrecorded extant, archaeological (mostly wetland) sites. A total of 98 sites were fully excavated, dating to the Bronze Age, Iron Age, early medieval and post-medieval periods, and included timber trackways and platforms, stone causeways, *fulachta fiadh*, cremations cemeteries and settlements sites (Gowen et al 2005). This remains the largest archaeological complex excavated in the context of a raised bog in Ireland.

More recently archaeological work on adjacent road schemes has revealed a wealth of new archaeological discoveries. The N7 Moneygall to Nenagh road scheme (Contract 1) took place between 2007 to 2008. This scheme extends west of Moneygall, south of Roscrea through the wetlands and marginal land between Roscrea and Borris-in-Ossory, to Nenagh. Prehistoric activity excavated on the N7 (Contract 1) included Bronze Age settlements and houses at Drumbaun, Moatquarter and Castleroan, Bronze Age cremation cemetery sites at Derrybane and Park, burnt mounds near Moneygall and a very large, Bronze Age well at Clashnevin. Early medieval settlement included a ploughed-out ringfort with associated droveway and field system at Killeisk, associated with a cluster of early medieval sites around Ballymackey on the River Ollatrim. The site contained several broken, decorated, quern-stone fragments. An early medieval / medieval square enclosure and crop-drying kilns with associated saddle and rotary querns were also excavated at Park (Roycroft 2008, 2009). At Busherstown, part of a 13th century AD moated manor was excavated. The main enclosure was c. 50m square, as seen by a crop-mark and had a large annex in which were 14 corn-drying kilns and several buildings. This site was a major crop processing / distribution centre and probably had a mill on the nearby stream. The site appears to have been abandoned in the early 14th century, coinciding with the Gaelic Resurgence of the area (*ibid.*).

Linking up to the east was the M7 Portlaoise to Castletown/ M8 Portlaoise to Cullahill motorway scheme Work was undertaken in 2006-2008, where a total of 92 archaeological sites were excavated over the three contracts area (39 sites, Contract 1; 39 sites, Contract 2; 14 sites, Contract 3). This included 47 prehistoric burnt mound / *fulachta fiadh* sites, often with multiple sites or spreads, 13 pit sites (often with burnt mound material present), a barrow and a ringditch site, three circular buildings and two post-hole groups. Early medieval activity included Parknahown 5 ecclesiastic settlement site and burial ground (O'Neill 2007, 133-139), plus two ringforts, five enclosed and two unenclosed settlement sites, medieval activity included three corn-drying kilns, charcoal kilns and seven metal working sites, hearths or furnaces. In addition, two post-medieval buildings were also excavated (Desmond 2007, 125-131).

Whilst, to the southeast of Roscrea and the M7M8 was the adjoining scheme; the M8N8 Cashel to Cullahill Road scheme (Counties Laois, Kilkenny and Tipperary NR/SR). On this scheme, a total of 46 archaeological sites were excavated, including a very large complex of Bronze Age burials and settlement and early-later medieval

settlement at Twomileborris, as well as a ringfort annex, prehistoric house and Iron Age activity at Gortmakellis, plus 25 *fulachta fiadh* along the Goul Valley and Blackwater flood plains, in Co.s, Kilkenny and Tipperary (Stevens 2009).

2.4 Placename & Townland

Placename	Irish	English translation	Source, reference
Castleroan, Co Offaly	<i>Caisleán Rhadhain</i>	Ruadan's or Rowans castle	(Joyce, Vol. 3, 198)
	<i>Caiseal Ruáin</i>		www.logainm.ie/41821.aspx Accessed January 2011

2.5 Summary of cultural landscape of the Castleroan area

The area through which the proposed scheme passes was subject to assessment in the form of an Environmental Impact Study conducted by Valerie J Keeley Ltd (2005), followed by a programme of archaeological test trenching.

A 2km radius of the site was observed and a variety of potential architectural and archaeological sites plus a river crossing contribute to the cultural landscape in the vicinity of Castleroan 3. The river crossing, identified as RC10, was located 10 m east of the site at Ch. 17.100, national grid reference 205773/181936. A tributary of Little Brosna River, it forms the county boundary between Offaly and Tipperary North and is located in the townland of Drumroe/Moatquarter in the parish of Castletownely/Rathnaveoge, in the barony of Clonlisk/Ikerrin. It is 1.5-2.0m wide and probably serves as drainage for the surrounding field systems.

A polished stone axe was a topographical find at site S39, located in the townland of Rathnaveoge Lower, parish of Rathnaveoge, barony of Ikerrin Co. Tipperary. S39 was located 170m northeast of Castleroan 3, at Ch. 17.200-17.300, national grid reference 207389/183940. The artefact was donated as a gift to the National Museum of Ireland.

One of the most common archaeological monuments in the Irish landscape was the ringfort. Most of these are already listed in the Register of Monuments and Places (RMP) and a number were cited in the Environmental Impact Statement (EIS). Only one new potential ringfort (partially destroyed) was identified during field walking. The site was not marked on any edition of the OS" maps and was located 900m northeast of Castleroan 3. It was assigned the label **S37** and was partially extent at ch. 18.000-18.100 in Co. Offaly.

Four ringforts were located within 2km of the site in County Tipperary; the closest TN017-044 was located 1350m to the south between ch. 15.900-16.100. The second ringfort TN017-045 was situated 1430m to the south at ch. 16.500-16.700 and the third RMP ref. TN 017-043 was located 1850m to the southeast, at ch. 18.700-19.000.

The fourth ringfort also had a bullaun stone nearby, TN023-004, was located 1950m south-southwest at ch 15.700-15.900.

Eight ringforts were situated within the same 2km radius of Castleroan 3 in County Offaly. Ringfort OF045-036 was identified in the EIS as S42 and was located 450m west of the site at ch. 16.600-16.800. A second ringfort OF045-038 was located 450m north-northeast of the site at ch. 17.400-17.600 and a third known ringfort OF045-035 was situated 850m north-northwest of the site at ch. 17.100-17.300. Ringfort OF047-010 was located 980m to the south-southwest on ch. 16.200-16.400, while ringfort OF045-023 was situated 1250m to the north at ch. 17.500-17.700. Three further ringforts OF045-024, OF045-039, OF045-034 were located at ch.'s 17.900-18.100, 18.700-18.800 and 16.100-16.300 respectively. They were located 1550m to the north, 1850m to the northeast and 1450m to the west of Castleroan 3.

Other monument/site types in the vicinity included a well OF045-033 which was noted at ch. 16.000-16.100 and located 1720m west of the site. Rathnaveoge Castle was identified as a Tower House TN017-033 and labelled **S38** during the fieldwalking. The building is sited on a terrace with good views to the west at ch. 17.800-18.100, 830m east of Castleroan 3.

A Church and Graveyard TN017-042 were located 1120m southeast of the site at ch. 17.500-17.800. A settlement, in the vicinity of Dunkerrin, OF045-022 was located 1180m north-northwest of the site at ch. 17.100-17.400, while a possible Tower House Enclosure OF045-040 was located 1630m to the northeast of Castleroan 3 at ch. 18.400-18.600.

Ecclesiastical remains, a bullaun stone, a church cross base, a graveyard and a possible souterrain OF045-032 were located 1950m SSW of the site at ch. 15.600-15.800. Since the EIS was published, a local landowner has referred to a possible tunnel (possibly a souterrain) oriented N-W to S-E crossing the proposed route around ch. 17.700. During Phase 1 testing a lime kiln and associated ditch running N-S were located in this area but there was no evidence of a souterrain.

A potential circular earthwork S43 was sited 1900m SW of the site between ch. 15.100 and 15.200, while a potential circular enclosure S41 was sited 250m to the southwest between ch. 16.800 and 17.000. RMP OF045-037 was a possible circular enclosure, S40, located 230m north-northwest of the site at ch. 17.000-17.200.

Two sites of architectural interest were located along the route. AH42 was a farmhouse and outbuildings located 1170m to the southwest, ch. 15.800-16.000, while a house with associated outbuildings AH41 was located 1500m east-northeast of the site on ch. 18.600-18.800.

Rathnaveoge Lower 1 (E3582) was excavated 20m east of Castleroan 3. It was a relatively modern metalled pathway that comprised of closely-set small to medium stones and loosely-compacted clay.

Located 600m east of Castleroan, Rathnaveoge Lower 2 (E3583) was a multi period site that comprised of five separate areas. In area one a house structure with slot trenches, a central hearth and a trampled floor may be dated to the medieval period. Area two had a ditch with five separate deposits of burnt bones that may also be

from the same period. A lime kiln and associated stone storage pit was excavated in area three. No archaeological features were discovered in area four. Two charcoal pits were identified as hearths in area five and area six had a pit with evidence of in-situ burning.

Three areas were stripped of topsoil in Rathnaveoge 3 (E3621). The site was 1100m east of Castleroan 3. Area one has two ditches or linear features with a north-northeast x south-southwest alignment in the eastern area of the cutting. In the centre of the area five stakeholes were observed but no pattern was apparent. Four postholes and one stakehole were evident in area two but again there was no obvious pattern. The Bronze Age site was dated by the eleven sherds of pottery and two fragments of flint. Area three was stripped but there were no archaeological features.

Rathnaveoge Lower 4 (E3623) was 1430m east of Castleroan 3. The site produced an extensive habitation site with small scale funerary / ritual activity. This was concentrated in two major structural phases, separated by a layer of redeposited natural subsoil. There were a number of structures built on top of one another in both phases with two possible two cremation burials from the later phase. Excavation of these features produced evidence of intensive use of the site dating to the late Bronze Age.

Potential sites noted in the EIS in the Castleroan 3 area:

Chainage	EIS Designation	Description
17.100	RC10	Tributary of Little Brosna River
17.200-17.300	S39	Find of a polished stone axe
16.900-17.000	S41	Circular enclosure
17.000-17.200	S40	RMP OF045-037, Circular enclosure
16.600-16.800	S42	RMP OF045-036, Ringfort
17.800-18.100	S38	RMP TN017-033: Tower House
18.000-18.100	S37	Destroyed Ringfort
15.800-16.000	AH42	Farmhouse and Outbuildings
18.600-18.800	AH41	House and Outbuildings
15.100-15.200	S43	Potential circular earthwork

Table 1: Potential sites noted in the EIS in the Castleroan area.

3. METHODOLOGY

3.1 Aims of the fieldwork

The N7 Castletown to Nenagh Phase 2 archaeological resolution programme aimed to fully excavate and record the archaeological sites identified during the Phase 1 testing programme. Sites were only resolved within the take of the route. Castleroan 3 did not contain any archaeological features which extended outside the route, although the focus of the site did appear to be towards the Southeast, outside the Lands Made Available.

3.2 Survey & excavation methods

Topsoil was generally stripped by a tracked machine equipped with a 2m wide ditching bucket. All potential features (contexts) were cleaned, recorded and excavated by hand.

Contexts were numbered sequentially from 1 to infinity, i.e. (C12) represents Context 0012, which could be any type of archaeological feature or layer. The composition, stratigraphic position and interpretation of all contexts were written on record sheets. Contexts were sampled where appropriate.

Relevant sections and cut features were photographed and drawn.

The positions of all finds and samples were recorded in three-dimensions (if practicable) in relation to the national grid.

Summary spreadsheets of Contexts, Finds, Graphics, Environmental Samples, Animal Bone and Human Bone were created as required.

The site was recorded using multi-context planning of all features exposed. Upon completion of excavation all cuttings were surveyed using GPS equipment and only areas within the CPO were resolved.

3.3 Finds Strategy

All artefacts recovered were labelled and securely packaged in appropriate materials. A panel of specialists, both on contract and on staff, were on hand should any specialist requirements arise during the investigations. On-site conservation facilities conformed to the guidelines issued by the Irish Professional Conservation and Restorers Association.

3.4 Dates, resources, scale (area) and constraints of the fieldwork

Fieldwork was completed on the 27th July 2007 with a team consisting of one director, one supervisor, four site assistants and one general operative.

Two cuttings were opened, Area 1 measuring 328.703 sq m and Area 2 measuring 1238.87 sq m respectively in extent.

3.4 Conditions (e.g. weather, vegetation and land use)

The area was a dry land site, there are no areas of wetland or drained wetland. Weather conditions were relatively good during the excavation however there were a number of wet days during which the excavation had to be halted but there was no damage caused to the archaeology. The immediate land was mainly used as pasture for cattle and the surrounding areas were used as grassland for cereals.

3.6 Specialist contributions/consultations

On-site conservation facilities conformed to the guidelines issued by the Irish Professional Conservation and Restorers Association. Procedures were in place for the immediate temporary conservation of artefacts, including organic, non-organic, wet and dry remains. Professional conservators were available to visit at short notice. Secure storage was provided at the VJK Ltd site compound at Rosemary Street, Roscrea. Off-site facilities are available at Valerie J Keeley Ltd Post-excavation office, Castlecomer, Co Kilkenny and with the specialists listed below:

Description of Specialists

Valerie J Keeley Ltd in-house specialists:

S Doyle	Senior Surveyor (Valerie J Keeley Ltd)
G Wallace	CAD Technician / Draughtsperson (Valerie J Keeley Ltd)
R Goodbody	Architectural Historian (Valerie J Keeley Ltd)
J Schmidt	Topographical / Aerial Surveyor / Photographer (Valerie J Keeley Ltd)
N Brady	Underwater Archaeologist (ADCO Ltd, sister company)

3.6 Consents

A Method Statement was submitted to the Department of Environment, Heritage and Local Government, National Monuments Section in advance of the works being undertaken. This method statement was accepted. The Excavation Number for the works is E3581.

4. FINAL RESULTS

4.1.1 Castleroan 3, Features exposed, phased and interpreted

Two cuttings were excavated, as part of this site and excavation registration number (See Figures 1-3; Plates 1-2). Area 1, measuring 400 m², was roughly rectangular (Chainage 04013-04043) and was located central to northwest of the road take/lands made available. Area 2, measuring 600 m², was also roughly rectangular and located 26m to the southeast of Area 1 (Chainage 04013-04040). Both cuttings were also located adjacent to a second excavations area Rathnaveogue Lower 1 (E3582; Valerie J Keeley Ltd. 2008, McMorran *et al forthcoming*; Figures 1, 2).

Area 1: The area measured 23.9m north-south x 15.30m east-west and sloped from west to east.

Area 2: Area 2 was situated to the south of area 1, the cutting measured 29.8m north-south x 17.7m east-west.

There were a total of 65 contexts recorded on Castleroan 3, accounting for 36 in Area 1 and 25 in Area 2, and for 2 in both areas. One feature in Area 1 was radiocarbon dated on this site to the Early Iron Age. Artefacts recovered were not consistent with this date but may be residual or a result of earlier activity. No date was recovered from features in Area 2. Features in Area 2 constituted a rectangular building of probable post-medieval date and associated pits, drains and hearth features. No artefactual material was retained from Area 2, however a quantity of modern ceramic wares, unidentified iron nail fragments, glass bottle shards and a single a ceramic tobacco-pipe bowl was observed from topsoil.

4.1.2 Naturally formed deposits: subsoil

Castleroan 3 lies at a height of 120m OD at Chainage 04013-04043– Area 1 (Figures 3-5; Plates 3-7), and 121 m OD at Chainage 04013-04040 – Area 2 (See Figures 3, 6, 7; Plates 10-14). Prior to excavation, the land use was mainly of pasture for grazing, although the land was quite wet. The fields are bounded by hedgerows. This site was set on the summits of hillocks, of the many that occur along the top of the ridge in the undulating landscape.

The site was located on the northeast side of the Clonakenny to Dunkerrin road, and at the very start of the road scheme (Contract 2) (See Figure 1). It was separated from the road by hedgerows of mature shrubs, bramble, hazel and trees including mountain ash. The terrain is gently-sloping from west to east; to the southwestern of the site is a small stream (flowing north), which also marks the boundary between Castleroan and Rathnaveogue Lower townlands and the Counties of Tipperary and Offaly. Mature trees and shrubs are located on the east side of the County boundary and the small stream.

The excavation is located within a roughly rectangular field on a north/south axis which was previously used as pasture and grassland.

The natural subsoil in Area 1 (C2) was mainly mottled orangey brown boulder clay in the southwest. The natural in the north east was primarily gravel with patches of coarse sand and some large stones with a thin covering of orange brown soil in places. The natural subsoil in Area 2 (C2) varies from compact whitish gravel and grey silty material in the north to a boulder clay and silty stony material in the south of the site. (Plates 2-11)

4.1.3 Archaeological features: Phase 1 – Early Iron Age furnaces (Area 1)

The metallurgical sample assemblage from Area 1, in addition to the vitrified clay artefact, was analysed by Angela Wallace, who interpreted the material as a significant example of iron-smelting and ore-roast activity (See Appendix G). The archaeological evidence in Area 1 consisted of a cluster of shallow earth-cut iron-working features, a large linear amorphous depression and outlying shallow earth-cut features. One feature dated to the early Iron Age. This activity is detailed below. In addition, a later, undated phase of linear drains, furrows and ditches was interpreted as post-medieval / early modern (See Section 4.1.4).

Iron-working activity

Five earth-cut pit features were located in the centre of Area 1, (See Figure 4; Plate 3). Three of the features had a single layer of charcoal-rich soil and contained metallurgical residues (See Appendix G). Two adjacent stake holes may have formed part of a complex of features associated with metal working. The archaeological evidence would imply that these features probably represent a single phase of use.

Iron smelting shaft-furnace: An oval depression (C29) located at the south of the cluster and central to the Area, measured 0.67(0.42) m in length (north-south), 0.57(0.41) m in width, and 0.24m in depth (See Figures 4, 5; Plates 3-6). It contained three (initially recorded as four) fills; the base and sides of this depression displayed evidence of significant heating, represented by a fire-reddened, pinkish silty clay, measuring 0.05m in depth (C61). This was in-fact the scorch mark on the unprotected subsoil (See Plates 4, 5). The actual basal deposit and backfill, was a charcoal-rich matrix (C23) that measured 0.20–0.30m in depth. A sample of apple-type (*pomoideae*) charcoal from this fill returned an Iron Age radiocarbon determination of cal BC 210-40 (SUERC-31025; See Dillon Section 4.3.2; Appendix H). This was sealed by a secondary fill (C63) of dark grey clay with specks of charcoal that measured 0.06m in depth and contained a large quantity of metallurgical waste. The upper fill (C62) was 0.19m thick and consisted of a brown silty clay with orange lumps of clay and blue to orange burnt stone inclusions. The fill had a small quantity of slag inclusions, especially at the base.

Analysis of the metallurgical residues from C29 concluded 'this feature consisted of 1.04 Kg of small irregular drippy pieces of slag, all fragments have typical morphology of smelting slags indicating the likely use of C29 as a *low-clay smelting furnace*' (See Appendix G).

A small, circular, stake hole (C46) was positioned, and cut, 0.01m from the eastern edge of C29. This feature measured 0.035m in diameter and 0.12m in depth, and contained mid dark grey brown clayey silt (C45) with grit and small flecks of charcoal inclusions that may have come from the bowl furnace. This feature was likely associated with the initial erection of the clay tower or shaft around C29, however it may alternatively have formed part of a structure positioned around the furnace, in association with another stake hole (C33, see below) excavated 1.60m to the west.

Ore-roasting pit: A second earth-cut feature (C27) was located 0.60m northeast of C29, the early Iron Age smelting furnace (See Figures 4, 5; Plate 3). This shallow, circular, feature measured 0.63m in diameter and had a maximum depth of 0.13m, and contained a single fill (C25) of dark grey/black silty ashy clay, with a moderate amount of charcoal flecks and occasional grit/small stone inclusions, plus two possible pieces of slag. Analysis of the metallurgical residues from C27 concluded '94 grams of small rust-coloured fragments were recovered from this feature. This material has the appearance of possible crushed and roasted ore, chemical and mineral analysis is recommended to confirm this as it is difficult to visually distinguish ore from slags. Residues suggest this pit was possibly used for ore roasting.' (See Appendix G)

Ore-roasting pit: A third, earth-cut feature within this cluster (C30) was excavated 0.30m west of C27 and 0.50m north of C29. This sub-circular feature measured 0.32m in length (east-west), 0.26m in width and 0.07m in depth and had one stony, fire-reddened fill (C24), black and dark orangey red due to burning, composed of charcoal-stained silty clay with occasional grit inclusions. One piece of slag was discovered within this fill. The natural was scorched across the whole base and side of the feature. Analysis of the metallurgical residues from C30 concluded the 'lack of metallurgical material associated with this feature suggests it was used as a charcoal pit or possibly for ore-roasting' (See Appendix G).

Undated pit: Located in the far southeast of the area, 6m southeast of the cluster of iron-working features (C29 etc.) was a truncated pit feature (C60) that measured 0.60m square by 0.14m in depth. It contained a mottled black / orange and heat-affected stony silt clay fill (C58) with occasional inclusions of charcoal and small unburned stones with some large stones on the base of the fill, resting on the natural.

Linear-dump: A charcoal-rich linear (C56) truncated the undated pit C60, and was located in the southeast of the area, 4m southeast of the cluster of iron-working features (C27, C29, etc.). The linear feature (C56) ran east-west for 5.3m with a slight S-shaped curve, sloping to the east and was truncated by four north-south orientated furrows, and measured 0.64m–1.47m in width, 0.14m–0.20m in depth (See Figures 4, 5; Plates 7-9). A black / dark brown silty clay fill (C49) contained a high percentage of charcoal, especially in the centre of the feature, lumps of orange and grey clay and large burnt stones c. 0.28m x 0.31m x 0.07m also in the centre and large

black stones at the base. Some of the stones present were vitrified (Find E3581:49:3), which gave them a glassy finish and 20 kg of slag residues (Appendix G). Burnt white stones were found mainly at the top of the mixed fill and slag was found throughout the fill.

This feature was a shallow irregular shape, mixed fill and slag inclusions would imply that the feature was used as a dump for the waste material from iron-ore smelting (see above; Appendix G). The orange colour probably represented some iron content in the fill, this coupled with the iron slag inclusions and the high charcoal content would suggest that this feature was part of a smelting process.

Associated pit: A possibly-associated, charcoal-rich oval pit (C50) was located in 4m to the southeast of the iron-working cluster and C29. It truncated the linear feature (C56) and itself, was truncated by later furrows. This feature measured 1.38m in length (north-south), 0.92m in width and 0.17m in depth, with some intrusive animal activity noted at the base. Charcoal inclusion gave the clayey silt material fill (C48) a black staining but the main colour was dark brown with grey. It also contained occasional decayed stone and a small quantity (0.152kg) of slag, (See Appendix G).

Slag from both pits C60 and C50 had similar fills to the linear C56 and therefore would suggest the features were all used as dumps and were probably relatively contemporary.

Dumps/spreads: Three irregular-shaped deposits were located in close proximity to the bowl furnaces and central to the area. The spreads and deposits were probably rake-out debris associated with the iron smelting / ore-roasting activity in the area.

A large deposit (C59) was located in the centre of the site, 6m northeast of the smelting activity and did not appear to have lie within a definite cut. The deposit measured 6.5m in length (north-south) by 2.68m in width, 0.20m in depth, and consisted of a dark brown/ black silty clay with grey patches throughout and with charcoal with burnt and decayed stone inclusions. The edge definition was unclear and it was possibly a rake out of the possibly-associated furnace features.

Two metres south of the smelting activity, was a further shallow deposit (C34). The black / dark grey silty ash had a frequent amount of charcoal and some slag and small stone inclusions. The feature was very shallow with a depth of 0.05m. It had a northwest-southeast orientation 1.4m in length and 0.21m in width. There were traces of a possible cut on the northeast side but this may have been related to bioturbation activity in the area.

Above this deposit was an irregular-shaped spread (C36) that measured 2.17m in length (north-south), 1.49m in width and 0.05m in depth. The spread was dark grey clay silty ashy deposit with a moderate amount of stones and charcoal lumps and flecks. Due to the slag inclusion and the close proximity of (C36/C34) to the smelting furnace complex, the feature was probably a drift deposit or rake out from one of shaft furnace.

Finally, a spread of mid brown clayey silt redeposited soil (C37) was located 0.80m to the east of (C36), and measured 0.85m in length (north-south), 0.39m in width and 0.06m in depth. This layer contained a single chert chunk (Find No. E3581:36:3; See Moore, Section 4.2.2).

4.1.3 Archaeological features: Phase 2a – undated (Area 1)

Two undated linear features were situated north and south of the Iron Age furnace complex and post-date the furnaces. It is likely these plough-furrows were post-medieval in date. In addition to the parallel furrows, a perpendicular or co-axial pattern of a number of post-hole / pit alignments.

Undated furrow/linear features: An east-west aligned shallow linear deposit (C57) was located 2.3m north of the bowl furnaces. The mid brown silty clay had occasional flecks of charcoal throughout the fill. The deposit had no obvious cut and measured 4.25m in length, 0.21m in width and 0.28m depth. The feature predates the furrows as it is truncated by one running in a north-south direction. The deposit was patchy in areas that may have been used as a division on the site, separating different activities.

A second linear feature (C44) measuring 7.2m in length (southwest-northeast), 0.40–0.46m in width and 0.08m in depth, was positioned 0.10m south of the bowl furnaces which may have been a shallow ditch used to partition the activity on the southern side. It had a fill (C43) of dark grey with orange and black staining ashy silty clay. A small amount of slag was found within the fill, as well as small angular stones, grit and charcoal inclusions. The linear was cut by a modern furrow (C38) orientated north-south.

Axial alignment of postholes / pit

A number of isolated earth-cut and undated features were positioned in the west/southwest of the area; this included a stake hole, post-hole and a small pit. These features, whilst isolated appear to align with the furrows C57 and C44, and may represent the remains of a post-built fence to delimit a field. An isolated pit was excavated in the north of the area located close to the baulk, and this may also be part of this pattern.

Pit: On the far southwest side of the area was a sub-rectangular pit (C55) that measured 0.97m in length (north-south), 0.36m in width, and 0.15m in depth, it contained a single fill (C54) was a light yellow brown silty clay composition that included small and medium stones.

Post-hole: Only one posthole (C53) was evident on the site, located 0.20m southeast of C51. It measured 0.25m northeast-southwest x 0.13m north-south x 0.11m deep. The fill (C52) was grey brown silty clay with a mixture of ashy, grit and small stone inclusions.

Stake hole: As mentioned above (See Section 4.2.2), a shallow post-hole feature (C33) was located 1.60m to the west of C29 and 0.25m to the southwest of C27. It measured 0.04m in diameter and had a maximum depth of 0.04m and was filled by mid brown clayey silt (C32), with charcoal and grit inclusions. As this feature was so shallow it may suggest that more stake holes may have been present but cut by later activity in the area.

Isolated Pit: An isolated pit (C42) extended into the baulk in the north of the cutting, the area was slightly extended and the full 0.72m in length (north-south), 0.68m in width, measurements of the feature were exposed. The dark grey sandy clay fill (C35) contained large amounts of charcoal. The feature had an uneven base with a maximum depth of 0.12m. The uneven base, the high percentage of charcoal and the lack of in situ burning may suggest that the pit was used a dump.

Boundary or drainage ditch

A linear ditch (C51) ran 10.7m north-south across the western end of area 1. It was 0.65–0.70m in width and 11cm in depth but may have been truncated from above by agricultural activity. Similar to a number of features, it was truncated by furrows and it extended into the baulk in the northern edge of the cutting. The mid brown clayey silty fill (C47) had a slight orange tint and inclusions of small stones and charcoal flecks.

4.1.4 Archaeological features: Phase 2b – Undated (Area 2)

Area 2 was situated to the southeast of Area 1, the cutting measured 29.8m in length (northwest-southeast) by 17.7m in width. Archaeological remains excavated in this area consisted of the remains of a possible post-medieval house with an internal drain, and several possibly un-associated pits/ post-holes.

Possible post-medieval dwelling

Excavation revealed the partial remains of a rectangular footing for a structure, probably that of a house, located centrally to Area 2 and aligned to the present Clonakenny to Dunkerrin road (See Figures 3, 6; Plates 10). No evidence of a structure was noted on the 1st or 2nd Ordnance Survey mapping. The structure was truncated to the southeast, and was probably rectangular in form, measuring up to 12m in length by *c.* 9m in width, aligned northwest-southeast and alongside but set 3m-back from the present road course. The dwelling was probably clay and stone-built, with lime mortared finish. The northwestern floor plan of the structure contained a truncated stone-lined drain, orientated north-south that possibly continued beyond the building. The interior also contained had two features, one a possible hearth pit situated at the northern end of the drain.

Foundations: The remains of two partition walls (C19) were represented by poorly-preserved foundation trenches (See Figure 6; Plate 10). This linear feature was truncated by later furrows running in a north-south orientation. The northwestern section of the foundation trench measured 7.6m in length (northeast–southwest)

and the southwest section measured 4.6m in length (northwest–southeast). Both sections of the trench measured 0.80m in width and varied in depth from 0.08–0.21m. It was filled with random-rubble stone, clay and lime-mortar. Within the base of the trench, a tightly-packed stony fill (C21) consisted of two rows of stones, which varied in size from *c.* 0.36m by 0.16m to 0.14m by 0.10m. The main backfill (C22) was brown clay with sand and chunks of charcoal. This fill also had pebble inclusions especially at the base of the feature. There was a concentration of loose rubble stones in the southern area of the site, which may suggest that they were part of the southern wall collapse. The remainder of the stone foundation trench may have been removed as part of land clearance or robbed and reused for other structures. The uppermost fill (C20) consisted mainly of patches of white lime mortar with charcoal and sand inclusions. It was concentrated in the south of the cut in the northern trench, while it was evenly distributed in the western trench.

Drain: A stone-lined, covered drain (C17) was identified in the centre of the excavation area. It was orientated north–south and measured 3.2m in length, decreasing in width from 0.20m in the northeast to 0.10m in the south. It had two rows of kerb stones (C18) that decreased in size towards the south. These upright stones were supported by rubble-packing stones (C39) comprising of irregular-shaped limestone, mainly situated in the northern part of the drain. Seven capstones (C31) were laid on the uprights lining the drain. They varied in size from approx. 0.54m by 0.20m by 0.05m to 0.15m by 0.22m by 0.08m. Although the stones only partially covered the drain it would be plausible to assume that the extent of the drain was covered by the capstones but had been removed over time. A number of similar flat stones were observed over the area of the site. (See Figure 6; Plate 10)

Tree-bowl: During construction of the drain, the line of the drain encountered an area of soft ground, the result of an earlier tree-bowl or tree-throw, which required some additional fill and packing to ensure the stability and integrity of the drain structure. This pit-type feature (C40) measured 0.60m in length (east–west) by 0.50m in width, 0.18m in depth, and was identified in the interior area of the structure, abutting the stone-lined drain and located at the northeast terminal of the drain. It was either used as a pit or effectively became a sink-hole to the drain head. A number of wedge-shaped limestone fragments (C41), measuring *c.* 0.18m by 0.20m by 0.07m formed a lining within the pit and these stones may have served two purposes, to level out the ground from the irregular shape of the tree bowl and slump therein, but also to contain the material caught within the tree bowl 'pit'. A sandy clay fill (C28) within, contained a high percent of charcoal inclusions and the mix of red burnt clay would have given its purple colour, plus fragments of bone and shell that extended (or were *washed in*) some *c.* 0.18m into the northern part of the drain. Two of the large capstones (C31) also covered the tree-bowl and fill.

Interior hearth pit: Also located in the northwestern interior of the structure and southeast of the drain, was a pit (C11) (See Figure 6; Plate 11). It measured 0.85m in length (north–south), 0.50m in width and 0.10m in depth,

and contained a backfill (C12) composed of medium brown clayey sandy with a red hue, especially on the top of the feature – suggesting scorching, indicative of a hearth. The fill also contained a high concentration of charcoal, especially at the north of the feature, plus fragments of iron nails and pieces of snail shell. The fill was also spilling onto the kerb stones of the drain C17 under the capping stones (C31), suggesting a contemporary relationship to the drain.

As both pit fills (C28 & C12) were evident in the drain (C17) and the capping stones were placed on the drain after the pits were utilized this would suggest that these features and the drain were contemporary.

External Features

Pit: An isolated pit (C9) with burnt material– indicative of scorching, or of a hearth, was situated 3.5m to the northwest of the structure. This was the most northern feature in the area was an oval-shaped cut with hearth material (See Figures 6, 7; Plate 12). The feature measured 1.08m in length (north–south), 0.94m in width and 0.18m in depth. The shallow depression had a dark brown / black sandy silty fill (C10) with gravel and charcoal inclusions. The fill also included a high percentage of stones. The stones mainly consisted of limestone *c.* 0.10m in diameter. They showed signs of burning but not to the extent that caused them to fracture or crack. The base was irregular on the east side of the feature and the soil beneath the stones showed no sign of scorching, therefore this feature may have been a dump for hearth material and was not burned *in-situ*.

Ditch / robber trench: A linear feature initially interpreted as a field boundary ditch (C3) was located south of the dwelling foundation trench C19 and cut the stone-collapse deposit from the house trench (and therefore post-dated it). The ditch extended for 10.4m from the southern-most baulk to the northeast where it terminated perpendicular to the house foundation trench, and also ranged from 3m to 4.5m in width, varied from 0.28m - 0.37m in depth (See Figure 6; Plate 13). Another section of the ditch may have resumed further northeast but not within the limit of excavation, however it remains more likely this represented a *robber feature* of the structural building material. Therefore, the extent of this linear feature represents the actual if approximate footprint of the dwelling. The backfill (C14) was mid yellow brown silty clay with particles of charcoal, frequent small pebble inclusions and a moderate amount of large stones. The flat bottomed shallow ditch was cut into the natural of boulder clay, silty stony material with some patches of cemented marl. No finds were noted from excavation. However, the evidence from the surface collection of finds was suggestive of a recent or early modern date for this robber ditch.

Post-hole: A post-hole was also identified external to the structure that turned out to be recent in date, visible at the western edge of the stripped area. A small additional area was extended west to get the full extent of the feature. This post-hole (C8) measured 0.19m in length (north–south), 0.20m in width and 0.12m in depth. Part of the post was still visible in the west baulk the full depth of the remaining post was 0.38m in section, suggesting

that the post was modern as there was only a shallow amount of topsoil above it (See Figure 6; Plate 14). The fill (C7) was composed of dark brown/black clayey sand and frequent amounts of charcoal. The presence of this high percentage of charcoal may suggest that the post was burned *in-situ*.

Topsoil

The topsoil in Area 1 (C1) consisted of compact brown silty clay 0.25–0.52m in depth and covered the whole of both cuttings prior to excavation. A single chert lithic of Early-Middle Neolithic date was recovered from this layer (Find No. E3581:1:1 {Fig 8}, See Moore, Section 4.2.2). The topsoil in Area 2 (C1) was also a compact brown silty clay material between 0.10–0.30m deep. Some modern/early modern ceramic, (brown / black wares, plain white, brown, blue / white pattern wares) was observed from the surface and topsoil in Area 2. There were also occasional pieces of corroded fragments of unidentified iron and iron nail fragments, both head and shafts, plus a undecorated clay tobacco pipe bowl, and glass shards (plain clear, blue and brown bottle bases and neck fragments) identified. However, this assemblage was residual and modern in date, so was not retained.

4.2 Artefacts recovered

4.2.1 Overview

Few artefacts were recovered at Castleroan 3. Area 1 contained two chert lithic artefacts, analysed by Dermot Moore as Early-Middle Neolithic date, and possibly residual to the activity of the site area (See Moore, Section 4.2.2). In addition, a single fragment of vitrified clay was recorded from Area 1, this was taken in association with the metallurgical sample assemblage from Area 1, and analysed by Angela Wallace, who interpreted the material as a significant example of iron-smelting and ore-roast activity (See Appendix G).

Some modern/early modern ceramic, (brown / black wares, plain white, brown, blue / white pattern wares) was observed from the surface and topsoil in Area 2. There were also occasional pieces of corroded fragments of unidentified iron and iron nail fragments, both head and shafts, plus a undecorated clay tobacco pipe bowl, and glass shards (plain clear, blue and brown bottle bases and neck fragments) identified. However, this assemblage was residual and modern in date, so was not retained.

4.2.1 Lithic Assemblage by Dermot G Moore

Abstract

A leaf-shaped arrowhead and a small chunk of tabular chert were recovered during excavations at Castleroan (E3581) in County Tipperary and represents residual prehistoric activity likely during the Early–Middle Neolithic.

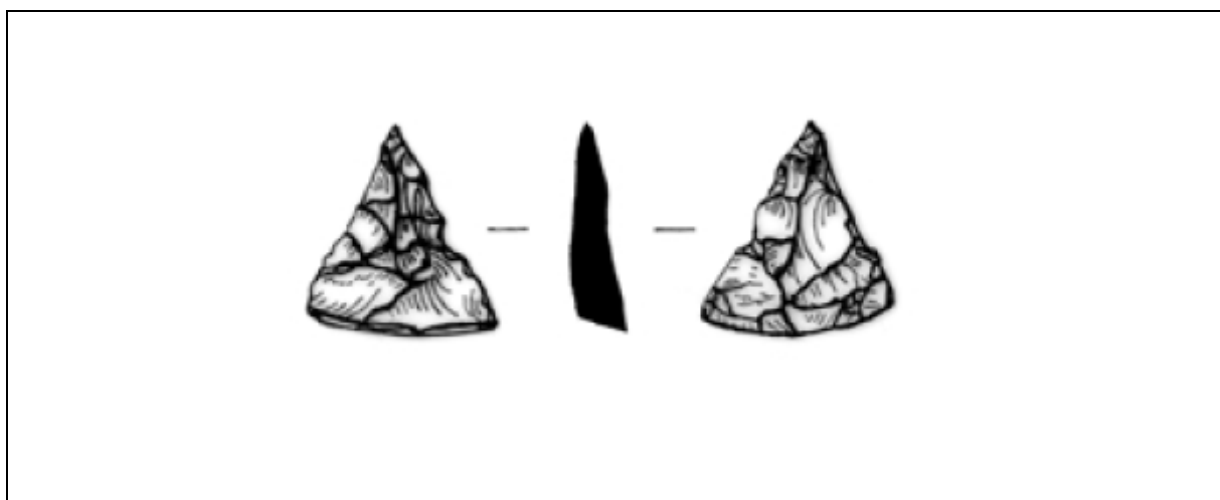
Introduction

The single portion of a chert kite/leaf arrowhead and a small chunk of tabular chert were recovered during excavations at Castleroan (E3581) in County Tipperary. The small projectile portion was retrieved from a topsoil context and the small chunk of chert was recovered from the fill of a feature. (Table 2)

The Lithic Assemblage

A tip of a fine chert arrowhead of likely kite/leaf-shaped form (E3581:1:1), which measured 15mm x 15mm x 3mm, made on a flake was recovered from a topsoil deposit (C01). Fine invasive flaking occurred on both extant faces (Illus. 1). As both surfaces and the tip show little or no damage or wear, it is likely that this projectile was never used or was lost when it was first shot. This example of a leaf-shaped arrowhead is a relatively common form in Ireland (Green 1980; Moore 1999).

The small chunk of tabular chert is likely natural in origin and may be associated with activity around a smelting furnace pit.



Illus. 1: Fine chert arrowhead of likely kite/leaf-shaped form (E3581:1:1).

Find No	Area	Context	Feature	Description	L	W	Th
E3581:1:1	1	C01	Topsoil	Tip of fine chert arrowhead of likely kite/leaf-shaped form. The arrowhead was made on a fine chert flake with fine invasive flaking on both faces. The position of the fracture would suggest that the arrowhead was broken during use possibly during point of impact.	15	15	3
E3581:36:2		C36	Spread	Small irregular chunk of tabular chert	N/A	N/A	N/A

Table 2: Catalogue of lithic artefacts.

Summary

As the leaf-shaped arrowhead was found in a topsoil deposit, little discussion on the nature of the prehistoric activity can be put forward. However, the quality of the arrowhead would suggest that it may be a hunting loss. Such single finds of complete and broken high quality leaf-shaped arrowheads, interpreted as lost hunting points (Moore 1999), have been noted at several sites such as Lough Gur (Ó Ríordáin 1954), Linford Site 1 (Moore and Williams in prep) and Ballyharry 1 on Islandmagee (Moore 2004) both in county Antrim.

References

- Green, S. 1980. *The Flint Arrowheads of the British Isles (Parts I and II)* (Brit. Archaeol. Rep. Brit. Series 75) Oxford, BAR.
- Moore, D. G. 1999. *Analysis of the Lithic Assemblages from Early Prehistoric Sites along the South Antrim Coast*. Unpublished MPhil Thesis (QUB).
- Moore, D. G. 2004. Hostilities in Neolithic Ireland: Trouble with the New Neighbours – The Evidence from Ballyharry, County Antrim, pp. 142-154 in Gibson, A., Sheridan, A. (eds.) *From Sickles to Circles: Britain and Ireland at the Time of Stonehenge*. Tempus: Stroud.
- Moore, D. G. and B. B. Williams (in prep), Excavations in Linford townland, Co. Antrim. *Ulster Journal of Archaeology*
- Ó Ríordáin, S. P. 1954. Lough Gur Excavations: Neolithic and Bronze Age Houses on Knockadoon. *Proc. Roy. Irish Acad.* 56, 297-459.

4.3 Environmental evidence

4.3.1 Overview

Metallurgical residue samples were exclusively recovered from features within Area 1; which produced a total of 22.15 kg of metallurgical residues, and this was analysed by A. Wallace (See Appendix G). The bulk of the material (20 kg) was recovered from C49 fill of a linear dump C56. Small quantities of slag were recovered from pits C29 (1.407 kg), C27 (0.094 kg) and C30 (0.033 kg).

In Area 1, due to the high charcoal content, the samples were sieved and plant/wood species identified by Mary Dillon (See Dillon, Section 4.3.2). Two samples produced sufficient material to be used for radiocarbon analysis to date the activity in this area; one from the charcoal rich slag deposit and the second from one of the smelting furnace pits to date the site and to establish if the features were relatively contemporary (*ibid*; below).

There were no faunal remains recovered from a significant context from Area 1. A small quantity of animal bone fragments was noted from a post-medieval pit in Area 2 but this was not retained. No other samples were

retained from Area 2, as the features were post-medieval or later in date and would not be beneficial to the excavation record.

4.3.2 Plant Remains & Charcoal Analysis by Mary Dillon

Introduction

The site at Castleroan 3 comprised two areas of excavation. Area 1 produced a number of features indicative of metalworking. Area 2 comprised the poorly-preserved remains of a post-medieval/modern building, as well as modern boundary ditches and furrows. The samples from this site were examined for plant remains and the results are detailed below.

Methodology

Bulk soil samples were collected on site and were processed post-excavation using a simple flotation method. The soil samples were saturated in water to allow the carbonised plant material to float. This was then poured off into a series of sieves (1 mm and 250 µm), trapping the 'flot' (floating material). This was air-dried and stored in air-tight plastic bags. The flots were sorted and scanned for plant material using a low-powered binocular microscope (magnification x10 to x40). Identification was carried out at the same magnification.

Results and discussion

In total, five samples were submitted from Castleroan 3, Co Offaly. None of the samples produced plant remains (Table 3). The samples came from smelting furnace pits and a linear dump. Most of the samples were high in charcoal content, apart from Sample 4 from Context 6, which contained no charcoal.

Conclusion

None of the five samples from Castleroan 3 contained plant remains.

Sample no.	Context no.	% scanned	Charcoal	Charred seeds
1	23	100	L	AB
2	25	100	H	AB
3	49	25	H	AB
4	61	100	AB	AB
10	62	100	H	AB
11	63	100	H	AB

H=High, M=Medium, L=Low, AB=Absent

Table 3: Assessment of the plant remains from Castleroan 3, Co. Offaly (E3581).

Sample no.	Context no.	Charcoal identification	Weight (g)	Fragment count
1	23	Pomoideae	0.2	1

Table 4: Charcoal identified in advance of radiocarbon dates from Castleroan 3, Co. Offaly (E3581).

5. CONCLUSIONS / SYNTHESIS

5.1 Conclusion

Area 1

The northern area comprised of a scatter of Iron Age features indicative of iron-smelting and associated ore-roasting and possibly primary bloom smithing. The archaeological evidence included bowl furnaces reclassified as low clay shaft furnaces, several pits, and an irregular linear depression containing a large quantity of iron slag, vitrified clay, burnt stone, and charcoal. Isolated postholes, stakeholes and a linear represented later intrusion, and included a narrow, shallow ditch ran north-south across the west end of the area. A small chert artefact, possibly an Early-Middle Neolithic projectile was also discovered from an un-stratified context. A chert chunk was recovered from the spread associated with the furnaces, but does not appear contemporary.

Area 2

Area 2 comprised the poorly-preserved remains of a post-medieval building, not present on the 1st or 2nd edition OS mapping. Archaeological remains included a possible post-medieval house with an internal drain, and several possibly un-associated pits/ post-holes. The structure was truncated to the southeast, and was probably rectangular in form, measuring up to 12m in length by c. 9m in width, aligned northwest-southeast and alongside but set 3m-back from the present road course. The dwelling was probably clay and stone-built, with lime mortared finish. The northwestern floor plan of the structure contained a truncated stone-lined drain, orientated north-south that possibly continued beyond the building. The interior also contained had two features, one a possible hearth pit situated at the northern end of the drain. Scattered across these remains, within the topsoil, was a large volume of modern debris including glass, metal and ceramic fragments.

5.2 Discussion

5.2.1 Iron working

Iron working has been increasing in profile in recent years, with the influx of new sites excavated with significant analysis of iron working assemblages, but was the poorly studied in the past (Edwards 1990, 86). In fact, the analysis of iron working materials from excavation has become far more widespread than previously was the case. Recent publications are challenging the traditional view of iron working in Ireland, in relation to Britain and Europe. New site types, artefacts and new analysis from recent years is advancing knowledge of the processes involved and date range of technology in Ireland. Experimental and ethnological comparisons by carried out Tylecote (1986) and Crew (1991) and more recently by Young (*forthcoming*) have greatly advanced our knowledge of the processes and the archaeological signature that is left behind.

The bloomery iron working process consisted of three constituent three activities: smelting is a process whereby iron minerals or ores are reduced and broken up by reaction with burning fuel (charcoal), leading to the formation of an iron bloom (billet) and liquid slag waste and residues. The iron bloom has to be refined by hammering to drive out remaining slag particles and this part of the process is known as bloom or primary smithing. The bloom is forged into shape, often in an open hearth or forge, with a forced air supply, usually by bellows. Finally, the metal was worked into artefacts using various heating, hammering, cutting, and twisting techniques, in a process known as secondary smithing. Both smelting and smithing produce waste residues such as slag.

5.2.2 Iron Age iron working

The dating of the furnace C29 on this site to cal BC 210-40 (SUERC-31025) places iron working on this site within the Iron Age. The evidence from Castleroan 3 also points to ore-roasting being carried out at a nearby pit to the furnace, while similar evidence for ore roasting was identified at Tinvaun 2, evidence for ore roasting is not always uncovered (See discussion in Wallace, Appendix G). The evidence from nearby site of Boola-Ballyslea also suggests charcoal manufacturing pits, possible ore-roasting and smelting. The site is therefore significant as it is early in terms of the development of Irish iron-working. The study of furnaces and metalworking from this period is particularly significant in understanding how the technology was developed or introduced into Ireland (*ibid.*).

Wallace (Appendix G) suggests the combined evidence from recently excavated sites such as Tonybaun (Nolan 2006) Rossan 6 (Photos-Jones 2008a), Kinnegad 2 (Photos-Jones 2008b) and Johnstown 3 (Photos-Jones 2008c) suggests that the first iron-working in Ireland is likely to have developed towards the late fifth or early fourth century BC (Wallace & Anguilano 2010). There is huge variety in volumes of metallurgical residues and types of associated hearths and furnace features on all of these sites. The features and further analysis of directly associated residues is therefore crucial in terms of developing an understanding of the adoption and spread of this complex technological development (See discussion in Wallace, Appendix G).

The quantity of residues from Castleroan 3 is relatively high in comparison to several of the similar dated sites (*ibid.*), suggesting a higher volume of ore was smelted and thus a larger bloom may have been produced. Several of the iron slags examined weighed in excess of 1 kg and were quite dense suggesting substantial quantities of iron may have been lost in the smelt. 31.85 kg of residues were recovered at the early Iron Age site of Tonybaun, Co. Mayo dated to 477–210 cal BC, and furnace was of a similar simple pit type but with a lining of flat stone slabs (Nolan 2006).

At two sites on the M8N8 Cullahill to Cashel road scheme yielded evidence of Iron Age iron working activity (Young 2010a, 2010b). Excavation at Ballydavis, Co Tipperary (E2370; Hardy *et al* 2010) produced 29.3 kg of smelting slags, whilst Borris, Co Tipperary revealed 198.3 kg of bloom smithing slags, plus an in-tact bloom (E2491; Conboy *et al* 2010). Smelting evidenced at site Ballydavis included a total of nine possible slag pit

smelting furnaces; furnaces radiocarbon dated to 765-416 cal BC (UBA-10360), 374-191 cal BC (UBA-10363), and 32 cal BC–cal AD 127 (UBA-10362). The latter two furnaces were cut into the upper fills of the enclosure ditch, a practice noted in several other contemporary sites such as Rathgall, Co. Wicklow and Clogher, Co. Tyrone (Raftery 1994; Scott, 1990. 160-161).

The introduction of iron and iron working technology to Ireland and the subsequent transition from the Bronze Age to the Iron Age has long been the subject of debate (Raftery 1994; Cooney & Grogan 1994; Waddell 2000). The precise radiocarbon dating of the transition is problematic, due to issues relating to the calibration curve in the 1st millennium BC, so other methods of dating must be used (Brindley 1995, 5-13; Baille 1995, 30-37). Debate is currently ongoing, especially following the spate of early dates from metal working sites in Ireland excavated recently (Carlin *et al* 2008 Warner 1974; Scott 1990). Limited evidence from a hand full of sites appears to now show that iron working may have been undertaken in Ireland as early as the 7th century BC, and possibly even the 8th century BC, which is more usually classified as the Bronze Age, however definitively by the 5th century BC (Carlin 2008, 104). A possible bloom smithing hearth and charcoal production pit at Rossan 6, Co Meath, was radiocarbon dated to 820-780 cal BC (Beta- 177434; Carlin *et al* 2008, 104/137), whilst metallurgical residues from a pit with Late Bronze Age pottery (dated to c.800 BC) at Kinnegad 2, Co Meath, dated by associated charcoal, returned a radiocarbon date of 820-410 cal BC (Beta-177426; Carlin *et al* 2008, 104/136). However, a furnace from the same site returned at date of 400-210 cal BC (Carlin 2008, 101-2). An iron smithing site, with nails and other artefacts present, excavated at Parksgrove 1, Co. Kilkenny was radiocarbon dated by oak charcoal to 757–261 cal BC (GrN-25788; Stevens 2005). A possible smithing hearth was recorded at Moyvalley 1, Co. Kildare dated 360-60 BC (Beta-177437; Carlin *et al* 2008, 104, 136). Early iron smelting furnaces have also been excavated at Carrickmines Great, Co. Dublin, dated 360-100 cal BC (Ó Drisceoil 2007, 27); Cherryville 12, Co. Kildare, dated 320-200 cal BC (Young 2008a), Newrath Site 35, Co. Kilkenny, dated 400–200 cal BC / 350–40 cal BC (J. Eogan *pers comm*), Johnstown 3, Co Meath dated 420–230 cal BC (Beta-177442; Carlin *et al* 2008, 104, 136).

5.3 Assessment of potential significance of archaeological findings

Castleroan 3 Area 1 consists of early Iron Age activity, including a low, clay shaft furnaces and ore-roasting features associated with spreads of charcoal-rich silt with slag at Ch17080, in Area 1. This activity, owing to the unusually early date is significant as it is early in terms of the development of Irish iron-working. The study of furnaces and metalworking from this period is particularly significant in understanding how the technology was developed or introduced into Ireland. By contrast, Area 2 represents possible post-medieval domestic structure, which owing to significant truncation is likely to represent a local or regional significance in the archaeological record.

Scheme No/Site No.	A038/E3581
Company	Valerie. J. Keeley Ltd
Senior Archaeologist	Eamonn Cotter
Excavation Director	Tori McMorrán
Townlands	Castleroan 3
County	Offaly
Existing Status	Excavated during phase 2 works
Information on Monument	Area 1. One furnace and associated ore-roasting pits, a charcoal-rich spread with slag inclusions with postholes and stake-holes. Area 2. Post-medieval/modern building, as well as modern boundary ditch and furrows.
Relative Importance	Important national study of Iron Age iron-working. National/regional significance
Monument Type	Iron smelting furnaces and a charcoal/slag rich spread
Significance <ul style="list-style-type: none"> • Historic • Archaeological • Cultural 	Area 1 Archaeologically, significant in terms of the development of Irish iron-working. The study of furnaces and metalworking from this period is particularly significant in understanding how the technology was developed or introduced into Ireland.
Landscape Setting Visual Prominence	The landscape of the area consists of gently rolling land between 121m OD and 154m OD. The area is crossed by a small, ditched stream, which forms the county boundary between Offaly and Tipperary North. The fields are mostly bounded by hedgerows accompanied by earthen banks and ditches.
Group Value/ Relationship with other monuments	Possible medieval in date, viewed in conjunction with possible medieval house structure and ditch at Rathnaveoge Lower 2 E3583 c. 700m east
Condition	Excavated during phase 2 works
Rarity	Rarely occurring.
Known/Informed Archaeological Potential	Discovered during phase 1 testing
Amenity Value	None
Other Considerations	None
Conclusion	Three smelting furnace and ore-roasting pits and charcoal/ slag spread signifying metalworking area. Worked chert and stone (chisel end) artefacts were found. Vitrified stone and slag samples were retained from kiln/metal working.

6. ACKNOWLEDGEMENTS

The authors wish to acknowledge the contributions of the following individuals:

Niall Roycroft, NRA Project Archaeologist

Joseph Kelly, Senior Executive Engineer, Kildare County Council

Pat Dowling, Kildare County Council

Colm Fagan, Kildare County Council

For Valerie J. Keeley Ltd., Roscrea:

Eamonn Cotter, Senior Archaeologist

Tori McMorran, Site Director

Anna Dunphy, Site Supervisor

Ana Santos, Sean Hurst, Paul Fingleton, David Creamer, Trish Reid, Jan Zajackowski, Karen Duignan, Carol

Martin General Operatives

Oscar Ryan, Surveyor

For Valerie J Keeley Ltd, Castlecomer:

Colm Flynn, Senior Archaeologist

Paul Stevens, Author & archaeologist

Ger Wallace, Draughtsman

7. BIBLIOGRAPHY

- Baille, M. G. L. 1995, 30-37 *Ireland in the Bronze Age*, Wordwell, Bray.
- Brindley, A. L. 1995, 5-13, *Ireland in the Bronze Age*, Wordwell, Bray.
- Byrne, F.J. 2001 *Irish Kings and High Kings*. Four Courts Press.
- Carlin, N. 2008 "Ironworking and production" in N. Carlin, L. Clarke & F. Walsh (eds) *The archaeology of life and death in the Boyne floodplain*. NRA Scheme Monographs Series 2
Bray: Wordwell P87-112
- Carlin, N., Clarke, L. & Walsh, F. 2008 *The archaeology of life and death in the Boyne floodplain*.
NRA Scheme Monographs Series 2 Bray: Wordwell
- Conboy, G., Hardy, C., Stevens P. & Green B. 2010 *M8/N8 Cullahill to Cashel Road Improvement Scheme, E2491 Site AR 36, Borris, Co. Tipperary*. Unpublished Final Report for Kilkenny County Council: Valerie J. Keeley Ltd.
- Cooney, G. & Grogan, E., 1994. *Irish Prehistory; a social perspective*, Wicklow,,: Wordwell Ltd
- Crew, P 1991 'The experimental production of prehistoric bar iron', *Historical Metallurgy* 25, 21–36.
- Desmond, S 2007 'Ancient peoples, hidden landscapes-the archaeology of the M7/M8 motorway scheme', in J O'Sullivan & M Stanley, *New Routes to the Past Archaeology and the National Roads Authority*, 125-131. NRA Monograph Series 4. Dublin.
- Edwards, N. 1990. *The Archaeology of Early Medieval Ireland*, Routledge, London.
- Gowen, M, Ó Néill J., & Phillips, M. (ed.s) 2005. *The Lisheen Mine Archaeological Project 1996-8*.
Wordwell, Bray.
- Hardy, C. Green. B, & Stevens P 2010 M8/N8 Cullahill to Cashel Road Improvement Scheme,
E2370 Site AR 26, Ballydavid, Co. Tipperary. *Unpublished Final Report for Kilkenny County Council*: Valerie J. Keeley Ltd.
- Joyce, P.W. 1869, *The Origin and History of Irish Names of Places, 3 Vol.s*
- Laois County Council, 2001, *N7 Castletown to Nenagh: Constraints Report*.
- Laois County Council, 2001, *N7 Castletown to Nenagh: Route Selection Report*.
- Laois County Council, 2005, *N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) Environmental Impact Statement*.
- Lennon, C. 2005. *Sixteenth Century Ireland*. Dublin: Gill and Macmillan.
- Marnane, D. G. 2003 *Land and Settlement: A History of West Tipperary*. The Ara Press
- Murphy, J.H. 1994 *The Wild Geese* in The Irish Review No. 16 Autumn/Winter 1994. The Institute of Irish Studies
- Nolan, J 2006 'Excavation of a children's burial ground at Tonybaun, Ballina, County Mayo', in J O'Sullivan & M Stanley (eds), *Settlement, Industry and Ritual*, 89–101.
- Ó Drisceoil 2007, 27);

- O'Donovan, John, 1840 *Letters containing information relative to the Antiquities of the County of Tipperary collected during the progress of the Ordnance Survey in 1840.*
- O'Neill, T. 2007 The hidden past of Parknahown, Co. Laois' in J O'Sullivan & M Stanley, *New Routes to the Past* 133-139. Archaeology and the National Roads Authority, Monograph Series 4. NRA, Dublin.
- Office of Public Works, 1995, *Record of Monuments and Places*
- Ordnance Survey 1835 *First Edition.*
- Ordnance Survey 1909, *Third Edition*
- Ordnance Survey, 1835, *First Edition*
- Photos-Jones, E. 2008a 'Analysis of Metallurgical Waste from Rossan VI, SASAA 91', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne Floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Photos-Jones, E. 2008b 'Analysis of Metallurgical Waste from Kinnegad II, SASAA 93', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne Floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Photos-Jones, E. 2008c 'Slag Analysis for Johnstown 3, Appendix 2', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Pleiner, R. 2000. *Iron in Archaeology: The European Bloomery Smelters*, Prague.
- Raftery, B. 1994 *Pagan Celtic Ireland: the Enigma of the Irish Iron Age*. Thames and Hudson, London
- Roycroft, N. 2008 "Before, during and after the Kingdom of Ely" in *Seanda*, 2008 Issue 3. p34-35
National Roads Authority, Dublin
- Roycroft, N. 2009 "Clay, daub and porches in prehistoric roundhouses" in *Seanda*, 2009 Issue 4.
p49-51 National Roads Authority, Dublin
- Scott, B.G. 1990 *Early Irish Ironworking*. Ulster Museum Publication 266. Belfast.
- Stevens, P. 2009 'Project overview, M8/N8 Cullahill to Cashel Road Improvement Scheme, Gortmakellis, Cashel, Co. Tipperary to Glashare, Co. Kilkenny' In I. Bennett (ed) *Excavations 2006; summary accounts of excavations in Ireland*. Wordwell, Bray.
- Stevens, P. 2005 'New evidence for the Bronze and Iron Ages in County Kilkenny: the 1999 gas pipeline excavations' *Old Kilkenny Review* **57**. 7-31
- Stout, G. T. 1984 *Archaeological Survey of the Barony of Ikerrin* in Association with The Roscrea Heritage Society.

- Tylecote R. 1986 *The Prehistory of Metallurgy in the British Isles*. London. The Institute of Metals.
- Valerie J Keeley Ltd 2007 *'N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Road Improvement Scheme, Advance Archaeological Works Contract 2', Phase 1 Trial Trenching and Townland Boundary Surveys*.
- Valerie J Keeley Ltd 2007 *'N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Road Improvement Scheme Advance Archaeological Works Contract 2' Detailed Phase 1 Method Statement*.
- Valerie J Keeley Ltd 2007 *'N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Road Improvement Scheme, Advance Archaeological Works Contract 2', Detailed Phase 2 Method Statement, Castleroan 3*.
- Valerie J Keeley Ltd 2008 *'N7 Castletown to Nenagh (Castleroan to Derrinsallagh) Road Improvement Scheme, Advance Archaeological Works Contract 2', Phase 2 Preliminary Assessment Report, Castleroan 3*.
- Valerie J. Keeley Ltd., 2007, *'N7 Castletown to Nenagh (Derrinsallagh to Ballintotty) Road Improvement Scheme Advance Archaeological Works Contract 2' Detailed Phase 1 Method Statement, Area 8 (Ch 17.080 – 18.600)*.
- Waddell, J. (2000) *The Prehistoric Archaeology of Ireland*. Wordwell, Bray
- Wallace A & Anguilano L. 2010 Iron-smelting and smithing: new evidence emerging on Irish road schemes in *Creative Minds: production, manufacturing and invention in ancient Ireland*. Archaeology and the National roads Authority, Monograph Series No. 7, 69-84.
- Warner, R. 1974, The Irish bronze –iron transition. *Irish Archaeological Research Foru*, **1** (2) 45-7
- Young, T. P. 2008a Archaeometallurgical residues from Cherryville Site 12, Kildare Bypass. 01E0955 *GeoArch Report 2007/24*. 33pp
- Young, T.P. 2010a. Evaluation of Archaeometallurgical Resides from the M8 / N8 Cullahill – Cashel: AR26 (E2370): *Unpublished report for Valerie J Keeley Ltd. & Kilkenny County Council*
- Young, T.P. 2010b Evaluation of Archaeometallurgical Resides from the M8 / N8 Cullahill – Cashel: AR36 (E2491): *Unpublished report for Valerie J Keeley Ltd. & Kilkenny County Council*.

8. ARCHIVE INDEX SHEET

Project	N7 CASTLETOWN TO NENAGH (DERRINSALLAGH TO BALLINTOTTY) ROAD IMPROVEMENT SCHEME			
Excavation number / Sub-number	E3581			
Site Name/ Townland Reference	Castleroan 3, Castleroan			
Archaeological Consultant	VALERIE J KEELEY LTD.			
Field director	Tori McMorran			
DATE	January 2011			
	Number of items (quantity)	Number of boxes/files (quantity)	Work completed / work to do	Location of Records / Artefacts
Field Records				
Site plan &/or dyelines	38	1		VJK Head Office
Site registers/indexes	5	1		VJK Head Office
Site diary/notes	2	1		VJK Head Office
Context matrix	2	1		VJK Head Office
Report	1	1		VJK Head Office
Summary	1	1		VJK Head Office
Survey/levels data (origin information)	Arbitrary base used, calibrated to stations: S229 S230 S231. Control data received from Laois Co. Council			
Borehole logs etc	-			
Context sheets	63	1		VJK Head Office
Trench record sheets	2	1		VJK Head Office
Wood Sheets	-			
Skeleton Sheets	-			
Worked stone sheets	-			
Sample sheets used yes/no	no			
Other sheets (Specify)	-			
Single context & Multi context plans (totals rather than sheets)	-			
Other plans (sketches, non-context plans etc)	-			
Sections/elevations	11	1		VJK Head Office
Timber drawings	-			
Stone drawings	-			
Images - monochrome	-			
Images - colour (slide or print)	-			
Images digital	156/39	1		VJK Head Office
Image/photo index	-			
Project design/specification/ Methodology	-			
SECURITY COPY (whole or part) If so what type?			on server	VJK Head Office

Finds and Enviro. Archive				
Accessioned/special (small) finds (specify types, especially wet finds or dry finds)	-			
Chert/flint	One chert fragment	1	Label/Specialist	VJK Head Office
Pottery (specify periods)	-			
Ceramic Building Material (specify types e.g. daub, tile)	-			
Worked stone	Chisel	1	Label/Specialist	VJK Head Office
Metalwork (specify types e.g. bronze, iron)	-			
Glass	Vitrified clay	1	Washed/Specialist	VJK Head Office
Slag (weight)	6 samples (2205g)	1	Washed/Specialist	VJK Head Office
Human bone (specify type e.g. cremated, skeleton, disarticulated)	-			
Animal bone (count-weight)	-			
Enviro - bulk (specify number of samples and total number of litres sampled)	6 soil samples	169 ltr.	Sieved/Specialist	VJK Head Office
Enviro - monolith (specify number of samples and number of tins per sample)	-			

APPENDIX A: LIST OF CONTEXTS

Summary context index										
C #	Cutting/ Area	Type	Interpretation	Description	Under	Over	Find	Sample	Plan	Photo
C01	1, 2	Deposit	Topsoil	Compact brown silty clay		All	1	8,9		
C02	1, 2	Deposit	Natural	Boulder clay	All					
C03	2	Fill	Ditch	Compact yellowish/brown stony silty clay. 10.4m x 4.5m x 0.37m.	C01	C14			5, 9, 32, 33	1417-1421, 1444-1452, 1456-1459
C04	2		NAS	Spread	C01	C02			-	-
C05	2		NAS	Natural Depression	C06	C02			1, 5	1422
C06	2		NAS	Natural Depression	C01	C05			1, 5	1422
C07	2	Fill	Posthole	Black compact clayey sand, occas. charcoal. 0.19m x 0.20m x 0.12m.	C01	C08			3	1423-1424, 1453
C08	2	Cut	Posthole	Circular. 0.19m x 0.20m x 0.12m.	C07	C13			3, 34	1423-1424, 1453
C09	2	Cut	Hearth Dump	Oval. 1.08m x 0.94m x 0.18m.	C10	C02			4, 36	1425, 1454
C10	2	Fill	Hearth Dump	Black/dark brown loose sandy silt with burnt stone, occas. gravel & flecks charcoal. 1.08 x 0.94 x 0.18m	C01	C09			4	1525, 1454
C11	2	Cut	Pit	Oval. 0.85m x 0.50m x 0.10m.	C12	C02			2, 35	1427
C12	2	Fill	Pit	Mid-brown clayey sand, reddened from burning. Occas. small stones. 0.85m x 0.50m x 0.10m	C31	C11			2	1427
C13	2		NAS	Decayed Stone	C08	C02				1453
C14	2	Cut	Ditch	Linear. 10.4m x 4.5m x 0.37m.	C03	C02			5, 9, 32, 33	1449-1452
C15	2		NAS	Natural depression	C16	C02			1	1455
C16	2		NAS	Natural depression	C01	C15			1	1455
C17	2	Cut	Stone Drain	Curvilinear, orien. NE-SW. 3.2m x 0.2m.	C18	C02			1, 34, 35	1487, 1488
C18	2	Fill	Stone Drain	Overlapping kerb stones. 0.15m x 0.07.	C39	C17			1, 35	1487, 1488

Summary context index										
C #	Cutting/ Area	Type	Interpretation	Description	Under	Over	Find	Sample	Plan	Photo
C19	2	Cut	Foundation trench	Linear. 4.5m NS x 7.5m EW x 0.8m wide x 0.21m deep.	C21	C02			1, 2, 3, 4, 34, 35, 36	1463
C20	2	Fill	Foundation trench	Lime mortar with charcoal and sand inclusions.	C01	C22			1, 3, 4	1463
C21	2	Fill	Foundation trench	Stones. 0.36m x 0.16m to 0.14m x 0.10m.	C22	C19			1, 2, 3, 4, 34, 35	1463
C22	2	Fill	Foundation trench	Brown clay with sand particles and chunks of charcoal. 0.8m wide x 0.21m deep.	C20	C21			2	-
C23	1	Fill	Smelting furnace	Tertiary fill. Charcoal. 0.42 x 0.23 x 0.30m deep.	C63	C61		1		1474-1477, 1523-1527
C24	1	Fill	Smelting furnace	Mix of black and dark orangey-red charcoal silty clay with stones and grit. 0.32m x 0.26m x 0.04m.	C01	C30		5	10	1460-1462, 1481-1487
C25	1	Fill	Ore-pits	Dark grey/black silty ashy clay, mod charcoal, occas. small stones. 0.63m diam x 0.13m deep.	C01	C27		2	10	1460-1462, 1467-1472, 1478-1480
C26	1		NAS	Soil Disturbance	C01	C02			10,14	-
C27	1	Cut	Ore-roasting pit	Sub-rectangular. 0.63m diam, 0.13m deep.	C25	C02			10, 37	1460-1462, 1467-1472
C28	2	Fill	Pit	Sandy clay. 0.60m x 0.50m x 0.18m	C31	C41, C39				1487, 1488
C29	1	Cut	Smelting Furnace Pit	Circular, steeply-sloped sides, rounded base. 0.57m x 0.67m x 0.29m.	C61	C02			10, 4, 37	1523-1528
C30	1	Cut	Ore-roasting pit	Sub-circular, bowl-shaped. 0.32m x 0.26m x 0.07m.	C24	C02			10, 37	1460-1462, 1479-1481, 1482-1485
C31	2	Fill	Stone drain	Seven limestone capstones. 0.54x0.20x0.05m to 0.15x0.22x0.08m.	C01	C28, C12			2, 35	1487, 1488
C32	1	Fill	Stakehole	Mid-brown clayey silt with charcoal and silt. 0.04m diam, 0.04m deep.	C01	C33			10	1547-1550

Summary context index										
C #	Cutting/ Area	Type	Interpretation	Description	Under	Over	Find	Sample	Plan	Photo
C33	1	Cut	Stakehole	Circular, vertical sides tapering to flat base, angled to south. 0.04m diam, 0.04m deep.	C32	C02			10,37	1547-1548
C34	1		Drift Deposit	Black/dark grey black silty ash, freq. charcoal, small stones. 1.40m x 0.21m x 0.05m deep.	C36	C02				1502-1504
C35	1	Fill	Pit	Dark grey sandy clay with freq. charcoal. 0.72m x 0.68m depth 0.12m.	C01	C42			16,31	1497-1501, 1599
C36	1		Spread	Dark grey silty ash. Mod. amount charcoal and stones. 2.17m x 1.49m x 0.05m deep.	C01	C34	2		14	1490-1491
C37	1		Redeposit	Mid-brown clayey silt redeposited soil. 0.85m x 0.39m x 0.06m.	C01	C02			14	1492-1494
C38	1	Fill	Furrow	Light/mid brown silty clay. 3.6m x 0.15m x 0.04m.	C01	C02			10,14 19,29, 37	-
C39	2	Fill	Stone drain	Limestone rubble packing stones, irreg. shaped.	C28	C18				1488-1489
C40	2	Cut	Pit	Former tree hole used as pit. Oval, stone-lined. 0.60m x 0.50m x 0.18m.	C41	C02			35	1488-1489
C41	2	Fill	Pit	Limestone lining. 0.18x0.20x0.07m.	C28	C40				1488-1489
C42	1	Cut	Pit	Circular. 0.72 x 0.68 x 0.12m.	C35	C02			16,31	1522, 1599
C43	1	Fill	Linear	Dark grey ashy silty clay, orangey & blackish staining, occ charcoal, grit and stones. 7.2m x 0.46m x 0.08m.	C01	C44		7	10,14, 19,29	1520-1521
C44	1	Cut	Linear	Linear, slightly curving, rounded base, gently sloping sides. 7.2m x 0.46m x 0.08m.	C43	C02			10,14, 19,29, 37	
C45	1	Fill	Stakehole	Mid/dark grey brown clayey silt. Occ charcoal & silt, diam 0.035m, depth 0.12m.	C01	C46			10,14	
C46	1	Cut	Stakehole	Circular, diam 0.035m, depth 0.12m.	C45	C02			10,37	
C47	1	Fill	Ditch	Mid-brown clayey silt with orangey staining. Occ charcoal flecks, small stones. 10.7 NNE-SW x 0.7m EW x 0.11m.	C01	C51			10,19	1540-1543, 1554-1560

Summary context index										
C #	Cutting/ Area	Type	Interpretation	Description	Under	Over	Find	Sample	Plan	Photo
C48	1	Fill	Pit	Dark brown/grey clayey silt. Freq charcoal, occas. decayed stone. 1.38m x 0.92m x 0.17m.	C56	C50		6	18,20	1529-1536
C49	1	Fill	Linear Dump	Black/dark brown silty clay & charcoal, lumps orange and grey clay and large burnt stones. 5.3m x 1.47m x 0.2m.	C01	C56	3	3	18,20	1506-1519, 1529-1536, 1572-1581, 1584-1590
C50	1	Cut	Pit	Rectangular. Steeply sloping sides, flat base. 1.38m x 0.92m x 0.17m.	C48	C02			18,20, 28	1529-1536, 1544-1546
C51	1	Cut	Ditch	Linear. 10.70m x 0.70m x 0.11m.	C47	C02			10,19,37, 38	1540-1543, 1554-1560
C52	1	Fill	Posthole	Dark grey/brown silty clay, ash, grit and small stones. 0.25m x 0.13m x 0.11m.	C01	C53			19	1561-1662
C53	1	Cut	Posthole	D-shape, steep sides. 0.25m x 0.13m x 0.11m.	C52	C02			19,38	1561-1564
C54	1	Fill	Pit	Light yellowish/brown silty clay, small/med. stones. 0.97m x 0.36m x 0.15m.	C01	C55			19	1665-1568
C55	1	Cut	Pit	Sub-rectangular, gradually sloping sides, flat base. E 0.97m x 0.36m x 0.15m.	C54	C02			19, 38	1665-1568
C56	1	Cut	Linear Dump	Linear, slight curve or S-shape, trunc. by furrows. 5.3m x 1.47m x 0.2m.	C49	C48			18,20,28	1506-1519, 1529-1536, 1572-1581, 1584-1590, 1600-1608
C57	1	Deposit	Deposit	Linear, E-W aligned, mid-brown silty clay, occ charcoal. 4.25m x 0.21m x 0.28m.	C01	C02			10,21, 25,29, 37	1570-1571
C58	1	Fill	Pit	Mottled dark/mid brown stony silt, patches of orange & fire reddened clay. Occas. small unburnt stone & charcoal. 0.6m x 0.6m x 0.14m.	C01	C60			18,20	1591-1596

Summary context index										
C #	Cutting/ Area	Type	Interpretation	Description	Under	Over	Find	Sample	Plan	Photo
C59	1	Deposit	Spread	Dark brown/black silty clay with grey patches, charcoal and burnt/decayed stone. 6.50m x 2.68m x 0.20m.	C01	C02			15,16, 21,29,30, 31	
C60	1	Cut	Pit	Rectangular, 0.6m x 0.6m x 0.14m.	C58	C02			28	1591-1596
C61	1	Fill	Smelting furnace pits	Basal fill. Compact pinkish silty clay.	C23	C29		4	10	1474-1477, 1523-1527
C62	1	Fill	Smelting furnace pits	Central upper fill. Brown compact silty clay with orange lumps clay and blue to orange burnt stone. 0.41m diam, 0.19m depth.	C01	C63		10	10	1474-1477, 1523-1527
C63	1	Fill	Smelting furnace	Secondary fill. Dark grey ash-like clay, flecks charcoal. 0.39m x 0.28m x 0.06m deep.	C62	C23		11		1474-1477, 1523-1527

APPENDIX B: LIST OF FINDS

Summary finds index					
Find #	Context #	Material	Artefact type	Comments /decoration/ other	Period
E3581:1:1	C1	Chert	Arrowhead	Fragment: A tip of a fine chert arrowhead of likely kite/leaf-shaped form, which measured 15mm x 15mm x 3mm, recovered from a topsoil deposit (C1). Fine invasive flaking occurred on both extant faces. As both surfaces and the tip show little or no damage or wear, it is likely that this projectile was never used or was lost when it was first shot.	Early-Middle Neolithic
E3581:36:2	C36	Chert	Chunk	Small irregular chunk of tabular chert Measures, 4.2cm x 1.3 x 1.4 x 0.5cm	Early-Middle Neolithic
E3581:49:3	C49	Vitrified clay	Slag	from kiln/metal working 3cm x 2.5cm x 2cm	Early Iron Age

APPENDIX C: SAMPLE PROCESSING RESULTS

Processing assessment:

Castleroan 3 E3581													
Sample	Context	Context description	Methodology	Amount processed in Kg	In litres	Comment retent	Comment flot	Bone weight gr.	Charred seeds/ grains	Nut shell frags	Retent sorted (2mm)	Flot weight gr	Stones over 5mm bagged
1	C23	Slag furnace	Flotation	18	18	Burnt clay + slag	Charcoal					218	
2	C25	Roasting pit	Flotation	21	20	Burnt clay + slag	Charcoal					75	
3	C49	Dump	Flotation	97	91	Vitrified clay+slag+burnt stones	Charcoal					397	
4	C61	Slag furnace	Flotation	5	5	Burnt clay	Charcoal					1	
5	C24	Roasting pit	Wet sieve 0.25mm	0.033	x	Burnt stones	No flot					0	
6	C48	Dump	Wet sieve 0.25mm	1.52	x	Slag	No flot					0	
7	C43	Furrow	Wet sieve 0.25mm	0.039	x	Slag	No flot					0	
8	furrow		Wet sieve 0.25mm	0.214	x	Slag	No flot					0	
9	C1	Topsoil	Wet sieve 0.25mm	0.206	x	Slag	No flot					0	
10	C62	Slag furnace	Flotation	8	8	Burnt clay + slag	Charcoal					10	
11	C63	Slag furnace	Flotation	20	20	Vitrified clay+slag	Charcoal					46	
Total Castleroan 3				162									

Targeted for analysis of archaeological features with highest information potential:

Site Name	Site Number	Sample #	C #	Context Type	Material	No.	Comment	Charcoal done	No. of charcoal samples done	Plant remains done	No. of plant remains samples done
Castleroan 3	E3581	1	0023	Smelting furnace	Charcoal	1		Yes	1		

Analysis Results: Charcoal

Site name	Sample no.	Context no.	Charcoal identification	Weight (g)	Fragment count
Castleroan 3	1	23	Pomoideae	0.2	1

Analysis Results: Metallurgical

Summary Sieving Results									
Sample	Context	Feature	Amount in Kg	Comment retent	Comment flot	Slag weight gr.	Charred seeds/grains	Nut shell frag.	Flot weight gr
1	C23	Furnace	18	Burnt clay and slag	Charcoal				218
2	C25	Furnace	21	Nothing noticed	Charcoal				75
3	C49	Flue	97	Vitrified clay, slag and burnt stones	Charcoal				90
4	C61	Furnace	5	Burnt clay	Charcoal				1
5	C24	Furnace		Nothing noticed		39g			
6	C48	Pit		Nothing noticed		1674g			
7	C43	Linear		Nothing noticed		54g			
8	C01	Furrow		Nothing noticed		217g			
9	C01	Testing		Nothing noticed		221g			
10	C62	Furnace	8	Burnt clay + slag	Charcoal				10
11	C63	Furnace	20	Vitrified clay+slag	Charcoal				46
			Total:169kg			2205g			440g

APPENDIX D: LIST OF DRAWINGS

Summary drawing index			
Drawing #	Type (plan, section, profile)	Scale 1:x	Description
1	Pre-ex plan	1:20	Pre-ex plan of possible house structure and burnt area with furrow and collapsed wall.
2	Pre-ex plan	1:20	Pre-ex plan of possible house structure and burnt area
3	Pre-ex plan	1:20	Pre-ex plan of possible posthole north of structure 0007, 0008.
4	Pre-ex plan	1:20	Pre-ex plan of burnt spread, possible hearth 0009, 0010.
5	Pre-ex plan	1:20	Pre-ex plan of possible ditch 0003, 0014. West.
6	Section	1.10	East-facing section drawing of possible ditch 0003, 0014.
7	Section	1.10	East-facing section drawing of possible posthole 0007, 0008, 0013.
8	Section	1.10	South-facing section drawing of possible hearth 0009, 0010.
9	Pre-ex plan	1:20	Pre-ex plan of possible ditch 0003, 0014. East.
10	Pre-ex plan	1:20	Pre-ex plan of area north of 105N/200E and 105N/205E.
11	Section	1.10	North-facing section of Smelting furnace 0025, 0027
12	Section	1.10	North-facing section of Smelting furnace 0023, 0061, 0062, 0063, 0029
13	Section	1.10	North-east facing section of Smelting furnace 0024, 0030.
14	Pre-ex plan	1:20	Area south of 200E/105N and 205E/105N
15	Pre-ex plan	1:20	Pre-ex plan of possible furrow and deposit 0059
16	Pre-ex plan	1:20	Pre-ex plan of edge of excavation
17	Pre-ex plan	1:20	Pre-ex plan of furrow and possible linear feature
18	Pre-ex plan	1:20	Pre-ex plan of furrow and 0049
19	Pre-ex plan	1:20	Pre-ex plan of linear feature 0047 running across west end of Area 1 and other small features
20	Pre-ex plan	1:20	Pre-ex plan of furrows and burnt spread
21	Pre-ex plan	1:20	Pre-ex plan of furrows and black spread
22	Section	1.10	West-facing section of 0049, 0056
23	Section	1.10	North-facing section of 0054, 0055
24	Section	1.10	North-facing section of ditch 0047, 0051
25	Section	1:20	Section of 0059 and furrows
26	Section	1.10	East-facing section of flue 0049, 0056

Summary drawing index			
Drawing #	Type (plan, section, profile)	Scale 1:x	Description
27	Section	1:10	North-facing section of tree bowl
28	Post-ex plan	1:20	Post-ex plan of flue and pit 0056, 0050
29	Post-ex plan	1:20	Post-ex plan of charcoal deposit 0059
30	Post-ex plan	1:20	Post-ex plan of charcoal deposit 0059
31	Post-ex plan	1:20	Post-ex plan of charcoal deposit 0059 and pit 0042
32	Post-ex plan	1:20	Post-ex plan of ditch 0014 and wall collapse
33	Post-ex plan	1:20	Post-ex plan of ditch 0014
34	Post-ex plan	1:20	Post-ex plan of foundation trench 0019 and stone drain 0017
35	Post-ex plan	1:20	Post-ex plan of foundation trench 0019, stone drain 0017 and pits 0011 and 0040
36	Post-ex plan	1:20	Post-ex plan of foundation trench 0019 and hearth 0009
37	Post-ex plan	1:20	Post-ex plan of linear 0044, stakeholes 0045 & 0033, Smelting furnaces 0029, 0027 & 0030, ditch 0051
38	Post-ex plan	1:20	Post-ex plan of pit 0055 & ditch 0051

APPENDIX E: LIST OF PHOTOGRAPHS

Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1400	Pre-ex	North	Smelting furnace (C23) (C61) (C62) (C63)
E3581 1401	Pre-ex	North	Smelting furnace (C23) (C61) (C62) (C63)
E3581 1402	Pre-ex	South	Ore-roasting pit (C25)
E3581 1403	Pre-ex	South	Ore-roasting pit (C25)
E3581 1404	Pre-ex	South	Ore-roasting pit (C25)
E3581 1405	Pre-ex	South	Ore-roasting pit (C25)
E3581 1406	Pre-ex	South	Ore-roasting pit (C24)
E3581 1407	Pre-ex	South	Ore-roasting pit (C24)
E3581 1408	Pre-ex	South	Ore-roasting pit (C24)
E3581 1409	Pre-ex	South	Ore-roasting pit (C25)
E3581 1410	Pre-ex	East	Stone drain (C17) (C19) (C21)
E3581 1411	Pre-ex	South	Stone drain (C17) (C19) (C40)
E3581 1412	Pre-ex	South	Stone drain (C17) (C19)
E3581 1413	Pre-ex	East	Stone drain (C17) (C19) (C41)
E3581 1414	Pre-ex	West	Stone drain (C17) (C40)
E3581 1415	Pre-ex	North	Stone drain (C17) (C19) (C40)
E3581 1416	Pre-ex	North	Stone drain (C17) (C19)
E3581 1417	Pre-ex	North	Ditch (C03) (C14)
E3581 1418	Pre-ex	North	Ditch (C03) (C14)
E3581 1419	Pre-ex	North	Ditch (C03) (C14)
E3581 1420	Pre-ex	South	Ditch (C03) (C14)
E3581 1421	Pre-ex	South	Ditch (C03) (C14)
E3581 1422	Pre-ex	North	NAS (C05) (C06)
E3581 1423	Pre-ex	West	Posthole (C07) (C08)
E3581 1424	Pre-ex	West	Posthole (C07) (C08)
E3581 1425	Pre-ex	West	Hearth (C09) (C10)

Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1426	Pre-ex	West	Posthole (C07) (C08)
E3581 1427	Pre-ex	North	Pit (C11) (C12)
E3581 1444	Mid-ex	West	Ditch (North end) (C03)
E3581 1445	Mid-ex	West	Ditch (North end) (C03)
E3581 1446	Mid-ex	West	Ditch (South end) (C03)
E3581 1447	Mid-ex	West	Ditch (South end) (C03)
E3581 1448	Mid-ex	West	Ditch (Centre) (C03)
E3581 1449	Mid-ex	South	Ditch (C03) (C14)
E3581 1450	Mid-ex	South	Ditch (C03) (C14)
E3581 1451	Mid-ex	North	Ditch (C03) (C14)
E3581 1452	Mid-ex	South	Ditch (C03) (C14)
E3581 1453	Mid-ex	West	Posthole (C08) (C07)
E3581 1454	Mid-ex	North	Hearth (C09) (C10)
E3581 1455	Pre-ex	South	NAS
E3581 1456	Mid-ex	West	Ditch (C03)
E3581 1457	Mid-ex	West	Ditch (C03)
E3581 1458	Mid-ex	East	Ditch (C03)
E3581 1459	Mid-ex	West	Ditch (C03)
E3581 1460	Pre-ex	West	Smelting furnaces (C23) (C24) (C25) (C62) (C63)
E3581 1461	Pre-ex	North	Smelting furnaces (C23) (C24) (C25) (C62) (C63)
E3581 1462	Pre-ex	North	Smelting furnaces (C23) (C24) (C25) (C62) (C63)
E3581 1463	Pre-ex	South	Foundation trench, stone drain (C19) (C20) (C21) (C17) (C18)
E3581 1464	Pre-ex	North	Spread and furrow (C36)
E3581 1465	Pre-ex	West	Spread and furrow (C36)
E3581 1466	Pre-ex	West	Spread and furrow (C36)
E3581 1467	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1468	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1469	Mid-ex	South	Ore-roasting pit (C25) (C27)

Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1470	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1471	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1472	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1473	Mid-ex	South	Ore-roasting pit (C25) (C27)
E3581 1474	Mid-ex	South	Bowl furnace (C23) (C61) (C62) (C63)
E3581 1475	Mid-ex	South	Bowl furnace (C23) (C61) (C62) (C63)
E3581 1476	Mid-ex	South	Bowl furnace (C23) (C61) (C62) (C63)
E3581 1477	Mid-ex	South	Bowl furnace (C23) (C61) (C62) (C63)
E3581 1478	Post-ex	South	Ore-roasting pit (C25)
E3581 1479	Post-ex	North	Ore-roasting pit (C25)
E3581 1480	Post-ex	North	Ore-roasting pit (C25)
E3581 1481	Mid-ex	South-west	Ore-roasting pit (C24)
E3581 1482	Mid-ex	South-west	Ore-roasting pit (C24)
E3581 1483	Mid-ex	South-west	Ore-roasting pit (C24)
E3581 1484	Post-ex	South	Ore-roasting pit (C24)
E3581 1485	Post-ex	South	Ore-roasting pit (C24)
E3581 1486	Post-ex	West	Ore-roasting pit (C24)
E3581 1487	Post-ex	West	Ore-roasting pit (C24)
E3581 1488	Pre-ex	West	Stone drain, pit (C18) (C17) (C28)
E3581 1489	Pre-ex	North	Stone drain, pit (C18) (C17) (C28)
E3581 1490	Post-ex	North	Spread (C36)
E3581 1491	Post-ex	North	Spread (C36)
E3581 1492	Pre-ex	North	Redeposit (C37)
E3581 1493	Pre-ex	West	Redeposit (C37)
E3581 1494	Pre-ex	West	Redeposit (C37)
E3581 1495	Mid-ex	West	Redeposit (C37)
E3581 1496	Mid-ex	West	Redeposit (C37)
E3581 1497	Pre-ex	West	Pit (C35)

Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1498	Pre-ex	South	Pit (C35)
E3581 1499	Pre-ex	North	Pit (C35)
E3581 1500	Pre-ex	North	Pit (C35)
E3581 1501	Pre-ex	West	Pit (C35)
E3581 1502	Pre-ex	South-east	Drift deposit (C34)
E3581 1503	Pre-ex	South-east	Drift deposit (C34)
E3581 1504	Pre-ex	North	Drift deposit (C34)
E3581 1505	Pre-ex	West	Stone drain (C18) (C17)
E3581 1506	Pre-ex	North	Flue (C49) (C56)
E3581 1507	Pre-ex	North	Flue (C49) (C56)
E3581 1508	Pre-ex	West	Flue (C49) (C56)
E3581 1509	Pre-ex	West	Flue (C49) (C56)
E3581 1510	Pre-ex	North-east	Flue (C49) (C56)
E3581 1511	Pre-ex	North	Flue (C49) (C56)
E3581 1512	Pre-ex	North	Flue (C49) (C56)
E3581 1513	Pre-ex	North	Flue (C49) (C56)
E3581 1514	Pre-ex	South	Flue (C49) (C56)
E3581 1515	Pre-ex	South	Flue (C49) (C56)
E3581 1516	Pre-ex	North	Flue (C49) (C56)
E3581 1517	Pre-ex	North	Flue (C49) (C56)
E3581 1518	Pre-ex	South	Flue (C49) (C56)
E3581 1519	Pre-ex	South	Flue (C49) (C56)
E3581 1520	Pre-ex	West	Linear (C43)
E3581 1521	Pre-ex	West	Linear (C43)
E3581 1522	Mid-ex	North	Pit (C42)
E3581 1523	Mid-ex	West	Bowl furnace (C61) (C29)
E3581 1524	Mid-ex	West	Bowl furnace (C61) (C29)
E3581 1525	Post-ex	West	Bowl furnace (C29)

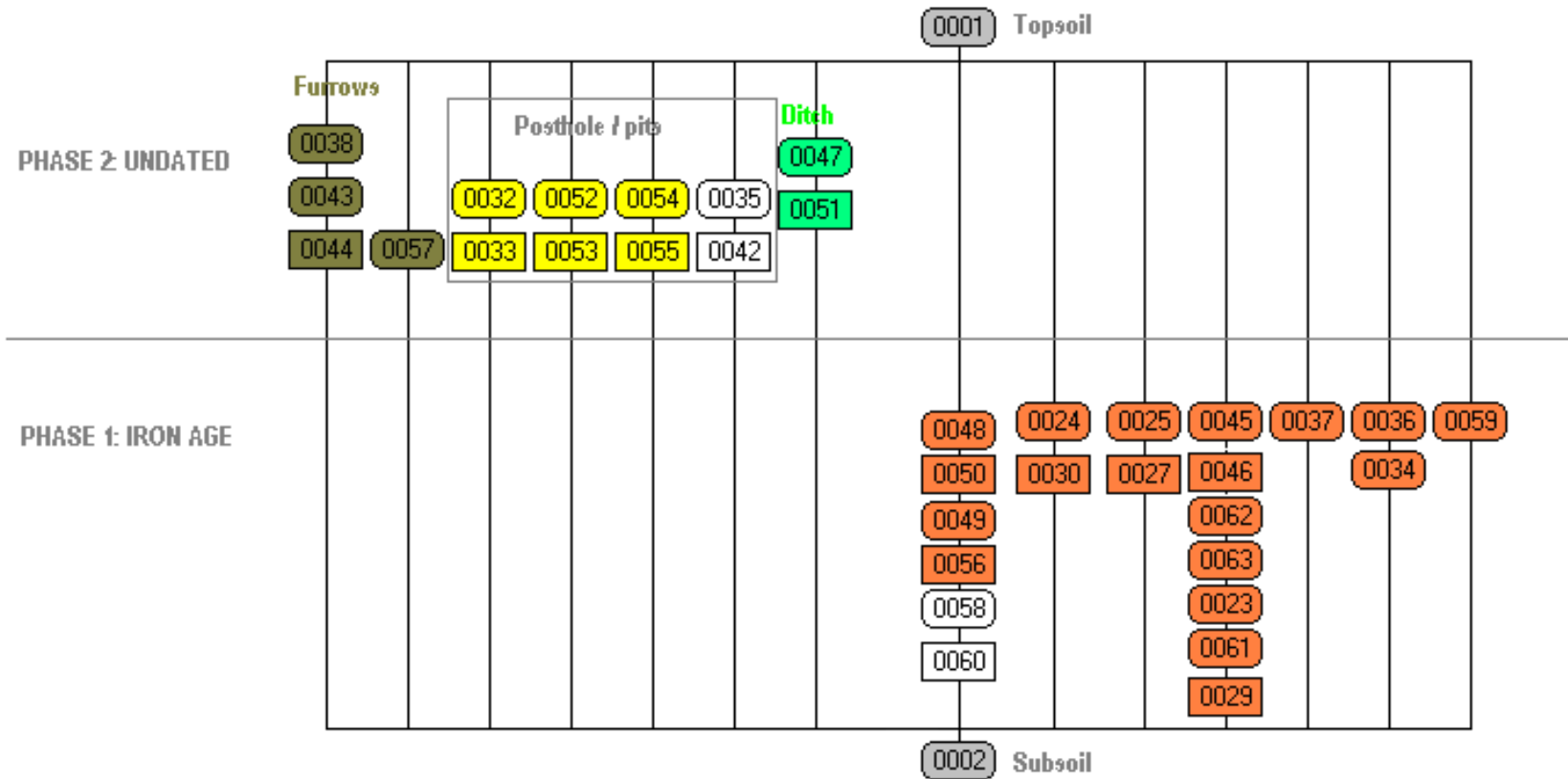
Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1526	Post-ex	West	Bowl furnace (C29)
E3581 1527	Post-ex	East	Bowl furnace (C29)
E3581 1528	Post-ex	South	Bowl furnace (C29)
E3581 1529	Pre-ex	East	Pit, flue (C48) (C49)
E3581 1530	Pre-ex	East	Pit, flue (C48) (C49)
E3581 1531	Pre-ex	North	Pit, flue (C48) (C49)
E3581 1532	Pre-ex	North	Pit, flue (C48) (C49)
E3581 1533	Mid-ex	West	Pit (C48)
E3581 1534	Mid-ex	West	Pit (C48)
E3581 1535	Mid-ex	North-west	Pit (C48)
E3581 1536	Mid-ex	West	Pit (C48)
E3581 1537	Pre-ex	West	NAS
E3581 1538	Pre-ex	West	NAS
E3581 1539	Pre-ex		NAS
E3581 1540	Pre-ex	South-west	Ditch (C47)
E3581 1541	Pre-ex	South-west	Ditch (C47)
E3581 1542	Pre-ex	South-west	Ditch (C47)
E3581 1543	Pre-ex	South-west	Ditch (C47)
E3581 1544	Post-ex	West	Pit (C50)
E3581 1545	Post-ex	North	Pit (C50)
E3581 1546	Post-ex	North-west	Pit (C50)
E3581 1547	Post-ex	South	Stakehole (C32)
E3581 1548	Post-ex	South	Stakehole (C32)
E3581 1549	Post-ex	South	Stakehole (C32)
E3581 1550	Post-ex	South	Stakehole (C32)
E3581 1551	Pre-ex	East	Flue (C56) (C49)
E3581 1552	Pre-ex	North	Flue (C56) (C49)
E3581 1553	Pre-ex	South	Flue (C56) (C49)

Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1554	Mid-ex	North	Ditch (C47)
E3581 1555	Mid-ex	North	Ditch (C47)
E3581 1556	Mid-ex	South	Ditch (C47)
E3581 1557	Mid-ex	South	Ditch (C47)
E3581 1558	Mid-ex	East	Ditch (C47)
E3581 1559	Mid-ex	East	Ditch (C47)
E3581 1560	Mid-ex	West	Ditch (C47)
E3581 1561	Mid-ex	West	Posthole (C53) (C52)
E3581 1562	Mid-ex	South	Posthole (C53) (C52)
E3581 1563	Post-ex	West	Posthole (C53)
E3581 1564	Post-ex	South	Posthole (C53)
E3581 1565	Mid-ex	South	Pit (C54)
E3581 1566	Mid-ex	South	Pit (C54)
E3581 1567	Mid-ex	West	Pit (C54) (C55)
E3581 1568	Mid-ex	West	Pit (C54) (C55)
E3581 1569	Mid-ex	East	Flue (C56) (C49)
E3581 1570	Pre-ex	West	Deposit (C57)
E3581 1571	Mid-ex	West	Deposit (C57)
E3581 1572	Mid-ex	West	Flue (C56) (C49)
E3581 1573	Mid-ex	West	Flue (C56) (C49)
E3581 1574	Mid-ex	North	Flue, furrow (C56) (C49)
E3581 1575	Post-ex	North	Flue, Pit (C50) (C56)
E3581 1576	Post-ex	North	Flue, Pit (C50) (C56)
E3581 1577	Post-ex	North	Flue, Pit (C50) (C56)
E3581 1578	Mid-ex	East	Flue (C49)
E3581 1579	Mid-ex	East	Flue (C49)
E3581 1580	Mid-ex	East	Flue (C49)
E3581 1581	Mid-ex	East	Flue (C49)

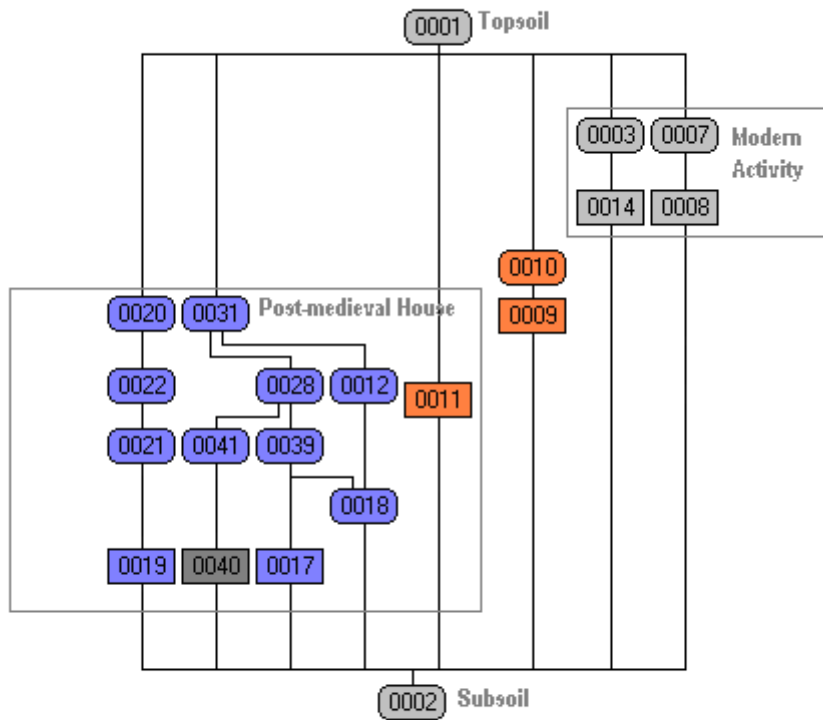
Summary photographic index			
Photo #	Type(pre-ex/ mid-ex/ post-ex, section)	Direction photo facing	Description
E3581 1582	Mid-ex	West	Flue (C56) (C49)
E3581 1583	Mid-ex	South-west	Flue (C56) (C49)
E3581 1584	Mid-ex	West	Flue (C49)
E3581 1585	Mid-ex	West	Flue (C49)
E3581 1586	Mid-ex	West	Flue (C56) (C49)
E3581 1587	Mid-ex	West	Flue (C56) (C49)
E3581 1588	Mid-ex	West	Flue (C56) (C49)
E3581 1589	Mid-ex	North	Flue (C56) (C49)
E3581 1590	Mid-ex	North-west	Flue (C56) (C49)
E3581 1591	Pre-ex	West	Pit (C58)
E3581 1592	Pre-ex	West	Pit (C58)
E3581 1593	Pre-ex	West	Pit (C58)
E3581 1594	Mid-ex	South	Pit (C58)
E3581 1595	Mid-ex	South	Pit (C58)
E3581 1596	Mid-ex	Vertical	Pit (C58)
E3581 1597	Mid-ex	South	NAS
E3581 1598	Mid-ex	North	NAS
E3581 1599	Mid-ex	West	Pit (C42) (C35)
E3581 1600	Post-ex	West	Flue, pit (C56) (C50)
E3581 1601	Post-ex	West	Flue, pit (C56) (C50)
E3581 1602	Post-ex	North	Flue, pit (C56) (C50)
E3581 1603	Post-ex	North-west	Flue, pit (C56) (C50)
E3581 1604	Post-ex	North-east	Flue, pit (C56) (C50)
E3581 1605	Post-ex	North-east	Flue, pit (C56) (C50)
E3581 1606	Post-ex	North	Flue, pit (C56) (C50)
E3581 1607	Post-ex	North-east	Flue, pit (C56) (C50)
E3581 1608	Post-ex	West	Flue, pit (C56) (C50)

APPENDIX F: SITE MATRIX

AREA 1:



AREA 2:



APPENDIX G: METALLURGICAL RESIDUES REPORT BY A. WALLACE,

Connacht Archaeological Services

1.0 Introduction

The site of Castleroan 3 was divided into two separate areas, Area 1 & Area 2. Metallurgical material was recovered from several features within Area 1. A total of 22.15Kg of metallurgical material was recovered from this site. The bulk of the material (20Kg) was recovered from C49 fill of a linear dump C56. Small quantities of slag were recovered from pits C29 (1.407Kg), C27 (0.094Kg) and C30 (0.033Kg). A date of cal BC 210-40 (SUERC-31025) was obtained from C23 fill of pit C29. (See Tables 5, 6 below)

The evidence from pit C29 suggests it formed part of a simple low clay shaft furnace, the nearby pit C27 was probably used for ore roasting and C30 was most likely used for charcoal production. Substantial quantities of charcoal would have been required to fire the furnace to the necessary temperatures (c.1000-1200°C).

2.0 Metallurgical Features

The main features associated with metallurgical activity were a cluster of three small adjacent pits C29, C27 and C30, the quantity of residues associated with each of these features was quite small.

C29 measured 0.57m east-west , 0.67m north-south and was 0.29m in depth. The edges and base of the pit showed scorching and it had charcoal rich fills. Lumps of burnt clay were observed at the surface which would indicate it may have had some sort of clay superstructure. A small stakehole C46 was cut 0.01m from the east edge of C29 which would also indicate some sort of superstructure. It is likely that C29 functioned as a simple low clay shaft furnace. Residues recovered from this feature consisted of 1.04Kg of small irregular drippy pieces of slag, all fragments have typical morphology of smelting slags indicating the likely use of C29 as a smelting furnace.

C27 was located 0.60m northeast of C29 and measured 0.63m in diameter and had a maximum depth of 0.13m. This shallow feature had only one fill of dark grey/black silty ashy clay with a moderate amount of charcoal flecks and occasional grit/small stone inclusions. 94 grams of small rust coloured fragments were recovered from this feature. This material has the appearance of possible crushed and roasted ore, chemical and mineral analysis is recommended to confirm this as it is difficult to visually distinguish ore from slags. Residues suggest this pit was possibly used for ore roasting.

C30 was excavated 0.30m west of *C27* and 0.50m north of *C29*. It measured 0.32m east-west x 0.26m north-south x 0.07m deep and had one fire reddened fill. It was composed of charcoal stained silty clay. The natural was scorched across the whole base and side of the feature. The lack of metallurgical material associated with this feature suggests it was used as a charcoal pit or possibly for ore roasting.

C50 A small quantity of material (0.152Kg) was recovered from *C50* a charcoal-rich oval pit which measured 1.38m north-south x 0.92m east-west x 0.17m deep. This feature was located at the western end of linear feature *C56*.

C56 The bulk of residues on the site (20Kg) were recovered from within the linear feature *C56* which ran east-west for 5.3m with a slight S-shaped curve. It measured 0.64m - 1.47m wide and was 0.14m - 0.20m deep. The black / dark brown silty clay fill (*C49*) had a high percentage of charcoal, especially in the centre of the feature. The soil had lumps of orange and grey clay and contained large burnt stones c. 0.28m x 0.31m x 0.07m in the centre and large black stones at the base. This feature was located c.4-5m southeast of the pit cluster *C29*, *C27* and *C30*, and it seems likely that *C56* was used as a dumping area for residues linked to a low clay shaft furnace *C29*.

3.0 Conclusions & Further Recommendations

Brief Background for Irish Smelting Furnaces

There has been some debate about the morphology of Irish furnaces, some believe them to be bowl-shaped (Scott 1990: 159) based on the common findings on archaeological sites of slag associated with shallow hemi-spherical pits. The evidence would also support the possibility that low clay shaft furnaces with slag pits may have been used as described by Pleiner (2000:150). Some supporting discussion for the Irish evidence for low clay shaft slag pit furnaces has been presented by Young (2003) and there is a good discussion of the contributions to this debate by Carlin (2008: 91-2).

Experimental work on bowl furnaces and low clay shaft furnaces has indicated the low clay shaft types are more suitable for smelting (Crew 1991), the bowl furnaces do work but not as efficiently (Tylecote 1986), it seems likely that several different types of furnace may have been used simultaneously amongst different communities as there is considerable variation in the record. Morphology of furnaces used may also be linked to the types of raw materials and ores locally available, further synthesis of recent discoveries and carefully documented experimental work based on Irish archaeological evidence will hopefully shed more light on this.

It is usually only possible to guess at furnace morphologies as frequently all that remains is a scorched bowl-shaped depression in the ground and some slag and fired clay fragments. Where there are large quantities of baked clay fragments associated with slag pits there is reasonable evidence to assume they formed part of a clay superstructure or shaft. Fired clay fragments however, are easily eroded over time and we can't assume the absence of clay shafts or low bowl furnaces when such evidence is missing.

Contextual & Chronological Significance of Castleroan 3 Furnace

The dating of the possible furnace C29 on this site to cal BC 210-40 (SUERC-31025) places ironworking on this site within the Iron Age. This is significant as it is early in terms of the development of Irish iron-working. The study of furnaces and metalworking from this period is particularly significant in understanding how the technology was developed or introduced into Ireland.

The combined evidence from recently excavated sites such as Tonybaun (Nolan 2006) Rossan 6 (Photos-Jones 2008a), Kinnegad 2 (Photos-Jones 2008b) and Johnstown 3 (Photos-Jones 2008c) suggests that the first iron-working in Ireland is likely to have developed towards the late fifth or early fourth century BC (Wallace & Anguilano 2010). There is huge variety in volumes of metallurgical residues and types of associated hearths and furnace features on all of these sites. The features and further analysis of directly associated residues is therefore crucial in terms of developing an understanding of the adoption and spread of this complex technological development.

Evidence recently examined from sites excavated on the N9-N10 and M3 road schemes also produced evidence for several Iron Age iron smelting furnaces (See Table 5). This list is not exhaustive as much recently excavated material is as yet unpublished. A brief look at the evidence indicates many of the other Iron Age sites have simple pits with burnt material and associated smelting slags, some also have evidence for ore-roasting and iron smithing representing several stages in the cycle of production.

Site	Length	Width	Depth	Qty of Residues from furnace	Dates
Tinvaun 2 C43 (N9-N10)	1.15m	0.65m	0.48m	5.88Kg	39 BC- AD 64
Danesfort 5 C335 (N9-N10)	0.49m	0.49m	0.67m	6.05Kg	No date (likely IA)
Danesfort 13 C49 (N9-N10)	0.85m	0.38m	0.25m	1.37Kg	Cal AD 7-125.
Danesfort 12 C13 (N9-N10)	0.45m	0.33m	0.28m	12.45Kg	No date (likely IA)
Rathcash East 3	5.24m	2.04m	0.72m	16.22Kg	Cal 160 BC - AD 0

Site	Length	Width	Depth	Qty of Residues from furnace	Dates
C43 (N9-N10)					
Grange 3 (M3)	0.50m	0.39m	0.09m	1.36Kg	Cal 191–5 BC (C600)
Tonybaun, Co. Mayo (N26)	0.91m	0.89m	0.29m	31.85Kg	Cal 477–210 BC Cal 166 BC–AD 25
Boola-Ballyslea - C42, C46	0.51m 0.89m	0.38m 0.49m	0.17m 0.18m	4.26Kg 2.31Kg	Cal. 370-160BC (?) Cal. 60BC-80AD (?) Dates not directly associated with IW contexts
Castleroan 3 (N7)	0.67m	0.57m	0.29m	22.15Kg	Cal. 210-40 BC

Table 5: Comparative data on furnace dimensions, residue quantities and dates from several other Iron Age smelting furnaces.

It is clearly evident from Table 5 above that the evidence at Castleroan 3 is similar to that at many other Iron Age sites where small quantities of residues are recovered in association with simple pits frequently identified by excavators as ‘bowl furnaces’ but which may equally have been simple low clay shaft furnaces. The evidence from Castleroan 3 points to ore-roasting being carried out at a nearby pit to the furnace, while similar evidence for ore roasting was identified at Tinvaun 2, evidence for ore roasting is not always uncovered. The evidence from nearby site of Boola-Ballyslea also suggests charcoal manufacturing pits, possible ore-roasting and smelting.

The quantity of residues from Castleroan 3 is relatively high in comparison to several of the similar dated sites shown in the table above, suggesting a higher volume of ore was smelted and thus a larger bloom may have been produced. Several of the iron slags examined weighed in excess of 1 kg and were quite dense suggesting substantial quantities of iron may have been lost in the smelt. 31.85 kg of residues were recovered at the early Iron Age site of Tonybaun, Co. Mayo dated to 477–210 BC, and furnace was of a similar simple pit type but with a lining of flat stone slabs.

There is a considerable quantity of distinctive drippy type slags from Castleroan 3, this morphology can be linked with iron smelting or primary smithing (*i.e.* reheating and hammering of the spongy bloom of iron to remove slag remaining within), morphology of the material can be indicative of both processes. The absence of smithing hearth cakes would suggest that iron smelting was the most likely activity carried out at this site.

Future Research & Recommendations

Further analysis of residues, especially those linked with possible ore roasting within C27 and also residues from furnace C29 is recommended in order to elucidate which process material is coming from

and also efficiency of processes. Sectioning and analysis of some of the large dense slags from C56 may reveal data on loss of iron into the slags and efficiency of smelt. An in-depth comparative study of evidence and residues from various Iron Age sites excavated on recent road schemes, along with further dating evidence, would provide a useful overview of new archaeological evidence of Iron Age metal-working activity.

Bibliography

- Carlin N. 2008 'Iron working and Production' in Carlin N., Clarke L. & Walsh F. *The Archaeology of Life and Death in the Boyne Floodplain: The Linear Landscape of the M4 Kinnegad-Enfield-Kilcock Motorway*. NRA Scheme Monographs 2.
- Crew, P. 1991 The Experimental Production of Prehistoric Bar Iron, *Historical Metallurgy*, 25: 1-36.
- Nolan, J. 2006 'Excavation of a children's burial ground at Tonybaun, Ballina, County Mayo', in J O'Sullivan & M Stanley (eds), *Settlement, Industry and Ritual*, 89–101.
- Photos-Jones, E. 2008a 'Analysis of Metallurgical Waste from Rossan VI, SASAA 91', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne Floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Photos-Jones, E. 2008b 'Analysis of Metallurgical Waste from Kinnegad II, SASAA 93', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne Floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Photos-Jones, E. 2008c 'Slag Analysis for Johnstown 3, Appendix 2', in N Carlin, L Clarke & F Walsh, *The Archaeology of Life and Death in the Boyne floodplain: the linear landscape of the M4* (on CD-ROM). NRA Scheme Monographs 2. National Roads Authority, Dublin.
- Pleiner, R. 2000. *Iron in Archaeology: The European Bloomery Smelters*, Prague.
- Scott, B.G. 1990 *Early Irish Ironworking*. Ulster Museum Publication 266. Belfast.
- Tylecote R. 1986 *The Prehistory of Metallurgy in the British Isles*. London. The Institute of Metals.
- Wallace A & Anguilano L. 2010 Iron-smelting and smithing: new evidence emerging on Irish road schemes in *Creative Minds: production, manufacturing and invention in ancient Ireland*. Archaeology and the National roads Authority, Monograph Series No. 7, 69-84.
- Young T.P. 2003 Is the Irish iron-smelting bowl furnace a myth? A discussion of new evidence for Irish bloomery iron making. GeoArch Report 2003/09

Sample No.	Context No.	Identification	Weight (kg)	Description
1	0023	Tertiary fill of furnace C29	0.275	Small irregular nodules black grey drippy slags 5-50mm across.
2	0025	Fill of furnace C27	0.094	Very small rust coloured irregular shaped nodules from 5-30mm across, probable crushed roasted ore.
3	0049	Fill of linear dump C56	20	70 % medium to large cakes of drippy slag, ranging from 80-120mm across, some heavy dense pieces (1 pce c.2Kg, 4 roughly oval pces over 1Kg)) suggesting possible high iron content. 1 medium solid piece baked clay lining.
6	0048	Fill of rectangular pit C50	0.152	3 medium irregular lumps drippy type slag 100-130mm across, 5 small irregular pieces 30-80mm across, drippy morphology. 2 small bags sieving retent, 22g 1mm retent, 26g 0.25mm retent, 5% magnetic material, 10-20% small pieces slag, remaining material consists of naturally occurring particles.
8	0001	Topsoil	0.214	8 small irregular nodules of slag 25-45mm across, 4 have a distinctive drippy morphology and the other 4 are rounded non-diagnostic pieces. 2gram bag of sieving retent, 30% magnetic, remaining material consists of naturally occurring particles.
9	0001	Topsoil	0.206	2 medium irregular drippy pieces of slag 60-85mm across. 8g bag of sieving retent, 5% magnetic.
10	0062	Uppermost Fill of furnace c29	0.092	21 small fragments irregular nodules, mainly 5-25mm across, 2 pieces some drippy pieces and some pieces baked clay lining (5)
11	0063	Upper Fill of furnace c29 (below C62)	1.04	Bag of small irregular drippy pieces of slag 20-50mm, 2 pieces 70mm, all fragments have typical morphology of smelting slags.

Table 6: Catalogue of Metallurgical Residues

APPENDIX H: RADIOCARBON DATE

Lab Code	Sample description	Radiocarbon Age (BP)	Calibrated Date (68.2% / 1σ)	Calibrated Date (95.4% / 2σ)
SUERC-31025	Charcoal, <i>apple-type</i> (<i>pomoideae</i>) from furnace pit C29, basal fill C23 (Sample 1)	2120 ± 30	200–100 cal BC 200BC-100BC (68.2%)	350BC-320BC (4.7%) 210BC-40BC (90.7%)

Table 7: Table of Radiocarbon dates for Castleroan 3 (Excavation No. E3581).
 350–40 cal BC (SUERC-31025)



Scottish Universities Environmental Research Centre
Director: Professor A B MacKenzie Director of Research: Professor R M Eilam
Rankine Avenue, Scottish Enterprise Technology Park,
East Kilbride, Glasgow G75 0QF, Scotland, UK
Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

22 September 2010

<i>Laboratory Code</i>	SUERC-31025 (GU-22270)
Submitter	Anna Dunphy VJK Ltd. Post Excavation Facility Ballyhimmin Business Centre Kilkenny Road, Castlecomer Co. Kilkenny, Ireland
Site Reference	Castleroan 3
Context Reference	23
Sample Reference	1
Material	charcoal : Poimodeae charcoal
$\delta^{13}\text{C}$ relative to VPDB	-27.6 ‰
<i>Radiocarbon Age BP</i>	2120 \pm 30

- N.B.**
1. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
 2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
 3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-

Date :-

Checked and signed off by :-

Date :-

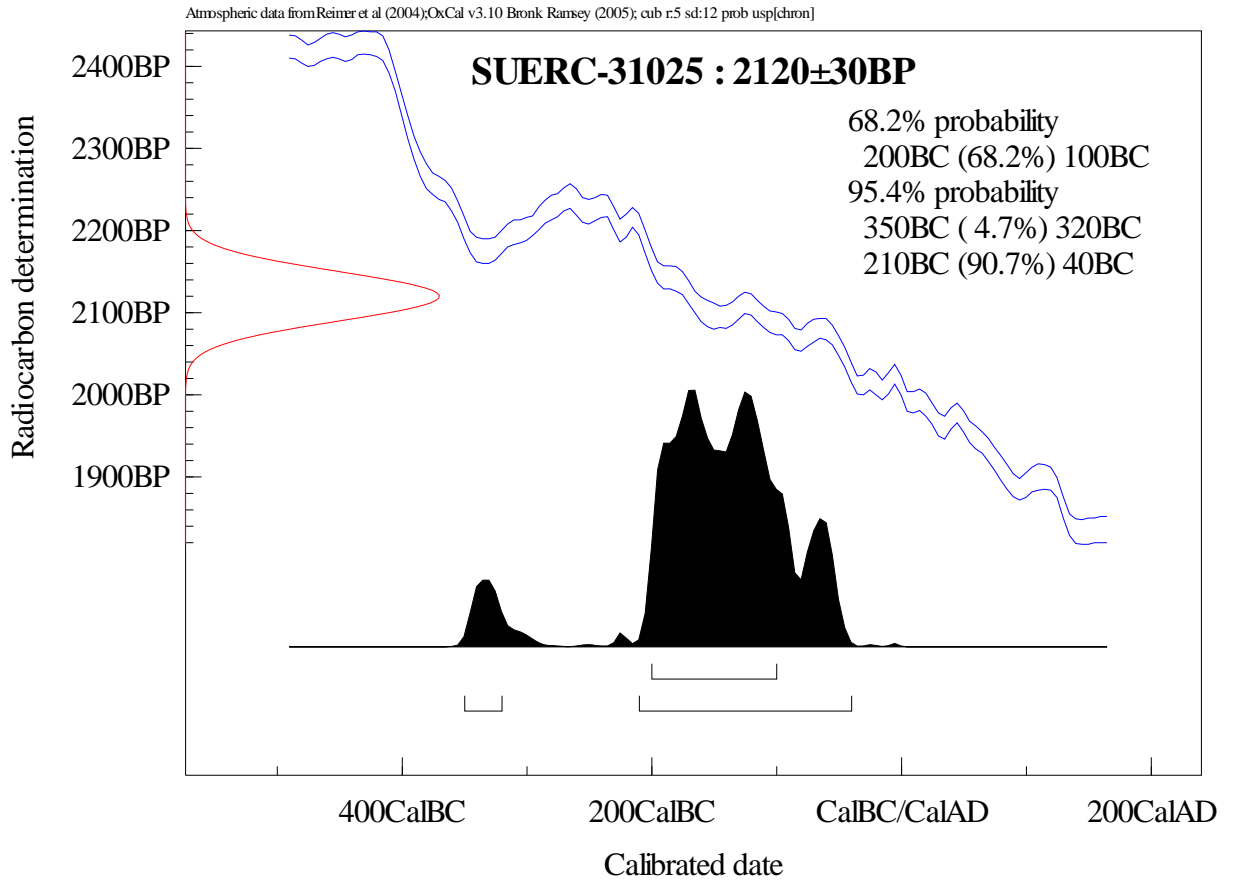


The University of Glasgow, charity number SC004401



The University of Edinburgh is a charitable body,
registered in Scotland, with registration number SC005336

Calibration Plot



PLATES



Plate 1: Aerial view of Castleroan 3, Area 1 & 2. Looking north-northwest (Photo: StudioLabs).



Plate 2: Detail of Castleroan 3, Area 1 & 2. Looking northwest (Photo: StudioLabs).

AREA 1



Plate 3: Area 1. Pre-excitation of iron-furnaces & postholes, Looking west.



Plate 4: Area 1. Pre-excitation of smelting furnace C29, Looking west.



Plate 5: Area 1. Section of Bowl Furnace (C23, C61, C62, C63 & C29). Looking west.



Plate 6: Area 1. Section of Bowl Furnace (C23, C61, C62, C63 & C29). Looking west.



Plate 7: Area 1 Pre excavation of Linear Dump (C49, C56), cut by furrows. Looking north.



Plate 8: Area 1. Section of linear-dump (C49, C56). Looking east.



Plate 9: Area 1. Post-excavation of linear-dump (C56). Looking west.

AREA 2



Plate 10: Area 2. Wall footing & drain (C21, C20, C19, C11 & C17). Looking southeast.



Plate 11: Area 2. Pre-excavation of pit (C11, C12). Looking north.



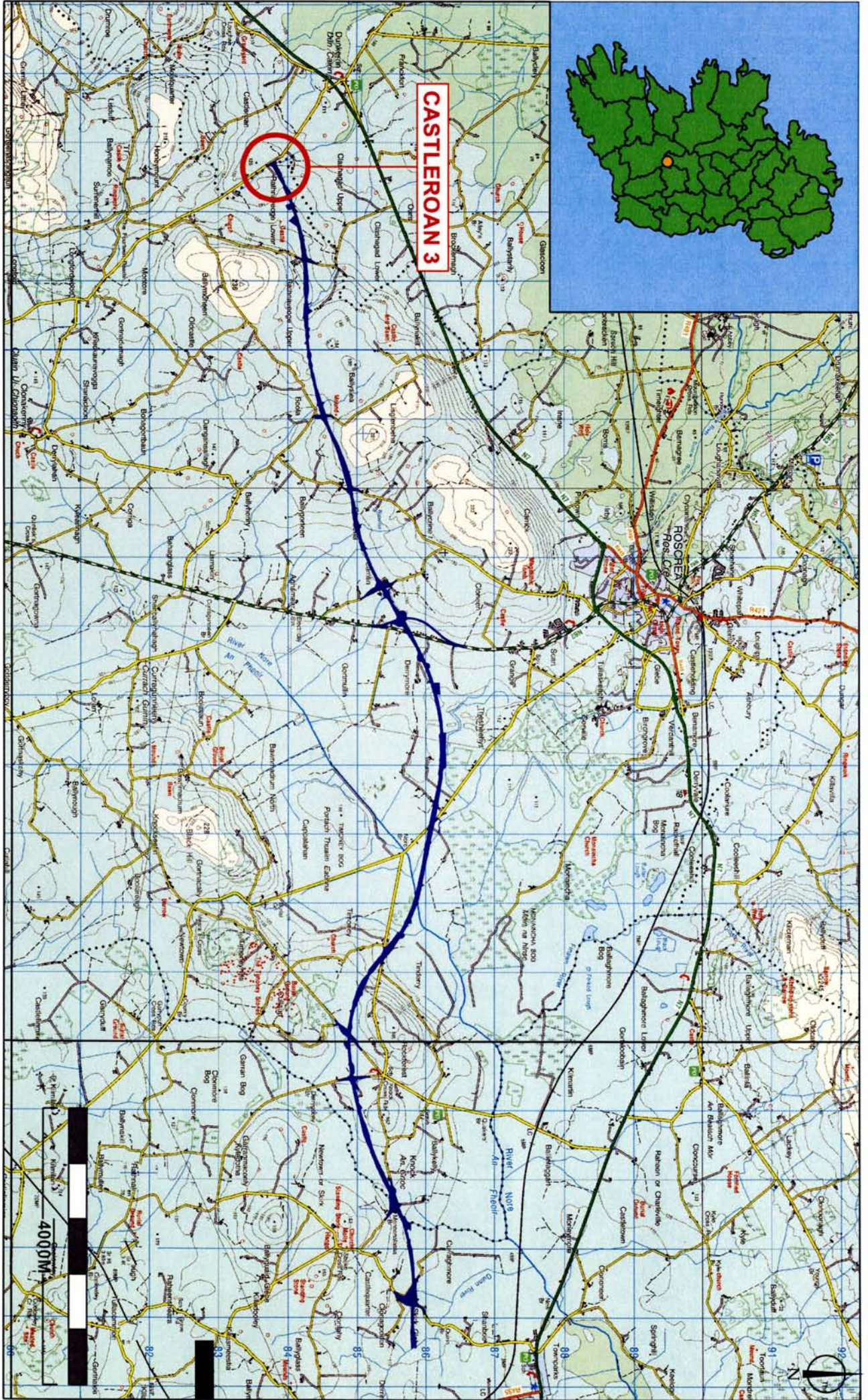
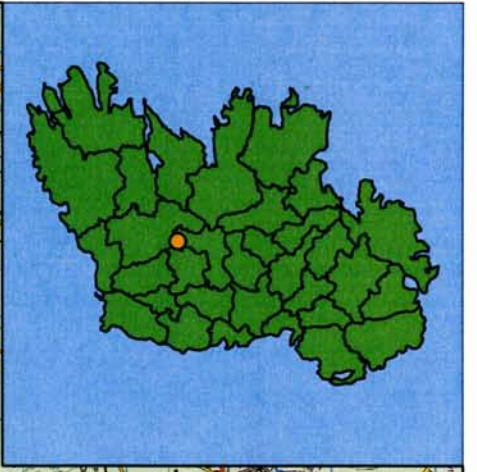
Plate 12: Area 2. Pre-excavation of hearth dump (C9, C10). Looking west.



Plate 13: Area 2. Section of ditch (C3, C14). Looking west.



Plate 14: Area 2. Pre-excavation of posthole (C7, C8). Looking west.



CASTLEROGAN 3

Title
Location of Castlerogan 3 on the N7
Castletown to Nenagh, Contract 2, shown on
the Discovery Series Mapping

Notes
Checked by: A. Dunphy
Approved by: E. Cotter

Job/Exc No.	E3581
Date	January 11
Compiled by	O. Ryan
Scale	1:75000
CAD reference	1310-06-300
Drawing No.	Figure 1

Client
Laois County Council

Project
N7 Castletown to Nenagh, Contract 2.

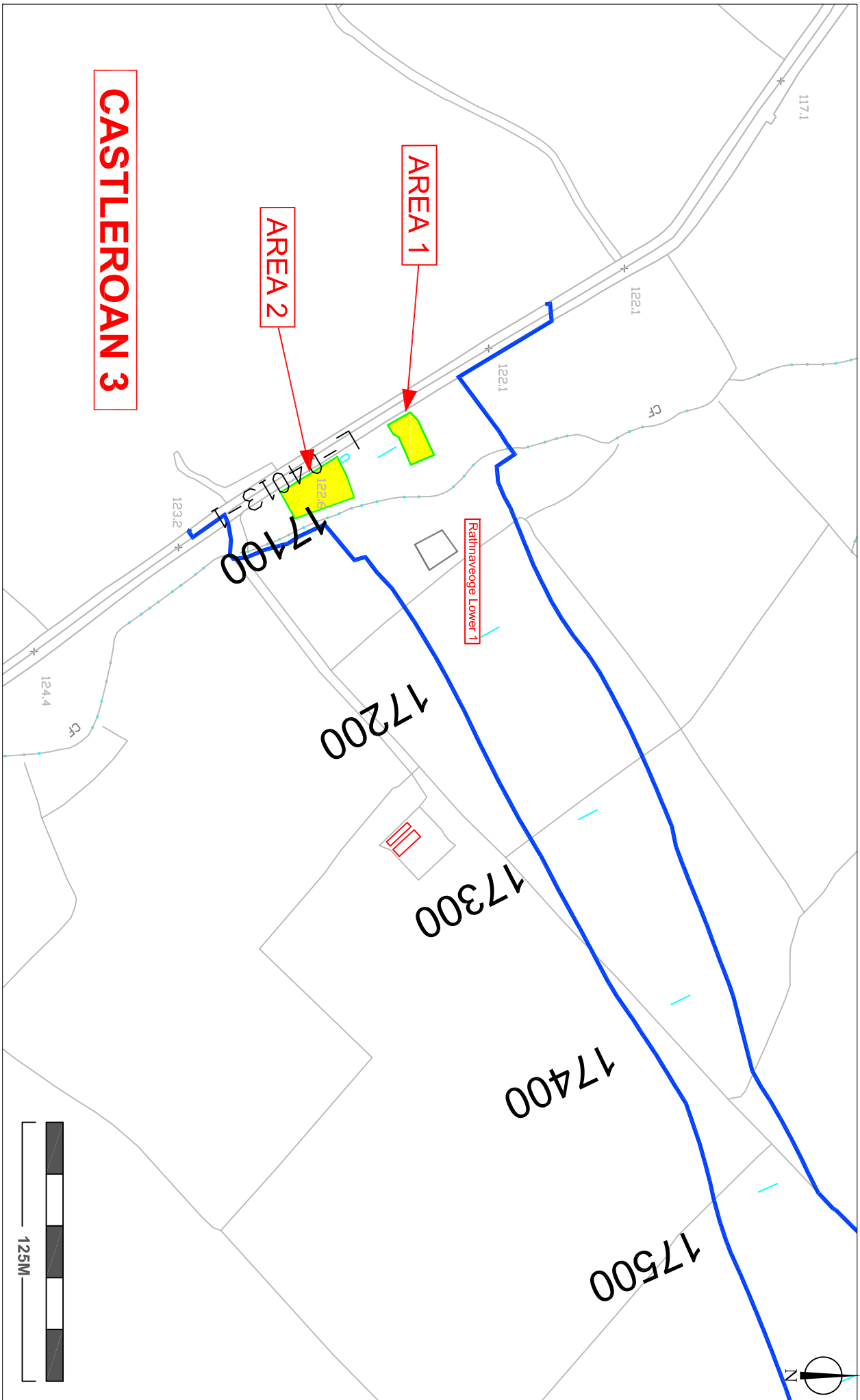


Waters & Kennedy Ltd
ARCHITECTURAL OPTICAL CONSULTANCY



Barlow House
Kilkeny Road
Castlemore
Co. Kilkenny.

Tel: (+353) 056 4440236
Fax: (+353) 056 4440237
Email: vk@wkl.ie
Website: www.wkl.ie

4000M



Title
 Location of Castleroan 3 on the N7
 Castletown to Nenagh, Contract 2,
 shown on OS Mapping

Notes
 Site Extents
 CPO

Job/Exc No.
 E3581
Date
 January 11

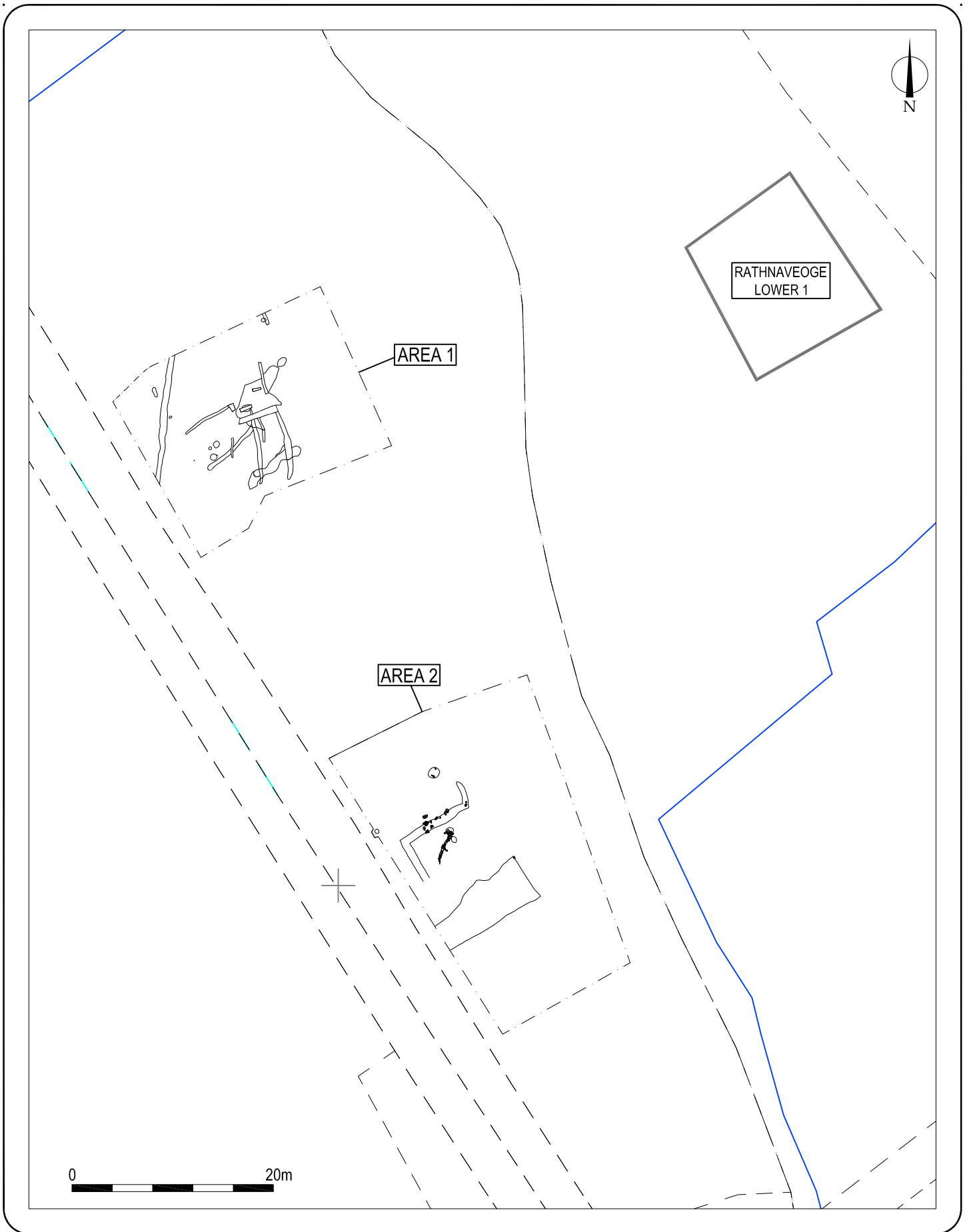
Compiled by
 O. Ryan
Scale
 1:2500


CAD reference
 1310-06-300
Drawing No.
 Figure 2

Client
 Laois County Council
Project
 N7 Castletown to Nenagh, Contract 2.

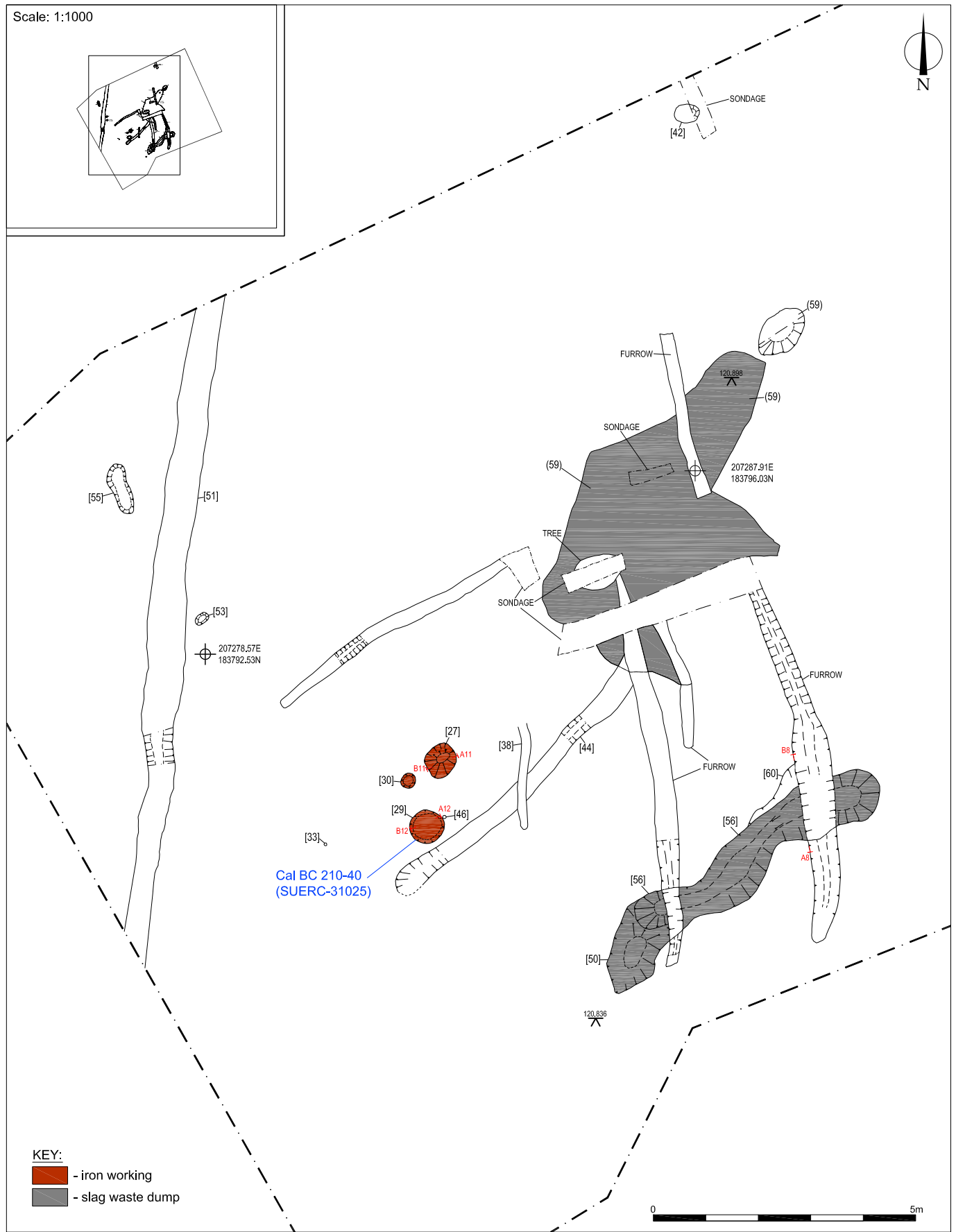
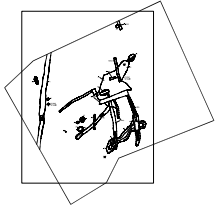


Barlton House
 Kilkenny Road
 Castletown
 Co. Kilkenny.
 Tel: (+353) 056 4440236
 Fax: (+353) 056 4440237
 Email: vjk@vjk.ie
 Website: www.vjk.ie



Title Castleroan 3. Close up showing Area 1 and Area 2.			Notes Checked by: A. Dunphy Approved by: E. Cotter			 Client Laois County Council	Brehon House Kilkenny Road Castlecomer Co. Kilkenny. Tel: (+353) 056 4440236 Fax: (+353) 056 4440237 Email: vjk@vjk.ie Website: www.vjk.ie
Job No. E3581	Drawn by L.Konopinski	CAD reference 1310-06-300	Date January 11	Scale 1:500	Drawing No. Figure 3		

Scale: 1:1000



Title
Post excavation plan of Castleroan 3. Area 1.

Job No.
E3581

Drawn by
L.Konopinski


CAD reference
1310-06-300

Notes
Checked by: A. Dunphy
Approved by: E. Cotter

Date
January 11

Scale
1:100

Drawing No.
Figure 4

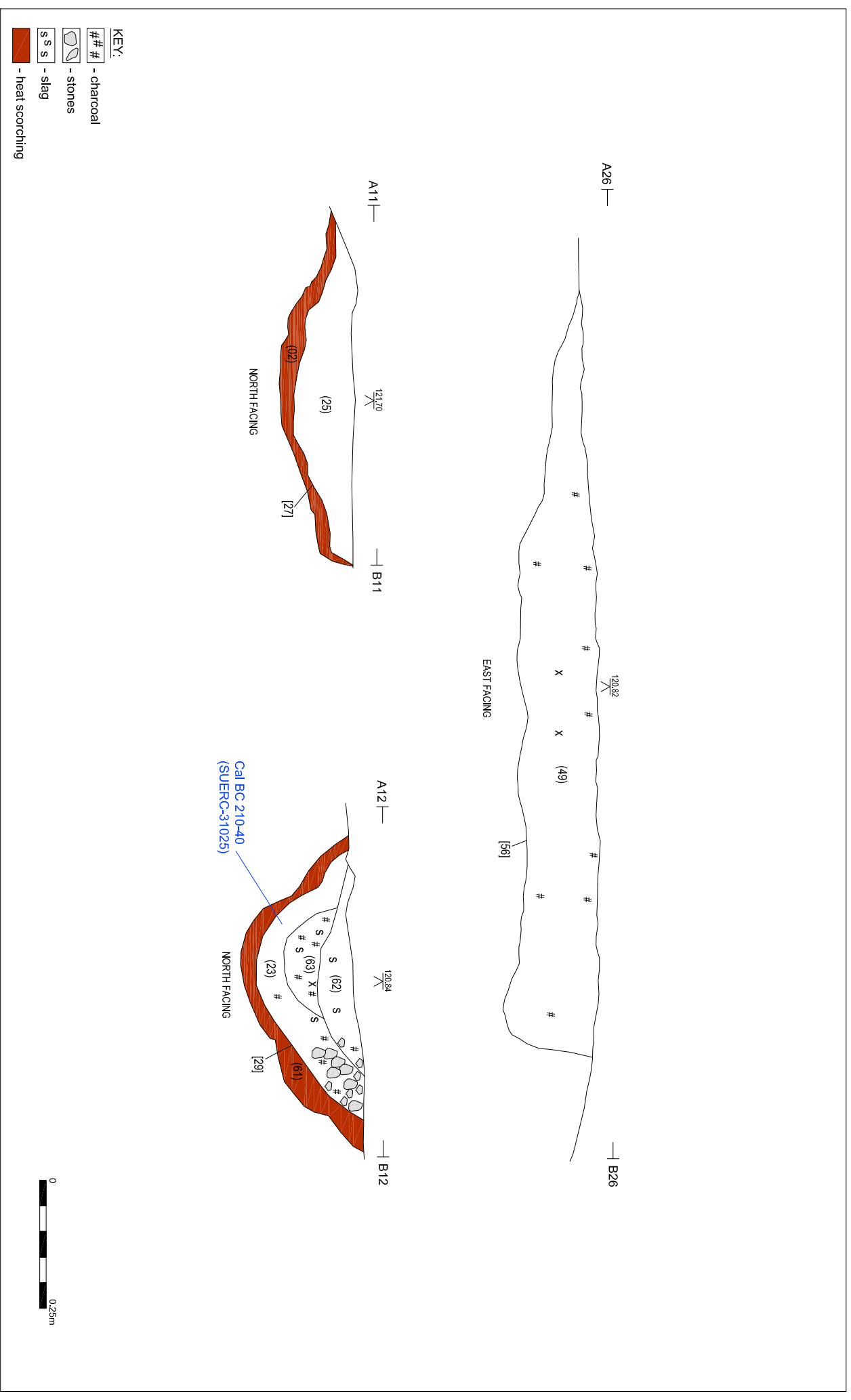


Client
Laois County Council


Project
N7 Castletown to Nenagh. Contract 2.

Brehon House
Kilkenny Road
Castlecomer
Co. Kilkenny.

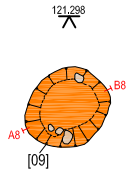
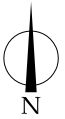
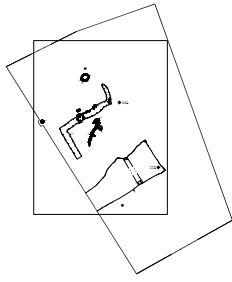
Tel: (+353) 056 4440236
Fax: (+353) 056 4440237
Email: vjk@vjk.ie
Website: www.vjk.ie



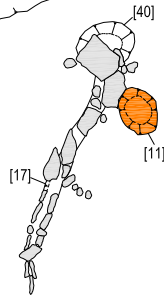
KEY:
 ## - charcoal
 S - stones
 SS - slag
 [red hatched] - heat scorching

Title Sections of iron-working feature [56], [29] & [27] from Area 1.	Notes Checked by: A. Dunphy Approved by: E. Cotter	Works/Exc No. E3581	Completed by L. Konopinski	CAD reference 1310-06-300	Client Laois County Council		Brabon House Kilkenny Road Castlesomer Co. Kilkenny.	Tel: (+353) 056 4440236 Fax: (+353) 056 4440237 Email: yjk@yjk.ie Website: www.yjk.ie
		Date January 11	Scale 1:10	Drawing No. Figure 5	Project N7 Castletown to Nenagh, Contract 2.			

Scale: 1:1000



207309.18E
183754.62N





[19]

207314.33E
183746.04N

[14]

121549

KEY:

-  - stones
-  - possible hearths

0 5m

Title
Post-excavation plan of Castleroan 3. Area 2.

Notes
Checked by: A. Dunphy
Approved by: E. Cotter



Brehon House
Kilkenny Road
Castlecómer
Co. Kilkenny.

Tel: (+353) 056 4440236
Fax: (+353) 056 4440237
Email: vjk@vjk.ie
Website: www.vjk.ie

Client
Laois County Council

Job No.
E3581

Drawn by
L.Konopinski

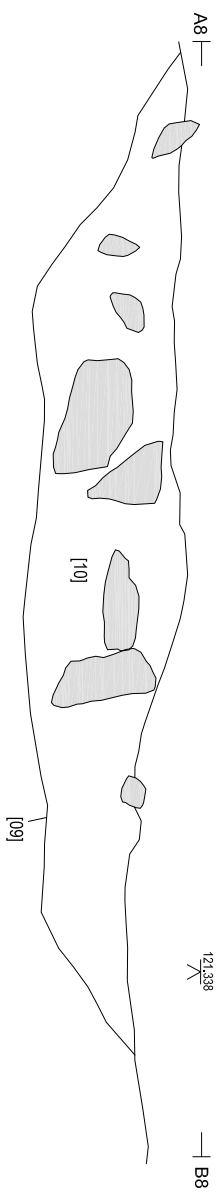
CAD reference
1310-06-300

Date
January 11


Scale
1:100

Drawing No.
Figure 6


Project
N7 Castletown to Nenagh, Contract 2.



SOUTH FACING SECTION

KEY:
 - stones



Title South facing section of hearth [09], [10], Area 2.	Notes Checked by: A. Dunphy Approved by: E. Cotter	
	Works/Exc No. E3581	Completed by L.Konopinski
Date January 11	Scale 1:10	CAD reference 1310-06-300
		Drawing No. Figure 7
	Client Laois County Council	Project N7 Castle town to Nenagh, Contract 2.
		Barton House Kilkenny Road Castlesomer Co. Kilkenny.
		Tel: (+353) 056 4440236 Fax: (+353) 056 4440237 Email: vjk@vjk.ie Website: www.vjk.ie

NRA DATABASE CONTENTS SHEET

Database entry	Comment
Excavation number	Ministerial Direction: A028/000 Registration No.: E3581
Townland	Castleroan
Site name	Castleroan 3
County	Offaly
Project reference	N7 Derrinsallagh to Ballintotty (Contract 2)
Year of excavation	2007
Grid reference (Easting)	207289 E
Grid reference (Northing)	183778N
OD Height (m)	120 m
Landscape setting	Pasture land, adjacent to small stream
Project Archaeologist	Niall Roycroft
Site Director	Tori McMorran
Archaeological consultancy	Valerie J Keeley Ltd
Identification technique	Test Trenching (VJK 2007)
Site type	Iron working
Site activity	Smelting & ore roasting
Dating period	Iron Age
Radiocarbon dates	Cal. BC 210–40 SUERC-31025
Dendro-chronological dates	N/A
Descriptions	Excavation produced evidence of early Iron Age, iron-smelting and ore-roasting. This included a possible clay, low-shaft furnaces, measured 0.67 m in length (north-south), 0.57 m in width, and 0.24m in depth, radiocarbon dated to 350–40 cal BC. Plus two ore-roasting pits and several deposits and spreads of waste material. A total of 22.15 kg of metallurgical residues was recovered, exclusively from features in Area 1 (analysed by A Wallace).
Artefacts	Chert arrow-head and chunk, vitrified clay
Environmental evidence	<i>Pomoideae</i> Apple-type charcoal, no seeds
Additional information	None
Publication	Excavations Bulletin 2007.

NRA DATABASE CONTENTS SHEET

Database entry	Comment
Excavation number	Ministerial Direction: A028/000 Registration No.: E3581
Townland	Castleroan
Site name	Castleroan 3
County	Offaly
Project reference	N7 Derrinsallagh to Ballintotty (Contract 2)
Year of excavation	2007
Grid reference (Easting)	207289 E
Grid reference (Northing)	183778 N
OD Height (m)	121 m
Landscape setting	Pasture land, adjacent to small stream/ road
Project Archaeologist	Niall Roycroft
Site Director	Tori McMorran
Archaeological consultancy	Valerie J Keeley Ltd
Identification technique	Test Trenching (VJK 2007)
Site type	House
Site activity	Domestic
Dating period	Undated – possible post-medieval
Radiocarbon dates	N/A
Dendro-chronological dates	N/A
Descriptions	Area 2 comprised the poorly-preserved remains of a post-medieval building, not present on the 1 st or 2 nd edition OS mapping. Archaeological remains included a possible post-medieval house with an internal drain, and several possibly un-associated pits/ post-holes. The structure was truncated to the southeast, and was probably rectangular in form, measuring up to 12m in length by c. 9m in width, aligned northwest-southeast and alongside but set 3m-back from the present road course. The dwelling was probably clay and stone-built, with lime mortared finish. The northwestern floor plan of the structure contained a truncated stone-lined drain, orientated north-south that possibly continued beyond the building. The interior also contained had two features, one a possible hearth pit situated at the northern end of the drain.
Artefacts	None
Environmental evidence	None
Additional information	None
Publication	Excavations Bulletin 2007.