N9/N10 KILCULLEN TO WATERFORD SCHEME, PHASE 4 – KNOCKTOPHER TO POWERSTOWN

Ministerial Direction Scheme Reference No.	A032
Registration No.	E3894
Site Name	AR107, Blanchvillespark 1
Townland	Blanchvillespark
County	Kilkenny
Excavation Director	Richard Jennings
NGR	260535 155212
Chainage	47680

FINAL REPORT

ON BEHALF OF KILKENNY COUNTY COUNCIL

MARCH 2011

Irish Archaeological Consultancy

PROJECT DETAILS

Project	N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown
Ministerial Direction Reference No.	A032
Excavation Registration Number	E3894
Excavation Director	Richard Jennings
Senior Archaeologist	Tim Coughlan
Consultant	Irish Archaeological Consultancy Ltd, 120b Greenpark Road, Bray, Co. Wicklow
Client	Kilkenny County Council
Site Name	AR107, Blanchvillespark 1
Site Type	Prehistoric: dispersed pits
Townland(s)	Blanchvillespark
Parish	Gowran
County	Kilkenny
NGR (easting)	260535
NGR (northing)	155212
Chainage	47680
Height OD (m)	78
RMP No.	N/A
Excavation Dates	2–6 May 2007
Project Duration	20 March 2007–18 April 2008
Report Type	Final
Report Date	March 2011
Report By	Richard Jennings and Tim Coughlan
Report Reference	Jennings, R. and Coughlan, T. 2011 E3894 Blanchvillespark 1 Final Report. Unpublished Final Report. National Monuments Service, Department of the Environment, Heritage and Local Government, Dublin.

ACKNOWLEDGEMENTS

This final report has been prepared by Irish Archaeological Consultancy Ltd in compliance with the directions issued to Kilkenny County Council by the Minister for Environment, Heritage and Local Government under Section 14A (2) of the National Monuments Acts 1930–2004 and the terms of the Contract between Kilkenny County Council and Irish Archaeological Consultancy Ltd.

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ABSTRACT

Irish Archaeological Consultancy Ltd (IAC), funded by the National Roads Authority (NRA) through Kilkenny County Council, undertook an excavation at the site of AR107, Blanchvillespark 1 along the proposed N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown (Figure 1). The following report describes the results of archaeological excavation at that site. The area was fully excavated by Richard Jennings under Ministerial Direction A032 and Excavation Registration Number E3894 issued by the DOEHLG in consultation with the National Museum of Ireland for IAC. The fieldwork took place between the 2 and 6 May 2007.

The site represented the possible remains of a small prehistoric campsite. A fire pit/hearth with an upper deposit of ash, charcoal and burnt bone and a lower deposit of oxidised sandy silts and heated stones was located in the centre of site. Three pits and posthole appear to form the outline of a possible structure while three rubbish pits are located to the north-east of this. The lithic finds from the archaeological excavation at Blanchvillespark 1 are a bipolar flint flake and four pieces of flint debitage. The assemblage is technologically diagnostic and dates to the Neolithic period. It represents a waste which is possibly related to domestic activities.

A small sample (0.1g) of charred hazelnut was sent for AMS radiocarbon dating and returned a 2 sigma calibrated date of 3660–3380BC, placing it in the middle Neolithic.

The site is of importance at a local level as it represents the first archaeological evidence in the immediate vicinity. Other sites to the north-east represent burnt mound activity and similar activity is located to the south-west in addition to a small Iron Age settlement and metalworking activity. This is the first evidence of Neolithic domestic settlement in the immediate area, albeit transient and temporary.

CONTENTS

List of Figures

List of Plates

1 INTRODUCTION

1.1 General

This report presents the results of the archaeological excavation of Blanchvillespark 1, AR107 (Figure 1), in the townland of Blanchvillespark undertaken by Richard Jennings of IAC, on behalf of Kilkenny County Council and the NRA, in accordance with the Code of Practice between the NRA and the Minister for Arts, Heritage, Gaeltacht and the Islands. It was carried out as part of the archaeological mitigation programme of the N9/N10 Kilcullen to Waterford Road Scheme, Phase 4, which extends between Knocktopher in Co. Kilkenny to Powerstown in Co. Carlow. The excavation was undertaken to offset the adverse impact of road construction on known and potential subsoil archaeological remains in order to preserve the site by record.

The site measured 625m^2 and was first identified during testing carried out in 2007 by Gill McLoughlin (E3363) for IAC Ltd. on behalf of the National Roads Authority. Blanchvillespark 1 was excavated between 2 and 6 May 2007 by a team of one director, one supervisor and eight assistant archaeologists.

1.2 The Development

For the purposes of construction, the N9/N10 Kilcullen to Waterford Road Scheme has been divided into separate sections, known as Phases 1–4. Phase 2 of the scheme extends from the tie-in to the Waterford City Bypass at Dunkitt, to Knocktopher in Co. Kilkenny (Ch. 2+000–Ch. 25+400). Phase 4 continues from Knocktopher to Powerstown in Co. Carlow (Ch. 25+400–Ch. 76+000) and includes the Kilkenny Link Road.

The roadway of the entire scheme includes approximately 64km of mainline high quality dual carriageway and 6.2km of the Kilkenny Link Road, which will connect the road development to the Kilkenny Ring Road Extension. The road development requires the realignment and modification of existing national, regional and local roads where the mainline intersects them. It requires the acquisition of 305 hectares of land for its construction. A further link road will connect the scheme to Paulstown in County Kilkenny, while six new grade separated junctions and three roundabouts are part of the road development.

1.3 Archaeological Requirements

The archaeological requirements for the N9/N10 Kilcullen to Waterford Road Scheme, Phase 4: Knocktopher to Powerstown, are outlined in the Archaeological Directions issued to Kilkenny County Council by the Minister for Environment, Heritage and Local Government under Section 14A (2) of the National Monuments Acts 1930–2004 and in the terms of the contract between Kilkenny County Council and Irish Archaeological Consultancy Ltd. These instructions form the basis of all archaeological works undertaken for this development. The archaeological excavation works under this contract are located between the townlands of Knocktopher, Co. Kilkenny, and Powerstown, Co. Carlow.

The proposed N9/N10 was subjected to an Environmental Impact Assessment, the archaeology and cultural history section of which was carried out by Valerie J. Keeley Ltd and published in February 2005. The Record of Monuments and Places, the Site Monument Record, Topographical files, aerial photography, the Kilkenny and Carlow County Archaeological Urban Survey, and literary sources were all consulted. Two phases of geophysical survey were also conducted by Target (post-EIS geophysics carried out by ArchaeoPhysica) and an aerial survey was carried out by Margaret Gowen & Co. Ltd. As a result of the paper survey, field inspections and geophysical

survey, 35 sites were recorded in proximity to this section of the overall route alignment.

A previous archaeological assessment of Phase 2 of the scheme (test trenching conducted by Margaret Gowen & Co. Ltd. in 2006) extended into the lands acquired for Phase 4 to a point at Ch. 37+100 in the townland of Rathclogh, Co. Kilkenny. Thirty-four archaeological sites were identified within this area between Knocktopher and Rathclogh and subsequently excavated by Irish Archaeological Consultancy Ltd. as part of this archaeological contract.

Advance archaeological testing of the area between Rathclogh (Ch. 37+100) and Powerstown (Ch. 76+000) was completed by IAC during March–May 2007 and excavation of the sites identified during this process was also conducted by IAC between August 2007 and April 2008.

1.4 Methodology

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

All archaeological features were fully excavated by hand and recorded on *pro forma* record sheets using a single context recording system best suited to rural environment, with multi context plans and sections being recorded at a scale of 1:50, 1:20 or 1:10 as appropriate.

A complete photographic record was maintained throughout the excavation. Digital photographs were taken of all features and of work in progress.

An environmental strategy was devised at the beginning of the excavation based on IAC in-house post-excavation and site methodologies and guidelines. Features exhibiting large amounts of carbonised material were the primary targets.

All artefacts uncovered on site were dealt with in accordance with the guidelines as issued by the NMI and where warranted in consultation with the relevant specialists. All archive is currently stored in IAC's facility in Lismore, Co Waterford and will ultimately be deposited with the National Museum of Ireland.

All dating of samples from the site was carried out by means of AMS (Accelerator Mass Spectrometry) Radiocarbon Dating of identified and recommended charred plant remains samples. All calibrated radiocarbon dates in this report are quoted to two Sigma.

All excavation and post excavation works were carried out in accordance with the relevant approvals and in consultation and agreement with the National Roads Authority (NRA) Project Archaeologist, the National Monuments Section of the DoEHLG and the National Museum of Ireland. Where necessary licences to alter and export archaeological objects were sought from the National Museum of Ireland.

References to other sites excavated as part of the N9/N10 Phase 4: Knocktopher to Powerstown are referenced throughout this report only by their site name e.g.

Paulstown 1. A list of these sites and details including director's name and National Monuments Excavation Reference Number can be referenced in Appendix 4.

Final Report Date Ranges

The following date ranges for Irish prehistory and medieval periods are used for all final reports for the N9/N10 Phase 4: Knocktopher to Powerstown excavations.

Mesolithic: 7000–4000BC
Neolithic: 4000–2500BC
Early Bronze Age: 2500–1700BC
Middle Bronze Age: 1700–1200BC
Late Bronze Age: 1200–800BC
Iron Age: 800BC–AD500
Early medieval period: AD500–1100
Medieval period: AD1100–1600
Post-medieval: AD1600–1800

Source:
Carlin, N., Clarke, L. & Walsh, F. 2008 *The M4 Kinnegad-Enfield-Kilcock Motorway: The Archaeology of Life and Death on the Boyne Floodplain*. NRA Monograph Series No. 2, Wordwell, Bray.

2 EXCAVATION RESULTS

Blanchvillespark 1, AR107 (Figure 4), was located in open landscape on the western slopes of a knoll. From the site it was possible to see the prehistoric site of Freestone Hill to the north-west (Plate 1), the Blackstairs Mountains and Mount Leinster to the east and even Mount Slievenamon far off in the distance to the south. The site contained evidence of a possible prehistoric temporary campsite. An enclosure (KK020-043) is located *c*. 900m to the south-east and a church and graveyard (KK020-025) located *c*. 750m north of Blanchvillespark 1.

2.1 PHASE 1 Natural Drift Geology

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C2	N/A				Mid brown/yellow boulder clay	Subsoil

The subsoil comprised a brown-yellow, boulder clay.

2.2 PHASE 2 Prehistoric Activity

The features consisted of a possible hearth, three rubbish pits and a series of elongated pits that possibly formed a temporary shelter or windbreak for the fire (Figure 4; Plate 2).

2.2.1 Possible hearth C3

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C3	N/A	0.77	0.66	0.15	Concave sides, fairly flat base	Cut of hearth
C4	C3	0.55	0.36	0.04	Light grey/dark brown/black silty clay	Fill of hearth
C21	C3	0.90	0.64	0.14	Mid brownish/red sandy silt	Fill of hearth

Finds: None

Pit/Cut C3 contained the possible remains of a hearth (Figures 5–6; Plate 3). It was located towards the centre of the site and comprised oxidised sandy silt (C21) on the base which was sealed by an ashy layer with charcoal and burnt bone (C4) (Figure 6). It is debatable whether the burnt material was *in situ* because the oxidised sediment was relatively thick (0.14m) and appeared to represent a fill as there was no indication of the underlying subsoil being scorched or reddened.

Charcoal was retrieved from hearth fill C4 during post-excavation soil flotation. This was subsequently identified to species. Oak charcoal (*Quercus* sp.) was the only species identified (O' Donnell, Appendix 2.2). The oak present may either be Ireland's native pedunculate (*Quercus robur*), which prefers wet, heavier clays, or the sessile oak (*Quercus petraea*). The low level of charcoal retrieved from this hearth may indicate that it was cleared out after the final use (*ibid*).

A total of 83 burnt bone fragments were recovered from the hearth fill C4, from these a total of 79 (95.2%) were not possible to identify to species due to minute fragment size and poor preservation of the bone (McCarthy, Appendix 2.4). The remaining 4 fragments (4.8%) were identified as pig (*sus*) species (*Ibid.*).

2.2.2 Rubbish Pits C5, C9 and C19

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C5	N/A	0.70	0.70	0.30	Almost vertical sides. Uneven base	Cut of pit
C6	C5	0.70	0.70	0.12	Mid – dark yellowish brown	Fill of pit
C9	N/A	0.70	0.58	0.33	Almost vertical sides. Almost flat	Cut of pit
C10	C9	0.75	0.75	0.32	Greyish/brown sandy silt	Fill of pit
C13	C19	0.43	0.35	0.14	Dark grey sandy silt	Fill of pit
C14	C5	0.45	0.39	0.17	Dark brown/black clay	Fill of pit

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C19	N/A	0.82	0.44	0.35	Almost vertical sides. Concave base	Cut of pit
C20	C19	0.66	0.40	0.15	Mid brownish/grey sandy silt	Fill of pit
C22	C9	0.47	0.40	0.20	Dark brown/black sandy silt	Fill of pit

Finds

Context	Find Number	Material	Period	Description
C14	E3894B:014: 1.1 – 1.2	Flint	Neolithic	Debitage
C20	E3894B:020:1	Flint	Neolithic	Flake

Three possible rubbish pits were identified on the site (Figure 5):

Pit C5 was located 0.80m west of C3. It was the most central and circular shaped of all the features and contained the most charcoal-rich fill (C14). It represented a probable rubbish pit containing the remains of organic material and was sealed by C6, a mid-yellowish-brown fill.

Oval pit C9 was located 1.6m north of C3 and contained a sterile sandy silt fill that sealed a lower fill of dark-brown/black sandy silt with moderate amounts of charcoal.

Sub-oval pit C19 was located 5m north-east of the other features on the site. The greyish hue of its two deposits (C13 and C20) might have been ash from the remains of a hearth. One piece of flint debitage was found within its fill.

Two pieces of flint debitage were retrieved from pit fill C14 and a flint flake was retrieved from pit fill C20. The flake was produced on a bi-polar core and displayed traces of use-wear on its right edge (Sternke, Appendix 2.1). The presence of debitage suggests that knapping and/or tool re-sharpening took place at the site. The assemblage is technologically diagnostic and dates to the Neolithic period (*ibid*).

Charcoal was retrieved from rubbish pit fills C14 and C22 during post-excavation soil flotation. This was subsequently identified to species. Fragments of oak charcoal (*Quercus* sp.) and hazel charcoal (*Corylus avellana*) were identified from both while C14 also contained ash charcoal (*Fraxinus* sp.), alder charcoal (*Alnus* sp.), blackthorn charcoal (*Prunus spinosa*) and wild/bird cherry charcoal (*Prunus avium/padus* sp.) (O' Donnell, Appendix 2.2). The variety of wood discovered in the rubbish pits points to the availability of a variety of trees nearby – canopy trees such as oak and ash as well as scrub trees such as hazel, cherry and blackthorn (*ibid*).

Plant remains analysis was also carried out on rubbish pit fill C22. It was found to contain fragments of hazelnut shells (*Corylus avellana* L.) which are regularly found in Irish archaeological deposits. The hazel tree was highly valued in the past because the nuts were valuable for food and because the tree was suitable for coppicing and therefore for timber and stakes (Geraghty 1996, 43). The nut shell fragments collected from archaeological sites usually represent waste. The shell fragments were cast aside after the nut kernel was consumed (Monk 2000, 75) (Johnson, Appendix 2.3).

A small fragment (0.1g) of charred hazelnut was chosen for AMS dating and returned a result of 4805±40 (SUERC 30111). The 2 Sigma calibrated result for this was 3660–3380BC (SUERC, Appendix 2.5) dating this feature to the middle Neolithic.

2.2.3 Possible Structure

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C7	N/A	0.73	0.38	0.18	Almost vertical sides. Flat base	Cut of pit/slot trench
C8	C7	0.73	0.38	0.18	Mid brown silty clay with abundant stones	Fill of pit
C11	N/A	0.26	0.17	0.09	Steep sides. U – shaped base	Cut of posthole
C12	C11	0.26	0.17	0.09	Mid brown sandy silt	Fill of posthole
C15	N/A	0.48	0.22	0.23	Almost vertical sides. U –shaped base	Cut of pit
C16	C15	0.48	0.22	0.23	Mid brown sandy silt	Fill of pit
C17	N/A	0.70	0.46	0.12	Sharp sides. Irregular base	Cut of pit
C18	C17	0.70	0.46	0.12	Mid yellowish/brown sandy silt	Fill of pit

Finds

Context	Find Number	Material	Period	Description
C16	E3894B:016:1.1–1.2	Flint	Neolithic	Debitage

Three heavily elongated oval pits (C7, C15 and C17; Figure 5; Plates 4–6) formed a triangular shape and potentially supported posts of a temporary shelter such as a lean-to or windbreak (Figure 4). An associated posthole, C11, may have provided an additional central support between C7 and C15 on the south-west side. The dimensions of the structure as it would have existed have been estimated as measuring 4m by 3.2m. It would have given a westerly shelter to possible hearth C3 which was located 0.80m east of the proposed structure.

As the features did not contain the same fill type it was thought that they were not related. The fill of C7 was the most distinct, as it contained a large quantity of stones, none of which could be definitively classified as stone packing. In contrast, the fills of C15 and C17 were brown sandy silts with considerably fewer stones.

Two pieces of debitage were retrieved from pit fill C16. As with the debitage from pit fill C14 (above), its presence suggests that knapping and/or tool re-sharpening took place at the site. The assemblage has been dated diagnostically to the Neolithic period (Sternke, Appendix 2.1).

Charcoal was retrieved from pit fills C8 and C16 during post-excavation soil flotation. This was subsequently identified to species. Fragments of oak charcoal (*Quercus* sp.) and alder charcoal (*Alnus* sp.) were identified from both while pit fill C16 also contained fragments of hazel charcoal (*Corylus avellana*) and ash charcoal (*Fraxinus* sp.) (O' Donnell, Appendix 2.2). These pits are thought to be part of a possible triangular shaped windbreak. In both cases the samples are dominated by oak, indicating that they represent the remains of oak posts burnt *in situ* (*ibid*).

2.3 PHASE 3 Topsoil and Plough soil

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C1	N/A			0.3	Mid yellowish/brown clayey silt	Topsoil

Finds: None

The topsoil was mid-yellowish-brown in colour with a clayey silt texture.

3 SYNTHESIS

The synthesis presents the combined results of all of the archaeological analysis carried out at Blanchesvillespark 1. This includes the analysis of the physical and archaeological landscape, the compilation of information gathered during research into the site type, date, and function, and the results of the excavation and specialist analysis of samples taken during the course of on-site works.

3.1 Landscape Setting – compiled by Michelle Brick

3.1.1 The General Landscape

The topography of the region through which the route passes is generally flat with an average height of 70m O.D. The southern periphery of the route is bordered by Kilmacoliver (261m) and Carricktriss Gorse (314m), with Slevenamon (721m) further west. The Slieveardagh hills (340m) are visible on the western horizon in the south of the route and with the exception of Knockadrina Hill (140m), the enclosed landscape is made up of minor undulations. In the centre of the route Freestone Hill (130m) and Knocknagappoge (334m) further north are the significant uplands. A number of hills and mountains are visible in the distance to the east and west of this area of the landscape but the topography remains generally flat. To the north the Castlecomer Plateau influences a rise in the overall topography of the region. This expanse of terrain stretches along the north-east margins of Kilkenny, crosses the county border into Carlow and stretches northwards into Laois. This plateau consists of a variety of hills and peaks including Mountnugent Upper (334m), Baunreagh (310m), Knockbaun (296m), Brennan's Hill (326m) and Fossy Mountain (330m). These hills contain seams of anthracite coal as a result of millions of years of compression, and consequently Shales and Sandstones were formed which are evident throughout the plateau. Mining in the region began in the 17th century, continued for over 300 years and it is for what Castlecomer is best known. According to the Environmental Protection Agency soil maps of Ireland, the underlying bedrock of the entire region primarily consists of Carboniferous Limestone. However there is also a small amount of surface bedrock, sands, gravels, shales and sandstone Tills present along the route. The soil cover of the region is primarily composed of Grey Brown Podzolics, Renzinas and Lithosols. Additional soil types also present along the route include Brown Earths, surface Water Gleys and Ground Water Gleys.

The prevailing water courses within the landscape of the N9/N10 Phase 4 are the Rivers Nore and Barrow. The River Nore rises on the east slopes of the Devil's Bit in Co. Tipperary and flows eastwards through Borris-in-Ossory and then south through Co. Kilkenny, passing through the towns of Durrow (Laois), Ballyragget, Kilkenny, Bennettsbridge and Thomastown to join the River Barrow upstream of New Ross, Co. Wexford. It is 140 kilometres long and drains a total catchment of 1572 square kilometers and runs through the central and southern sections of the route. In the south of the route three main tributaries of the River Nore are evident. The Kings River flows east through Callan and Kells. It is joined by the River Glory which meanders on a north-south axis towards the western margins of the route landscape and the Little Arrigle River flows along the southern fringes. These rivers are flanked by low-lying valleys that are characterised by wet, marshy land. The condition of the soil improves further north beyond the King's River where the influence of these waterways declines. In the northern area of the route the River Dinin is a tributary of the River Nore flowing south-west from Brennan's Hill through the Castlecomer Plateau. The Plateau is the tableland that is the watershed between the Rivers Nore and Barrow (Lyng 1984). The River Barrow is the second longest river (193 kilometres) in Ireland after the River Shannon. It rises in the Slieve Bloom Mountains in Co Laois and flows east across bogs and lowlands and then turns south into the

lowland immediately east of the Castlecomer Plateau. It passes through Portarlington, Athy, Carlow, and Graiguenamanagh and runs through northern section of the route. It is joined by the River Nore at New Ross. The Maudlin River is the notable tributary of the River Barrow within the landscape of the route and flows east from Old Leighlin, with minor tributaries of it flowing through Banagagole. There are also streams and minor watercourses present throughout the entire landscape and these waterways would have been a valuable resource to past communities and would also have had a major influence on settlement and the surrounding land use.

The physical landscape through which the N9/N10 Phase 4 passes can be divided into three principal areas defined by the main rivers and their catchments. The southern area is located in the undulating landscape on the western flanks of the Nore Valley. The central area is dominated by the fertile watershed between the Barrow and Nore systems in the hinterland of Kilkenny City. The northern area is located on the western flanks of the Barrow Valley overlooked by uplands to the north and west. Blanchvillespark 1 is located in the northern landscape area.

3.1.2 The Northern Landscape

The northern landscape of the N9/N10 crosses the border from Kilkenny into Carlow and traverses the western side of the River Barrow; the Blackstairs Mountains, which are of granite formation, are located to the east of the Barrow. It includes 50 sites discovered during the Phase 4 excavations stretching from Rathcash 1 northwards to Tomard Lower 1. This northern landscape is overlooked to the west by the Castlecomer Plateau, and the excavated sites are all situated on contours of 50–100m OD. From the south-west of the Barrow, and encroaching into the northern landscape, the underlying limestone is dolomitized and consequently the permeability has been increased. The glacial drift comprises slightly sandy (20–60%) slightly gravely clays with a moisture content of 10–20%. There is therefore significantly less sand but higher moisture content than in the southern and central landscapes. This moisture occurs in the wetter deposits in the top 1–2m before ground level in localised areas with silty sand and gravel lenses indicating a high water table. To the east of the River Barrow, localised silty, laminated clays and peat occur. Soft ground was noted in the river's floodplain. The area is also classified as a minor aquifer in the Kilkenny Groundwater Protection Scheme (Buckley & Fitzsimmons, 2002) due to these thick sand and gravel deposits. Progressing northwards, the views become more expansive, and the rising high ground of the Castlecomer Plateau (50–300m OD) bounds the distant landscape. This plateau consists of a variety of hills and peaks, which contain seams of anthracite, the focus of coal mining in the region from the 17th century. The Blackstairs Mountains (735m) are visible on the horizon to the south-east, and most obvious of these is the peak of Mount Leinster (795m). There are impressive views from these plateaus and hills especially to the south, east and west over the Barrow and Nore Valleys.

The prevailing watercourse of this region is the River Barrow which travels north–south through the landscape. The Maudlin River is a tributary of the River Barrow and flows from the west through Old Leighlin; minor tributaries of this river flow through Bannagagole, directly north of Moanmore, and the River Dinin is a tributary of the River Nore which travels south-west from Brennan's Hill through the Castlecomer Plateau. The suffix 'comer' signifies a meeting of the rivers; it also signifies any deep gripe, such, for instance, as the channel formed by a mountain stream (Carrigan 1905). From the hinterland of Kilkenny and the confluence of the Nore and Barrow the Monefelim River contributes to the occurrence of wet grassland and broadleaf woodland. The narrow tributaries of the River Barrow, including the Monefelim River, as well as the Maudlin River, flow from the higher, steep, escarpment located to the west. Subsoils in this area consist of undifferentiated alluvium and soils of mineral

alluvium. The route crosses into County Carlow where at Moanmore (meaning 'great bog') a variety of archaeological features have been recorded. At the most northerly point of the N9/N10 the land is again characterised by its views; here they include the Barrow Valley, Mount Leinster, Brandon Hill, and the Blackstairs Mountains.

3.1.3 Site Specific Landscape

Blanchvillespark 1, AR107 (Figure 4), was located in open landscape on the western slopes of a knoll. From the site it was possible to see the prehistoric site of Freestone Hill to the north-west (Plate 1), the Blackstairs Mountains and Mount Leinster to the east and even Mount Slievenamon far off in the distance to the south. The site contained evidence of a possible prehistoric temporary campsite. Rathcash East 3 was located *c.* 1.2km to the south-west and Blanchvillespark 3 was located *c.* 620m to the north–east. A church (KK020-025001) and graveyard (KK020-025002) was located *c.* 750m to the north.

3.2 The Archaeological Landscape– compiled by Michelle Brick

As part of the general research relating to sites along the scheme and the specific research relating to Blanchvillespark 1, the known archaeology within the surrounding landscape was assessed in order to establish the level and type of activity in the surrounding area in the past. This included a review of information from the Record of Monuments and Places, previous excavations and other relevant documentary sources including mapping and other sites excavated as part of the N9/N10 Phase 4 scheme. The excavated archaeology at Blanchvillespark 1 has been identified as being Neolithic in date.

3.2.1 General Neolithic Landscape of the Scheme

The Neolithic period in Ireland is generally understood to have occurred between 4000BC–2500BC. Archaeological evidence directly associated with settlement during this period had – prior to the upsurge in development-led excavations – been rather sparse in Kilkenny and Carlow as the soils in these areas may have been too heavy for Neolithic farming technology (Grogan 2004). However, recent excavations on the Waterford to Sheepstown portion of the N9/N10 Kilcullen to Waterford Road Scheme in south Kilkenny, as well as the rectangular houses discovered on the Kilcullen to Powerstown portion of the same road scheme in Co. Carlow, have added further insight into the Neolithic settlement of the region. Prior to the N9/N10 excavations archaeological activity in the Kilkenny/Carlow region was predominantly represented by a limited number of burials or tombs, most of which are Neolithic in date, such as the middle Neolithic megalithic tombs at the eponymous site of Linkardstown and at Baunogenasraid, Co. Carlow and Jerpoint West, Co. Kilkenny (Raftery, 1944; Raftery, 1972; 1974; Ryan 1974).

The Northern Neolithic Landscape

The most notable features of the Neolithic within the northern landscape are the funerary monuments on the Castlecomer Plateau and in the Carlow region. There are only a few examples of these structures in north Kilkenny which may be of Neolithic date. These include the megalithic structures at Ballyspellan (KK008-136) and Swiftsheath (KK010-114) and further to the north-west is the passage tomb of Clonmantagh (KK008-12400) and the portal tomb of Borrismore (KK012-062). There are also two megalithic structures located in Ballynaslee (KK004-005001, KK004-005002) close to the Kilkenny–Carlow border. These two structures are close to Russelltown, situated directly east across the county border in Carlow where recent archaeological excavations yielded a rectangular Neolithic structure (Dunne 2007; Logan 2007). An additional Neolithic structure was also discovered close-by in Busherstown (Dunne 2007, 67) and both structures have been associated with domestic activity dating to the early–middle Neolithic. It is of particular interest that

these sites are situated close to Brown's Hill in the townland of Kernanstown, the location of a portal tomb (CW007-010) which also dates to this period. Additional potential Neolithic activity can be found throughout Co. Carlow. Three megalithic structures are located to the east and north-east of the county in Donore (CW016-075), Knockmore (CW022-007) and Clonygoose (CW022-007). There are also some portal tombs in this area, specifically Ballygraney (CW019-090), Ballynasilloge (CW022-010001) and Kilgraney (CW019-041). A further portal tomb occurs at Haroldstown (CW009-008) and a cluster of three megalithic structures are located in Kernanstown (CW007-010, CW007-011, CW007-012), one of which is the abovementioned portal tomb at Brown's Hill. A middle Neolithic Linkardstown tomb occurs to the north-east in Baunogenasraid (CW012-017) and this cist is surrounded by a megalithic structure (Raftery 1972). The Linkardstown tombs at Linkardstown itself and Baunogenasraid indicate continuation of activity in to the middle and later Neolithic. Further evidence to the east in County Wicklow, from a possible occupation site at Rathgall (Raftery 1976; Roche forthcoming) associated with broad-rimmed bowls and the related but later burial at Rath (Prendergast 1959; Brindley and Lanting 1989/90), are part of the extensive, if dispersed, settlement pattern within the Barrow, Suir and Slaney catchments. An element of continuity in the region is further indicated by the discovery of sherds from middle Neolithic bowls at Moanduff 2, Garryduff 1 and Paulstown 2.

Neolithic evidence was identified at four sites in the northern landscape of the N9/N10 Phase 4, again mainly in the form of artefacts. Three of the sites were located close to the Kilkenny/Carlow border. Middle Neolithic pottery, representing both globular and broad rimmed bowls, came from domestic activity at Paulstown 2. A large multi-period settlement was excavated at Moanduff 2, where evidence of middle and final Neolithic settlement was also discovered. Early Neolithic domestic activity is represented by a significant lithic assemblage that includes arrowheads, convex end scrapers, platform cores, blades and flakes. Three pits and several other dispersed features were assigned to the middle Neolithic period and produced a globular bowl pottery sherd and three flint hollow scrapers. Final Neolithic/ early Bronze Age Beaker pottery came from domestic activity and amongst the lithic material were distinctive Beaker scrapers. As this structure does not conform to the early Neolithic settlement morphology, it is more likely to date to the later Neolithic periods, or perhaps the Bronze Age. Residual Neolithic material in the form of three flint scrapers also came from Coolnakisha 1. Further evidence of the late Neolithic/Beaker period in the northern landscape came from Paulstown 2 in the form of beaker pottery. Smaller quantities also came from Garryduff 1, Blanchvillespark/Ballyquirk 1, Kilmacahill 2, Shankill 5 and Moanduff 2. At Paulstown 2 the Beaker pottery may have been associated with three post circles. These appear to be free-standing posts forming small ceremonial enclosures with internal rectangular settings of four upright posts. However, it is possible that the Paulstown 2 posts represent the truncated foundations of small circular houses.

Conclusion

The broad regional pattern in the Neolithic in all three of the Phases 4 landscapes indicates two core areas of settlement. In the north-east there is a concentration of activity along the upper Barrow Valley extending from the Goresbridge area northwards along the Barrow and the valley of the Burren River. This continued to be an important area into the middle and late Neolithic and the activity at Ballynolan 1 is on the southern edge of this landscape. To the south-west, on the upland fringes between the Nore and Suir Valleys, a second settlement concentration may reflect route-ways along the lower Nore/Barrow and Suir extending southwards towards the coast at Waterford. The central areas within the current scheme, consisting of lower lying terrain, appear not to have been attractive in this early period possibly a

reflection of the heavier, and perhaps more thickly afforested, soils. Expansion into this landscape is, however, indicated by the Grooved Ware and Beaker contexts at Templemartin 5, Paulstown 2 and Danesfort and this heralds more intensive settlement in the Bronze Age.

3.2.2 The Site Specific Archaeological Landscape of Blanchvillespark 1

There are no previously recorded monuments in close proximity to Blanchvillespark 1. The nearest monuments are a Church and Graveyard (KK020-025) 750m to the north and an enclosure site (KK020-043) 900m to the south-east.

A number of sites were excavated in the wider area as part of the N9/N10 Phase 4: Knocktopher to Powerstown. Approximately 1km to the south-west Iron Age metalworking pits were identified at Rathcash East 3, with evidence for a Bronze Age burnt mound further to the west at Rathcash East 2. To the north-east of the site a fragmentary burnt spread was identified at Blanchvillespark 2, 250m away. This site was not excavated due to continual flooding; however the remains as identified during testing were minimal and suggest that any more substantive burnt mound deposit exists outside the limits of the N9/N10. A further 250m to the north-east was Blanchvillespark 3. This site consisted of a series of scattered pits associated with burnt mound material. In one area the activity was more pronounced with evidence of a possible structure associated with a large trough. This site may have functioned as a sweat house. It returned three radiocarbon dates, all in the middle Bronze Age.

3.3 Typological Background of Temporary Prehistoric Structures

The rise in development lead archaeological excavations in recent years has resulted in the identification of many smaller and ephemeral features which now make up a substantial portion of the archaeological record in addition to the larger, well documented site types. This is also true on the N9/N10 Phase 4: Knocktopher to Powerstown where a number of sites have been interpreted as Temporary Structures. These structures generally present as small slot trenches, alignments of small numbers of postholes, clusters of stakeholes or combinations of all three elements. There are usually not enough definitive elements such as formal entrances and roof supports to identify a specific building type - as with Neolithic or Bronze Age houses. Temporary structures are more likely to represent transient settlement and would probably have been in use for a very short time as there is often no evidence of domestic habitation in the form of artefacts or waste material. Along the N9/N10 these structures have been dated to the Neolithic and Bronze Age periods. To date no definitive study has been carried out to assimilate the results from the many excavations across the country over the past 2 decades so there is no detailed research into variances between periods and typology.

3.4 Summary of the Excavation Results

The site represented the possible remains of a small prehistoric campsite. A fire pit/hearth with an upper deposit of ash, charcoal and burnt bone and a lower deposit of oxidised sandy silts and heated stones was located in the centre of site. Three pits and posthole appear to form the outline of a possible structure while three rubbish pits are located to the north-east of this. A small quantity of flint was recovered from the site.

3.5 Summary of the Specialist Analysis

A number of specialists provided analysis of samples and artefacts recovered from the site as part of the post-excavation works. This work in part formed the basis for the dating evidence for the site. The detailed reports on the results of all analysis are in Appendix 2

Lithics analysis

The lithic finds from the archaeological excavation at Blanchvillespark 1 are a bipolar flint flake and four pieces of flint debitage. The assemblage is technologically diagnostic and dates to the Neolithic period. It represents a waste which is possibly related to domestic activities. This site makes a minor contribution to the evidence for prehistoric settlement and land use in Co. Kilkenny.

Charcoal and Wood Species identification

The charcoal results are dominated by oak, indicating that some oak woodlands were located in the nearby area. There is some evidence of scrub/shrub trees also from Blanchvillespark 1, in the form of hazel, cherry and blackthorn. A wetland element is indicated by the identification of alder, which needs a constant source of water to grow. The windbreak was probably made from oak posts, while a variety of trees were identified from the rubbish pits. The low level of charcoal from the hearth is unusual, and indicates it may have been cleared out after use

Analysis of Plant Remains

A total of four samples were examined, but only one of these contained seeds. C.22 (S.12), contained fragments of hazelnut shells (Table 1). These are ubiquitous finds in Irish archaeological deposits. The hazel tree was highly valued in the past because the nuts were valuable for food and because the tree was suitable for coppicing and therefore for timber and stakes (Geraghty 1996, 43). The nut shell fragments collected from archaeological sites usually represent waste. The shell fragments were cast aside after the nut kernel was consumed (Monk 2000, 75).

Animal Bone Analysis

Eighty three burnt bone fragments recovered from a single archaeological context C4 on Blanchvillespark 1 were submitted for examination. From these a total of 79 (95.2%) were not possible to identify to species due to minute fragment size and poor preservation of the bone. The remaining 4 fragments (4.8%) were identified and divided into species. The faunal remains assemblage contained bones from a single recognisable species of pig/*sus*. All 83 bone fragments including identified and indeterminate species displayed evidence of exposure to heat.

Radiocarbon Dating

A single sample was sent for AMS radiocarbon dating.

A small fragment (0.1g) of charred hazelnut was chosen for AMS dating and returned a 2 Sigma calibrated result for this was 3660–3380BC (SUERC 30111).

4 DISCUSSION AND CONCLUSIONS

4.1 Discussion

The site has produced evidence of a possible temporary shelter and associated pits and a hearth. The site was located on slightly higher ground that was surrounded in the wider area by lower lying marginal land that in many cases was prone to flooding. In this regard the site was ideally located as a temporary camp/settlement site.

There are no previously recorded monuments in the immediate vicinity of the site so in this regard the identification of the site was unexpected. Blanchvillespark 1 has been interpreted as a temporary structure/shelter. It is likely that this represents a transient activity on site and is not related to a longer term settlement. This is evident in the nature of the remains which are not substantial enough to be considered as a formal Neolithic house. The three postholes may have held posts which could have formed a tripod with the resulting structural frame resembling a tee-pee. This could then have been covered by skins/hides or scrub effectively acting as a windbreak. This structure may also have been similar to a bivouac - a shelter constructed of natural materials like a structure of branches to form frame may be utilized, which is then covered with leaves, ferns and similar for waterproofing and duff (also known as *leaflitter*) for insulation (Wikipedia). Until comparative examples are researched this interpretation must be considered speculative.

A possible hearth, C3, was located, yet the depth of its oxidised soil raised the possibility that it was hearth waste in a secondary context (Figures 5–6). Perhaps the feature was somewhat truncated or the fire was particularly intense and penetrated deep into the subsoil. Pits C5 and C9 were considered rubbish pits because of their organic content, the discovery of flint debitage, and the fact that they were sealed by an upper deposit. C9 contained two ashy deposits possibly from a hearth.

While there were no significant recorded monuments identified in the immediate area it should be noted that this prehistoric campsite was on raised ground that was overlooked by the major prehistoric landmark of Freestone Hill located to the north-west.

4.2 Conclusions

The site is of importance at a local level as it represents the first archaeological evidence in the immediate vicinity. Other sites to the north-east represent burnt mound activity and similar activity is located to the south-west in addition to small Iron Age settlement and metalworking activity. This is the first evidence of Neolithic domestic settlement in the area, albeit transient and temporary.

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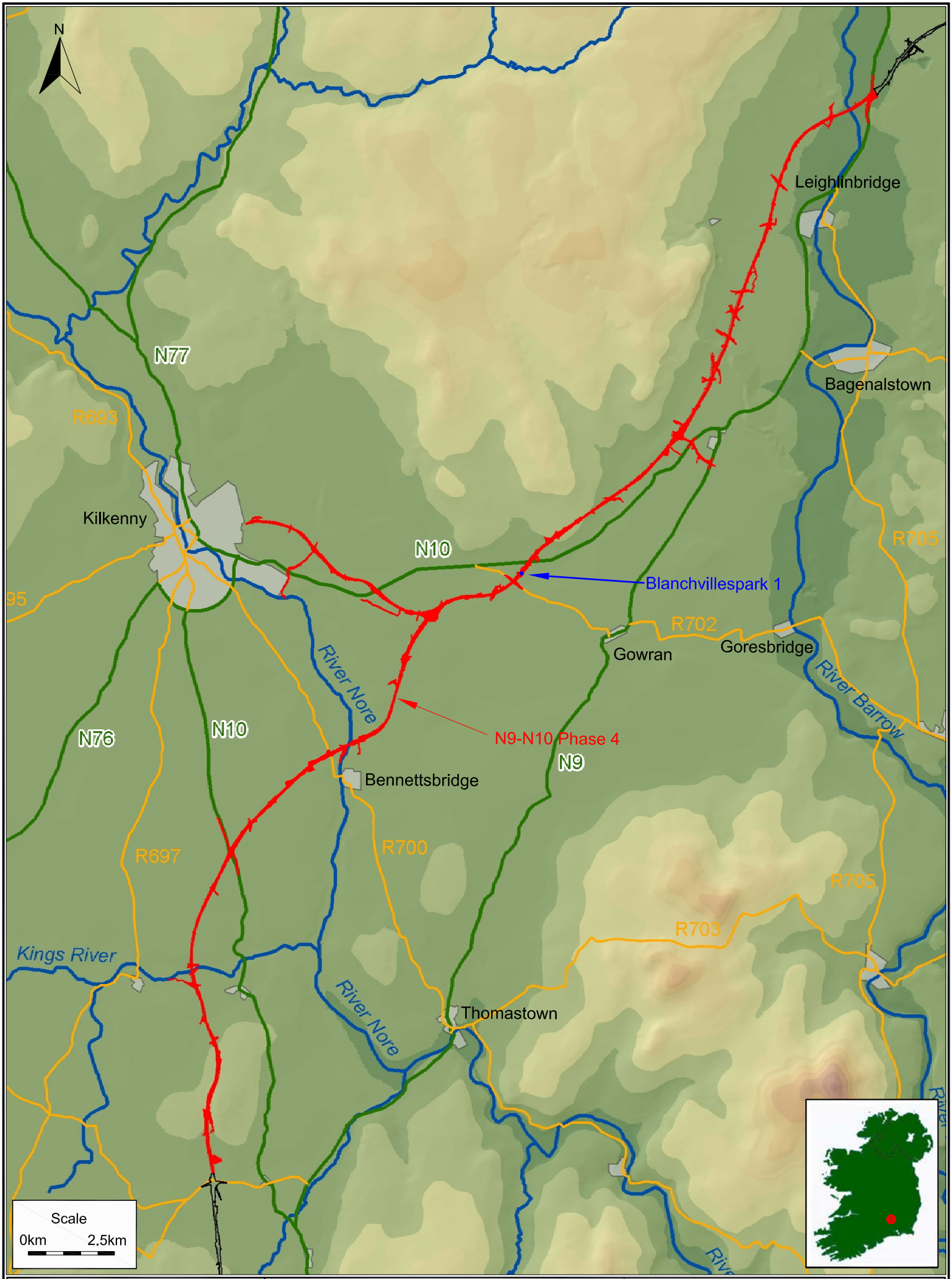

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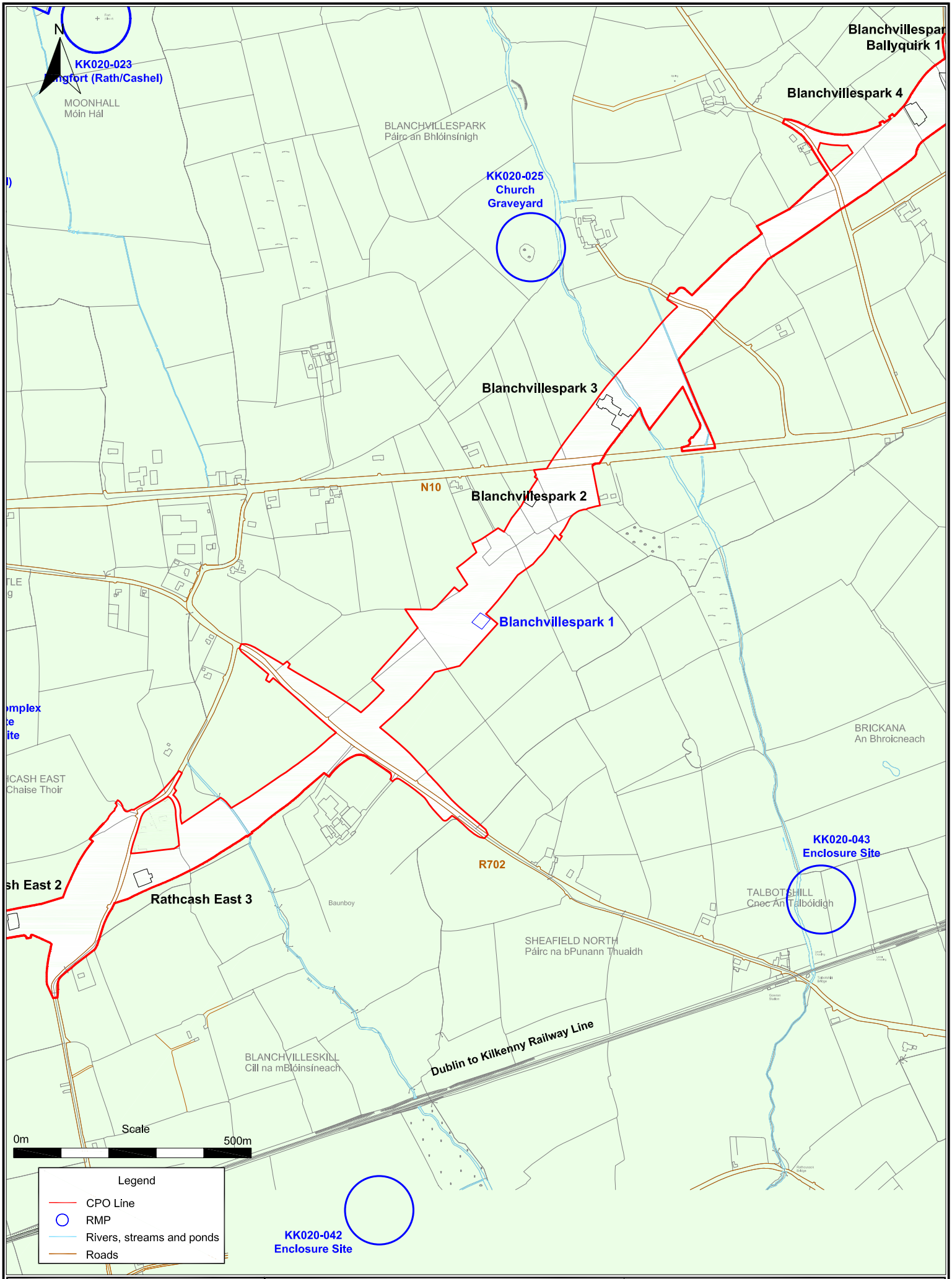
			Job No: J2432
			Figure No: 1



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Client:	Kilkenny County Council

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Date:	17/05/10
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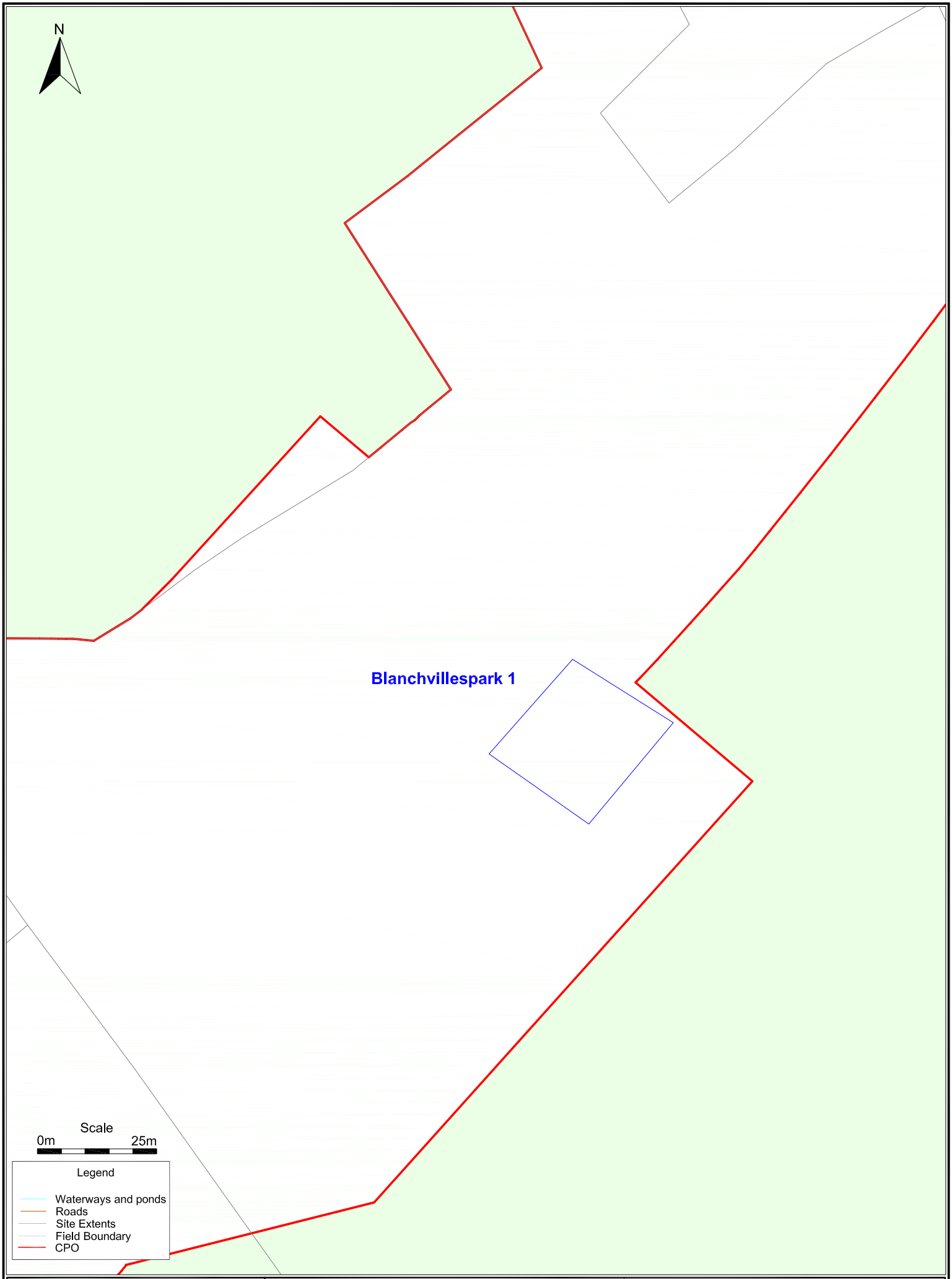
Job No:	J2432
Figure No:	2



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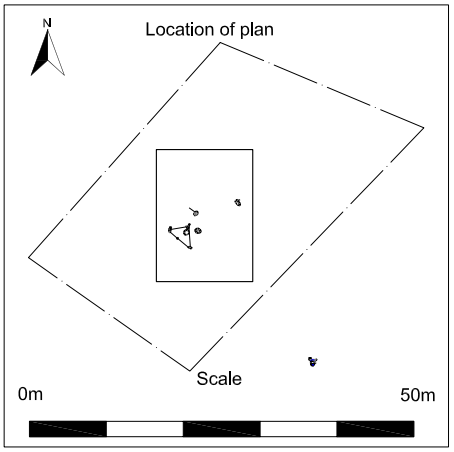

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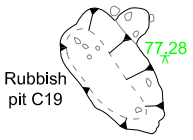

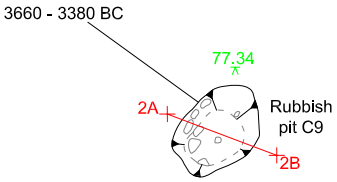

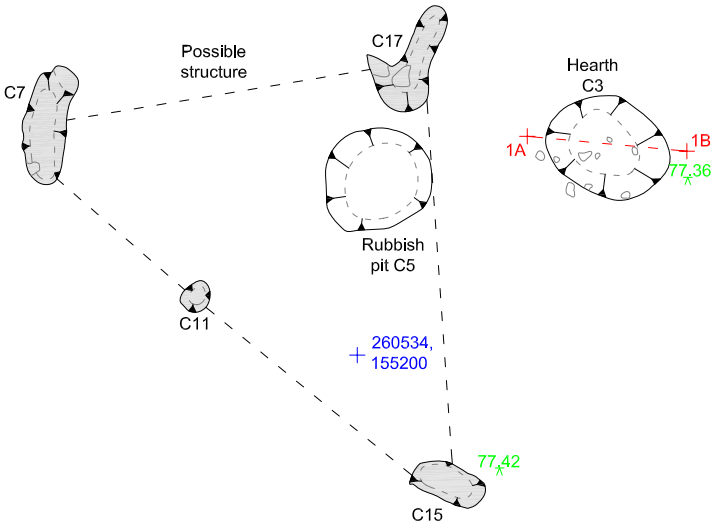

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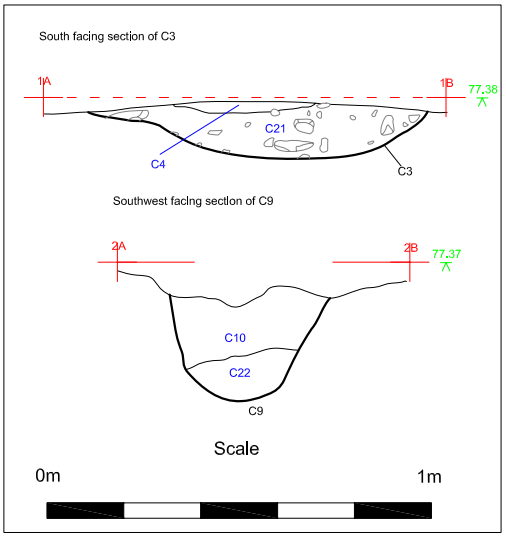

Scale
0m
2.5m

Legend

– –	Break of slope
– –	Sections
Cxx	Cut numbers
XXXXXXE XXXXXXN	National Grid Reference
	Stone
XX.XX	Levels - metres OD

IAC Irish Archaeological Consultancy

Title:	Blanchvillespark 1 - plan of site
Project:	N9/N10 Phase 4: Knocktopher to Powerstown
Client:	Kilkenny County Council

Scale:	1:50 @ A4
Date:	17/05/10
Produced by:	G Kearney
Job No:	J2432.1
Figure No:	4

PLATES

Plate 1: Blanchvillespark 1 (Freestone Hill in background), pre-excavation, facing north-west

Plate 2: Blanchvillespark 1, post-excavation, facing south-east

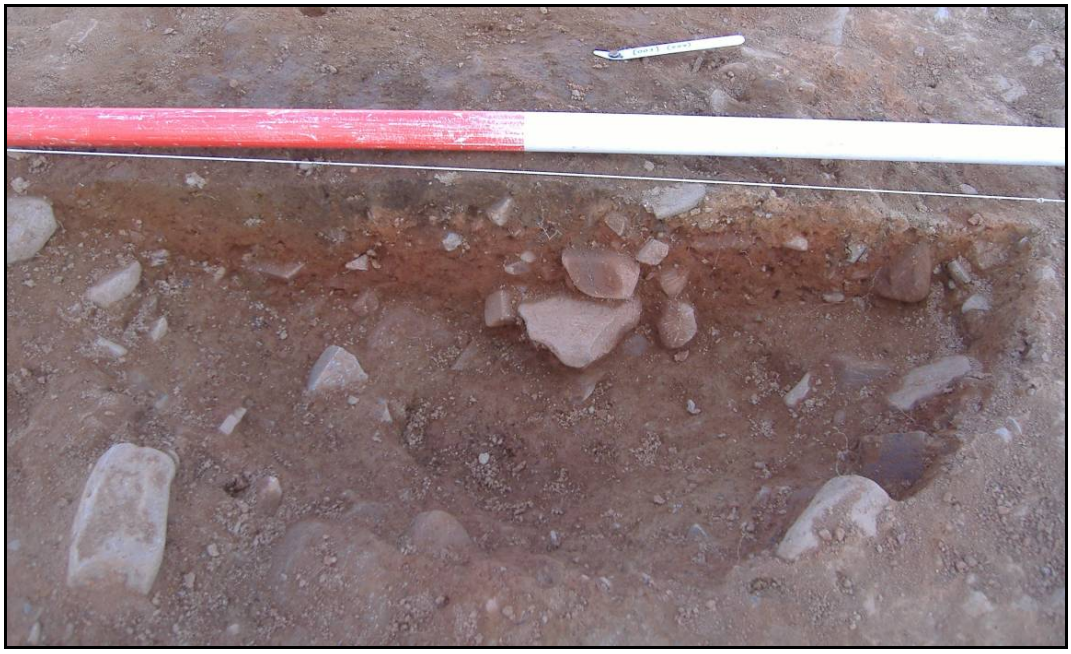

Plate 3: Possible hearth C3, mid-excavation, facing north

Plate 4: Elongated pit C7, mid-excavation, facing east

Plate 5: Elongated pit C15, post-excavation, facing south

Plate 6: Elongated pit C17, post-excavation, facing west

APPENDIX 1 CATALOGUE OF PRIMARY DATA

Appendix 1.1 Context Register

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Context Above	Context Below
C3	N/A	0.77	0.66	0.15	Cut of pit	Concave sides, fairly flat base	C4,C21	C2
C4	C3	0.55	0.36	0.04	Fill of pit	Light grey/dark brown/black silty clay	C1	C21, C3
C5	N/A	0.70	0.70	0.30	Cut of pit	Almost vertical sides. Uneven base	C6	C2
C6	C5	0.70	0.70	0.12	Fill of pit	Mid – dark yellowish brown	C1	C5
C7	N/A	0.73	0.38	0.18	Cut of pit/slot trench	Almost vertical sides. Flat base	C8,C22	C2
C8	C7	0.73	0.38	0.18	Fill of pit	Mid brown silty clay	C1	C7
C9	N/A	0.70	0.58	0.33	Cut of pit	Almost vertical sides. Almost flat	C10,C22	C2
C10	C9	0.75	0.75	0.32	Fill of pit	Greyish/brown sandy silt	C1	C22,C9
C11	N/A	0.26	0.17	0.09	Cut of pit	Steep sides. U – shaped base	C12	C2
C12	C11	0.26	0.17	0.09	Fill of pit	Mid brown sandy silt	C1	C11
C13	C19	0.43	0.35	0.14	Fill of pit	Dark grey sandy silt	C19	C20
C14	C5	0.45	0.39	0.17	Fill of pit	Dark brown/black clay	C6	C5
C15	N/A	0.48	0.22	0.23	Cut of pit	Almost vertical sides. U –shaped base	C16	C2
C16	C15	0.48	0.22	0.23	Fill of pit	Mid brown sandy silt	C1	C15
C17	N/A	0.70	0.46	0.12	Cut of pit	Sharp sides. Irregular base	C18	C2
C18	C17	0.70	0.46	0.12	Fill of pit	Mid yellowish/brown sandy silt	C1	C17
C19	N/A	0.82	0.44	0.35	Cut of pit	Almost vertical sides. Concave base	C20,C13	C2
C20	C19	0.66	0.40	0.15	Fill of pit	Mid brownish/grey sandy silt	C13	C19
C21	C3	0.90	0.64	0.14	Fill of pit	Mid brownish/red sandy silt	C4	C3
C22	C9	0.47	0.40	0.20	Fill of pit	Dark brown/black sandy silt	C10	C9

Appendix 1.2 Catalogue of Artefacts

Registration Number	Context	Item No.	Simple Name	Full Name	Material	Description	No. of Parts
E3894:014:1.1	14	1.1	Debitage	Flint debitage	Flint	Flint debitage	N/A
E3894:014:1.2	14	1.2	Debitage	Flint debitage	Flint	Flint debitage	N/A
E3894:016:1.1	16	1.1	Debitage	Flint debitage	Flint	Flint debitage	N/A
E3894:016:1.2	16	1.2	Debitage	Flint debitage	Flint	Flint debitage	N/A
E3894:020:1	20	1	Flake	Flint flake	Flint	A flint flake produced on a bipolar core and displays traces of use-wear on its right edge. The flake was recorded in burnt and incomplete condition	N/A

Appendix 1.3 Catalogue of Ecofacts

During post excavation works specific samples were processed with a view to further analysis. A total of 13 soil samples were taken from features at Blanchvillespark 1 and were processed by flotation and sieving through a 250µm mesh. The following are the ecofacts recovered from these samples

Context #	Sample #	Feature type i.e. Structure A, hearth C45	charcoal	Seeds & Hazelnut	Animal bone	Burnt animal bone	human bone	Shell	Other
C4	8	Fill of pit	0.1g			0.7g			8.1g Burnt Clay
C4	10	Fill of pit	0.2g			4.8g			
C8	1	Fill of pit	2.3g						
C8	2	Fill of pit	5.1g						
C8	3	Fill of pit	3.7g						
C6,14	7	Fill of pit	9.2g						
C13	11	Fill of pit	7.0g						
C16	6	Fill of pit	9.6g						
C20	4	Fill of pit	2.4g						
C20	5	Fill of pit	3.8g						
C22	12	Fill of pit	41.2g	0.3g					
C14	13	Fill of pit	24.8g						
C10	14	Fill of pit	5.8g						

Appendix 1.4 Archive Index

Project: N9/N10 Phase 4 Knocktopher to Powerstown		
Site Name: Blanchvillespark 1		
Excavation registration Number E3894		
Site director: Richard Jennings		
Date: July 2010		
Field Records	**Items (quantity)**	**Comments**
Site drawings (plans)	2	
Site sections, profiles, elevations	1	
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books	1	Richard
Site registers (folders)	1	
Survey/levels data (origin information)	0	
Context sheets	22	
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	70	
Photographs (print)	0	
Photographs (slide)	0	
Security copy of archive	Yes	Digitised

APPENDIX 2 SPECIALIST REPORTS

Appendix 2.1 Lithics Report – Dr. Farina Sternke

Appendix 2.2 Charcoal and Wood Report – Lorna O' Donnell

Appendix 2.3 Plant Remains Analysis Report – Penny Johnson

Appendix 2.4 Faunal Assemblage Report – Aoife McCarthy

Appendix 2.5 Radiocarbon Dating Report – SUERC Laboratory

Appendix 2.1 Lithics Report – Dr. Farina Sternke

LITHICS FINDS REPORT FOR E3894 BLANCHVILLESPARK 1 (A032/138), CO.KILKENNY

N9/N10 ROAD SCHEME – PHASE 4

FARINA STERNKE MA, PHD

Contents

List of Tables

Introduction

A total of five lithic finds from the archaeological investigations of a prehistoric site at Blanchvillespark 1, Co. Kilkenny were presented for analysis (Table 1). The finds are associated with a fire pit, a short slot trench and five smaller pits.

Find Number	Context	Material	Type	Condition	Cortex	Length (mm)	Width (mm)	Thickness (mm)	Complete	Retouch
E3894:014:1.1	14	Flint	Debitage							
E3894:014:1.2	14	Flint	Debitage							
E3894:016:1.1	16	Flint	Debitage							
E3894:016:1.2	16	Flint	Debitage							
E3894:020:1	20	Flint	Flake	Burnt	No	29	17	5	No	No

Table 1 Composition of the Lithic Assemblage from Blanchvillespark 1 (E3894)

Methodology

All lithic artefacts are examined visually and catalogued using Microsoft Excel. The following details are recorded for each artefact which measures at least 20mm in length or width: context information, raw material type, artefact type, the presence of cortex, artefact condition, length, with and thickness measurements, fragmentation and the type of retouch (where applicable). The technological criteria recorded are based on the terminology and technology presented in Inizan *et al.* 1999. The general typological and morphological classifications are based on Woodman *et al.* 2006. Struck lithics smaller than 20mm are classed as debitage and not analysed further, unless they represent pieces of technological or typological significance, e.g. cores etc. The same is done with natural chunks.

Quantification

The lithics are five flaked pieces of flint (Table 1). One artefact is larger than 20mm in length and/or width and was therefore recorded in detail.

Provenance

The lithic artefacts were recovered from contexts C14, C16 and C20.

Condition:

The recorded lithics survives in burnt and incomplete condition.

Technology/Morphology:

The artefacts are a flake and four pieces of debitage (Table 1).

FLAKES

The flake (E3894:020:1) was produced on a bipolar core and measures 29mm in length, 17mm in width and 5mm in thickness. It displays traces of use-wear on its right edge. The flake most likely dates to the Neolithic period based on its technology.

DEBITAGE

The presence of four pieces of debitage suggests that knapping and/or tool re-sharpening took place at the site.

Dating:

The assemblage is technologically diagnostic and dates to the Neolithic period.

Conservation

Lithics do not require specific conservation, but should be stored in a dry, stable environment. Preferably, each lithic should be bagged separately and contact with other lithics should be avoided, so as to prevent damage and breakage, in particular edge damage which could later be misinterpreted as retouch. Larger and heavier items are best kept in individual boxes to avoid crushing of smaller assemblage pieces.

Discussion

Flint is available in smaller nodules along the Wicklow, Wexford and Waterford coast or in the glacial tills in Co. Kilkenny in the form of remanié pebbles. The use of a limited single platform and dominant bipolar technology on small to medium sized pebbles is in parts the result of this availability. The flint used at Blanchvillespark 1is beach pebble flint which almost certainly derives from the Wicklow, Wexford or Waterford coast. The majority of these flint nodules are rather small pebbles with an average dimension of 30–50mm and often only permit the use of a bipolar technology to efficiently reduce the nodule achieving a maximum outcome, i.e. the largest possible amount of suitable and usable blanks. The result is the regionally dominant split pebble bipolar (Neolithic and Bronze Age) character of the south-eastern flint assemblages (O'Hare 2005).

Summary

The lithic finds from the archaeological excavation at Blanchvillespark 1, Co. Kilkenny are a bipolar flint flake and four pieces of flint debitage. The assemblage is technologically diagnostic and dates to the Neolithic period. It represents a waste which is possibly related to domestic activities.

This site makes a minor contribution to the evidence for prehistoric settlement and land use in Co. Kilkenny.

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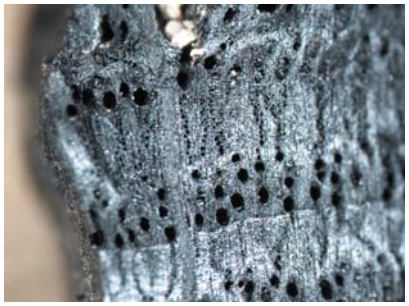
Appendix 2.2 Charcoal and Wood Report – Lorna O' Donnell

Client – Irish Archaeological Consultancy Ltd
Site Name- Blanchvillespark 1
Excavation number –E3894 AR107
County – Kilkenny
Author- Lorna O'Donnell

Date –25/9/09



Illustrations

Figures

Tables

Introduction

This report describes the charcoal analysis of samples from Blanchvillespark 1, Co. Kilkenny excavated by Richard Jennings. The site was excavated as part of the N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown (Jennings 2009). The site possibly represents a prehistoric camp site, with a hearth, rubbish pits and postholes. The aim of the work is to identify enough suitable material for radiocarbon dating, and to provide a floristic background to the site. It can also identify any species selection patterns at Blanchvillespark 1. This report is summary in nature only, further analysis, discussions and comparisons of results will be incorporated into a final integrated charcoal and wood report for all sites along the N9/N10 (Lyons *et al* forthcoming).

Methodology (After IAC Ltd)

Processing

A mechanical flotation tank using a pump and water recycling system is used for soil flotation

The soil is washed using a 1mm mesh in the flotation tank and a 300 micron and 1mm sieve is used to catch floated material.

The volume of all soil samples are recorded in litres using a measuring jug.

The sample is then placed into the 1mm mesh in the flotation tank, the tank is then filled with water and the sample washed. Any large lumps of soil can be carefully broken down by hand, but the jets of water in the flotation tank gently clean the rest of the sample.

Once the sample is clean (just stones, charcoal, artefacts remaining in the mesh) the tank is fill up with water and at this stage any floating material (charcoal, seeds etc) should flow over the spout and into the sieves.

The retent is then gently poured into a labelled tray (containing site code, site name, sample number and context number) and place on a shelf to dry.

The flots are securely packaged in tissue, labelled and hung up to dry. This prevents any loss of light material (seeds) which could result once the flots are dry and being moved (if they are dried on trays).

Before washing a new sample all equipment used (measuring jugs, 1mm mesh, sieves etc) are thoroughly washed using clean water.

The large black settling tanks (and water) are cleaned between every site, or if a large site is being processed, every 1–2 weeks.

Any samples containing a high clay content will be soaked in water for 1–2 days to aid the sieving process.

Charcoal identification

Each piece of charcoal was examined and orientated first under low magnification (10x-40x). They were then broken to reveal their transverse, tangential and longitudinal surfaces. Pieces were mounted in plasticine, and examined under a binocular microscope with dark ground light and magnifications generally of 200x and 400x. Each taxon or species will have anatomical characteristics that are particular to them, and these are identified by comparing their relevant characteristics to keys (Schweingruber 1978; Hather 2000 and Wheeler *et al* 1989) and a reference collection supplied by the National Botanical Gardens of Ireland, Glasnevin. It was aimed to identify fifty fragments per sample.

Details of charcoal recording

The general age group of each taxa per sample was recorded, and the growth rates were classified as slow, medium, fast or mixed. It was not within the scope of this project to measure all the ring widths from the charcoal, however, some measurements were taken with a graticule in the microscope in order to make the scale of slow, medium and fast growth less subjective. Slow growth within the

charcoal from this site was considered to be approximately 0.4mm per annum, medium approximately 1mm per annum and fast approximately 2.2mm per annum.

The ring curvature of the pieces was also noted – for example weakly curved annual rings suggest the use of trunks or larger branches, while strongly curved annual rings indicate the burning of smaller branches or trees (Fig. 1). Tyloses in vessels in species such as oak can denote the presence of heartwood. These occur when adjacent parenchyma cells penetrate the vessel walls (via the pitting) effectively blocking the vessels (Gale 2003, 37). Insect infestation is usually recognised by round holes, and is considered to be caused by burrowing insects. Their presence normally suggests the use of decayed degraded wood, which may have been gathered from the woodland floor or may have been stockpiled.

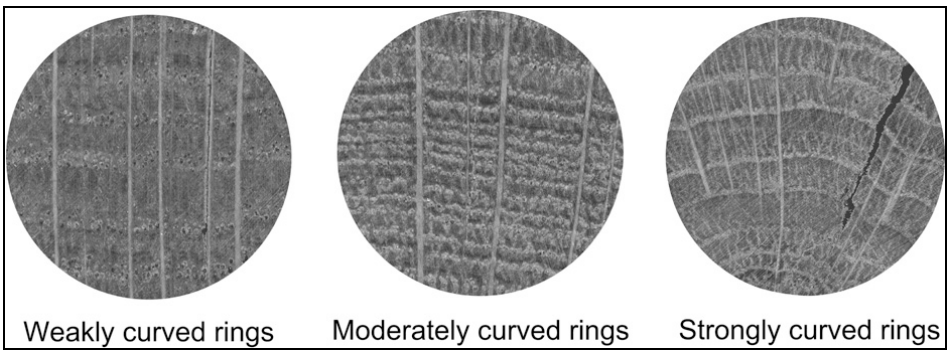


Fig. 1 Ring curvature. Weakly curved rings indicate the use of trunks or large branches. (After Marguerie and Hunot 2007 1421, Fig. 3).

Results

Six wood types were identified from Blanchvillespark 1, alder (*Alnus* sp.), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), wild/bird cherry (*Prunus avium/padus*), blackthorn (*Prunus spinosa*) and oak (*Quercus* sp.). The results are dominated by oak (Fig. 2).

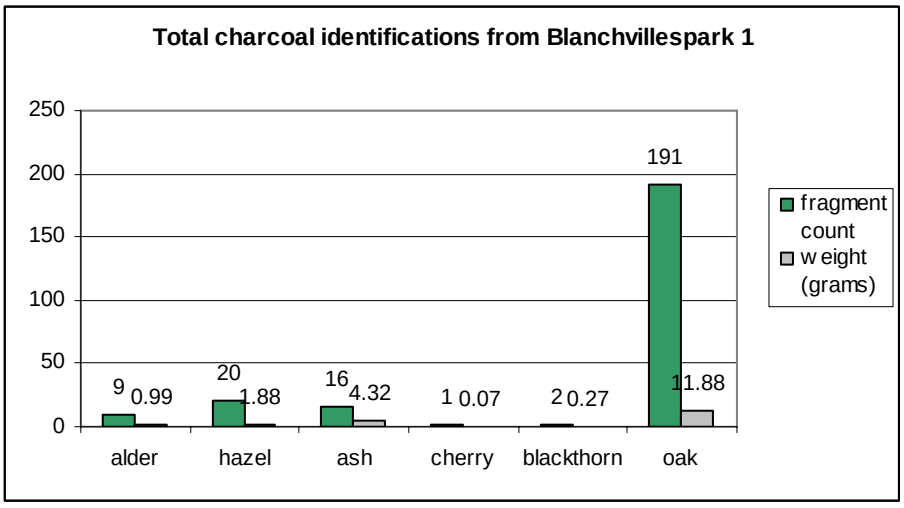


Fig. 2

Charcoal was examined from five contexts from Blanchvillespark 1. A possible triangular shaped windbreak was excavated on the site (Jennings 2009). Charcoal was identified from two of these pit/post fills (**Cuts 7** and **15, Fills 8** and **16**). In both cases the samples are dominated by oak, indicating that they represent the remains of oak posts burnt *in situ*. Soil from two rubbish pits were examined (**Cuts 9** and **5**, Fills **22** and **14**). **C22** is dominated by oak, with some hazel, while **C14** contains ash,

oak, hazel, alder, blackthorn and cherry. One hearth was examined (**Cut 3 Fill 4**), this will provide evidence of short term or episodic burning on site. The charcoal level from this sample is the lowest of the five examined, only 10 small fragments of oak were identified. The low level of charcoal in the hearth may indicate that it was cleared out after the final use.

Discussion

It is presumed that while people may have managed trees during prehistory in Ireland, that they did not plant them, and therefore that the trees would grow in optimum soil conditions. A consideration of the preferred growth conditions of the trees from Blanchvillespark 1 should provide a background to the type of soil conditions close to the site.

The charcoal results are dominated by oak, indicating that some oak woodlands were located in the nearby area. Oak is frequently identified from Irish archaeological sites. It is a strong, robust timber, which burns well at high temperatures. The oak present could be either our native sessile oak (*Quercus petraea*) or our native pedunculate (*Quercus robur*) which prefers more wet, heavier clays than the sessile oak. (Beckett 1979, 40–41). Another canopy tree identified from the site is ash. This prefers moist, well drained and fertile soils. It is very intolerant of shade (Lipscombe and Stokes 2008, 188).

There is some evidence of scrub/shrub trees also from Blanchvillespark 1, in the form of hazel, cherry and blackthorn. Hazel is a very tolerant tree; it can grow from wet to dry conditions (but not waterlogged ones) (Orme and Coles 1985, 9). It was once very common in Ireland, Mc Cracken writes that it was once widespread to an extent that is hard to imagine today (1971, 19). It can grow as a tree or can form hazel scrub. Wild/bird cherry can grow well in light conditions such as near woodland margins (Orme and Coles 1985, 11). Blackthorn can be found on woodland edges and occurs on a wide range of soils (Lipscombe and Stokes 2008, 64).

A wetland element is indicated by the identification of alder, which needs a constant source of water to grow. It can be seen beside rivers, streams and can form carr woodland.

Summary

Charcoal was identified from five contexts at Blanchvillespark 1. Alder, hazel, ash, cherry, blackthorn and oak were identified from the samples. A windbreak was probably made from oak posts, while a variety of trees were identified from the rubbish pits. The low level of charcoal from the hearth is unusual, and indicates it may have been cleared out after use.

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Table 1 Charcoal identification details from Blanchvillespark 1

Context number	Cut number	Sample number	Flot weight (g)	Context description	Wood taxon	No. of fragments	Charcoal weight (grams)	Size of fragments (mm)	No. of growth rings	Growth	Weakly or strongly curved rings	Insect holes	Tyloses	Comment
4	3	10	0.2	possible hearth	*Quercus* sp. (oak)	10	0.1	5-10	2-3	medium				
8	7	3	3.7	pit/posthole fill	*Alnus* sp. (alder)	1	0.05	5	3	medium				
					Quercus sp. (oak)	49	2.61	5-10	2-3	medium				
14	5	13	24.8	rubbish pit	*Alnus* sp. (alder)	3	0.59	5-10	3-5	medium				
					Corylus avellana (hazel)	8	0.81	5-10	3-5	medium				1 roundwood 12mm in diameter, bark, 9 years old
					Fraxinus sp. (ash)	11	4.12	5-15	2-9	medium	strongly curved			
					Prunus avium/padus sp. (wild/bird cherry)	1	0.07	5-10	3-5	medium				
					Prunus spinosa (blackthorn)	2	0.27	5-10	3-5	medium				
					Quercus sp. (oak)	42	4.62	5-15	3-5	medium	weakly curved			
16	15	16	9.6	pit/posthole fill	*Alnus* sp. (alder)	5	0.35	5-10	3-5	medium				
					Corylus avellana (hazel)	3	0.29	5-10	3-5	medium	strongy curved			
					Fraxinus sp. (ash)	5	0.2	5-10	3-5	medium				
					Quercus sp. (oak)	45	2.37	5-10	3-5	medium	weakly curved		10%	
22	12	12	41.1	rubbish pit	*Corylus avellana* (hazel)	9	0.78	5-10	2-3	medium	strongly curved			
					Quercus sp. (oak)	45	2.18	5-10	3-4	medium	weakly curved			

Appendix 2.3 Plant Remains Analysis Report – Penny Johnston

Client – Irish Archaeological Consultancy Ltd
Site Name- Blanchvillespark 1
Excavation number – E3894 AR107
County – Kilkenny
Author- Penny Johnston
Date – June 2009

Introduction

This report details the analysis of plant remains recovered from an excavation in advance of the construction of the N9/N10 Knocktopher to Powerstown Road (Phase 4).

Methodology

The samples for this phase were processed by the client, who also carried out a preliminary sorting of the samples. This pre-selection of the plant remains may bias the final plant records from these sites, as it is possible that many small items, such as weed seeds and chaff, were not picked out. As a result, only limited interpretation of the plant remains from these sites is possible.

The selected material was sent to Eachtra Archaeological Projects where it was examined under a low-powered binocular microscope (X6–X45). Suitable plant material was identified and the results of analysis are presented at the end of this report. Scientific names are mainly confined to the identification table in order to facilitate easy reading of the text. Nomenclature and taxonomic orders generally follows Stace (1997).

Blanchvillespark 1 AR107 E3894

Excavation at Blanchvillespark 1 revealed the remains of a possible prehistoric campsite that comprised a fire pit, a short slot trench and a possible windbreak.

A total of four samples were examined, but only one of these contained seeds. The samples that did not contain archaeological plant material were C.8 (S.1), C.20 (S.5) and C.13 (S.11). The remaining sample, C.22 (S.12), contained fragments of hazelnut shells (Table 1). These are ubiquitous finds in Irish archaeological deposits. The hazel tree was highly valued in the past because the nuts were valuable for food and because the tree was suitable for coppicing and therefore for timber and stakes (Geraghty 1996, 43). The nut shell fragments collected from archaeological sites usually represent waste. The shell fragments were cast aside after the nut kernel was consumed (Monk 2000, 75).

Table 1: Identified plant remains from Blanchvillespark 1

Context	**22**
Sample	**12**
Hazelnut shell fragments (*Corylus avellana* L.)	10

References

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Appendix 2.4 Faunal Assemblage Report – Aoife McCarthy

Osteoarchaeological Report of Faunal Remains from
E3894: Blanchvillespark 1 AR107
Co. Kilkenny
N9/N10 Kilcullen to Waterford Scheme
Phase 4b: Knocktopher to Powerstown
Author: Aoife McCarthy MA BA
Date: October 2009

Introduction

Introduction

This report details the osteological analysis of burnt bone recovered during excavations at Site E3894 AR107 Blanchvillespark 1 in the townland of Blanchvillespark, Co. Kilkenny as part of the archaeological mitigation programme of the N9/N10 Kilcullen to Waterford Road Scheme. Aoife McCarthy MA (Osteoarchaeology University of Southampton 2006) undertook the analysis on behalf of Irish Archaeological Consultancy Ltd. in October 2009. At the time of writing this report, background archaeological information was obtained from a draft interim excavation report (Jennings, R. 2009) and from consulting the original site register documents.

General Osteological Information

The osteological analysis of faunal remains recovered from Site AR107 Blanchvillespark 1 was undertaken to provide an overview of the osteoarchaeological aspect of the site and determine if the material could provide further interpretation of site activity.

A total of 83 fragments from 66 possible skeletal elements and weighing 7.5g were recorded within the assemblage. The degree of preservation of the animal bone assemblage recovered at Site AR107 Blanchvillespark 1 was very poor with a high degree of fragmentation.

The faunal remains assemblage recovered at Site AR107 Blanchvillespark 1 originated from (C4) the grey silty clay fill of pit feature [C3]. A total of 4 bone fragments (4.8%) of the faunal remains assemblage was identified to species, leaving 79 fragments (95.2%) unidentifiable and classed as indeterminate vertebrate of small, medium or large size. Bone element was identified where possible.

The faunal remains assemblage retrieved from Site AR107 Blanchvillespark 1 contained bones from a single possible species of pig.

Methodology

SPECIES IDENTIFICATION: Identification of the bones involved reference to Schmid (1972) and Hillson (1992) as well as comparison with the author's own reference material.

- NISP: Number of Identified Specimens Indicates the total number of fragments found.

- MNI: Minimum Number of Individuals. Indicates the minimum number of individuals from every species that were present in the material. Estimating MNI is calculated on the specimen of the most abundant skeletal element present; whilst taking age, sex, size and archaeological context into account.

- MNE: Minimum Number of Elements. Indicates the minimum number of anatomical units that are present and what side they are from. To avoid getting a higher MNE all loose epiphyses have to be paired with all unfused diaphysis.

SAMPLING: Due to the fragmented nature of the animal bone material it was decided to dry sieve the samples. The burnt bone was passed through a 10mm, 5mm and

2mm sieve in turn, with all bone fragments recovered from each sieve size being included in the assemblage for analysis; "Quantitive studies require a sampling approach that enables each of the species used at a site to have an equal opportunity to be recovered, with no skewing that will increase one taxonomic unit over another." (Shaffer & Sanchez, 1994)

AGEING: Two main methods are used to determine the age of faunal remains; tooth eruption and degree of Epiphysial fusion (a less reliable method). Tooth eruption and wear stages were recorded for the following teeth where possible; dP4 (deciduous fourth premolar), P4 (fourth premolar), M1 (first molar), M2 (second molar) and M3 (third molar) of cattle, sheep/goat and pig (Grant 1982). The analysis of tooth wear patterns refers to the alteration of the enamel surface and exposure of inner dentine through use. Due to the nature of the material recovered at AR107 Blanchvillespark as well as the high degree of fragmentation age estimates were not possible.

BIOMETRICAL DATA: Due to the high degree of fragmentation of the faunal remains recovered from Site AR107 Blanchvillespark measurements were not possible.

SEX DETERMINATION: Sex determination of animal remains is possible by analysis of certain sexually dimorphic elements. For example goat horncores may be classified as male or female based on their morphology and cattle metacarpals can be defined as male or female through calculation of the slenderness index (McCormick 1992). Sexual determination of species was not possible due to the high degree of fragmentation of the animal bone material recovered from Site AR107 Blanchvillespark.

BUTCHERY/GNAWING/BURNING: Evidence for butchery was recorded under the categories of cut, chopped, chopped and cut. All specimens were analysed for evidence of rodent or carnivorous gnawing as well as evidence of burning. Burnt bones were recorded in accordance with colour changes resulting from differing heat levels e.g. calcined bones acquire a bluish-whitish hue through exposure to high temperatures.

PATHOLOGY: The discovery of any injury and/or pathology was recorded for all specimens, where present.

Results

Context 4 Sample 8
A total of 19 bone fragments (0.9g) representing 19 possible skeletal elements were identified within sample 8 from (C4) the grey silty fill of pit feature [C3]. The small size of the 19 bone pieces, as well as the degree of fragmentation meant it was not possible to identify species. All 19 bone fragments recovered from sample 8 displayed bone surface modification and cracking as well as alteration in colour to white; indicating calcification and exposure to a high level of heat. When bone is exposed to heat the process of decomposition of organic elements is accelerated (Luff, R. & Pearce, J. 1994). This accelerated mineralisation is manifested on bone surface as a glossy grey-white surface (Luff, R. & Pearce, J. 1994)

Context 4 Sample 10
A total of 64 bone fragments (6.6g) representing 47 possible skeletal elements were identified within C4 the grey silty fill of pit feature C3. Four (0.7g) of the 64 bone fragments recovered from C4 were identified as *sus*/pig phalange. The small size of the remaining 60 bone pieces (5.9g), as well as the degree of fragmentation meant it was not possible to identify species.

Sus/Pig

Four fragments of *sus*/pig phalange (0.7g) representing two possible skeletal elements were identified within 2mm dry sieved fill material C4. Evidence of exposure of the four phalange bone fragments to heat was noted in the form of surface modification and a colour change to grey/white. The structure of bone changes through exposure to heat. Contact of bone with heat diminishes its moisture content and results in the combustion of the organic or collagen component; the remaining structure of the bone after this process is mineral. Such distortion to the bone structure reduces its size and as detailed above alters bone colour (Luff R. & Pearce J. 1994).

Indeterminate Vertebrate

A total of 42 bone fragments from indeterminate vertebrates (5.9g) were retrieved from fill material C4. Due to a high degree of fragmentation a total of 24 fragments (2.2g) were unidentifiable to element or species. However, a total of 18 burnt bone fragments (3.7g) were identified to element including rib, long bone and skull fragments. All 42 indeterminate bone fragments recovered from C4 displayed evidence of exposure to a high level of heat, resulting in the calcification of the bone. This was recognised by an alteration of the bone texture and colour to grey/white. The structure of bone changes through exposure to heat. Contact of bone with heat diminishes its moisture content and results in the combustion of the organic or collagen component; the remaining structure of the bone after this process is mineral. Such distortion to the bone structure reduces its size and as detailed above alters bone colour (Luff R. & Pearce J. 1994). A large percentage of unidentifiable bone fragments were recovered from sieving and consisted of tiny fragments of trabecular bone.

Summary

Eighty three burnt bone fragments recovered from a single archaeological context C4 on Site AR107 Blanchvillespark 1 were submitted for examination. The bone samples were passed through a 10mm, 5mm and 2mm sieve in turn, with all bone fragments recovered from each sieve size being included in the assemblage for analysis. All recovered bone from dry sieving was assessed and identified to species where possible. From these a total of 79 (95.2%) were not possible to identify to species due to minute fragment size and poor preservation of the bone. The remaining 4 fragments (4.8%) were identified and divided into species. The faunal remains assemblage contained bones from a single recognisable species of pig/*sus*.

Taphonomic alterations noted on the faunal remains from Site AR107 give us an insight into the process that the assemblage went through before recovery. As illustrated in the bone database none of the 83 recovered bone fragments displayed evidence of gnawing or butchery. All 83 bone fragments including identified and indeterminate species displayed evidence of exposure to heat. The majority of the 83 burnt bone fragments showed surface cracking, exposure of trabecular bone and colour change to grey/white indicating contact with a high point of heat and an acceleration of the mineralisation process (Luff R. & Pearce J. 1994).

The entire faunal remains assemblage, identifiable and indeterminate retrieved from Site AR107 was recovered from a single archaeological context C4 the grey silty fill of pit C3. No finds were recovered from pit feature C3. It is not possible to determine the significance of this small and largely unidentifiable assemblage of burnt bone.

Bone Database:

Spec	C	S	Taxa	Anat	Side	Prox	Dist	1	2	3	4	5	6	7	8	But	Bu	G	Q	Weight (g)	Comments
1	C4	8	Unid	Unid													W		19	0.9	Series of small-minute fragments of calcined bone. Largest fragment is 7mm long. Several fragments trabecular bone exposed. Indeterminate
2	C4	10	Unid	Unid													W		11	0.4	Series of tiny fragments of trabecular bone & tooth crown. Fragments passed through 2mm sieve
3	C4	10	Unid	Unid													W		10	0.6	Series of small fragments calcined trabecular bone. Not poss. to ID. Fragments in 2mm sieve
4	C4	10	Unid	Unid													W		20	1.1	Small fragments of calcined bone. Not possible to ID, bones in 2mm sieve
5	C4	10	Unid	Skull													W		6	1	Poorly preserved fragments of skull small-med sz, bones whitened exposure to heat
6	C4	10	Unid	Long Bone													W, G		7	1.7	Long bone diaphysis small fragments, white/grey (exposed to heat) poorly preserved. Not possible to ID
7	C4	10	Unid	Poss Rib													W		5	1	Bone fragments calcined. Poss. rib, trabecular bone exposed. In 2mm sieve
8	C4	10	Poss Pig	Ph										1			W, G		1	0.4	Distal fragment of distal phalange poss. pig. From 2mm sieve. Fragment is 11mm long.
9	C4	10	Poss Pig	Ph													W, G		3	0.3	Fragments of calcined phalange diaphysis. From 2mm sieve. Poorly preserved.
10	C4	10	Unid	Unid													G		1	0.1	Fragment of unidentifiable trabecular bone

Key:
C= Context But=Butchery N=No W=White
S=Sample Bu=Burnt Unid=Unidentifiable R=Rodent
Anat=Anatomical Element G=Gnaw Tax=Taxon Cn=Carnivore Prox=Proximal
Q=Quantity of Pieces B=Black Ph=Phalange Dist=Distal G=Grey

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GLOSSARY OF TERMS:
BOS: Latin term for Cow
SUS: Latin term for Pig
CERVUS: Latin term for Deer
EQUUS: Latin term for Horse
OVIS: Latin term for Sheep
CAPRINAE: Latin term for Sheep/Goat
CANIS: Latin term for Dog
LEPUS: Latin term for Hare
AVES: Latin term for Bird
TAPHONOMY: The study of the processes affecting an organism after death from the time of burial until collection.
TRABECULAR BONE: Osseous tissues that fill the interior cavity of bones and resemble a sponge or honeycomb.
DIAPHYSIS: Bone shaft
CORPUS COSTAE: Body of Rib Bone

Appendix 2.5 Radiocarbon Dating Report – SUERC Laboratory

The “Measured radiocarbon age” is quoted in conventional years BP (before AD 1950). The error is expressed at the one-sigma level of confidence.

The “Calibrated date range” is equivalent to the probable calendrical age of the sample material and is expressed at the two-sigma (95.4% probability) level of confidence

Calibration data set: OxCal3

Context	Sample No	Material	Species id/ Weight	Lab	Lab Code	Date Type	Calibrated date ranges	Measured radiocarbon age (BP)	13C/12C Ratio ‰
C22, Fill of pit	12	Charcoal	*Corylus Avellana sp*. / 0.1g	SUERC	SUERC 30111	AMS (Std)	3650–3520BC (1 sigma), 3660–3380BC (2 sigma)	4805±40	-24.5

References for calibration datasets:
PJ Reimer, MGL Baillie, E Bard, A Bayliss, JW Beck, PG Blackwell, C Bronk Ramsey, CE Buck, GS Burr, RL Edwards, M Friedrich, PM Grootes, TP Guilderson, I Hajdas, TJ Heaton, AG Hogg, KA Hughen, KF Kaiser, B Kromer, FG McCormac, SW Manning, RW Reimer, DA Richards, JR Southon, S Talamo, CSM Turney, J van der Plicht, CE Weyhenmeyer (2009) Radiocarbon 51:1111–1150.

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14
NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

APPENDIX 3 LIST OF RMP IN AREA

RMP No	Description
KK020-023	Ringfort
KK020-025001	Church
KK020-025002	Graveyard
KK020-043	Enclosure
KK020-042	Enclosure

See Figure 2 for location.

APPENDIX 4 LIST OF SITE NAMES

Site Name	*Site Code*	*E Number*	*Director*	*NGR*
Baysrath 2	AR055	E3627	Fintan Walsh	251593/137855
Baysrath 3	AR056	E3628	Fintan Walsh	251672/138000
Baysrath 4	AR057	E3629	Fintan Walsh	251515/138280
Danganbeg 1	AR058	E3606	Emma Devine	251462/138754
Danganbeg 2	AR059	E3607	Emma Devine	251397/138939
Danganbeg 3	AR060	E3671	Emma Devine	251430/139245
Danganbeg 4	AR061	E3676	Emma Devine	251401/139372
Knockadrina 1	AR062	E3677	Ed Lyne	251422/139420
Tinvaun 1	AR063	E3678	Ed Lyne	251482/139625
Tinvaun 2	AR064	E3680	James Kyle	251445/139736
Tinvaun 3	AR065	E3608	James Kyle	251501/139832
Tinvaun 4	AR066	E3609	James Kyle	251508/139917
Stonecarthy West 1	AR067	E3610	James Kyle	251538/140023
Knockadrina 1	AR068	E3611	James Kyle	251647/140237
Rathduff 1	AR069	E3612	Ed Lyne	251286/142167
Rathduff Upper 1	AR070	E3613	Ed Lyne	251280/142559
Kellsgrange 1	AR071	E3575	James Kyle	250911/143732
Kellsgrange 2	AR072	E3577	James Kyle	250967/143861
Kellsgrange 3	AR073	E3576	James Kyle	250948/144003
Ennisnag 1	AR074	E3614	Richard Jennings	251416/145690
Ennisnag 2	AR075	E3615	Richard Jennings	251638/146068
Danesfort 12	AR076	E3616	Richard Jennings	251669/146186
Danesfort 13	AR077	E3617	Richard Jennings	251765/146384
Danesfort 2	AR078	E3540	Richard Jennings	251953/146745
Danesfort 4	AR079	E3539	Richard Jennings	251880/147579
Danesfort 3	AR080A	E3542	Richard Jennings	252221/146845
Danesfort 1	AR080B	E3541	Richard Jennings	252267/146707
Croan 1	AR081	E3543	Emma Devine	252280/147332
Danesfort 5	AR082	E3546	Emma Devine	252567/147767
Danesfort 6	AR083	E3538	Emma Devine	252764/147995
Danesfort 7	AR084	E3537	Emma Devine	252878/148099
Danesfort 8	AR085	E3461	Richard Jennings	253020/148246
Danesfort 9	AR086	E3468	Richard Jennings	253089/148345
Danesfort 10	AR087	E3459	Richard Jennings	253229/148414
Danesfort 11	AR088	E3460	Richard Jennings	253245/148462
Rathclogh 1	AR089	E3726	Patricia Lynch	253365/145515
Rathclogh 2	AR090	E3727	Patricia Lynch	253650/148848
Kilree 1	AR091	E3728	Patricia Lynch	254088/149310
Kilree 2	AR092	E3729	Patricia Lynch	254320/149500
Kilree 3	AR093	E3643	Patricia Lynch	254449, 149639
Kilree 4	AR094	E3730	Patricia Lynch	255330/150084
Dunbell Big 2	AR095	E3853	Yvonne Whitty	256684/151066
Holdenstown 1	AR096	E3681	Yvonne Whitty	256737/151253
Holdenstown 2	AR097/98	E3630	Yvonne Whitty	256891/151781
Holdenstown 3	AR099	E3854	Yvonne Whitty	256990/152085
Holdenstown 4	AR100	E3682	Yvonne Whitty	256828/152048
Dunbell Big 1	AR101	E3855	Yvonne Whitty	257034/152315
Rathcash 1	AR102	E3859	Tim Coughlan	258178/154199
Rathcash 2	AR103	E3860	Tim Coughlan	258294/154293
Rathcash East 1	AR104	E3892	Tim Coughlan	259419/154546
Rathcash East 2	AR105	E3893	Tim Coughlan	259555/154566
Rathcash East 3	AR106	E3861	Tim Coughlan	259821/154653
Blanchvillespark 1	AR107	E3894	Richard Jennings	260535/155212
Blanchvillespark 2	AR108	E3895	Tim Coughlan	260637/155449

Site Name	***Site Code***	***E Number***	***Director***	***NGR***
Blanchvillespark 3	AR109	E3913	Tim Coughlan	260785/155653
Blanchvillespark 4	AR110	E3914	Tim Coughlan	261442/156269
Blanchvillespark / Ballyquirk 1	AR111	E3862	Ruth Elliott	261531/156323
Ballyquirk 1	AR112	E3863	Ruth Elliott	261531/156323
Ballyquirk 2	AR113	E3864	Ruth Elliott	261811/156508
Ballyquirk 3	AR114	E3865	Ruth Elliott	261875/156559
Ballinvally 1	AR115	E3836	Emma Devine	263258/157521
Garryduff 1	AR116	E3852	Emma Devine	263933/157991
Kilmacahill 1	AR117	E3915	Tim Coughlan	264267/158369
Kilmacahill 2	AR118	E3833	Tim Coughlan	264380/158453
Jordanstown 1	AR119	E3834	James Kyle	264546/158643
Jordanstown 2	AR120	E3851	James Kyle	264893/159038
Kellymount 6	AR121	E3758	Przemaslaw Wierbicki	265130,159277
Jordanstown 3	AR122	E3916	Przemaslaw Wierbicki	265103/159227
Kellymount 1	AR123	E3756	Przemaslaw Wierbicki	265250/159397
Kellymount 2	AR124	E3757	Przemaslaw Wierbicki	265164/159463
Kellymount 3	AR125	E3856	Przemaslaw Wierbicki	265338/159597
Kellymount 4	AR126	E3857	Przemaslaw Wierbicki	265412/159803
Kellymount 5	AR127	E3858	Przemaslaw Wierbicki	265530,159977
Shankill 2	AR128	E3738	Richard Jennings	265924/160651.
Shankill 3	AR129	E3737	Richard Jennings	266052/161141
Shankill 4	AR130	E3838	Richard Jennings	266286/161526
Shankill 5	AR131	E3850	Richard Jennings	266374/161730
Shankill 6	AR132	E3840	Richard Jennings	266403/161836
Moanmore 1	AR133	E3835	Richard Jennings	266476/162016
Moanmore 2	AR134	E3843	Sinead Phelan	266756/162866
Moanmore 3	AR135	E3837	Sinead Phelan	266856/163259
Bannagagole 1	AR136	E3844	Sinead Phelan	266942/163569
Moanduff 1	AR137	E3839	Robert Lynch	267261/164397
Coneykeare 1	AR138	E3683	Sinead Phelan	267836/166209
Coolnakisha 1	AR139	E3768	Ellen O'Carroll	268175/167274
Coolnakisha 2	AR140	E3767	Ellen O'Carroll	268306/167559
Cranavonane 1	AR141	E3842	Tim Coughlan	268554/167895
Cranavonane 2	AR142	E3732	Ellen O'Carroll	268830/168154
Cranavonane 3	AR143	E3731	Ellen O'Carroll	269123/168362
Tomard Lower 1	AR144	E3733	Ellen O'Carroll	269349/168496
Paulstown 1	AR145	E3642	Ruth Elliot	265889/158499
Paulstown 2	AR146	E3632	Ruth Elliot	265664/158651
Rathgarvan or Clifden 1	AR147	E3760	Przemaslaw Wierbicki	257026/154123
Maddockstown 1	AR148	E3759	Przemaslaw Wierbicki	256886/154199
Templemartin 3	AR149	E3845	Emma Devine	255095/155200
Templemartin 4	AR150	E3841	Emma Devine	254920/155427
Templemartin 5	AR151	E3846	Emma Devine	254706/155636
Templemartin 1	AR152	E3849	Emma Devine	254504/155826
Templemartin 2	AR153	E3847	Emma Devine	254173/156236
Leggetsrath East 1	AR154	E3734	Emma Devine	253793/156484
Moanduff 2	AR155	E3735	Sinead Phelan	267470/164887
Moanduff 3	AR156	E3736	Sinead Phelan	267515/164979
Ballyquirk 4	AR157	E3848	Richard Jennings	262596/157025
Shankill 1	AR158	E3766	Przemaslaw Wierbicki	265707/160269
Rathgarvan or Clifden 2	AR159	E3921	Tim Coughlan	257095/154119
Ballynolan 1	AR160	E3755	Sinead Phelan	267714/165597
Stonecarthy West 2	UA2	E3974	Tim Coughlan	251372/142037
Rathduff Bayley 1	UA4	E4011	Tim Coughlan	251005/143564