

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



Ministerial Direction Scheme Reference No.	A032
Registration No.	E3862
Site Name	AR111, Blanchvillespark / Ballyquirk 1
Townland	Blanchvillespark / Ballyquirk
County	Kilkenny
Excavation Director	Ruth Elliott
NGR	261531 156323
Chainage	49180

FINAL REPORT

ON BEHALF OF KILKENNY COUNTY COUNCIL

JUNE 2011

PROJECT DETAILS

Project	N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown
Ministerial Direction Reference No.	A032
Excavation Registration Number	E3862
Excavation Director	Ruth Elliott
Senior Archaeologist	Tim Coughlan
Consultant	Irish Archaeological Consultancy Ltd, 120b Greenpark Road, Bray, Co. Wicklow
Client	Kilkenny County Council
Site Name	AR111, Blanchvillespark / Ballyquirk 1
Site Type	Pits and postholes
Townland(s)	Blanchvillespark / Ballyquirk
Parish	Gowran
County	Kilkenny
NGR (easting)	261531
NGR (northing)	156323
Chainage	49180
Height OD (m)	100.326
RMP No.	N/A
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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 AR111, Blanchvillespark / Ballyquirk 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 Ruth Elliott under Ministerial Direction A032 and Excavation Registration Number E3862 issued by the DOEHLG in consultation with the National Museum of Ireland for IAC. The fieldwork took place between the 22 November and 3 December 2007.

The site identified pits, postholes and stakeholes scattered across the site. There were two noticeable clusters. In the south of the site a number of medium sized pits were identified in association with some postholes and stakeholes. They returned no finds, their function is unknown, and there was no obvious structural pattern to their layout. In the centre of the site there was a larger cluster of more pits, postholes and stakeholes. Two possible alignments were noticed which are not directly related to each other. One was characterised by four pits and a stakehole that formed a slight arc while the other consisted of a linear alignment of a further four pits and a possible posthole. Both alignments had other features in proximity that may have been associated. Four sherds of Beaker pottery were identified within one of the pits of the linear alignment. A small number of other pits, postholes and spreads were identified in relative isolation away from the main clustered areas of activity and probably unrelated. None of these additional features produced any finds.

A total of three samples were sent for AMS radiocarbon dating. A sample of alder charcoal from the pit fill C25 produced a 2 sigma calibrated date range of 1878–1689BC (UBA 12227). A sample of *Pomoideae* charcoal from the pit fill C20 produced a 2 sigma calibrated date range of 1877–1691BC (UBA 12228). Finally a sample of alder charcoal from the pit fill C82 produced a 2 sigma calibrated date range of 2871–2584BC (UBA 12229).

Blanchvillespark / Ballyquirk 1 has produced evidence of isolated pits/temporary domestic settlement from both the late Neolithic and the early-middle Bronze Age. The site is important locally as there were no previously recorded prehistoric sites in the immediate vicinity. However, the site is also potentially important regionally on the basis of its two distinct phases of activity and also the presence of Beaker pottery in the fills of one of the features associated with the early-middle Bronze Age activity. It provides further evidence, in conjunction with other sites excavated as part of the N9/N10 scheme, of settlement of the Blanchvillespark and Ballyquirk Area in early prehistory.

CONTENTS

1	INTRODUCTION.....	1
1.1	General	1
1.2	The Development.....	1
1.3	Archaeological Requirements	1
1.4	Methodology.....	2
2	EXCAVATION RESULTS.....	4
2.1	PHASE 1 Natural Drift Geology	4
2.2	PHASE 2 Late Neolithic Activity	4
2.3	PHASE 3 Early Bronze Age/Beaker Activity	6
2.4	PHASE 4 Other Undated Archaeological Features.....	9
2.5	PHASE 5 Post-medieval Features	10
2.6	PHASE 6 Topsoil	10
3	SYNTHESIS.....	11
3.1	Landscape Setting	11
3.2	The Archaeological Landscape.....	13
3.3	Typological Backgrounds of Blanchvillespark/Ballyquirk 1.....	20
3.4	Summary of the Excavation Results	22
3.5	Summary of the Specialist Analysis	22
4	DISCUSSION AND CONCLUSIONS.....	24
4.1	Discussion.....	24
4.2	Conclusions.....	25
5	BIBLIOGRAPHY.....	26
5.1	References.....	26
5.2	Other Sources	28

FIGURES

PLATES

APPENDIX 1	CATALOGUE OF PRIMARY DATA	I
Appendix 1.1	Context Register.....	i
Appendix 1.2	Catalogue of Artefacts.....	vi
Appendix 1.3	Catalogue of Ecofacts	vii
Appendix 1.4	Archive Index	ii
APPENDIX 2	SPECIALIST REPORTS	III
Appendix 2.1	Prehistoric Pottery Report – Eoin Grogan and Helen Roche	iv
Appendix 2.2	Lithics Report – Farina Sternke.....	viii
Appendix 2.3	Charcoal and Wood Report – Susan Lyons	xii
Appendix 2.4	Burnt Bone Report – Aoife McCarthy	xxii
Appendix 2.5	Metallurgical Waste Analysis Report – Angela Wallace.....	xxxii
Appendix 2.6	Radiocarbon Dating Results – QUB Laboratory.....	xxxiv
APPENDIX 3	LIST OF RMP IN AREA	XXXV
APPENDIX 4	LIST OF SITE NAMES	XXXVI

List of Figures

- Figure 1: Blanchvillespark / Ballyquirk 1 - general site location
- Figure 2: Blanchvillespark / Ballyquirk 1 - location of site showing RMPs
- Figure 3: Blanchvillespark / Ballyquirk 1 - location of site within development
- Figure 4: Blanchvillespark / Ballyquirk 1 - Plan of site
- Figure 5: Blanchvillespark / Ballyquirk 1 - Sections 1–7
- Figure 6: Blanchvillespark/Ballyquirk 1 - Illustration of prehistoric pottery E3682:25:2 (by Alva Mac Gowan)

List of Plates

- Plate 1: Pit C65, mid-excavation, facing north-west
- Plate 2: Pits C65 and C70, post-excavation, facing north-east
- Plate 3: Pit C23, post-excavation, facing north-east
- Plate 4: Pit C90, mid-excavation, facing north-west
- Plate 5: Pit C22, post excavation, facing north-east
- Plate 6: Pit C26, mid excavation, facing south-west
- Plate 7: Pit C83, mid-excavation, facing south-west

1 INTRODUCTION

1.1 General

This report presents the results of the archaeological excavation of Blanchvillespark / Ballyquirk 1, AR111 (Figure 1), in the townland of Blanchvillespark / Ballyquirk undertaken by Ruth Elliott 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 Kilkullen 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 was first identified during testing carried out in 2007 by Gill McLoughlin (E3363) for IAC Ltd on behalf of the National Roads Authority. Blanchvillespark / Ballyquirk 1 was excavated between 22 November and 3 December 2007 with a team of one director and one supervisor and five assistant archaeologists.

1.2 The Development

For the purposes of construction, the N9/N10 Kilkullen 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 Kilkullen 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 wood charcoal samples. All calibrated radiocarbon dates in this report are quoted to two Sigma. Dating of the site also involved pottery analysis through typological study.

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

The site was located on the low southerly slopes of Knockadeen Hill, on undulating terrain at the highest point in the field. The peak of Brandon Hill was visible behind Freagh Hill and Croghan to the SSE. The Blackstairs Mountains were hidden from view by the undulating terrain of the lower Knockadeen slopes to the south-east. Mount Slievenamon was visible to the west. There was a very gentle slope descending from northwest-southeast across the area. A sudden steep slope at the western extent of the excavation area dropped towards a natural basin where a burnt mound site was located at Blanchvillespark 4, 80m away. An existing road formed the eastern boundary of the site, utilising a natural ridge in its ascent up Knockadeen hill. To the far side of this road, the small site of Ballyquirk 1 was located 30m away. There are no Recorded Monuments and Places located within the immediate vicinity of the site. The field had most recently been used for pasture.

2.1 PHASE 1 Natural Drift Geology

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C2	N/A	N/A	N/A	N/A	Hard, mid yellow clay	Subsoil

The subsoil consisted of a mid-yellow clay.

2.2 PHASE 2 Late Neolithic Activity

2.2.1 Pits

Four pits were excavated in the southern part of the site.

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C3	C4	1.6	1.25	0.32	Brown silty sand	Fill of pit
C4	N/A	1.6	1.25	0.32	Oval cut	Cut of pit
C12	C14	>0.60	0.45	0.2	Stony light brown/red silty sand	Upper fill of pit
C13	C14	>0.60	1.16	0.21	Light yellow/grey sandy clay	Basal fill of pit
C14	N/A	1.16	0.23	0.29	Linear cut	Cut of oblong pit
C61	C62	0.3	0.28	0.27	Brown silty clay	Fill of small pit
C62	N/A	0.3	0.28	0.27	Sub-circular cut	Cut of small pit
C63	C83	0.62	0.5	0.13	Dark brown sandy clay	Upper fill of pit
C79	C83	0.57	0.52	13	Dark brown sandy clay	Upper fill of pit
C80	C83	0.37	0.25	0.1	Brownish red sandy clay	Fill of pit
C81	C83	0.16	0.1	0.07	Black sandy clay	Smaller fill/lens of pit
C82	C83	1.04	0.5	0.3	Dark brown/black sandy clay	Basal/primary fill of pit
C83	N/A	1.16	0.64	0.3	Sub-rectangular cut	Cut of pit with five fills

Finds: None

Four pits in the south-eastern extent of the site were located in an area c. 7m by 9m (Figure 4). One of these, C62, was quite small and nondescript. The other three pits were relatively more substantial. Pit C83 was filled by a number of sandy clay layers, many containing charcoal and burnt clay inclusions (Figure 5). A stakehole (C92) was cut into the eastern side of this pit (See Section 2.2.2). The burnt clay most likely represents dumped material rather than *in situ* burning. Although it is possible that it functioned as a hearth this would not have been its primary use. Pit C4, however, had only one homogenous fill. A short oblong pit, C14, was located centrally in this area (Figure 4). This was partially truncated on the east by a modern plough furrow C46b. It contained two stony fills.

Charcoal was recovered from the pit fill C82 during post-excavation soil flotation and subsequently identified to species. The charcoal fragments were identified as a large number of willow (*Salix* sp.) charcoal fragments and smaller amounts of oak (*Quercus* sp.), ash (*Fraxinus excelsior*), pomaceous woods (*Pomoideae spp*) and hazel (*Corylus avellana*) charcoal fragments. The possible *in situ* burning in pit C83 implies that it may have served as a hearth or fire pit at one point. The high occurrence of willow suggests that this was predominantly the wood of choice burnt within this feature. It is also possible that the low levels of ash, oak, hazel and pomaceous woods made up part of the fuel stock or comprised redeposited charcoal from other firing events which became incorporated into this feature. It is difficult to ascertain based on the charcoal identifications alone the exact nature of this feature (Lyons, Appendix 2.3).

Fragments of burnt animal bone were recovered from the pit fills C80 and C82 and a total of 5 bone fragments (38.5%) of the assemblage were identified to species. Due to the high degree of fragmentation and minute size of the individual bone fragments it was not possible to identify 8 fragments (61.6%) and these were classed as indeterminate vertebrate. The only species identified were pig (*Sus*) and rodent bone fragments (McCarthy, Appendix 2.4).

A fragment (0.17g) of alder (*Alnus glutinosa*) charcoal from the pit fill C82 was chosen for AMS dating and produced a result of 4131±26 (UBA 12229). The 2 Sigma calibrated result for this is 2871–2584BC placing this feature in the late Neolithic/early Bronze Age (QUB, Appendix 2.6).

2.2.2 Postholes and Stakeholes

Five postholes and stakeholes were located in the south-eastern extent of the site.

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C10	C11	0.18	0.18	0.39	Grey silty sand	Single fill of stakehole
C11	N/A	0.18	0.18	0.39	Sub rounded cut with a pointed base.	Cut of stakehole
C44	C51	0.14	0.14	0.25	Light brown sandy clay	Fill of stakehole
C49	C50	0.8	0.3	0.3	Dark brown sandy silt	Fill of posthole
C50	N/A	0.8	0.3	0.3	Oval cut	Cut of posthole
C51	N/A	0.14	0.14	0.25	Circular cut	Cut of stakehole
C86	C87	0.12	0.07	0.09	Brown silty clay	Single fill of stakehole
C87	N/A	0.12	0.07	0.09	Sub-oval cut	Cut of stakehole
C91	C92	0.05	0.04	0.07	Light brown/grey sandy clay	Single fill of stakehole
C92	N/A	0.05	0.04	0.07	Circular cut	Cut of stakehole

Finds: None

Three features (C87, C50 and C51) were located in this south-eastern area (Figure 4). Posthole C50 contained the remains of an *in situ*, decayed post sealed by a small spread of charcoal-enriched soil on the surface: a charcoal plug indicated that the post was burnt *in situ*. A vertical line of sub-rectangular stones within the fill indicated packing stones. The original post would have been c. 0.1m in diameter and standing upright. The two stakeholes C87 and C51 held upright stakes.

Stakehole C11 was a relatively isolated feature, situated north-west of the main pit cluster. The concentration of charcoal within the fill suggested the upright stake may have burnt *in situ*. Stakehole C92 was cut into the side of pit C83 and appeared both contemporary and related in function (see above).

2.3.3 Discussion

Activity in the southern part of the site was represented by five pits, five postholes and stakeholes, and a short, oblong pit (Figure 4). None of the features produced any finds but it is interpreted that all of the features are probably contemporary with the late Neolithic radiocarbon date returned from C83. There was no definitive structural pattern to the features and as such their collective function is not clear.

2.3 PHASE 3 Early Bronze Age/Beaker Activity

2.3.1 Pits

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C17	C19	0.3	0.25	0.07	Black sandy clay	Fill of shallow pit
C18	C19	0.35	0.34	0.12	Brown sandy clay	Basal fill of shallow pit
C19	N/A	0.56	0.34	12	Oval cut	Cut of shallow pit
C25	C26	0.75	0.5	0.06	Brownish black sandy clay	Fill of shallow pit
C26	N/A	0.75	0.5	0.07	Teardrop shaped cut	Cut of shallow pit
C30	C32	0.46	0.43	0.1	Dark brown silty clay	Upper fill of pit
C31	C32	0.46	0.43	0.1	Light brown sandy silt	Basal fill of pit
C32	N/A	0.46	0.43	0.2	Circular cut	Cut of pit with two fills
C36	C38	0.9	0.56	0.1	Brownish silty sand	Upper fill of pit
C37	C38	0.37	0.21	0.12	Brownish silty sand	Lower fill of pit
C38	N/A	0.9	0.56	0.25	Oval cut	Cut of pit with two fills
C41	C47	0.48	0.46	0.12	Dark brown silty clay	Fill of shallow pit
C47	N/A	0.48	0.46	0.12	Sub-circular cut	Cut of shallow pit
C54	C55	1	0.8	0.34	Dark brown gravely silt	Single fill of pit
C55	N/A	1	0.8	0.34	Sub-circular cut	Cut of single filled pit
C56	C65	0.7	0.7	0.15	Dark grey silty clay	Upper fill of pit
C64	C65	0.74	0.76	0.1	Medium/big angular stones and silt	Fill of pit
C65	N/A	0.74	0.76	0.1	Circular cut	Cut of pit
C66	C70	0.6	0.45	0.07	Dark brown silty clay	Top fill of pit
C67	C70	0.7	0.6	0.09	Brown silty clay	Fill of pit
C68	C70	0.6	0.46	0.08	Brown silty clay	Fill of pit
C69	C70	0.5	0.46	0.14	Mottled yellowish silty clay	Basal fill of pit
C70	N/A	0.7	0.5	0.34	Oval cut	Cut of pit with four fills
C71	C72	0.42	0.4	0.44	Brown silty clay	Single fill of pit
C72	N/A	0.68	0.59	0.44	Circular cut	Cut of pit
C75	C78	0.38	0.3	0.11	Reddish silty clay	Upper fill of pit
C77	C78	1.3	0.7	0.1	Yellowish silty clay	Basal fill of pit
C78	N/A	1.3	0.7	0.21	Oval cut	Cut of pit with two fills

Finds

Context #	Find #	Material	Period	Description
C66	E3862:066:1	Flint	Late Neolithic/ early Bronze Age	Burnt flint flake
C25	E3862:025:1–4	Pottery	Late Neolithic/ early Bronze Age Beaker	4 bodysherds Beaker

A group of 11 pits was located centrally within the excavation area. These had no distinct pattern and appeared by and large to be randomly distributed in an area of roughly 10m by 15m.

Four of the pits, C70, C65, C38 and C32, were located centrally in a slight arc (Figure 4; Plates 1–2). This was 8.5m in length, aligned NNE–SSW and opened to the north-west. The pits were all oval or circular in shape and contained at least two layers, most with charcoal inclusions. Pits C65 and C32 both contained very stony basal fills, and the fill within pit C65 was almost entirely composed of angular stones.

Pit C78 was relatively isolated and located 7–8m north-west of the central arc of pits (Figure 4). Similar to pits C65 and C32, it also had a very stony basal fill.

The remaining five pits were clustered near the eastern limit of excavation, c. 8m south-east of the central arc of pits (Figure 4). Four of these (C47, C26, C72 and C55) were orientated northwest-southeast in a slightly curved alignment 6.5m in length. Pit C19 was located 1m west of this alignment. With the exception of the large pit C55, the pits were relatively small in size and contained silty or sandy clay fills, most with charcoal inclusions. Pit C47 also had inclusions of burnt clay. It is possible that the activity represented in this area may have originally continued out to the north-east where the modern road cuts through the landscape.

Four worn body sherds of Beaker pottery were recovered from the pit fill C25. While only a small quantity of Beaker material was recovered, it represents a fine, well-made vessel, probably with a soft S-shaped overall profile. The decoration appears to consist of a horizontally arranged panel of vertical scores bounded, at least on top, by a horizontal line (Grogan and Roche, Appendix 2.1, Figure 6).

A flint flake was recovered from the pit fill C66. It is a bipolar flake and most likely dates to the late Neolithic/early Bronze Age period based on its technology (Sternke, Appendix 2.2).

Charcoal was recovered from the pit fill C25 during post-excavation soil flotation and subsequently identified to species. The charcoal fragments were identified as willow (*Salix* sp.) charcoal and a small amount of oak (*Quercus* sp.) charcoal fragments. The absence of any conflagration deposits from pit C26 suggests that the charcoal assemblage recorded from here in C25, may be part of a dump deposit from nearby firing events. The recovery of prehistoric pottery fragments from C25 may also be testament that it functioned as a rubbish pit. The presence of just willow and hazel may be indicative of a single deposit of charcoal or dumping episode (Lyons, Appendix 2.3).

A fragment of alder (0.41g) (*Alnus glutinosa*) charcoal from the pit fill C25 was chosen for AMS dating and produced a result of 3449±25 (UBA 12227). The 2 Sigma calibrated result for this is 1878–1689BC placing this feature in the early/ middle Bronze Age (QUB, Appendix 2.6).

2.3.2 Postholes and Stakeholes

Seven postholes and two stakeholes were located centrally within the excavation area; many of these appeared to be associated with the pits in the location. There was however, no evidence for coherent structural remains or definite links between the features and their precise original function remains undetermined.

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C20	C22	0.24	0.16	0.23	Reddish brown clay	Packing fill
C21	C22	0.24	0.05	0.16	Black silty clay	Post-pipe fill
C22	N/A	0.24	0.21	0.23	Circular cut	Cut of posthole
C27	C28	0.14	0.14	0.12	Brown gravelly silt	Fill of stakehole
C28	N/A	0.14	0.14	0.12	Circular cut	Cut of stakehole
C33	C35	0.13	0.1	0.1	Greyish brown silt	Upper fill of posthole
C34	C35	0.31	0.3	0.15	Mid greyish brown silty sand	Basal fill of posthole
C35	N/A	0.42	0.33	0.25	Oval cut	Cut of posthole
C39	C40	0.05	0.05	0.1	Brown silty clay	Fill of stakehole
C40	N/A	0.05	0.05	0.1	Circular cut	Cut of stakehole
C52	C53	0.42	0.28	0.14	Dark brown silty clay	Fill of posthole

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C53	N/A	0.42	0.28	0.14	Oval cut	Cut of posthole
C57	C58	0.25	0.22	0.08	Dark brown silty clay	Fill of posthole
C58	N/A	0.25	0.22	0.08	Circular cut	Cut of posthole
C84	C85	0.33	0.2	0.12	Dark brown sandy silt	Fill of pit/posthole
C85	N/A	0.33	0.2	0.12	Oval cut	Cut of pit/posthole

Finds: None

Postholes C53 and C35 were located to the west of the arc of pits in the centre of the area (Figure 4). Stakehole C40 was located centrally along the line of the arc of pits. The fills of all three features suggested that the original posts and stakes had been deliberately removed. Posthole C22 was located outside the arc of pits, 2m to the south-east (Figure 4). The basal layer C21 represented a post-pipe which burnt *in situ*. This was located at the side of the cut and represented a post c. 0.5m in diameter and standing upright. The surrounding packing fill was also burnt *in situ*, particularly in close proximity to the post-pipe. The proximity of these features to the arc of pits suggests that they may have been associated.

Posthole C58 was located near the southern edge of pit C47 approximately 1.5m NNE of stakehole C28, which was located near the edge of pit C19. These posts and stakes may have had functions related to the adjacent pits. The fills suggest that both post and stake had been deliberately removed.

The very shallow remains of posthole C85 were located approximately 5m south-west of the arc of pits (Figure 4). C85 had been partially truncated by a modern plough furrow C46a.

Charcoal was recovered from the posthole fill C20 during post-excavation soil flotation and subsequently identified to species. The charcoal fragments were identified as hazel (*Corylus avellana*) charcoal. The fragments level was relatively low and is therefore unlikely to represent the remains of a structure that had burnt down; as such events would leave behind a larger charcoal assemblage. It is instead likely that this assemblage may be the result of construction methods, such as a) the charring of post bases to prevent the timbers from rotting b) a way of re-sizing posts or c) the method by which the timbers were felled (Lyons, Appendix 2.3).

A fragment of pomoideae (0.78g) charcoal from the posthole fill C20 was chosen for AMS dating and produced a result of 3452±21 BP (UBA 12228). The 2 Sigma calibrated result for this is 1877–1691BC placing this feature in the early/ middle Bronze Age (QUB, Appendix 2.6).

2.3.3 Spreads

Three spreads were located to the south-west of pit C78.

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C73	N/A	0.48	0.46	0.07	Black sandy silt	Mid-sized spread
C74	N/A	0.43	0.2	0.06	Black silty clay	Smaller spread
C76	N/A	0.78	0.35	0.07	Red silty clay	Mid-sized spread

Finds: None

The spread represented by C74 and C76 was essentially a small patch of *in situ* burnt soil and charcoal with no evidence of a cut. Spread C73 was a similar small patch of charcoal-enriched soil with no evidence of a cut.

2.3.4 Discussion

The main concentration of features was located centrally in the east half of the excavation area, continuing up to the eastern limit of excavation. These comprised 10 pits, eight postholes and two small spreads. Although the 10 pits had no definite formal arrangement; the central four formed a slight arc shape, a fifth was isolated approximately 8m north-west and the remaining five were clustered approximately 8m south-east: four in a northwest-southeast alignment. The eight postholes did not form any coherent structural remains but some appeared clearly related to the pits in the area. The three spreads were relatively isolated to the north-west and represented small scale burning in the location.

As there was no discernable form or pattern to the pits and postholes their precise function was unknown. The majority of the fills were largely sterile, although pit C26 contained four sherds of Beaker pottery (E3862:25:1–4), but whether these were deposited as rubbish or for ritual purposes cannot be determined.

2.4 PHASE 4 Other Undated Archaeological Features

2.4.1 Pits

Two pits were excavated in the southern part of the site.

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C15	C23	1.93	0.78	0.27	Black/brown clayey silt	Upper fill of pit
C16	C23	0.7	0.78	0.27	Brown silty clay	Fill of pit
C23	N/A	1.93	1.3	0.29	Sub-circular cut	Cut of pit with three fills
C24	C23	1.93	1.32	0.29	Brown/yellow mottled silty clay	Side fill of pit
C89	C90	1.1	0.75	0.38	Brown silty clay	Single fill of pit
C90	N/A	1.1	0.75	0.38	Sub-oval cut	Cut of pit

Finds: None

Context #	Find #	Material	Period	Description
C89	E3862:089:1–3	Flint	Natural	

Pits C23 and C90 were located in the south-western part of the site (Figure 4; Plates 3–4). The large pit, C23, was lined on the sides and base by a layer of silt (C24), followed by two deposits of charcoal-enriched soil containing burnt stone (C15 and C16). Samples containing possible iron slag were retrieved from both of the latter deposits suggesting the pit contained waste produce derived from metalworking. Pit C90, immediately south of this, contained large sub-angular stones in a silty clay matrix and produced three pieces of burnt flint.

The two pieces of possible slag submitted, weighing 65.3g and measuring roughly 25mm across were submitted for analysis (Wallace, Appendix 2.5). Both pieces have reddish patches evident on the surface giving them the appearance of metallurgical residues but on closer examination it appears more likely they are naturally occurring stones which have been subjected to high temperatures.

A hammer was used to break one of the fragments to examine it in section and it appears that there are possible veins of iron within this material. It would seem that both these pieces are iron-rich stones that have been subjected to high temperatures. Given that no metal finds were retrieved from this site and the early dates obtained from features, the most likely explanation is that this material is naturally occurring iron rich stone which was exposed to high temperatures.

2.4.2 Posthole

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C7	C9	0.34	0.32	0.05	Brown silty clay	Fill of pit/posthole
C8	C9	0.34	0.32	0.08	Dark brown silty clay	Fill of pit/posthole
C9	N/A	0.34	0.32	0.13	Circular cut	Cut of pit/posthole

Finds: None

A single isolated posthole was located to the north-northwest of the early Bronze Age/Beaker cluster. It may have been associated with the latter-mentioned activity, but was at a sufficient distance (7.5m) away from the cluster to be discussed on its own. This may have been a small pit or posthole. It had a charcoal-rich basal fill and silty clay secondary fill.

2.5 PHASE 5 Post-medieval Features

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C5	C6	4.25	0.95	0.21	Greyish black sandy silt with large stones	Fill of linear feature
C6	N/A	4.25	0.95	0.21	Linear cut	Cut of linear feature
C45	C46	>2.00	0.6	0.13	Darkish brown clayey silt	Fill of plough furrows
C46	N/A	>2.00	0.6	0.13	Linear cut	Plough furrows

Finds: None

A linear drainage ditch, C6, orientated northeast-southwest, terminated within the north-western part of the excavation area (Figure 4). There were frequent large sub-angular stones on the base of the feature within a silty matrix.

Plough furrows on the site, all given the number C46, averaged 0.6m in width and were orientated northwest-southeast (Figure 4).

2.6 PHASE 6 Topsoil

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C1	N/A				Mid brown silty clay	Topsoil

Finds

Context #	Find #	Material	Period	Description
C1	E3862:1:1	Metal	Modern	Belt buckle

The topsoil was well-drained, consisted of mid-brown, silty clay and contained only one modern artefact, a belt buckle.

3 SYNTHESIS

The synthesis presents the combined results of all of the archaeological analysis carried out at Blanchvillespark/Ballyquirk 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

3.1.1 The General Landscape – compiled by Michelle Brick

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

Portarlinton, 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 or Ballyquirk 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

The site was located on the low southerly slopes of Knockadeen Hill, on undulating terrain at the highest point in the field. There was a very gentle slope descending from north-west to south-east across the area. A sudden steep slope at the western extent of the excavation area dropped towards a natural basin where a burnt mound site was located at Blanchvillespark 4 c. 80m away. An existing road formed the eastern boundary of the site, utilising a natural ridge in its ascent up Knockadeen hill. To the far side of this road, the small site of Ballyquirk 1 was located c. 30m away. There are no Recorded Monuments and Places located within the immediate vicinity of the site.

3.2 The Archaeological Landscape

As part of the general research relating to sites along the scheme and the specific research relating to Blanchvillespark/Ballyquirk 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/Ballyquirk 1 has been identified as being Neolithic and Bronze Age in date.

3.2.1 The General Neolithic landscape of the Scheme – compiled by Michelle Brick

The Neolithic period in Ireland is generally understood to have occurred between 4000–2500BC. 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 Knocktopher 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 are 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 Road Scheme, again mainly in the form of artefacts. Three of the sites were located close to where 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 General Bronze Age Landscape of the Scheme

The archaeological record implies that the Irish Bronze Age (2500–800BC) population dramatically increased from that of the Neolithic and the evidence for permanent settlements with considerable longevity becomes much more substantial. In addition, a wide range of ritual and funerary activity associated with this settlement is apparent. The overall environmental record for Ireland suggests that there was a general climatic deterioration in the Bronze Age, bringing wetter, colder conditions; during this period there was also accelerated forest clearance with more intensive habitation in the drier lowlands. As a result of extensive development-led projects across the country, understanding of settlement and burial patterns from the early Bronze Age has greatly developed. The distribution of the prehistoric evidence shows that the Rivers Nore and Barrow provided a focus for settlement. In the central part of the current portion of the N9/N10 Phase 4 the fertile Kilkenny lowlands have produced some Bronze Age archaeology, particularly in Danesfort and Ennisnag townlands. In the northern part of the scheme intense settlement is indicated by both burnt mounds and barrows existing on the uplands of the Castlecomer Plateau and the flanking valleys of the Nore and Suir. Hillforts appear to be positioned to overlook the settlement activity, as well as the route of the Nore, the lower saddle to the north of the Slieveardagh Hills, and to the south of the spur surmounted by Clonmantagh. A considerable number of ringditches, cremation and inhumation burials (single and grouped), burnt mound sites, structures and domestic settlement evidence, have been recorded as part of the Bronze Age on the N9/N10 Phase 4.

In the southern landscape the exposure of domestic Bronze Age settlement was less forthcoming than that of the northern landscape. There was little direct evidence for structures in the southern and central landscapes with the exception of a cluster of structures in the Danesfort area. Instead most of the settlement activity that fell within the roadtake was noted in the northern landscape, further to the north of Kilkenny and in Carlow. Ritual and burial is a dominant feature of the Bronze Age in Kilkenny and Carlow as indicated by the presence of flat cemeteries, burial cairns, ringditches, mounds, barrows and hillforts throughout these counties. Freestone Hill situated in Coolgrange, Co. Kilkenny, in the centre of the present landscape is just one example of these sites. Along the lower part of the Nore Valley, and concentrated in the Foulksrath and Jeninstown areas, the landscape is dominated by barrows (in this case more specifically ringditches). The contrasting locations of these site types most probably relate to differential landscape exploitation by the same communities with some activities, possibly associated with the seasonal use of upland pasture, confined to higher terrain and settlement and funerary activity taking place in the more sheltered lowlands.

The significant number of burnt mound sites discovered due to the N9/N10 excavations, combined with the previously known examples in the RMP reinforces the concept that Bronze Age activity in Kilkenny and Carlow was considerable. A total of 36 sites with evidence for burnt mound activity were uncovered during the N9/N10 excavations, with an additional example discovered, and preserved outside, the roadtake. The burnt mounds are focussed in the upland area, especially along the river and stream valleys, such as at Clashduff, Coan West and Muckalee on the Dinin and Douglas Rivers, and in the upland hinterland of Freestone Hill.

The distribution of the prehistoric evidence shows that the Rivers Nore and Barrow provided a focus for Bronze Age settlement. The patterning of human activity in the region indicates that these were also the principal route-ways in prehistory; both were navigable by small craft but they, and the major tributaries of the Nore- the Dinin and King's Rivers - were also conspicuous landscape features that facilitated accurate navigation through this landscape. The Barrow and Nore also provided access to wider networks beyond the region.

The Northern Landscape: Domestic Settlement

The domestic settlement evidence from the landscape along the northern sections of Kilkenny and the border with Carlow can be characterised by multi-period sites, such as at Moanduff 2–3, and by clusters of activity represented by multiple burnt mound sites and several, possibly associated, structures. This part of the Barrow is overlooked by the hillforts at Freestone Hill (KK020-018002) (Coolgrange), Ballinkillin (CW019-027) and Killoughternane (CW019-065). However, the distinct clustering of the Paulstown area sites suggests the existence of a community separate to that in the immediate vicinity of Freestone Hill although it is probable that the hillforts reflect a wider landscape control system involving co-operation or alliance between a number of communities in the Kilkenny region. In addition to the indirect evidence in the form of burnt mounds and cultural deposits in pits, several structures, of typical Bronze Age morphology, were recovered. At Garryduff 1 an external ring of 37 postholes and stakeholes was positioned in a shallow, curving slot-trench and enclosed an area 11m in diameter with an inner ring of 10 larger postholes (7m diameter). This structure was located on the edge of a break of slope, which led down to an adjacent river. Other features on site may represent a possible grain stand and pits for food storage/rubbish. In the south-western corner of the site a curving arc (12m long) of 18 postholes and stakeholes was identified which may continue beyond the site. Six kilometres to the north of Garryduff 1 was an oval-shaped structure at Shankill 4. This was most likely a hut (4m x 3m) and consisted of postholes, stakeholes, an internal hearth, and outlying pits. An arc of stakeholes measuring 3m by 2.5m on its north side might have formed an entrance porch. Sherds from at least one domestic cordoned urn came from the site. A roundhouse at Moanmore 2 consisted of 14 postholes, a central hearth, and up to 50 associated stakeholes and postholes.

As well as two rectangular Neolithic structures at Moanduff 2–3 there were four, or possibly five, separate areas of Bronze Age activity identified. As the features representing this activity were heavily truncated it is impossible to identify their exact function however some may represent Bronze Age structures. A middle-late Bronze Age enclosure (180m x 160m) and late Bronze Age activity in the form of troughs with burnt clay and stone were also excavated on site. At Coneykeare 1 two very tentative structures were identified by the director and a fifth concentration of activity, incorporating burnt mounds and settlement activity; was noted at Coolnakisha 1. A five post, L-shaped possible temporary structure at Coolnakisha 1 was identified along with two pits containing burnt bone and a moderate amount of charcoal and flint. A spread, also containing a moderate amount of charcoal, burnt bone, flint and heat-shattered stones was located to the north-west of the possible structure. It is most likely that the burnt bone deposits within the features on this site are domestic in nature.

The Northern Landscape; Funerary and Ritual activity

Funerary evidence is represented by ringditches at Kellymount 5 and Paulstown 1 and simple pit cremations also at Paulstown 1. Evidence of the Bronze Age is present at Croan (Aghaviller Parish); where a food vessel was discovered, and also at Cruttencloagh; where artefacts of amber, gold and bronze were found; there were 14

gold beads discovered with varying decoration together with graduated amber beads (Lyng 1984). The find circumstances of these artefacts is unknown however similar artefacts in the form of a necklace were discovered at Tara, around the neck of an adolescent male, buried in a pit (Herity and Eogan 1977) and it is likely that the Cruttenclough finds came from a similar burial context. They indicate trading links with Europe and a bronze sunflower pin was also discovered in this townland, which is of late Bronze Age type (Lyng 1984; Eogan 1974a, 87) and originally had a gold foil covering. Other material demonstrating a late Bronze Age presence in the area includes the large hoard from Ballytegan, Co. Laois (Eogan 1983); this contained three sunflower (two covered in gold foil) and one disc-headed pin, two socketed axes, a bracelet of twisted strands and a variety of both solid and hollow bronze rings. The rings are characteristic of Eogan's (1974b; 1993) midland province and this hoard demonstrates ritual activity in the region. Early Bronze Age activity is also evident in the adjacent area of Co. Carlow on the east side of the River Barrow. A cist burial at Killinane contained cremated bone and an upright tripartite bowl food vessel (Moore 1984). Similar discoveries were also found close by in Sliguff and Wells; both townlands are located in west Carlow along the Kilkenny border close to the landscape of the present scheme. The Sliguff cist contained a crouched inhumation that was accompanied by a bowl while the pit cemetery at Baunogenasraid was inserted into the mound of the earlier Linkardstown tomb (Raftery 1974). A large cemetery mound at Ballon Hill was discovered in the 19th century, which revealed a large assemblage of vases and collared urns in both pit and cist burials (Waddell 1990, 51–53).

Six of the sites in this northern landscape of the N9/N10 Phase 4 had evidence for prehistoric funerary activity which was represented by barrows, ringditches, cists and cremation deposits at Rathcash East 1, Garryduff 1, Paulstown 1–2, Kellymount 5, and Coolnakisha 1–2. This evidence broadens the funerary landscape of the Bronze Age in this region. A possible ringditch was recorded at Rathcash East 1. It was formed by two very shallow curvilinear cuts creating a circle with a diameter of 6m and potential openings or entrances (1.45m wide) mirroring one another on the south-east and north-west sides. Nearby activity included a hearth and possible refuse pit. It is possible that this domestic activity was related to funerary practices associated with the ringditch; however, it is perhaps more plausible that, given the lack of associated burial activity (although the enclosed area had been truncated) and the occurrence of two entrances, the ringditch in fact represents a domestic structure.

At Garryduff 1 two unroofed structures, both comprising arcs of post- and stakeholes, may have been associated with a large, northwest–southeast pit (2m x 1.3m x 0.16m) located close to Structure 1. This pit contained a charcoal-rich deposit with burnt bone, heat-cracked stones and charred hazelnuts which had been deliberately deposited. Three postholes also containing similar material in their fills were arranged around the pit and a definite concentration of burnt bone was noted in this area of the site. It is possible that this pit and the adjacent postholes represent the remains of a draught pit for a pyre with the postholes at either side being used to stabilise the pyre structure for the duration of the process. Two cremation pits were located outside the enclosure which contained quite large chunks of human bone and possible pyre material.

The cemetery complex at Paulstown 1 consisted of both pit and cist burials. Three small cists (averaging 0.6m by 0.32m by 0.16m internally) were made expediently with slabs and blocks of local stone. Three other pits were less formally lined with stone. Each contained cremations but one cist produced two discrete deposits. Three other grave pits formed part of the cemetery. In one of these pits an unburnt human skull was placed on top of a washed cremation deposit. Several burials were

accompanied by ceramic gravegoods. These gravegoods included burnt sherds from bipartite vases, a miniature cordoned urn and a miniature vase; a burnt flint scraper as well as charred seeds and hazelnuts also came from one of the cists. The largest grave at Paulstown consisted of a large pit or pits. This contained a complex sequence of deposition which appears to have begun with a circular pit which contained an inverted vase; this was disturbed by the insertion of Vessel 1, another inverted vase which survived intact. A miniature vase (No. 6) may have accompanied one of these burials. Subsequently, a second larger pit extended the grave to the south. The fragmentary remains of three pots (No.s 3–5) were deposited on the base of this pit and a large cremation deposit was placed over them. This deposit contained sherds from Vessels 5 and 6 as did a final silty fill. The evidence suggests that the grave was extended to accommodate burials disturbed from other graves. A large circular pit occurred on the edge of the cemetery (1.55m by 1.48m by 0.80m deep). This had originally been maintained as an open feature that filled naturally with water. Subsequently, a complex sequence of layers containing charcoal, burnt and unburnt bone, charred hazelnut shells and seeds, antler and flint (including flakes, blades and debitage), developed or was deposited in the pit. The proximity of this feature, which appears to have been a well, suggests that it was associated with the funerary activity on the site.

A double ringditch was identified at Kellymount 5. The external ringditch (12m diameter x 1.04m deep) was lined with a spread of burnt mound material, possibly relating to the earlier use of the site as a burnt mound complex. The only artefacts in this external ringditch consisted of three Bronze Age pottery sherds. The internal ringditch (5.6m diameter x 0.2m deep) was situated centrally within the external ringditch and also contained heat-shattered stones in its fills. A central pit had burnt bone inclusions. A further two pits were located to the south of the ringditches and both contained burnt bone inclusions. A substantial part of a vase urn came from one of the troughs associated with the burnt mound complex; while this may be derived from the funerary activity it is evident that the vessel had been used in a domestic context and may have been a deliberate deposit in the base of the trough.

Evidence for funerary activity was also excavated at Coolnakisha 2, where one pit (0.33m x 0.26m x 0.13m) contained 25.5g of charcoal, 0.1g of charred seeds and 390.3g of burnt bone. Other pits and possible pits and spreads also contained burnt bone inclusions, although in much smaller quantities. Both sites produced small quantities of probably middle Bronze Age while residual Neolithic material in the form of three flint scrapers came from Coolnakisha 1.

It is therefore apparent that the central, northern part of Kilkenny contained the most varied evidence for burial and funerary activity. As the N9/N10 progresses northwards sites with a probable continuity of function and chronology emerge: from the Danesfort complex near the King's River to the varied ringditches and cremations at Templemartin 5 and the amalgamation of ritual and burial at Paulstown 1–2.

The Northern Landscape; Burnt Mound Activity

The evidence from the northern landscape was dominated by clusters of burnt mounds and reinforces the patterning already indicated by the previously known archaeological record. Several previously identified burnt mounds were recorded in Cloghoge (KK020-039, KK020-075, 076), Rathcash West (KK020-077, 078), Shankill (KK016-003, KK016-010) and at Moanmore (meaning 'great bog') (CW015-007, CW015-014). Twenty seven sites with evidence of burnt mound activity were uncovered as part of the N9/N10 Phase 4 excavations within the northern landscape. The underlying limestone geology/glacial drift consisted of sandy/gravel-clays which have a higher moisture content than the southern and central landscapes resulting in

a high water table in localised areas. This helps explain the presence of the considerably sized waterholes at these burnt mound sites, notably within the Jordanstown and Kellymount cluster (Jordanstown 2 and 3 and Kellymount 1–3, 5&6). Other clusters of burnt mound activity in the northern landscape occurred at Ballyquirk 1, 2 and 4, Moanmore 1 and 3, Moanduff 1, 2 and 3, Rathcash 1 and 2, Blanchvillespark 2, 3 and 4 and Cranavonane 1 and 2. Other sites exhibiting burnt mound activity include Shankill 6, Bannagagole 1, Rathcash East 2, Tomard Lower 1 and Ballinvally 1. Due to the poor on-site conditions the sites at Cranavonane 2 and Blanchvillespark 2 were not fully resolved but were identified as burnt mounds. Burnt mounds were not excavated at Kellymount 1, Moanduff 2 and 3, Ballyquirk 1 and Ballinvally 1; however features associated with burnt mound activity were recovered and excavated at these sites indicating a clear association with this type of activity.

The Northern Landscape; Route-ways and communications

While it is clear that the rivers and streams are a major feature of the settlement networks the distribution of prehistoric activity, for example on the lowland fringes to the south of the Castlecomer Plateau, shows that other route-ways were functioning at both a local and regional scale. Within these network systems it is possible to identify particular concentrations of human activity. Some of these were already important in the early Neolithic while others became prominent only in the Bronze Age. Among the most significant of these are those in the area around Carlow, on the upper Barrow and its tributary the Burren River, which the archaeological work on the Carlow Bypass has highlighted (Dunne 2007). To the south of this, the eastern side of the Barrow in the Goresbridge area formed the core of a settlement zone that in the Bronze Age extended westwards across the river into the Paulstown area of Co. Kilkenny. The immediate environs of Kilkenny City also appear in the Bronze Age as a settlement focus, underlined as a result of the N9/N10 excavations, while the southern end of the Castlecomer Plateau, with the major focal site on Freestone Hill, has been highlighted by the discovery of new sites on the lowlands immediately to the south around Rathcash.

The Northern Landscape; Conclusions

In the northern part of the region, focussed on the uplands of the Castlecomer Plateau and the flanking valleys of the Nore and Suir, intense settlement is indicated by both burnt mounds and barrows. The burnt mounds are focussed in the upland area and especially along the river and stream valleys, such as at Clashduff, Coan West and Muckalee on the Dinin and Douglas Rivers, and in the upland hinterland of Freestone Hill. Along the lower part of the Nore Valley, and concentrated in the Foulksrath and Jeninstown areas, the landscape is dominated by barrows (in this case more specifically ringditches). The contrasting locations of these site types most probably relate to differential landscape exploitation by the same communities with some activities, possibly associated with the seasonal use of upland pasture, confined to higher terrain and settlement and funerary activity taking place in the more sheltered lowlands. The large number of burnt mounds discovered on the lowland fringe to the east of the plateau, along the Barrow Valley, shows the development of intensive settlement throughout the northern part of the region. In this area the hillforts appear to be positioned to overlook the settlement landscape.

3.1.1 The Site Specific Archaeological Landscape of Blanchvillespark/ Ballyquirk 1

There are no Recorded Monuments and Places in the immediate vicinity of Blanchvillespark/Ballyquirk 1. A church and graveyard (KK020-025) are recorded c. 850m to the south-west, there are no other Recorded Monuments and Places recorded close-by.

At Blanchvillespark/Ballyquirk 1 late Neolithic and early-middle Bronze Age pits were excavated. Some sherds of beaker pottery were also recovered from the site. There was no discernable pattern or function to the pits; it is possible that they are in part related to an early Bronze Age settlement that was identified at Ballyquirk 2, located c. 300m to the north-east of Blanchvillespark / Ballyquirk 1. A wide range of features including circular arrangements of posts and stakes indicate that this was likely to be the focus of a semi-permanent domestic settlement in the early Bronze Age. At Ballyquirk 3, located c. 400m away, a sub-rectangular- or oval-shaped stakehole structure was excavated. A post-built structure which replaced its earlier stakehole counterpart was also excavated and dated to the middle Bronze Age. A number of pits and small features clustered near this structural evidence were also excavated. Further to the north-east, a complex of up to five burnt mounds and associated features were excavated at Ballyquirk 4, c. 1.25km away. Dates returned from the site indicate it was in use during the middle Bronze Age period.

At Ballyquirk 1, located c. 50m to the ESE, small scale, localised burnt mound activity in the form of pits was excavated and these have been dated to the early Bronze Age period. A number of sites were also excavated to the south-west of Blanchvillespark/Ballyquirk 1, as part of the N9/N10 Phase 4: Knocktopher to Powerstown works. At Blanchvillespark 4, located c. 80m away, a burnt mound complex with at least five troughs was excavated. Various spreads of burnt mound material were also recorded. Three samples were sent for radiocarbon dating and indicate that there was activity on site in the early and late Bronze Age, although it is interpreted that the site would have been occupied at other times in prehistory based on the stratigraphic complexity of the site. Further to the south-west, at Blanchvillespark 3, located c. 950m away, excavations uncovered burnt mound activity with associated features, including a possible sweathouse. These have been dated to the middle Bronze Age. Beyond this site at Blanchvillespark 2, a fragmentary burnt spread was identified c. 1.2km 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.

3.3 Typological Backgrounds of Blanchvillespark/Ballyquirk 1

The specific nature of the activity at Blanchvillespark / Ballyquirk 1 is unclear but it is possible that it is related to isolated settlement activity in the form of pits and postholes, or temporary prehistoric structures, and the presence of Beaker pottery may also provide a key to the nature of the occupation of the site

3.3.1 Typological Background of Isolated Pits

It can be difficult to get into the prehistoric 'mind set' when interpreting archaeological remains, none more so than in the case of apparently isolated pits and postholes sometimes containing 'ritually' deposited items.

Usually large postholes/pits are interpreted as load bearing or structural elements of a building however given the relatively isolated nature of the posthole that explanation is not plausible. What then was its function? Was it excavated purely as a rubbish pit to deposit the pottery or did it have more significance? Were they a 'closing deposit' when the structure was being abandoned/ dismantled? Even if the deposition was attributable to such actions what was the posthole excavated for, what did it support? Totem poles or marker posts have been suggested for such anomalies in the past indeed it has been noted that all a totem pole would leave behind in the archaeological record is a seemingly unremarkable large posthole (Barker1993, 25).

It is possible that some isolated pits represent simple refuse pits associated with temporary settlement but may also have been excavated and backfilled as part of a ritual associated with the transient nature of people at the time. Edmonds suggests that pits were dug and filled as people left a place for a season, like the planting of crops, offering “the hope of renewal and return” (Edmonds 1999). Pollard also suggests that abandoning a settlement and moving on was an act of social transition, and a potential threat to social order. The digging and filling of pits may have been a way to counter this threat (Pollard 2001).

Cremation pits are a common form of burial in the Bronze Age in which the dead would have been burnt on a wooden pyre and the ashes placed in a small pit. Burials can be found in isolation, or grouped together in cemeteries. Recent excavations along the many linear infrastructure projects have revealed hundred of these pit burials and analysis indicates that these pits may indeed not be ‘isolated’ features as such and may be part of the wider landscape of Bronze Age burial rites in Ireland (Grogan, O Donnell & Johnston 2007, 115). In the middle and later Bronze Age the quantity of cremated bone deposited was represented by small token deposits rather than the full cremated body.

3.3.2 Typological Background of Temporary Prehistoric Structures

The rise in development led 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

3.3.3 Typological Background of Beaker Pottery and Pits

Beaker pottery was adopted in Ireland c. 2500/2400BC (Brindley 2005, Carlin 2006, 2) and it is seen as a major trend that rapidly spread throughout Europe at this time (Carlin 2006, 2). Its emergence is currently considered to indicate the development of a more hierarchical and individualistic society, whereby status was attained and represented by the competitive exchange and display of exotic goods (*ibid.*). In Ireland, Beakers follow the same stylistic evolution as in Britain, from the early All-Over Corded style, to the later more elaborate decorated forms (Malone 2001, 243). The typical Beaker site in Ireland consists of occupational spreads, and pits and postholes that often lack any recognisable pattern (*ibid.*).

In Ireland, Beaker pottery is predominantly found in pits along with artefacts such as lithics, burnt and unburnt animal bone, and the charred remains of cereals and fruits. 100 of the 210 sites yielding Beakers in Ireland have consisted almost exclusively of pits. Sixty-two of these sites consisted solely of pits, while other types of features such as postholes, stakeholes, slot trenches, spreads, and metallised surfaces also occurred with the remainder (Carlin forthcoming).

The vast majority of Irish Beaker pottery comes from pits that share many characteristics with Neolithic and Early Bronze Age pits in Britain and Ireland (Garrow 2006; Woodward 2002; Smyth 2007). The broad range of different forms of deposition within these features prevents the recognition of any purely 'domestic' component, furthermore, the presence of human bone as well as special objects such as polypod bowls, polished stone axes, arrowheads and scraper caches suggests that some of these were not regarded as simply rubbish or storage pits (Carlin forthcoming). Despite this, our inability to confirm that all of these pits are indeed wholly representative of settlement activity has implications for the general acceptance that Beaker artefacts in Ireland are mainly found in a settlement or 'domestic' context (*ibid.*).

3.4 Summary of the Excavation Results

The site identified pits, postholes and stakeholes scattered across the site. There were two noticeable clusters. In the south of the site a number of medium sized pits were identified in association with some postholes and stakeholes. They returned no finds, their function is unknown, and there was no obvious structural pattern to their layout. In the centre of the site there was a larger cluster of more pits, postholes and stakeholes. Two possible alignments were noticed which are not directly related to each other. One was characterised by four pits and a stakehole that formed a slight arc while the other consisted of a linear alignment of a further four pits and a possible posthole. Both alignments had other features in proximity that may have been associated. Four sherds of Beaker pottery were identified within one of the pits of the linear alignment. A small number of other pits, postholes and spreads were identified in relative isolation, away from the main clustered areas of activity and probably unrelated to each other. None of these additional features produced any finds.

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

Prehistoric pottery analysis

The site produced four sherds (weight: 20g) representing a final Neolithic/ early Bronze Age Beaker. This is an important addition to the previously poorly represented distribution of Beaker activity in this region.

Lithics analysis

The lithic finds from the archaeological excavation at Blanchvillespark / Ballyquirk 1, Co. Kilkenny are a bipolar flint flake and three natural chunks of flint. The flake most likely dates to the late Neolithic/early Bronze Age.

Charcoal and Wood Species identification

The charcoal fragments from posthole C22 and pits C26 and C83 recorded at Blanchvillespark / Ballyquirk 1 were chosen for charcoal identification and analysis. Since it was difficult to ascertain whether all three features were associated with each other, the interpretations are localised to each feature, rather than the site as a whole. It is likely that pit C83 functioned as a hearth or fire pit, where willow was the dominant species burnt, with lesser oak, hazel, ash and pomaceous woods used. C26 may have been used as a rubbish pit and the presence of just willow and hazel could represent a single dumping event and therefore a short-lived feature. The presence of hazel from posthole C22 is likely to be the remains of a partly burnt structure or burnt post.

Animal Bone Analysis

A total of 13 burnt bone fragments recovered from two archaeological contexts on Blanchvillespark/Ballyquirk 1 were submitted for examination. A total of 8 bone fragments (61.5%) were not possible to identify to species due to trabecular or spongy nature of the minute fragments. The remaining 5 fragments (38.5%) were identified and divided into species. The faunal remains assemblage contained bones from 2 species - pig and rodent. The burnt remains assemblage, identifiable and indeterminate retrieved from this site was recovered from 2 archaeological contexts that have been interpreted as the charcoal rich fills of a single pit feature C83. It was not possible to determine the significance of this small and largely unidentifiable assemblage of burnt bone.

Metallurgical analysis

A total of 2 small fragments of material were submitted for examination. Both pieces are irregular in shape, one piece is flattish and the other is blocky in shape. They do not have typical appearance of iron slags. A hammer was used to break one of the fragments to examine it in section and it appears that there are possible veins of iron within this material. It would seem that both these pieces are iron-rich stones that have been subjected to high temperatures. Given that there were no metal finds from this site and also owing to the early dates obtained from features, the most likely explanation is that this material is naturally occurring iron rich stone which was exposed to high temperatures.

Radiocarbon Dating

A total of three samples were sent for AMS radiocarbon dating.

The results of the analysis dated as charcoal from the pit fill C25. The 2 sigma calibrated date was 1878–1689BC (UBA 12227)

The results of the analysis dated as charcoal from the pit fill C20. The 2 sigma calibrated date was 1877–1691BC (UBA 12228)

The results of the analysis dated as charcoal from the pit fill C82. The 2 sigma calibrated date was 2871–2584BC (UBA 12229)

4 DISCUSSION AND CONCLUSIONS

4.1 Discussion

The site at Blanchvillespark/Ballyquirk 1 consisted of pits and postholes with no obvious structural pattern dating to the Neolithic and the early-middle Bronze Age. The surrounding physical landscape in the immediate vicinity consists of a marginal landscape that is prone to flooding and is poorly drained. This type of landscape is often associated with burnt mound activity as it provides an easy water source, given that the majority of burnt mounds are associated with heating of water, usually in a trough. However, potential domestic settlement activity would not usually be associated with this type of physical background and in this regard the location of this multi-phased site would not have been expected.

There are no previously recorded monuments in the area that would indicate a potential for Neolithic or early/middle Bronze Age activity at or near the site. Excavations at sites in the vicinity as part of the N9/N10 scheme have produced some evidence of contemporary Bronze Age activity, although no further related Neolithic activity was recorded. The location of the Neolithic and Bronze Age phases within the one site can therefore be considered as coincidental rather than a re-use of an earlier site. Indeed, both phases of activity were identified in separate areas of the site and no definitive connection can be made in relation to continuity of settlement at the site.

Contemporary dates in the early-middle Bronze Age were identified from one trough of a multi-phased burnt mound site to the south at Blanchvillespark 4 and from a posthole at a multi-phased possible domestic settlement site at Ballyquirk 2 to the north. In both cases, these were likely not to have been the main phase of occupation of the respective sites but they show that there was established settlement in the area throughout the Bronze Age and in this context it is to be expected that further isolated evidence would be identified in the wider vicinity as at Blanchvillespark/Ballyquirk 1.

The Neolithic activity at the site has been interpreted as isolated pits/postholes although it is possible that these represent 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 postholes may have held posts which could have formed part of a structure that 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 (such as 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 *leaf litter*) for insulation (Wikipedia). Until comparative examples are researched, this interpretation must be considered speculative.

The Bronze Age activity on the site may also represent a temporary structure similar to that described above. The identification of Beaker pottery within some of the fills may be of particular significance. However, as has been outlined in section 3.3.3, Beaker pottery is often recorded from isolated pits with no definitive structural plan. While the identification of the pottery provides further clarity on the dating of the features, in tandem with the radiocarbon analysis, it does not provide greater clarity on the function of the site.

There are few recorded examples of Beaker pottery from the region. This is therefore an important addition to the previously poorly represented distribution of Beaker activity in this area. Combined with other sites excavated as part of the scheme, most

notably at Paulstown 1 c. 4km to the north-east, the site has expanded the previously known distribution of Beaker pottery.

4.2 Conclusions

Blanchvillespark/Ballyquirk 1 has produced evidence of isolated pits/temporary domestic settlement from both the late Neolithic and the early-middle Bronze Age. The site is important locally as there were no previously recorded prehistoric sites in the immediate vicinity. However, the site is also potentially important regionally on the basis of its two distinct phases of activity and also the presence of Beaker pottery in the fills of one of the features associated with the early-middle Bronze Age activity. It provides further evidence, in conjunction with other sites excavated as part of the N9/N10 scheme, of settlement of the Blanchvillespark and Ballyquirk Area in early prehistory.

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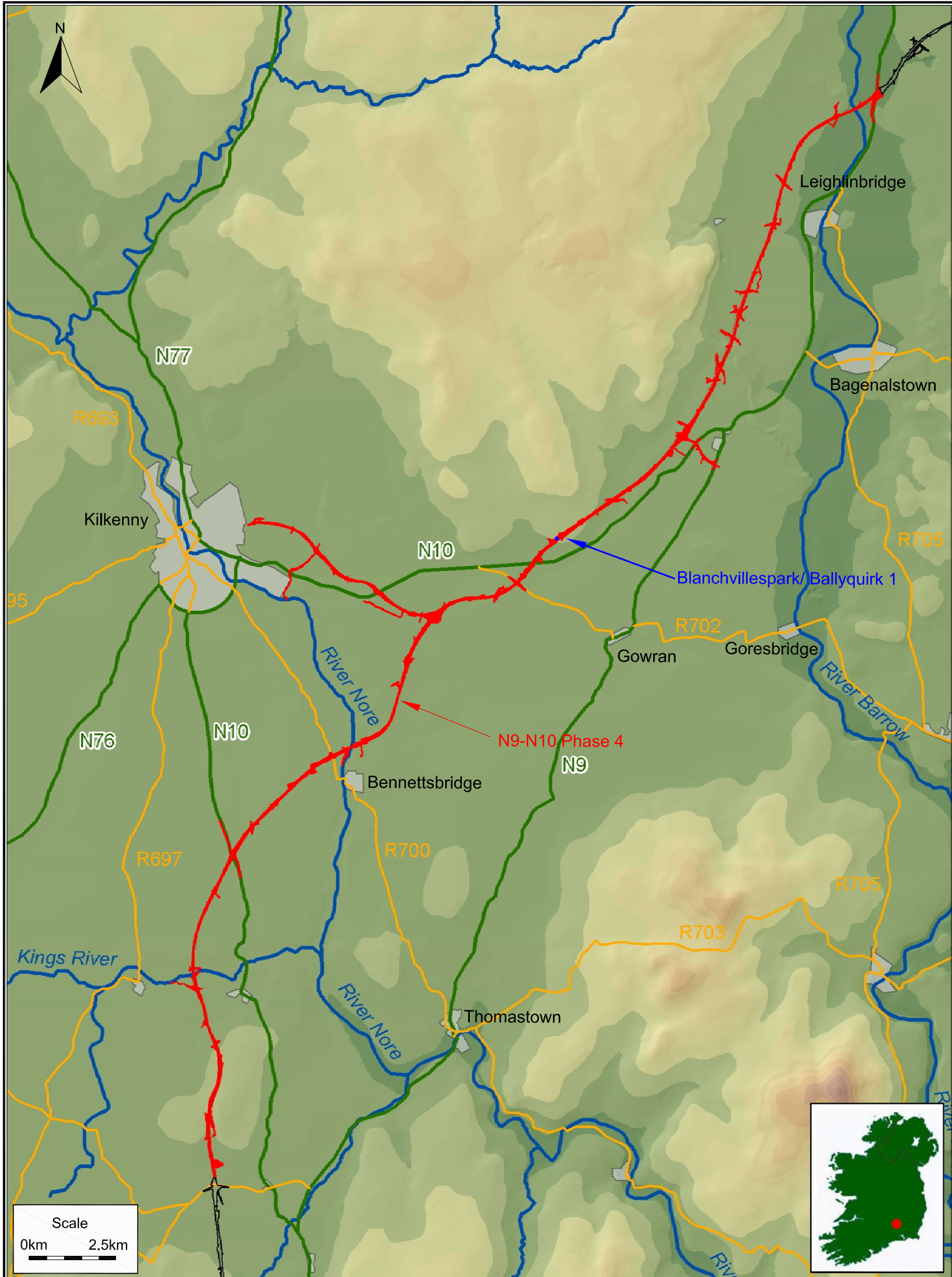
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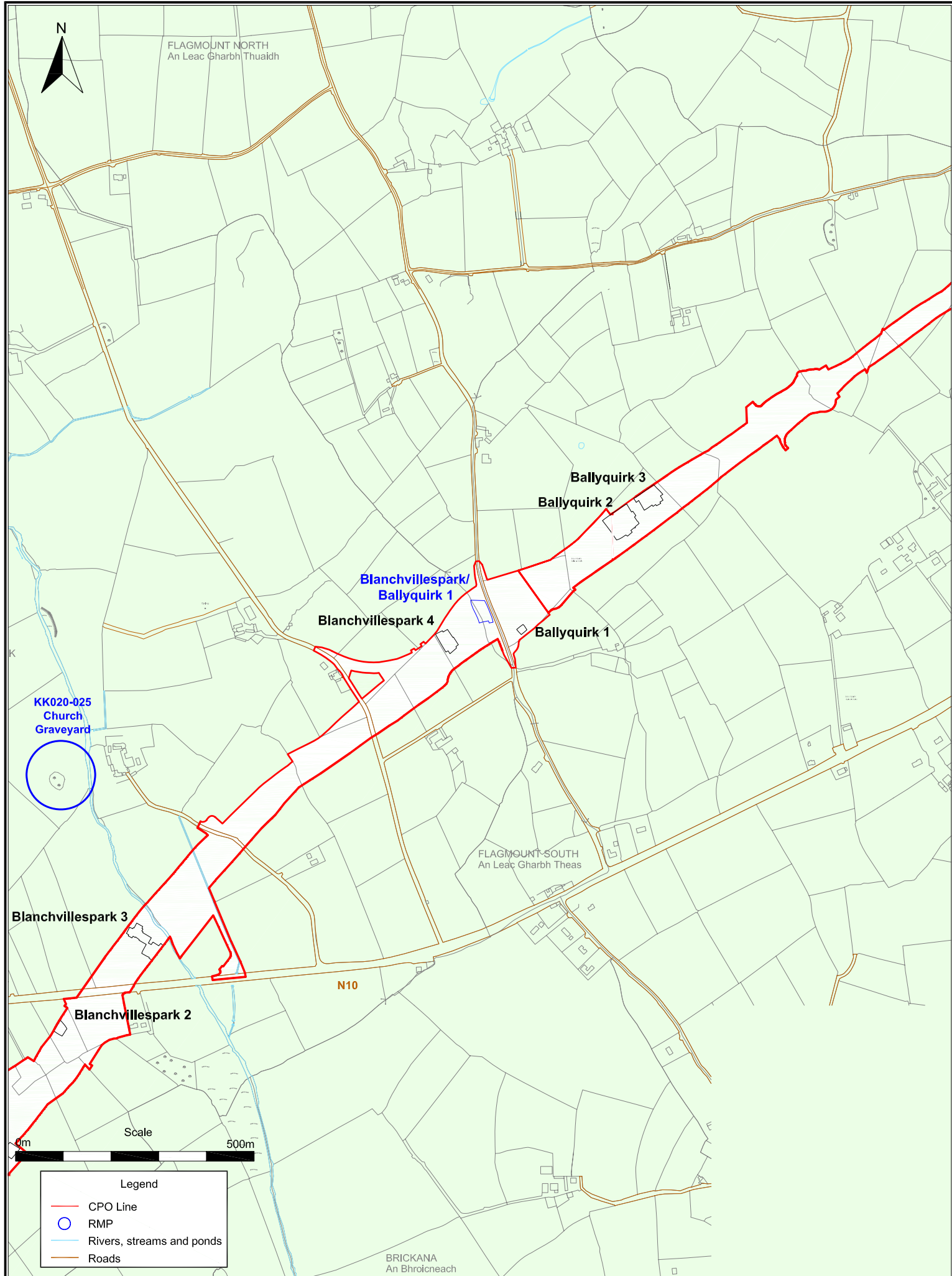
Record of Monuments and Places (RMP), The Department of the Environment, Heritage and Local Government, 7 Ely Place Upper, Dublin 2.

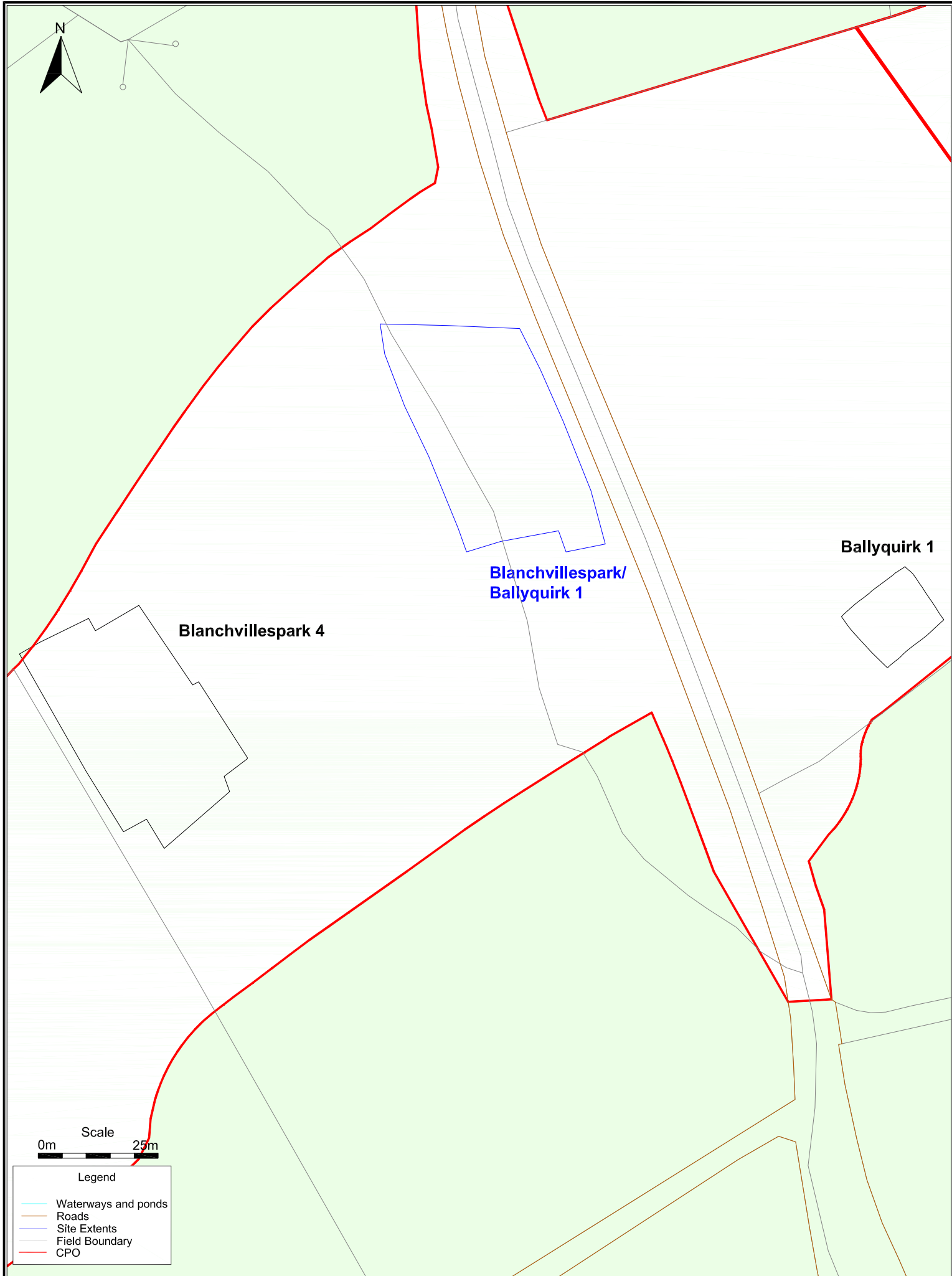
Topographical Files of the National Museum of Ireland, Kildare Street, Dublin 2.

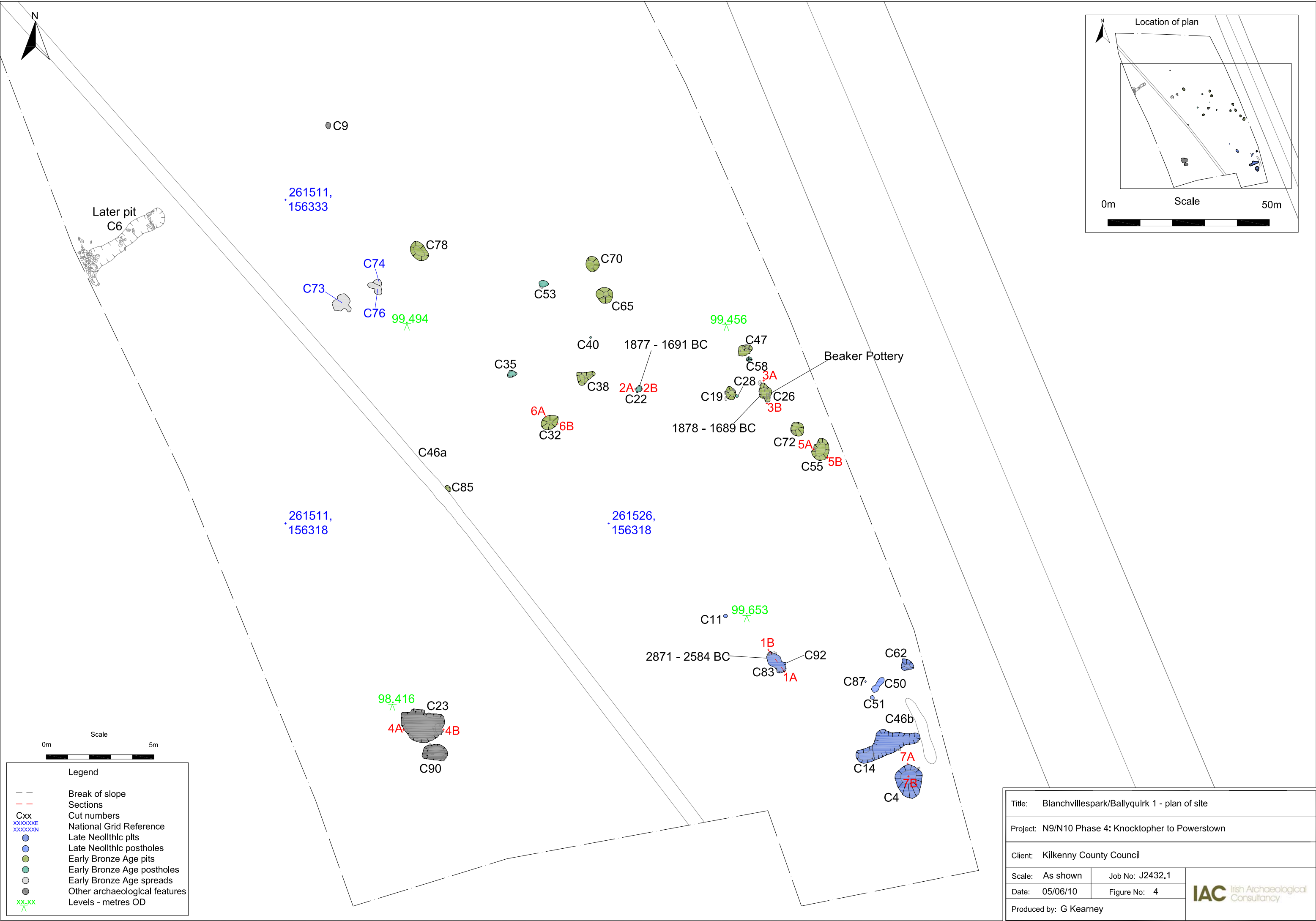
Electronic references

ENVision; *Environmental Protection Agency* Soil maps of Ireland
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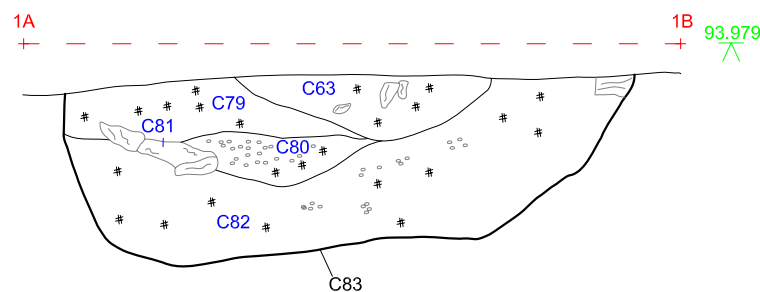




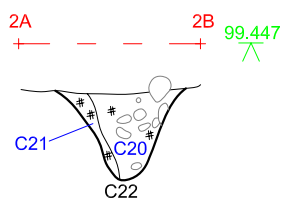


Title: Blanchvillespark/Ballyquirk 1 - plan of site		
Project: N9/N10 Phase 4: Knocktopher to Powerstown		
Client: Kilkenny County Council		
Scale: As shown	Job No: J2432.1	
Date: 05/06/10	Figure No: 4	
Produced by: G Kearney		IAC Irish Archaeological Consultancy

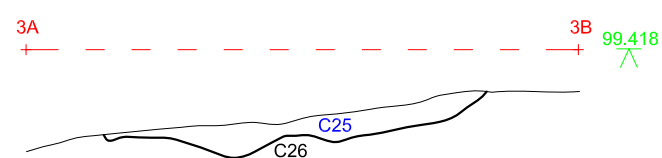
Northeast facing section of C83



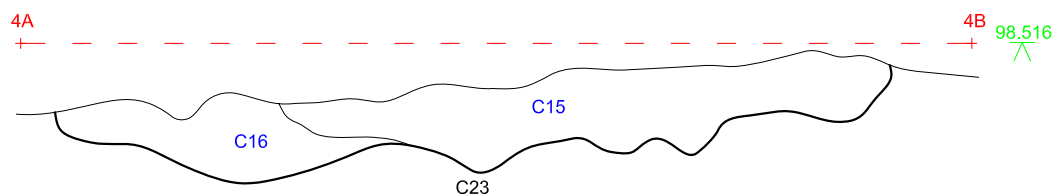
South facing section of C22



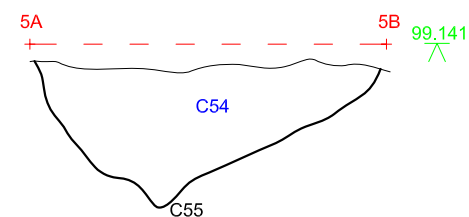
West facing section of C26



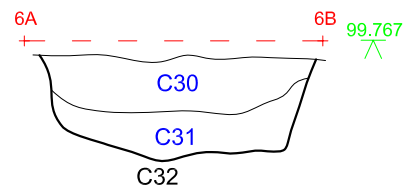
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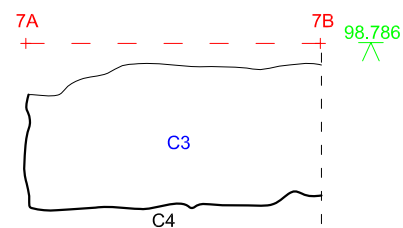
Southeast facing section of C55



Southwest facing section of C32



West facing section of C4



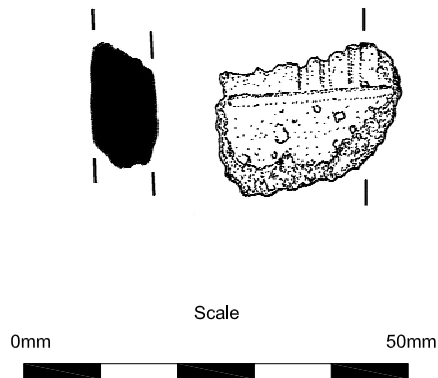
Legend

Cxx	Cut numbers
Cxx	Fill numbers
	Stone
#	Charcoal
xx.xx	Levels - metres OD

IAC Irish Archaeological Consultancy

Title:	Blanchillespark/Ballyquirk 1 - sections 1-7	Scale:	1:15 @ A4
Project:	N9/N10 Phase 4: Knocktopher to Powerstown	Date:	08/06/10
Client:	Kilkenny County Council	Produced by:	G Kearney
		Job No:	J2432.1
		Figure No:	5

BLANCHVILLESPARK/ BALLYQUIRK
E3862:25:2



PLATES



Plate 1: Pit C65, mid-excavation, facing north-west



Plate 2: Pits C65 and C70, post-excavation, facing north-east



Plate 3: Pit C23, post-excavation, facing north-east



Plate 4: Pit C90, mid-excavation, facing north-west



Plate 5: Pit C22, post excavation, facing north-east



Plate 6: Pit C26, mid excavation, facing south-west



Plate 7: Pit C83, mid-excavation, facing south-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
C1	N/A				Topsoil	Mid brown silty clay	N/A	C2
C2	N/A				Natural	Hard, mid yellow clay	C1	N/A
C3	C4	1.6	1.25	0.32	Fill of pit	Loosely compacted brown silty sand with frequent stones and moderate charcoal inclusions.	C1	C4
C4	N/A	1.6	1.25	0.32	Cut of pit	Oval in shape, imperceptible break of slope with concave sides leading to an imperceptible basal break of slope and a concave base.	C3	C2
C5	C6	4.25	0.95	0.21	Fill of linear feature	Loosely compacted greyish black sandy silt with frequent large sub-angular stones at the base	C1	C6
C6	N/A	4.25	0.95	0.21	Cut of linear feature	Linear running east to west, sides and base is filled with stones and break of slope is gradual.	C5	C2
C7	C9	0.34	0.32	0.05	Topfill of pit/posthole - siltation	Loosely compacted mid brown silty clay with moderate charcoal, moderate small rounded stones and occasional angular stones.	C1	C8
C8	C9	0.34	0.32	0.08	Basal fill of pit/posthole	Loosely compacted dark brown silty clay with moderate charcoal and small rounded stones.	C7	C9
C9	N/A	0.34	0.32	0.13	Cut of pit/posthole with two fills	Circular pit, gradual break of slope with gradual sides leading to a gradual basal break of base and a concave base.	C8	C2
C10	C11	0.18	0.18	0.39	Single fill of stakehole	Loosely compacted mid grey silty sand with frequent charcoal chunks	C1	C11
C11	N/A	0.18	0.18	0.39	Cut of stakehole	Sub rounded shape, sudden break of slope with steep sides leading to a gradual basal break of slope and a pointed base.	C10	C2
C12	C14	>0.60	0.45	0.20	Upper fill of linear	Loosely compacted stony gritty light brown/red silty sand with frequent pebbles and small stone inclusions.	C1	C13
C13	C14	>0.60	1.16	0.21	Basal fill of linear	Loosely compacted light yellow/grey sandy clay with frequent small and medium sized stones.	C12	C14
C14	N/A	1.16	0.23	0.29	Cut of linear feature	Irregular linear, gradual break of slope with gradual sides leading to a gradual basal break of slope and a u-shaped base.	C13	C2
C15	C23	1.93	0.78	0.27	Upper fill of pit	Loosely compacted black/brown clayey silt with moderate charcoal and very frequent stones.	C1	C16
C16	C23	0.7	0.78	0.27	Fill of pit	Loosely compacted mid brown silty clay with grey hue, moderate stone within as well as occasional charcoal.	C15	C24
C17	C19	0.3	0.25	0.07	Fill of shallow pit	Loosely compacted black sandy clay with small frequent pieces of charcoal.	C1	C18
C18	C19	0.35	0.34	0.12	Basal fill of shallow pit	Loosely compacted brown sandy clay with frequent flakes of charcoal.	C17	C19
C19	N/A	0.56	0.34	0.12	Cut of shallow pit	Oval in shape, stepped break of slope with stepped sides leading to an irregular basal break of slope and an irregular base.	C18	C2
C20	C22	0.24	0.16	0.23	Packing fill	Reddish brown clay with occasional charcoal and frequent sub-angular stones.	C1	C21

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Context Above	Context Below
C21	C22	0.24	0.05	0.16	Post-pipe fill	Loosely compacted black silty clay with frequent charcoal.	C20	C22
C22	N/A	0.24	0.21	0.23	Cut of posthole	Circular shape, sharp break of slope with sharp sides leading to an irregular basal break of slope and an irregular base.	C21	C2
C23	N/A	1.93	1.3	0.29	Cut of pit with three fills	Sub circular shape e-w, gradual to sharp break of slope with gradual to sharp sides leading to a gradual basal break of slope and a flat base.	C24	C2
C24	C23	1.93	1.32	0.29	Side fill of pit	Loose to moderate compaction, mottled mid brown/yellow silty clay with occasional charcoal and stone.	C16	C23
C25	C26	0.75	0.5	0.06	Fill of shallow pit	Loosely compacted brownish black sandy clay with frequent charcoal.	C1	C26
C26	N/A	0.75	0.5	0.07	Cut of shallow pit	Teardrop shape ne-sw, gradual break of base with stepped sides leading to a gradual basal break of slope with an uneven stone base.	C25	C2
C27	C28	0.14	0.14	0.12	Fill of stakehole	Moderately loose compaction, brown gravely silt with occasional charcoal and frequent pebbles.	C1	C28
C28	N/A	0.14	0.14	0.12	Cut of stakehole	Circular shape, sharp break of slope with sub vertical sides leading to a sharp basal break of slope with a pointed base.	C27	C2
C29	N/A				Root activity	Root activity throughout site. Mainly rootburn due to field clearance and random root disturbances and marks.	C1	C2
C30	C32	0.46	0.43	0.1	Upper fill of pit	Loosely compacted dark brown silty clay with frequent charcoal and moderate stones.	C1	C31
C31	C32	0.46	0.43	0.1	Basal fill of pit	Moderately compacted light brown sandy silt with occasional charcoal; and frequent stones.	C30	C32
C32	N/A	0.46	0.43	0.2	Cut of pit with two fills	Circular shape, concave break of slope with concave sides leading to a concave basal break of slope and a concave base.	C31	C2
C33	C35	0.13	0.1	0.1	Upper fill of posthole	Loosely compacted greyish brown silt with occasional stones.	C1	C34
C34	C35	0.31	0.3	0.15	Basal fill of posthole	Loosely compacted dark brown silty clay with moderate stones.	C33	C35
C35	N/A	0.42	0.33	0.25	Cut of posthole	Oval shape, sharp break of slope with sharp sides, leading to a sharp basal break of slope with an irregular base.	C34	C2
C36	C38	0.9	0.56	0.1	Upper fill of pit	Loosely compacted brownish silty sand with small stones.	C1	C37
C37	C38	0.37	0.21	0.12	Lower fill of pit	Loosely compacted brownish silty sand with small stones.	C36	C38
C38	N/A	0.9	0.56	0.25	Cut of pit with two fills	Oval in shape, sharp break of slope with moderate sides leading to a gradual basal break of slope and a concave base.	C37	C2
C39	C40	0.05	0.05	0.1	Fill of stakehole	Loosely compacted mid brown silty clay with moderate charcoal.	C1	C40
C40	N/A	0.05	0.05	0.1	Cut of stakehole	Circular shape, sharp break of slope with sharp sides leading to a sharp basal break of slope with a tapered base.	C39	C2
C41	C47	0.48	0.46	0.12	Fill of shallow pit	Loosely compacted dark brown silty clay with frequent charcoal and some burnt clay.	C1	C47
C42	N/A				Non archaeological	N/A		
C43	N/A				Non archaeological	N/A	C1	C44

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Context Above	Context Below
C44	C51	0.14	0.14	0.25	Fill of stakehole	Loosely compacted light brown sandy clay with a yellow hue, moderate charcoal within fill.	C1	C51
C45	C46	>2.00	0.6	0.13	Plough furrow	Moderately loose compaction, mid to dark brown clayey silt with occasional charcoal.	C1	C46
C46	N/A	>2.00	0.6	0.13	Plough furrow	Linear sse-nnw, gradual break of slope with sloping sides leading to an imperceptible basal break of slope and a concave base.	C45	C2
C47	N/A	0.48	0.46	0.12	Cut of shallow pit	Sub circular shape n-s, stepped break of slope on the west side while sharp on the south and east and north sides with stepped sides on the west and vertical on the south, east and north, leading to a stepped basal break of slope and a flat base.	C41	C2
C48	N/A				N/A	N/A	N/A	N/A
C49	C50	0.8	0.3	0.3	Single fill of posthole	Loosely compacted dark brown sandy silt with frequent charcoal and moderate stone.	C1	C50
C50	N/A	0.8	0.3	0.3	Cut of posthole	Irregular oval, irregular break of slope with steep sides leading to a concave basal break of slope and a pointed base.	C49	C2
C51	N/A	0.14	0.14	0.25	Cut of stakehole	Circular shape, sharp break of slope with vertical sides, leading to a sharp basal break of slope and a concave base.	C44	C2
C52	C53	0.42	0.28	0.14	Fill of posthole	Loosely compacted dark brown silty clay with occasional stones.	C1	C53
C53	N/A	0.42	0.28	0.14	Cut of posthole	Oval in shape, sharp break of slope with sharp sides leading to a gradual basal break of slope and a concave base	C52	C2
C54	C55	1	0.8	0.34	Single fill of pit	Very loosely compacted dark brown gravelly silt with frequent pebbles and stones. Also small amount of charcoal within fill.	C1	C55
C55	N/A	1	0.8	0.34	Cut of single filled pit	Sub circular in shape ne-sw, sharp to gradual break of slope with sharp to gradual sides leading to a gradual basal break of slope with a concave base.	C54	C2
C56	C65	0.7	0.7	0.15	Upper fill of pit	Loosely compacted dark grey silty clay with frequent charcoal and occasional stones.	C1	C64
C57	C58	0.25	0.22	0.08	Fill of shallow posthole	Loosely compacted dark brown silty clay with frequent small pieces of charcoal.	C1	C58
C58	N/A	0.25	0.22	0.08	Cut of shallow posthole	Circular shape, moderate break of slope with concave sides leading to a gradual basal break of slope and a rounded base.	C57	C2
C59	N/A				Non archaeological	NA		
C60	N/A				Non archaeological	NA		
C61	C62	0.3	0.28	0.27	Fill of small pit	Loosely compacted mid brown silty clay with a grey hue, occasional charcoal and stone.	C1	C62
C62	N/A	0.3	0.28	0.27	Cut of small pit	Sub-circular in shape e-w, gradual break of slope with gradual sides leading to a gradual to sharp basal break of slope and a concave base.	C61	C2
C63	C83	0.62	0.5	0.13	Upper fill of pit	Loosely compacted dark brown sandy clay with frequent charcoal	C1	C79
C64	C65	0.74	0.76	0.1	Fill of pit	Fill composed of big angular stones and big/medium rounded/semi rounded stones, apparently not structured.	C56	C65
C65	N/A	0.74	0.76	0.1	Cut of pit	Circular shape, concave break of slope on south side while sharp on north side leading to a concave base.	C64	C2

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Context Above	Context Below
C66	C70	0.6	0.45	0.07	Top fill of pit	Loosely compacted dark brown silty clay with moderate charcoal and small to medium stones.	C1	C67
C67	C70	0.7	0.6	0.09	Fill of pit	Loosely compacted mid brown silty clay with a yellow hue, occasional charcoal and moderate small to medium stones within fill.	C66	C68
C68	C70	0.6	0.46	0.08	Fill of pit	Loosely compacted mid brown silty clay with occasional charcoal and frequent stones.	C67	C69
C69	C70	0.5	0.46	0.14	Basal fill of pit	Loosely compacted mottled yellowish silty clay with occasional charcoal and moderate stones.	C68	C2
C70	N/A	0.7	0.5	0.34	Cut of pit with four fills	Oval cut with sharp top break of slope, steep sides, gradual basal break of slope and a concave base.	C69	C2
C71	C72	0.42	0.4	0.44	Single fill of pit	Loosely compacted mid brown silty clay with frequent stones.	C1	C72
C72	N/A	0.68	0.59	0.44	Cut of pit	Circular shape, sharp break of slope with vertical sides, leading to a gradual basal break of slope with a concave base.	C71	C2
C73	N/A	0.48	0.46	0.07	Mid-sized spread	Loosely compacted black sandy silt with frequent charcoal and moderate stone.	C1	C2
C74	N/A	0.43	0.2	0.06	Smaller spread	Loosely compacted black silty clay with stone.	C1	C2
C75	C78	0.38	0.3	0.11	Upper fill of pit	Loosely compacted reddish silty clay.	C1	C2
C76	N/A	0.78	0.35	0.07	Mid-sized spread	Loosely compacted red silty clay with stone.	C1	C2
C77	C78	1.3	0.7	0.1	Basal fill of pit	Loosely compacted yellowish silty clay with well sorted stones.	C75	C78
C78	N/A	1.3	0.7	0.21	Cut of pit with two fills	Oval in shape, gradual break of slope with moderate sides leading to a gradual basal break of slope with a concave base.	C77	C2
C79	C83	0.57	0.52	13	Upper fill of pit	Loosely compacted dark brown sandy clay with frequent charcoal.	C63	C80
C80	C83	0.37	0.25	0.1	Fill of pit	Loosely compacted brownish red sandy clay with charcoal fragments and burnt clay.	C79	C81
C81	C83	0.16	0.1	0.07	Smaller fill/lens of pit	Loosely compacted black sandy clay with frequent charcoal.	C80	C82
C82	C83	1.04	0.5	0.3	Basal/primary fill of pit	Loosely compacted dark brown/black sandy clay with frequent charcoal and occasional burnt clay.	C81	C83
C83	N/A	1.16	0.64	0.3	Cut of pit with five fills	Sub rectangular nw-se, sharp break of slope with concave sides leading to a gradual basal break of slope and a flat base.	C82	C2
C84	C85	0.33	0.2	0.12	Single fill of smaller pit/posthole	Loosely compacted dark brown sandy silt with moderate charcoal and frequent stones.	C46	C85
C85	N/A	0.33	0.2	0.12	Cut of smaller pit/posthole	Oval in shape, imperceptible break of slope with concave sides leading to an imperceptible basal break of slope and an uneven base.	C84	C2
C86	C87	0.12	0.07	0.09	Single fill of stakehole	Loosely compacted mid brown silty clay with a yellow hue, moderate charcoal within fill.	C1	C87
C87	N/A	0.12	0.07	0.09	Cut of stakehole	Sub-oval in shape, sharp break of slope with sharp sides leading to a sharp to gradual basal break of slope with a concave base.	C86	C2
C88	N/A				Non archaeological	N/A	C1	C2
C89	C90	1.1	0.75	0.38	Single fill of pit	Loose to moderate compaction, mid brown silty clay with a grey black hue, occasional charcoal and frequent stone.	C1	C90

Context	Fill of	L(m)	W(m)	D(m)	Interpretation	Description	Context Above	Context Below
C90	N/A	1.1	0.75	0.38	Cut of pit	Sub oval in shape, sharp break of slope with sharp sides leading to a sharp to gradual basal break of slope with an irregular/sub-oval base.	C89	C2
C91	C92	0.05	0.04	0.07	Single fill of stakehole	Loosely compacted light brown/grey sandy clay with occasional charcoal.	C1	C92
C92	N/A	0.05	0.04	0.07	Cut of stakehole	Circular in shape, gradual break of slope with gently sloping sides leading to a gradual basal break of slope and a flat base.	C91	C2

Appendix 1.2 Catalogue of Artefacts


Registration Number	Context	Item No.	Simple Name	Full Name	Material	Description	No. of Parts
E3862:001:1	1	1	Buckle	Iron buckle	Iron	A badly corroded iron belt buckle. Main piece is square in shape and fastening pin is still in place. A curving loop is present on one side of the buckle. May indicate that this is a buckle from a harness rather than a belt.	N/A
E3862:025:1	25	1	Beaker	Bodysherd of final Neolithic / early Bronze Age beaker	Ceramic	A much worn bodysherd of final Neolithic / early Bronze Age beaker	N/A
E3862:025:2	25	2	Beaker	Bodysherd of final Neolithic / early Bronze Age beaker pottery	Ceramic	A much worn bodysherd of final Neolithic / early Bronze Age beaker. Decorated with an incised horizontal line with a fringe of vertical scored lines, possibly part of a filled panel, beneath	N/A
E3862:025:3	25	3	Beaker	Bodysherd of final Neolithic / early Bronze Age beaker pottery	Ceramic	A much worn bodysherd of final Neolithic / early Bronze Age beaker	N/A
E3862:025:4	25	4	Beaker	Bodysherd of final Neolithic / early Bronze Age beaker pottery	Ceramic	A much worn bodysherd of final Neolithic / early Bronze Age beaker	N/A
E3862:066:1	66	1	Flake	Flint flake	Flint	A burnt bipolar flint flake	N/A
E3862:089:1-3	89	1-3	Chunk	Natural chunk of flint	Flint	A natural chunk of flint	3

Appendix 1.3 Catalogue of Ecofacts

During post excavation works specific samples were processed with a view to further analysis. A total of 21 soil samples were taken from features at Blanchvillespark / Ballyquirk 1 and all 21 samples were processed by flotation and sieving through a 250µm mesh. Only eight samples produced ecofacts. The following are the ecofacts recovered from these samples:

Context #	Sample #	Feature type i.e. Structure A, hearth C45	charcoal	seeds	burnt animal bone	animal bone	human bone	burnt human bone	Metallurgical Waste / Slag
15	1	Pit							65.3g
20	6	Posthole	1.1g						
25	8	Pit	4.3g						
63	16	Pit	0.8g						
79	17	Pit	1.6g						
80	18	Pit			0.4g				
81	19	Pit	1.6g						
82	20	Pit	2.9g		0.4g				

Appendix 1.4 Archive Index

Project: N9/N10 Phase 4 Knocktopher to Powerstown		
Site Name: 111 Blanchvillespark/Ballyquirk 1		
Excavation Registration Number: E3862		
Site Director: Ruth Elliott		
Date: 12.02.08		
Field Records	Items (quantity)	Comments
Site drawings (plans)	30 plans	
Site sections, profiles, elevations	6 section sheets	
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books		
Site registers (folders)	1	
Survey/levels data (origin information)		
Context sheets	92	
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	137	
Photographs (print)	0	
Photographs (slide)	0	
Security copy of archive	Yes	Digital copy

APPENDIX 2 SPECIALIST REPORTS

Appendix 2.1 Prehistoric Pottery Report – Eoin Grogan and Helen Roche

Appendix 2.2 Lithics Report – Farina Sternke

Appendix 2.3 Charcoal and Wood Report – Susan Lyons

Appendix 2.4 Burnt Bone Report – Aoife McCarthy

Appendix 2.5 Metallurgical Waste Analysis Report

Appendix 2.6 Radiocarbon Dating Results – QUB Laboratory

Appendix 2.1 Prehistoric Pottery Report – Eoin Grogan and Helen Roche

N9/N10 Kilcullen to Waterford Scheme, Phase 4, Knocktopher to Powerstown

**The prehistoric pottery from Blanchvillespark/ Ballyquirk 1, Co. Kilkenny
(AR111, E3862)**

Eoin Grogan and Helen Roche

May 2009

Summary

The site produced four sherds (weight: 20g) representing a final Neolithic/ early Bronze Age Beaker. This is an important addition to the previously poorly represented distribution of Beaker activity in this region.

The Beaker pottery

The site at Blanchvillespark/ Ballyquirk 1 produced four worn bodysherds from pit **26**¹ (Group I²; Elliot 2008a). While only a small quantity of material was recovered this is a fine, well-made vessel, probably with a soft S-shaped overall profile. The decoration appears to consist of a horizontally arranged panel of vertical scores bounded, at least on top, by a horizontal line. Similar decoration occurs on vessels from Paulstown 2 (Elliot 2008b; Grogan and Roche 2009a); the apparent form and decorative style represented at Blanchvillespark/ Ballyquirk have generally been assigned to Clarke's (1970) European Bell Beaker, or his Wessex/Middle Rhine types. More recently, following reviews by, for example, Lanting and van der Waals (1972), there has been a greater recognition of the regional development of Beaker. Case's (1993) simpler threefold scheme, and its specific application to the Irish material, provides a straightforward medium for insular comparison (Case 1995). The formal horizontally zoned decoration at Blanchvillespark/ Ballyquirk suggests that the pottery belongs to his style 2 and should date to c. 2450–2300BC. Similar pottery at Danesfort 8 (Jennings 2008; Grogan and Roche 2009b) is dated to 2457–2205BC (UBA 11001, 3846±27).

Regional context

There are few recorded examples of Beaker pottery from the region. However, significant assemblages occur to the south at Baysrath, Co. Kilkenny (Grogan and Roche 2008a), and immediately to the north at Paulstown 2 (Elliot 2008b; Grogan and Roche 2009a). Smaller quantities came from Danesfort 8 (to the south-west of Blanchvillespark: Jennings 2008; Grogan and Roche 2009b) and Glashare (north-west), Co. Kilkenny, Moanduff 2, immediately to the north in Co. Carlow (Phelan and Zimny 2009; Grogan and Roche 2009c), as well as Parknahown (north-west), Co. Laois (Roche and Grogan 2008; Grogan and Roche 2008b). These sites have a riverine distribution along the major valleys of the Barrow, Nore and Suir. These link the sites at Glashare and Parknahown, on the watershed between the Nore and Suir, with the clusters of Beaker activity around Cashel and Caher in Co. Tipperary (Grogan and Roche 2006; forthcoming, fig. 2) further south on the River Suir. The site at Blanchvillespark/ Ballyquirk is an important addition to the complex of final Neolithic to early Bronze Age activity in north-east Kilkenny and provides a link with the Neolithic and early Bronze Age concentration in the area around Carlow to the north (Dunne 2007).

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¹ Throughout this report the context numbers are in **bold**.

² Group numbers (Roman numerals) refer to sherds from a distinct vessel where the overall form is not identifiable.

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CATALOGUE

The excavation number E3862 is omitted throughout: only the context number, in **bold**, followed by the find number is included (e.g. **25:1**). The thickness refers to an average dimension; where relevant a thickness range is indicated. Vessel numbers have been allocated to pottery where some estimation of the form of the pot is possible, or where the detailed evidence of featured sherds (e.g. rims, shoulders), decoration or fabric indicates separate pots. Group numbers (Roman numerals) refer to sherds from a vessel where the overall form is not identifiable principally due to the absence of sufficient feature (rim/ neck/ shoulder) sherds. While this generally indicates separate pots due to the nature of the material it is possible that some Vessel Groups may represent portions of vessels otherwise identified by Vessel Numbers. Individual sherds that could not be definitely ascribed to either category are described separately; these may come from further pots that are not, however, included in the calculations of minimum and maximum numbers of vessels. Fragments are small sherds (generally less than 10mm square) where only one surface has survived while crumbs are very small pieces ($\leq 5 \times 5\text{mm}$) generally without surviving surfaces. The inclusions were examined using simple magnification and in some cases attribution reflects probable, rather than certain, identification.

Worn: some wear damage to surfaces and edge breaks much worn: considerable wear damage

Final Neolithic/ early Bronze Age Beaker

Alignment of pits

Fills **25** of pit **26**

Group I. This is represented by 4 worn bodysherds (**25:1–4**) of light buff to red-buff fabric with a grey core. There is a medium content of dolerite and quartzite inclusions ($\leq 3 \times 2\text{mm}$, up to $4.37 \times 4\text{mm}$). Body thickness: 8.96mm; weight: 20g.

Decoration This is preserved only on **25:2** and consists of an incised horizontal line with a fringe of vertical scored lines, possibly part of a filled panel, beneath.

Vessel No.	Context/feature	Number of sherds	Rimsherds	Necksherds	Base-anglesherds	Basesherds	Bodysherds	Fragments	Crumbs	Inclusions	Vessel size (cm)	Weight (g)	Pottery type	Decorated
Group I	25	4	0	0	0	0	4	0	0	D Q	-	20	Beaker	■

Q quartzite D dolerite ■ decorated

Table 1. Details of pottery including individual vessels from Blanchillespark/ Ballyquirk 1, Co. Kilkenny.

Vessel	Context	Sherds to draw	Section only	Photograph
Group I	25	B. 25:2		

B. body

Table 2. Suggestions for illustration: Blanchillespark/ Ballyquirk 1, Co. Kilkenny.

Appendix 2.2 Lithics Report – Farina Sternke

LITHICS FINDS REPORT FOR E3862 BLANCHVILLES PARK BALLYQUIRK 1 (A032/142), CO. KILKENNY

N9/N10 ROAD SCHEME – PHASE 4B

FARINA STERNKE MA, PHD

Contents

List of Tables

Introduction

Methodology

Quantification

Provenance

 Condition

 Technology/Morphology

 Dating

Conservation

Conclusion

Bibliography

List of Tables

Table 1 Composition of the lithic assemblage from Blanchvillespark Ballyquirk 1
(E3862)

Introduction

Four lithic finds from the archaeological investigations of a prehistoric site at Blanchvillespark Ballyquirk 1, Co. Kilkenny were presented for analysis (Table 1). The finds are associated with pits and postholes.

Find Number	Context	Material	Type	Condition	Cortex	Length (mm)	Width (mm)	Thickness (mm)	Complete	Retouch
E3862:066:1	66	Flint	Flake	Burnt	No	23	15	8	Yes	No
E3862:089:1	89	Flint	Natural Chunk							
E3862:089:2	89	Flint	Natural Chunk							
E3862:089:3	89	Flint	Natural Chunk							

Table 1 Composition of the Lithic Assemblage from Blanchvillespark Ballyquirk 1 (E3862)

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 are retouched or of specific significance, e.g. cores etc. The same is done with natural chunks.

Quantification

The artefacts are a worked flint (E3862:066:1) and three natural chunks of flint.

Provenance

The finds were recovered from fill C66.

Condition:

The lithic survives in burnt, but complete condition.

Technology/Morphology:

The lithic is a bipolar flake which measures 23mm in length, 15mm in width and 8mm in thickness.

Dating:

The flake most likely dates to the late Neolithic/early Bronze Age period based on its technology (O'Hare 2005).

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.

Conclusion

The lithic finds from the archaeological excavation at Blanchvillespark Ballyquirk 1, Co. Kilkenny are a bipolar flint flake and three natural chunks of flint. The flake most likely dates to the late Neolithic/early Bronze Age.

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

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Appendix 2.3 Charcoal and Wood Report – Susan Lyons

Site Name- Blanchvillespark Ballyquirk 1

Excavation number –E3862 AR111

County – Kilkenny

Author- Susan Lyons

Date –16/09/09

CHARCOAL IDENTIFICATION SUMMARY REPORT

Illustrations

Figures

- Figure 1 Ring curvature. Weakly curved rings indicate the use of trunks or large branches (after Marguerie and Hunot 2007 1421, Fig. 3)
- Figure 2 Total charcoal identifications from AR111 Blanchvillespark Ballyquirk 1 (fragment count and weights)

Tables

- Table 1 Charcoal identifications from AR111 Blanchvillespark Ballyquirk 1

1 Introduction

Three charcoal samples were identified and analysed from excavations associated with features of potentially prehistoric date at Blanchvillespark Ballyquirk 1, Co. Kilkenny as part of the resolution of the N9/N10 Kilcullen to Waterford Scheme, Phase 4B – Rathclogh to Powerstown. The site contained 10 pits, eight postholes and two small spreads (Elliott, 2009).

It is generally considered that the principle reason for charcoal analysis is the hypothesis that wood used as firewood will be collected from as close to a site as possible and as such can help to reflect the local wooded environment in the area. It is also likely that abandoned structural timbers or wood brought to the site for uses in construction works or other activities are also reused as firewood. The charcoal identified can also go some way to interpreting the local woodland that grew in the vicinity of the site and possible changes to that woodland over time. This charcoal report serves as a summary report only for Blanchvillespark Ballyquirk 1 and will later form part of an overall scheme-wide charcoal study for the N9/N10 (Lyons, *et al*, forthcoming).

2 Methodology (After IAC Ltd)

2.1 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 high clay content will be soaked in water for 1–2 days to aid the sieving process.

2.2 Charcoal identifications

Three charcoal samples from C20 (fill of posthole C22), C25 (fill of pit C26) and C82 (basal fill of pit C83) were selected for charcoal analysis.

The larger sized charcoal fragments (>3mm in width) are fractured to view the three planes [transverse, radial and tangential sections] necessary for microscopic wood identification. The wood species identifications are conducted under a binocular microscope using a trancident light and viewed at magnifications of 100x, 200x and 400x where applicable. Where possible the age and growth pattern of the wood

fragments is also recorded by studying the transverse section at a magnification of up to 40x.

Wood species identifications are made using wood reference slides and wood keys devised by Franklin and Brazier (1961), Schweingruber (1978), Hather (2000) and the International Association of Wood Anatomists (IAWA) wood identification manuals and (www.lib.ncsu.edu/insidewood) by Wheeler, Bass and Gasson (1989).

Quantifying charcoal samples can be difficult as many wood species can be affected by heat in different ways and hence become fragmented into an arbitrary number of fragments. Due to the potential for a very high number of charcoal fragments from the samples, a representative sample of 50 charcoal fragments (Keepax, 1988) are randomly chosen from larger samples for identification and analysis. In the case of smaller samples all charcoal fragments within are identified. The charcoal fragments of each species identified are counted, weighted (grams) and bagged according to species.

2.3 Details of charcoal recording

The general age group of each taxa per sample is recorded, and the growth rates are 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 are 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 is considered to be approximately 0.4mm per annum, medium approximately 1mm per annum and fast approximately 2.2mm per annum.

The ring curvature is also noted where applicable from each charcoal fragment. Weakly curved annual rings suggest the use of trunks or larger branches, while strongly curved annual rings indicate the burning of smaller branches or twigs **Fig. 1**. Tyloses within the vessels of species such as oak can denote the presence of heartwood. These are balloon-like outgrowths of adjacent parenchyma cells of xylem vessels (vascular tissue used to transport water and minerals). When the plant is subjected to stressful conditions, tyloses will develop and block the vascular tissue to prevent further damage to the plant.

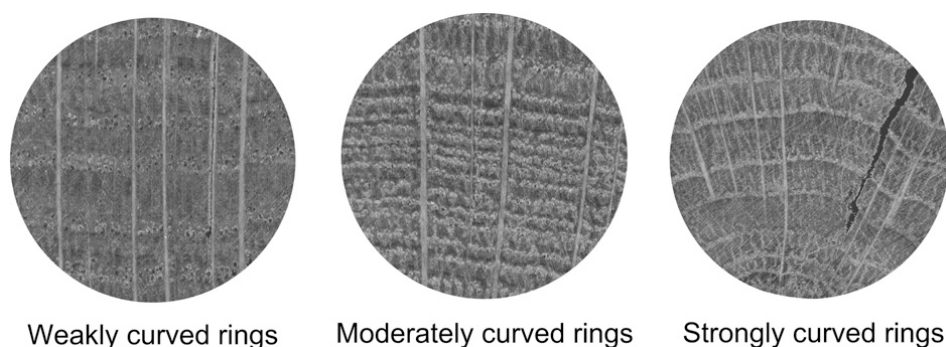


Fig. 1. Ring curvature (after Marguerie and Hunot 2007 1421, Fig. 3)

3 Results

The results of the charcoal identifications are summarized in **Table 1**

Five wood species totaling 118 identifications were recorded from the samples associated with Blanchvillespark Ballyquirk 1. *Salix* sp. (willow) was the dominant species identified, followed by much lesser incidences of *Corylus avellana* (hazel),

Quercus sp. (oak), *Fraxinus excelsior* (ash) and *Pomoideae* spp. (pomaceous woods) (Fig. 2).

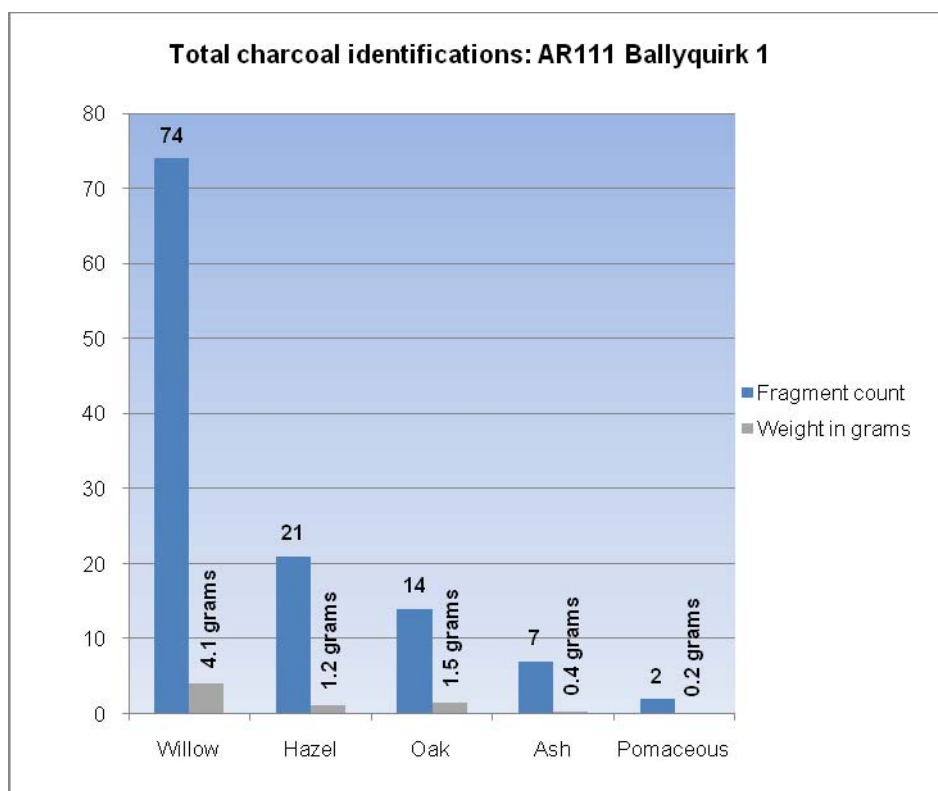


Fig. 2

Willow was the dominant species recorded from C25 (C26) and C82 (C83). While hazel was present from all three features (C22, 26 and C83), it was the only species recorded from C20 (C22). The only feature to contain ash, oak and pomaceous woods was C82 (C83). (Fig. 3)

4 Discussion

4.1 Background and origin of wood species

Salix spp. (willows).

There are a number of different species of willow which cannot be differentiated through wood anatomy. They grow rapidly, and can be easily propagated from cuttings. General comments only about the genus can be made, as there are different varieties of it. They are not naturally a woodland species, although shrubby growth may occur under light woodland cover. All willows appear to favour wet conditions, and it may be a pioneer species on wet soils. The use of willow depends on the species concerned, for some grow as shrubs and others as trees, and a species may be particularly suited to some purpose. In general, the flexibility of willow shoots has led to coppicing or pollarding to produce the raw materials for baskets, frames, hurdling etc. (Orme & Coles, 1985). The main Irish native willows are grey willow (*Salix cinerea*), goat willow (*Salix caprea*) and eared willow (*Salix aurita*).

Corylus avellana L. (hazel)

Hazel woodlands replaced birch in the early post-glacial forests and remains on some shallow limestone soils to the present day (Pilcher & Hall, 2001). The species can tolerate most soil types, but not waterlogged conditions and forms a small deciduous tree or shrub. It commonly occurs in understorey of oak and/or ash woodlands, where

it may grow to a height of 10m or more. In open areas or woodland glades hazel grows as a shrub. Hazel is a common species recorded from Irish archaeological sites and its widespread presence is highlighted in pollen diagrams from the Neolithic to the medieval period (Caseldine, 1996). It produces good firewood and is a suitable wood for kindling. The wood is soft enough to be split yet flexible and strong enough to be used in rope making and basketry. It has also proved a useful resource in the construction of hurdles, wattling, palisades and trackways from prehistoric times (Pilcher & Hall, 2001).

Quercus sp. (oak)

Oak is a tall deciduous woodland tree, often growing in association with hazel and ash. Most species prefer damp, non-calcareous soils on lowland or montane sites. Of the 27 European species, pedunculate oak (*Quercus robur*) and sessile oak (*Quercus petraea*) are native to Ireland. Pedunculate oak is common on heavy clay lowland soils whereas sessile oak thrives on the lighter loams characteristic of higher ground (Culter & Gale, 2000). The wood is easy to cleave both radially and tangentially and has provided one of the most important building materials since the prehistoric period (Gale & Culter, 2000). The heartwood timber is renowned for its durability but the paler sapwood is susceptible to beetle and fungal attack. The strength of the timber depends on the species and is influenced by climatic and edaphic factors (Edlin, 1951). When burnt, oak charcoal, particularly the dense heartwood, has higher calorific values than most European woods and this can make for good long-lasting fuel (Culter & Gale, 2000).

Fraxinus excelsior (ash)

Ash thrives well on nutrient-rich soils but is also a common woodland species and grows in mixed woodland with oak on damp, slightly acidic soils (Gale & Culter, 2000). Pollen analysis indicates that ash became more common in the pollen record from the Neolithic period onwards (Mitchell, 1953/4). This could be as a result of more clearance due to agricultural practices at the time, where ash was able to germinate and grow more vigorously as secondary woodland and in marginal areas and hedges (Kelly, 1976). Ash is also abundant in native hedgerows and was quite common in the later historic period.

Pomoideae spp. (pomaceous woods)

The pomaceous wood species includes the genera *Malus* (apple), *Pyrus* (pear), *Sorbus* (rowan/mountain ash or whitebeam) and *Crataegus* (hawthorn). They are anatomically very similar and in the absence of bark, buds and leaves cannot be differentiated between each other very often. The pomaceous wood types are small deciduous spiny trees or shrubs and are common to the scrubby margins of woodlands and hedgerows (Gale & Culter, 2000). Hawthorn is shade-tolerant and forms understorey in ash and hazel woodland. Both hawthorn and apple-type (*Malus* sp.) produced edible fruits which would have been gathered as a foodstuff during the prehistoric period (Greig, 1991). These wood types burn slow and steady and provide excellent heat with minimal smoke (Culter & Gale, 2000). In later prehistoric periods, these wood species are more prevalent in the landscape, perhaps as a result of opening up larger areas of land or the fencing off of certain areas (Stuijts, 2003/4, 20).

4.2 Distribution of charcoal from Blanchvillespark Ballyquirk 1

The number of identifiable charcoal fragments recovered from Blanchvillespark Ballyquirk 1 were localised to just three features; posthole C22 and pits C26 and C83.

The only feature to contain any obvious *in situ* burning was pit C83, which implies that it served as a hearth or fire pit at one point. The high occurrence of willow suggests

that this was predominantly the wood of choice burnt within this feature. It is also possible that the low levels of ash, oak, hazel and pomaceous woods made up part of the fuel stock or was redeposited charcoal from other firing events became incorporated into this feature. It is difficult to ascertain based on the charcoal identifications alone the exact nature of this feature.

The absence of any conflagration deposits from pit C26 suggests that the charcoal assemblage recorded from here may be part of a dump deposit from nearby firing events. The recovery of prehistoric pottery fragments from C26 (Elliott, 2009) may also be testament that it functioning as a rubbish pit. The presence of just willow and hazel may be indicative of a single deposit of charcoal or dumping episode.

The hazel identified from posthole C22 was relatively low and is therefore unlikely to represent the remains of a structure that had burnt down as such events would leave behind a larger charcoal assemblage. It is instead likely that this assemblage may be the result of construction methods, such as a) the charring of post bases to prevent the timbers from rotting b) a way of re-sizing posts of c) the method by which the timbers were felled.

5 Summary

The charcoal fragments from posthole C22 and pits C26 and C83 recorded at Blanchvillespark Ballyquirk 1 were chosen for charcoal identification and analysis. Since it was difficult to ascertain whether all three features were associated with each other, the interpretations are localised to each feature, rather than the site as a whole. It is likely that pit C83 functioned as a hearth or fire pit, where willow was the dominant species burnt, with lesser oak, hazel, ash and pomaceous woods used. C26 may have been used as a rubbish pit and the presence of just willow and hazel could represent a single dumping event and there for a short-lived feature. The presence of hazel from posthole C22 is likely to be the remains of a partly burnt structure or burnt post.

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Table 1 Charcoal identification results from Blanchvillespark Ballyquirk 1 (E3892)

Context number	Sample number	Flot volume (grams)	Context description	Wood Species Identifications	No. of fragments	Charcoal weights (grams)	Size of fragments (mm)	No. of growth rings	Growth ring curvature
020	018	1.1 grams	Fill of posthole C22	Corylus avellana (hazel)	18	1 grams	3mm - 6mm	3 - 5 rings	
025	008	4.3 grams	Fill of pit C26	Salix sp. (willow)	40	2.8 grams	3mm - 11mm	3 - 8 rings	weak
				Quercus sp. (oak)	10	1.2 grams	4mm - 7mm	4 - 6 rings	
082	020	2.9 grams	Basal fill of pit C83	Salix sp. (willow)	34	1.3 grams	3mm - 7mm	3 - 5 rings	weak
				Fraxinus excelsior (ash)	7	0.4 grams	4mm - 5mm	3 rings	
				Quercus sp. (oak)	4	0.3 grams	4mm - 6mm	3 rings	
				Corylus avellana (hazel)	3	0.2 grams	3mm - 5mm	2 - 4 rings	
				Pomoideae spp. (pomaceous woods)	2	0.2 grams	5mm	3 rings	

Appendix 2.4 Burnt Bone Report – Aoife McCarthy

**Osteoarchaeological Report of Burnt Bone Remains from
E3862: Blanchvillespark / Ballyquirk 1 AR111
Co. Kilkenny
N9/N10 Kilcullen to Waterford Scheme
Phase 4b: Knocktopher to Powerstown
Author: Aoife McCarthy MA BA
Date: December 2009**

Table of Contents

1. Introduction
 - 1.1 Introduction
 - 1.2 General Osteological Information
2. Methodology
3. Results
4. Summary
5. Bibliography

1. Introduction

1.1 Introduction

This report details the osteological analysis of burnt bone remains recovered during excavations at Blanchvillespark/Ballyquirk 1 in the townland of Blanchvillespark/Ballyquirk, 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 November 2009. At the time of writing this report, background archaeological information was obtained from a draft interim excavation report (Elliott, R. 2009) and from consulting the original site register documents.

1.2 General Osteological Information

The osteological analysis of burnt bone remains recovered from Blanchvillespark/Ballyquirk 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 13 fragments from a possible 10 skeletal elements and weighing 0.65g were recorded within the assemblage. The degree of preservation of the burnt bone assemblage recovered at Blanchvillespark/Ballyquirk 1 was very poor with a high rate of fragmentation and particles of a small size.

The burnt bone recovered at Blanchvillespark/Ballyquirk 1 originated from two archaeological contexts: C80 the sandy/clay fill of pit feature C83 and C82 the black sandy/clay basal fill of pit feature C83.

A series of three charcoal samples from archaeological contexts C25, C20 and C82 were identified to species and sent for radiocarbon dating. A sample of alder charcoal recovered from pit fill C25 returned a two sigma calibrated radiocarbon date of Cal. 1878–1689BC, whilst a sample of pomoideae charcoal from packing fill C20 returned a two sigma calibrated radiocarbon date of Cal. 1877–1691BC. Alder charcoal from primary fill C82 was also sent for AMS dating and returned a two sigma calibrated radiocarbon date of Cal. 2871–2584BC. The radiocarbon dates produced from material at Blanchvillespark/Ballyquirk 1 place activity within the late Neolithic and Bronze Age periods.

A total of 5 bone fragments (38.5%) of the burnt bone assemblage were identified to species. Due to the high degree of fragmentation and minute size of the individual bone fragments it was not possible to identify 8 fragments (61.6%) these were classed as indeterminate vertebrate. Bone elements were identified where possible.

The burnt remains assemblage retrieved from Blanchvillespark/Ballyquirk 1 contained bones from a possible 2 species of; pig and rodent.

2. 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.

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.

BIOMETRICAL DATA: Due to the high degree of fragmentation of the burnt bone recovered from Site AR111 Blanchvillespark/Ballyquirk measurements were not taken.

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 and nature of bone material recovered from Site AR111 Blanchvillespark/Ballyquirk.

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.

3. Results

Context 80 Sample 18

A total of 4 burnt bone fragments (0.44g) representing 4 possible skeletal elements were identified within C80 the sandy clay fill of pit feature C83. A single rib corpus fragment (0.34g) was identified to pig. The small size of the remaining 3 bone pieces (0.10g), as well as the degree of fragmentation meant it was not possible to identify species.

Sus/Pig

A single pig rib body fragment (7.7%) was recovered. The weight of the proximal rib fragment was 0.34g. The bone fragment measured 18mm in length, 9mm wide and 2mm thick. The rib body fragment displayed evidence of exposure to heat in the form of surface cracking and colour change to white. Bone structure changes through exposure to heat with a white or pale grey colour indicating exposure to temperatures

in excess of c. 600°C combined with a ready oxygen supply (McKinley, 2004). As detailed by Luff & Pearce in 1994 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

Due to a high degree of fragmentation and minute size a series of 3 unidentifiable bone fragments of indeterminate vertebrate were recovered from Site AR111. All 3 trabecular or spongy bone fragments (23.1%) recovered from C80 at Site AR111 displayed evidence of exposure to a high level of heat, resulting in the calcination of the bone. This was recognised by an alteration of the bone texture combined with colour alteration 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).

Context 82 Sample 20

A total of 9 burnt bone fragments (0.22g) representing 6 possible skeletal elements were identified within C82 the black sandy clay basal fill of pit feature C83. A series of 4 partially re-constructible rib corpus fragments (0.18g) were identified as rodent. The tiny size of the remaining 5 trabecular or spongy bone pieces (0.04g), as well as the degree of fragmentation meant it was not possible to identify species.

Rodent

A total of 4 possible rodent burnt bone fragments were recovered from Site AR111 Blanchvillespark/Ballyquirk. The wild species bone fragments constituted 30.1% of the burnt bone assemblage and weighed 0.18g. All four bone fragments displayed evidence of exposure to a high level of heat in the form of bone surface colour change to well white/grey. 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 and oxidation at high temperatures reduces its size and as detailed above alters bone colour (Luff R. & Pearce J. 1994).

Indeterminate Vertebrate

Due to a high degree of fragmentation and minute size a series of 5 unidentifiable bone fragments of indeterminate vertebrate were recovered from Site AR111. All 5 trabecular or spongy bone fragments (38.5%) recovered from C82 at Site AR111 displayed evidence of exposure to a high level of heat, resulting in the calcination of the bone. This was recognised by an alteration of the bone texture combined with colour alteration to grey/white. 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 alters bone colour (Luff R. & Pearce J. 1994).

4. Summary

Thirteen burnt bone fragments recovered from two archaeological contexts on Blanchvillespark/Ballyquirk 1 were submitted for examination. A total of 8 bone fragments (61.5%) were not possible to identify to species due to trabecular or spongy nature of the minute fragments. The remaining 5 fragments (38.5%) were

identified and divided into species. The faunal remains assemblage contained bones from 2 species of pig and rodent.

Taphonomic alterations noted on the faunal remains from Blanchvillespark/Ballyquirk 1 give us an insight into the process that the assemblage went through before recovery. All 13 bone fragments displayed evidence of exposure to heat. The bone fragments showed surface warping, exposure of trabecular bone and colour change to grey/white or white indicating contact with a high point of heat and an acceleration of the mineralisation process (Luff R. & Pearce J. 1994).

A series of three charcoal samples from archaeological contexts C25, C20 and C82 were identified to species and sent for radiocarbon dating. A sample of alder charcoal recovered from pit fill C25 returned a two sigma calibrated radiocarbon date of Cal. 1878–1689BC, whilst a sample of pomoideae charcoal from packing fill C20 returned a two sigma calibrated radiocarbon date of Cal. 1877–1691BC. Alder charcoal from primary fill C82 was also sent for AMS dating and returned a two sigma calibrated radiocarbon date of Cal. 2871–2584BC. The radiocarbon dates produced from material at Site AR111 place activity within the late Neolithic and Bronze Age periods.

The burnt remains assemblage, identifiable and indeterminate retrieved from Blanchvillespark/Ballyquirk 1 was recovered from a series of 2 archaeological contexts that have been interpreted as the charcoal rich fills of a single pit feature C83. It is not possible to determine the significance of this small and largely unidentifiable assemblage of burnt bone. No finds were recovered from the pit feature C83.

Bone Database:

Spec	C	S	Taxa	Anat	Side	Prox	Dist	1	2	3	4	5	6	7	8	But	Bu	G	Q	W (g)	Comments
1	C80	18	Pig	Rib				1									W		1	0.34	Single calcined fragment of proximal rib corpus costae. Bone surface is cracked. Length 18mm, 9mm wide & 2mm thick.
2	C80	18	Unid	Unid													W, G		3	0.10	Small fragments of calcined trabecular bone. Indeterminate vertebrate.
3	C82	20	Rod	Rib							1						W		4	0.18	Series of 4 (partially re-constructible) rib corpus costae fragments of small, rodent. Bone fragments are calcined.
4	C82	20	Unid	Unid													W		5	0.04	Series of tiny fragments of calcined trabecular/spongy bone.

Key:

C= Context

S=Sample

Anat=Anatomical Element

Q=Quantity of Pieces

W (g) = Weight in grams.

But=Butchery

Unid=Unidentifiable

G=Gnaw

B=Black

W=White

R=Rodent

Taxa=Taxon

Dist=Distal

Bu=Burnt

Cn=Carnivore

Prox=Proximal

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 Metallurgical Waste Analysis Report – Angela Wallace

**Report on
Archaeometallurgical Residues
From Blanchvillespark / Ballyquirk 1
N9/N10 Kilcullen to Waterford Scheme
Phase 4: Knocktopher to Powerstown
By
Angela Wallace MSc, MIAI
On behalf of
IAC Ltd.
APRIL 2010**

Blanchvillespark / Ballyquirk 1, AR111

Blanchvillespark / Ballyquirk 1 produced a series of pits, postholes and stakeholes. The likelihood is that the majority of these represented peripheral settlement evidence from the Beaker period in the middle third millennium BC. Finds from the site included four sherds of Beaker pottery, burnt flint and one possible struck flint.

A total of 2 small fragments of material were submitted for examination. These fragments came from C15 fill of pit C23. C23 was a large pit located in the south-western part of the site and contained burnt stone and charcoal-enriched soil. There is no direct dating evidence from this pit.

The two pieces submitted had a total weight of 65.3g and are roughly 25mm across, both pieces are irregular in shape, one piece is flattish and the other is blocky in shape. They do not have typical appearance of iron slags.

Both pieces are dark grey in colour and are quite dense, they appear more likely to be burnt stones. Both pieces have reddish patches evident on the surface giving them the appearance of metallurgical residues but on closer examination it appears more likely they are naturally occurring stones which have been subjected to high temperatures.

A hammer was used to break one of the fragments to examine it in section and it appears that there are possible veins of iron within this material. It would seem that both these pieces are iron-rich stones that have been subjected to high temperatures. Given that there were no metal finds from this site and also the early dates obtained from features, the most likely explanation is that this material is naturally occurring iron rich stone which was exposed to high temperatures.

Appendix 2.6 Radiocarbon Dating Results – QUB 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: intcal04.14c

Context	Sample No	Material	Species id/ Weight	Lab	Lab Code	Date Type	Calibrated date ranges	Measured radiocarbon age (BP)	13C/12C Ratio ‰
C25, fill of pit	8	Charcaol	<i>Alnus glutinosa</i> 0.41 g	QUB	UBA 12227	AMS (Std)	1869–1694BC 1 sigma, 1878–1689BC 2 sigma	3449±25	-28.6
C20, fill of posthole	18	Charcaol	<i>Pomoideae</i> 0.78g	QUB	UBA 12228	AMS (Std)	1869–1696BC 1 sigma, 1877–1691BC 2 sigma	3452±21	-29.3
C82, fill of pit	20	Charcaol	<i>Alnus glutinosa</i> 0.17g	QUB	UBA 12229	AMS (Std)	2859–2632 BC 1 sigma, 2871–2584 BC 2 sigma	4131±26	-27.2

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
KK020-025001	Church
KK020-025002	Graveyard

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	E3458	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
Blanchillespark 1	AR107	E3894	Richard Jennings	260535/155212

Site Name	Site Code	E Number	Director	NGR
Blanchvillespark 2	AR108	E3895	Tim Coughlan	260637/155449
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
Leggetsraeth 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