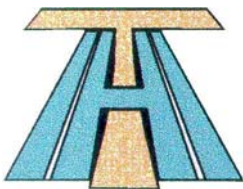
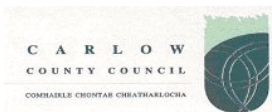


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N9/N10 KILCULLEN TO WATERFORD SCHEME, PHASE 4 – KNOCKTOPHER TO POWERSTOWN



| | |
|---------------------------------------------------|---------------------|
| Ministerial Direction Scheme Reference No. | A032 |
| Registration No. | E3460 |
| Site Name | AR088, Danesfort 11 |
| Townland | Danesfort |
| County | Kilkenny |
| Excavation Director | Richard Jennings |
| NGR | 253245 148462 |
| Chainage | 37100 |

FINAL REPORT

ON BEHALF OF KILKENNY COUNTY COUNCIL

JUNE 2011

IAC Irish Archaeological
Consultancy

PROJECT DETAILS

| | |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | |
| Project | N9/N10 Kilcullen to Waterford Scheme, Phase 4: Knocktopher to Powerstown |
| Ministerial Direction Reference No. | A032 |
| Excavation Registration Number | E3460 |
| | |
| Excavation Director | Richard Jennings |
| Senior Archaeologist | Tim Coughlan |
| Consultant | Irish Archaeological Consultancy Ltd, 120b Greenpark Road, Bray, Co. Wicklow |
| Client | Kilkenny County Council |
| | |
| Site Name | AR088, Danesfort 11 |
| Site Type | |
| Townland(s) | Danesfort |
| Parish | Danesfort |
| County | Kilkenny |
| NGR (easting) | 253245 |
| NGR (northing) | 148462 |
| Chainage | 37100 |
| Height OD (m) | 63.137 |
| | |
| RMP No. | N/A |
| | |
| Excavation Dates | 11–15 June 2007 |
| Project Duration | 20 March 2007–18 April 2008 |
| | |
| Report Type | Final |
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| Report By | Richard Jennings and Tim Coughlan |
| Report Reference | Jennings, J. and Coughlan, T. 2011 E3460 Danesfort 11 Final Report. Unpublished Final Report. National Monuments Service. Department of Environment, Heritage and Local Government, Dublin.. |

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

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ABSTRACT

Irish Archaeological Consultancy Ltd (IAC), funded by the National Roads Authority (NRA) through Kilkenny County Council, undertook an excavation at the site of AR088, Danesfort 11 along the proposed N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown (Figure 1). The following report describes the results of archaeological excavation at that site. The area was fully excavated by Richard Jennings under Ministerial Direction A032 and Excavation Registration Number E3460 issued by the DOEHLG in consultation with the National Museum of Ireland for IAC. The fieldwork took place between the 21 May and 29 June 2007.

The excavation identified a number of pits one of which may have functioned as a trough. The oval trough contained a series of stakeholes in the base of the cut which may be associated with a wattle lining. The trough and two adjacent shallow pits contained heat shattered stone within their fills and while no definitive mound was identified on site, it is interpreted that these features were related to burnt mound activity.

To the south-west of the trough and two shallow pits a further possible trough and three pits were recorded. These features also exhibited heat shattered stones in their fills and may have been associated with burnt mound activity. The possible trough was oval and two stakeholes were identified at the base which may show evidence of a possible wattle lining.

The site was transected by a post-medieval boundary ditch which truncated the area of the second group of pits.

A sample of charred hazelnut from pit fill C13 was radiocarbon dated. The 2 sigma calibrated result was 2467–2295BC (UBA 15560).

Danesfort 11 is an important site locally in terms of our understanding of the wider early Bronze Age landscape. Along with other excavated sites from the N9/N10 Phase 4 it represents further evidence of prehistoric activity in the immediate area. This activity has been interpreted as burnt mound type activity but the site is not located in a typical burnt mound physical setting and did not produce classic burnt mound features, indeed the absence of an actual mound was significant. In this regard the site also provides an interesting insight into the variety of site types and features associated with burnt mounds and hot-stone technology.

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 Bronze Age Activity..... | 4 |
| 2.3 | Phase 3 Post-medieval activity..... | 6 |
| 2.4 | Phase 4 Topsoil and Plough soil..... | 6 |
| 3 | SYNTHESIS..... | 7 |
| 3.1 | Landscape Setting – compiled by Michelle Brick..... | 7 |
| 3.2 | The Archaeological Landscape..... | 9 |
| 3.3 | Typological Background of Burnt Mounds..... | 14 |
| 3.4 | Summary of the Excavation Results..... | 15 |
| 3.5 | Summary of the Specialist Analysis..... | 15 |
| 4 | DISCUSSION AND CONCLUSIONS..... | 16 |
| 4.1 | Discussion..... | 16 |
| 4.2 | Conclusions..... | 16 |
| 5 | BIBLIOGRAPHY..... | 17 |
| 5.1 | References..... | 17 |
| 5.2 | Other Sources..... | 18 |
| FIGURES | | |
| PLATES | | |
| APPENDIX 1 | CATALOGUE OF PRIMARY DATA..... | I |
| Appendix 1.1 | Context Register..... | i |
| Appendix 1.2 | Catalogue of Artefacts..... | iv |
| Appendix 1.3 | Catalogue of Samples..... | iv |
| Appendix 1.4 | Archive Index..... | v |
| APPENDIX 2 | SPECIALIST REPORTS..... | VI |
| Appendix 2.1 | Charcoal and Wood analysis Report – Lorna O’ Donnell..... | vii |
| Appendix 2.2 | Plant Remains Analysis Report – Penny Johnston..... | xv |
| Appendix 2.3 | Radiocarbon Dating Results – QUB Laboratory..... | xix |
| APPENDIX 3 | LIST OF RMP IN AREA..... | XX |
| APPENDIX 4 | LIST OF SITE NAMES..... | XXI |

List of Figures

- Figure 1: Danesfort 11 - general site location
- Figure 2: Danesfort 11 - location of site showing RMPs
- Figure 3: Danesfort 11 - location of site within development
- Figure 4: Danesfort 11 - plan of site
- Figure 5: Danesfort 11 - sections 1–3

List of Plates

- Plate 1: Trough C4 (right) and pit C8 (left), pre-excavation, facing north
- Plate 2: Trough C4 with stakeholes, post-excavation, facing south-west
- Plate 3: Pit group 2, mid-excavation, facing north-east
- Plate 4: Ditch C33 cutting through C16, mid-excavation, facing north-west
- Plate 5: Pit C14, post-excavation, facing north-east
- Plate 6: Pit/ possible trough C22, post-excavation, facing south

1 INTRODUCTION

1.1 General

This report presents the results of the archaeological excavation of Danesfort 11, AR088 (Figure 1), in the townland of Danesfort undertaken by Richard Jennings of IAC, on behalf of Kilkenny County Council and the NRA, in accordance with the Code of Practice between the NRA and the Minister for Arts, Heritage, Gaeltacht and the Islands. It was carried out as part of the archaeological mitigation programme of the N9/N10 Kilcullen to Waterford Road Scheme, Phase 4, which extends between Knocktopher in Co. Kilkenny to Powerstown in Co. Carlow. The excavation was undertaken to offset the adverse impact of road construction on known and potential subsoil archaeological remains in order to preserve the site by record.

The site measured 718m² and was first identified during testing (E3882) carried out in 2006 by Melanie McQuade for Margaret Gowen & Co. Ltd. on behalf of the National Roads Authority. Danesfort 11 was excavated between 11 and 18 June 2007 with a team of one director and five assistant archaeologists.

1.2 The Development

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

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

1.3 Archaeological Requirements

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

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

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

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

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

1.4 Methodology

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

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

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

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

No artefacts were uncovered on the site. All archive is currently stored in IAC's facility in Lismore, Co Waterford and will ultimately be deposited with the National Museum of Ireland.

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

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

References to other sites excavated as part of the N9/N10 Phase 4: Knocktopher to Powerstown are referenced throughout this report only by their site name e.g. Paulstown 1. A list of these sites and details including director's name and National Monuments Excavation Reference Number can be referenced in Appendix 4.

Final Report Date Ranges

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

Mesolithic: 7000–4000BC

Neolithic: 4000–2500BC

Early Bronze Age: 2500–1700BC

Middle Bronze Age: 1700–1200BC

Late Bronze Age: 1200–800BC

Iron Age: 800BC–AD500

Early medieval period: AD500–1100

Medieval period: AD1100–1600

Post-medieval: AD1600–1800

Source:

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

2 EXCAVATION RESULTS

The site consisted of two small groups of pits spaced 10m apart in a low-lying basin. A natural pond and prehistoric archaeological features were discovered 40m to the south-west at Danesfort 10, AR087. The low and undulating nature of the surrounding landscape meant that Mount Leinster was visible 30km to the east and Slievenamon 30km to the south-west. The site was 2.2km west of the River Nore. The site was 150m north-east of a prehistoric structure at Danesfort 9 (E3468), 250m north-east of a prehistoric field system at Danesfort 8 (E3461), 470m north-east of a group of Bronze Age pits at Danesfort 7 (E3537), 600m north-east of a late Bronze Age pit at Danesfort 6 (E3538), and 900m north-east of a middle Bronze Age settlement at Danesfort 5 (E3546). It was also adjacent to RMP sites KK023-062 and KK023-063, enclosures (Figure 2).

2.1 Phase 1 Natural Drift Geology

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|-------------------------------------------|----------------|
| C2 | N/A | | | | Light greyish yellow, compact sandy clay. | Subsoil |

The natural subsoil on the site consisted of a light grey-yellow sandy clay. All subsequent features and deposits were either cut into or sealed the subsoil.

2.2 Phase 2 Bronze Age Activity

2.2.1 Pit Group 1

2.2.1.1 Trough with six stakeholes

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|------------------------------|-----------------------|
| C3 | C4 | 1.80 | 1.43 | 0.38 | Dark black silty sand | Upper fill of trough |
| C4 | N/A | 2.00 | 1.43 | 0.55 | Sub-oval cut | Cut of trough |
| C9 | C4 | 0.92 | 1.43 | 0.20 | Dark brown/black sand | Bottom fill of trough |
| C23 | C24 | 0.05 | 0.06 | 0.12 | Mid greyish brown sandy silt | Fill of stakehole |
| C24 | N/A | 0.05 | 0.06 | 0.12 | Circular cut | Cut of stakehole |
| C25 | C26 | 0.04 | 0.04 | 0.04 | Mid greyish brown sandy silt | Fill of stakehole |
| C26 | N/A | 0.04 | 0.04 | 0.04 | Circular cut | Cut of stakehole |
| C27 | C28 | 0.06 | 0.05 | 0.07 | Mid greyish brown sandy silt | Fill of stakehole |
| C28 | N/A | 0.06 | 0.05 | 0.07 | Circular cut | Cut of stakehole |
| C29 | C30 | 0.06 | 0.05 | 0.05 | Mid greyish brown sandy silt | Fill of stakehole |
| C30 | N/A | 0.06 | 0.05 | 0.05 | Sub-oval cut | Cut of stakehole |
| C31 | C32 | 0.05 | 0.04 | 0.05 | Mid greyish brown sandy silt | Fill of stakehole |
| C32 | N/A | 0.05 | 0.04 | 0.05 | Oval shaped cut | Cut of stakehole |
| C35 | C36 | 0.06 | 0.04 | 0.03 | Mid greyish brown sandy silt | Fill of stakehole |
| C36 | N/A | 0.06 | 0.04 | 0.03 | Oval shaped cut | Cut of stakehole |

Finds: None

Sub-oval trough C4 contained six stakeholes in its base, which most likely held some form of lining, perhaps made from wattle (Figure 4, Plate 1 and 2). The trough contained charcoal and heat-affected stones in its fill, C3.

Charcoal was retrieved from the trough fill C9 during post-excavation soil flotation. This was subsequently identified to species. The majority of fragments identified were of oak charcoal (*Quercus* sp.) with smaller amounts of hazel (*Corylus avellana*) charcoal, pomaceous fruitwoods (*Pomoideae* spp.) charcoal and elm (*Ulmus* sp.) charcoal also identified (O' Donnell, Appendix 2.2). The oak present could be our native pedunculate (*Quercus robur*) which prefers more wet, heavier clays than the sessile oak (*Ibid.*)

2.2.1.2 Two shallow pits

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|--------------------------|----------------|
| C5 | C6 | 1.00 | 0.72 | 0.11 | Greyish black silty sand | Fill of pit |
| C6 | N/A | 1.00 | 0.72 | 0.11 | Oval shaped cut | Cut of pit |
| C7 | C8 | 1.30 | 0.75 | 0.07 | Dark black silty sand | Fill of pit |
| C8 | N/A | 1.30 | 0.75 | 0.07 | Sub-oval cut | Cut of pit |

Finds: None

Adjacent to trough C4 were two pits, C6 and C8, which were most likely associated (Figure 4). They also contained charcoal and heat-affected stones in their silty sand fills, C5 and C7, respectively. It is not clear what their precise function was but they may have been waste pits for disposed burnt mound material.

2.2.2 Pit Group 2

This group of archaeological features was located c. 10m south-west of the trough and its associated pits (Figure 4, Plate 3).

2.2.2.1 Pit/Possible Trough C22 with two stakeholes (Figure 4, Plate 6)

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|--------------------------------|-------------------|
| C21 | C22 | 1.84 | 1.26 | 0.26 | Dark brown silty sand | Fill of pit |
| C22 | N/A | 1.84 | 1.26 | 0.26 | Oval shaped cut | Cut of pit |
| C41 | C42 | 0.05 | 0.05 | 0.07 | Dark blackish brown silty sand | Fill of stakehole |
| C42 | N/A | 0.05 | 0.05 | 0.07 | Circular cut | Cut of stakehole |
| C43 | C44 | 0.12 | 0.05 | 0.07 | Blackish brown silty sand | Fill of stakehole |
| C44 | N/A | 0.12 | 0.05 | 0.07 | Oval shaped cut | Cut of stakehole |

Finds: None

The dimensions of this pit are slightly smaller than the trough C4 to the north-east and its fill did not contain heat shattered stone. However, it is possible that this pit may also have functioned as a trough which had the heat shattered stone cleaned out after use. The presence of two stakeholes within the cut could suggest that it was similar in function to the C4 trough. The lack of heat-shattered stone could imply that it had an alternative function.

2.2.2.2 Three other pits

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|----------------------------------------|---------------------|
| C13 | C14 | 0.64 | 0.39 | 0.16 | Mid brown silty clay | Fill of pit |
| C14 | N/A | 1.00 | 0.44 | 0.34 | Oval shaped cut | Cut of pit |
| C15 | C16 | 1.34 | 1.34 | 0.32 | Greyish-light greyish black silty sand | Fill of pit |
| C16 | N/A | 1.34 | 1.34 | 0.32 | Cut of poss. circular pit | Cut of pit |
| C17 | C18 | 1.50 | 1.30 | 0.09 | Mid greyish brown silty clay | Fill of pit |
| C18 | N/A | 3.00 | 1.90 | 0.20 | Double oval L-shaped cut | Cut of pit |
| C19 | C14 | 0.45 | 0.32 | 0.29 | Light orangey brown silty clay | Primary fill of pit |
| C20 | C14 | 0.32 | 0.30 | 0.16 | Dark brown silty clay | Fill of pit |
| C37 | C18 | 1.60 | 1.47 | 0.10 | Mid brown clayey silt | Fill of pit |
| C38 | C18 | 1.25 | 1.47 | 0.06 | Dark brown clayey silt | Fill of pit |
| C40 | C18 | 0.80 | 0.70 | 0.09 | Mid brownish grey silty clay | Fill of pit |

Finds: None

The presence of heat-shattered stones in the fills of these pits indicates that they were possibly used for the deposition of burnt mound type material similar to that derived from the trough. Their exact function is unclear, but they indicate small scale

burnt mound activity in this area. Pit C18 consisted of two oval shaped cuts at right angles to each other that may in fact represent two separate features. Pit C16 was heavily truncated by a later boundary Ditch C33 (Plate 4).

Charcoal was retrieved from the pit fill C13 during post-excavation soil flotation. This was subsequently identified to species. The majority of fragments identified were hazel (*Corylus avellana*) charcoal with smaller amounts of oak (*Quercus* sp.) charcoal and ash (*Fraxinus* sp.) charcoal also identified (O'Donnell Appendix 2.1). Charcoal fragments were also retrieved from the pit fill C21 and were subsequently identified as mostly oak (*Quercus* sp.) charcoal fragments with smaller amounts of hazel (*Corylus avellana*) charcoal, ash (*Fraxinus* sp.) charcoal and elm (*Ulmus* sp.) charcoal also identified (*Ibid.*).

A single charred hazelnut (*Corylus avellana* L.) shell fragment was recovered and identified from pit fill C13 (Johnston Appendix 2.2). As this is such a small collection of hazelnut shell fragments it is unlikely to be a significant indicator of site diet (*Ibid.*).

A small fragment (0.01g) of this hazelnut shell from fill C13 was chosen for AMS dating and returned a result of 3893±29 BP (UBA 15560). The 2 Sigma calibrated date for this was 2467–2295BC (QUB, Appendix 2.3) dating this feature to the early Bronze Age.

2.3 Phase 3 Post-medieval activity

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|-------------------------------------|----------------|
| C33 | N/A | 8.5 | 1.10 | 1.05 | Orangey brown very fine clayey sand | Cut of ditch |
| C34 | C33 | 8.5 | 1.10 | 1.05 | Linear cut | Fill of ditch |

This linear boundary ditch extended across the site and cut through several of the pits (Figure 4 and 5, Plate 4). This boundary was also recorded in Danesfort 10 to the south, where a stone revetment was discovered within it. No such structure was discovered in this part of the ditch which was completely silted up and not visible prior to excavation. The ditch traverses almost perpendicularly towards the Danesfort–Bennettsbridge Road which suggests that it was probably constructed when this route was already present. The ditch is not evident on the first edition OS Map.

2.4 Phase 4 Topsoil and Plough soil

| Context | Fill of | L(m) | W(m) | D(m) | Basic Description | Interpretation |
|---------|---------|------|------|------|----------------------------------------|----------------|
| C1 | N/A | | | | Dark grey, blackish, loose silty sand. | Topsoil |

The topsoil consisted of a dark-grey, blackish, loose, silty sand.

3 SYNTHESIS

The synthesis presents the combined results of all of the archaeological analysis carried out at Danesfort 11. This includes the analysis of the physical and archaeological landscape, the compilation of information gathered during research into the site type, date, and function, and the results of the excavation and specialist analysis of samples taken during the course of on-site works.

3.1 Landscape Setting – compiled by Michelle Brick

3.1.1 The General Landscape

The topography of the region through which the route passes is generally flat with an average height of 70m O.D. The southern periphery of the route is bordered by Kilmacoliver (261m) and Carricktriss Gorse (314m), with Slievenamon (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 Mountrugent 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. Danesfort 11 is located in the central landscape area.

3.1.2 The Central Landscape

The central landscape of the route encompasses the environs of the Nore Valley and the hinterland of Kilkenny City. It includes 35 sites discovered during the Phase 4 excavations stretching from Danesfort 1 northeast to Dunbell Big 1 and along the Kilkenny Link Road from Rathgarvan or Clifden 1 west to Leggetsrath East 1. The underlying bedrock of the region is made up of Carboniferous Limestone sands and gravels, Carboniferous Limestone Tills, Shale's and Sandstone Tills. According to the EPA the natural soils of the region consist of Renzinas and Lithosols in areas dominated by underlying bedrock of Carboniferous Limestone sands and gravels. Soil cover consisting of Grey Brown Podzolics and Brown Earths is present in areas of underlying Carboniferous Limestone Tills and Surface Water Gleys and Ground Water Gleys are the soils present where the underlying bedrock is made up of Shale's and Sandstone Tills. This landscape is underlain not only by the Butlersgrove geological formation but also by the Ballyadams formation (thick-bedded calcarenitic wackestone on erosional surfaces). A large number of quarries in the area, some of which produced the distinctive blue 'Kilkenny limestone' that was used to construct the medieval and later city, occur around the city itself and extend southward into the dolomite formations along the Nore around Dunbell (Tietzsch-Tyler, 1994).

The glacial drift around the Kilkenny City hinterland, along the Kilkenny Link Road, comprises sandy (50–60%), gravely clay with a noticeably higher sand content than along the southern plain of the River Nore. As this section crosses existing watercourses, areas of granular deposits and several isolated sand and gravel lenses were noted. The floodplain of the Nore extends c. 80m on the western side and c. 50m on the eastern side, creating marsh and wet grassland within the immediate area. The nature of the glacial drift and geology, combined with the water sources and floodplains in the area, has resulted in the high quality of the local pastoral and arable agricultural landscape. The topography in this section remains between 50m and 80m OD creating open and expansive views over the confluence of the Nore and Kings Rivers. Mountains are visible on the horizon to the north, east and south-east. Freestone Hill (130m) is located directly to the North and Knocknaguppoge beyond this rises to 334m. Outside the parameters of this landscape lies Brandon Hill (513m) to the south-east and further to the east are the Blackstairs Mountains (735m) and Mount Leinster (795m). The River Nore is the prevailing water course of the region and the River Barrow flows along the margins to the east. The Kings River is located to the south and would have influenced activity in and around this area.

3.1.3 Site Specific Landscape

The site consisted of two small groups of pits spaced 10m apart in a low-lying basin. A natural pond and prehistoric archaeological features were discovered 40m to the south-west at Danesfort 10, AR087. The low and undulating nature of the surrounding landscape meant that Mount Leinster was visible 30km to the east and Slievenamon 30km to the south-west. The site was 2.2km west of the River Nore. The site was 150m north-east of a prehistoric structure at Danesfort 9 (E3468), 250m north-east of a prehistoric field system at Danesfort 8 (E3461), 470m north-east of a group of Bronze Age pits at Danesfort 7 (E3537), 600m north-east of a late Bronze Age pit at Danesfort 6 (E3538), and 900m north-east of a middle Bronze Age settlement at Danesfort 5 (E3546). It was also adjacent to RMP sites KK023-062 and KK023-063, enclosures (Figure 2).

3.2 The Archaeological Landscape

As part of the general research relating to sites along the scheme and the specific research relating to Danesfort 11, 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 Danesfort 11 has been identified as being Bronze Age in date.

3.2.1 The General Bronze Age Landscape of the Scheme – compiled by Michelle Brick

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 of 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 Jenkinstown 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 Central Landscape: Domestic Settlement

The characteristics of the prehistoric settlement landscape change from the peripheral activity located alongside the River Nore floodplains of the southern landscape to a slightly more permanent and defined settlement in the central landscape. The direct domestic settlement evidence, albeit limited, indicates the presence of a Bronze Age community in the locality. As the evidence for peripheral settlement activity including burnt mounds and funeral monuments was also limited, this area may have been dominated by small-scale settlement. The area contained soils amenable to farming and perhaps the area was cultivated, rather than settled. The majority of the evidence was centred upon the Danesfort area which may consequently represent an important focus of activity, perhaps with considerable longevity.

Danesfort 5 was located upslope from a burnt mound site in Croan (unexcavated and not a Recorded Place and Monument) and contained three post-built, circular houses with southeast-facing porches and internal hearths. Structure 1 overlay the remains of postholes, stakeholes and a possible fireplace, which may have represented an earlier structure or shelter. The morphology of these houses, with their regularly spaced postholes, would indicate a middle-late Bronze Age date, as also suggested by middle to late Bronze Age pottery. At Dunbell Big 2 there was a shallow, circular gully with internal postholes, an east-facing entrance (representing a possible structure) and a pit containing middle Bronze Age domestic pottery. A small lithic assemblage, including a convex end scraper, flake and debitage, came from Holdenstown 1. Holdenstown 3 also produced sherds from two fine middle Bronze Age domestic vessels.

A major prehistoric complex was identified at Templemartin 5 where settlement, industry and burial continued episodically until the late Bronze Age. The site was situated on the top of a northwest-southeast ridge and overlooked the surrounding

countryside of rolling pasture land. At this site a series of six ringditches were recorded, two of which extended beyond the area of excavation and are therefore preserved *in situ*. One of the ringditches (5.2m external diameter) was penannular with a gap of 0.8m in the south-east and an almost-centrally located hearth. The presence of a hearth, with evidence for *in situ* burning, suggests that this 'ringditch' was the foundation trench for the wall of a structure, rather than a funerary monument. It was post-dated by another ringditch which cut through its western side. Other peripheral and possible settlement activity, in the form of pits, Bronze Age pottery and postholes, was noted at Danesfort 7, 8 and 9, as well as Ennisnag 1.

The Central Landscape; Funerary and Ritual activity

The previously known Bronze Age burial record of this landscape included two prehistoric burials excavated by Cassidy in 1991 at Dunbell Big (Cassidy 1991a and b). There at Ringfort No. 5, a pit containing a badly damaged Bronze Age food vessel was found and the second burial was discovered within a cist. The cist fill was mainly a reddish loam and on its side at its base was an intact food vessel containing and surrounded by burnt bone (*ibid.*). Other significant funerary activity includes the single grave sites of Garrincreen to the west and Grange Lower (Waddell 1990, 103) to the south-east. Bowl burials have also been discovered at Wells, Slyguff and Kilgraney, Co. Carlow, sites that border the eastern margins of this study area.

Ten sites produced evidence for funerary activity in this section of the N9/N10, primarily in the form of ringditches: Danesfort 1, 12 and 13, Kilree 4, Holdenstown 1 and Templemartin 5. However, the Danesfort 12 and 13 ringditches have produced Iron Age dates. The Danesfort 1 ringditch had cremated bone in the middle of its three fills, at opposite sides of the ditch. At Danesfort 6 a deep, flat-bottomed, straight-sided circular pit containing sherds of at least three vase urns and a cremation pit with a marker post were identified. At Danesfort 7 a middle-late Bronze Age flat cemetery was characterised by eight circular pits associated with token cremations. There are also some previously recorded finds from the Danesfort area, in particular a lidded vase that was found in the 19th century. Graves (1860) refers to the discovery of three 'sepulchral urns' found in Danesfort by Lady Elizabeth and Captain Wemyss, in the proceedings of the September meeting of the Kilkenny and South East of Ireland Archaeological Society in 1860; two of these are described as rare and highly ornamented. The exact location of these finds has been questioned but excavated evidence of Bronze Age funerary activity in this townland, as a result of the N9/N10, supports the authenticity of the discovery.

An isolated cremation pit at Kilree 1 was capped with a saddle quern. At Kilree 4 a double ringditch was located on the edge of the Nore floodplain overlooking a potential crossing point. The fills of both the external and internal ringditch contained charcoal, animal bone and burnt bone. A possible cremation pit was identified and contained a single piece of copper in the middle fill; charcoal, burnt bone and burnt clay were also found in the fills. A funerary complex was identified at Holdenstown 1 and consisted of three ringditches, one of which was badly truncated. The primary phase of one of the small ringditches contained cremated material; this ringditch was later re-used to enclose a small inhumation cemetery. The activity at Holdenstown 1 fits into a wider landscape as the adjacent site of Dunbell Big 2 contained evidence for Bronze Age settlement and Holdenstown 2 also had evidence of prehistoric activity.

Two pits from the multi-phased site Templemartin 5 contained cremations in Grooved Ware vessels. In addition there were six ringditches, at least five of which were later in date than the two cremation pits. These ringditches formed the main concentration of activity probably during the Bronze Age and focused the funerary action on a rise

to the north-east of the site, at the edge of a north-south gravel ridge overlooked by Freestone Hill. One was penannular, and its entrance faced the south-east, typical of the Bronze Age period and it pre-dated the other ringditches. It is possible that this represents the slot trench of a structure rather than a funerary monument. Fifteen cremation pits were identified on the site: two of these dated to the late Neolithic. The main focal point of the cemetery was also the highest point of the site and was on the edge of a ridge overlooking the surrounding countryside, and two of the ringditches and a concentration of Bronze Age cremation pits were located here. Five of the cremation pits had evidence for marker posts/stones and two others had been formally capped or sealed with sterile material. The amount of bone contained in any of the above cremations could only be considered as a token deposit of any individual. Two cremations, Cremations 9 and 11, display evidence of structured deposition and have larger chunks of bone than the others, suggesting these two might be slightly earlier, perhaps middle Bronze Age in date. The rest of the cremations had only very small pieces of bone which suggests that they were more intensely processed: perhaps more indicative of a late Bronze Age date. Possible pyre remains were represented by deposits located to the south of the main concentration of cremations

The Central Landscape; Burnt mounds

Only seven sites with evidence of burnt mound activity were uncovered within the central landscape. Two of the three Danesfort sites were located close together (Danesfort 10 and 11) and a further two sites were also located in proximity to each other (Rathgarvan or Clifden 1 and Maddockstown 1). Burnt mound activity discovered at Danesfort 2 was situated on the southern slopes of a small valley near the Ennisnag tributary of the King's River in the southern end of this landscape. Holdenstown 4 was not located close to any other burnt mounds however it was situated on flat terrain with good visibility southwards to Holdenstown 3. Rathgarvan or Clifden 1 and Maddockstown 1 were located on flat, wet grassland. Rathgarvan or Clifden 1 had evidence for natural springs and a waterhole which would have supplied water on-site. The River Nore meanders NNW-SSE to the south-east of both these sites. Burnt mound activity was also excavated at Leggetsrath East 1 which was located on the eastern edge of the floodplain of a small river/stream. This site was also on marginal land but was surrounded to the north and south by well-drained pastureland. Other burnt mound sites recorded in the vicinity include those at Bishopslough West (KK024-037, 38), Maddockstown (KK020-052), Rathcash West (KK020-077, 78) and Cloghoge (KK020-039, 075, 76).

The Central Landscape; Route-ways and Communications

It is evident that the Nore, Dinin (and its tributary the Douglas) provided the landscape links within the extensive late Bronze Age settlement distribution to the north of Kilkenny extending from the lowlands up into the uplands of the Castlecomer Plateau. However, beyond this the Nore also leads to the lowland zone in mid-Laois with its core of prehistoric activity, as well as to the sources of the Suir and contact with other major settlement cores at, for example, Cahir and Cashel. To the south the King's River, rising in the Slieveardagh Hills, also provides access to the Suir Valley. While it is clear that the rivers and streams are a major feature of the settlement networks, the distribution of prehistoric activity shows that other route-ways were functioning at both a local and regional scale. 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 on the eastern side of the Barrow in the Goresbridge area that 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. Additionally 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 Central Landscape; Conclusions

While the central part of the N9/N10 Scheme through the fertile Kilkenny lowlands has produced some Bronze Age archaeology, particularly in the Danesfort and Ennisnag areas, this low level of activity reflects the known site distribution patterns. This picture provides an interesting contrast with the dense settlement in the early medieval and medieval periods but it is probably significant that the two nodes of Bronze Age settlement identified are in slightly more elevated terrain overlooking the Nore and King's Rivers. More significant in this study area is the rich array of Bronze Age funerary activity uncovered along this portion of the N9/N10 route.

3.2.2 The Site Specific Archaeological Landscape of Danesfort 11

There were a number of recorded monuments located in close proximity to Danesfort 11. An enclosure site (KK023-062) is recorded to the west, 200m away, and 100m to the east an enclosure site and a possible ridge and furrow site (KK023-062001, 2) are recorded. Further north-east another enclosure site (KK023-063) is located 550m away, and 700m to the north-east, three enclosures (KK023-049001, 2, 3) are recorded in Kilree. To the south-east at a distance of 1.2km another enclosure site is located (KK023-082). To the south-west of Danesfort 11, a field system and linear earthwork (KK023-06001, 2) are recorded 750m away.

At Danesfort 11 features associated with burnt mound activity were excavated although no burnt mound spread was uncovered. There were a number of sites excavated in the immediate vicinity of Danesfort 11, as part of the N9/N10 Phase 4: Knocktopher to Powerstown works. At Rathclogh 1, located 100m to the north-east, post-medieval activity in the form of field drains and a field boundary were excavated. Rathclogh 2 was located 550m to the north-east and a number of pits and a single stakehole dating to the middle/late Neolithic period were excavated. Beyond Rathclogh 2, the next site located to the north-east of Danesfort 11 was Kilree 1, 1.15km away. Here a large sub-rectangular trough containing four stakeholes and a single posthole, C22, were identified. A hearth and a second possible hearth were also excavated and these have been dated to the late Bronze Age.

A number of sites were also excavated to the south of Danesfort 11, as part of the N9/N10 Phase 4: Knocktopher to Powerstown works. At Danesfort 10, located 20m to the south-west, prehistoric hearths and pits were excavated which were dated to the middle Iron Age. At Danesfort 9, (160m to the south-west), a late Neolithic temporary shelter or the ephemeral remains of a domestic dwelling and a single pit were excavated. At Danesfort 8, located 300m to the south-west, two ditch alignments of an ancient field system were excavated, as well as a number of pits, postholes and stakeholes. Two radiocarbon dates from this site indicate that it is contemporary with Danesfort 11. At Danesfort 7, 500m away, Neolithic activity in the form of eight scattered circular pits, two stakeholes and one post pit were recorded. Middle Neolithic pottery sherds were also recovered at this site. Danesfort 6 was located 620m away to the south-west. Here, middle and late Bronze Age phases of activity comprising of a deep, flat-bottomed, straight-sided circular pit containing sherds of a least three different funerary urns, and a cremation pit with marker post were excavated. A later phase of occupation was defined by a concentration of postholes, stakeholes, pits, and boundaries clustered together on the western edge of a natural pool was dated to the medieval period. At Danesfort 5, 900m away, a mid-late Bronze Age settlement that comprised three post and beam roundhouses with internal hearths and southeast-facing porches were excavated. Some later Iron

Age activity was also identified in the form of a keyhole-shaped kiln, a bowl furnace and other pits containing heat-cracked stone and metalworking debris at the site.

The surrounding archaeological landscape shows evidence of continuity of settlement from the Neolithic period throughout prehistory and into the medieval and post-medieval periods. The evidence suggests that the area has been subject to quite intensive occupation throughout the ages.

3.3 Typological Background of Burnt Mounds

Burnt mound sites (also commonly referred to as *fulacht fiadh*) are one of the most common field monuments found in the Irish landscape. The last published survey (Power *et al.* 1997), carried out over a decade ago, recorded over 7,000 burnt mound sites and in excess of 1,000 sites have been excavated in recent years through development led archaeological investigations. In spite of this no clear understanding of the precise function of these sites has been forthcoming.

Burnt mound sites are typically located in areas where there is a readily available water source, often in proximity to a river or stream or in places with a high water table. In the field burnt mounds may be identified as charcoal-rich mounds or spreads of heat shattered stones, however, in many cases the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless even disturbed spreads of burnt mound material often preserves the underlying associated features, such as troughs, pits and gullies, intact.

Ó Néill (2003–2004, 82) has aptly identified these sites as the apparatus and by-product of pyrolithic technology. This technology involved the heating or boiling of water by placing fire-heated stones into troughs of water. Small shallow round-bottomed pits, generally referred to as pot boiler pits or roasting pits, are often associated with burnt mound sites. The purpose of these pits remains unclear. Occasionally large pits are also identified and may have acted as wells or cisterns. Linear gullies may extend across the site, often linked to troughs and pits, and demonstrate a concern with onsite water management. Post and stakeholes are often found on burnt mound sites and these may represent the remains of small structures or wind breakers.

Burnt mound sites are principally Bronze Age monuments and reach their pinnacle of use in the middle/late Bronze Age (Brindley *et al.* 1989–90; Corlett 1997). Earlier sites, such as Enniscoffey Co. Westmeath (Grogan *et al.* 2007, 96), have been dated to the Neolithic and later sites, such as Peter Street, Co. Waterford (Walsh 1990, 47), have been dated to the medieval period. Thus although burnt mound sites generally form a component of the Bronze Age landscape, the use of pyrolithic technology has a long history in Ireland.

Although there is a general consensus that burnt mound sites are the result of pyrolithic technology for the heating or boiling of water, the precise function of these sites has, to date, not been agreed upon. Several theories have been proposed but no single theory has received unanimous support. The most enduring theory is that burnt mounds sites were used as cooking sites. O'Kelly (1954) and Lawless (1990) have demonstrated how joints of meat could be efficiently cooked in trough of boiling water. The use of burnt mound sites for bathing or as saunas has been suggested as an alternative function (Lucas 1965, Barfield and Hodder 1987, O' Drisceoil 1988). This proposal is largely influenced by references in the early Irish literature to sites of a similar character and is very difficult to prove, or disprove. Others, such as Jeffrey (1991), argue that they may have been centres of textile production for the fulling or dyeing of cloth. More recent demonstrations by Quinn and Moore (2007) have shown

that troughs could have been used for brewing, however, this theory has been criticised by leading Irish environmentalists due to the absence of cereal remains from most burnt mound sites (McClatchie *et al.* 2007).

3.4 Summary of the Excavation Results

The excavation identified a number of pits one of which has been interpreted as functioning as a trough. The oval trough contained a series of stakeholes in the base of the cut which may be associated with a wattle lining. The trough and two adjacent shallow pits contained heat-shattered stone within their fills and while no definitive mound was identified on site it is interpreted that these features were related to burnt mound activity.

To the south-west of the trough and two shallow pits a further possible trough and three pits were recorded. These features also exhibit heat-shattered stones in their fills so they appear to be also associated with burnt mound activity. The possible trough was oval and two stakeholes were identified at the base which may show evidence of a possible wattle lining.

The site was transected by a post-medieval boundary ditch which truncated the area of the second group of pits.

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.

Charcoal and Wood Species identification

Charcoal was examined from three contexts (trough and pit) at Danesfort. Five wood taxon or tree types were identified from Danesfort, hazel (*Corylus avellana*), ash (*Fraxinus* sp.), pomaceous fruitwood (Pomoideae), oak (*Quercus* sp.) and elm (*Ulmus* sp.). The results are dominated by oak, followed by hazel.

Analysis of Plant Remains

A single fragment of charred hazelnut shell was found. As waste products of hazelnut consumption, these are ubiquitous finds in Irish archaeobotanical assemblages. Archaeobotanists generally agree that a small collection of hazelnut shell fragments is unlikely to be a significant indicator of site diet. Therefore, the few fragments retrieved from this site are probably relatively unimportant.

Radiocarbon Dating

A single sample was sent for AMS radiocarbon dating.

A sample of charred hazelnut from pit fill C13 was radiocarbon dated. The 2 sigma calibrated result was 2467–2295BC (UBA 15560).

4 DISCUSSION AND CONCLUSIONS

4.1 Discussion

The primary activity identified at Danesfort 11 has been dated to the early Bronze Age and consists of pits and possible troughs probably associated with burnt mound activity. The immediate surrounding physical landscape would not appear to be one normally associated with burnt mound activity. It is not a normally marginal or wet landscape although there was evidence of an infilled pool on the nearby site of Danesfort 10. Variations in the water table and hydrology of the site must also be considered since the Bronze Age. There are no other burnt mound sites in the immediate vicinity but the site is located within an archaeological landscape that exhibits occupation from the Neolithic throughout the Bronze Age and into the Iron Age, early medieval and medieval periods. Contemporary activity was identified at Danesfort 8, 300m away where pits with Beaker pottery were identified along with possibly contemporary field system. It is clear therefore that the activity at Danesfort 11, although small scale in its nature, provides evidence of a wider community settled in the Danesfort area in the early Bronze Age.

While the pool identified at Danesfort 10 may have provided the water source for the trough, consideration needs to be given to the nature of the activity on the site. It is possible that features identified as troughs did not contain water. As has been previously outlined small shallow round-bottomed pits, generally referred to as pot boiler pits or roasting pits, are often associated with burnt mound sites. The features at Danesfort 11 may represent a series of pot-boilers or roasting pits although it would be anticipated that some scorching of the base and sides of the pits were identified. The lack of scorching suggest that the pits either functioned as troughs or as waste pits into which the burnt material was dumped once cooled, obviously from an activity located outside the limits of the excavated site.

While no definitive burnt mound spread was identified at the site, it is possible that it lay to the north of the primary trough which was located adjacent to the field boundary and the existing Danesfort to Bennettsbridge road. However, it is also not unusual for mound deposits to be absent on these types of sites and the only evidence for hot-stone technology is within the fills of pits and troughs.

Both the primary trough C4, and the possible second trough C22, produced evidence of possible wattle lining. This was more prominent in C4 where a number of stakeholes were identified, whereas only two were present in the possible second trough. Given the location of the site it may have been necessary to line the trough in order to retain water within it. The stakeholes may also have had a structural function but this is speculative.

4.2 Conclusions

Danesfort 11 is an important site locally in terms of our understanding of the wider early Bronze Age landscape. Along with other excavated sites from the N9/N10 Phase 4 it represents the further evidence of prehistoric activity in the immediate area. This activity has been interpreted as burnt mound type activity dated to the early Bronze Age, but the site is not located in a typical burnt mound physical setting and did not produce classic burnt mound features, indeed the absence of an actual mound was significant. In this regard the site also provides an interesting insight into the variety of site types and features associated with burnt mounds and hot-stone technology.

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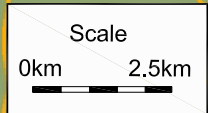
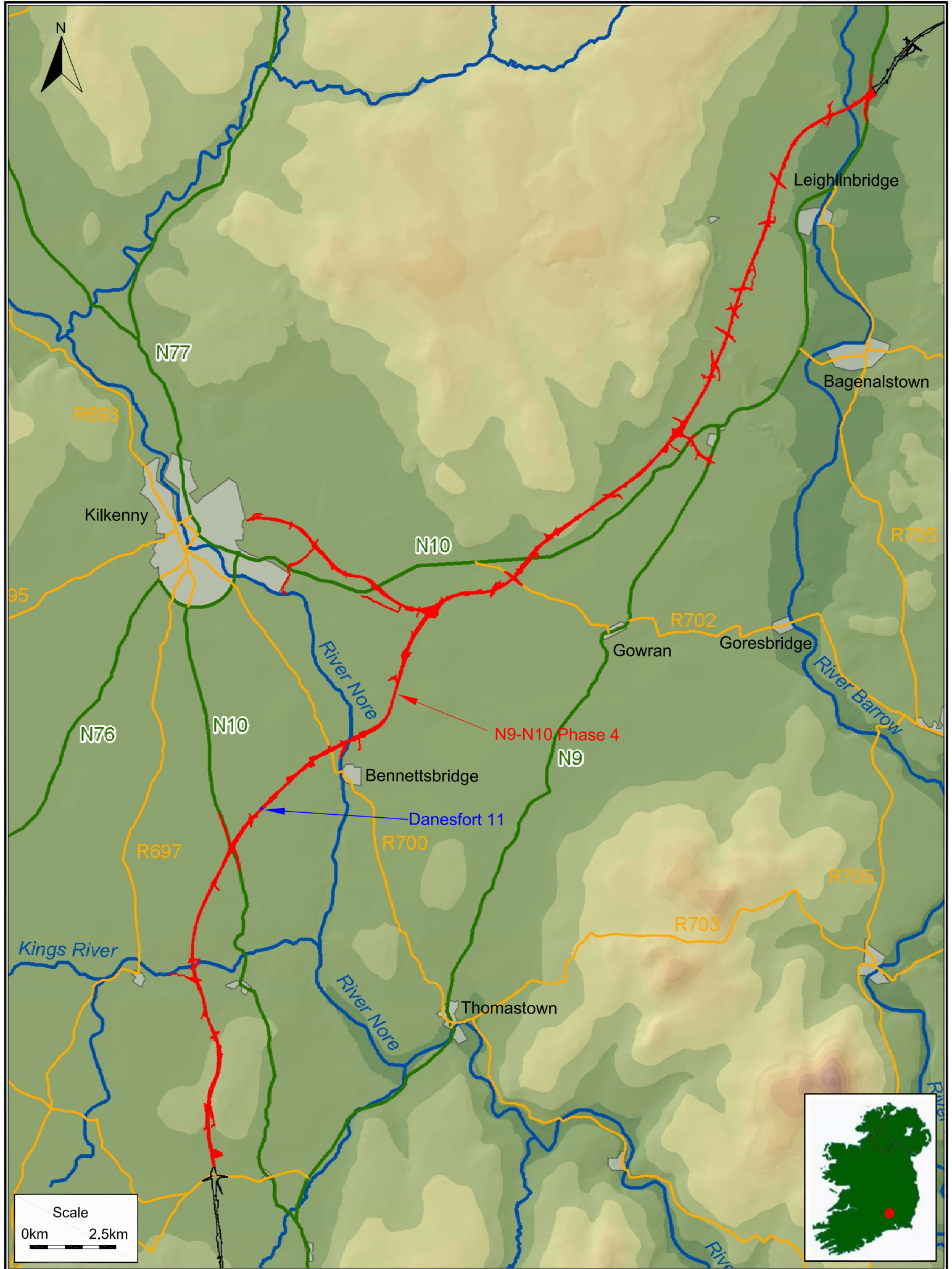
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Topographical Files of the National Museum of Ireland, Kildare Street, Dublin 2.

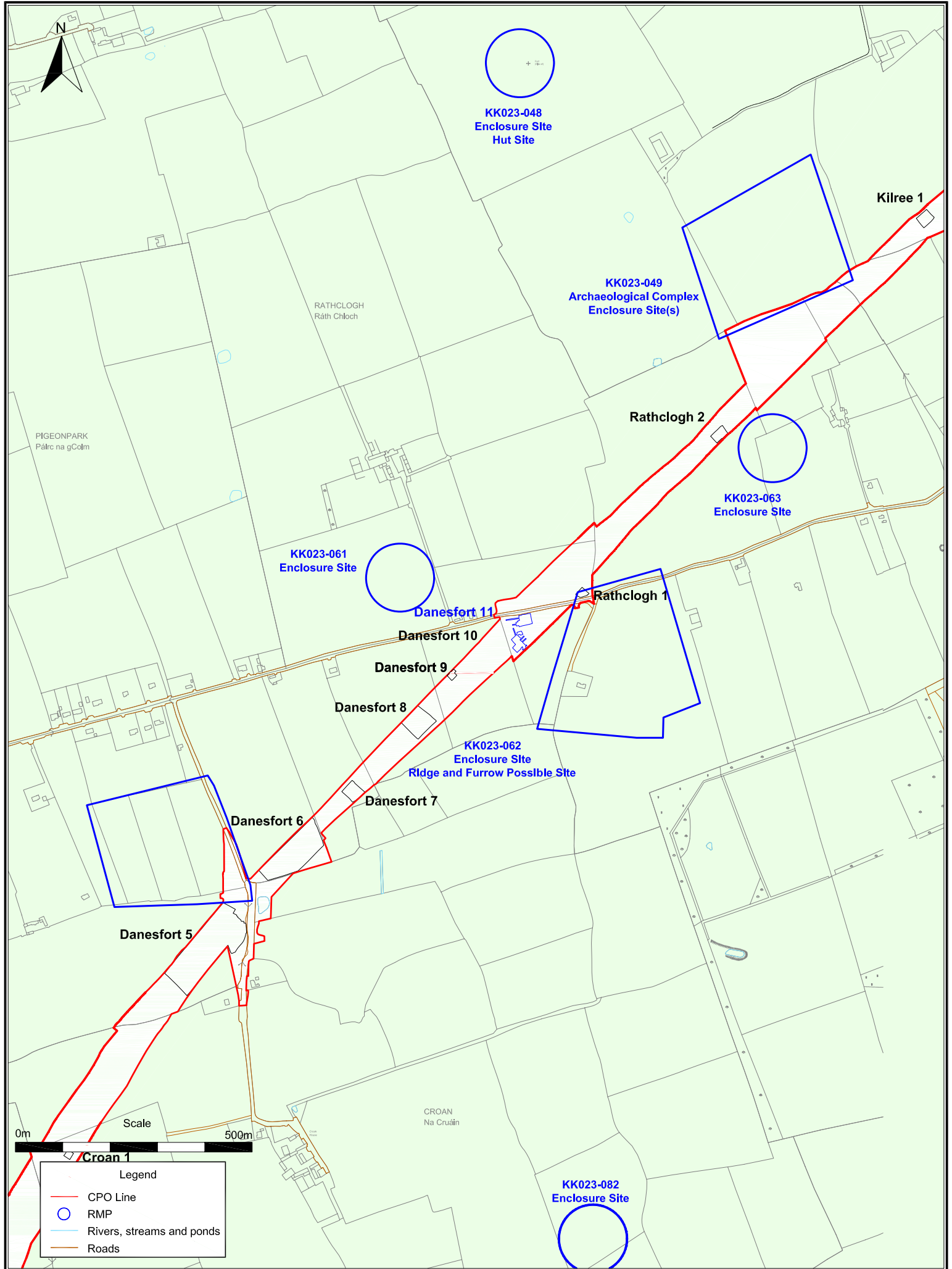
Second Edition OS map

Electronic references

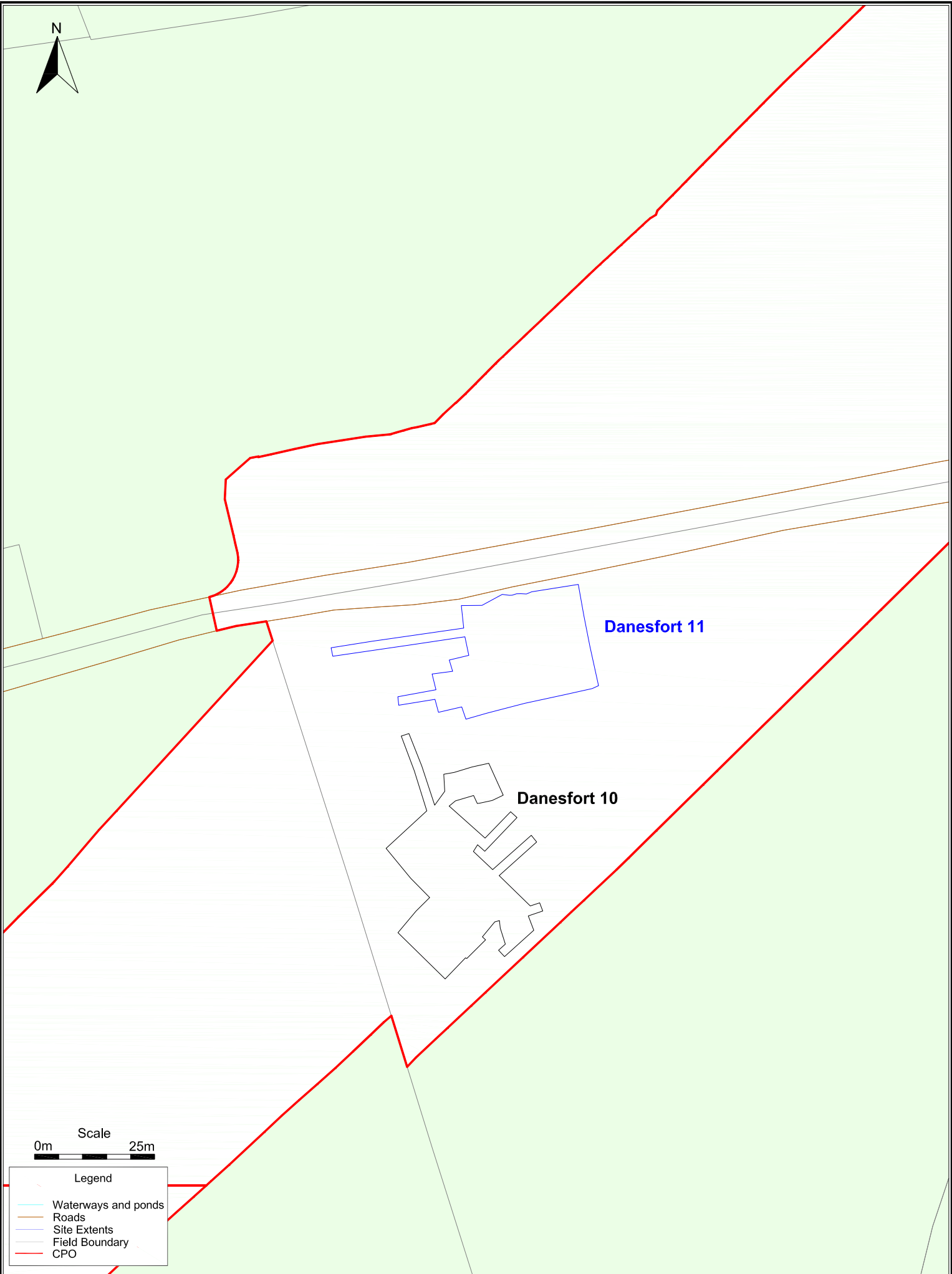
ENVision; *Environmental Protection Agency* Soil maps of Ireland
<http://www.epa.ie/InternetMapView/mapviewer.aspx>



| | | | | |
|--|----------|-------------------------------------------|--------------|-----------|
| | Title: | Danesfort 11 - General Site Location | Scale: | As Shown |
| | Project: | N9-N10 Phase 4: Knocktopher to Powerstown | Date: | 31/05/10 |
| | Client: | Kilkenny County Council | Produced by: | P Higgins |
| | | | Job No: | J2432 |
| | | | Figure No: | 1 |



| | | | |
|-----------------|----------------------------------------------|---------------------|--------------|
| Title: | Danesfort 11 - Location of site showing RMPs | Scale: | 1:10000 @ A4 |
| Project: | N9-N10 Phase 4: Knocktopher to Powerstown | Date: | 17/05/10 |
| Client: | Kilkenny County Council | Produced by: | P Higgins |
| | | Job No: | J2432 |
| | | Figure No: | 2 |

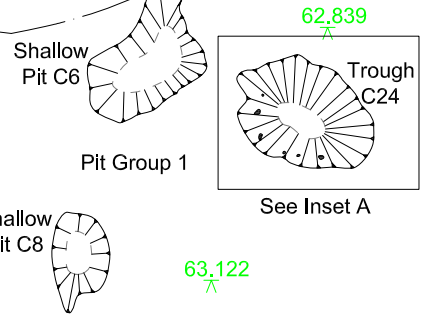
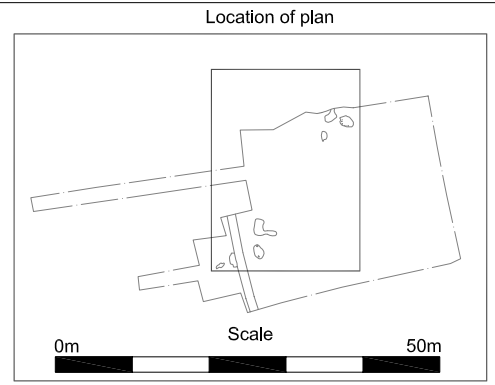
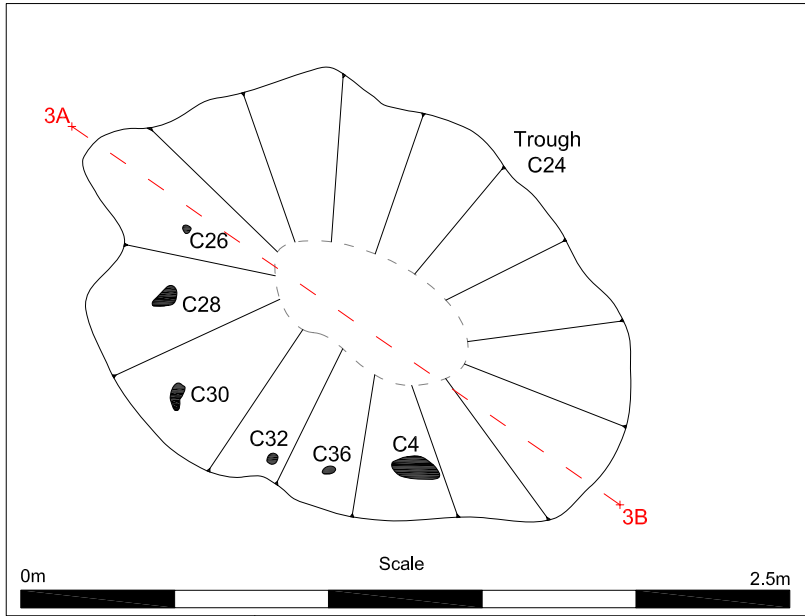


Legend

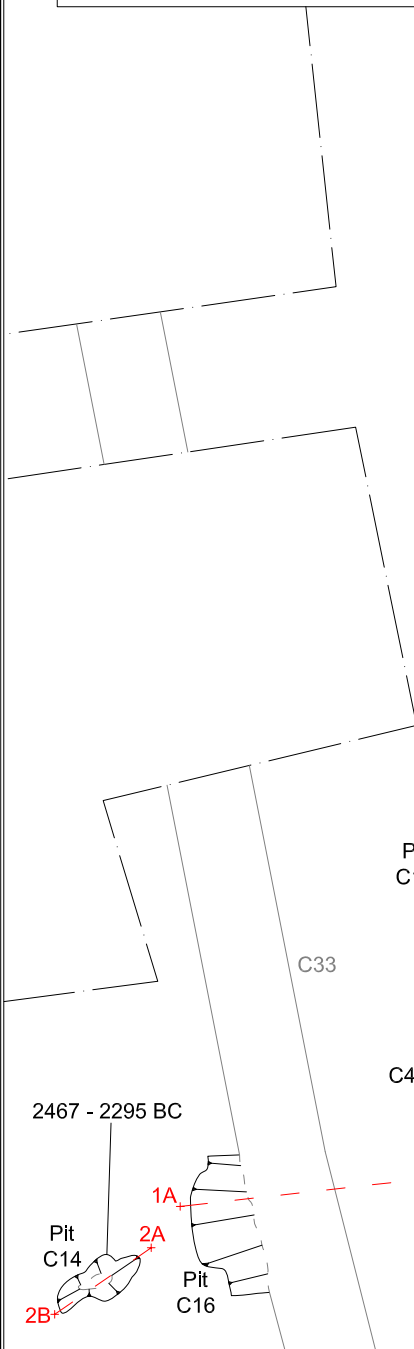
- Waterways and ponds
- Roads
- Site Extents
- Field Boundary
- CPO



Inset A



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148468

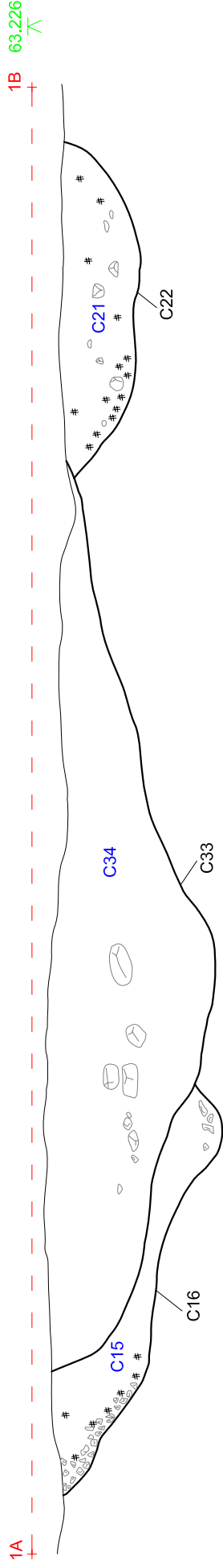


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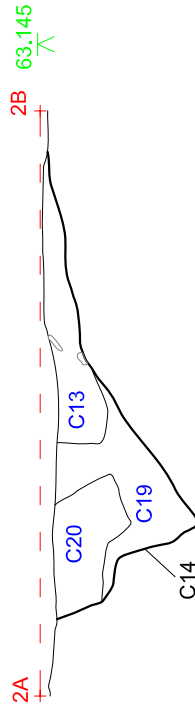


| Legend | |
|--------------------|-------------------------|
| --- | Break of slope |
| --- | Sections |
| CXX | Cut numbers |
| ● | Stakeholes |
| XXXXXXE XXXXXXN | National Grid Reference |
| XX.XXX ^ | Levels - metres OD |

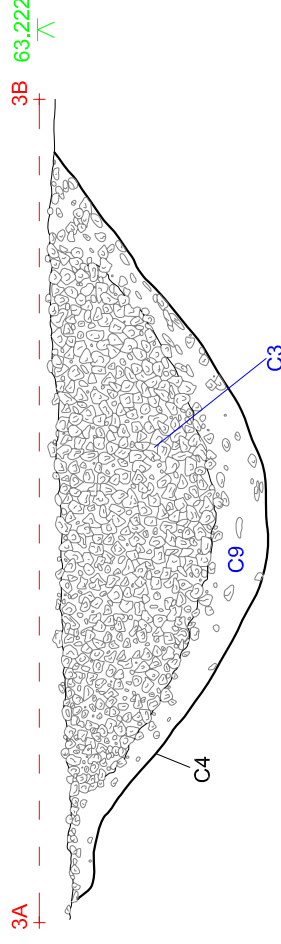
South facing section of C16, C22, C33



Northwest facing section of C14



Southwest facing section of C4



Legend

- CXX Cut Numbers
- CXX Fill Numbers
- Stone
- Charcoal
- Levels - metres OD



| | | | |
|----------|-------------------------------------------|--------------|------------|
| Title: | Danesfort 11 Sections 1-3 | Scale: | 1:20 @ A4 |
| Project: | N9-N10 Phase 4: Knocktopher to Powerstown | Date: | 03/06/10 |
| Client: | Kilkenny County Council | Produced by: | P. Higgins |
| | | Job No.: | J2432 |
| | | Figure No.: | 5 |

PLATES



Plate 1: Trough C4 (right) and pit C8 (left), pre-excavation, facing north



Plate 2: Trough C4 with stakeholes, post-excavation, facing south-west



Plate 3: Pit group 2, mid-excitation, facing north-east



Plate 4: Ditch C33 cutting through C16, mid-excitation, facing north-west



Plate 5: Pit C14, post-excitation, facing north-east



Plate 6: Pit/ possible trough C22, post-excitation, facing south

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 |
|---------|---------|------|------|------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| 1 | N/A | | | | | Dark grey, blackish, loose silty sand. | | |
| 2 | N/A | | | | | Light greyish yellow, compact sandy clay. | | |
| 3 | C4 | 1.80 | | 0.38 | Upper fill of pit | Loosely compacted black silty sand, oval in plan, with stones and charcoal | C1 | C9 |
| 4 | N/A | 2.00 | 1.43 | 0.55 | Cut of pit | Large deep pit containing stones from burnt mound with stakeholes close to the edge of the pit. Sharp break of slope-top and gradual break of slope-base. Sides from SW -vertical, from NE- vertical to gradual. Base-uneven | C9 | C2 |
| 5 | C6 | 1.00 | 0.72 | 0.11 | Fill of pit | Tightly compacted, greyish black with light brown patches, silty sand. Inclusions: burnt stones and occasional charcoal | C1 | C6 |
| 6 | N/A | 1.00 | 0.72 | 0.11 | Cut of pit | Oval shaped pit, break of slope-top is sharp from E side and gradual from the other sides, Break of slope-base is not perceptible, base- flat and sides are smooth | C5 | C2 |
| 7 | C8 | 1.30 | 0.75 | 0.07 | Fill of pit | Loosely compacted, black silty sand with stones and charcoal inclusions. | C1 | C11 |
| 8 | N/A | 1.30 | 0.75 | 0.07 | Cut of pit | Shallow pit or natural depression covered by <i>Fulacht</i> material. Gradual break of slope and sides and flat- uneven base | C11 | C2 |
| 9 | C4 | 0.92 | | 0.20 | Bottom fill of pit | Loose dark brown/black sand, medium sized stones and charcoal included. | C9 | C2 |
| 10 | C8 | | | | | The same as C01 | | |
| 11 | C8 | 0.45 | 0.30 | 0.06 | Bottom fill of pit | Loosely compacted dark brown silty sand, stones and charcoal included. | C7 | C8 |
| 12 | C7 | | | | | The same as C01 | | |
| 13 | C14 | 0.64 | 0.39 | 0.16 | Fill of pit | Loosely compacted mid-brown silty sand with flecks of charcoal and heat shattered stones. | C1 | C14 |
| 14 | N/A | 1.00 | 0.44 | 0.34 | Cut of pit | Orientated SW-NE pit with straight sides on NE-NW, gradual on S-SW. Base of slope-top vertical on NE-NW, gradual on S-SW. Break of slope-base is vertical on N and gradual on N-E and S. Flat base. | C13 | C2 |
| 15 | C16 | 1.34 | | 0.32 | Fill of pit | Loosely compacted light greyish black silty sand, small to medium stones and charcoal included. | C1 | C16 |
| 16 | N/A | 1.34 | | 0.32 | Cut of pit | Pit cut by ditch. Gradual break of slope, stepped sides and sloping base. | C15 | C2 |
| 17 | C18 | 1.50 | 1.30 | 0.09 | Fill of pit | Softly compacted mid greyish brown with distinct patches of grey, silty clay with plenty of heat shattered stones and charcoal flecks | C1 | C18 |

| Context | Fill of | L(m) | W(m) | D(m) | Interpretation | Description | Context Above | Context Below |
|---------|---------|------|------|------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| 18 | N/A | 3.00 | 1.90 | | Cut of pit | Roughly oval shapes pit- more circular on the W, with gradual break of slope and sides, flat base | C37 | C2 |
| 19 | C14 | 0.45 | 0.32 | 0.29 | Primary fill of pit | Loosely compacted light orangey brown silty clay with occasional charcoal flecks. | C1 | C14 |
| 20 | C14 | 0.32 | 0.30 | 0.16 | Fill of pit | Loosely compacted dark brown silty clay with occasional to moderate charcoal inclusions. | C1 | C2 |
| 21 | C22 | 1.84 | 1.22 | 0.26 | Fill of pit | Oval SW-NE, loosely compacted dark brown silty sand with a lot of pebbles and some charcoal. | C1 | C22 |
| 22 | N/A | 1.84 | 1.22 | 0.26 | Cut of pit | Pit filled by burnt stones and soil with charcoal from possible <i>fulacht</i> with two stakeholes within cut 22. | C21 | C2 |
| 23 | C24 | 0.05 | 0.04 | 0.12 | Fill of stakehole | Circular in plan, loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C24 |
| 24 | N/A | 0.05 | 0.04 | 0.12 | Cut of stakehole | Circular in shape, Sharp break of slope-top, vertical sides, gradual break o slope-base and tapered rounded point base | C23 | C2 |
| 25 | C26 | 0.04 | 0.04 | 0.04 | Fill of stakehole | Loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C26 |
| 26 | N/A | 0.04 | 0.04 | 0.04 | Cut of stakehole | Circular in shape, gradual break of slope, vertical sides and flat base | C25 | C2 |
| 27 | C28 | 0.06 | 0.05 | 0.07 | Fill of stakehole | Circular in plan, loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C28 |
| 28 | N/A | 0.06 | 0.05 | 0.07 | Cut of stakehole | Circular in shape, Sharp break of slope-top, vertical sides, gradual break o slope-base and tapered rounded point base | C27 | C2 |
| 29 | C30 | 0.06 | 0.05 | 0.05 | Fill of stakehole | Sub-oval in plan N-S in orientation, loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C30 |
| 30 | N/A | 0.06 | 0.05 | 0.05 | Cut of stakehole | Sub-oval in plan N-S in orientation, with sharp break of slope- top, gradual break of slope-base and gradual sides, Tapered rounded point base. | C29 | C2 |
| 31 | C32 | 0.05 | 0.04 | 0.05 | Fill of stakehole | Oval in plan, running east to west, loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C32 |
| 32 | N/A | 0.05 | 0.04 | 0.05 | Cut of stakehole | Oval in plan, east to west running, vertical sides with gradual break of slope- base and sharp break of slope-top, tapered rounded point base | C31 | C4 |
| 33 | N/A | 8.5 | 1.10 | 1.05 | Fill of ditch | Linear in shape, N orientated, moderate to softly compact, orangey brown(light) very fine clayey sand with occasional pebbles | C34 | C2 |
| 34 | C33 | 8.5 | 1.10 | 1.05 | Cut of ditch | Linear in shape. Sharp break of slope for top, gradual sides, uneven break of slope base. | C1 | C33 |
| 35 | C36 | 0.05 | 0.04 | 0.03 | Fill of stakehole | Loosely compacted mid greyish brown sandy silt with occasional charcoal. | C4 | C36 |
| 36 | N/A | 0.06 | 0.04 | 0.03 | Cut of stakehole | Oval in plan NW-SE, sharp break of slope with gradual shape of base. Gradual sides and flat base | C35 | C2 |
| 37 | C18 | 1.60 | 1.47 | 0.10 | Fill of pit | Fairly compacted mid brown clayey silt, with occasional | C1 | C38 |

| Context | Fill of | L(m) | W(m) | D(m) | Interpretation | Description | Context Above | Context Below |
|---------|---------|------|------|------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| 38 | C18 | 1.25 | 1.47 | 0.06 | Fill of pit | Compact due to plenty of heat shattered stone, dark brown/black in patches, clayey silt with occasional charcoal flecks and roots. | C37 | C18 |
| 39 | | | | | | The same as C01 | | |
| 40 | C18 | 0.80 | 0.70 | 0.09 | Fill of pit | Semi-circular/oval, orientated N-S, softly compacted, mid brownish grey silty clay with occasional heat shattered stone and charcoal. | C1 | C18 |
| 41 | C42 | 0.05 | 0.05 | 0.07 | Fill of stakehole | Loosely compacted dark, blackish brown silty sand with no inclusions. | C22 | C42 |
| 42 | N/A | 0.05 | 0.05 | 0.07 | Cut of stakehole | Circular on plan, sharp break of slope-top with a gradual base, sloping sides and concave base | C41 | C2 |
| 43 | C44 | 0.12 | 0.05 | 0.07 | Fill of stakehole | Loosely compacted blackish brown silty sand with no inclusions. | C22 | C44 |
| 44 | N/A | 0.12 | 0.05 | 0.07 | Cut of stakehole | W-E orientated cut, sharp break of slope-top with a gradual break of slope-base. Sloping sides and concave point base. | C43 | C2 |

Appendix 1.2 Catalogue of Artefacts


No finds were recovered from the Danesfort 11.

Appendix 1.3 Catalogue of Samples

During post excavation works specific samples were processed with a view to further analysis. A total of 11 soil samples was taken from features at Danesfort 11 and were processed by flotation and sieving through a 250µm mesh. The following are the ecofacts recovered from these samples:

| Context # | Sample # | Feature type i.e. Structure A, hearth C45 | charcoal | seeds | burnt animal bone | animal bone | human bone | burnt human bone | Charred hazelnut |
|-----------|----------|-------------------------------------------|----------|-------|-------------------|-------------|------------|------------------|------------------|
| 3 | 9 | | 3.1g | | | | | | |
| 5 | 2 | | 0.3g | | | | | | |
| 9 | 1 | | 9.2g | | | | | | |
| 13 | 3 | | 3.4g | | | | | | <0.1g |
| 15 | 11 | | 11.0g | | | | | | |
| 17 | 6 | | 1.3g | | | | | | |
| 19 | 5 | | 0.9g | | | | | | |
| 20 | 4 | | 3.5g | | | | | | |
| 21 | 7 | | 5.8g | | | | | | |
| 38 | 8 | | 7.1g | | | | | | |
| 40 | 12 | | 2.3g | | | | | | |

Appendix 1.4 Archive Index

| | | |
|-------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|
| Project: N9/N10 Phase 4 Knocktopher to Powerstown |  | |
| Site Name: Danesfort 11 | | |
| Excavation Registration Number: E3460 | | |
| Site director: Richard Jennings | | |
| Date: December 2010 | | |
| Field Records | Items (quantity) | Comments |
| Site drawings (plans) | 4 | 2 Pre-ex, 2 post-ex |
| Site sections, profiles, elevations | 4 | 4 section sheets |
| Other plans, sketches, etc. | | |
| Timber drawings | | |
| Stone structural drawings | | |
| | | |
| Site diary/note books | | |
| Site registers (folders) | | |
| | | |
| Survey/levels data (origin information) | 128 | |
| | | |
| Context sheets | 44 | |
| Wood Sheets | | |
| Skeleton Sheets | | |
| Worked stone sheets | | |
| | | |
| Digital photographs | 46 | |
| Photographs (print) | | |
| Photographs (slide) | | |
| | | |
| Security copy of archive | | |

APPENDIX 2 SPECIALIST REPORTS

Appendix 2.1 Charcoal and Wood Report – Lorna O’ Donnell

Appendix 2.2 Plant Remains Analysis Report – Penny Johnston

Appendix 2.3 Radiocarbon Dating Results – QUB Laboratory

Appendix 2.1 Charcoal and Wood analysis Report – Lorna O’ Donnell

**Scheme – N9/N10
Excavation Number –E3460 AR088
Site Name- Danesfort 11
County – Kilkenny
Author- Lorna O’Donnell**

Date –17/7/09



1 Introduction

This report describes the charcoal analysis of samples from a *fulacht fiadh*, excavated by Richard Jennings at Danesfort 11, Co. Kilkenny. The site was excavated as part of the N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown (Jennings 2008). Charcoal was examined from three contexts, including a trough and pit fills. The aim of the work is to provide enough suitable material for radiocarbon dating, and to provide a floristic background to the site, as well as wood selection patterns for the burnt mound. This report is summary in nature only, further analysis, discussions and comparisons of results will be incorporated into a final integrated charcoal and wood report for all sites along the N9/N10 (Lyons *et al* forthcoming).

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

2.2 Charcoal identification

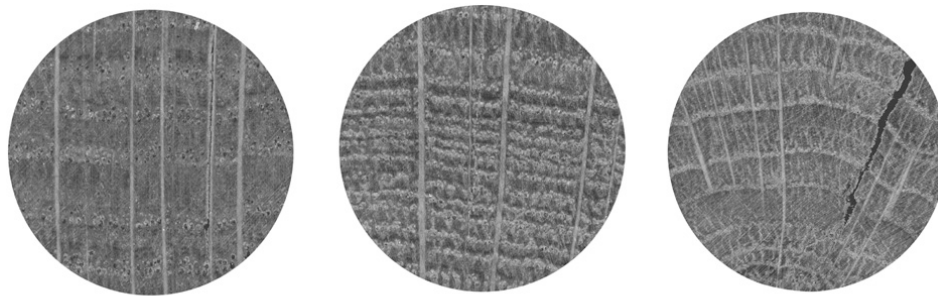
Each piece of charcoal was examined and orientated first under low magnification (10x-40x). They were then broken to reveal their transverse, tangential and longitudinal surfaces. Pieces were mounted in plasticine, and examined under a binocular microscope with dark ground light and magnifications generally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

2.3 Details of charcoal recording

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

scale of slow, medium and fast growth less subjective. Slow growth within the charcoal from this site was considered to be approximately 0.4mm per annum, medium approximately 1mm per annum and fast approximately 2.2mm per annum.

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



Weakly curved rings Moderately curved rings Strongly curved rings

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

3 Results

Five wood taxon or tree types were identified from Danesfort, hazel (*Corylus avellana*), ash (*Fraxinus* sp.), pomaceous fruitwood (Pomoideae), oak (*Quercus* sp.) and elm (*Ulmus* sp.). The results are dominated by oak, followed by hazel (Fig. 2).

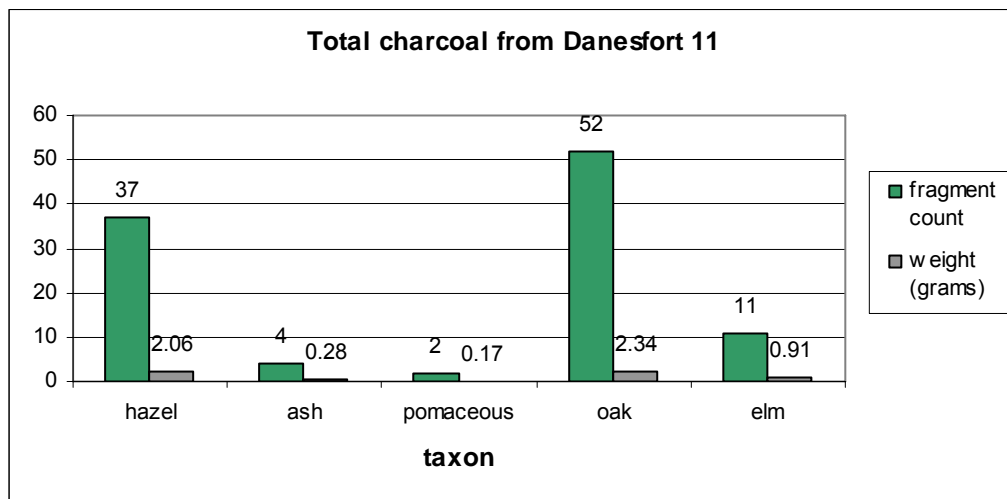


Fig. 2

Hazel, pomaceous fruitwood, oak and elm were identified from the trough (Cut 4, Context 9). Oak is the main tree present. From the pit fill (Cut 14, Context 13), hazel, ash and oak were identified. Hazel, ash, oak and elm were identified from the pit fill (Cut 22, Context 21).

4 Discussion

The oak present could be either our native pedunculate (*Quercus robur*) which prefers more wet, heavier clays than the sessile oak (*Quercus petraea*) (Beckett 1979, 40-41). Hazel is a very tolerant tree, it can grow from wet to dry conditions (but not waterlogged ones (Orme and Coles 1985, 9). It was once very common in Ireland, Mc Cracken writes that it was once widespread to an extent that is hard to imagine today (1971, 19). It can grow as a tree or can form hazel scrub.

The Pomoideae group (pomaceous fruitwood), a sub family of the Rosaceae includes crab apple, wild pear, rowan/whitebeam and hawthorn. Crab apple (*Malus sylvestris*) is a tree of hedges, copses and oak woodland, thriving in fertile and heavy soils. It often grows singly, with large distances between individual trees (Lipscombe and Stokes 200, 78). Wild pear (*Pyrus pyraster*) can grow on woodland edges and also can be found growing in a solitary situation (Lipscombe and Stokes 2008, 114 ; Stuijts 2005, 142). Rowan (*Sorbus aucuparia*) is a tough colonizer which can tolerate peaty soils and exposed conditions. It needs plenty of light to thrive (Hickie 2002, 65). It is a tree of mountains, woodlands and valleys, growing on a wide range of soils, including chalks, acid soils and even peat (Lipscombe and Stokes 2008, 120). Whitebeam (*Sorbus aria*) grows up to 20m high and has a preference for limestone soils (Orme and Coles 1985, 11). Hawthorn (*Crataegus monogyna*) can thrive in all but the most acid of soils (Gale and Cutler 2000). As wild pear is not a native Irish species, it is likely that the charcoal represents other types encompassed in the Pomoideae group.

Ash trees prefer moist, well drained and fertile soils. It is very intolerant of shade (Lipscombe and Stokes 2008, 188). Elm trees prefer heavy moist clays and loams but will also grow on chalk soils (Lipscombe and Stokes, 210).

5 Summary

Charcoal was examined from three contexts (trough and pit) at Danesfort. Five trees were identified, the dominant taxon is oak.

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Table 1 Charcoal identification details from Danesfort 11

| Context number | Cut number | Sample number | Flot weight (g) | Context description | Wood taxon | No. of fragments | Charcoal weight (grams) | Size of fragments (mm) | No. of growth rings | Growth | Weakly or strongly curved rings | Insect holes | Tyloses | Comment |
|----------------|------------|---------------|-----------------|---------------------|---------------------------------|------------------|-------------------------|------------------------|---------------------|-------------------------|---------------------------------|--------------|---------|---------------|
| 9 | 4 | 1 | 9.2 | Trough fill | <i>Corylus avellana</i> (hazel) | 13 | 0.73 | 8-10 | 3-4 | medium | strongly curved | | | radial cracks |
| | | | | | Pomoideae spp. (pomaceous) | 2 | 0.17 | 2-3 | 2 | medium | | | | |
| | | | | | <i>Quercus</i> sp. (oak) | 35 | 1.42 | 5-10 | 5-6 | slow and medium | strongly and weakly curved | | 30% | |
| | | | | | <i>Ulmus</i> sp. (elm) | 2 | 0.18 | 6 | 2 | medium | strongly curved | | | |
| 13 | 14 | 3 | 3.4 | Pit fill | <i>Corylus avellana</i> (hazel) | 14 | 0.95 | 15 | 5-6 | medium | strongly curved | present | | |
| | | | | | <i>Fraxinus</i> sp. (ash) | 3 | 0.13 | 7-8 | 5-20 | mixed - medium and slow | strongly curved | | | |
| | | | | | <i>Quercus</i> sp. (oak) | 3 | 0.18 | 6 | 3-4 | slow | | | 50% | |
| 21 | 22 | 7 | 5.8 | Pit fill | <i>Corylus avellana</i> (hazel) | 10 | 0.38 | 7 | 2-3 | medium | strongly curved | present | | |
| | | | | | <i>Fraxinus</i> sp. (ash) | 1 | 0.15 | 4 | 3 | | | | | |
| | | | | | <i>Quercus</i> sp. (oak) | 14 | 0.74 | 6 | 2-4 | medium | weakly curved | | 30% | |
| | | | | | <i>Ulmus</i> sp. (elm) | 9 | 0.73 | 6 | 2-3 | medium | strongly curved | | | |

Appendix 2.2 Plant Remains Analysis Report – Penny Johnston

Site Name- Danesfort 11
Excavation number – E3460 AR088
County – Kilkenny
Author- Penny Johnston
Date – June 2009

Introduction

This report details the analysis of plant remains recovered from excavations at AR088, Danesfort 11 along the proposed N9/N10 Kilcullen to Waterford Scheme, Phase 4 – Knocktopher to Powerstown.

Methodology

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

The selected material was sent to Eachtra Archaeological Projects where it was examined under a low-powered binocular microscope (X6 –X45). Suitable plant material was identified and the results of analysis are presented in Tables 1 – 25 at the end of this report. Scientific names are mainly confined to these identification tables in order to facilitate easy reading of the text. Nomenclature and taxonomic orders generally follows Stace (1997).

Results

The site comprised a series of pits almost certainly associated with a burnt mound/*fulacht fiadh*. A total of 6 samples were examined from this site; C9 (S.1), C13 (S.3), C21 (S.7), C38 (S.8), C15 (S.11) and C40 (S.12). Charred remains were present in only one sample, where a single fragment of charred hazelnut shell was found. As waste products of hazelnut consumption, these are ubiquitous finds in Irish archaeobotanical assemblages. Archaeobotanists generally agree that a small collection of hazelnut shell fragments is unlikely to be a significant indicator of site diet (e.g. McClatchie 2007, 65). Therefore, the few fragments retrieved from this site are probably relatively unimportant.

Plant remains from burnt mounds/*fulachta fiadh* are generally poor and the results from this site are no exception. Examination of samples from twenty-five burnt mound/*fulacht fiadh* sites excavated along the route of a Bord Gáis Eireann pipeline in 2002 did not produce any significant plant remains and it was concluded that most charred seeds from such sites were accidental inclusions (Johnston 2007a, 70). A more wide ranging survey by the Irish Archaeobotanical Discussion Group (IADG) found that samples from 132 burnt mound sites indicate that cereal remains were recorded at less than 8% of examined sites. The remains were always preserved by charring and were recorded in very small quantities (IADG 2007).

Table 25: Identified plant remains from Danesfort 11 E3460

| | |
|--------------------------------------------------------|----|
| Context | 13 |
| Sample | 3 |
| Hazelnut shell fragments (<i>Corylus avellana</i> L.) | 1 |

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Appendix 2.3 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: intcal09.14c

| Context | Sample No | Material | Species id/ Weight | Lab | Lab Code | Date Type | Calibrated date ranges | Measured radiocarbon age (BP) | 13C/12C Ratio ‰ |
|--------------------|-----------|----------------|--------------------|-----|-----------|-----------|-------------------------------------------------|-------------------------------|-----------------|
| C13, Fill of a pit | 3 | Hazelnut Shell | Hazelnut / 0.01g | QUB | UBA 15560 | AMS (Std) | 2460–2345BC (1 sigma), 2467–2295BC (2 sigma) | 3893±29 | -25.6 |

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 |
|---------------|--------------------|
| KK023-048001 | Enclosure |
| KK023-048002 | Hut |
| KK023-049001 | Enclosure |
| KK023-049002 | Enclosure |
| KK023-049003 | Enclosure |
| KK023-063 | Enclosure |
| KK023-061 | Enclosure |
| KK023-062001 | Enclosure |
| KK023-062002 | Cultivation Ridge |
| KK023-060001 | Field System |
| KK023-060002 | Linear Earthwork |

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 |
| Blanchvillespark 1 | AR107 | E3894 | Richard Jennings | 260535/155212 |
| Blanchvillespark 2 | AR108 | E3895 | Tim Coughlan | 260637/155449 |

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