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National Roads Authority
An tÚdarás um Bóithre Náisiúnta

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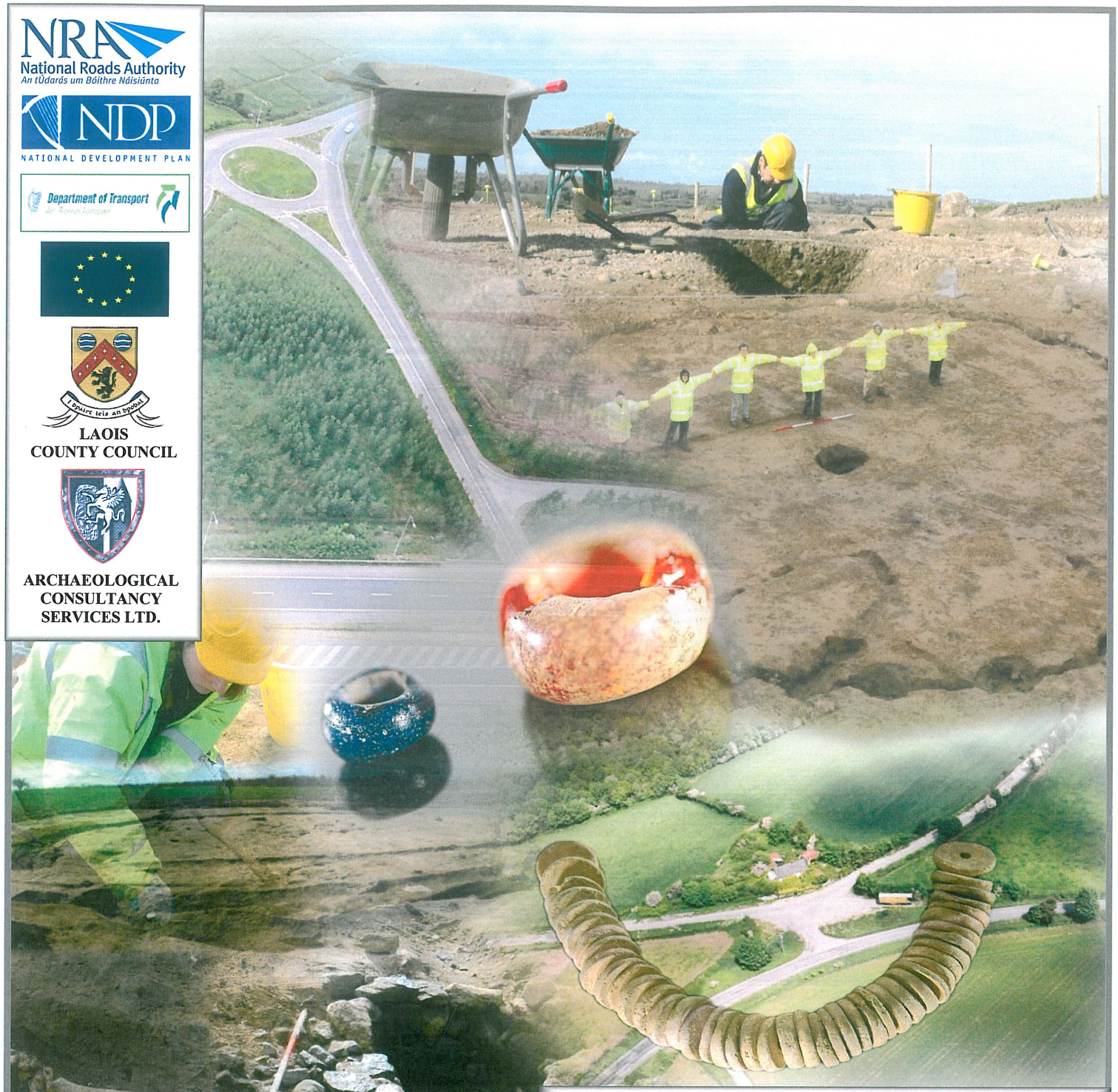

M7 Portlaoise-Castletown/ M8 Portlaoise-Cullahill Motorway Scheme

Contract 1 Gortnaclea – Oldtown
Phase 2 - Excavation

Report on the Archaeological Excavation
of
Cuffsborough 2, Co. Laois

Ministerial Directions No.
A015/087
E2197
Deirdre Murphy
Report by Murphy with Kane

September 2008
Final
(Senior Archaeologist: Deirdre Murphy)

PROJECT DETAILS

Project	M7 Portlaoise to Castletown/ M8 Portlaoise to Cullahill Motorway Scheme
Client	Laois County Council, County Hall, Portlaoise, County Laois
Contract	Contract 1
Site Name	Cuffsborough 2, Co. Laois
Townland	Cuffsborough
Nat. Grid Ref.	234398, 183268
OS Map Ref.	OS 6 inch sheet 22
Chainage	21360 - 21500
Ministerial Directions No.	A015/087
Record No.	E2197
Archaeologist	Deirdre Murphy
Senior Archaeologist	Deirdre Murphy
Report Type	Final
Report Status	Final
Report by	Murphy with Kane
Date of Submission	September 2008
Distribution	Elspeth Logan & Mary Deevy

ACKNOWLEDGEMENTS

This report has been prepared by Archaeological Consultancy Services Ltd on behalf of Laois County Council, Kildare National Roads Design Office (NRDO), and the National Roads Authority (NRA).

The excavation was carried out in accordance with the Directions of the Minister for the Environment, Heritage and Local Government (DOEHLG), in consultation with the National Museum of Ireland (NMI) issued under Section 14 of the National Monuments Acts 1930–2004.

Consulting Engineers – ARUP Consulting Engineers

Project Engineer – Mike Evans
Engineer – Gráinne Wolfe

Kildare County Council, National Roads Design Office

Senior Executive Engineer – Adrian King
Project Archaeologist – Sylvia Desmond
Engineer – Damian McGinnity

Laois County Council

Executive Engineer-Brenda Cuddy
Liaison – Sarah Dunne

National Monuments, Department of the Environment, Heritage and Local Government

Chief Archaeologist – Brian Duffy
Archaeologist – Martin Reid

Irish Antiquities Division, National Museum Of Ireland

Keeper - Nessa O Connor
Assistant Keeper – Isabella Mulhall

NON TECHNICAL SUMMARY

The proposed M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme consists of approximately 41km of motorway and 11km of single dual carriageway commencing to the southwest of the existing Portlaoise Bypass and running in a southern direction tying into the existing N8 at Oldtown. A portion of the scheme runs to the west tying into the existing N7 near Borris-in-Ossory. The Archaeological Works contract is subdivided into three separate contracts. The following report describes the results of archaeological excavation along one section of the planned M8 Portlaoise to Cullahill Motorway Scheme, at Cuffsborough, County Laois, Contract 1.

Contract 1 extends from the townland of Gortnaclea to Oldtown and consists of approximately 14km of motorway, which extends from Aghaboe to south of Cullahill through the townlands from Gortnaclea to Oldtown. The site was identified during archaeological testing carried out by Eamonn Cotter of Archaeological Consultancy Services Ltd in March 2005 under ministerial direction (A015/014 and E2130) from The Minister of the Environment, Heritage and Local Government, issued in consultation with the National Museum of Ireland (NMI) issued under Section 14 of the National Monuments (Amendment) Act 2004. Thirty nine trenches were excavated within this field and a cluster of pits were identified. The site was designated Cuffsborough 2.

Archaeological resolution of Cuffsborough 2 (A015/087) commenced on the 11th November 2005 by Deirdre Murphy of Archaeological Consultancy Services Ltd. For recording purposes the site was designated the scheme no. A015/087 and record no. E2197. Topsoil stripping revealed a number of pits filled with burnt stone material, postholes, cremations and bird remains. Sherds of pottery (E2197:47:1, E2197:58:1, E2197:60:1-3, E2197:123:1-3) and three fragments of flint were recorded (E2197:1:1, E2197:32:1, E2197:123:4).

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Area 1

1. INTRODUCTION

1.1 Site Location

This report details the results of the archaeological excavation of a site on the M7 Portlaoise – Castletown/M8 Portlaoise-Cullahill Motorway Scheme at Cuffsborough 2, Contract 1, County Laois (Ordnance Survey six-inch sheet 22, National Grid Co-ordinates 234398, 183268 Figures 3–4). The site at Cuffsborough 2 was situated *c.*2.5km south of the foundation of Aghaboe and was located to the south of the River Nore approximately halfway between Borris-in-Ossory and Durrow. It was located at Chainage 21360 - 21500 of the proposed scheme, in the townland of Cuffsborough and within the Parish of Aghaboe.

1.2 Scope of the Project

The purpose of the Archaeological Services Project was to conduct Archaeological Site Investigations within the lands made available for the scheme and to assess the nature and extent of any new potential archaeological sites uncovered (Phase 1). This phase of the project was carried out in March-June 2005 and throughout 2006 when access to land became available. The principal aim of this phase of the project was to test the known sites, including sites of potential identified in the EIS and through aerial photography. It sought to test for any previously unknown sites that may by virtue of their size or complexity lead to significant delays and costs if revealed during construction works. This phase of the project also tried to assess the archaeological risk across the scheme by examining the volume, range, complexity and distribution of archaeology identified during testing.

The second phase of the project involved the resolution of all archaeological sites identified within the proposed road corridor prior to commencement of the construction of the motorway (Phase 2). The aim of this phase of works was to clear the entire route of archaeology in order to avoid delays and costs during construction works. This phase of the project was carried out from July 2005-October 2006 and excavations were conducted by seven licensed directors under the management of a Senior Archaeologist, Deirdre Murphy. In total ninety-two sites were excavated during this phase of works and all excavations were given separate record numbers issued by The Department of the Environment, Heritage and Local Government.

Following completion of fieldwork a programme of post-excavation analysis was necessary as reports on the archaeological findings must be published. A dissemination strategy also forms a crucial part of this phase of the project. It is proposed that all final reports will be submitted to the relevant authorities by the end of Feb 2009 and that publication and public lectures/seminars will

follow thereafter. Both the format and time-scale for publication and seminars will be decided in consultation with the Project Archaeologist.

1.3 Circumstances of Discovery

An archaeological assessment of this site was carried out in advance of the construction of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, on behalf of Laois County Council by Eamonn Cotter. The site was identified during archaeological testing carried out by Eamonn Cotter of Archaeological Consultancy Services Ltd in March – May 2005 under ministerial direction number A015/014. Thirty nine trenches were excavated within this field and some potential archaeology was identified. The site was designated Cuffsborough 2.

1.4 Date and Duration of Excavation Works

Excavation of this site commenced on the 11th November 2005 and was completed on 16th December 2005.

1.5 Size and Composition of the Excavation Team

The excavation team was composed of:

One senior archaeologist
One supervisor
Two archaeological assistants
Five general operatives

2. RECEIVING ENVIRONMENT

2.1 Detailed Overview of the receiving environment

2.1.1 Topographic

The topography of the Cuffsborough area is one of undulating countryside, well drained by free flowing streams and streamlets. The current landscape is characterised by rolling tracts of fertile land interspersed with pockets of less fertile and more low-lying, wetter and boggier areas. In prehistoric times, it is likely that this region was much more heavily wooded and probably less well drained than it is today. However, in the greater Cuffsborough area grey-brown podzolic (medium textured, moderately deep) soils are prevalent (Feehan 1983, 90-3). The grey-brown podzolic soils are among the best soils in Ireland. The soils in this area are medium textured, well-drained, friable podzolics and are especially good for tillage farming, although these soils are also highly suitable for grass production and grazing (Feehan 1983, 92). Consequently it is easy to see why this area became a haven for Bronze Age settlement in the past. It is clear that the domestic settlement in Cuffsborough occurred in the drier and slightly higher lying areas (such as at Cuffsborough 4) while *fulacht fiadh* activity occurred right across the wetter and more lower-lying landscape (Cuffsborough 3 and 1) in the vicinity of free flowing streams such as the one at Cuffsborough 3, which flows southwards draining the land of excess water and eventually flowing into the river Erkina.

2.1.2 Archaeological

The earliest evidence for human occupation in county Laois consists of a small number (8) of recorded megalithic tombs, one such possible tomb in the townland of Cuffsborough. Graves (1852, 358) documented the discovery of a 'beehive-shaped chamber' beneath a mound of earth. The chamber measured *c.*1.50m in diameter and was reputedly built with large orthostats supporting tiers of corbelling and a roof stone *c.*1.05m high (Sweetman *et al* 1995, 1). The bones of two skeletons were found on the floor of the chamber. The location of this possible tomb was not properly documented or dated and no longer exists. It is possible that this tomb, like other chamber tombs recorded under mounds of earth in Leinster, could date to the Neolithic Period or early Bronze Age (Sweetman *et al* 1995, 1).

The evidence for early Bronze Age activity in Cuffsborough consists of a documented cist burial in the townland. A crouched inhumation accompanied by a pottery vessel was discovered within a short cist at this site (Sweetman *et al* 1995, 5). Although this find was documented, the original location of the cist burial was not properly recorded. In the townland of Kilminfoyle, directly to the south-east of Cuffsborough, a *fulacht fiadh* was recorded (Candon 1987, 23). Two further

fulachta fiadh were recorded east in the townlands of Fearagh and Ballygeehin Lower. However, no visible surface traces of any are evident (Sweetman *et al* 1995, 12). While there is definite evidence for prehistoric settlement activity in Cuffsborough prior to recent excavations we do not know the exact (scientific) nature of this activity or where it was located. A hillfort situated *c.*5km to the north-east of Cuffsborough in the townland of Boley Upper comprised a circular enclosure on high ground commanding views of the entire surrounding area. It is defined by a bank of earth and stone and has an external fosse (Sweetman *et al* 1995, 17). No other diagnostic Neolithic, Bronze Age or Iron Age monuments occur within the townland itself or within the vicinity besides that which was excavated during the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill motorway scheme undertaken recently (discussed below). While there is a dearth in the range and number of prehistoric monuments and sites in the surrounding area, the chance recovery of a number of diagnostic artefacts (e.g. two bronze axeheads were found at Aghaboe, *c.*2.5km to the north east of Cuffsborough) indicates that other activities took place in the region.

2.1.3 Historic

The famous 6th century early ecclesiastical foundation of Aghaboe is situated *c.*2.5km to the north of Cuffsborough. The exact date the monastery was founded is unknown; however, we do know that this important monastic centre was founded by St. Canice (or Kenny) in the second half of the 6th century (Gwynn & Hadcock 1970). St. Canice also established other smaller ecclesiastical sites throughout the surrounding area and founded another large foundation in Kilkenny (Carrigan 1905, 30). The ecclesiastical settlement at Aghaboe was the wealthiest and most influential monastic site in the region. It was targeted and raided by the Vikings in 845 AD and 913 AD and it has also been recorded that the monastery was burned to the ground in 1116 AD (Mac Airt & Mac Nioca 1983, AU 845; O' Donovan 1856 2nd Ed., AFM 913; Kennedy 2003, 12). The last abbot of Aghaboe was Cian Ua Gerachan who died in 1154 AD. After the Synods of Rath Breasail (1111 AD) and Kells (1152 AD), Aghaboe became the Episcopal See of the Diocese of Ossory, however, this status was short lived due to the first Anglo-Norman bishop of Ossory making Kilkenny the Episcopal See of Ossory after the Norman invasion (Lewis 1837, 11). Under Anglo-Norman control, the monastic lands became a parish as well as an Anglo-Norman manor (Kennedy 2003, 12). Dermot MacGillapatrick attacked Aghaboe in the 14th century during a period of Irish resurgence and took control of the Anglo-Norman settlement and ecclesiastical complex resulting in the replacement of the 13th century Augustinian settlement with a Dominican order. This order resided in Aghaboe until the priory was suppressed in 1540 AD (Kennedy 2003, 13).

A church site is recorded in the southern part of the townland of Cuffsborough (Sweetman *et al* 1995, 79). This church and graveyard site was in use in the late 18th and early 19th centuries and possibly even earlier (Carrigan 1905, 58). Folklore sources indicate that the church may have had a pre-Cromwellian origin and it was under the influence of Aghaboe. A holy well is recorded *c.*200m to the west of this church site in the townland of Ballygowdan. There are traditions of other church sites in the area; e.g. in the townlands of Dairyhill and Kilminfoyle. Considering their proximity to Aghaboe it is possible that these sites formed part of the Medieval or the Early Medieval ecclesiastical landscape, dominated by the influential Aghaboe. Secular settlement in the area in the Early Medieval period consists of ringfort/ enclosure sites recorded, not in Cuffsborough, but in the surrounding townlands (e.g. Palmershill, Tinnaragh and Boherard) (Sweetman *et al* 1995). Secular settlement in the area in 13th and 14th centuries includes the moated sites recorded at Garryduff and Kilminfoyle and a motte and bailey recorded at Aghaboe (Sweetman *et al* 1995). Secular settlement in the area in the 15th and 16th centuries includes the tower houses recorded in the townlands of Gortnaclea and Grantstown (Sweetman *et al* 1995).

In the mid-late 17th century, the townland of Cuffsborough received its name from the personal name 'Cuff', named after Captain Joseph Cuff, a Cromwellian grantee (Carrigan 1905, 58; Kennedy 2003, 65). After the Cromwellian wars, the lands of Ballygaudenbeg and Ballygaudenmore were forfeited by local landowners. The former townland is now known as Ballygowdan and the later townland is now known as Cuffsborough. William Petty's Down Survey map of the 1650s map outlines all confiscated/ forfeited lands of the Cromwellian period. Joseph Cuff was granted the land previously held by Thomas Hovenden (who owned Ballygaudenbeg and Ballygaudenmore). In the 18th century, the Cuff family built Cuffsborough House, a three storey cut stone faced house dating to 1770 (Griffin 1999, 571; Bence-Jones 1978, 98). The building is listed in the National Inventory of Architectural Heritage and has recently been restored[1].

3. RESEARCH FRAMEWORK

The research framework for Cuffsborough 2 will address the following topics:

(i) The construction date or date of initial site occupation/use

(ii) The absolute/relative chronology of site use in terms of periods, levels, phases, sequences and events

(iii) The date of site abandonment

[1] See http://www.buildingsofireland.ie/cgi-bin/getsearchresults.cgi?county=11

(iv) The extent of the archaeological site/activity

(v) The extent of the viable (local/regional) economic catchment area, i.e. the nearest viable contemporary sources of water and raw materials etc.

(vi) The nature and composition of the archaeological finds, features, layers and deposits on site.

(vii) The phases of activity on site

(viii) The nature and phases of construction, use, repair and abandonment of the site.

(ix) What cultural group/unit would have occupied the site

(x) Why the site location would have been chosen

(xi) How the site would have been constructed and what activities would have taken place at and within the site

(xii) The longevity of the site, its success (or otherwise) and the reasons for the site being abandoned

4. EXCAVATION RESULTS

4.1 Excavation Methodology

Excavation began on 11th November 2005 under Ministerial Direction Number A015/087. Topsoil stripping on this site was carried out by means of a twenty tonne mechanical excavator equipped with a grading bucket. Spoil was managed by a dumper and was stored on archaeologically sterile areas within the limits of the site. The recording techniques employed were based on a recording system that best suits a rural environment. All potential archaeological features exposed were cleaned, recorded (by plan, photographs, levels, feature sheets etc.) and removed by hand excavation. The site was recorded using multi-context planning of all features exposed. An appropriate sampling strategy was employed. Any finds were washed (where appropriate), treated and catalogued on site and left ready for any further post excavation analysis deemed necessary. They were numbered according to the requirements of the National Museum of Ireland from 1 to 99 according to record number and feature number, i.e. E2197:3:1 represents find number 1 within feature number 3 in Cuffsborough 2, which was excavated under record number E2197. Unless otherwise stated, the features have been measured length-width-depth. All measurements are in metres. Upon completion of excavation all cuttings were surveyed using GPS equipment and only areas within the CPO were resolved.

4.2 Full Stratigraphic Report

4.2.1 List of features

F001 Topsoil

F002 Natural subsoil

F003 Cut of circular pit filled with F004

F004 Fill of F003

F005 Cut of circular pit filled with F006, F029

F006 Primary fill of F005

F007 Cut of circular pit filled with F008

F008 Fill of F007

F009 Non-archaeological

F010 Non-archaeological

F011 Non-archaeological

F012 Tertiary/Top fill of F034

F013 Cut of posthole filled with F014

F014 Fill of F013

F015 Non-archaeological

F016 Non-archaeological

F017 Cut of sub-rectangular pit northwest of F043 filled with F018

F018 Fill of C017

F019 Cut of irregular pit filled with F020, F045

F020 Primary fill of F019

F021 *Fulacht*/Burnt spread above F039, F041, F049

F022 Non-archaeological

F023 Cut of posthole north of F005 filled with F024

F024 Fill of F023

F025 Cut of posthole southwest of F005 filled with F026

F026 Fill of F025

F027 Cut of posthole northeast of F023 filled with F028

F028 Fill of F027

F029 Secondary/Top fill of F005

F030 Not used

F031 Not used

F032 Secondary fill of F034

F033 Primary fill of F034

F034 Cut of sub-circular pit filled with F033, F032, F012

F035 Cut of posthole northeast of F051 filled with F036

F036 Fill of F035

F037 Cut of posthole filled with F038

F038 Fill of F037

F039 Cut of sub-circular pit adjacent to F041, F049 filled with F040

F040 Fill of F039

F041 Cut of circular pit adjacent to F039, F049 filled with F048, F042

F042 Secondary/Top fill of F041

F043 Cut of sub-rectangular pit southeast of F017 filled with F044

F044 Fill of F043

F045 Secondary/Top fill of F019

F046 Cut of posthole filled with F047

F047 Fill of F046

F048 Re-deposited natural/Primary fill of F041

F049 Cut of sub-rectangular pit adjacent to F039, F041 filled with F050

F050 Fill of F049

F051 Cut of oval pit southwest of F035 filled with F052

F052 Fill of F051

F053 Non-archaeological

F054 Non-archaeological

F055 Cut of oval pit filled with F056

F056 Fill of F055

F057 Cut of posthole filled with F058

F058 Fill of F057

F059 Cut of posthole filled with F060

F060 Fill of F059

F061 Cut of posthole filled with F062

F062 Fill of F061

F063 Non-archaeological

F064 Non-archaeological

F065 Cut of sub-circular pit filled with F066

F066 Fill of F065

F067 Cut of posthole filled with F068

F068 Fill of F067

F069 Cut of posthole filled with F070

F070 Fill of F069

F071 Cut of posthole filled with F072

F072 Fill of F071

F073 Cut of posthole filled with F074

F074 Fill of F073

F075 Cut of small circular pit filled with F076

F076 Fill of F075

F077 Cut of posthole filled with F078

F078 Fill of F077

F079 Cut of posthole filled with F080

F080 Fill of F079

F081 Cut of small circular pit filled with F082

F082 Fill of F081

F083 Cut of sub-circular pit filled with F084

F084 Fill of F083

F085 Cut of posthole adjacent to F087 filled with F086

F086 Fill of F085

F087 Cut of posthole adjacent to F085 filled with F088

F088 Fill of F087

F089 Tertiary/Top fill (Cremation deposit) of F095

F090 Cut of shallow pit containing bird burial filled with F092, F091

F091 Fill of F090

F092 Bird skeleton buried in F090

F093 Secondary fill of F095

F094 Primary fill of F095

F095 Cut of cremation pit filled with F094, F093, F089

F096 Non-archaeological

F097 Non-archaeological

F098 *Fulacht*/burnt spread above F034, F099, F102, F105

F099 Cut of circular pit/trough filled with F100

F100 Fill of F099

F101 Same as F012

F102 Cut of small rectangular pit filled with F104, F103

F103 Secondary/Top fill of F102

F104 Primary fill of F102

F105 Cut of small circular pit filled with F107, F106

F106 Secondary/Top fill of F105

F107 Primary fill of F105

F108 Non-archaeological

F109 Non-archaeological

F110 Non-archaeological

F111 Fill of F118

F112 Non-archaeological

F113 Non-archaeological

F114 Non-archaeological

F115 Cut of circular pit filled with F116

F116 Fill of F115

F117 Cut of circular pit filled with F123

F118 Cut of oval pit filled with F111

F119 Non-archaeological

F120 Non-archaeological

F121 Cut of oval pit filled with F124, F125

F122 Non-archaeological

F123 Fill of F117

F124 Primary fill of F121

F125 Secondary/Top fill of F121

F126 Non-archaeological

F127 Non-archaeological

F128 Non-archaeological

4.2.2 Stratigraphical matrix

Natural Deposit

F001	Topsoil: Consisted of mid brown, silty clay (up to 0.30m in depth). One piece of flint identified as a platform flake was recorded (E2197:1:1).
F002	Natural subsoil: Consisted of yellow-orange, sandy clay.

AREA 1 (Figures 8 and 11)

Group 1

Circular pit 1

F005	Cut of circular pit. Measured 1.20m x 1m x 0.35m. It had a sharp break of slope, almost vertical sides, and a gradual break of slope leading to an uneven base. Filled with F006, F029. Part of cluster of pits (F007, F039, F041, F049) southeast of group

	2. Above F002, below F006.
F006	Primary fill of F005, with moderately compacted, black, clayey sand. Frequent burnt stones and charcoal included. Measured 1.20m x 1m x 0.35m. Fill recorded mainly on northeast side of pit. No finds were recorded. Three samples were taken (burnt stones-S10, soil-S11, charcoal-S15). Above F005, below F029.
F029	Secondary/Top fill of F005, with loosely compacted, brown-grey, silt. Occasional burnt stones included. Measured 0.45m x 0.20m (length x depth). Silted up layer. No finds were recorded. One soil samples taken (S8). Above F006, below F001.

Circular pit 2

F007	Cut of circular pit. Measured 1.20m x 1.20m x 0.25m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a flat base. Filled with F008. Part of cluster of pits (F005, F039, F041, F049) southeast of group 2. Above F002, below F008.
F008	Fill of F007, with moderately compacted, grey-black, silty sandy clay. A moderate amount of burnt stones included. Measured 1.20m x 1.20m x 0.25m. No finds were recorded. Two samples were taken (soil-9, burnt stones-13, charcoal-20). Above F007, below F001.

Posthole 1

F023	Cut of very shallow circular posthole. Measured 0.30m x 0.30m x 0.10m. It had a gradual break of slope, concave sides, and a gradual break of slope leading to a rounded base. Located with F025 adjacent to F005 southeast of group 2. Filled with F024. Above F002, below F024.
F024	Fill of F023, with soft, mottled grey-yellow, silty sand. Occasional burnt stones included. Measured 0.30m x 0.30m x 0.10m. No finds were recorded. One soil sample was taken (S5). Above F023, below F001.

Posthole 2

F025	Cut of shallow circular posthole. Measured 0.30m x 0.25m x 0.15m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Located with F023 adjacent to F005 southeast of group 2. Filled with F026. Above F002, below F026.
F026	Fill of F025, with moderately compacted, mid brown, silty sand. Occasional burnt stones included. Measured 0.30m x 0.25m x 0.15m. No finds were recorded. One soil sample was taken (4). Above F025, below F001.

Posthole 3

F027	Cut of circular posthole, with rounded corners. Measured 0.43m x 0.40m x 0.28m. It had a sharp break of slope, convex sides, and a gradual break of slope leading to a pointed base. Located adjacent to cluster of pits (F039, F041, F049) southeast of group 2. Filled with F028. Above F002, below F028.
F028	Fill of F027, with soft, greyish-black, clayey silt. Occasional charcoal and burnt stones included. Measured 0.43m x 0.40m x 0.28m. No finds or samples were taken. Above F027, below F001.

Posthole 4

F035	Cut of oval posthole. Measured 0.35m x 0.30m x 0.15m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F036. Located southeast of F007. Above F002, below F036.
F036	Fill of F035, with friable, mid greyish-brown, sandy silt. Occasional stones included. Measured 0.35m x 0.30m x 0.15m. No finds were recorded. One soil sample taken (S26). Above F035, below F001.

Posthole 5

F037	Cut of circular posthole. Measured 0.30m x 0.35m x 0.20m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled

	with F038. Located adjacent to cluster of pits (F039, F041, F049) southeast of group 2. Above F002, below F038.
F038	Fill of F037, with friable, mid greyish-brown, sandy silt. Frequent stones included. Measured 0.30m x 0.35m x 0.20m. No finds were recorded. One soil sample taken (S27). Above F037, below F001.

Sub-circular pit 3

F039	Cut of sub-circular pit, with irregular corners. Measured 1.70m x 0.90m x 0.35m. Orientated northwest-southeast. It had a gradual break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F040. Part of cluster of pits (F005, F007, F041, F049) southeast of group 2. Stratigraphically below F021. Above F002, below F040.
F040	Fill of F039, with friable, dark brownish-black, fine silt. Frequent burnt stones included. Measured 1.70m x 0.90m x 0.35m. No finds were recorded. Two samples were taken (burnt stones-2, soil-3). Above F039, below F021.

Circular pit 4

F041	Cut of circular stakehole, with rounded corners. Measured 1.20m x 1.20m x 0.47m. It had a gradual break of slope, convex sides, and a gradual break of slope leading to a rounded base. Filled with F042, F048 (Sealed with F021). Part of cluster of pits (F005, F007, F039, F049) southeast of group 2. Stratigraphically below F021. Above F002, below F048.
F048	Re-deposited natural/Primary fill of F041, with friable, mid greyish-yellow, silty sand. Frequent charcoal included. Measured 0.65m x 0.10m (width x depth). No finds or samples were taken. Above F041, below F042.
F042	Secondary/Top fill of F041, with friable, mid greyish-brown, silty sand. Occasional stones and charcoal included. Measured 1.10m x 1.20m x 0.20m. No finds were recorded. One soil sample was taken (S22). Above F048, below F021.

Sub-rectangular pit 5

F049	Cut of sub-rectangular pit, with rounded corners. Measured 1.30m x 0.60m x 0.30m. Orientated northwest-southeast. It had a gradual break of slope, concave sides, and a

	gradual break of slope leading to a rounded base. Filled with F050. Part of cluster of pits (F005, F007, F039, F041) southeast of group 2. Stratigraphically below F021. Above F002, below F050.
F050	Fill of F049, with friable, dark brownish-black, fine silt. Frequent burnt stones, and occasional charcoal included. Measured 1.30m x 0.60m x 0.30m. No finds were recorded. Two samples were taken (soil-23, burnt stones-24). Above F049, below F021.

***Fulacht*/Burnt spread**

F021	Deposit of friable, mid greyish brown-black, silt. Occasional burnt stones included. Measured 4.20m x 2.40m x 0.15m. Orientated northeast-southwest. No finds or samples were taken. Stratigraphically above F039, F041, F049. Above F040, F042, F050, below F001.

Adjacent to Group 1 (Figure 8)

Circular pit 1

F003	Cut of circular pit. Measured 0.83m x 0.83m x 0.30m. It had a gradual-sharp break of slope, sloping-concave sides, and a gradual break of slope leading to an uneven base. Filled with F004. Possible stakeholes recorded in base. Adjacent to F019 southeast of group 1 and 2. Above F002, below F004.
F004	Fill of F003, with moderately compacted, black-dark brown, silty clay. A moderate amount of charcoal, and occasional burnt stones included. Measured 0.83m x 0.83m x 0.30m. No finds were recorded. One charcoal and two soil samples taken (S18, S7, S47). Above F003, below F001.

Sub-rectangular pit 2

F017	Cut of sub-rectangular pit, with rounded corners. Measured 1.80m x 1.30m x 0.15m. Orientated east-west. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a flat-rounded base. Filled with F018. Adjacent to F043 and southwest of the main pit cluster in group 1. Above F002, below F018.
F018	Fill of F017, with friable, mid-dark bluish-grey, fine silt. Frequent burnt stones, and

	occasional charcoal included. Measured 1.80m x 1.30m x 0.15m. No finds were recorded. Two soil samples taken (S12). Above F017, below F001.

Irregular pit 3

F019	Cut of irregular pit, with rounded corners. Orientated north-south. Measured 2.50m x 1.25m x 0.10m. It had a gradual break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F020, F045. Located at the most southeast point in Area 1. Above F002, below F020.
F020	Primary fill of F019, with soft-loosely compacted, mottled black-brown-yellow, silt. Occasional burnt stones and other angular/sub-angular stones included. Larger stones lined the edges of the pit. Measured 1.35m x 0.53m x 0.11m. No finds were recorded. Two soil and one charcoal sample taken (S21, S30, S28). Above F019, below F045.
F045	Secondary/Top fill of F019, with soft-loosely compacted, mid-brown, silt. Frequent burnt stones included. Measured 0.50m x 0.07m (width x depth). No finds or samples taken. Above F019, below F045.

Sub-rectangular pit 4

F043	Cut of sub-rectangular pit, with rounded corners. Measured 1.35m x 0.80m x 0.18m. Orientated northwest-southeast. It had a sharp break of slope, sloping sides, and a sharp break of slope leading to an uneven base. Filled with F044. Adjacent to F017. Above F002, below F044.
F044	Fill of F043, with moderately compacted, light grey, fine silt. Occasional burnt stones included. Measured 1.35m x 0.80m x 0.18m. No finds were recorded. Two samples were taken (soil-6, charcoal-19). Above F043, below F001.

Oval pit 5

F051	Cut of oval pit, with rounded corners. Measured 0.45m x 0.20m x 0.10m. Orientated northeast-southwest. It had a sharp break of slope, sloping sides, and a gradual break of slope leading to a rounded base. Filled with F052. Located southwest of F035 and south of F007. Above F002, below F052.
F052	Fill of F051, with firm, light-dark grey, clayey silt. Occasional charcoal and burnt stones included. Measured 0.45m x 0.20m x 0.10m. No finds were recorded. One soil

	sample was taken (S25). Above F051, below F001.

Group 2

Sub-circular pit 1

F034	Cut of sub-circular pit. Measured 1.50m x 1.15m x 0.41m (max. depth). Orientated northeast-southwest. It had a sharp break of slope, concave sides, and a gradual break of slope leading to an uneven base. Filled with F033, F032, F012. Part of cluster of pits (F099, F102, F105) northwest of group 1. Stratigraphically below F098. Truncated by a furrow. Above F002, below F033.
F033	Primary fill of F034, with firm, mottled greyish-yellow, sandy clay (re-deposited natural). Occasional burnt stones and charcoal included. Measured 1.50m x 0.25m (length x depth). No finds were recorded. One charcoal sample taken (S17). Above F034, below F032.
F032	Secondary fill of F034, with moderately compacted, grey-black, sandy silt. Frequent burnt stones and charcoal included. Measured 0.49m x 0.22m (length x depth). One flint artefact identified as a fully patinated flake was recorded (E2197:32:1). Two samples were taken (charcoal-S16, soil-S49). Above F033, below F012.
F012	Tertiary fill of F034, with dense but soft, light grey, silt. A moderate amount of burnt stones included. Measured 1.60m x 0.15m (length x depth). No finds or samples were taken. Above F032, below F098.

Circular pit/trough 2

F099	Cut of circular pit/trough. Measured 1.30m x 1.30m x 0.30m. It had a sharp break of slope, vertical-concave sides, and a gradual break of slope leading to a flat base. Filled with F100. Part of cluster of pits (F034, F102, F105) northwest of group 1. Stratigraphically below F098. Above F002, below F100.
F100	Fill of F099, with friable, dark greyish-black, silt. Frequent burnt stones (sandstone) and charcoal included. Measured 1.30m x 1.30m x 0.30m. No finds were recorded. One soil sample was taken (S51). Above F099, below F001.

Small sub-rectangular pit 3

F102	Cut of small sub-rectangular pit, with rounded corners. Measured 2.50m x 0.80m x 0.15m. It had a gradual-sharp break of slope, concave sides, and a gradual break of slope leading to a flat base. Filled with F104, F103. Part of cluster of pits (F034, F099, F105) northwest of group 1. Stratigraphically below F098. Above F002, below F104.
F104	Primary fill of F102, with friable, mottled light-dark yellow grey, sandy silt. Occasional burnt stones and charcoal included. Measured 2.40m x 0.80m x 0.15m. No finds or samples were taken. Above F102, below F103.
F103	Secondary fill of F102, with friable, dark greyish black, fine silt. Frequent burnt stones and charcoal included. Measured 2.20m x 0.80m x 0.10m. No finds were recorded. One soil sample was taken (S52). Above F104, below F098.

Small circular pit 4

F105	Cut of small circular pit. Measured 0.90m x 0.85m x 0.15m. It had a gradual break of slope, irregular sides, and an imperceptible break of slope leading to an uneven base. Filled with F107, F106. Part of cluster of pits (F034, F099, F102) northwest of group 1. Stratigraphically below F098. Above F002, below F107.
F107	Primary fill of F105, with very compact, mottled yellow-grey, silty clay. A moderate amount of charcoal and burnt/heat shattered stones included. Measured 0.90m x 0.85m x 0.05m. This fill is possibly re-deposited natural subsoil. No finds or samples were taken. Above F105, below F106.
F106	Secondary fill of F105, with friable, dark brownish-black, silt. Frequent burnt stones included. Measured 0.90m x 0.85m x 0.15m. No finds were recorded. One soil sample was taken (S53). Above F107, below F098.

***Fulacht*/Burnt spread**

F098	Deposit of dense but soft, brown-black, gritty sandy clay. The edges contained patches of fine grey silt and burnt stones. Frequent burnt/heat shattered stones (sandstone & quartz pebbles) and charcoal included. Measured 4.50m x 4.50m x 0.06m. Orientated north-south. Similar deposit to F021. No finds were recorded. One soil sample was taken (S50). Stratigraphically above F034, F099, F102, F105. Above

	F012, F100, F104, F106, below F001.

Posthole at North of Area 1 (Figure 8)

F013	Cut of very shallow circular posthole, with rounded corners. Measured 0.36m x 0.40m x 0.13m. It had a gradual break of slope, concave sides, and a gradual break of slope leading to a flat base. Filled with F014. Truncated by a furrow. Almost ploughed away. Above F002, below F014.
F014	Fill of F013, with soft, greyish black, sandy silt. Frequent charcoal included. Measured 0.36m x 0.40m x 0.13m. No finds were recorded. One soil sample taken (S14). Above F013, below F001.

AREA 2 (Figures 9 and 12)

Posthole 1

F046	Cut of circular posthole. Measured 0.22m x 0.22m x 0.20m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F047. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F047.
F047	Fill of F046, with moderately compacted, mid brown, fine clayey silt. Occasional charcoal included. Measured 0.22m x 0.22m x 0.20m. One Neolithic pottery (body) sherd was recorded (E2197:47:1). One soil sample was taken (S37). Above F046, below F001.

Posthole 2

F057	Cut of sub-circular posthole, with a square-ish cut and rounded corners (See fig 9 and 12). Measured 0.25m x 0.30m x 0.20m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F058. Located southwest of main posthole cluster. Above F002, below F058.
F058	Fill of F057, with soft, mid brown-mottled yellow, fine clayey silt. Frequent burnt stones and charcoal included. Measured 0.25m x 0.30m x 0.20m. One pottery (rim) sherd of probable Bronze Age date was recorded (E2197:58:1). One soil sample taken (S34). Above F057, below F001.

Posthole 3

F059	Cut of sub-circular posthole. Measured 0.25m x 0.25m x 0.17m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F060. Located southwest of main posthole cluster. Above F002, below F060.
F060	Fill of F059, with friable, mid greyish-brown, silty sand. Occasional stones included. Measured 0.25m x 0.25m x 0.17m. Pottery sherds and fragments of Neolithic date were recorded (E2197:60:1-5). One soil sample taken (S38). Above F059, below F001.

Posthole 4

F061	Cut of circular posthole. Measured 0.35m x 0.35m x 0.15m. It had a gradual break of slope, sloping sides, and a gradual break of slope leading to a rounded base. Filled with F062. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F062.
F062	Fill of F061, with soft-moderately compacted, dark brown, fine clayey silt. No inclusions. Measured 0.35m x 0.35m x 0.15m. No finds were recorded. One soil sample taken (S40). Above F061, below F001.

Sub-circular pit 1

F065	Cut of sub-circular pit, with rounded corners. Measured 0.45m x 0.55m x 0.20m. It had a sharp break of slope, almost vertical sides, and a sharp break of slope leading to an uneven base. Filled with F066. Located southwest of main posthole cluster. Above F002, below F066.
F066	Fill of F065, with loosely compacted, dark brownish-black, fine silt. Frequent burnt stones included. Measured 0.45m x 0.55m x 0.20m. No finds were recorded. One soil sample was taken (S42). Above F065, below F001.

Posthole 5

F067	Cut of oval posthole, with rounded corners. Measured 0.50m x 0.35m x 0.17m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F068. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F068.

F068	Fill of F067, with friable, mid orange-brown, sandy silt. Occasional stones included. Measured 0.50m x 0.35m x 0.17m. No finds were recorded. One soil sample was taken (S46). Above F067, below F001.

Posthole 6

F069	Cut of oval posthole. Measured 0.35m x 0.25m x 0.21m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a flat base. Filled with F070. Part of a cluster of postholes forming a possible sub-circular structure. Above F002, below F070.
F070	Fill of F069, with moderately compacted, dark brown, clayey silt. A moderate amount of charcoal, and occasional patches of yellow natural subsoil included. Measured 0.35m x 0.25m x 0.21m. No finds were recorded. One soil sample was taken (S41). Above F069, below F001.

Posthole 7

F071	Cut of sub-circular posthole. Measured 0.30m x 0.25m x 0.15m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F072. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F072.
F072	Fill of F071, with soft, dark brown, fine clayey silt. Occasional charcoal and burnt stones included. Measured 0.30m x 0.25m x 0.15m. No finds were recorded. One soil and charcoal sample was taken (S31). Above F071, below F001.

Posthole 8

F073	Cut of sub-circular posthole, with rounded corners. Measured 0.35m x 0.30m x 0.25m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F074. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F074.
F074	Fill of F073, with friable, mid greyish brown, sandy silt. Occasional stones and charcoal included. Measured 0.35m x 0.30m x 0.25m. No finds were recorded. One soil sample was taken (S43). Above F073, below F001.

Small circular pit 2

F075	Cut of small circular pit. Measured 0.40m x 0.40m x 0.20m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F076. Located southwest of main posthole cluster. Above F002, below F076.
F076	Fill of F075, with friable, mid greyish brown, sandy silt. Frequent stones included. Measured 0.40m x 0.40m x 0.20m. No finds were recorded. One soil sample was taken (S33). Above F075, below F001.

Posthole 9

F077	Cut of circular posthole. Measured 0.25m x 0.25m x 0.16m. It had a sharp break of slope, vertical sides, and a sharp break of slope leading to an almost flat base. Filled with F078. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F078.
F078	Fill of F077, with friable, mid greyish brown, sandy silt. Occasional stones included. Measured 0.25m x 0.25m x 0.16m. No finds were recorded. One soil sample was taken (32). Above F077, below F001.

Posthole 10

F079	Cut of circular posthole. Measured 0.20m x 0.20m x 0.27m. It had a sharp break of slope, almost vertical sides, and a sharp break of slope leading to a rounded base. Filled with F080. Located southwest of main posthole cluster. Above F002, below F080.
F080	Fill of F079, with moderately compacted, dark brown, silty clay. Occasional charcoal and stones included. Measured 0.20m x 0.20m x 0.27m. No finds were recorded. One soil sample was taken (S36). Above F079, below F001.

Small circular pit 3

F081	Cut of small circular pit, with rounded corners. Measured 0.25m x 0.25m x 0.10m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F082. Located southwest of main posthole cluster. Above F002, below F082.

F082	Fill of F081, with friable, mid greyish brown, sandy silt. Occasional stones included. Measured 0.25m x 0.25m x 0.10m. No finds were recorded. One soil sample was taken (S35). Above F081, below F001.

Sub-circular pit 4

F083	Cut of sub-circular pit, with rounded corners. Measured 1.16m x 1.10m x 0.12m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to an uneven base. Filled with F084. Located northeast of a cluster of postholes forming a possible sub-circular structure. Above F002, below F084.
F084	Fill of F083, with friable, dark greyish brown, silt. Occasional stones included. Measured 1.16m x 1.10m x 0.12m. No finds were recorded. One soil sample was taken (S39). Above F083, below F001.

Posthole 11

F085	Cut of oval posthole, with rounded corners. Measured 0.30m x 0.25m x 0.23m. It had a sharp break of slope, almost vertical sides, and a gradual break of slope leading to a tapered pointed base. Filled with F086. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F086.
F086	Fill of F085, with friable, dark greyish brown, silt. Occasional stones included. Measured 0.30m x 0.25m x 0.23m. No finds were recorded. One soil sample was taken (S44). Above F085, below F001.

Posthole 12

F087	Cut of circular posthole. Measured 0.30m x 0.30m x 0.19m. It had a sharp break of slope, vertical sides, and a sharp break of slope leading to a flat base. Filled with F088. Part of cluster of postholes forming a possible sub-circular structure. Above F002, below F088.
F088	Fill of F087, with moderately compacted, mid-dark brown, sandy silt. A moderate amount of burnt stones included. Measured 0.30m x 0.30m x 0.19m. No finds were recorded. One soil sample was taken (S45). Above F087, below F001.

Oval pit 5

F090	Cut of oval pit, with rounded corners. Measured 0.50m x 0.40m x 0.10m. It had a gradual break of slope, concave sides, and an imperceptible break of slope leading to a rounded base. Filled with F091, F092 (probably modern bird burial). Located east of main posthole cluster. Above F002, below F092.
F092	Remains of bird skeleton in F090, with wet and soft bone. Fully articulated with a long neck representing a domestic goose or mallard (see appendix 5). Possibly modern as soil is acidic and bone is still present. Above F090, below F091.
F091	Fill of F090, with moderately compacted, mid brown, slightly sandy clay. Occasional quartz pebbles included (quartz found in subsoil also). Measured 0.50m x 0.40m x 0.10m. No finds were recovered (soil sample taken for sieving). Above F092, below F001.

Oval pit 6

F095	Cut of oval pit, with rounded corners. Measured 0.50m x 0.35m x 0.14m (max. depth). Orientated northeast-southwest. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a mainly rounded base. Filled with F094, F093, F089. Located southeast of main posthole cluster. Above F002, below F094.
F094	Primary fill of F095, with friable, dark greyish brown, sandy silt. Occasional stones included. Measured 0.40m x 0.14m (width x depth). No finds or samples were taken. Above F095, below F093.
F093	Secondary fill of F095, with friable, dark bluish grey, clayey silt. No inclusions. Measured 0.40m x 0.25m x 0.14m. No finds or samples were taken. Above F094, below F089.
F089	Tertiary/Top fill of F095, with friable, dark brown-black, silt. A moderate amount of burnt bone was included. Measured 0.33m x 0.33m x 0.06m (max. depth). No finds were recorded. Three burnt bone samples were taken. Only small deposit of bone was present, it was white implying burning at a high temperature (Appendix 6), although due to the small size of the bone it could not be positively identified and it could not be determined whether the bone was animal or human. Above F093, below F001.

AREA 3 (Figure 10 and 12)

Oval pit

F055	Cut of oval pit, with rounded corners. Measured 1.20m x 0.70m x 0.15m. Orientated east-west. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. Filled with F056. Isolated pit. Above F002, below F056.
F056	Fill of F055, with soft, dark greyish-black, clayey sand. Occasional charcoal included. No fulacht material was recorded. Measured 1.20m x 0.70m x 0.15m. No finds were recorded. One soil sample taken (S56). Above F055, below F001.

Isolated features found during stripping (Figure 7)

Circular pit

F115	Cut of circular pit. Measured 0.62m x 0.53m x 0.18m. It had a gradual break of slope, sloping sides, and a gradual break of slope leading to a rounded base. Filled with F116. Above F002, below F116.
F116	Fill of F115, with moderately compacted, brown, silty clay. Occasional charcoal included. Measured 0.62m x 0.53m x 0.18m. No finds or samples were taken. Above F115, below F001.

Circular pit

F117	Cut of circular pit. Measured 0.60m x 0.60m x 0.20m. It had a mainly sharp break of slope, mainly vertical sides, and a mainly sharp break of slope leading to a mainly flat base. Filled with F123. Possibly a small isolated refuse pit. Above F002, below F123.
F123	Fill of F117, with soft, dark grey-black, silt with silty sand. Frequent charcoal, hazelnuts and oxidised clay included. Measured 0.60m x 0.60m x 0.20m. Three prehistoric (possibly Neolithic) pottery sherds (E2197:123:1-3) and one flint scraper (E2197:123:4) were recorded. Five soil samples were taken (S54). Above F117, below F001.

Oval pit

F118	Cut of oval pit. Measured 1.58m x 1m x 0.30m. It had a sharp break of slope, vertical sides, and a gradual break of slope leading to an uneven base. Filled with F111.

	Above F002, below F111.
F111	Fill of F118, with loosely compacted, light brown, silty clay (re-deposited topsoil). A moderate amount of small and sub-angular stones included. Measured 1.58m x 1m x 0.30m. No finds or samples were taken. Above F118, below F001.

Oval pit

F121	Cut of oval pit. Measured 1.50m x 1.10m x 0.30m. Orientated east-west. It had a gradual break of slope, gently sloping sides, and an imperceptible break of slope leading to an uneven base. Filled with F124, F125. Above F002, below F124.
F124	Primary fill of F121, with compact, red oxidised, sandy clay. A moderate amount of small and sub-angular stones included. Measured 1.40m x 0.10m (length x depth). No finds were recorded. One soil sample was taken (S58). Above F121, below F125.
F125	Secondary fill of F121, with loosely compacted, grey-black, silty clay. Frequent charcoal and occasional stones included. Measured 0.40m x 0.10m (length x depth). No finds were recorded. One soil sample was taken (S57). Above F124, below F001.

4.2.3 Stratigraphic Sequencing

Table … Stratigraphic Groups		
Site Name: Cuffsborough 2		**Record No.:E2197**
Period	**Phase**	**Composition**
I	1	Formation of subsoil
II	1	Neolithic Early Bronze Age: Initial clearance of site
	2	Early Bronze Age: Cutting of *fulacht* pits/postholes/spreads
	3	Middle Bronze Age: Construction of temporary shelter
	4	Late Bronze Age : Cutting of pit(s)
III	1	Modern period: Formation of topsoil
	2	Cutting of agricultural features: furrows

This report details each unit in the stratigraphic sequence, starting with the earliest.

Period 2

Phase 2 Neolithic/Early Bronze Age: Prehistory

Area 1 (See Fig. 8)

Fourteen pits, five postholes and two burnt spreads formed two main groups in Area 1. The features noted may represent *fulacht fiadh*/burnt mound activity. This activity involved heating water through 'hot stone technology' within a pit/trough provided in the aim of implementing domestic and other activities. The smaller *fulacht* pits had more specific functions such as dry roasting (negating the use for water at all) or pot boiling (Grogan, *forthcoming*). *Fulacht* material comprising heat shattered stones and charcoal was a by-product of this type of technology (Grogan, *forthcoming*) and will be referred to as such below.

Group 1 (See Fig. 8)

Five circular/sub-rectangular pits, F005, F007, F039, F041, F049 (1.20-1.90m x 0.60-1.20m x 0.25-0.47m), five postholes F023, F025, F027, F035, F037 (0.30-0.43m x 0.25-0.40m x 0.10-0.28m) and a *fulacht*/burnt spread F021 (4.20m x 2.40m x 0.15m) were revealed in excavation.

F039, F041, and F049 were situated in a cluster under F021 and comprised mainly gradual breaks of slope, concave sides, and rounded bases. They were filled with deposits of silt, and *fulacht* material. The fourth pit, F005 (located further south) with sharp breaks of slope, almost vertical sides, and an uneven base comprised two deposits of black clayey sand and grey silt, and *fulacht* material. Located over 3m southwest of F039, F007 comprised gradual-sharp breaks of slope, concave sides, and a flat base with silty-sandy clay and burnt stones. The primary fill of F041 (F048) incorporated 0.10m of re-deposited yellow silty clay indicating a waterproof lining.

All five postholes (F023, F025, F027, F035, F037) generally comprised gradual breaks of slope, concave sides and rounded bases with varying deposits of silt and *fulacht* material. They were interspersed with the pits, indicating a secondary role such as shelter/windbreaker similar to that at Cuffsborough 1.

No artefacts were recovered. The pits proximity and stratigraphical position under spread F021 (F039, F041, F049) would suggest contemporaneous usage.

Adjacent to Group 1 (See Fig. 8)

Five pits, F003, F017, F019, F043, F051 (0.45-2.50m x 0.20-1.30m x 0.15-0.30m) were revealed *c.*1-7m to the south and southwest of Group 1. They are noted as a separate group to Group 1 because of their relative distance. Each varied in plan but comprised mainly gradual-sharp breaks

of slope, concave sides and flat-rounded bases with varying amounts of silt and inclusions of clay, sand and *fulacht* material. The base of circular pit F003 also contained a number of depressions representing possible stakeholes but these were not allocated separate context numbers.

No artefacts were recovered.

Group 2 (See Fig. 8)

Four mainly circular pits, F034, F099, F102, F105 (0.90-2.50m x 0.80-1.30m x 0.15-0.41m) were located *c.*9m northwest of Group 1 under *fulacht*/burnt spread F098 (4.50m x 4.50m x 0.06m).

Each pit comprised mainly gradual breaks of slope, concave sides, and a flat base and was filled with varying deposits of silt with inclusions of sand, clay and *fulacht* material. F034 was truncated by a modern agricultural furrow. F099 was identified as a trough, (a larger-scale pit) as it was larger than the adjacent pits (1.30m x 1.30m x 0.30m) and had gradual-sharp breaks of slope, concave sides, and flat base. The primary fill of F034 (F035) and of F105 (F107) incorporated 0.05-0.25m of re-deposited silty/sandy clay indicating a waterproof lining.

No artefacts were recovered. The pits proximity and stratigraphical position under spread F098 would suggest contemporaneous usage.

At the north of the cutting the cut of a very shallow circular posthole, with rounded corners was evident. It measured 0.36m x 0.40m x 0.13m and had a gradual break of slope, concave sides, and a gradual break of slope leading to a flat base. It was filled with F014 and was truncated by a furrow. It was almost ploughed away. No artefacts were recovered from the fill of the feature.

Period 2

Phase 3 Middle Bronze Age: Prehistory

Area 2 (See Fig. 9 and 12)

Structure 1

Eighteen features were noted in Area 2. Within this, twelve postholes were revealed, nine of which (F046, F061, F067, F069, F071, F073, F077, F085, F087; 0.22-0.50m x 0.22-0.35m x 0.15-0.25m) formed a sub-circular plan denoting a possible structure. Two large gaps to the east (3m) and southeast (4m) were recorded. F057, F059, F079 (0.20-0.25m x 0.20-0.30m x 0.17-0.27m) were located northeast of this. The internal diameter of the possible structure was *c.*6m. The mainly circular/oval postholes comprised sharp breaks of slope, concave-vertical sides and

rounded-flat bases and were filled with fine clayey or sandy silt and occasional *fulacht* material. Three postholes F046, F057, F059 also contained two body and one rim prehistoric pottery sherds (E2197:47:1, E2197:58:1, E2197:60:4).

Six mainly circular pits, F065, F075, F081, F083, F090, F095 (0.25-1.16m x 0.25-1.10m x 0.10-0.20m) were noted surrounding the postholes. They comprised mainly sharp breaks of slope, concave-vertical sides and rounded bases and were filled with silt and inclusions of clay, sand and occasional burnt stones. F090 was located west of the posthole structure and contained a full bird skeleton in its primary deposit with quartz pebbles in the deposit above. This is most likely a modern burial. F095 was located south of F090 containing in its tertiary deposit inclusions of burnt bone suggesting a cremation pit. F065 and F081 were situated to the northeast of the possible structure and were interspersed with postholes F057, F059 and F079.

No other artefacts from this group were noted during excavation, impeding further diagnostic analysis.

Located at the north east of the cluster of postholes the cut of sub-circular pit, with rounded corners was evident. It measured 1.16m x 1.10m x 0.12m. It had a sharp break of slope, concave sides, and a gradual break of slope leading to an uneven base. It was filled with F084. No artefacts were recovered from this feature.

Period 2

Phase 4 Late Bronze Age: Prehistory

Area 3 (See Fig. 10)

Isolated pit

Located south east of Area 2 the cut of an oval pit, with rounded corners was exposed within a third cutting. It measured 1.20m x 0.70m x 0.15m and was orientated east-west. It had a sharp break of slope, concave sides, and a gradual break of slope leading to a rounded base. It was filled with F056, soft, dark greyish-black, clayey sand. It contained occasional charcoal some of which was sampled. It was identified as prunus, pomoideae and hazel and produced a radiocarbon date of Cal 840 BC- 750 BC indicating a Late Bronze Age date for its use. No artefacts were recovered from the feature.

Isolated features found during stripping (See Fig. 7)

Four oval/circular pits, F115, F117, F118, F121 (0.60-1.58m x 0.53-1.00m x 0.18-0.30m) were randomly exposed within the road corridor during topsoil stripping. They comprised mainly gradual breaks of slope, concave-vertical sides and flat bases with deposits of silty clay and inclusions of charcoal and stones. Pit F117, recorded as a refuse pit also contained remnants of hazelnuts, oxidised clay, three prehistoric (Neolithic) pottery sherds (E2197:123:1-3) and one flint scraper (E2197:123:4).

Period 3 Modern period

Phase 2

Agricultural activity

Prior to the excavation of the site, this field was used for tillage evidence of which can be seen with the truncation of pit F034 by a modern plough furrow.

4.2.4 Stratigraphic Discussion

The excavations at Cuffsborough 2 exposed the presence of Bronze Age occupation through the occurrence of *fulacht fiadh*/burnt mound activity, and postholes containing prehistoric pottery. Two main areas of activity were identified and are referred to as such below. A third cutting was opened but all it contained was a single isolated pit. The only modern activity visible on site was the presence of an agricultural furrow that truncated pit F034. Other pits peripheral to the main features revealed on site will not be discussed in detail below. A technical description of each can be found in the matrix and sequencing above.

Area 1 located at the extreme northern end of the side contained evidence of burnt mound activity that was dated through radiocarbon analysis to the Early Bronze Age (Cal 2700 BC – 2470 BC). *Fulacht fiadh*/Burnt mound is the term given to the association of irregular/crescent-shaped *fulacht*/burnt spreads, pit-like troughs that held large volumes of water, hearths and in some cases (particularly this site), other *fulacht* pits (Brindley et al. 1989–90, 25). The main objective was to boil water using 'hot stone technology' (immersing hot stones in water, which shatter as a result), in order to carry out various activities that may include cooking, washing, bathing, tanning and other domestic and small-scale industrial activities (Barfield and Hodder, 1987, 371; O' Drisceoil 1991). *Fulacht* material comprising heat shattered stones and charcoal deposited as a mound or spread was a by-product of this type of activity (O'Connor 2007). They range in date from the Late Neolithic to the early Medieval period, but were attributed mainly to the Bronze Age (Brindley et al. 1989–90, 25; Corlett, 1997; Russell 2001; Waddell, 1998, 177). More specifically, the type of trough used can determine the actual period within the Bronze Age, i.e. early, middle or late period (Eoin Grogan, *forthcoming*).

A total of fourteen similar-sized pits comprising naturally deposited silt and *fulacht* material were exposed in Area 1 of Cuffsborough 2 following the removal of two *fulacht*/burnt spreads (F021, F098), which covered at least seven of the pits (See Fig. 8). The proximity of the pits to one another suggested the presence of intensive *fulacht* activity and the scale of features in this group may indicate communal-type usage rather than domesticity. They were identified as *fulacht* pits because of their relatively shallow depth, their mainly gradual breaks of slope, concave sides, rounded bases and deposits of *fulacht* material. Generally, pits with a depth of less than 0.25m are considered to have a more specific role to the average trough and may sometimes negate the need for water at all, i.e. dry roasting. Two groups of pits could be discerned in Area 1, each lying stratigraphically below a *fulacht*/burnt spread of similar composition, representing two concentrations of activity. A number of postholes were recorded surrounding four of the five pits in Group 1 (See Fig.8), indicating a secondary role such as shelter/windbreaker similar to that at Cuffsborough 1. No similar features were recorded around the four pits of Group 2. Re-deposited natural was recorded compacted tightly into the base of at least two of these pits (F034 and F105), forming a waterproof lining (a typical feature found in *fulacht* pits and troughs). Only one flint scraper fragment (E2197:32:1) was recorded in Area 1, in the secondary deposit of F034. The lack of diagnostic artefacts in this area makes further analysis difficult. It is difficult to stratigraphically distinguish between the pits as no visible truncation was apparent. Within the two main groups, the pits appear contemporaneous and as both groups were sealed with similar spreads of *fulacht* material (heat shattered stones and charcoal), a single phase of activity was probable.

Area 2 located some distance south of Area 1 comprised a sub-circular structure that was dated through radiocarbon analysis to the Middle Bronze Age (Cal 1540 BC- 1410BC). A total of twelve postholes and seven pits were evident. The postholes formed a sub-circular structure with an internal diameter of *c.*6m, ideal for domestic use. Two large gaps to the east (3m) and southeast (4m) were recorded. The pits interspersed with these were relatively small, acting as refuse or depository-type pits, although no evidence of such was discovered. Recorded in three postholes were two body and one rim prehistoric pottery sherds (E2197:47:1, E2197:58:1, E2197:60:1), most likely the result of ritual deposition following abandonment of the site. The two body sherds have been identified as Early Neolithic carinated bowls while the rim sherd is more likely to be of Middle Bronze Age date (See Appendix 3). East of this, two pits, F090 and F095 contained deposits of cremated bone. This was too fragmentary to be positively identified and therefore it is unknown whether it is animal or human. The skeletal remains of a bird found in F090 were very fragile and wet, and difficult to obtain an exact date from. They were most likely modern and disassociated with the archaeological remains. The small (token) deposit of cremated bone in the

secondary (sealing) fill of F095 may have resulted from ritual deposition similar to that of the pottery sherds. The abovementioned evidence suggests Area 2 was used for some form of domestic occupation varying from a simple shelter to a small dwelling as the postholes were unsubstantial and therefore, incapable of supporting a large weight.

Located south east of Area 2 the cut of an oval pit, with rounded corners was exposed within a third cutting. It was filled with soft, dark greyish-black, clayey sand and contained occasional charcoal some of which was sampled. It was identified as prunus, pomoideae and hazel and produced a radiocarbon date of Cal 840 BC- 750 BC indicating a Late Bronze Age date for its use. No artefacts were recovered from the feature and it existed in isolation.

In addition to the above features four oval/circular pits, two of which contained evidence if in-situ burning were randomly exposed within the road corridor during topsoil stripping. Two of the pits were located quite close to Area 2 and may have been associated with the sub-circular structure. They were oval, with flat bases and contained oxidised clay and inclusions of charcoal and stones in their fill. Further south the two remaining pits were circular and pit F117 at the extreme south of the site contained three prehistoric (Neolithic) pottery sherds (E2197:123:1-3) and one flint scraper (E2197:123:4) of Bronze Age date, again indicative of ritual deposition.

4.2.5 Stratigraphic Conclusion

Through the various stages of archaeological investigation three distinct phases of activity were identified on this site ranging from the Early Bronze Age to the Late Bronze Age. Three separate areas of activity were noted on the site and each area provided evidence of a different date range for the activities specific to that area. To the extreme north of the site evidence of *fulacht fiadh*/burnt mound activity was identified, highlighted by the large number of pits, and spreads/mounds containing *fulacht* material. This activity related to the Early Bronze Age. Seventy eight metres to the south a sub-circular structure of postholes with an internal diameter of *c.*6m was also recorded. This complex arrangement of features provided evidence of an occupational site involving domestic activity and was dated to the Middle Bronze Age. A number of Neolithic pottery sherds (some recovered from three postholes of the structure) and Bronze Age flint artefacts were also recorded, providing an insight into the use of material culture and its ritual deposition either prior to construction of the shelter/structure or following abandonment of the site. A third area twenty five metres east of the sub-circular structure contained an isolated pit of Late Bronze Age date. Further pits were identified randomly scattered within the road corridor following extensive topsoil stripping. A single pit located at the extreme southern end of the site

contained Neolithic pottery sherds and a flint scraper suggestive of ritual deposition. When comparing the various Bronze Age activities at Cuffsborough 2 with neighbouring archaeological sites, a pattern of large-scale occupation across the townland of Cuffsborough emerges.

4.3 Artefactual evidence

4.3.1 Pottery

Pottery					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Condition**	**Comments (decoration etc)**
E2197:47:1	Neolithic	1 sherd	Body sherd	-	0.17m x 0.14m x 0.9m Black in colour
E2197:58:1	Probably Bronze Age	1 sherd	Rim sherd	-	Possible comb-pressed decoration with 2 horizontal lines around the outside of the rim. 1 diagonal incised line below these. 0.065m x 0.025m x 0.0085m Black in colour
E2197:60:1-3	Neolithic	3 fragments		Very fragile	Black in colour Probably part of same vessel as F47
E2197:60:4	Neolithic	1 sherd	Body sherd		Not decorated Probably part of same vessel as F47
E2197:60:5	Neolithic	Crumbs			Probably part of same vessel as F47
E2197:123:1	Neolithic	1 sherd	Body sherd	-	Not decorated
E2197:123:2	Neolithic	1 sherd	Body sherd	-	Not decorated
E2197:123:3	Neolithic	1 sherd	Body sherd	-	Not decorated

4.3.2 Flint

Flint objects					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Condition**	**Comments (decoration etc)**
E2197:1:1	Bronze Age	fragment	Platform flake	-	Possible natural Low bulb of percussion and faint ridges
E2197:32:1	Bronze Age	fragment	Fully patinated flake	-	Weathered white

E2197:123:4	Bronze Age	Fragment	Sub-circular flint scraper	-	Unidentifiable

4.4 Environmental Evidence

4.4.1 Wood identification/Charcoal analysis

See Appendix 1

Table: Charcoal samples sent for analysis					
Site Name: Cuffsborough 2				Record No:E2197	
Context number	Sample number	Feature type	Date obtained	Sample type	Analysis results
F40	S3	Fill of pit	Cal 2700 BC-2470BC	Charcoal	Ash and oak
F56	S23	Fill of pit	Cal 840BC – 750BC	Charcoal	Prunus, Pomoideae Ash, Oak and Hazel
F76	S33	Fill of pit	Cal 1540BC-1410BC	Charcoal	Alder, Ash, Oak, Pomoideae, Birch, Cherry and Hazel

4.5 Dating Evidence

Three radiocarbon dates were retrieved for this site placing the site firmly in the Bronze Age period. The pit F34 produced a date of Cal 2700-2479 B.C (Appendix 2) from a sample of ash, the pit F55 produced a date of Cal 840-750 B.C (Appendix 2) from a mixed sample of hazel, prunus and pomoideae and the pit F75 produced a date of Cal 1540 – 1410 BC (Appendix 2) from a sample of hazel.

5. DISCUSSION (Information by Niall Kenny and Amy McQuillan)

The area to the north of the site contained evidence of *fulachta fiadh* activity. *Fulachta fiadh* or burnt mounds tend to survive as low grass covered mounds, usually horseshoe/crescent shaped, consisting of large accumulations of heat shattered stones mixed with black soil and charcoal (Brindley *et al* 1989/90, 25; Power *et al* 1997, 75). When levelled, these monuments are often visible as black spreads of heat shattered stone in ploughed fields. *Fulachta fiadh* normally consist of a hearth, trough and the associated mound of material (Brindley *et al* 1989/90, 25). However, not all sites consisting of quantities of charcoal and heat shattered stone may be classified as a

fulacht fiadh as they may lack the all important associated trough and hearth features. A trough was identified at Cuffsborough 2 although no evidence of a hearth survived. A number of different factors can contribute to the absence of a trough/hearth and these include: the trough/hearth may have been destroyed by agricultural activity such as ploughing, the trough/hearth may lie outside the limits of the excavation or portable or wooden containers may have been used as water receptacles and were removed when the site went out of use. We do know that by the mid-second millennium BC elongated, single-piece wooden troughs fashioned and carved from dugout boats were in use (O' Neill 2000, 19: O' Kelly 1954, 132) and so the use of these could account for some (not all) of the sites lacking troughs. Furthermore, if the stones were heated on simple bonfires and not in cut or lined hearth places then traces of this may not be visible in the archaeological record (due to deep ploughing etc). Therefore, the absence of a trough/ hearth at such sites does not automatically imply that these sites were not *fulachta fiadh*.

The accumulation of the mound of burnt stone around the trough occurs through prolonged use of hot stone technology. Simply, this involved the heating of stones, probably on a nearby hearth, and placing them in the water filled trough. The immersion of hot stones in the trough boils the water for some desired purpose and the stones subsequently shatter and break. The accumulation of heat shattered stone and charcoal around the trough in a crescent shape mound is the result of continued use and emptying of the trough.

The majority of *fulachta fiadh* and burnt mound sites have been firmly placed in the second millennium BC and the earlier part of the first millennium BC (1500 – 500BC) (Brindley *et al* 1989/90; Brindley & Lanting 1990; Waddell 1998, 177). However, through development led excavations it is becoming increasingly clear that their use may have a much earlier antiquity. The earliest sites appear to date from the early 3rd millennium BC while the latest sites possibly survive into the Iron Age and even beyond into the early and later Medieval periods (O' Neill 2000; O' Neill 2003-4, 83). The site at Cuffsborough 2 returned an Early Bronze Age date of Cal BC 2700-2470 (See Appendix 2).

However, generally (although not always) unlined oval and circular shaped troughs tend to occur on early Bronze Age sites (F99 being an example of this kind of trough at Cuffsborough 2) while rectangular shaped troughs are more common in the middle Bronze Age and these tend to be lined with wood (wicker/ planks/ logs) and flagstones (O' Neill 2000, 19). Also by the mid-second millennium BC wooden troughs fashioned from dugout boats are known (i.e. as at Killeens site II, O' Kelly 1954, 132-134). These general trends may help to indicate a tenuous and rough date for the certain *fulacht* sites. However, observations relating to trough morphology and dating must not be taken as a given and should be treated very cautiously.

Fulachta fiadh are undeniably the most common type of prehistoric site in Ireland (Power *et al* 1997, 75; Waddell 1998, 174). There are over 4,500 known examples throughout Ireland and over 3,000 of these occur in Co. Cork (Power *et al* 2000). The known distribution of these sites occurs right throughout the island of Ireland (with large concentrations in Munster) and notably, examples have been recorded on islands such as Valentia, off the coast of Co. Kerry (Mitchell 1990; Sheehan 1990). It is probable that thousands of more *fulacht* sites exist, unrecorded and undetected, throughout the Irish landscape. Large numbers of burnt mound sites have also been recorded in England, Scotland and Wales (Hodder 1990; Halliday 1990; Williams 1990).

Fulachta fiadh and burnt mound sites are normally situated close to a water source, such as a river, stream or in wet marshy areas (Power *et al* 1997, 75). In spite of the obvious biases which previous surveys and fieldwork have on *fulachta fiadh* distribution maps, regional studies show that in Cork particular concentrations occur along streams and sandstone ridges and tend to occur below the 800ft contour (Power 1990). Particular concentrations and clusters of *fulachta fiadh* sites have also been identified in Co. Kilkenny (again despite the biases of previous fieldwork/ surveys in the area) and these occur throughout the county near streams and streamlets in limestone and sandstone rich areas (Condit 1990).

The exact function of *fulachta fiadh* is rather ambiguous and despite the vast number of these monuments occurring throughout Britain and Ireland, they still remain somewhat enigmatic. There are many different theories as to the function of *fulachta fiadh* and briefly these include: cooking places (O' Kelly 1954; O' Drisceoil 1988), prehistoric bathing places/ saunas (Barfield & Hodder 1987) as well as semi-industrial functions such as leather working/ production, fulling cloth, soap production, garment waterproofing, processing cremations, brewing, boat building, brine evaporation and so on (as listed by Barfield & Hodder 1987, 371; Waddell 1998, 177 and O' Neill 2000, 19; Monk 2007, 24). While there has been much debate and discussion over the possible function of these monuments, it is generally accepted that they were used to bring troughs of water to a boil through a form of hot stone technology (Waddell 1998, 177). It is also accepted that some of these sites were used continuously over long periods of time which accounts for the resultant accumulation of quite large mounds of heat-shattered stone at these sites (e.g. at Shanboe 1) (Waddell 1998). It has been suggested that 'if a single function could be proposed (for *fulachta fiadh*) it would be expected that all of these sites would have a similar form' (O'Connor 2007, 9). It is also stressed that it is futile searching for one single function when it is clear that so many of the *fulachta fiadh* sites are different in form. Most academics are agreed on the fact that these sites were used to boil water through the use of hot stones, it is probable then that this hot water was used in the undertaking of a variety of different tasks and functions. Research studies carried out

by ACS Ltd on the M3 excavations of the size and arrangement of pits, troughs, hearths and other features associated with *fulachta fiadh* sites indicates that perhaps the variation in the form of these features and sites may be to do with the fact that these sites served different multiple functions (O'Connor, 2007).

O' Kelly (1954) and others (such as Lawless 1990 and even the chef Darina Allen 1994) have adequately demonstrated that *fulachta fiadh* could at least theoretically have functioned as ancient cooking sites. This theory has dominated academic discourse since the 1950s, however it appears that there are inherent problems with it; the general absence of animal bones from many *fulacht fiadh* sites severely undermines this theory and high acidic levels and bad preservation cannot always explain their wide-scale absence. O' Kelly (1954) has suggested that the lack of bone on some sites may be due to the fact that the meat was not consumed on site (but instead at settlement sites) or that scavenging animals and dogs may have retrieved the bones. The 'cooking site theory' cannot be applied universally to all *fulacht fiadh* sites, however it is certain that some sites did function as cooking places amongst other things. Quantities of animal bone have been recorded on other *fulachta fiadh* sites excavated on the same road scheme and in the same townland as this site at Cuffsborough 1 and Cuffsborough 3. A large number of bovine bone fragments (25 in total) were recorded at the late Bronze Age *fulacht fiadh* site excavated ten years ago in Cloonaddadoran Co. Laois and these were actually found in the basal fill of the trough (Crumlish 1997). The animal bone recovered from Cuffsborough 1 and 3 and Cloonaddadoran in Laois could very well be the vestiges of ancient cooking practices and so these sites could very well have functioned as cooking sites (both ritual and functional) for nearby settlement sites such as Cuffsborough 4 and possibly the small settlement at this site Cuffsborough 2. However, the complete absence of animal bone on such sites as Shanboe 1 and 5, Contract 2 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme indicates that perhaps other activities were possibly being carried out at these sites.

Apart from the *fulacht fiadh* related features uncovered at Cuffsborough 2 a sub-circular structure 6m in diameter of Middle Bronze Age date was identified further south. Sherds of Neolithic pottery and a single sherd of Middle Bronze Age pottery was recovered from the fill of pits and postholes along the south western part of the structure, possibly representing some sort of ritual deposition. This structure together with a series of randomly occurring pits could represent the remains of more scattered Bronze Age settlement activity (with structured symbolic deposits) located close to *fulachta fiadh* activity and a short distance from the large settlement site of Cuffsborough 4 located on slightly higher ground to the south.

Quite notably a cremation pit was identified at Cuffsborough 2. The cremation deposit was placed within the upper fill of the cut of this pit. It is not certain whether this is in fact a *bona fide* cremation pit or not, however, as specialist analysis of the burnt bone from this upper fill was unable to determine whether the remains were human or animal.

Evidence for domestic settlement in the Early Bronze Age is relatively scarce, while evidence for settlement in the Middle and Late Bronze Age is more abundant (O'Sullivan 1998, 69). It has been noted that the settlement sites of the Middle and Late Bronze Age were typically located on well-drained thin soils, well suited to arable agriculture (O'Sullivan 1998, 70), such as this site at Cuffsborough 2. Settlement location may have been dictated by proximity to resources such as woodland, water sources, stone/metal sources, good soils, communication routes, political allies and ceremonial places within the landscape.

Early and Middle Bronze Age sites can vary from either unenclosed or enclosed single farmsteads to nucleated settlements. Domestic structures were generally constructed of wood or, less often, from stone. The houses themselves can be circular, oval or rectangular although the majority are circular in shape. The average diameter is between 5 and 9m (Doody 2000, 143). The house remains can range from a single or double wall slot, an outer slot trench with an inner ring of posts and to houses with a single or double ring of posts. Some structures have porched entrances, while the entrance is unrecognisable at others. There may or may not be a hearth within the structure and it is common for there to be no associated artefacts from the structure (Carlin 2006, 12).

The structure at Cuffsborough 2 dating to the Middle Bronze Age may be broadly contemporary with the Early – Middle Bronze Age unenclosed settlement at Cuffsborough 4. The clustering of domestic structures is evident in Early and Middle Bronze Age Ireland and an example includes Meadowlands, Co. Down, where two possibly contemporary, unenclosed Early Bronze Age roundhouses were uncovered (Pollock and Waterman 1964). An example of a clustered settlement dating to the Middle Bronze was excavated at Ballybrowney, Co. Cork, where at least three structures were excavated along with three possibly contemporary enclosures, evidence of burial activity, copper smelting and cereal cultivation (Cotter 2005).

The siting of Cuffsborough 2 adjacent to burnt mound sites is not without parallels. At Caltragh, Co. Sligo, three Middle Bronze Age circular structures were excavated in association with a series of contemporary cremation burials, burnt mounds and saddle querns (MacDonagh, 2005). At Killoran 8, Co. Tipperary, at least three unenclosed house sites were discovered within 200m of burnt mounds, trackways and a large cremation cemetery. Most, if not all, of the activity at Killoran 8 probably dates to the Middle Bronze Age (O'Neill 2005, 289). A Middle Bronze Age settlement site was uncovered at Charlesland, Co. Wicklow, which comprised two circular

structures at site D and one oval structure at site G, all of which appear to have been associated with cereal cultivation (Molloy 2004).

6. INTERPRETATION AND RECONSTRUCTION

Two main areas of activity were recovered following the removal of topsoil at Cuffsborough 2. Within Area 1, two separate groups of pits were identified beneath very scant charcoal and burnt stone spreads. Postholes were evident surrounding four of the pits indicating a secondary function such as shelter or a wind break. Two of the pits contained a waterproof lining and another owing to its size was interpreted as a trough. This area of the site was interpreted as the remains of a burnt mound/fulacht fiadh and the fact that all the features were covered by the spreads suggests they were contemporaneous and represented a single phase of activity.

Further north within Area 2 a series of twelve postholes formed a sub-circular structure 6m in diameter. This was interpreted as a simple shelter and Neolithic pottery sherds recovered from the fill of three of the postholes probably represents accidental or ritual deposition following abandonment of the site. A third area was opened and it contained a single pit. Together, these areas provide evidence of temporary settlement and *fulacht fiadh* activity spanning the period from the Early to Late Bronze Age.

7. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

The *fulacht* spreads, trough and pits at Cuffsborough 2 were generally typical of most *fulacht fiadh* sites. However the presence of a later structure dating to the middle Bronze Age and the presence of Neolithic pottery and a possible cremation suggest some sort of ritual deposition. The proximity of the settlement adjacent to the burnt mound and the burnt mounds at Cuffsborough 1 and 3 and the proximity to the settlement at Cuffsborough 4 highlights the significance of this townland throughout the entire Bronze Age period. The combined elements of burnt mound activity, settlement and ritual deposition make this site and associated sites within this townland locally and nationally significant.

8. CONCLUSION

This site has been adequately archaeologically assessed and resolved. There are no other archaeological features within the limits of the roadtake. Consequently no further work is required

prior to the construction phase of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme.

9. BIBLIOGRAPHY

9.1 References

Allen, D. (1994) 'Hot water and plenty of it', *Archaeology Ireland*, **27**, 8-9

Barfield, L. and M. Hodder (1987), 'Burnt mounds as saunas, and the prehistory of bathing', *Antiquity*, 61, 370-379

Bence-Jones, M. 1978, *Burke's guide to country houses, Ireland*, The Academy Press: Dublin

Brindley, A. L., et al. (1989-90), 'Radiocarbon dates from Irish fulachta fiadh and other burnt mounds', *JIA*, 5, 25-33

Brindley, A.L. & Lanting, J.N. (1990) 'The Dating of Fulacht fiadh', in Buckley, V. (Ed.) *Burnt Offerings, International Contributions to Burnt Mound Archaeology,* 55-58, Wordwell: Dublin

Candon, A. (1987) *Archaeological Survey of Upper Ossory, phase 2. The barony of Clarmallagh.* AnCo/ Roscrea Heritage Society report.

Carlin, N. 2006, *M3 Research Report on Bronze Age Houses in Ireland*, unpublished reports for ACS Ltd.

Carrigan, W. 1905, *The history and antiquities of the diocese of Ossory*, 4 Vols. Roberts Books and Wellbrook Press: Kilkenny

Condit, T. (1990) 'Preliminary observations on the distribution of fulachta fiadh in County Kilkenny', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 18-23, Wordwell: Dublin

Cotter, E., 2005, Bronze Age Ballybrowney, Co. Cork, in O'Sullivan, J. and Stanley, M (eds), *Recent Archaeological Discoveries on National Road Schemes 2004*, National Roads Authority, Dublin, 37-43

Crumlish, R. (1997) *Cloonaddadoran Co. Laois*. Excavations.ie- database of Irish excavation reports

Doody, M. 2000, Bronze Age houses in Ireland, in A. Desmond et al (eds), *New agendas in Irish Prehistory*. Bray, 135-60

Feehan, J. (1983), *Laois: an environmental history*, Ballykilcavan Press: Stradbally

Graves, J. 1852, Proceedings, *Journal of the Royal Society of Antiquaries of Ireland* 2, 358

Griffin, D.J. 1999, Country houses of county Laois, in Lane, P. & Nolan, W. (eds.), *Laois: History & Society. Interdisciplinary Essays on the History of an Irish County*, Geography Publications: Dublin, 563-584

Gwynn, A. and Hadcock, R.N. 1970, *Medieval religious houses, Ireland*. Longman Group Ltd, Dublin

Joyce, P.W. (1995), *The History and Origins of Irish Names of Places*. De Burca. Dublin (facsimile reprint of original edition)

Halliday, S.P. (1990) 'Patterns of fieldwork and the distribution of burnt mounds in Scotland', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 60-61, Wordwell: Dublin

Hodder, M.A. (1990) 'Burnt mounds in the English West Midlands', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 106-111, Wordwell: Dublin

Kennedy, J. (2003). *The Monastic Heritage & Folklore of County Laois*, Roscrea: Lisheen

Kenny, N. (2007). On recent archaeological discoveries in the townland of Shanboe, unpublished research report for ACS Ltd on behalf of the National Roads Authority

Lawless, C. (1990) 'A Fulacht Fiadh Bronze Age cooking experiment at Turlough, Castlebar', *Cathair na Mart* **10,** 1-10

Lewis, S. 1837, (Reprint 1984) *A Topographical Dictionary of Ireland*, 2 Vols. Genealogical Publishing Co., Inc, Baltimore

Mac Airt, S. and Mac Nioca, G. 1983, *The Annals of Ulster: to A.D. 1131: text and translation*, Dublin Institute for Advanced Studies, Dublin

MacDonagh, M., 2005, Valley bottom and hilltop: 6000 years of settlement along the route of the N4 Sligo Inner Relief Road, in O'Sullivan, J. and Stanley, M. (eds) *Recent Archaeological Discoveries on National Road Schemes 2004*, National Roads Authority, Dublin, 9-23

Mitchell, F. (1990), 'Early Bronze Age fulachts on Valencia Island', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 24-26, Wordwell: Dublin

Molloy, B. 2004, Excavations at Charlesland, Co. Wicklow, online article at: http://www.mglarc.com/projects/charlesland.htm

Monk, M. (2007) 'A greasy subject', *Archaeology Ireland,* **21 No. 1**, 22-24

Murphy, D. (2006), 'Report on Archaeological Assessment of Testing Area 3, Contract 1', unpublished report prepared by ACS Ltd in conjunction with the National Roads Authority

O'Connor, Eimear (2007), *Fulachta Fiadh, Burnt Mounds and Hot Stone Technology on the M3*, unpublished report for ACS Ltd

O' Donovan, J. (ed.) 1856, *Annals of the Four Masters: Annals of the kingdom of Ireland/ by the Four masters, from the earliest period to the year 1616*. Edited from Mss. in the library of the Royal Irish academy and of Trinity College, Dublin, with a translation and copious notes, by John O'Donovan. Dublin: Hodges, Smith & Co

O' Drisceoil, D.A. (1988) 'Burnt mounds: cooking or bathing?', *Antiquity,* **62**, 671-80

O' Kelly, M. J. (1954) 'Excavations and experiments in ancient Irish cooking-places', *Journal of the Royal Society of Antiquaries Ireland* **84,** 105-155

O' Neill, J. (2000) 'Just another fulachta fiadh story', *Archaeology Ireland*, **Vol. 14 No. 2**, 19

O'Neill, J. (2003-4) '*Lapidibus in igne calefactis coquebatur*: The Historical burnt mound 'tradition'', *Journal of Irish Archaeology* **12 & 13**, 79-85

O'Neill, J. 2005, Killoran 8, in Gowen, M., O'Neill, J & Phillips, M. (eds), *The Lisheen Mine Archaeological Project* 1996-8. Wordwell, Bray, 288-290

O'Sullivan, A. 1998, *The Archaeology of Lake Settlement in Ireland*, Discovery programme monograph, No. 4, Royal Irish Academy: Dublin

Pollock, A. J. and Waterman, D. M. 1964, A Bronze Age Habitation site at Downpatrick, *Ulster Journal of Archaeology* 27, 31-58

Power, D. (1990) 'Fulachta fiadh in County Cork', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 13-17, Wordwell: Dublin

Power, D. *et al*. (1997) *Archaeological Inventory of County Cork* (Vol. III Mid Cork), Stationery house: Dublin

Power, D. *et al*. (2000) *Archaeological Inventory of County Cork* (Vol. IV North Cork), Stationery house: Dublin

Sheehan, J. (1990) 'The excavation of a fulacht fiadh at Coarhamore, Valentia Island, Co. Kerry', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 27-37, Wordwell: Dublin

Sweetman, D. e*t al.* (1995) *Archaeological Inventory of County Laois*, Stationary Office: Dublin

Waddell, J. 1998, *The Prehistoric Archaeology of Ireland*, Wordwell, Bray

Williams, G. (1990) 'Burnt mounds in south-west Wales', in Buckley, V. (Ed.) *Burnt Offerings, international contributions to Burnt Mound Archaeology*, 129-141, Wordwell: Dublin

9.2 Other Sources

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

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

9.3 Cartographic Sources

1839 1st edition Ordnance Survey Map

1891 2nd edition Ordnance Survey Map

1909 Ordnance Survey Revision edition RMP map

Signed:

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Deirdre Murphy

Senior Archaeologist

September 2008

Appendix 1 Wood Identification Analysis

M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Contract 1

Charcoal & Wood Report for E2195, E2213, E2203, E2425, E2200
E2201, E2424, E2184, E2185, E2197, E2198, E2184, E2212, E2249, E2189,
E2130, E2215, E2216, E2217, E2218, E2214, E2170, E2196, E2190, E2208, E2209

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1. Introduction

Two thousand seven hundred and ten charcoal fragments from sixty two contexts relating to twenty seven archaeological sites were analysed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill road scheme, contract 1. Contract 1 covers a length of approx 31 km and includes numerous *fulacht fiadh* sites, iron working sites, enclosures, ditches, house and palisade structures, barrows, pits, postholes and one possible cow-horn processing site.

In recent years a considerable amount of structural as well as non-structural wood and charcoal has been recovered from archaeological deposits in Ireland. Wood was a vital and widely used raw material from prehistoric to medieval times although its importance is rarely reflected in the analysis of archaeological assemblages mainly due to its perishable nature. It is important to note that people in prehistoric, Early Christian and medieval communities were mainly dependant on woodland resources for the construction of buildings, for the manufacture of most implements and for fuel for wood-burning activities. The woods in a surrounding catchment area were exploited and often managed to provide an essential raw material for the community. A study of the range of species on an archaeological site offers an indication of the composition of local woodland in its period of use and any selection policies for particular species at any given time and place.

Large assemblages of wood and charcoal from the numerous road schemes currently under excavation, and subsequent analysis of the sampled wood and charcoal is currently on-going in Ireland. Although relatively little of the charcoal and wood analysis carried out from these analyses has been published, one recent publication includes the gas-pipe line to the west which is used for comparative purposes in this report (Grogan *et al.* 2007).

Analysis of timbers can also provide information on two different levels. These can be seen as the structural and constructional aspects gained from studying the timbers as 'timber' and also the environmental and dendrochronological aspects gained from a study of the timber as 'wood'. From preliminary analysis of some of the work in progress on the wood assemblages it is clear that oak was the most common species used for wall-posts and planks, hazel was preferred for wattle structures and species such as pomoideae, ash, willow, alder, birch and holly were utilised for a variety of other structural requirements. Alder, ash and oak are the most frequent species used in the construction of plank-lined troughs while hazel and ash are selected for wattle posts also used in the construction of wattle troughs. The analysis completed from the wood and charcoal excavated along the M7/M8 Cullahill to Cashel will add important information to the rapidly expanding database of environmental indicators particularly

in relation to the Bronze Age and Medieval periods in the area. This area of work is especially important in Ireland where there are no written records up to the 18th century relating to the amount and type of woodland in Ireland (McCracken 1971, 15).

The analysis of charcoal can also provide information on two different levels. Charcoal analysis is an important component of any post-excavation environmental work as it can help in re-constructing an environment hitherto lost, although this must be done with caution as sufficient sample numbers are required for a complete and full understanding of the immediate environment. Keepax suggest 50 samples in a European temperate climate. Charcoal is also analysed and identified to determine what species are used and selected for particular functions on site i.e. post-holes, wall posts, burnt remains of wattle and so on. In summary, charcoals are excellent indicators of exploited environments and the vegetation that developed within them.

Results from the hundreds of *fulacht fiadh* which have been analysed throughout Ireland with regard to species selection for fuel have shown that a wide variety of taxa are identified from these assemblages, which may suggest that the inhabitants were selecting fuel from whatever trees and branches were closest to hand. Alder charcoal does sometimes dominate the *fulacht* assemblages but this is generally confined to the wetter areas of Ireland such as Mayo (O Carroll, N5, 2007) and the midlands area of Ireland (O Carroll, N6 KEK, 2008) highlighting the wetter environments in the particular areas of Ireland. Hazel was shown to be more frequently used at *fulacht* sites in Tipperary possibly highlighting the different terrain of more dryland areas and scrubland in the south of Ireland in the Bronze Age (O'Donnell, N8 2008).

The wood and charcoal assemblage analysed in this report covers both the Pre-Historic and Medieval periods and comprises *fulacht* sites dating to the Bronze Age period as well as some charcoal production pits dating to the Iron Age and the Early Medieval period, Iron Age waste pits, slag pits, enigmatic pits, kilns, structures/slot trenches, postholes, barrow features and ditch/enclosure fills from the Bronze Age, Iron Age and Medieval periods.

The analysis presented here concentrates on species identification, species selection and the composition of the local woodland during the Bronze Age, Iron Age and Medieval periods along the route of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill. Woodworking analysis was completed on timbers that contained evidence of tooling, which includes recording facets and jam curves and is sometimes a useful indicator of tool types being used on a given site at a given period. Split timber types, preserved point types, annual tree-ring counts and average growth rates of the trees that the wood was drawn from was also noted and recorded. Each piece of wood was also examined for blade signatures.

In general the charcoal analysed was quite fragmented and iron stained with few large brushwood or roundwoods with pith to bark charcoal samples were encountered. As a consequence determining ring width growths and ring counts on the charcoal samples was not completed for the majority of the samples.

2. Methods

The process for identifying wood, whether it is charred, dried or waterlogged is carried out by comparing the anatomical structure of wood samples with known comparative material or keys (Schweingruber 1990). A wood reference collection from the Botanical Gardens in Glasnevin, Dublin was also used.

Wood

Thin slices were taken from the transversal, tangential and longitudinal sections of each piece of wood and sampled using a razor blade. These slices were then mounted on a slide and glycerine was painted onto the wood to aid identification and stop the wood section from drying out. Each slide was then examined under an E200 Nikon microscope at magnifications of 10x to 500x. By close examination of the microanatomical features of the samples the species were determined. The diagnostic features used for the identification of wood are micro-structural characteristics such as the vessels and their arrangement, the size and arrangement of rays, vessel pit arrangement and also the type of perforation plates.

All of the wood excavated on each site was sampled for identification and further analysis. The wood samples were firstly washed and recorded on wood working sheets and were then identified as to species.

Where appropriate, the samples were measured and described in terms of their function and wood technology. This included point types, split types and individual toolmarks such as facets and tool signatures.

The annual tree rings were counted partially under a microscope and partially by eye therefore it is only an approximate age. The annual tree ring counts for the split timbers do not give a real estimate of the age of the parent tree when it was cut down as splitting implies division and therefore only partial remains of the parent tree will survive. Average growth rates were also established. A fast growth rate is around 4mm per year. As different factors (weather and soil conditions) determine growth rates of trees and growth rates vary across each sample average growth rates were calculated for each sample. The growth rates for some samples varied significantly therefore these samples were classified as slow to moderate, moderate to fast and so on.

Charcoal

The soil samples were processed on-site. The flots were sieved through a 250 micron or a 1mm sieve, while the retent was put through a 2mm or 4mm sieve. All of the charcoal remains from the soil samples were then bagged and labeled.

The identification of charcoal material involves breaking the charcoal piece along its three sections (transverse, tangential and radial) so clean sections of the wood pieces can be obtained. This charcoal is then identified to species under a universal compound microscope reflected and transmitted light sources at magnifications x 10 - 400. By close examination of the microanatomical features of the samples the charcoal species are determined.

The purpose of the charcoal identifications was two-fold. In some cases the identifications were carried out prior to C14 dating in order to select specific species for dating and in other cases the charcoal was analysed for fuel selection policies and selection of wood types for structural use. Each species was identified, bagged together and then weighed. Insect channels were noted on the charcoal fragments identified as this may indicate the use of dead or rotting wood used for fuel or other such functions. The distinction can sometimes be made between trunks, branches and twigs if the charcoal samples are large enough. This was noted where possible. When charcoal samples showed indications of fast or slow growth this was also recorded. The samples identified for environmental reconstruction and wood usage were counted per fragment and then weighed. The smaller sample amounts with less than 50 fragments were all identified while 50 fragments were identified from the larger samples.

There are inherent problems in re-constructing the environment at the time of use of the site due to the low quantity of samples and charcoal fragments identified from the assemblages. Keepax concludes that, when working in a temperate climate, at least fifty samples should be identified from an archaeological site, to make it a viable charcoal study, with a minimum of 25 samples (Keepax 1988). Notwithstanding the charcoal sample numbers, it is clear that the charcoal results coupled with the wood analysis throw up some interesting results and trends in relation to wood selection and use and woodland cover in the Bronze, Iron and Medieval periods in Co. Laois.

A number of wood taxa cannot be identified to species or sub-species level anatomically. Sessile oak *(Quercus petraea)* and pedunculate oak *(Quercus robur)* are both native and common in Ireland and the wood of these species cannot be differentiated on the basis of their anatomic characteristics. English elm *(Ulmus procera)* and wych elm *(Ulmus glabra)* cannot be separated by their wood structure and identifications of elm are shown as *Ulmus* spp. There are also two species of birch (*Betula pendula* and *Betula pubescens*) and several species of willow therefore the

identifications are given as *Betula* spp and *Salix* spp respectively. Within the family of Pomoideae it is impossible to distinguish between crab apple (*Malus sylvestris*), pear (*Pyrus communis*), hawthorn (*Crataegus* spp.) and mountain ash/rowan (*Sorbus aucuparia*).

3. Definitions of Element Types and woodworking terminology

Dates and timeframes

Early Bronze Age (EBA)	*c. 2500-1800BC*
Middle Bronze Age (MBA)	*1800-1000BC*
Late Bronze Age (LBA)	*1000-500BC*
Iron Age	*500BC-400AD*
Early Medieval	*400AD-1200AD*
High Medieval	*1200AD-1400AD*
Late Medieval	*1400AD-1600AD*
Post Medieval	*1600AD – 1900AD*

Constructional Elements

Brushwood: Stems or rods measuring 6 cm or less in diameter.

Roundwood: A piece of worked or unworked wood in the round and over 6 cm in diameter.

Vertical Stake/Post: Upright brushwood or roundwood driven vertically or at an angle into the ground. Sometimes but not always used for stabilization.

Horizontal: Brushwood or roundwood laid flat on the ground.

Twigs: Small shoots or branches measuring around 1 cm in diameter.

Split timber: Wood converted from the round including planks, half splits and split pegs.

Woodworking terms and definitions

Chisel point: The end of a piece of wood cut to a point on one single face.

Conversion:	The way in which the primary trunk has been split into smaller elements.
Facet:	The cut surface produced on a piece of wood by a tool blow. The blow can leave behind a particular signature if the cutting edge of the tool is flawed.
Facet junction:	The nature of the junctions between each facet was also assessed as to whether they were clean, ragged or stepped
Jam curves:	A complete toolmark on wood retaining the impression of the complete width of the blade used
Pencil point:	The end of a piece of wood cut to a point on multiple faces.
Signature:	A signature is an imperfection in a woodcutter's blade which is transferred onto the timber when the wood is cut. A negative impression or a groove is created where a flange of metal extends beyond the axe blade where as a positive or raised signature is created by a gap in the blade edge.
Wedge point:	The end of a piece of wood cut to a point on two faces.

4. Description of the feature types and landscape

Charcoal was identified from the fill of various troughs, the fill of pits, from burnt mound spreads and postholes/stakeholes associated with excavated *fulachta fiadh*. These were from Addergoole 1, Addergoole 2, Aghmacart 1, Ballycuddahy 1, Cannonswood 2, Cuffsborough 1, Cuffsborough 3, Curragh 1, Curragh 2, Oldglass 1, 2 & 3, Oldtown 1, Parknahown 5 and Tintore 1. Charcoal analysed from charcoal pits and bowl furnaces which are most likely associated with metalworking activities were from Cuffsborough 4, Parknahown 4 and Tintore 4, Leap 2 and Parknahown 5. Charcoal analysed from a kiln were from the Early medieval period at Parknahown 5. Charcoal analysed from pits and fill of well/pit were excavated at Cuffsborough 1 and 2, Cannonswood 1, Cross 1, Parknahown 4 and Tintore 2 and were identified to determine possible function and fuel type used at the pits. Waste pits dated to the Iron Age were also analysed from Leap 1.

Possible structural wood used at the site were analysed from charcoal associated with postholes from a C shaped structure and slot trenches at Cuffsborough 4. Charcoal from postholes were analysed from Parknahown 5 and Tintore 2. Ditch and enclosure fills examined were sampled from Parknahown 2, Tintore 2 and Curragh 2. The fill of a slump possibly associated with a cow horning site was analysed from Gortnagroagh 1 and charcoal from Barrow fills were identified from Oldglass 1 and 4.

Wood timbers were identified from Addergoole 2, Cuffsborough 1, Cuffsborough 3, Cuffsborough 4 and Parknahown 5. The wood from Addergoole 2 is most likely associated with a natural oak tree trunk as is the oak and yew wood identified from Parknahown 5. The oak, alder and hazel wood uncovered from a well feature at Cuffsborough 3 may have served as a lining to the well as the alder wood was split and the hazel brushwood was pointed. A carved 'S' shaped type artefact was also identified from the wood collection at Cuffsborough 3. Pine wood identified from Cuffsborough 1 was very hard and is probably modern in origin.

In the General Soil Map (1980) the soils in the Portlaoise - Mountrath - Castletown area are characterised as 90% groundwater clays with 10% grey brown podsolics, derived from limestone glacial till, with a small area of sandstone-derived clays around Ballyfin.

5. Results & Analysis

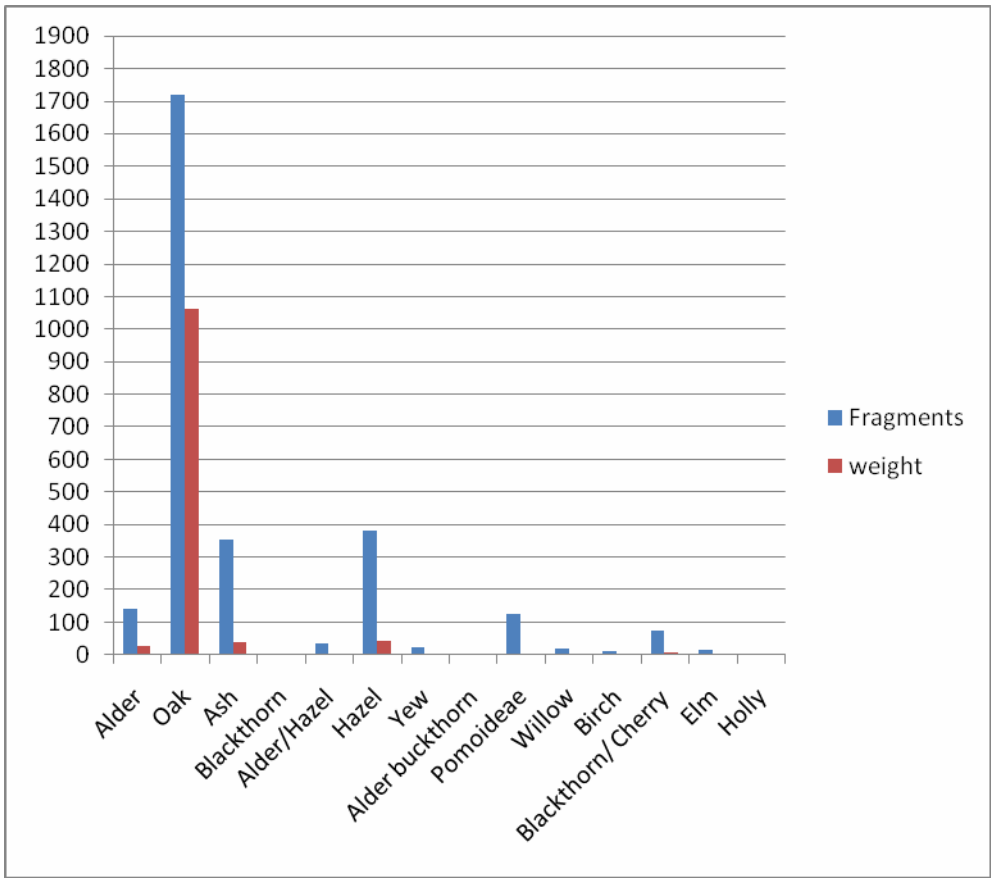
Charcoal

A total of 62 charcoal samples from trough fills, pit fills, post holes, burnt mound spreads, burnt spreads, waste pits, kilns, slag pits, charcoal pits, slot trenches, structural features, barrow features, fill of a slump and enclosure/ditch fills. The weight and fragment count identified from each taxon type at each site analysed is represented below in Figure 1 and Table 1.

Thirteen taxa were identified from the charcoal assemblage retrieved from the sites and features excavated from Contract 1, M7/M8. These were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* Pomoideae (apple type), blackthorn/cherry (*Prunus* spp), yew (*Taxus baccata*), willow *(Salix* spp), birch (*Betula* sp), holly *(Ilex aquifolium*), elm (*Ulmus* sp) and alder buckthorn *(Frangula alnus)* in order of representation. The charcoal is mainly representative of fuel collection policies at the Bronze Age *fulacht,* kilns and iron working sites although charcoal from structural features were identified from Cuffsborough 4 (Table 10) and posthole fills were analysed from Curragh 2 (Table 12), Parknahown 5 (Table 23) and Tintore 2 (Table 27) dating to the Middle and Late Bronze Age and High Medieval periods. The fills of the ditches, enclosures and barrow sites are more difficult to attribute a function to. They are most likely related to various burning episodes on site and deposition through various formation processes on the site.

Charcoal assemblage, all sites

Figure 1: All taxa identified from sites analysed. Weight in grams.



Charcoal assemblage results by site

Cuffsborough 2, *Pit fill*, Early, Middle and Late Bronze Age activity

Table 1: Taxa present at Cuffsborough 2

Site	E number	Feature type	Context	Sample no	Date	Identifications	Comment
Cuffsborough 2	E2197	Pit fill	F40	3	2700BC-2470BC EBA	Oak (0.2g, 3 f) Ash (0.5g, 11 f)	Tiny fragments
Cuffsborough 2	E2197	Pit fill	F56	29	840BC-740BC LBA	Oak (0.1g, 1 f) Ash (0.01g, 5f) Hazel (0.1g, 1 f) Pomoideae (0.01g, 2 f) Prunus (0.1g,	Tiny fragments

						2f)	
Cuffsborough 2	E2197	Pit fill	F76	33	1540BC-1410BC MBA	Alder (0.1g, 4 f), Oak (0.2g, 5f) Ash (0./1g, 3f) Hazel (1.5g, 13 f) Pomoideae (0.15g, 6f) Birch (0.2g, 5f) Cherry (0.5g, 1 f)	Tiny fragments. Hard to id. Insect channels on hazel

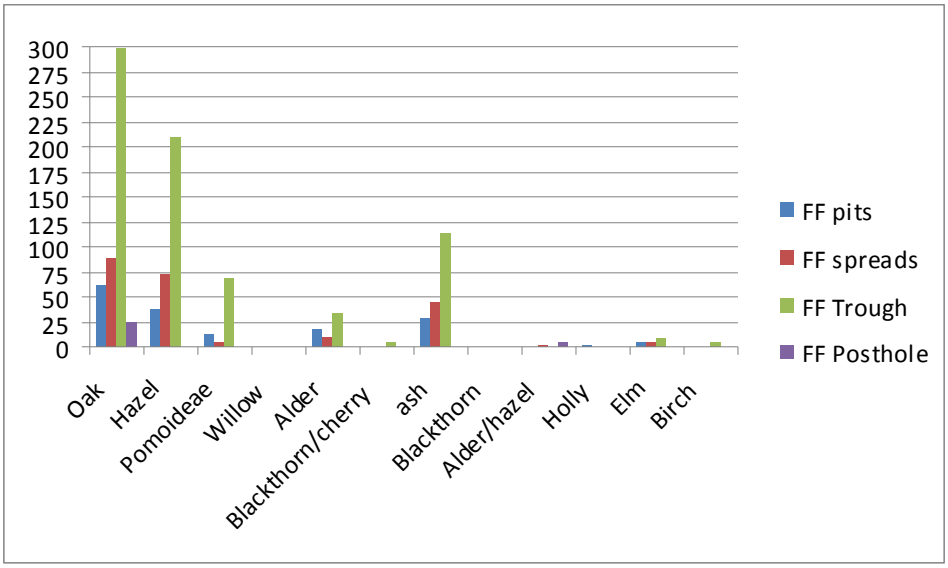
The charcoal fragments from this site were very small and difficult to identify as it was hard to see all the micro characteristics pertaining to each taxon. Oak, ash, hazel, pomoideae and *Prunus* (blackthorn/cherry) were identified from the pit fills. The fragments were very small and difficult to identify from the assemblage. The taxa are representative of a mosaic of environment types with oak and ash being associated with primary woodlands and hazel, pomoideae and *Prunus* more scrub like material and alder and birch associated with wetter areas. Insect channels were noted on the hazel charcoal from the pit F76 which suggests that the wood was collected from dead wood which lay on the ground for some time. There are more taxa present or selected for use as firewood in the Middle and Late Bronze Age as opposed to the early Bronze Age.

Results by feature/site types

***Fulacht* fiadh sites**

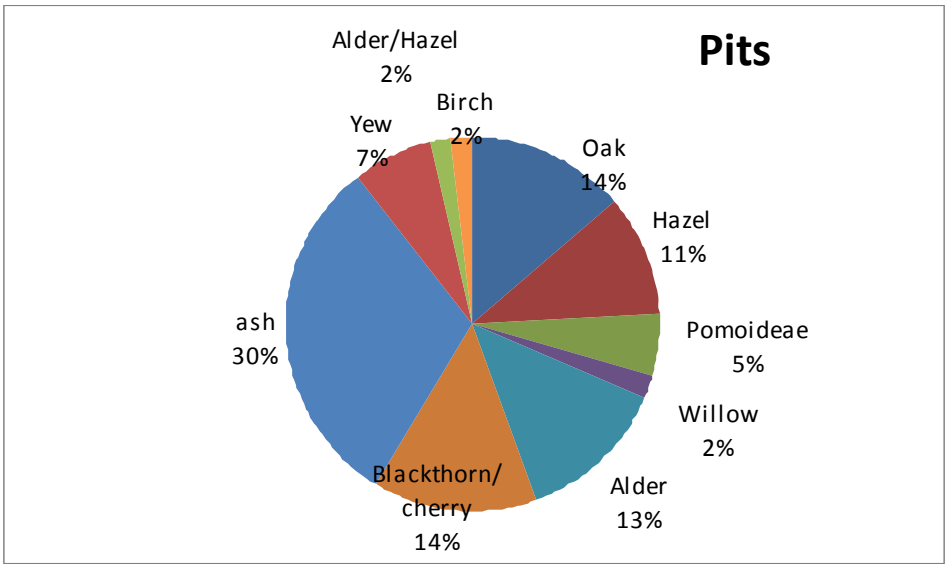
Twenty four samples from features associated with *fulacht* sites were analysed from Contract 1. These samples were retrieved from Addergoole 1 & 2, Aghmacart 1, Ballycuddahy 1, Cannonswood 2, Cuffsborough 1 & 3, Curragh 1 & 2, Leap 2, Oldglass 2 & 3, Oldtown 1, Parknahown 5 and Tintore 1. Eleven taxa were identified and these were mainly represented by oak (*Quercus* spp), ash (*Fraxinus excelsior*) and hazel (*Corylus avellana*), dryland taxa. Smaller amounts of alder (*Alnus glutinosa*), pomoideae (apple type), holly (*Ilex aquifolium*), willow (*Salix* sp), birch (*Betula* sp), elm (*Ulmus* sp), blackthorn (*Prunus spinosa*) and cherry (*Prunus padus/avium)* were also identified.

Figure 2: Wood taxa identified from features associated with *fulacht* sites



When all the taxa are graphed in relation to feature types it is clear that there is very little difference in wood selection between different feature types excavated at these ubiquitous *fulacht* sites. Does this indicate that similar functions were being carried out at the pits and troughs and the burnt spreads are related to all burning activities at the site? Oak is more prevalent in the identifications from the postholes which may suggest that oak was being used as post material at these sites.

Figure 3: Wood taxa identified from pits excavated along Contract 1



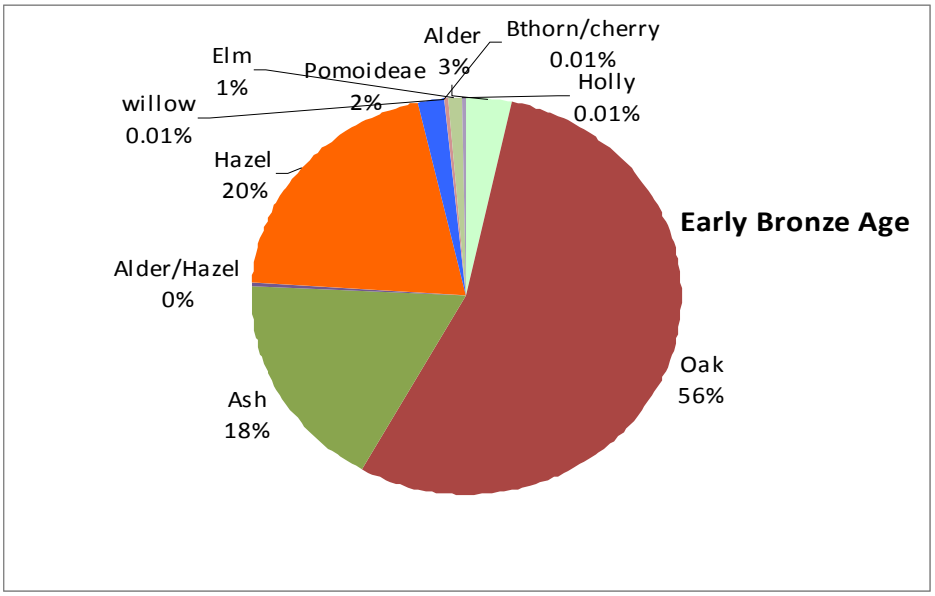
A variety of wood taxa were identified from the analysed pits excavated at Cannonswood 1, Cuffsborough 1 & 2, Cross 1, Parknahown 4 and Tintore 2. These pits are not all

associated with *fulacht fiadh* sites and are for the most part undiagnostic pits. The fact that oak does not dominate at these pits indicates that they were probably not single episodic events or used either as cremation pits or as charcoal production pits. The variety of taxa indicates that a range of wood taxa from a range of environments were being used at these pits. The alder, willow and birch are wetland type trees while the ash, yew and oak are normally associated with primary woodlands and the scrub material is derived from pomoideae, hazel and blackthorn/cherry. The charcoal is reminiscent of hearth/firewood material where a variety of taxa are collected from twigs and branches from near to the site. As discussed above the yew identified from Cannonswood 1 and Parknahown 4 may indicate a more ritual aspect and use to the functions at these particular pits.

Wood and charcoal present in each period of use

It is presumed that firewood used at sites in the Pre-historic period would be collected from close to the sites. This may be in contrast to the wood selection policies where particular trees were favoured for particular constructional functions. The wood and charcoal were compared chronologically against each other to determine which trees were being selected during each time period excavated along the route of Contract 1 M7/M8. This was completed to determine if there was any differences between woodland cover during the Bronze Age, Iron Age and Medieval periods. A note of caution must be observed here as the sample and fragment counts from each site was low and trends can only really be recorded rather than highlighting actual specific events occurring. It would be beneficial to compare these charcoal results with any pollen cores completed in the area.

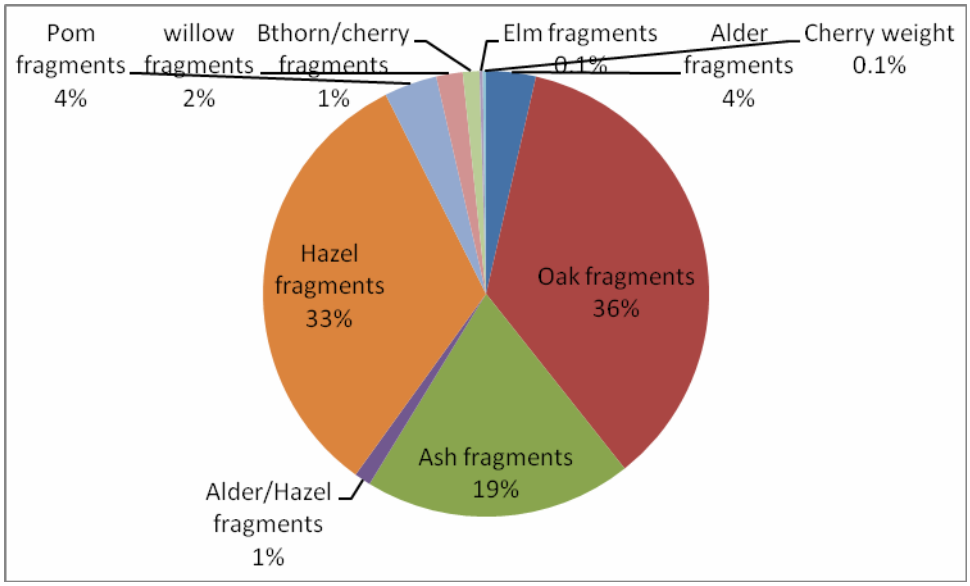
Figure 4: Taxa present in charcoal from the Early Bronze Age sites investigated



A total of thirteen sites were analysed which dated to the Early Bronze Age. These were Addergoole 1 and 2, Aghmacart 1. Ballycuddahy 1, Cannonswood 2, Cuffsborough 2 and 4, Curragh 1 and 2, Leap 2, Oldglass 2 and 3 and Tintore 1. These excavated sites were all related to *Fulacht* activity except **F169** from Cuffsborough 4 which is associated with a slot trench.

A total of ten taxa were identified from the Early Bronze Age sites. Oak, hazel and ash trees were present in most quantities from the samples analysed while lesser quantities of alder, pomoideae, elm, blackthorn/cherry, holly and willow were also present. The information indicates access to primary woodland areas which contained oak, ash and possible hazel scrub. The environment surrounding the sites in the Early Bronze Age appeared to be relatively dry as the main taxa identified are symptomatic of dryland conditions. Willow and alder, wetland taxa, were present in low quantities.

Figure 5: Taxa present in the Middle Bronze Age charcoal

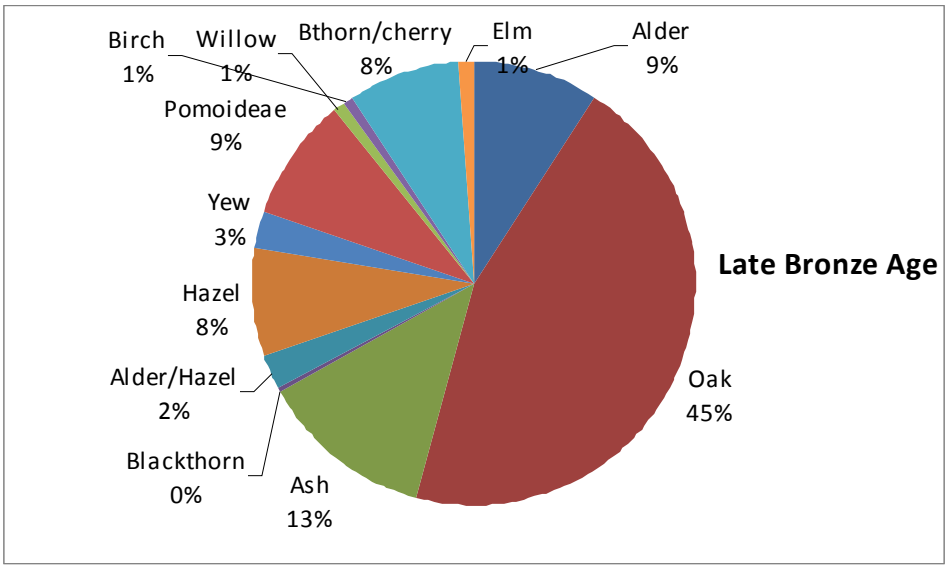


Eight sites were analysed from the Middle Bronze Age dated sites. The sites investigated were Cuffsborough 4 (postholes and slot trenches), Cuffsborough 1 (*fulacht* activity), Cuffsborough 2 (pits & fulacht activity), Oldglass 2 and 3 (*fulacht* activity), Oldtown 1 (*fulacht* activity), Tintore 1 (*fulacht* activity) and Tintore 2 (ditch and postholes). The occurrence of *fulacht fiadh* sites dating to this period along this stretch of the road is low when compared to other road schemes around Ireland (O Carroll, 2007, N11 unpublished post excavation report, OCarroll, N5, unpublished post excavation report). In general there are more *fulacht* sites dated to the Middle Bronze Age in Ireland than any other period of activity.

Nine taxa were identified from these Middle Bronze Age sites. Oak, hazel and ash again were more dominant but the oak counts were lower than in the Earlier period and hazel counts were higher. The counts for the remaining scrubland trees were also slightly

higher than in the earlier periods. Does this show a pattern of higher oak usage in the earlier Bronze Age periods and by inference less primary oak woodlands present in the Middle Bronze Age and more scrub such as hazel.

Figure 6: Wood taxa present at the Late Bronze Age sites excavated



A total of thirteen features were analysed from the Late Bronze Age. These were from Addergoole 1 (trough), Cannonswood 1 (pit), Cross 1 (pit), Cuffsborough 1 (trough, pit and well), Cuffsborough 2 and 3 (trough), Cuffsborough 4 (structural), Curragh 2 (trough and postholes), Gortnagroagh 1 (slump), Oldtown 1 (FF stakehole), Parknahown 4 (pit), Springfield 1 (enclosure) and Tintore 2 (ditch, pit and postholes). Eleven taxa were identified from these features. These were oak, ash, alder, pomoideae, hazel, blackthorn/cherry, yew, willow, birch and elm. We see oak and ash occurring more frequently at the sites investigated in the Later Bronze Age. Oak does not recover though to its higher levels as seen in the Early Bronze Age periods. Hazel is significantly less dominant during this period but it is difficult to understand why. Was the land being cleared for the large population expanse in the area during the Later Bronze Age? It is thought that hazel trees in Ireland were mainly scrubland trees rather than occurring within larger woodlands due to the large amount of pollen the tree is show to produce in pollen studies (Bettina *pers comm.*). There is also an increased use of alder trees which may suggest that the environment was getting increasingly wetter in the Bronze Age. This is a phenomenon recognised by archaeologists and palaoe environmentalists throughout Ireland.

Site	Site type	E number	Sample number	Context	Date	Identifications	Comment	Length	Width x Depth/ Diameter	Age	Woodworking evidence	Recommendations
Addergoole 2		E2213		23	EBA	*Quercus* tree trunk	naturally hollowed in centre	24cm	8cm	50yrs	No	Discard
Cuffsborough 1		E2184		24	BA	*Indt.*	mushy and dessicated.				No	Discard
Cuffsborough 3	Well fill	E2184	26	F64	LBA	*Alnus glutinosa*	Split wood /dessicated	12cm	6 x 3cm		No	Discard
Cuffsborough 3	Well fill	E2184	24	F64	LBA	*Alnus glutinosa*	Split wood /dessicated				No	Discard
Cuffsborough 3	Well fill	E2184	2	F64	LBA	*Corylus avellana*	worked wood	8.6cm	3 x 2.3cm (max)	Indt.	Yes. Carved with tiny facets (1cm wide and wide u shaped) at top of artefact.Sub-circular at one end and a shaft/handle carved from the rounded end . Broken at shapt end.	Photo, draw and conserve
Cuffsborough 3	Well fill	E2184	17	F64	LBA	*Corylus avellana*	Brushwood		2.2cm	16yrs	No	Discard
Cuffsborough 3	Fulacht /trough	E2184	18	F42	LBA	*Corylus avellana*	Brushwood		3cm	12yrs	No	Discard

Table 2: Wood identified from Contract 1

Site	Site type	E number	Sample number	Context	Date	Identifications	Comment	Length	Width x Depth/ Diameter	Age	Woodworking evidence	Recommendations
Cuffsborough 3	Fulacht /trough	E2184	3	F67	LBA	*Quercus spp*	Charred			16yrs	No	Discard
Cuffsborough 4	Houses and palisaded structures	E2184		F210	BA	Organics and 3 fragments of oak charcoal						Discard
Cuffsborough 4	Houses and palisaded structures	E2184		F133	BA	*Pinus sylvestris*	Hard wood/possibly modern	2cm	1 x 0.5cm	Indt.	No	Discard
Cuffsborough 4	Houses and palisaded structures	E2184		F166	BA	*Pinus sylvestris*	Hard wood/possibly modern	3	1 x 0.5cm	Indt.	No	Discard
Parknahown 5		E2170	1	23	Mediaval/Iron age	*Quercus spp*	Root? Very hard wood	30cm	20cm	60yrs	No	Discard
Parknahown 5		E2170	2		Mediaval/Iron age	*Taxus Bacatta*	Tree stumps. Hard wood	42cm	12cm	Indt.	No	Discard

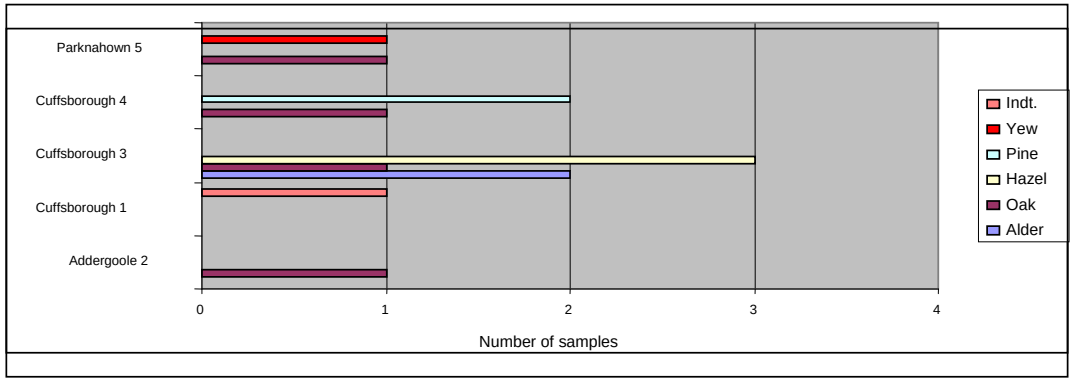


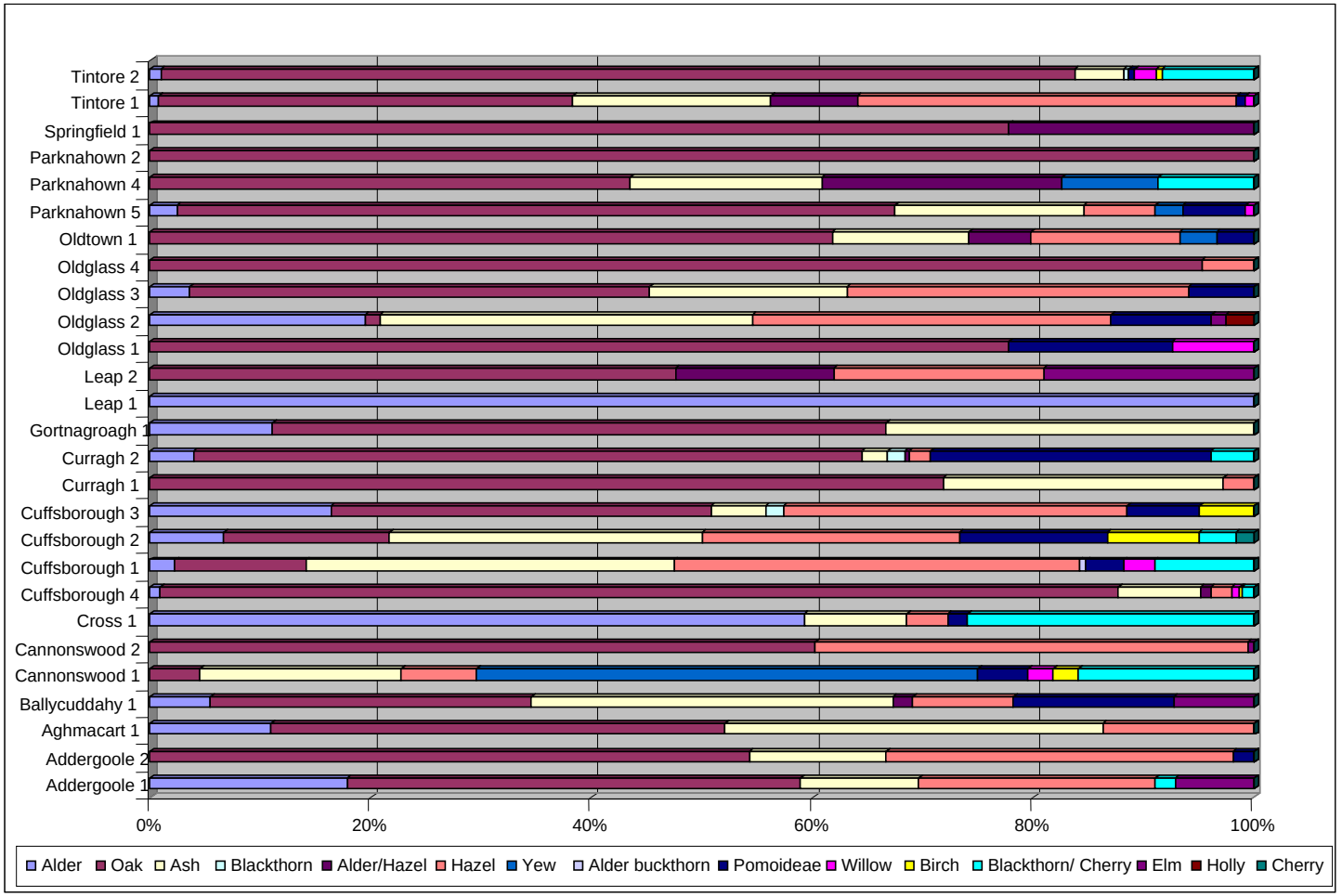
Figure 7: All wood taxa identified from sites that produced wood along Contract 1

Wood assemblage

Overall the wood assemblage was limited in numbers and poor in relation to information obtainable with regard to wood types selected and wood working evidence. Wood timbers were identified from Addergoole 2, Cuffsborough 1, Cuffsborough 3, Cuffsborough 4 and Parknahown 5. The wood from Addergoole 2 is most likely associated with a natural oak tree trunk as is the oak and yew wood identified from Parknahown 5. The oak, alder and hazel wood uncovered from a well feature at Cuffsborough 3 may have served as a lining to the well as the alder wood was split. A carved 'S' shaped type artifact was also identified from the wood collection at Cuffsborough 3. Pine wood identified from Cuffsborough 4 was very hard and is probably modern in origin.

6. Discussion of Charcoal and wood assemblage

Table 3: Wood taxa identified from each site excavated along Contract 1, M7/M8



Principal aims of the study

1. To determine the types of wood selected for use either as fuel or as structural wood.
2. To re-construct the environment that the charcoal and wood was selected from and the possible changes and differences in different time periods between woodland present in the areas during the Early, Middle and Late Bronze Age as well as the Medieval periods.
3. To analyse the wood for woodworking evidence and examine and describe any wooden artefacts recognised in the assemblage.

Wood types identified from charcoal and wood assemblages

Table 4: Taxa types identified from the charcoal and wood assemblage along Contract 1

Botanical name	**Species**
Corylus avellana	Hazel
Prunus spinosa	Blackthorn
Prunus avium/padus	Bird/Wild Cherry
Ulmus sp.	Elm
Pomoideae	Apple type
Quercus spp	Oak
Alnus glutinosa	Alder
Salix sp	Willow
Fraxinus excelsior	Ash
Frangula alnus	Alder buckthorn
Betula sp	Birch
Taxus Baccata	Yew
Pinus sylvestris	Pine
Ilex acquifolium	Holly

Two thousand seven hundred and ten charcoal fragments from sixty three contexts related to twenty seven archaeological sites were analysed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill, Contract 1. Thirteen wood samples from five sites were also identified from Contract 1. Contract 1 covers a length of approx 31 km and includes numerous *fulacht fiadh* sites, iron working sites, enclosures, house and palisade structures, barrows, pits, postholes and kilns.

Charcoal was identified from the fill of various troughs, the fill of pits, from burnt mound spreads and postholes/stakeholes associated with excavated *fulachta*

fiadh. These were from Addergoole 1, Addergoole 2, Aghmacart 1, Ballycuddahy 1, Cannonswood 2, Cuffsborough 1, Cuffsborough 2, Cuffsborough 3, Curragh 1, Curragh 2, Oldglass 1, 2 & 3, Oldtown 1, Parknahown 5 and Tintore 1. Charcoal analysed from charcoal pits which are most likely associated with metalworking activities were from Cuffsborough 4, Parknahown 4, Tintore 4, Leap 2 and Parknahown 5. Charcoal was also analysed from a kiln at Parknahown 5 dating to the Early medieval period. Charcoal from pits excavated at Cuffsborough 2, Cannonswood 1, Cross 1, Parknahown 4 and Tintore 2 were also identified to determine possible function and fuel type used at the pits. Possible structural wood used at the site were analysed from charcoal associated with postholes from a C shaped structure and slot trenches at Cuffsborough 4. Charcoal from postholes were analysed from Curragh 2, Parknahown 5 and Tintore 2. Ditch and enclosure fills examined were sampled from Parknahown 2, Tintore 2 and Curragh 2. The fill of a slump possibly associated with a cow horning site was analysed from Gortnagroagh 1 and charcoal from Barrow fills were identified from Oldglass 1 and 4. Charcoal from an early Medieval hearth was examined from Cannonswood 1 and charcoal from waste pits at Leap 1 dating to the Iron Age were also identified.

Wood timbers were identified from Addergoole 2, Cuffsborough 1, Cuffsborough 3, Cuffsborough 4 and Parknahown 5. The wood from Addergoole 2 is most likely associated with a natural oak tree trunk as is the oak and yew wood identified from Parknahown 5. The oak, alder and hazel wood uncovered from a well feature at Cuffsborough 3 and may have served as a lining to the well as the alder wood was split and the hazel brushwood was pointed. A carved 'S' shaped type artefact was also identified from the wood collection at Cuffsborough 3. Pine wood identified from Cuffsborough 1 was very hard and is probably modern in origin.

There were fourteen taxa present in the charcoal and wood remains. Pine was present in the wood assemblage and not in the charcoal identifications while pomoideae, ash, blackthorn/cherry, yew, alder buckthorn, holly, elm, willow and birch were present in the charcoal assemblage and not in the wood samples.

Taxa identified from the assemblage were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* Pomoideae (apple type), blackthorn/cherry (*Prunus* spp), yew (*Taxus baccata*), willow *(Salix* spp), birch (*Betula* sp), holly *(Ilex acquilofium*), elm (*Ulmus* sp), alder buckthorn *(Frangula alnus)* and pine (P*inus sylvestris*) in order of representation. The pine identified from the wood samples at Cuffsborough 1 is likely to be modern in date as it was hard and similar in nature and form to modern wood. The range of taxa identified from the features analysed includes large trees (elm, ash, yew, pine and oak), medium sized trees (alder and birch) and smaller scrub or hedgerow trees like blackthorn, blackthorn/cherry, willow, hazel, holly, pomoideae and alder buckthorn.

The charcoal is mainly representative of fuel collection policies at the site although charcoal from structural features was identified from pre-historic features at Cuffsborough 4, high medieval postholes at Curragh 2, a late Bronze Age stakehole at Oldtown 1, Early medieval postholes at Parknahown 5 and pre-historic postholes at Tintore 2 (see tables 10, 12, 21, 23 & 27). The charcoal identified from the pre-historic slot trenches at Cuffsborough 4 was dominated by oak while the posthole **F177** was ash. The charcoal from the charcoal production pit at Cuffsborough 4 was also dominated by oak. This suggests that oak was specifically collected for use for slot trenches and charcoal production in the Bronze Age and Iron Age and ash may have been used as post material in relation to habitation sites. Ash wood was nearly exclusively used as post material at a Late Bronze Age habitation site at Clonfinlough in Co. Offaly (Moloney *et al*, 1993).

Oak was also more prevalent at the medieval-dated structural features identified from Curragh 2 and Parknahown 5 as well as the charcoal identified from the Bronze Age stakeholes and postholes at Oldtown 1 and the Tintore 2. Oak was also identified in high quantities from the ditch and enclosure features at the Bronze Age sites at Tintore 2 and Springfield 1 and the Iron Age-dated site at Parknahown 2 and the medieval site of Curragh 2. Oak may have been used as structural posts or other such features within these ditches.

In summary oak was present at most sites analysed but was identified in greater amounts at the aforementioned sites and was noticeably lacking from a Late Bronze Age dated pit at Cross 1. The frequent occurrence of oak within the structural features excavated is not surprising as the use of oak for structural wood is well attested to in both the Pre-historic and Medieval periods. It is only when oak is not used at these features that we can infer that it may not have been available in the surrounding landscape or that the charcoal associated with that particular feature may not be related to its structural function.

The oak identified from the charcoal production pit at Cuffsborough 4 (Table 10) and at the slag pits at Parknahown 5 (Figure 3) is repeated elsewhere across the country where oak was exclusively collected for charcoal production. Oak is a dense wood and is very suitable for charcoal production and associated metalworking activities. It also makes good firewood when dried and will grow in wetland areas when conditions are dry. The oak identified suggests that there was a supply of oak in the surrounding environment. The oak was possibly selected from a coppiced wood. A coppice tree is where the tree is cut down at its base and as a consequence several new shots or straight growing trees will grow out of this one stump. The use of quickly

renewable oak coppiced trees would have been the most efficient method of sustaining a continuous supply of fuel for use in these charcoal production pits.

The existence of these charcoal production pits conjures up many scenarios of an organized well-structured society which places our ancestors away from obvious settlement centres and refocuses attention into the broader landscape, in which so much of the medieval day would have been spent. The charcoal burner would have roamed around from place to place in order to access new areas of coppiced woodlands as previously coppiced areas regenerated.

A hearth dated to the early medieval periods from Cannonswood 2 which produced over 380 grams of oak charcoal may have been a charcoal production pit based on the exclusivity of oak in the sample and the date. Similar unassociated pits along several road schemes which when analysed have produced large fragments of oak and are re-classified as charcoal production pits (Charlestown by-pass, unpublished post excavation report, 2007). These charcoal production pits are generally lost in the archaeological record until the charcoal is examined and assessed.

Other industrial sites examined from the route was a kiln from the medieval period at Parknahown 5 (Figure 8). The range of taxa identified from these kilns mirrors results from other road schemes where a range of taxa are identified. Charcoal identified from kilns along the N8 produced a similar array of taxa. Ash is the only taxa that is more prevalent within this sites as opposed to the N8, Cashel to Mitchelstown (O Donnell, 2008, unpublished post excavation report).

Barrows similar to the sites excavated at Oldglass 1 and 4 are generally regarded as funerary monuments therefore the charcoal present in the ditch is possibly associated with the rituals of the dead and with cremation processes (Figure 9). It is not surprising then that oak is the dominant species identified from these ditches as oak is nearly always used for the purpose of cremating bodies. This may be due to the excellent properties of oak as a fuel or the body may have lain on an oak plank which was later burnt with the body. Charcoal analyses at other cremation sites Bettystown, Co. Dublin (98E072), Ballybrowney Lower 1 (03E1058), Ballynapark, Co. Wicklow (A022-33) and Hermitage, Limerick (01E0319) revealed that oak is the dominant species identified from within these features. Charcoal from a ring ditch analysed from site D, Morett (03E0461) produced mainly oak fragments from the fill of its ditch.

Charcoal present in the pits, troughs and burnt mounds were all quite similar with dryland taxa dominating rather than wetland taxa. This is contrast to analysis carried out in Mayo (Charlestown by-pass) and the midlands area of Ireland (N6-KEK) by the author where alder was more apparent at these sites. The land around Co. Laois and the siting of these *fulachts* may have occurred in less marshy or wetland

areas and as such the inhabitants of the sites excavated along the M7/M8 had access to more dryland taxa such as ash, hazel and oak. The presence of similar taxa within the pits and the trough suggest that similar functions were being carried out at these sites. The *fulacht* site at Addergoole 2 had a noticeable absence of wetland taxa which indicates that this area may have been particularly dry during the period of use of the site.

Comparative work carried out in other areas include Charlesland in Co. Wicklow where charcoal and wood were analysed from four *fulachta fiadh* by O' Donnell, dating from the Early to the Late Bronze Age. Troughs, hearths, mounds, and a burnt spread were analysed from these sites. The charcoal assemblage was dominated by ash, alder, willow and hazel. The wood from two of the *fulacht* sites was mainly alder along with some hazel. The absence of oak and the greater quantities of alder in this area compared favourably to analysis carried out along the N11 in Co. Wicklow (O Carroll, 2007, unpublished post excavation reports, NRA). This is in contrast to results from the south of Ireland and here along the M7/M8 where hazel, oak and ash dominate over any other taxa.

Work carried out along the gas pipeline to the west show that the main woods used for firewood at 44 analysed *fulacht fiadh* were alder, ash, oak and hazel (O' Donnell, 2007, 32). O' Donnell also notes that the values for ash are lower in the Late Bronze Age and attributes the decrease in ash charcoal from the Middle Bronze Age onwards to a period of land clearance prior to the Early Bronze Age which allowed ash to grow well in these clearings (O' Donnell 2007, 37). This is probably the same phenomenon that occurred her along the M7/M8 where the values for ash are lower, although not by a huge margin in the Later Bronze Age. The noticeable decrease in hazel along the M7/M8 may have been a product of deforestation. Can we then suggest an increase in population throughout the Bronze Age and widespread land clearance which is noticeable in the drop off of hazel and oak? The amount of *fulachts* excavated from the Late Bronze Age also points strongly to an increase in population in the Late Bronze Age in the study area.

Other patterns emerging from the analysis is that elm appears to occur more frequently in the Early Bronze Age sites as seen at Ballycuddahy and Oldglass 2. Elm is thought to have extensively died out with the occurrence of an elm disease epidemic in the Neolithic period. Yew, a much venerated and valued tree type, was identified from two undiagnostic Late Bronze Age pits at Cannonswood 1 and Parknahown 4. The presence of yew at these pits does not occur at other sites along the scheme and may point to some ritual or unusual type of activity being undertaken at these pits.

When the charcoal is plotted against time periods we see a slight reduction in the presence of oak charcoal in the Middle Bronze Age and an increase in hazel wood.

Does this suggest a clearance of oak trees in the early Bronze Age whereby they are not so prolific in the Middle Bronze Age? Hazel decreases notably in the Late Bronze Age which also may indicate a clearance of scrub for the inhabitants of the Late Bronze population expansion in the area. There are certainly more Late Bronze Age-dated sites excavated from the area than any other period of activity along the road scheme.

Oak dominates the charcoal assemblage from the Iron Age and Medieval periods. Certainly oak was present in the area during these periods but is difficult top make any further assumptions on woodland cover during these periods due to the small sample set and the nature of the archaeological features examined which were in the main structural.

8. Conclusions on Wood and charcoal Assemblage

Two thousand seven hundred and ten charcoal fragments from sixty two contexts related to twenty seven archaeological sites were analysed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill, contract 1. Thirteen wood samples including a hazel wooden artifact was also analysed from the assemblage. Fourteen taxa were identified from the charcoal and wood assemblage retrieved from the sites and features excavated along the routeway. These were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* Pomoideae (apple type), blackthorn/cherry (*Prunus* spp), yew (*Taxus baccata*), willow *(Salix* spp), birch (*Betula* sp), holly *(Ilex aquilofium*), elm (*Ulmus* sp) and alder buckthorn *(Frangula alnus)* and pine (*Pinus sylvestris*) in order of representation. The charcoal is mainly representative of fuel collection policies at the Bronze Age *fulacht* sites although charcoal from structural features were identified from Cuffsborough 4 and posthole fills were analysed from Curragh 2, Parknahown 5 and Tintore 2 dating to the Middle & Late Bronze Age and Medieval periods. The fills of the ditches (Curragh 2 & Tintore), enclosures (Parknahown 2 & Springfield 1) and barrow sites (Oldglass 1 & 4) are more difficult to attribute a function to. They are most likely related to various burning episodes on site and deposition through various formation processes on the site. Charcoal identified from waste pits at Leap 1, slag pits at Parknahown 5 and possible charcoal production pits at Cannonswood 2 and Cuffsborough 4 are associated with fuel used for metalworking. The charcoal identified from the kilns are also more difficult to attribute a function to as the wood could have been used as firewood or structural features within the kiln site which later burnt down.

Oak along with ash and hazel dominate the charcoal assemblage while oak, hazel, alder, pine and yew in that order are present in the wood assemblage.

Oak is seen to dominate the charcoal assemblages in all periods of use. Oak was specifically selected for most structural uses such as posts and planks in slot

trenches and was the preferred taxon for use at metalworking activities including charcoal production pits. Oak was also very prevalent in the ditches and enclosure fills which may indicate that these features contained oak posts or planks. Oak was also the dominant taxon identified from the Barrow sites at Oldglass 1 and 4. Oak is generally the preferred taxon used for cremation deposits due to the high temperatures it can reach and its high calorific value. Ash posts may have been used at one site at Cuffsborough 4 in the Bronze Age.

A variety of taxa were also identified from the kiln although dryland taxa were more frequently identified such as hazel, oak and ash.

Oak, hazel and ash are the dominant taxa identified from the *fulacht* sites. These are all dryland type taxa. These results are in contrast to wood analysis carried out at Charlesland and the N11 in Co. Wicklow, the gas pipeline to the west the N6 KEK in the midlands and Charlestown in Co. Mayo where alder and oak appear to be more dominant. However recent results from the N8 Cashel to Mitchelstown have produced a similar array of taxa where oak, hazel and ash are more common than wetland taxa such as alder. With regard to other functions for the charcoal we can conclude that the activities carried out within the troughs were similar to that which was being carried out at the pits as the taxon identified from the *fulacht* pits mirrors those present in the troughs.

Yew was identified in frequent amounts from two late Bronze Age pits at Cannonswood 1 and Parknahown 4. The yew wood which is generally associated with special type artifacts and holy places, may point to a ritual use for these enigmatic pits.

Wood timbers were identified from Addergoole 2, Cuffsborough 1, Cuffsborough 3, Cuffsborough 4 and Parknahown 5. The wood from Addergoole 2 is most likely associated with a natural oak tree trunk as is the oak and yew wood identified from Parknahown 5. The oak, alder and hazel wood uncovered from a well feature at Cuffsborough 3 may have served as a lining to the well as the alder wood was split. A carved 'S' shaped type artifact was also identified from the wood collection at Cuffsborough 3. Pine wood identified from Cuffsborough 4 was very hard and is probably modern in origin.

The archaeological evidence points to an increase in inhabitants in the Late Bronze Age as the quantity of *fulachts* in this period is greater than any other period in the area. The environmental evidence from the wood and charcoal may also point to an increase in population and an increase in wetness along this particular route of the M7/M8 where there is less hazel and oak than earlier periods and more wetland type taxon. Oak is more frequently identified from the sites dating to the Iron Age and Medieval periods. Oak was sourced for use in the metalworking activities and the

charcoal production pits at these sites. Oak was again the more dominant taxon identified from the Medieval periods but this may be a reflection of wood usage related to structural timbers rather than the trees in the surrounding environment.

All of the wood taxa identified from the excavations were of native origin. The wood and charcoal assemblage analysed here is indicative of a more dryland environment. Wetland species identified in lower quantities were alder, birch and willow which are symptomatic of local wet condition along river banks or peat bogs.

It would be of great benefit to the project if the results were compared and contrasted with a pollen core specifically taken from the areas that underwent excavation along the M7/M8.

Appendix 1

Description of wood types

Alnus glutinosa (Alder)

Alder is a widespread native tree and occupies wet habitats along stream and river banks. It is an easily worked and split timber and therefore quite commonly manufactured into planks.

Betula sp (Birch)

Hairy birch (*Betula pubescens Ehrh*) and silver birch (*Betula pendula Roth*) cannot be distinguished microscopically. Silver birch requires light and dry soil while hairy birch grows on wet-marginal areas. Birch more often occurs on wet marginal areas and is one of the first trees to establish itself on raised bogs. The wood from birch trees is strong but it rots quickly when exposed to outdoor conditions.

Corylus avellana (Hazel)

Hazel is a native species and was very common up to the end of the 17th century. McCracken (1971, 19) points out that "it was once widespread to a degree that is hard to imagine today". With the introduction of brick, steel and slate the crafts associated with hazel became obsolete, and today the woods that supplied hazel have diminished rapidly.

Hazel is normally about 3-5m in height and is often found as an understory tree in broadleaf woods dominated by oak. It also occurs as pure copses on shallow soils over limestone as seen today in The Burren in Co. Clare and survives for 30 to 50 years. Its main advantage is seen in the production of long flexible straight rods through the process known as coppicing. Hazel also makes good fuel.

Frangula alnus (Alder buckthorn) is a small deciduous shrub up to 4-5 m in height, with wide-spreading branches. It is found on moist acid soils along riversides and on peat.

Fraxinus excelsior (Ash)

Ash is a native species to Ireland preferring lime rich freely draining soils. It is not a very durable timber in waterlogged conditions but has a strong elastic nature and is easily worked. Ash appears to have colonised the open land after the first farmers removed much of the native woodland therefore it is frequently used as

structural timber in the Later Bronze Age periods. Ash is also abundant in native hedgerows and was quite common in the later historic period.

Ilex aquifolium (Holly),

Holly is a shrub found quite commonly in hedgerows alongside blackthorn and furze and in the understory of oak woods. The *Bretha Comaithchesa* (Laws of neighbourhood) which are listed in the ancient Irish law tracts records holly as one of the five nobles of the wood namely for its use in the construction of cart-shafts and its leaves were valuable as cattle fodder during the winter months (Nelson 1993, 43).

Pinus sylvestris (Scots Pine),

It was generally thought that although Scots pine became common throughout Ireland after the last glaciation, it had declined and was absent by the medieval period and not reintroduced until the late 17th century. Contrary to this, pollen evidence of former tree growth on Clonsast bog, Co. Offaly suggests that Scots pine may have survived in Ireland as a true native. Dr Neil Murray found a continuous record of pine pollen from the early post-glacial period right up to the modern era (Nelson 1994, 148).

The quality and texture of Scots pine depends on the rate of growth of each tree. Scots pine wood is not naturally durable and is no longer widely planted as a commercial forest species in Ireland.

Pomoideae, (Apple type)

Pomoideae includes apple, pear, hawthorn and mountain ash. It is impossible to distinguish these wood species anatomically but as wild pear is not native and crab apple is a rare native species in Ireland it is likely that the species identified from the site along the N5 are hawthorn or mountain ash (rowan) (Nelson 194-200, 1993). Hawthorn (*Crataegus monogyna*) is a native species, and is found in many hedgerows throughout Ireland. Mountain ash (*Sorbus aucuparia*) is also a common tree in Ireland growing particularly well in rocky and hilly mountainous places.

Prunus spinosa (Blackthorn)

It is difficult to differentiate between cherry and blackthorn particularly in relation to charcoal therefore the identified charcoal has been classified as *Prunus* spp which could be either blackthorn or cherry.

The sloe bush, as blackthorn is commonly referred to, is a very durable wood and is as strong as oak. It is a thorny shrub found in woods and scrubs on all soil types. In a woodland situation it is more likely to occur in clearings and at the woodland edges.

Prunus padus/Prunus avium (Bird /Wild cherry)

The genus *Prunus spp.* includes *Prunus spinosa* (Blackthorn), *Prunus avium* (Wild cherry) and *Prunus padus* (Bird cherry). Wood of the genus *Prunus* can be difficult to differentiate microscopically. Wild cherry and blackthorn are more common in Ireland than bird cherry. There is very little archaeological evidence for the use of cherry wood in Ireland although the wild cherry tree is commonly found in many hedgerows (Nelson 1993, 167). It is a very durable wood and is as strong as oak.

Quercus spp (Oak)

Sessile oak *(Quercus petraea)* and pedunculate oak *(Quercus robur)* are both native and common in Ireland and the wood of these species can not be differentiated on the basis of their anatomic characteristics. Pedunculate oak is found growing in areas of heavy clays and loams, particularly where the soil is alkaline. Sessile oak is found on acid soils and often in pure stands. Unlike pedunculate oak, it thrives on well-drained soils but is tolerant of flooding (Beckett 1979, 40-41). Both species of oak grow to be very large trees (30-40m high).

Oak was one of the most prevalent trees growing in Ireland throughout the medieval period. The anglicised form of the Irish name for oak (derry) is included in many townland names today. Out of 62,000 townlands in Ireland about 1,600 contain the word “derry” in one form or another, either as a prefix or suffix (Mc Cracken 1971, 23).

Oak is a dense wood and is very suitable for charcoal production. It also makes good firewood when dried and will grow in wetland areas when conditions are dry. Charcoal was important in pre-historic and Medieval Ireland as it burned hotter and cleaner than wood and was considered superior to wood in that respect. We know from historical sources that the charcoal maker, or collier, was an important figure in Early medieval Ireland.

Oak also has unique properties of great durability and strength and was frequently used in the manufacture of posts and wooden plank.

Salix sp (Willow),

Willow is a very strong wood in tree form and is excellent for the use as posts. It is also a very flexible wood and was commonly used for the construction and weaving of baskets. It is a native species in Ireland and can be found in a tree and shrub form. According to Webb (1971, 160-2) thirteen species of willow are found growing wild in Ireland, of which eight are certainly native. The wood of *salix* trees and shrubs cannot be differentiated to species on the basis of anatomical features.

Taxus Bacatta (Yew)

The yew *(Taxus baccata L.)* is a slow-growing conifer, living as long as 1000 years and reaching 65 feet, they are known for their strength and resistance to the cold. It is much less common in recent times because of overharvesting (its hard, springy wood was the source of English longbows). The evergreen needles are very broad, and the seeds are produced in red, berry-like cones. Yews are toxic; one of the toxic compounds, taxol, is an effective treatment for some cancers. Yew is used for the manufacture of wooden bows, spears and many staves were constructed from yew in the Early Medieval periods.

Ulmus spp (Elm)

A few fragments of elm charcoal were identified from the trough fill, the early burnt spreads and the early Neolithic hut sites.

English elm *(Ulmus procera)* and wych elm *(Ulmus glabra)* cannot be separated by their wood structure. As suggested by Mitchell (1986) elm declined (although would not have completely died out) with the advent of farming and possibly elm disease epidemic around 3700BC. It generally prefers damp woods particularly on limestone.

9 References

Beckett, J.K., 1979, *Planting Native Trees and Shrubs*. Jarrold and Sons Ltd; Norwich.

Eogan, G., 1983, *Hoards of the Irish Later Bronze Age*. University College Dublin

Edlin, HL, 1956. *Trees, wood and man*. Collins, London

Grogan, E, O Donnell, L, Johnston, P. 2007. *The Bronze Age Landscapes of the pipeline to the west.* Wordwell, Wicklow

Grogan, E., O'Donnell, L. & Johnston, P. (2007) *The Bronze Age landscapes of the Pipeline to the West: an integrated archaeological and environmental assessment*. Wordwell Ltd., Dublin.

Grogan, E. (2005) *The North Munster Project*. 2 Volumes. Wordwell Ltd., Dublin.

Heery, A. (1998) *The vegetation history of the Irish midlands: Palaeoecological reconstructions of two lake sites adjacent to eskers* PhD thesis, University of Dublin (Trinity College).

The Heritage Council (2007) *A review of research needs in Irish archaeology*. The Heritage Council of Ireland Series, Kilkenny.

Hall, V., 1995, "Woodland Depletion in Ireland over the last Millennium" in J.R. Pilcher and S. Mac An tSaoir (eds), *Wood, Trees and Forests in Ireland, 23-35.*

Hurley, M.F., 1982, "Wooden artifacts from the excavation of the medieval City of Cork" in S. McGrail, *Woodworking Techniques before A.D 1500,* B A R **129**, 301-311.

Hurley, M.F., 1986, *A study of Skeletal and Wooden Artefacts from Medieval Cork.* Unpublished M.A. Thesis, University College Cork.

Hurley, M. & Scully, O., 1997, *Late Viking Age and Medieval Waterford Excavations 1986-1992.* Waterford Corporation.

Kelly, F., 1988, *A Guide to Early Irish Law.* Institute for Advanced Studies, Dublin.

Keepax, C. A. (1988) *Charcoal analysis with particular reference to archaeological sites in Britain*. Ph.D. Dissertation, University of London.

McCracken, E., 1971, *The Irish Woods Since Tudor Times.* Institute of Irish Studies, Belfast.

Morgan, R., 1975, "The Selection and Sampling of Timber from Archaeological Sites for Identification and Tree-ring analysis", *Journal of Archaeological Science,* 2, 221-230.

Nelson E.C., 1993, *Trees of Ireland.* The Lilliput Press, Dublin.

Moloney et al, 1994) Excavations at Clonfinlough, Co. Offaly, Crannog Publications.

Mac Coitir, N., 2003, *Irish Trees, Myths, legends and Folklore*. The Collins Press

O Carroll, E., 1996, *The analysis of two wooden assemblages from Corlea Bog, Co. Longford and King John's Castle, Co. Limerick.* Unpublished M.A. Thesis, University College Cork.

O Carroll, E., 2004, The analysis of wood and charcoal from Monanny, Co. Monaghan, Unpublished report for IAC.

O Carroll, E., 2007, The analysis of wood and charcoal from Cashelduff, Co. Mayo, Unpublished report for Mayo County Council.

O Carroll, E., 2007, The analysis of wood and charcoal from the N11, Arklow to Rathnew, Co. Wicklow, Unpublished report for the NRA/Wicklow County Council.

OCarroll, E. 2004. *The analysis of charcoal remains from Ballybrowney Lower 1, Co. Cork*. Unpublished specialist report for ACS Ltd

OCarroll, E. 2000. *The analysis of charcoal remains from Bettystown, Co. Meath*. Unpublished specialist report for ADS Ltd.

OCarroll, E. 2002. *The analysis of charcoal remains from Hermitage, Co. Limerick*. Unpublished specialist report for Aegis.

O Carroll, E, 2007, Wood and Charcoal identifications from the N5, Charlestown by-pass, Mayo Co. Co./NRA

O Carroll, E, 2008, Wood and Charcoal identifications from the N6 KEK, VJ Keeley Ltd/NRA

O Donnell, L. 2005, *Wood and charcoal identifications from Charlesland, Co. Wicklow*, Unpublished specialist report for Margaret Gowen and Co.

O Donnell, L. 2005, *Wood and charcoal identifications from Ballynagran, Co. Wicklow*, Unpublished specialist report for Margaret Gowen and Co.

O Donnell, 2008, *Wood and charcoal identified from the N8 Cashel to Mitchesltown,* unpublished post excavation report for NRA/Margaret Gowen & Company

O' Sullivan, A., 1987, "Wood in Archaeology", *Archaeology Ireland 4***,** 69-73.

O' Sullivan, A., 1994, "The use of Trees and Woodland in early medieval Ireland", *Irish Forestry* **51,** 80-94.

Rackham, O., 1976, *Trees and Woodlands in the British Landscape.* Weidenfeld & Nicholson, London.

Rackham, O., 1980, *Ancient Woodland: its history, vegetation and uses in England.* Edward Arnold, London.

Schweingruber, F.H., 1990, (3rd edition) *Microscopic Wood Anatomy*. Birmensdorf: Swiss Federal Institute for Forest, Snow and Landscape Research.

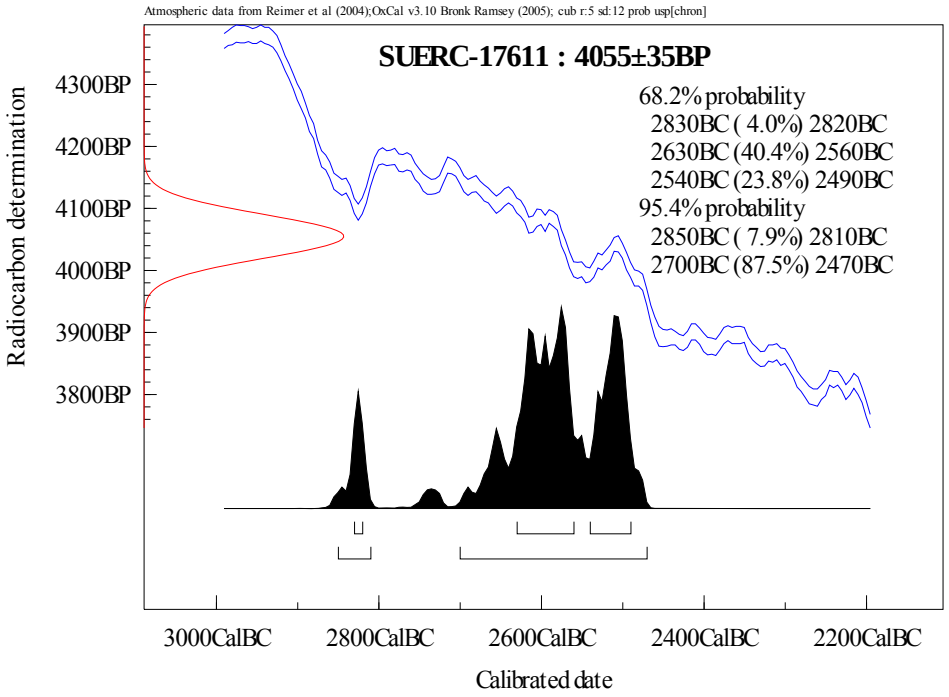
Sands, R. 1997, *Pre-historic woodworking. The Analysis and Interpretation of Bronze and Iron Age toolmarks. Institute of Archaeology, University of London*

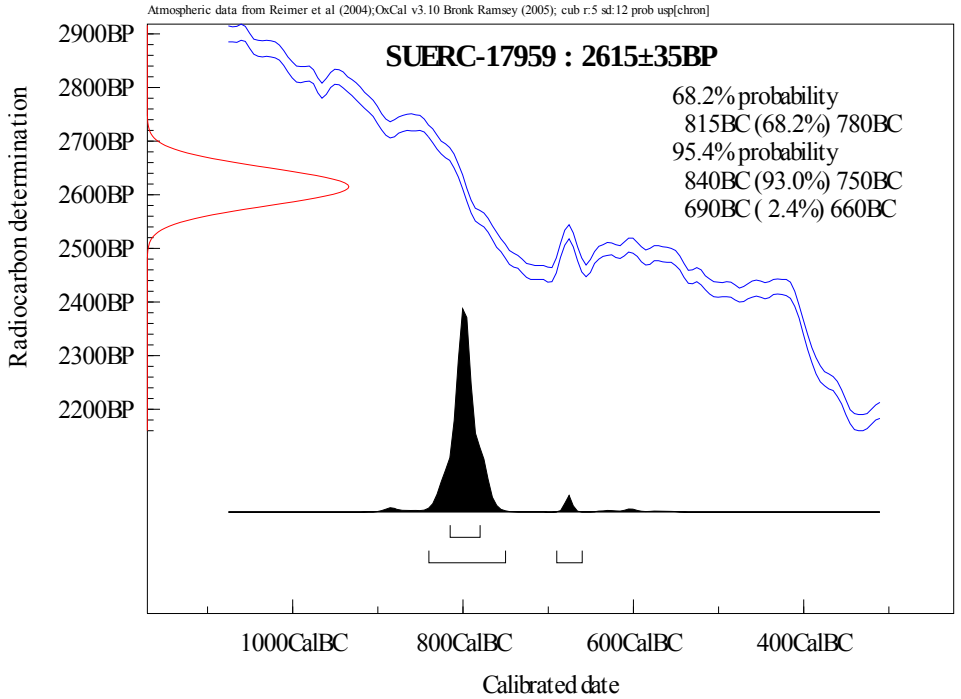
Webb, D.A., 1977, *An Irish Flora.* Dundalgan Press Ltd., Dundalk.

Western, C. A., 1970, "Wood and Charcoal in Archaeology", *Science in Archaeology, 178-187.*

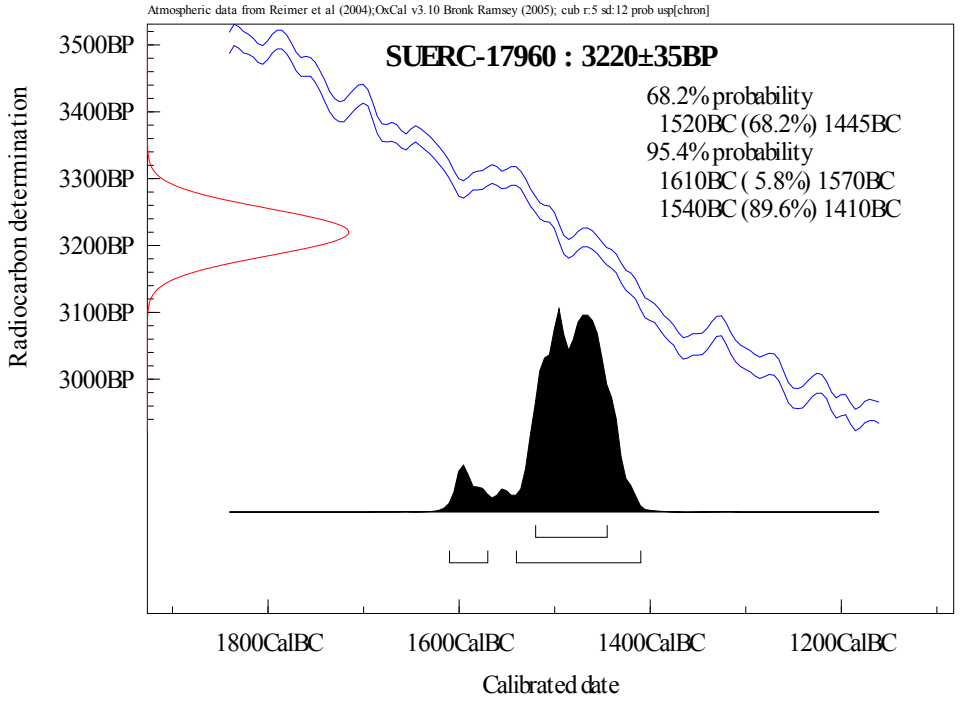
Appendix 2- Radiocarbon Dating

GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Age error 1 sigma
16169	17611	Charcoal	Cuffsborough 2	Cuffsborough 2: E2197:F40:S3	Ash	-26.0	4055	35





GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Age error 1 sigma
16170	17959	Charcoal	Cuffsborough 2	Cuffsborough2:E2197:F56:S29	Prunus,Pomoideae and Hazel	-26.0	2615	35



GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Age error 1 sigma
16171	17960	Charcoal	Cuffsborough 2	Cuffsborough 2:E2197:F76:S33	Hazel	-25.1	3220	35

Appendix 3- Prehistoric Pottery Report

The M7/M8 Portlaoise to Cullahill Scheme
The prehistoric pottery from Cuffsborough 2, Co. Laois
(E2197)
Eoin Grogan and Helen Roche

Summary

The site at Cuffsborough 2 produced nine sherds (plus 4 fragments and crumbs; weight: 49g) of prehistoric pottery representing at least three early Neolithic carinated bowls and a single sherd possibly from a fine middle Bronze Age vessel.

Introduction

The pottery at Cuffsborough came from the fills [**47, 58, 60**] of postholes [**46, 57, 59**] and that [**123**] of a small refuse pit [**117**].

The early Neolithic

The small Cuffsborough assemblage is of fine quality. Although there are no feature sherds the general quality of the fabric and finish, the thin walls (7.95–11.85mm) and fine quartzite inclusions (generally ≤ 2 by 1mm) indicate that the sherds came from early Neolithic carinated bowls. These represent the first type of Neolithic pottery (Case 1961: 'Dunmurry–Ballymarlagh styles'; Sheridan 1995: 'classic' carinated bowls) and have a very wide, if uneven, distribution in Ireland. Dated sites indicate that this pottery style was current during the period *c*. 4000–3600 BC. There is very little identified archaeology of this period from Co. Laois although three other early Neolithic sites, at Derrinsallagh 3 and 4, and Tintore 2 (Grogan and Roche 2008a; 2008b; 2008c), were identified on the M7/M8 Portlaoise to Cullahill Scheme.

Other pottery

A single rimsherd from another vessel came from the fill [**58**] of posthole [**57**]. This upright flat-topped rim is of hard dark grey burnished fabric and has a low content of crushed dolerite inclusions (up to 4.6 x 3.6mm). This is from a fine pot although the overall profile or size could not be determined. The decoration, including circumferentially arranged comb impressed lines on the rim top and a chevron pattern of steep opposed oblique lines, is unusual. However, similar pottery came from Site C (Ó Ríordáin 1954, fig. 6.6) and Circle L, Lough Gur, Co. Limerick (Grogan and Eogan 1987, 407, fig. 44.879, 424, fig. 51.top). Unusually fine and elaborately decorated vessels also came from Knowth, Co. Meath, concentration A (Eogan 1984, 256, fig. 89.1339–1403, pl. 75), Rathgall, Co. Wicklow (Barry Raftery pers comm.), and Ballinaspig More, Co. Cork (Danaher 2004; Grogan and Roche 2004). It is probable, as suggested for the Ballinaspig material, that this pottery dates to the middle Bronze Age. However, some parallels with both

Beaker and middle Neolithic pots were noted for the Lough Gur and Knowth material and these possibilities cannot be completely ruled out for the Cuffsborough sherd.

Bibliography

Case, H. 1961 Irish Neolithic Pottery: Distribution and Sequence, *Proceedings of the Prehistoric Society* **9**, 174–233.
Danaher, E. 2004 Ballinaspig More 5, Co. Cork. In I. Bennett (ed.), *Excavations 2002*, 55–6. Wordwell, Bray.
Eogan, G. 1984 *Excavations at Knowth* **1**. Royal Irish Academy Monographs in Archaeology, Dublin.
Grogan, E. and Eogan, G. 1987 Lough Gur excavations by Seán P. Ó Ríordáin: further Neolithic and Beaker habitations on Knockadoon, *Proceedings of the Royal Irish Academy* **87**C, 299–506.
Grogan, E. and Roche, H. 2004 The prehistoric pottery from Ballinaspig More 5, Ballincollig, Co. Cork. Unpublished Report for Archaeological Consultancy Services Ltd.
Grogan, E. and Roche, H. 2008a The M7/M8 Portlaoise to Cullahill Scheme. The prehistoric pottery from Derrinsallagh 3, Co. Laois (E2179). Unpublished Report for Archaeological Consultancy Services Ltd.
Grogan, E. and Roche, H. 2008b The M7/M8 Portlaoise to Cullahill Scheme. The prehistoric pottery from Derrinsallagh 4, Co. Laois (E2180). Unpublished Report for Archaeological Consultancy Services Ltd.
Grogan, E. and Roche, H. 2008c The M7/M8 Portlaoise to Cullahill Scheme. The prehistoric pottery from Tintore 2, Co. Laois (E2209). Unpublished Report for Archaeological Consultancy Services Ltd.
Ó Ríordáin, S.P. 1954 Lough Gur Excavations: Neolithic and Bronze Age Houses on Knockadoon, *Proceedings of the Royal Irish Academy* **56**C, 297–459.
Sheridan, A. 1995 Irish Neolithic pottery: the story in 1995. In I. Kinnes and G. Varndell (eds), '*Unbaked Urns of Rudely Shape*', 3–21. Oxbow Monograph **55**, Oxford.

CATALOGUE

The excavation number E2197 is omitted throughout; only the context number followed by the find number is included. Where the pottery is listed in the catalogue the context numbers are in bold: *e.g.*: **47**:1. The thickness refers to an average dimension; where relevant a thickness range is indicated. Vessel numbers have been allocated to pottery where some estimation of the form of the pot is possible, or where the detailed evidence of featured sherds (*e.g.* rims, shoulders) or fabric indicates separate vessels.
R = rimsherd B = bodysherd

Neolithic pottery

Fill [**47**] of posthole [**46**]
47:1 is a small bodysherd of compact buff-brown fabric with a dark grey core and smooth inner surface. There is a low content of quartzite inclusions (≤ 2 x 1mm, up to 3 x 2mm). Body thickness: 9.8mm; weight: 2g.
Comment This material is very similar to the pottery from posthole [**59**] (below) and may be from the same vessel.

Fill [**60**] of posthole [**59**]
There are 4 bodysherds (**60**:4 – probably a single sherd; plus 3 fragments: **60**:1–3; crumbs: **60**:5) of buff fabric with a dark grey core and inner surface. There is a low content of quartzite inclusions (≤ 2 x 1mm, up to 3.4 x 3.4mm). Body thickness: *c*. 11.85mm; weight: 21g.
Comment This material is very similar to **47**:1 (above) and may be from the same vessel.

Fill [**123**] of pit [**117**]
There are 2 bodysherds (**123**:1–2) of pitted buff fabric with a very low quantity of mainly sandgrade quartzite inclusions. Body thickness: 6.97mm; weight: 6g.
Bodysherd (**123**:3) is of smooth buff fabric with a dark grey core and inner surface: there is a black accretion on the inner surface. There is a low content of quartzite inclusions (≤ 2 x 1mm). Body thickness: 7.95mm; weight: 16g.

Other pottery

Fill [**58**] of posthole [**57**]
This context produced a single rimsherd (**58**:1) from a vessel with an upright flat-topped rim. The hard fabric is dark grey throughout with burnishing on the rim top and outer surface. There is a low content of crushed dolerite inclusions (up to 4.6 x 3.6mm). Neck thickness: 7.94mm; weight: 4g.

Decoration On the rim top there are circumferentially arranged comb impressed lines created with a slightly curved and pointed denticulated spatula. A single scored line occurs immediately beneath the rim on the inner surface. On the exterior there are two closely spaced horizontal lines immediately beneath he rim with, below, a band of steep opposed oblique lines possibly forming a chevron pattern.

Appendix 4 - Lithics Report

Preliminary analysis of the lithic pieces from

Cuffsborough 2, Co. Laois

(Archaeological Licence No: E2197)

Scheme A015/87

by

Dr. MARIA B. O'HARE

Statement of Significance

Three flint pieces were derived from excavations at Ciuffsborough 2, Co. Laois. These are ad-hoc and expedient lithic types including a fairly diagnostic scraper, which would tend to suggest later prehistoric activity with a Bronze Age date preferred. However given the limitation of the quantity of this collection, and the fact that more detailed contextual information is not presently available makes inferences of a specific prehistoric phase or more specific contextual interpretation quite difficult.

Introduction

Three flint lithics were derived from the Portlaoise to Castletown/Culahil, contract 1 of the M7/M8 motorway scheme at Cuffsborough 2, Co. Laois, under excavation licence number E2197, scheme AO15/87. These lithic pieces have an individual entry and are listed within the database (Microsoft excel) for Contract 1, report number three and is accompanied by a glossary of terms corresponding to this database.

Description of artefacts

The first lithic is a platform flake (E2197:001:001) derived from feature (F1) measuring 24.3x16.8x4.3mm. This is a poorly struck piece and has scalar attributes indicative of more ad-hoc/expedient technology. The second lithic piece is a fully patinated flake (E2197:032:001) recovered from feature (F32) and measuring 20.3x11.7x3.6mm; again with scalar attributes. The third piece is a fairly expedient sub-circular scraper type (E2197:123:004) measuring 34.4x33.3x7.4mm, which was recovered from feature (F123).

Discussion

The sub-circular type scrapers and in particular ad-hoc, scalar type technology types are the mainstay lithics of the Irish Bronze Age (O' Hare 2005 and O' Hare forthcoming), therefore, it would seem reasonable to infer that the small lithic collection from Cuffsborough 2 represents at least some Bronze Age activity within this site. Hopefully further investigation at some point in the future would shed further light upon the nature and specific date of this activity.

Bibliography

O' Hare, M. 2005. *The Bronze Age Lithics of Ireland*, Unpublished phD thesis, Queen's University, Belfast.

O' Hare, M. Forthcoming publication for *B.A.R. British Archaeological Reports*.

Appendix 5 – Animal Bone Analysis Report

05_09
M7 Portlaoise to Castletown /
M8 Portlaoise to Cullahill Motorway Scheme Project

Animal Bone Analysis Report from Cuffsborough 2, Co. Laois

(A015/087, E2197)

August 2008

By Claudia Tommasino

05-09 Cuffsborough 2 (A015/087, E2197)

Animal Bone Analysis Report

Claudia Tommasino

August 2008

1. Introduction

The excavation of Cuffsborough 2 commenced in November and was completed in December 2005, as part of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme Project.

The site was situated 200m from the *fulacht fiadh* found in Cuffsborough 1. On this site were found postholes and pits, one of them filled with burnt stones and one with cremated remains. Pottery found in the site, specifically in postholes, dates from the Bronze Age. Radiocarbon dating produced dates that confirm the Bronze Age occupation of the site.

The only feature in Cuffsborough 2 with animal bones was F92, and it is most likely modern, according to the excavation report for the site (Murphy, forthcoming).The animal specimen corresponds to a bird, possibly a goose (Anser anser) or mallard (Anas platyrhynchos).

2. Methodology and analyses

2.1 Identification and quantification

The general methodology applied for the recording and analysis of this assemblage followed the one described by McCormick and Murray (2007). It seeks to prevent the overestimation of the assemblage proportion through a selective approach that would produce NISP (Number of Identifiable Specimens). Therefore, fragments were divided into three categories: ‘countable’, ‘low grade’ and ‘non-countable’. Fragments where at least 50% of the diagnostic area is present would be countable. The criteria for countable fragments are specified in Tommasino (2008).

On the other hand, ‘non countable’ elements are those which could provide some kind of important information relating to pathology, taphonomy or bone work (like pig fibula).but less than 50% of the diagnostic bone is present. Ribs and vertebrae were recorded as non countable, to keep track of the usage or waste patterns on the site, but were not included in the TNF or analyses.

Finally, fragments that did not fit into the aforementioned criteria were considered as 'low grade'. This also included pig and horse lateral metapodials, and carpals and tarsals (except carpal 3 and the scafocuboid).

'Countable' and 'non-countable' fragments were recorded in two different forms in one electronic database (in Microsoft Office Access 2003) including information as: context, species, skeletal element, side, condition, state of fusion, taphonomy, pathology, measurements, ageing, dental wear and observations. The 'non-countable' form emphasized aspects including taphonomy, pathology and observations.

Skeletal element, species and laterality were assessed for 'countable' and 'non-countable' fragments according to the criteria reported by Cohen and Serjeantson (1996). Skeletal elements are expressed in tables and figures by their abbreviation or codes, shown in Appendix table 1.

The TFN (Total Number of Fragments that composes the assemblage) was quantified by NISP (Number of Identifiable Specimen) and MNI (Minimum Number of Individuals). The first was calculated as the total of fragments attributed to a specific taxon (Grayson, 1984; O'Connor, 2004; Reitz and Wing, 1999). MNI was calculated dividing each element found in pairs in the animal carcass by its laterality, not taking into account loose teeth. Then, MNI is the higher count of one of the elements, either the right or the left side (Grayson, 1984; O'Connor, 2004). NISP and MNI are calculated only with countable fragments.

2.2 Ageing

Whenever possible, the epiphysial fusion assessment was done using the categories of fused, unfused or fusing for metaphyses, epiphyses or metaphyses and epiphyses. Later on, Cohen and Serjeantson (1996) provided the information for assigning relative age to these specimens.

2.4 Taphonomy

The recognition of any taphonomic factors such as gnawing, burning and butchery marks in the bones was dealt with mostly according to Lyman (1994).

Gnawing was classified according to the agent that produced it: carnivore, rodent or/and insect. Burning was assessed by three categories: singed or partially burnt, calcined and burnt/blackened (whenever 90-100% of the bone was affected). Finally, butchery marks were assessed as: sawn, chopped and/or cut.

2.5 Pathology

Pathological modifications were recorded in detail and assessed by their effects on the bones, using the criteria of Baker and Brothwell (1980).

2.6 Measurements and osteometry

Whenever possible, fused specimens were measured following Von Den Driesch (1976).

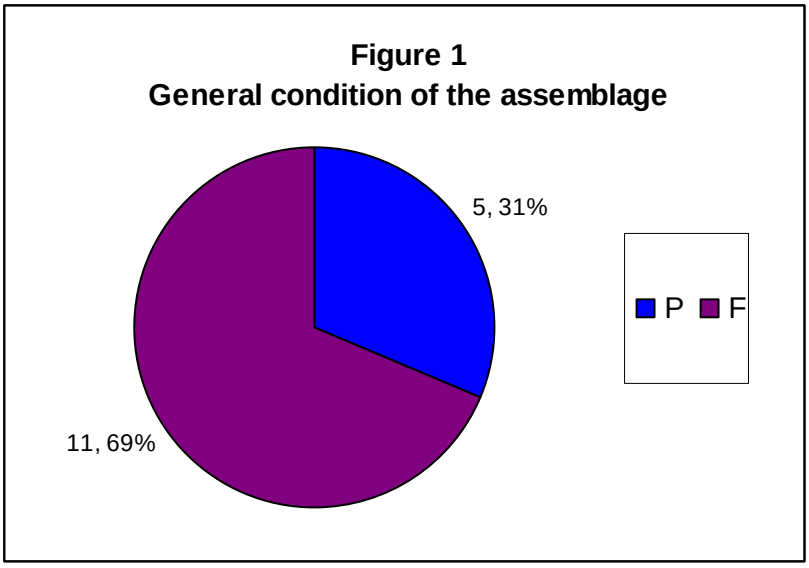
3. Analyses and results

3.1 Summary of findings: Assemblage Overview

3.1.1 Identification and quantification

The 16 TNF that make up this assemblage do not have good preservation. On the contrary, 11 fragments are only in fair preservation, while the rest were found in very poor preservation (Figure 1).

Figure 1
General condition of the assemblage



The excavation report and the characteristics of the fragments reveal that all bones come from the same specimen of bird. Therefore, the count is 1 NISP and 1 MNI. Using Cohen and Serjeantson (1996) the epiphyses and diagnostic areas of some bones were assessed to identified the specimen. But the general condition previously reported for the assemblage impedes the identification of the species of this bird. Most probably this bird was a domestic goose (*Anser anser*) due to some diagnostic characteristics and size, but it cannot be completely discarded that it was a mallard (*Anas platyrhynchos*).

Table 1 details the skeletal elements that integrate the specimen of bird.

Skeletal element	Fragments
CMC	2
CO	2
FE	2
HU	2
RA	2
SC	2
SYN	1
TMT	1
TT	2
Grand Total	**16**

Table 1. TFN for the bird specimen found in Cuffsborough 2.

3.1.2 Ageing

Although the condition of the assemblage is too poor to make a reliable assessment of age, the general characteristics of the bones (as porosity) and some epiphyseal fusion stages suggest it is an adult specimen.

3.1.3 Taphonomy and pathological conditions

No taphonomic modifications or pathological conditions were identified in any of these bird bones.

3.1.4 Measurements and osteometry

The preservation of the assemblage did not allow any measurements to be taken in the bird assemblage.

3.1.5 Livestock economy

The information is too scarce to interpret any husbandry practices from this specimen.

4. Conclusions and recommendations

As mentioned in the report it is highly possible that this specimen is modern. In this case, the assemblage would have no archaeological value and the bones could be discarded. Possibly further contextual analysis could conclude if the specimen of bird found in Cuffsborough 2 is modern or archaeological.

Therefore the author as the bone specialist, suggests that if the archaeological origin of the specimen is confirmed , it should be kept in case more contextual information is obtained for the site, allowing further analysis. The assemblage should be stored under methods approved by the N.M.I. that guarantees low acid conditions to ensure its preservation. The final decision should be made by the N.M.I. in agreement with the licence holder.

Bibliography

1. Baker, J. R. and D. Brothwell. 1980. **Animal Diseases in Archaeology**. New York: Academic Press.
2. Cohen, A. and D. Serjeantson. 1996. **A manual for the identification of bird bones from archaeological sites**. London: Archaeotype Publication Ltd.
3. Grayson, D. 1984. **Quantitative Zooarchaeology.** Washington: Academic Press Inc.
4. Lyman, R. 1994 **Vertebrate Taphonomy**. Cambridge: Cambridge Manuals in Archaeology.
5. McCormick, F. and E. Murray. 2007. **Knowth and the Zooarchaeology of Early Christian Ireland**. Dublin: Royal Irish Academy.
6. Murphy, D. (forthcoming). **Cuffsborough 3, Contract 1, M7/M8 Motorway Scheme.** Unpublished report.
7. O'Connor, T. 2004. **The archaeology of animal bones**. Great Britain: Sutton Publishing Limited.
8. Reitz, E. and E. Wing. 1999. **Zooarchaeology**. Cambridge: Cambridge University Press.
9. Tommasino, C. 2008. **Animal Bone Analysis Report from Parknahown 5, Co. Laois.** Unpublished report.
10. Von Den Driesch, A. 1976. **A guide to the measurements of animal bones from archaeological sites**. USA: Peabody Museum Bulletins, Harvard University, Peabody Museum of Archaeology and Ethnology.

Appendix

Table 1. Skeletal elements and their abbreviation

Abbreviation	Element
AN	Antler
AS	Astragalus
CA	Calcaneus
CMC	Carpo-metacarpus
CO	Coracoid
CR	Cranium
FE	Femur
HC	Horn Core
HU	Humerus
LMT	Loose Mandibular Tooth
LT	Loose tooth
LXT	Loose Maxillary Tooth
MC1	Metacarpal 1
MC2	Metacarpal 2
MC3	Metacarpal 3
MC4	Metacarpal 4
MC5	Metacarpal 5
MCU	Metacarpal Unidentified
MN	Mandible
MPU	Metapodial Unidentified
MT1	Metatarsal 1
MT2	Metatarsal 2
MT3	Metatarsal 3
MT4	Metatarsal 4
MT5	Metatarsal 5
MTU	Metatarsal Unidentified
NC	Coracoid
PA	Patella
PE	Pelvis
PH1	Phalange 1
PH2	Phalange 2
PH3	Phalange 3
RA	Radius
SC	Scapula
SCU	Scafocuboid
SYN	Synsacrum
TI	Tibia
TMT	Tarso-metatarsus
TT	Tibio-tarsus
UL	Ulna
VC1	Atlas
VC2	Axis

Appendix 6 – Environmental Analysis Report

Archaeological Services
University of Durham

Cuffsborough 2, M7/M8 Motorway Project, Co Laois, Ireland

environmental analysis

on behalf of
Archaeological Consultancy Services Ltd

Report 1873
April 2008

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environmental analysis

Report 1873

April 2008

Archaeological Services Durham University

on behalf of

Archaeological Consultancy Services Ltd

Unit 21 Boyne Business Park, Greenhills, Drogheda, Co. Louth, Ireland

Contents

1. Summary

The project

1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Cuffsborough 2, Co Laois, Ireland. This report presents the results of cremated bone analysis of context (89) and the identification of pre-Quaternary fossils from contexts (53) and (89).

Results

Cremated bones

1.2 The amount of cremated bone in this context was small and it was white in colour, implying burning at high temperatures. None of the fragments could be identified, and it was impossible to tell whether the bone was animal or human.

Pre-Quaternary fossils

1.3 The pre-Quaternary fossil included species of crinoids, brachiopods and corals. All of these marine animals will have lived in the warm shallow seas that covered Ireland during the Carboniferous Period, and their fossils will have eroded out of the local limestone bedrock that derives from that time.

2. Project background

Location and background

2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Cuffsborough 2, Co Laois, Ireland. The site is a substantial middle Bronze Age settlement. This report presents the results of analysis of the cremated bone from a cremation deposit, context (89). Pre-Quaternary fossils from context (89) and posthole fill (52) have been identified.

Objective

2.2 The objective was to further our understanding of burial practices in Co Laois during the prehistoric period.

Dates

2.3 Samples were received by Archaeological Services Durham University in October 2007. Analysis and report preparation was conducted between October 2007 - April 2008.

Personnel

2.4 Sample processing was undertaken by Archaeological Consultancy Services Ltd. The cremated bone analysis and report preparation was carried out by Dr Anwen Caffell. Pre-Quaternary fossils were identified by Prof Maurice Tucker.

Archive

2.5 The licence number is AO15/087 (E2197). The samples are currently at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Cremated bone analysis

Methods

3.1 Cremated bone from context (89) was presented for analysis, weighing 7.7g in total. The cremated remains were passed through a nest of sieves, with mesh sizes of 10mm, 5mm, and 2mm (McKinley 2004). Each fraction was weighed and the largest fragment of bone was measured.

Results and interpretation

3.2 The results are presented in Table 3.1. The amount of cremated bone in this context was small, weighing <10g, and the fragment size was also small with a maximum fragment size of 16.9mm and no bone in the 10mm+ sieved fraction. The cremated bone was white, implying burning at a high temperature of *c.* 600ºC or more (McKinley 2004). The fragments were examined with a view to identification, but due to their small size no positive identification could be made, and it could not be determined whether the bone was human or animal.

Table 3.1: Fraction weights and fragment size

Context	Sample	Total Weight	Fraction Weights						Max. Frag Size
			>10mm		5-10mm		2-5mm		
		g	g	%	g	%	g	%	mm
89	1	7.7	0.0	0.0	3.0	39.0	4.7	61.0	16.9

4. Pre-Quaternary fossil analysis

Methods

4.1 Two samples were presented for fossil analysis. These included the fill of a posthole (context 52), and a cremation deposit (context 89). The fossils were examined at up to ×60 magnification using a Leica MZ6 stereomicroscope.

Results

4.2 The fossils in both contexts were dominated by crinoids, with at least three species present. Brachiopod shell fragments and small pieces of coral were also present in context (52). The results are presented in Table 4.1.

Table 4.1: Pre-Quaternary fossils from Cuffsborough 2

Context		52	89
Sample		25	-
Weight of sample (g)		25	3
Volume of sample (ml)		25	2
Pre-Quaternary fossils (relative abundance)			
Brachiopods	shell frag.	2	-
Corals	frag.	1	-
Crinoids	ossicle frag.	3	2

Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Discussion

4.3 Crinoids, also known as 'sea-lilies', are marine mammals from the phylum Echinodermata, which live in both shallow and deep water (Tucker 2002). Silicified fragments of the stems (ossicles) used to attach themselves to a substrate, occurred in the contexts. There are only a few hundred known extant forms, but crinoids were much more numerous both in species and numbers in the past.

4.4 Brachiopods are sessile, two-valved, marine animals that look similar to clams. Most species are now extinct (Tucker 2002). Corals are also marine organisms, which typically live in colonies of many identical individuals. All of the fossil species in these contexts will have lived in the warm shallow seas that covered Ireland during the Carboniferous Period, and will have eroded out of the local limestone bedrock that derives from that time.

5. Sources

McKinley, J I, 2004 Compiling a Skeletal Inventory: Cremated Human Bone, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, 9-13, Southampton and Reading

Tucker, ME, 2002 *Sedimentary Rocks in the Field*, 3rd edition, Chicester

Appendix 7 – Petrographical Report

Petrographical Report on Stone Samples from Cuffsborough 2, Co. Offaly
(Ministerial Direction No. A015/087)

EurGeol Dr Stephen Mandal MIAI PGeo

Geology of the Site (see Figure 1; Archer *et al.* 1996; Gatley *et al.* 2005)

The geology of the area is dominated by Carboniferous sediments, predominantly limestone, which form a stratigraphical succession generally younging to the southeast.

However, the oldest rocks in the area occur in the northwest of the area and are of Devonian Age, comprising the Cadamstown Formation (CW) of pale and red sandstone, grit and claystone and include the Clonaslee Member (CWcl), which consist of thick flaggy sandstone and thin siltstone.

The oldest rocks of the Carboniferous Period in the area belong to the Lower Limestone Shale (LLS), consisting of sandstone, limestone and mudstone. These unconformably overlie the Ballysteen Formation (BA); Courceyan Age fossiliferous dark grey muddy limestones which make up the majority of the area. Included in the Ballysteen Formation is the Lisduff Oolite Member (BAld) of oolitic limestone. Overlying this is the Waulsortion Limestones, massive bedded limestones of Upper Courceyan Age.

Another unconformity separates the Waulsortion Limestones from the conformable Urlingford Succession of the Crosspatrick Formation (CS), pale-grey cherty crinoidal limestone; the Aghmacart Formation (AG), dark shaly micrite / peloidal limestone; the Durrow Formation (DW), shaly fossiliferous and oolitic limestone; and the Clogrenan Formation (CL), cherty bluish crinoidal limestone.

A further substantial unconformity separates this succession from the Killeshin Siltstone Formation (KN), Upper Namurian muddy siltstone and silty mudstone, in turn unconformably overlain by the Moyadd Coal Formation (MC), Lower Westphalian shale, siltstone and minor sandstone.

The bedrock at the site consists of the Waulsortion Limestones of massive bedded limestones.

The geology of the area represents the period from the Devonian (*c.* 410 – 355 million years ago), when this part of Ireland was on the edge of a huge continent called Laurussia, formed by the collision of Laurentia and Avalonia – South America at the end of the Silurian. The rocks were derived from the Caledonian mountain uplift which occurred at e start of the Devonian,

representing the final erosion of the mountain range prior to the inundation of the early Carboniferous sea. The Carboniferous sequence of rocks in the area is a result of shallow (sandstones and limestones) and deeper (shales and mudstones) period of deposition on the sea floor.

Results of Assessment

Site	MD #	Sample	Description
Cuffsborough 2	A015/087	2	Coarse quartzite; fractured water rolled cobbles
Cuffsborough 2	A015/087	10	Coarse quartzite; fractured water rolled cobbles
Cuffsborough 2	A015/087	13	Coarse quartzite; fractured water rolled cobbles
Cuffsborough 2	A015/087	20	Very fine sandstone, limestone, quartz, chert; rounded and angular pieces
Cuffsborough 2	A015/087	21	Coarse block of sandstone
Cuffsborough 2	A015/087	22	Coarse block of sandstone
Cuffsborough 2	A015/087	23	Limestone, sandstone, quartz; rounded and angular pieces
Cuffsborough 2	A015/087	24	Coarse quartzite; fractured water rolled cobbles
Cuffsborough 2	A015/087	25	Very fine limestone, limestone fossils, sandstone, quartz, chert
Cuffsborough 2	A015/087	26	Very fine limestone, limestone fossils, sandstone, quartz, chert
Cuffsborough 2	A015/087	27	Coarse block of sandstone
Cuffsborough 2	A015/087	29	Limestone, sandstone, quartz; rounded and angular pieces
Cuffsborough 2	A015/087	01-09	Larger pebbles of coarse quartz and sandstone plus finer pieces of sandstone, limestone, quartz and chert
Cuffsborough 2	A015/087	11-19	Larger pebbles of quartz, sandstone and greywacke plus finer pieces of sandstone, limestone, quartz and chert
Cuffsborough 2	A015/087	30-39	Larger pebbles of coarse quartz and sandstone plus finer pieces of sandstone, limestone, quartz and chert
Cuffsborough 2	A015/087	40-49	Larger pebbles of coarse quartz and sandstone plus finer pieces of sandstone, limestone, quartz and chert
Cuffsborough 2	A015/087	50-59	Larger pebbles of coarse quartz and sandstone plus finer pieces of sandstone, limestone, quartz and chert

Potential Sources

All of the materials identified within the samples are readily available at the site, in bedrock and in the overlying glacial tills.

However, the closest bedrock source for quartzite occurs in the Clay Gill Sandstone Formation which occurs in the upland areas *c.* 3k east of Durrow. Whilst it is possible that quartzites occur in the glacial tills, the importing of quartzite from other areas, or the preferential extraction of quartzite from the tills cannot be ruled out.

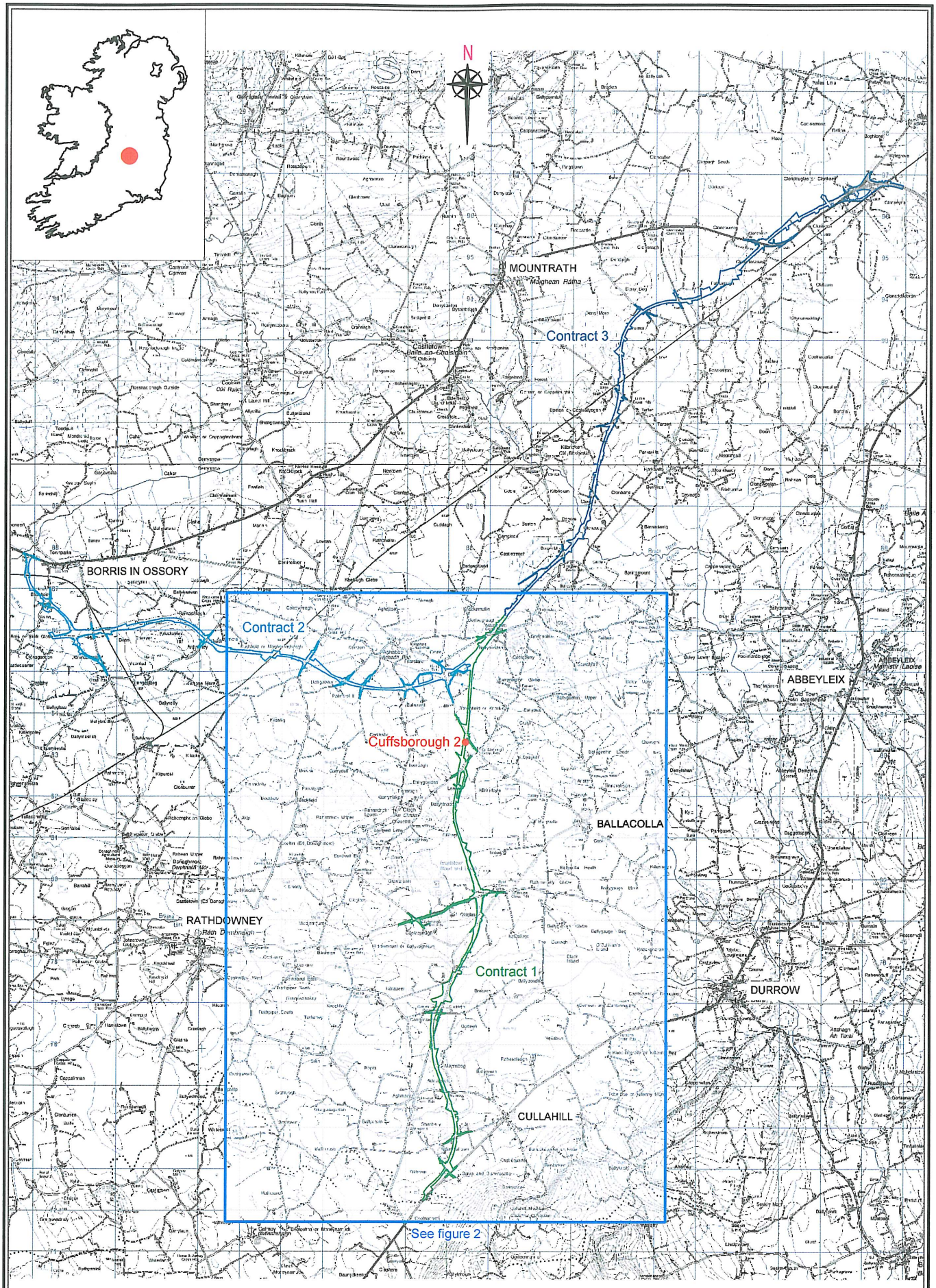
References

Archer, J.B., Sleeman, A.G. and Smith, D.C., 1996. *The Geology of Tipperary: to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 18*. Geological Survey of Ireland Publications. Westprint Ltd: Sligo.

Gatley, S., Somerville, I.D., Morris, J.H., Sleeman, A.G. and Emo, G., 2005. *Geology of Galway-Offaly: to accompany the Bedrock Geology 1:100,000 Scale Map Series, Sheet 15*. Geological Survey of Ireland Publications. Westprint Ltd: Sligo.

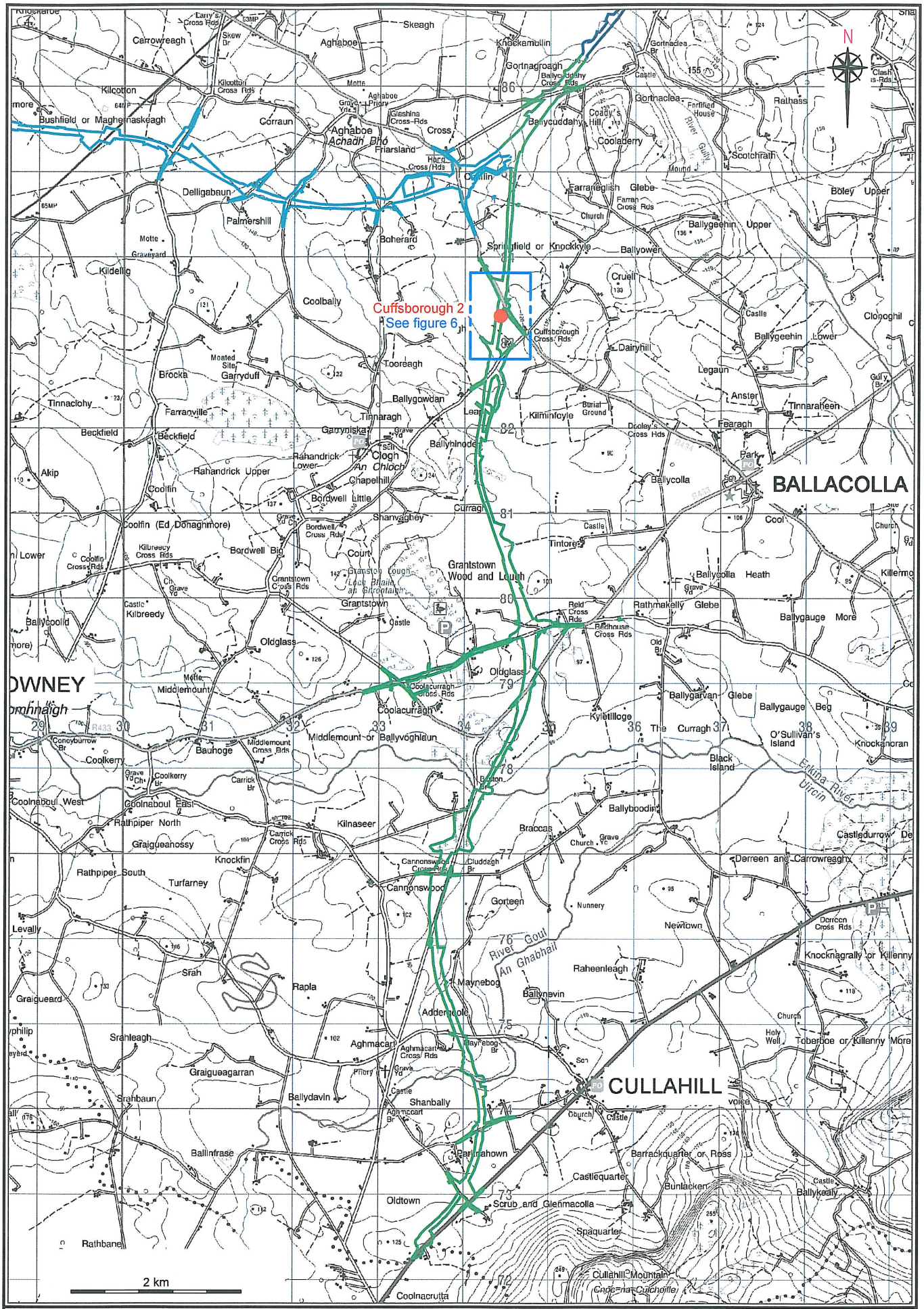
Appendix 8 - Archive Contents

Site Archive			
Type	**Description**	**Quantity**	**Notes**
Contexts	Validated contexts from excavation	102	
Plans	'A2' 1:20 (no. of sheets)	16	Pre and post excavation plans.
Sections and profiles.	'A2' 1:10 (no. of sheets)	4	
Photographs		Colour print 7 x 26	All photographs have been checked and labelled.
Registers	Plan Register Photo Register Finds Register Sample Register	1 1 1 1	All Registers have been checked and cross-referenced.



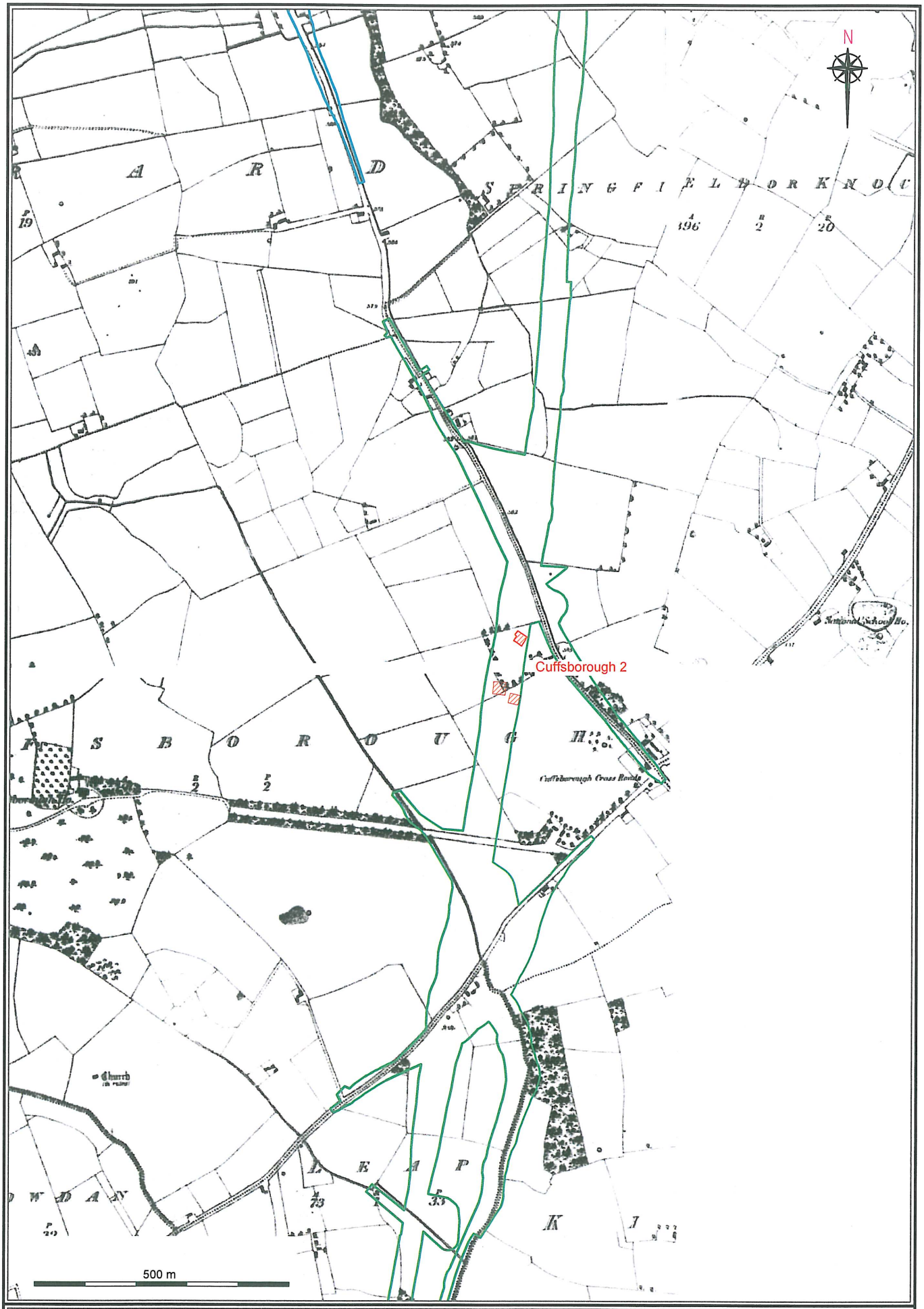
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 125,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7498

Figure 1: Location of M7/M8 Motorway Scheme showing location of Cuffsborough 2



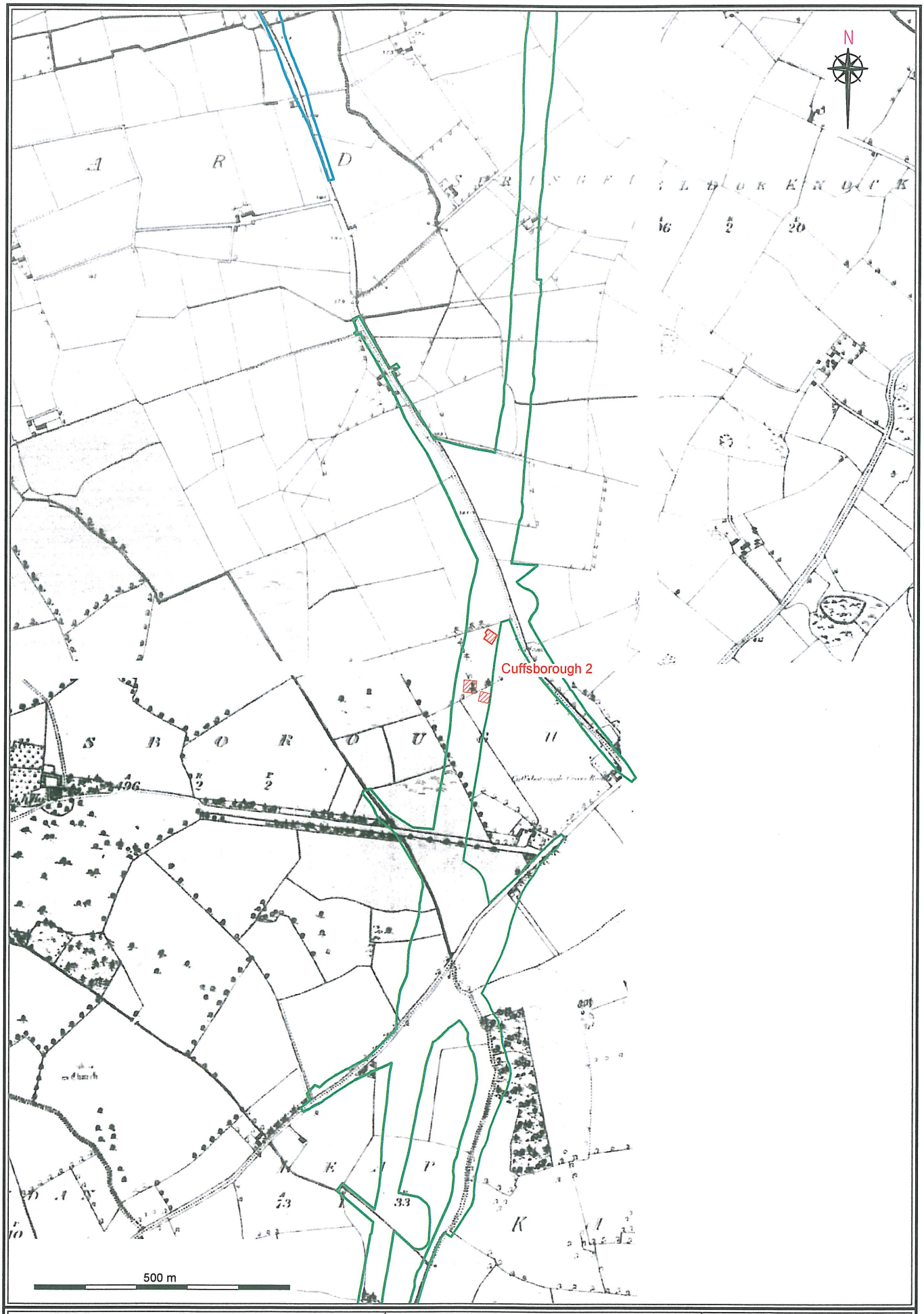
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 60,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7499

Figure 2: Location of Contract 1 showing Cuffsborough 2



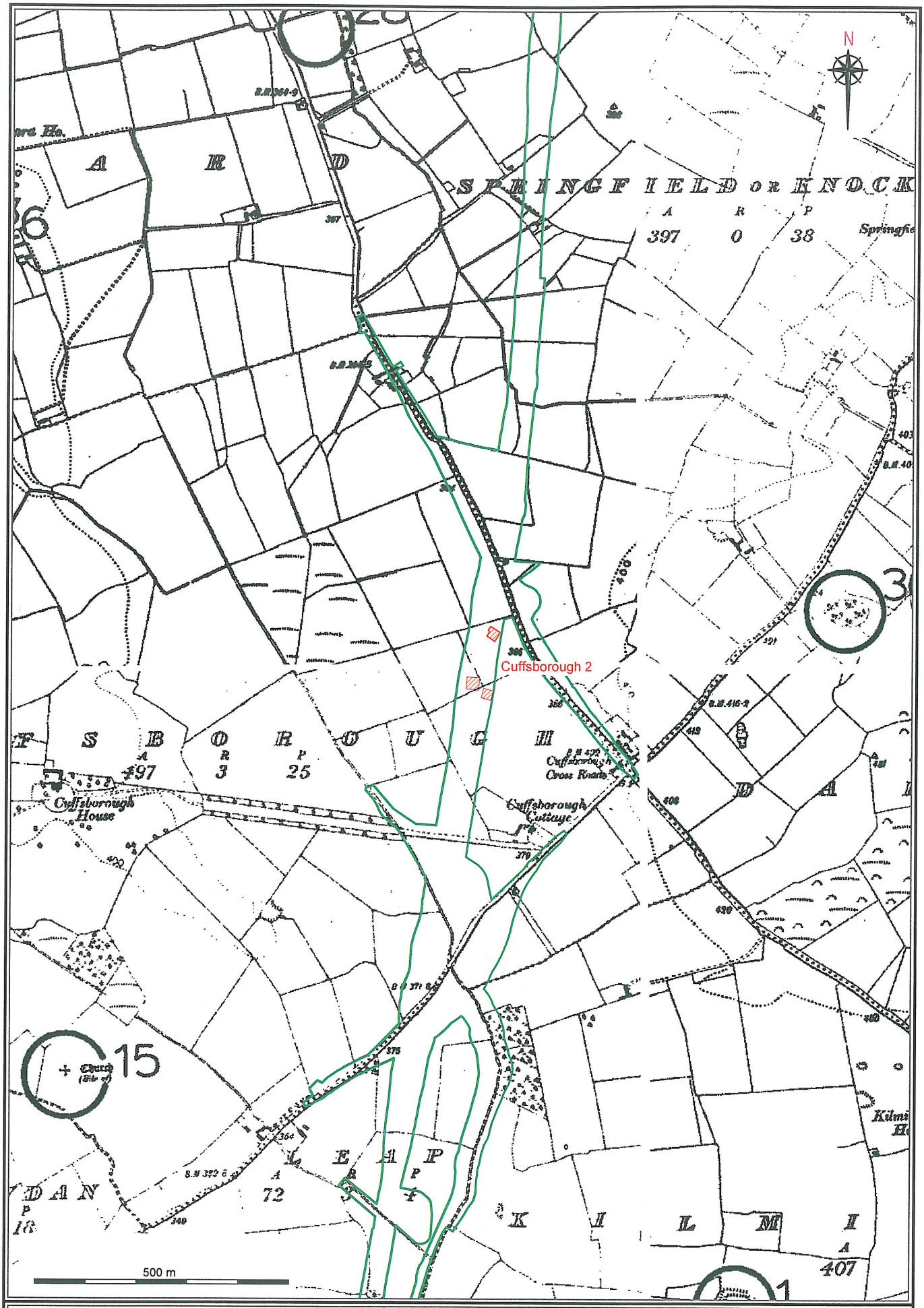
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 10,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: OSi Laois 1st Ed. (1839)
	Client: Laois County Council	Drawing no.: 05_09_C7500

Figure 3: Plan showing Cuffsborough 2 on OSi Laois 1st Ed. (1839) background



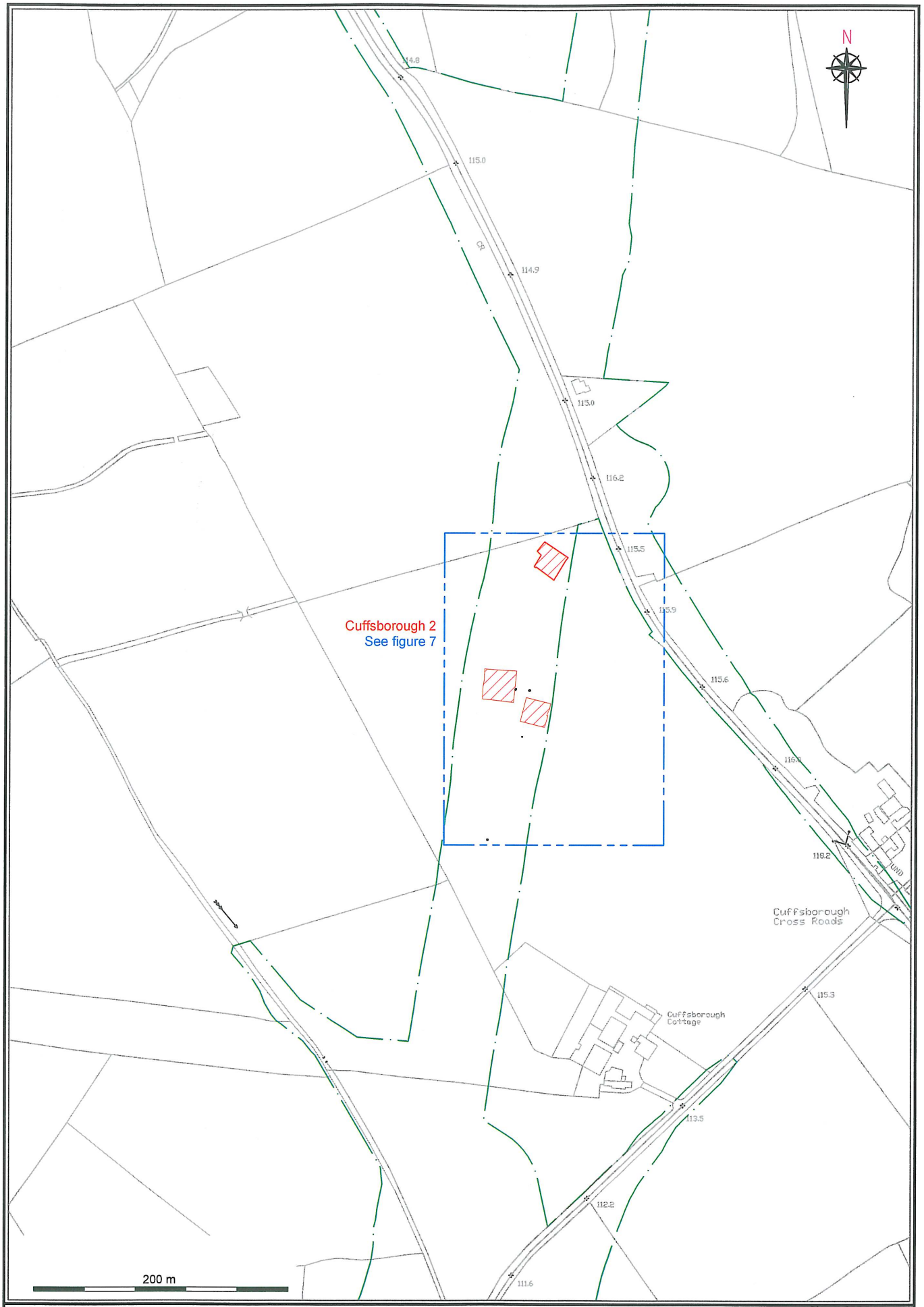
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 10,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: OSi Laois 2nd Ed. (1889-91)
	Client: Laois County Council	Drawing no.: 05_09_C7501

Figure 4: Plan showing Cuffsborough 2 on OSi Laois 2nd Ed. (1889-91) background



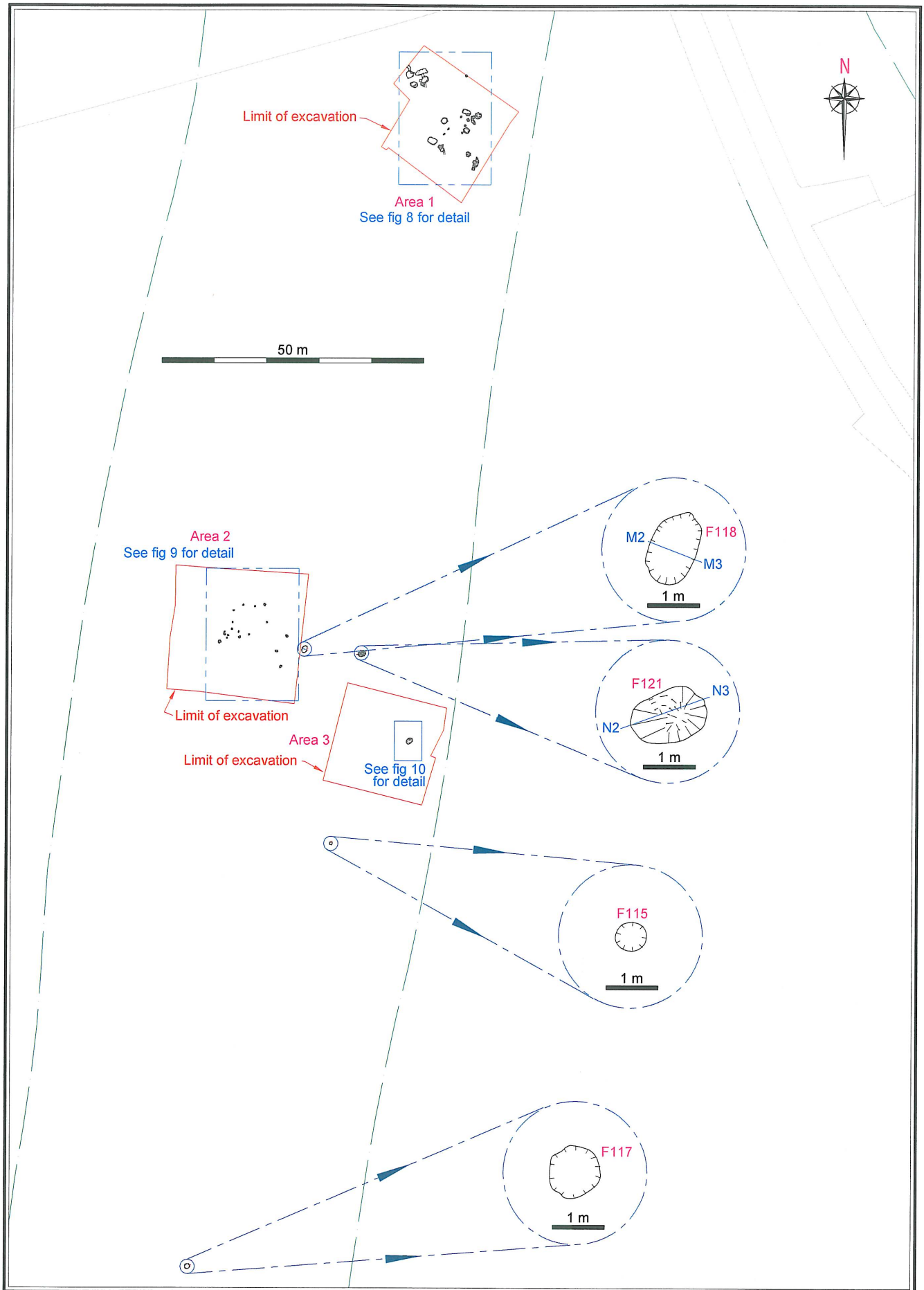
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 10,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: OSi Laois SMR 1909
	Client: Laois County Council	Drawing no.: 05_09_C7502

Figure 5: Plan showing Cuffsborough 2 on OSi Laois SMR 1909 background



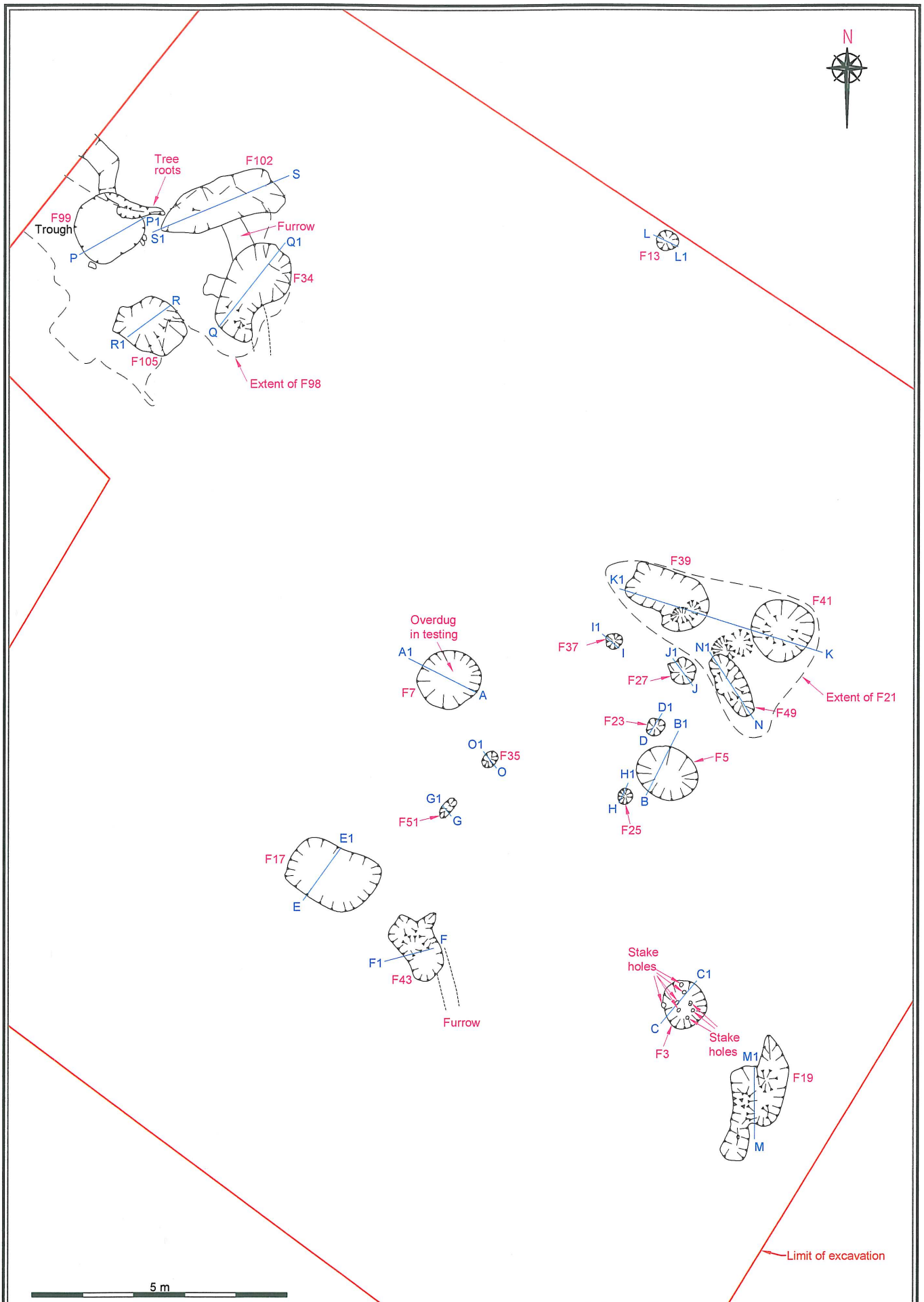
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 4,000 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7503

Figure 6: Location of Cuffsborough 2



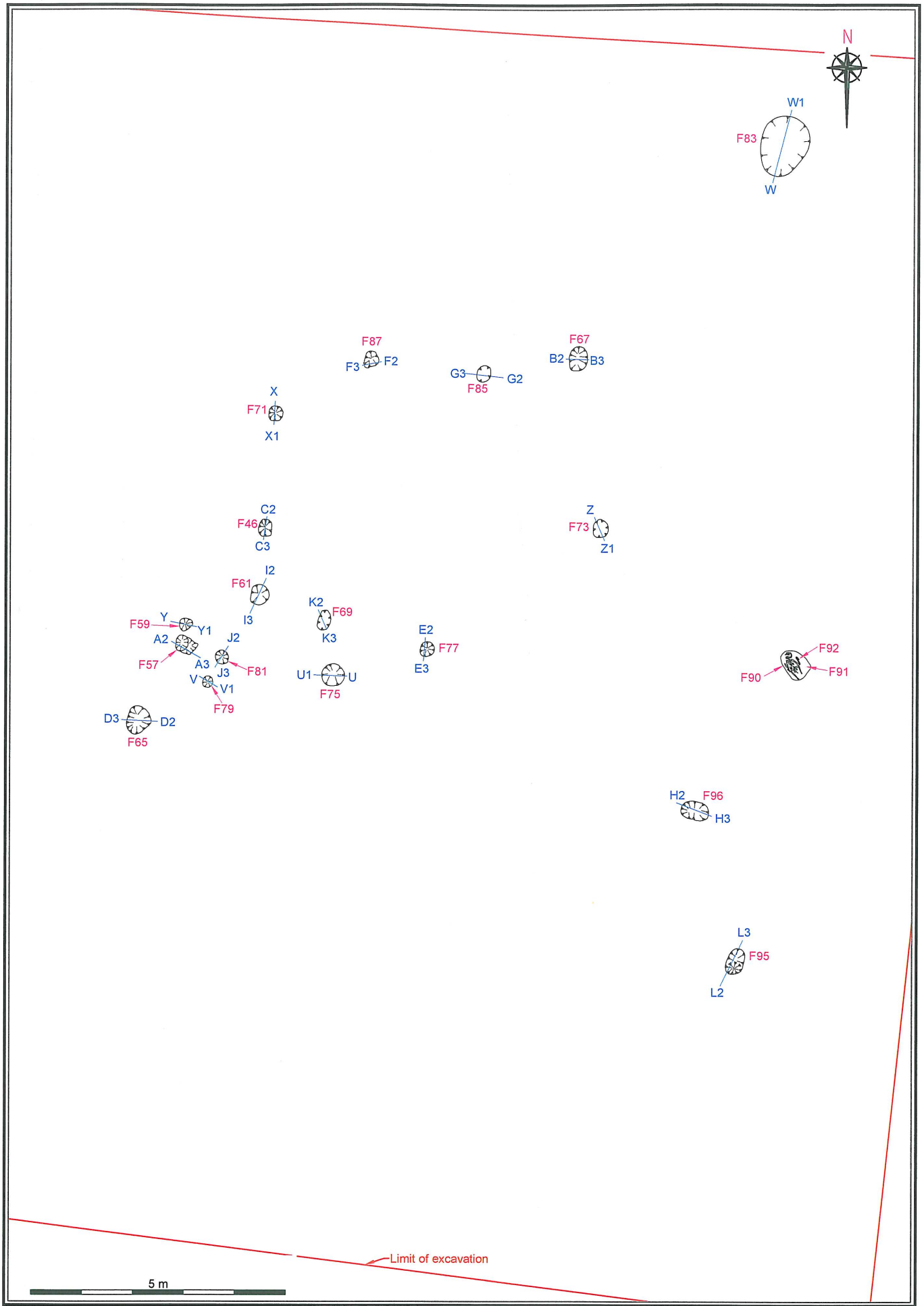
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laoise; Contract 1, Cuffsborough 2	Scale: 1:1,000 A4
	Issued for: Archaeological Excavation Report	Date: Sept '08
	Client: Laois County Council	Origin: ACS Ltd.
		Drawing no.: 05_09_C7504

Figure 7: Extent of site



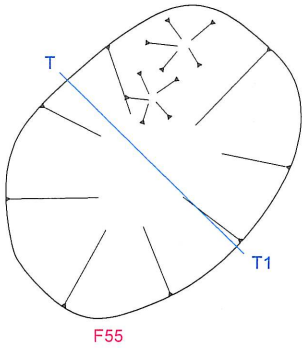
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 100 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7505

Figure 8: Detail of Area 1



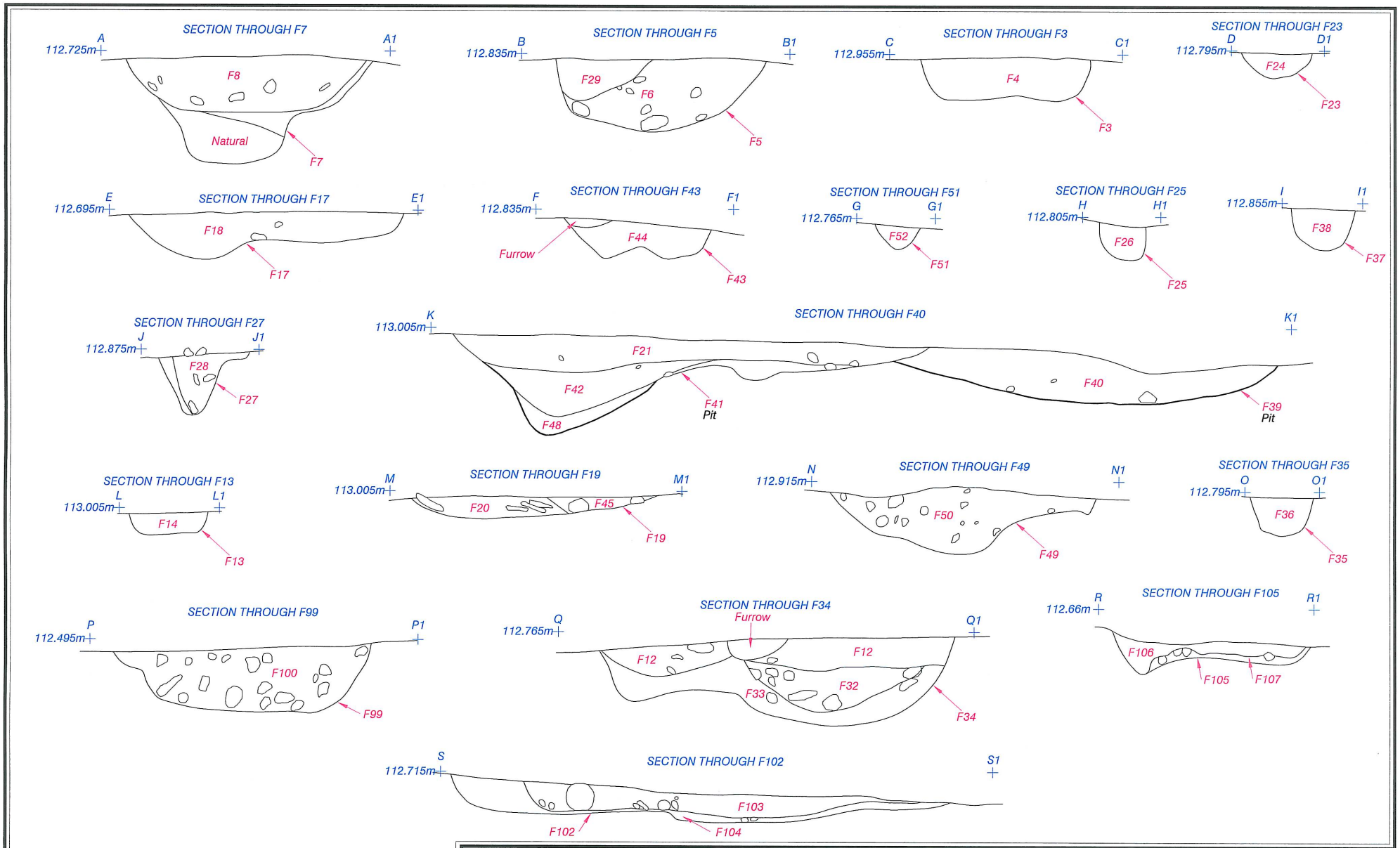
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 100 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7506

Figure 9: Detail of Area 2



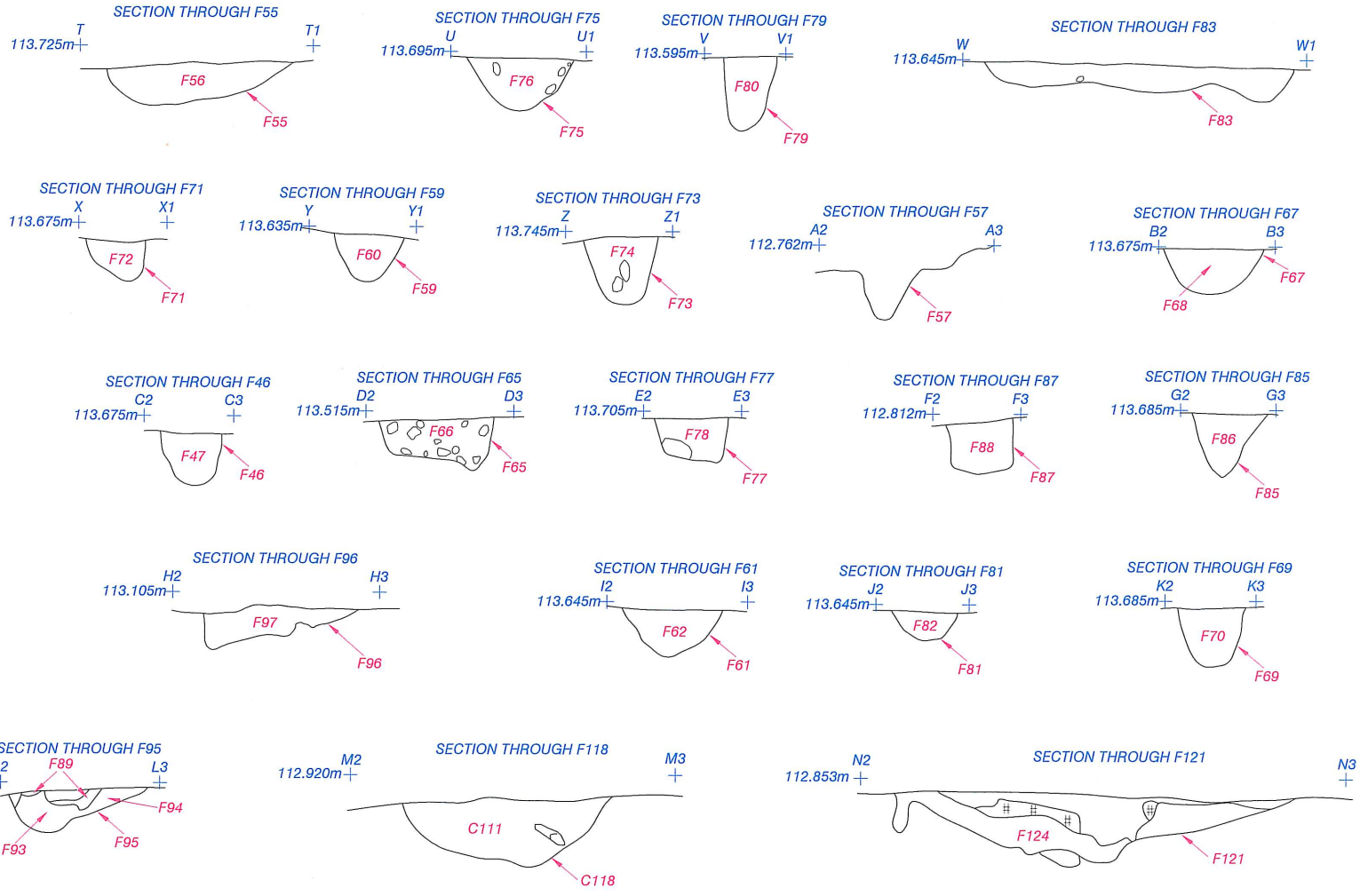
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1: 30 A4
		Date: September '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7507

Figure 10: Detail of Area 3



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1:25 A4
		Date: September '08
	Issued for: Archaeological Excavation Report	Origin: ACS Ltd.
	Client: Laois County Council	Drawing no.: 05_09_C7508

Figure 11: Sections in Area 1



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1:25 A4
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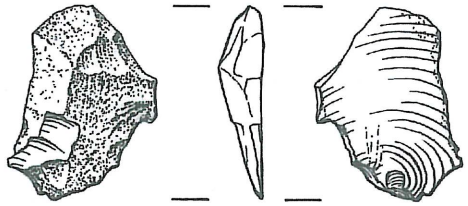
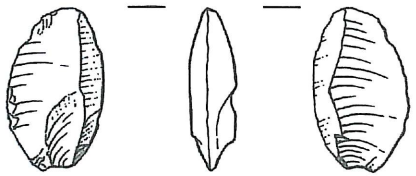
	Issued for: Archaeological Excavation Report	Origin: ACS Ltd.
	Client: Laois County Council	Drawing no.: 05_09_C75081

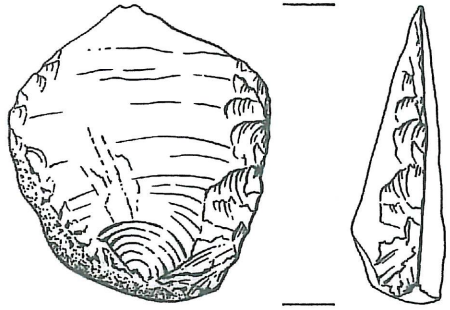
Figure 12: Sections



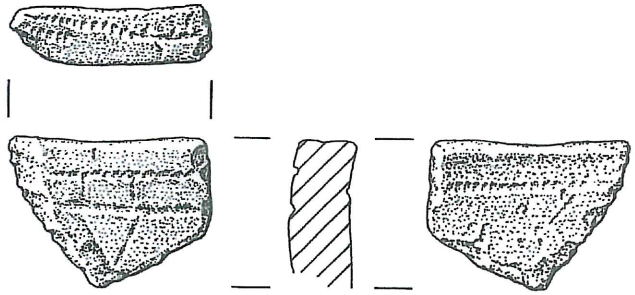
Platform flake (E2197:1:1)



Fully patinated flake (E2197:32:1)



Sub-circular flint scraper (E2197:123:9)



Decorated Bronze Age pottery rim sherd (E2197:58:1)

5 cm

Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Cuffsborough 2	Scale: 1:1 A4
	Issued for: Archaeological Excavation Report	Date: Sept '08
	Client: Laois County Council	Origin: Kurkowicz/Wolff
		Drawing no.: 05_09_C7510

Figure 13: Illustrations of artefacts from Cuffsborough 2

Plate 1: General view of Area 1 facing south-west (05_09_CP263:1)

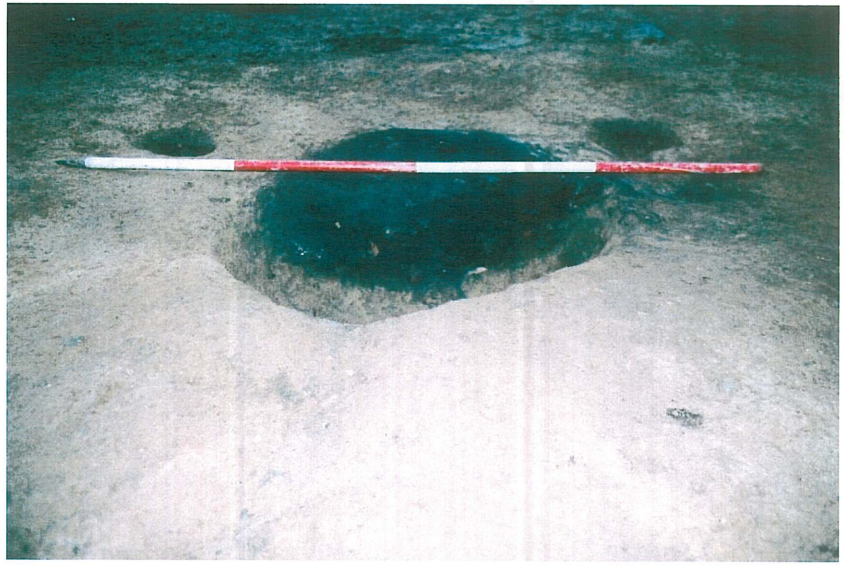


Plate 2: Mid ex of pits F5, F23 and F25 with traces of burnt stone spread F21 from south-east (05_09_CP260:19)

Plate 3: Post-ex of pit F5 (05_09_CP260:14)

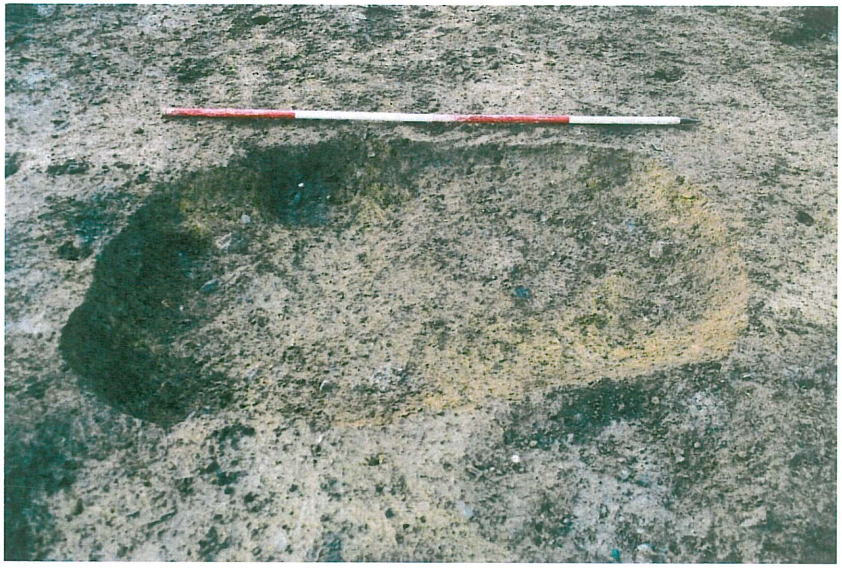


Plate 4: Post-ex of pit F17 from north-east (05_09_CP260:17)

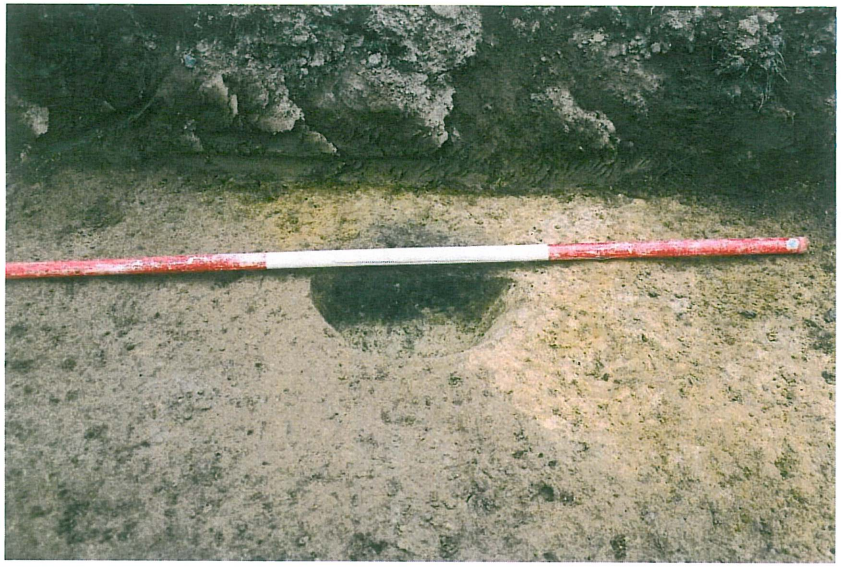


Plate 5: Mid ex of pit F13 at north of cutting (05_09_CP260:24)

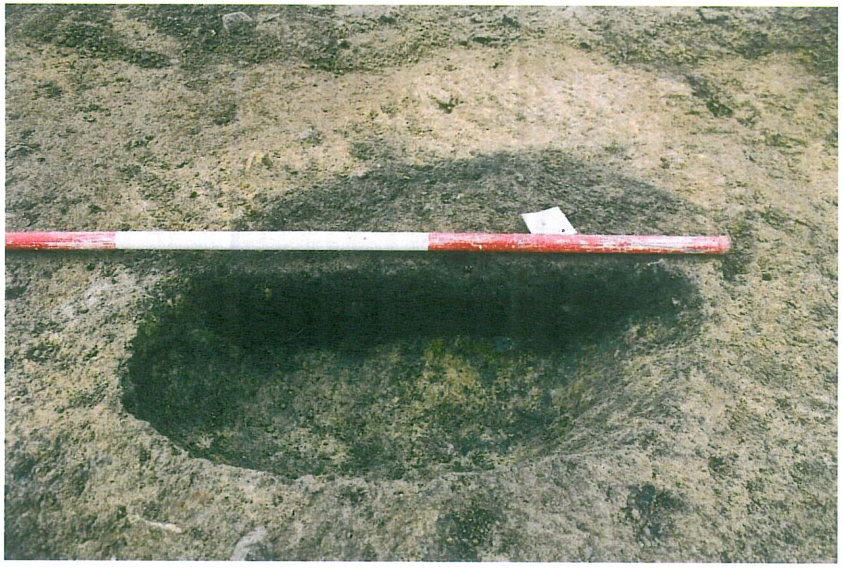


Plate 6: Mid ex of pit F3 at south of cutting (05_09_CP260:25)

Plate 7: Post ex of pit F3 with stakeholes in base from south (05_09_CP261:27)

Plate 8: Section through pit F19 at south of cutting (05_09_CP260:26)

Plate 9: Extent of burnt spread in north-west corner of Area 1 (05_09_CP263:19)

Plate 10: Features in north-west corner of Area 1 (05_09_C 263:18)

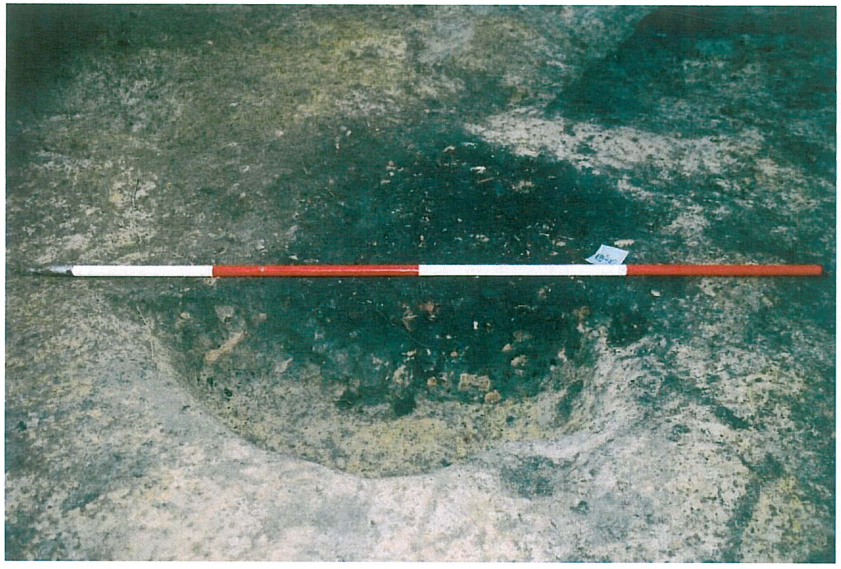


Plate 11: Mid ex of trough F99 from south at north-west of cutting (05_09_CP263:14)

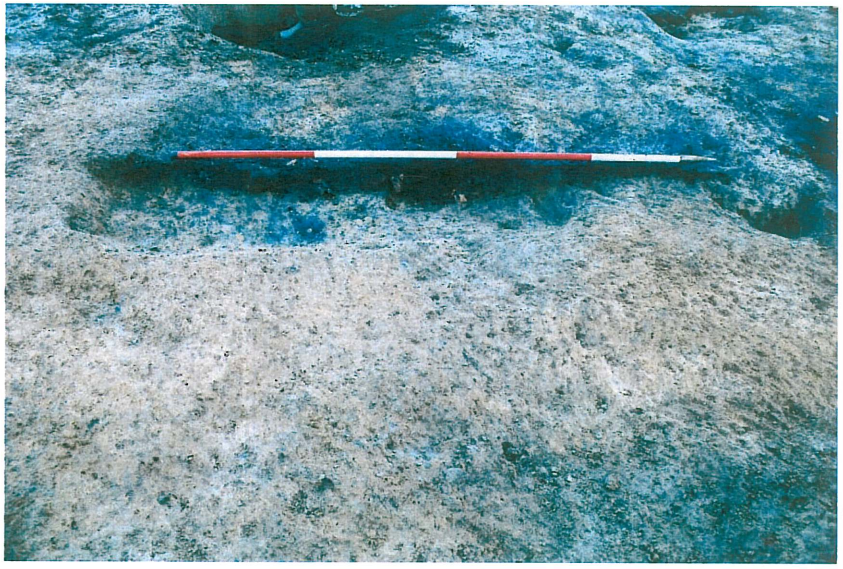


Plate 12: Mid ex of pit F102 from north- west at north-west of cutting (05_09_CP263:13)

Plate 13: Extent of Area 2 from north (05_09_CP260:12)

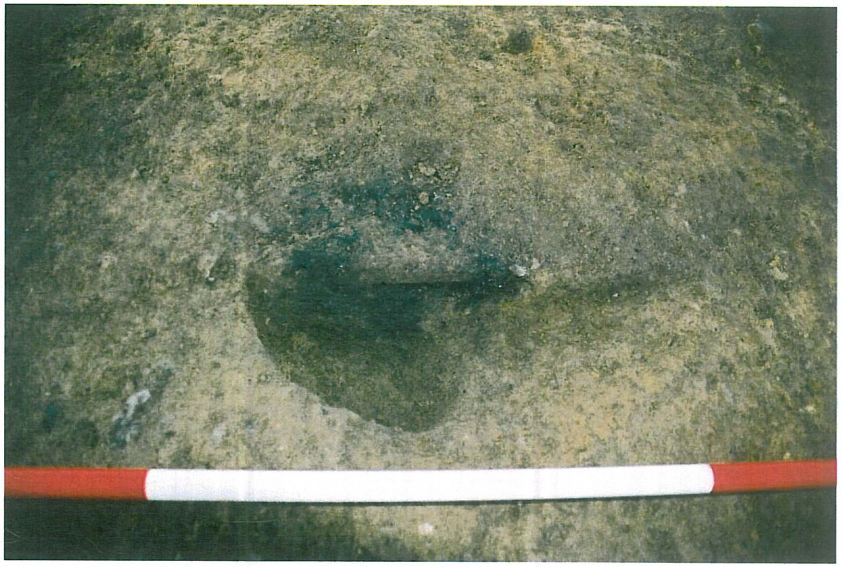


Plate 14: Section through cremation pit F95 (05_09_CP262:2)

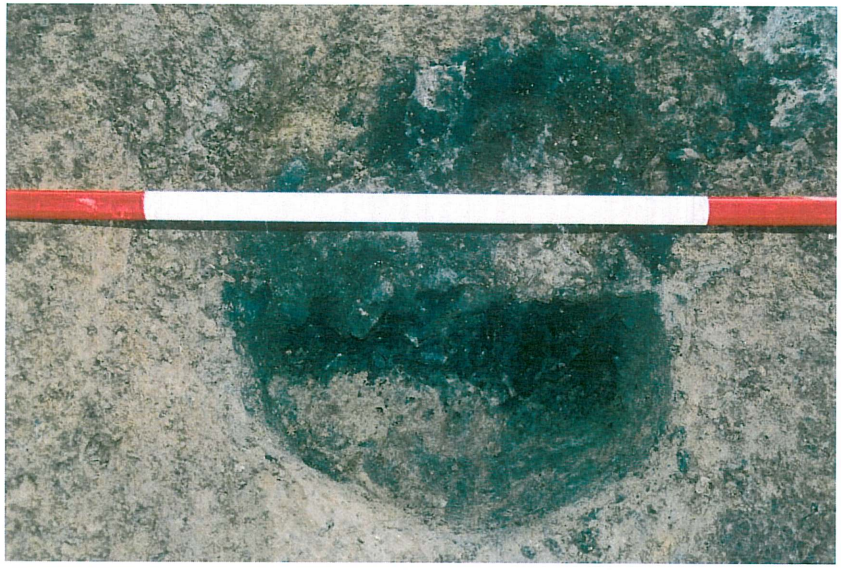


Plate 15: Mid –ex of sub-circular pit F65 (05_09_CP261:9)

Plate 16: Post - ex of posthole F85 (part of possible structure) (05_09_CP262:1)

Plate 17: Post – ex of posthole structure from north-west (05_09_CP263:7)

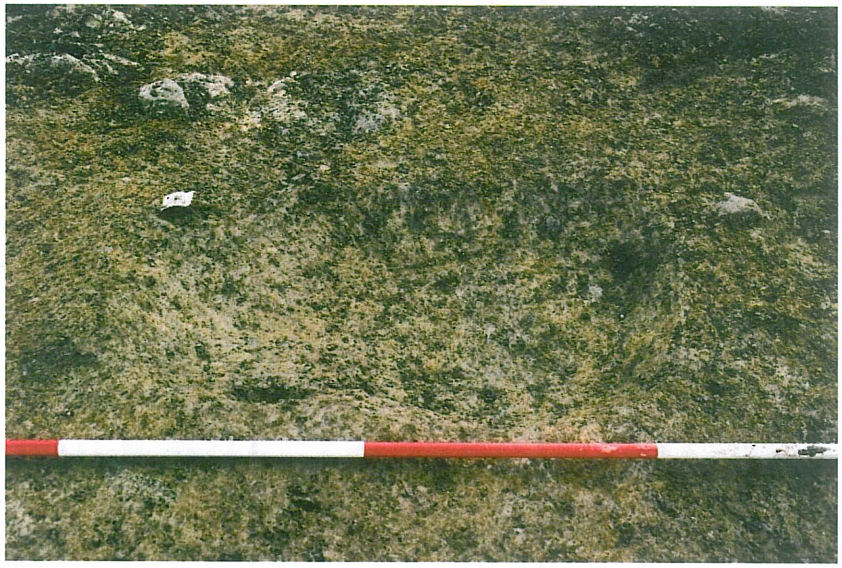


Plate 18: Post-ex of isolated pit F55 (05_09_CP261:5)

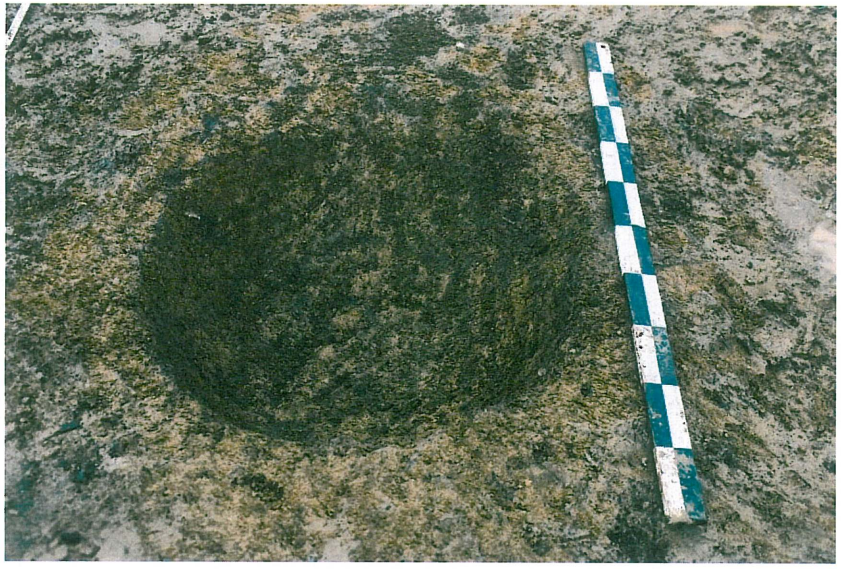


Plate 19: Post-ex of circular pit F115 (05_09_CP267:2)

Plate 20: Post-ex of oval pit F118 (05_09_CP266:8)

Plate 21: Post-ex of oval pit F121 (05_09_CP266:17)

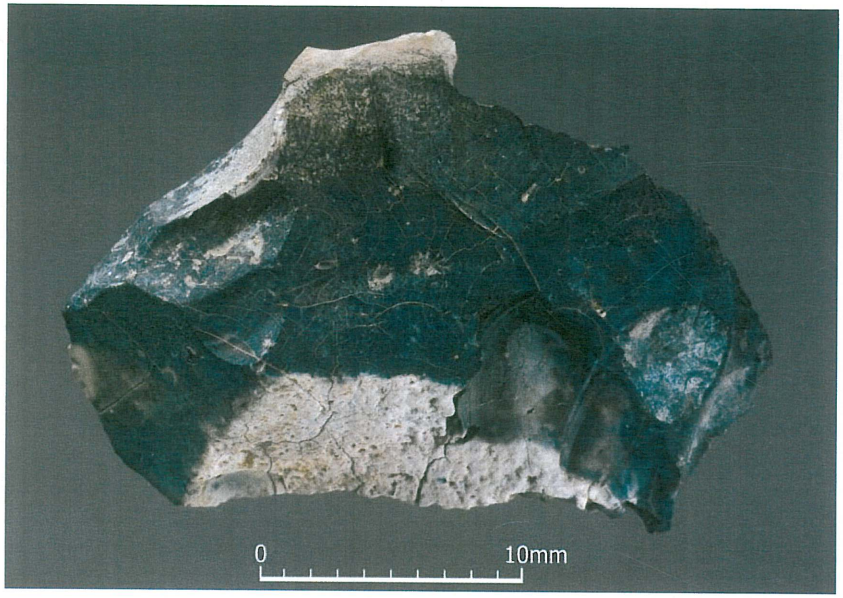


Plate 22: Platform flake (05_09_Artefact photos_Cuffsborough2_E2197:1:1_001)

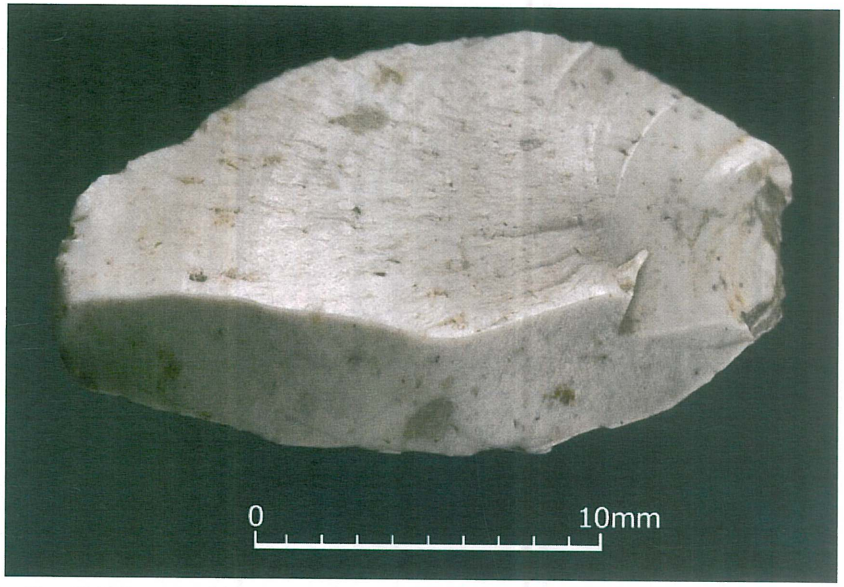


Plate 23: Fully patinated flake (05_09_Artefact photos_Cuffsborough2_E2197:32:1_001)

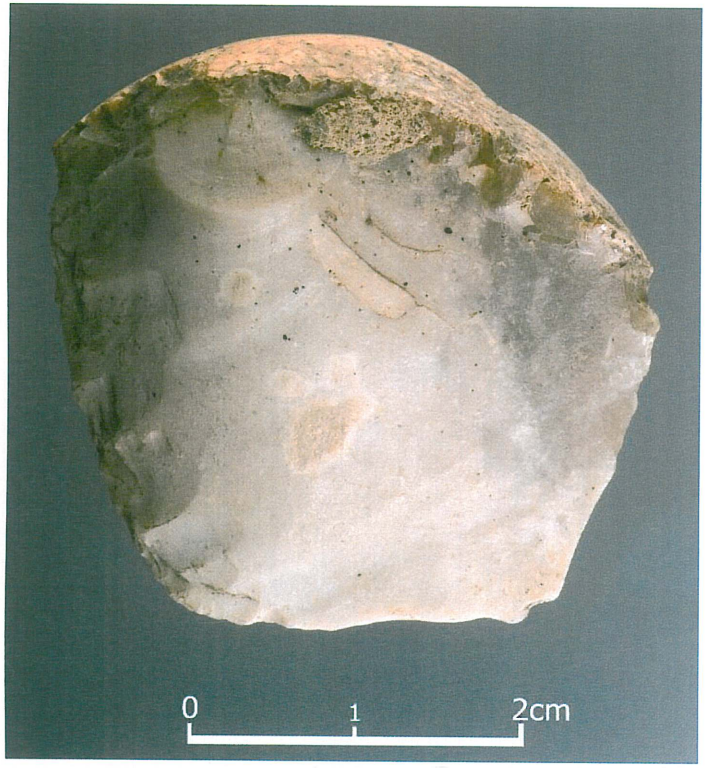


Plate 24: Sub-circular flint scraper (05_09_Artefact photos_Cuffsborough2_E2197: 123:9_001)

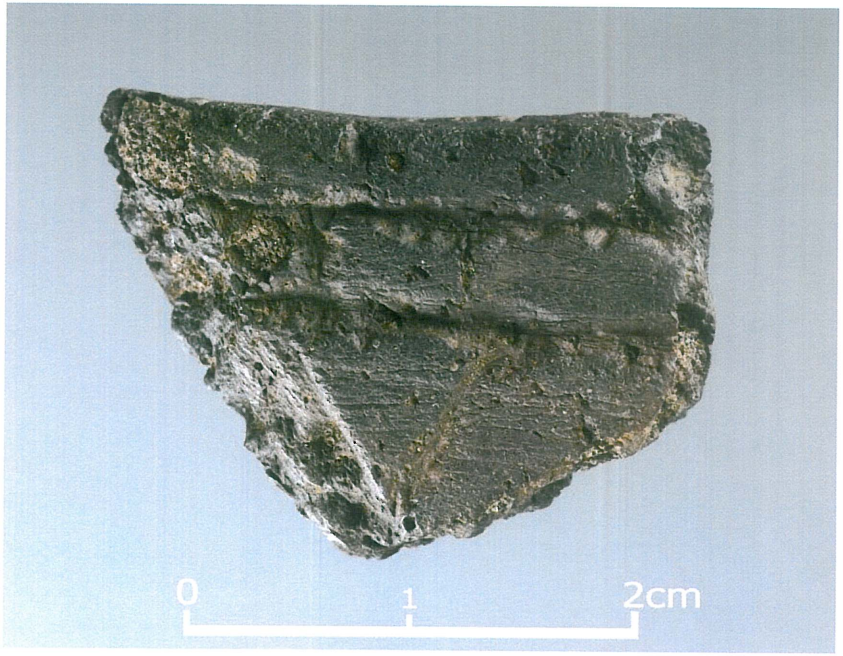


Plate 25: Decorated Bronze Age pottery rim sherd (05_09_Artefact photos_Cuffsborough2_E2197:58:1_002)