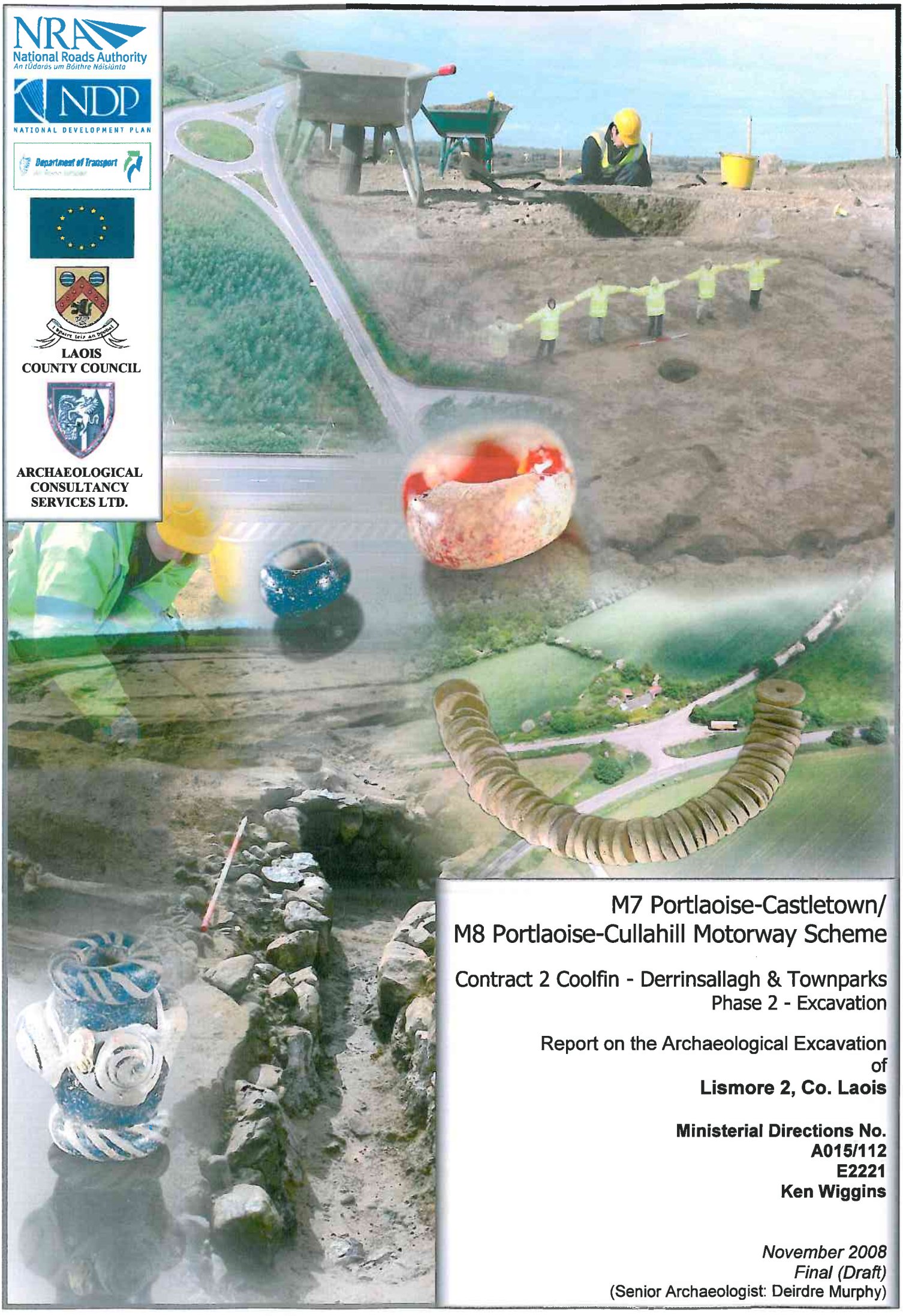

National Roads Authority
An tÚdarás um Bóithre Náisiúnta

NDP
NATIONAL DEVELOPMENT PLAN

Department of Transport

LAOIS
COUNTY COUNCIL

ARCHAEOLOGICAL
CONSULTANCY
SERVICES LTD.

M7 Portlaoise-Castletown/ M8 Portlaoise-Cullahill Motorway Scheme

Contract 2 Coolfin - Derrinsallagh & Townparks
Phase 2 - Excavation

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

Ministerial Directions No.
A015/112
E2221
Ken Wiggins

November 2008
Final (Draft)
(Senior Archaeologist: Deirdre Murphy)

PROJECT DETAILS

Project	M7 Portlaoise to Castletown/ M8 Portlaoise to Cullahill Motorway Scheme
Client	Laois County Council, County Hall, Portlaoise, Co. Laois
Contract	Contract 2
Site Name	Lismore 2
Townland	Lismore, Co. Laois
Nat. Grid Ref.	227954, 186014
OS Map Ref.	OS 6 inch sheet 22
Chainage	12500–12960
Ministerial Direction No.	A015/112
Record No.	E2221
Archaeologist	Ken Wiggins
Senior Archaeologist	Deirdre Murphy
Report Type	Final
Report Status	Draft
Report by	Wiggins with Kane
Date of Submission	November 2008
Distribution	Elspeth Logan & Mary Deevy

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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. Contract 2 consists of approximately 11km of motorway, which extends east/west from Aghaboe to west of Borris-in-Ossory through the townlands from Coolfin to Townparks and Derrinsallagh. The following report describes the results of archaeological excavation along one section of the planned M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, at Lismore, County Laois, Contract 2.

A programme of advanced archaeological investigation (Phase 1) was undertaken in April 2005 by Lydia Cagney under ministerial direction (A015/036) from the Minister of the Environment, Heritage and Local Government, issued in consultation with the National Museum of Ireland (NMI) in accordance with Section 14 of the National Monuments (Amendment) Act 2004. Phase 1 assessment identified a number of archaeological deposits and features. The site was designated Lismore 2.

The full archaeological resolution of Lismore 1 commenced on 2nd November 2005 and was directed by Ken Wiggins. For recording purposes, the site was designated the scheme no A015/112 and record no E2221. Topsoil stripping was targeted on features revealed during Phase 1 testing, resulting in the opening of four cuttings (Areas 1–4) at widely spaced intervals on a north-west/south-east axis across the field. A large number of archaeological features of prehistoric date, including post-holes, stake-holes, pits and hearths were revealed in Areas 1–3, but topsoil stripping of Area 4 revealed no features or deposits of archaeological interest. During Phase 1 investigation, a number of the test trenches at the southern end of the field could not be completed due to waterlogged conditions. The dry nature of the ground allowed this trenching to be concluded, and the excavation of one of the trenches, T36, uncovered remains of a large charcoal-rich pit, likely to be of prehistoric origin. A number of pottery sherds, stone objects, flint debitage and glass fragments were recorded.

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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 Lismore 2, Contract 2, County Laois (Ordnance Survey six-inch sheet 22, 874mm from the west margin and 313mm from the south margin; National Grid Co-ordinates 227954, 186014; Figures 1–7). The site at Lismore 2 was situated 3.5km south-east of Borris-in-Ossory village. It was located between Chainage 12500 and 12960 of the proposed scheme, in the townland of Lismore 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 February 2009 and that publication and public

lectures/seminars will follow thereafter. Both the format and timescale 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 Lydia Cagney. The site was identified during archaeological testing carried out by Lydia Cagney of Archaeological Consultancy Services Ltd in April 2005 (Testing Area 9, Contract 2, Field 533). Forty-four trenches were excavated within this field and a number of potential archaeological features were identified in widely spaced concentrations. The site was designated Lismore 2.

1.4 Date and Duration of Excavation Works

Topsoil stripping was carried out between 1st and 7th November 2005 (Areas 1–3). The stripping of Area 4 took place on 2nd February 2006, but revealed nothing of archaeological interest, and was immediately backfilled. The completion of test trench T36, which revealed another archaeological feature, was carried out on 24th November 2005. Excavation of Areas 1–3 took place between 1st and 25th November 2005.

1.5 Size and Composition of the Excavation Team

The excavation team was composed of:

One director

Two supervisors

Eight archaeological assistants

Seven general operatives.

2. RECEIVING ENVIRONMENT

2.1 Detailed Overview of the receiving environment

2.1.1 Topographic

The prehistoric settlement evidence revealed at Lismore 2 was situated on rising ground around the north-east side of Knockseera hill. The motorway was routed to skirt the north and east edges of this hill, located south-east of the village of Borris-in-Ossory, traversing the townlands of Lismore, Barnasallagh, and Derryvorrigan as it progressed. Archaeological sites were revealed in all three townlands. The only other side found in the townland of Lismore was part of a large early medieval enclosure with burials, well to the south-east of Lismore 2, which was mostly contained in the adjoining townland of Bushfield or Maghernaskeagh (Bushfield or Maghernaskeagh/Lismore 1). However, one area of the site, Zone F, a number of burnt spreads and troughs, was located on the Lismore side of the townland boundary, and by its nature was potentially contemporary with the activity recorded at Lismore 2. Two sites were excavated by Anne-Marie Lennon at Barnasallagh, adjoining Lismore from the north-east. Barnasallagh 1 was an isolated, shallow circular pit with charcoal. Barnasallagh 3 comprised an isolated charcoal production pit. Two much more substantial sites were excavated by Anne-Marie Lennon in the townland of Derryvorrigan. The remains of pits, post-holes, spreads, a hearth, three possible round-houses, bowl furnaces and a lime kiln were excavated at Derryvorrigan 1. This settlement evidence is considered to be of early medieval date. At Derryvorrigan 2 the remains of a possible structure and associated pits and spreads were excavated. This material is likely to be contemporary with the evidence recorded at Derryvorrigan 1.

The ground about the north and east slopes of Knockseera Hill represented a prominent location in the landscape that would seem to have been a natural choice for a settlement. Area 1, the south-east extremity of the site, lay around 143.5m OD. The rising ground to the north-west, where Areas 2 and 3 were located, lay around 145.5m OD. Lismore 2 is not located near any major rivers or lakes, and the choice of location seems to have been dictated more in terms by a need for a wide view, or a prominent position, rather than proximity to a major water source. A water course does exist in the valley between Sentry Hill and Knockseera, *c*.1.25km north-west of Lismore 2, which would also account for the settlement at Derryvorrigan. Water could also be sourced at Kilcotton, *c*.1.2m east-north-east of Lismore 2. These local water supplies appear to have been enough to support the settlement at Lismore 2, which otherwise enjoyed the benefits of a relatively lofty and sheltered perch on the north-east slope of Knockseera Hill.

2.1.2 Archaeological

There are several recorded monuments in the townlands surrounding Lismore 2. In Lismore townland itself, *c*. 260m east of Area 1 at Lismore 2, are the remains of a medieval church. It has been suggested that this church was a later edition to a possibly earlier ecclesiastical site. This church was dedicated to St. Canice and was known as 'Cill Cainneach Beg' or 'Kilkennybeg' meaning 'the little church of Canice', obviously in relation to the saints more important churches at Aghaboe and Kilkenny. The name Kilkennybeg is still attached to the field adjoining the church on the south and is separated from it by a modern fence. The field in which the church is located is called 'the lawn' or sometimes 'the church field'. The only inscribed monuments are two or three engraved grave stones from the 18th century (Carrigan, 1905, I, 131-2). The placename 'Lismore' may refer to the enclosure that surrounded the monastic site. A tower house is indicated in Lismore on the down survey parish maps (1654-6). The two structures indicated on the equivalent barony maps most likely represent the tower house and the church (Courtney 2005, 107).

In Grangemore townland, to the south of Lismore, is a 17th century castle (Sweetman et al 1995, 125), once owned by the Phelans. According to Carrigan, the walls are 3ft thick, the doors are defended by port-holes, and the chimney stacks are lozenge-shaped (Carrigan 1905, I, 132). Also in this townland are the remains of a rectangular stone built house (Sweetman et al 1995, 127). There is also a rectangular earthwork, or possible moated site in Grangemore, which may represent an Anglo-Norman presence in the area (ibid, 60). There are two circular enclosures in the same townland (ibid, 47). It is impossible to speculate on the origin of these enclosures, as they may represent prehistoric or early medieval settlements. At Knockseera, to the west of Lismore, are the remains of a church and graveyard. These remains are associated with St. Kiernan of Ossory (Sweetman et al 1995, 85).

2.1.3 Historic

The landscape around this part of Co. Laois was probably rampant with political strife and upheaval in the early Christian period. This would have been as a result of both conflict with the Vikings and also conflict between the indigenous tribes of the area as they clashed over land, power and wealth.

In the beginnings of the early Christian period in the 5th century AD, the townland of Lismore lay in the territory of the Kingdom of Osraige. To the east and north-east was the kingdom of the Laigin. To the west was Mumu and to the North was Mide (Smyth 1982, 144). The territory of the Osraige later became the medieval diocese of Ossory (Smyth 1982, 146).

Aengus Osrithe was the founder and first ruler. The ancient kingdom of Ossory has been now broken up into 14 baronies. Three of these baronies lie in Co. Laois and the rest lie in Co. Kilkenny. The three in Co. Laois are Upperwoods, Clarmallagh and Clandonagh. Clandonagh can be translated as the territory of the Clan or children of Donnagh. These were recognised as territorial divisions by 1657 when the civil survey referred to them as cantreds or hundreds. They only became baronies in the legal sense 200 years later (Carrigan 1905, I, 21).

The Osriage were close neighbours of the Laigis and were located in the marshes of Muma and Laigin. From an early period, they had appropriated what is now part of south Co. Laois. They had a strong association with St. Canice, who was their most famous patron saint. They appear to have been one of the early groups of Erainn tribes in the south of Ireland and their territory was regarded as part of Munster rather than Leinster. A connection between the Osraige and another group, the Corco Laìgde has been commented upon. The Corcu Laìgde probably originated in Cork. The fragmentary Annals states that the seven kings of the Corco Laìgde ruled Osraige and the seven kings of the Osraige took control of Corco Laìgde. The Osraige seem to have re-asserted their independence from the Corco Laìgde by the mid-7th century but a few battles are recorded between the Osraige and their western neighbours before the late 10th century. They were also engaging in disputes with the Laigin to the east.

Numerous battles had weakened the Laigis, and this was noticed by Cathal mac Finguin, King of Munster, who took advantage of this by invading the Laigin and demanding their hostages in 738. He was avenging an incident that had occurred three years previously at Fèile where his ally, Cellach, King of Osraige, had been slain (Muirchadha 1999, 48). Cathal died in 742, but in the same year the Osraige penetrated as far as Westmeath, devastating both Cenèl Fiachach and Delbna.

Cerbhall mac Dùnlainge was the most famous king of Osriage. He is known for his successes against the Vikings, his military power and political capabilities. It has been suggested that his success was due to his ability to adapt to changing political situations and his tendency to ally himself with those he feared most as an enemy (Downham 2004, 17). During his career, between 842 and 888, he turned Ossory from a kingdom of relative obscurity into a major player in early medieval politics (Downham 2004, 1). He became a formidable force against the Vikings after he succeeded his father, Dùngal, in 842. He defeated the Norsemen at Cuil-moine in 844 and in the following year, killed 1200 of the Vikings at Dublin (Carrigan 1905, I, 37).

Until the late 850s, there were no further dealings between Cerbhall and the Vikings. In 852, Cerbhall joined forces with the Vikings and the Munstermen to fight against the Lochlanns of Co. Tipperary. In 859, a great army was lead by Cerbhall and his Viking ally Amhlaeibh, into Meath, which they spoiled for three months. Peace was restored when Cerbhall submitted to the Bishop of Armagh, successor to St. Patrick, at the Synod of Rath-Hugh and thus made alliance with the north. After the synod, Cerbhall severed his alliance with his Viking allies and was engaged in conflicts with them in the following year when he slew the people of the Viking king Rodolph (Downham 2001, 13; Carrigan 1991, I, 38). He spent his time thereafter leading campaigns against his neighbours in Leinster, Munster and also by participating in two campaigns against Connacht. He had managed, by the end of his career, to establish Ossory as an independent power in southern Ireland (Downham 2004, 7).

It is generally agreed that between 795 and 837 the Vikings began sporadic attacks in Ireland. Leinster was vulnerable to attacks coming from Dublin, Wexford and Waterford. Laois escaped attacks for the first 45 years due to its inland location. In 825, the Vikings began to intimidate the Osraige and two years later captured an encampment of the Laigin and killed many. Between 837 and 876, large Viking fleets began to arrive at the mouth of the Boyne and the Liffey whereby the Vikings could carry out intensive raiding while constructing semi-permanent settlements for the winter.

Laois was protected to the north and east by the kingdom of Leinster and to the south by the kingdom of Ossory. The first recorded raid in Laois was in 841, just after the Viking foundation of Dublin and Annaghassan. Leinster and the Southern Ui Neill were plundered as far as the Slieve Bloom, which was on the border of the territory between the Ui Neill and Laois. The Dublin garrison then attacked the monastery of Clonenagh and after that, the monastery of Killeigh in Co. Offaly. In 843, large campaigns saw the establishment of a new base on Lough Ree and in 845, the hill of Dunmaise in Laois was attacked and plundered. In the same year, the Irish conducted a series of successful counter attacks on the Vikings. The first occurred in Ossory where a Viking fleet is said to have arrived up the River Nore and plundered Coolcashin in Kilkenny. In the late 860s and 870s, the Viking threat to the Osraige lessened somewhat. Between 876 and 916 the raiding calmed. This period has been often called the ‘40 years rest’. During the years 916 to 937 the activities of the Vikings can no longer be referred to as raids, as they were intertwined with the political issues among the Irish (Doherty 1998, 295).

3. RESEARCH FRAMEWORK

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

(i) The construction date or date of initial site occupation/use
(ii) The date of site abandonment
(iii) The extent of the archaeological site/activity
(iv) The location and distribution of known contemporary sites in the local, regional and national (and international, if appropriate) context.
(v) The phases of activity on site
(vi) Why the site location would have been chosen
(vii) The likely social status of the builders/occupiers of the site
(viii) The function of the site and its likely interrelationships with the contemporary social, economic, cultural and natural environment.
(ix) 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 1st November 2005 under Ministerial Direction Number A015/112. 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. E2221:3:1 represents find number 1 within feature number 3 in Lismore 2, which was excavated under record number E2221. 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

Lismore 2 consists of 3 Areas of archaeological features and deposits (Areas 1–3), each one with its own feature list. Area 4 of the site was archaeologically sterile. A limited amount of archaeological material was recorded along the completed eastern extent of Phase 1 test trench T36.

Area 1:

F001 Topsoil
F002 Natural
F003 Fill of hearth F048 (Figure 13; Plates 1, 2 & 3)
F004 Non-archaeological
F005 Fill of shallow pit F039 (Figure 13)
F006–**F007** Non-archaeological
F008 Fill of shallow pit F040 (Figure 13)
F009 Fill of pit F047 (Figure 13)
F010 Fill of post- or stake-hole F041
F011 Fill of post- or stake-hole F046
F012–**F015** Non-archaeological
F016 Fill of pit F051 (Figure 13; Plates 4 and 5)
F017 Fill of shallow pit F043 (Figure 13)
F018 Fill of stake-hole F042
F019 Non-archaeological
F020 Fill of shallow pit F045
F021–**F025** Non archaeological
F026 Fill of possible post-hole F044
F027–**F031** Non-archaeological
F032 Fill of pit F049 (Figure 13)
F033–**F038** Non-archaeological
F039 Cut of shallow pit, filled with F005 (Figures 8 and 13)
F040 Cut of shallow pit, filled with F008 (Figures 8 and 13; Plate 7)
F041 Cut of post- or stake-hole, filled with F010 (Figures 8 and 13)
F042 Cut of stake-hole, filled with F018 (Figures 8 and 13)
F043 Cut of shallow pit, filled with F017 (Figures 8 and 13)
F044 Cut of possible post-hole, filled with F026 (Figures 8 and 13)

F045 Cut of shallow pit, filled with F020 (Figure 8)

F046 Cut of post-hole, filled with F011 (Figures 8 and 13)

F047 Cut of pit, filled with F009 (Figures 8 and 13; Plate 7)

F048 Cut of hearth, filled with F003 (Figures 8 and 13; Plates 2 and 3)

F049 Cut of pit or large post-hole, filled with F032 (Figures 8 and 13; Plate 8)

F050 Non-archaeological

F051 Cut of charcoal pit, filled with F016 (Figures 8 and 13; Plates 4–6)

Area 2:

F100 Cut of field ditch, running south-west/north-east (Figures 9, 10)

F101 fill of ditch F100 (Figure 14)

F102 Charcoal-rich brown silty fill of pit F132 (Figure 15)

F103 Charcoal rich brown silty fill of pit F146 (Figure 15)

F104 Charcoal rich brown silty fill of pit F147 (Figure 15)

F105 Brown fill with frequent stones and charcoal

F106 Charcoal-rich deposit with burnt bone (Figure 17; Plate 9)

F107 Brown silty deposit with small pebbles, fill of pit F140 (Figure 15)

F108 Deposit of charcoal possibly under redeposit fill F247, fill of pit F248

F109 Grey-brown fill with occasional charcoal

F110 Brown silty fill with stones, fill of post-hole F131 (Figure 16)

F111 Dark brown to black fill of post-hole F153 (Figure 16)

F112 Black charcoal-rich fill with frequent stones, post-pipe of post-hole F159 (Figure 16)

F113 Black charcoal rich stony deposit, fill of pit F157 (Figure 15)

F114 Charcoal-rich fill of post-hole F240 (Figure 16)

F115 Burnt sandy silt upper fill of post-hole F163 (Figure 16)

F116 Charcoal rich fill of stake-hole F164

F117 Brown silty fill with charcoal and stone inclusions, fill of post-hole F156 (Figure 16; Plate 11)

F118 Brown silty clay with charcoal and stone, upper fill of post-hole F155 (Figure 16; Plates 10–12)

F119 Brown silty fill with charcoal and stone, upper fill of post-hole F172 (Figure 16)

F120 Brown stony deposit, upper fill of large pit F178 (Figure 15)

F121 Brown silty deposit with charcoal, fill of post-pit F170 (Figure 16; Plate 10)

F122 Fill of possible post-hole F123 (Figure 17)

F123 cut of possible post-hole, filled with F122 (Figures 10 and 17)

F124 Fill of possible post-hole F125 (Figure 17)

F125 Cut of a post-hole, filled with F124 (Figures 10 and 17)

F126 Fill of cut of post-hole F129 (Figure 17)

F127 Possible post-pipe within post-hole F129 (Figure 17)

F128 Fill of post-pit F129 (Figure 17)

F129 Cut of post-hole, filled with F126, F127, F128 (Figures 10 and 17)

F130 Fill of pit F131 (Figure 15)

F131 Cut of pit, filled with F130 (Figures 10 and 15)

F132 Cut of a shallow pit, filled with F102 (Figures 10 and 15)

F133 Fill of post-hole F134

F134 Cut of post-hole, filled with F133 (Figures 9 and 17)

F135 Fill of post-hole F136

F136 Cut of small post-hole, filled with F135 (Figures 9 and 17)

F137 Upper fill of post-hole F139 (Figure 17)

F138 Primary fill of post-hole F139 (Figure 17)

F139 Cut of a post-hole, filled with F137 and F138 (Figures 10 and 17)

F140 Cut of a pit, filled with F107 (Figures 9 and 15)

F141 Grey silty layer of fill of hearth F145 (Figure 15)

F142 Brown silty lower fill of hearth F145 (Figure 15; Plate 14)

F143 Burnt clay layer in hearth F145 (Figure 15)

F144 Charcoal deposit on base of hearth F145 (Figure 15)

F145 Cut of hearth, filled with F141–F144 (Figures 10 and 15; Plate 14)

F146 Cut of pit, filled with F103 (Figures 10 and 15)

F147 Cut of shallow pit, filled with F102 (Figures 10 and 15)

F148 Fill of post-hole F149, stratified under F106 (Figure 17)

F149 Cut of post-hole, filled with F148 (Figures 10 and 17)

F150 Lower fill of post-hole F151 (Figure 16)

F151 Cut of post-hole, filled with F150 and F110 (Figures 9 and 16)

F152 Fill of post-hole F153 (Figure 16)

F153 Cut of post-hole, filled with F111 and F152 (Figures 9 and 16; Plate 18)

F154 Lower fill of post-hole F155 (Figure 16)

F155 Cut of post-hole, filled with F118 and F154 (Figures 9 and 16; Plates 10–13)

F156 Cut of post-hole, filled with F117 (Figures 9 and 16; Plates 11 and 13)

F157 Cut of a shallow pit, filled with F113 (Figures 9 and 15)

F158 Packing material in post-hole F159 (Figure 16)

F159 Cut of post-hole, filled with F112 and F158 (Figures 9 and 16)

F160 Fill of pit F161 (Figure 15)

F161 Cut of pit, filled with F160 (Figures 9 and 15)

F162 Fill of post-hole F163 (Figure 16)

F163 Cut of post-hole, filled with F115 and F162 (Figures 9 and 16)

F164 Cut of stake-hole, filled with F116 (Figures 9 and 18; Plates 17 and 18)

F165 Fill of stake-hole F166

F166 Cut of stake hole, filled with F165 (Figures 9 and 18; Plates 17 and 18)

F167 Fill of stake-hole F168

F168 Cut of stake-hole, filled with F167 (Figures 9 and 18; Plates 17 and 18)

F169 Post-pipe fill within post-hole F170 (Figure 16)

F170 Cut of post-hole, filled with F121 and F169 (Figures 9 and 16; Plates 10 and 13)

F171 Fill of post-hole F172 (Figure 16)

F172 Cut of post-hole, filled with F171 and F119 (Figures 9 and 16; Plate 13)

F173 Fill of linear feature F174 (Figure 14)

F174 Cut of linear feature, filled with F173 (Figures 9, 10 and 14; Plate 19)

F175 Charcoal layer of large pit F178 (Figure 15)

F176 Brown fill of large pit F178 (Figure 15)

F177 Orange fill of large pit F178 (Figure 15)

F178 Cut of large pit, filled with F120, F173, F175 and F177 (Figures 9 and 15)

F179 Fill of stake-hole F180

F180 Cut of stake-hole, filled with F179 (Figures 9 and 18)

F181 Fill of stake-hole F182

F182 Cut of stake-hole, filled with F181 (Figures 9 and 18)

F183 Fill of stake-hole F184

F184 Cut of stake-hole, filled with F183 (Figure 9)

F185 Fill of stake-hole F186

F186 Cut of stake-hole, filled with F185 (Figure 9)

F187 Fill of stake-hole F188

F188 Cut of stake-hole, filled with F187 (Figure 9)

F189 Fill of stake-hole F190

F190 Cut of stake-hole filled with F189 (Figure 9)

F191 Fill of stake-hole F192

F192 Cut of stake-hole, filled with F191 (Figure 9)

F193 Fill of stake-hole F194

F194 Cut of stake-hole, filled with F193 (Figures 9 and 18)

F195 Fill of stake-hole F196

F196 Cut of stake-hole, filled with F195 (Figures 9 and 18)

F197 Fill of post-hole F199 (Figure 16)

F198 Packing of post-hole F199 (Figure 16)

F199 Cut of post-hole filled with F197 and F198 (Figures 9 and 16)

F200 Fill of stake-hole F201

F201 Cut of stake-hole, filled with F200 (Figures 9 and 18; Plates 16 and 19)

F202 Fill of stake-hole F203

F203 Cut of stake-hole, filled with F202 (Figures 9 and 18; Plate 16)

F204 Fill of stake-hole F205

F205 Cut of stake-hole, filled with F204 (Figures 9 and 18; Plate 16)

F206 Fill of stake-hole F207

F207 Cut of stake-hole, filled with F206 (Figures 9 and 18; Plate 16)

F208 Fill of stake-hole F209

F209 Cut of stake-hole, filled with F208 (Figures 9 and 18; Plate 16)

F210 Fill of stake-hole F211

F211 Cut of stake-hole, filled with F210 (Figure 9)

F212 Fill of stake-hole F213

F213 Cut of stake-hole, filled with F212 (Figure 9; Plate 16)

F214 Fill of stake-hole F215

F215 Cut of stake-hole, filled with F215 (Figure 9)

F216 Fill of stake-hole F217

F217 Cut of stake-hole, filled with F216 (Figure 9)

F218 Fill of stake-hole F219

F219 Cut of stake-hole, filled with F218 (Figure 9)

F220 Fill of shallow pit F221 (Figure 15)

F221 Cut of shallow pit, filled with F220 (Figures 9 and 15)

F222 Fill of shallow pit F223 (Figure 15)

F223 Cut of shallow pit, filled with F222 (Figures 9 and 15; Plates 15 and 19)

F224 Fill of stake-hole F225

F225 Cut of stake-hole, filled with F224 (Figure 9)

F226 Fill of stake-hole F227

F227 Cut of stake-hole, filled with F226 (Figure 9; Plate 15)

F228 Fill of stake-hole F229

F229 Cut of stake-hole, filled with F228 (Figure 9)

F230 Fill of stake-hole F231

F231 Cut of stake-hole, filled with F230 (Figure 9)

F232 Fill of stake-hole F233

F233 Cut of stake-hole, filled with F232 (Figures 9 and 18)

F234 Fill of stake-hole F235

F235 Cut of stake-hole, filled with F234 (Figures 9 and 18)

F236 Fill of stake-hole F237

F237 Cut of stake-hole, filled with F236 (Figure 9)

F238 Fill of stake-hole F239

F239 Cut of stake-hole, filled with F238 (Figure 9)

F240 Cut of post-hole, filled with F114 (Figures 9 and 16; Plate 18)

F241 Fill of shallow linear pit parallel to ditch F100 (Figure 14)

F242 Cut of shallow linear pit, filled with F241 (Figures 10 and 14)

F243 Fill of linear feature at west limit of Area 2 (Figure 14)

F244 Cut of field drain, filled with F243 (Figures 10 and 14)

F245 Middle fill of field ditch F100, below fill F101 (Figure 14)

F246 Lower fill of ditch fill F100, below fill F245 (Figure 14)

F247 Charcoal layer stratified on fill F108 in pit F248 (Figure 15)

F248 Cut of pit, filled with F108 and F247 (Figures 9 and 15)

F249 Fill of stake-hole F252

F250 Fill of stake-hole F253

F251 Fill of stake-hole F254

F252 Cut of stake-hole, filled with F249 (Figures 9 and 18; Plate 16)

F253 Cut of stake-hole, filled with F250 (Figures 9 and 18)

F254 Cut of stake-hole, filled with F251 (Figures 9 and 18)

Area 3:

F300 Natural depression in subsoil, containing deposit F311

F301 Cut of hearth, filled with F303 (Figures 11 and 21; Plate 20)

F302 Cut of field drainage ditch, filled with F315 (Figures 11 and 19)

F303 Fill of round hearth F301 (Figures 11 and 21; Plate 20)

F304 Burnt stone fill of large pit F330 (Figure 20; Plate 21)

F305 Cut of pit containing burnt stone fill F306 (Figures 11 and 21; Plate 24)

F306 Fill of pit F305 (Figure 21)

F307 Burnt stone fill of pit F331 (Figure 21)

F308 Burnt stone fill of pit F332 (Figure 21; Plate 23)

F309 Cut of western extent of angled field ditch, aligned sw/ne, filled with F324; same as F312 (Figures 11 and 19

F310 Root disturbance/non-archaeological

F311 Charcoal and stone fill of natural depression in subsoil F300

F312 Cut of eastern extent of angled field ditch, aligned nw/se, filled with F324; same as F309 (Figures 11 and 19)

F313 Cut of field drain, aligned nw/se, filled with F320 (Figures 11 and 19)

F314 Cut of field drain, aligned ne/sw, filled with F325 (Figures 11 and 19)

F315 Fill of field ditch F302 (Figure 19)

F316 Cut of round pit containing pottery, filled with F317 (Figures 11 and 21; Plate 22)

F317 Fill of pit F316 (Figure 21; Plate 22)

F318 Cut of post-hole, filled with F319 (Figures 11 and 21)

F319 Fill of post-hole F318 (Figure 21)

F320 Fill of field ditch F313 (Figure 19)

F321 Lower fill of field ditch F313

F322 Cut of large sub-rectangular pit, filled with F323, F338, F339 and F340 (Figures 11 and 20)

F323 Upper middle fill of pit F322 (Figure 20)

F324 Fill of angled field boundary ditch F309 /F312 (Figure 19)

F325 Fill of field boundary ditch F314 (Figure 19)

F326 Cut of oval pit filled with F327 (Figures 11 and 21)

F327 Fill of pit F326 (Figure 21)

F328 Cut of oval pit adjacent to pit F305, filled with F329 (Figures 11 and 21; Plate 24)

F329 Fill of pit F328 (Figure 21)

F330 Cut of pit filled with F304 (Figures 11 and 20; Plates 21 and 24)

F331 Cut of pit filled with F307 (Figures 11 and 21)

F332 Cut of pit filled with F308, F333 and F334 (Figures 11 and 21; Plate 23)

F333 Brown silty sand fill of pit F332, under F308 (Figure 21; Plate 23)

F334 Thin charcoal fill of pit F332, under F333 (Figure 21; Plate 23)

F335 Cut of large pit north of pit F304, filled with F336 and F337 (Figures 11 and 20)

F336 Primary fill of pit F335 (Figure 20)

F337 Upper fill of pit F335 (Figure 20)

F338 Upper fill of pit F322 (Figure 20)

F339 Lower middle fill of pit F322 (Figure 20)

F340 Primary fill of pit F322 (Figure 20)

F341 Cut of post-hole, in the base of pit F322, filled with F342 (Figures 11 and 20)

F342 Fill of post-hole F341 (Figure 20)

Test trench T36:

F400 Cut of field ditch to south of pit F402 (Figure 12)

F401 Fill of pit F402 (Figure 22)

F402 Cut of pit, filled with F401, F403 and F404 (Figures 12 and 22)

F403 Upper fill of pit F402 (Figure 22)

F404 Primary fill of pit F402 (Figure 22)

F405 Cut of field ditch to north of pit F402 (Figure 12)

4.2.2 Stratigraphic Matrix

The excavation of Lismore 2 was not confined to a single large area but consisted of four widely spaced areas on a north-west/south-east axis in Field 533 (testing area 9). Area 1, measuring 20m x 20m, was located at the south-east end of the field, on the north-west side of the third class road between Green Cross and Knockaroe Cross. Area 2 was 190m north-west of Area 1, and Area 3 was 55m north-west of Area 2. Area 4, which was found not to contain any features of archaeological interest, was 50m north-west of Area 3.

Two offset trenches from the testing phase were not completed due to local flooding of the field. The trenches, T36 and T38, aligned north-east/south-west, were located on the west side of the centreline trench, T1, aligned north-west/south-east. Phase 1 excavation of the two trenches stopped 40m short of the centreline trench, and during Phase 2 work at Lismore 2 both T36 and T38 were completed by mechanical stripping of the topsoil as far as the centreline trench. The completion of the two test trenches revealed a single feature of archaeological origin, pit F402, containing charcoal-enriched fills, located in test-trench T36. The trench was boxed-out to allow the pit to be fully excavated and recorded by hand.

Topsoil and subsoil

Topsoil and subsoil

F001	Topsoil: Soft dark brown clayey silt, containing angular and sub-rounded stones. Between 0.27m and 0.48m deep. One find (E2221:1:1) a piece of retouched flint (Area 3).
F002	Natural subsoil: Soft yellow to pale brown sandy silt with frequent small to medium angular stones and other decomposed stones.

Area 1

Hearth F048

Hearth F048 (Figures 8 and 13; Plates 1–3)

F048	Cut of sub-circular hearth pit. Measured 0.88m x 0.75m x 0.08m. Had a gradual break of slope from the top, gradual sides, an imperceptible break to the base and a rounded base. Filled with F039. Above F002, below F003.

F003	Fill of hearth pit F048, with soft dark reddish-brown silty clay with moderate inclusions of charcoal and small pebbles. Measured 0.88m x 0.75m x 0.08m. The edge of the cut was oxidised, indicative of *in situ* burning. One sample of charcoal-enriched soil was taken (1). Soil sample (1). Above F048, below F001.

Pits

Pit F039 (Figures 8 and 13)

F039	Cut of shallow pit. Measured 0.40m x 0.30m x 0.11m. Had a gradual break of slope from the top, concave sides, an imperceptible break to the base and a 'dish-shaped' base. This was the most northerly cut in the area. Filled with F005. Above subsoil F002, below fill F005.
F005	Fill of pit F039, with soft mid orange-brown clayey silt with occasional inclusions of small pebbles. Measured 0.40m x 0.30m x 0.11m. Soil sample (2). Above cut F039, below topsoil F001.

Pit F040 (Figures 8 and 13; Plate 7)

F040	Cut shallow sub-circular pit. Measured 0.48m x 0.43m x 0.18m. Had a gradual break of slope from the top, gradual sides to the north and south, vertical at the west, and undercut at the east, a gradual break to the base and an uneven base. Filled with F008. Above subsoil F002, below fill F008.
F008	Fill of pit F040, with soft loose mid orange-grey sand with occasional small stones. Measured 0.41m x 0.30m x 0.30m. Above cut F040, below topsoil F001.

Pit F043 (Figures 8 and 13)

F043	Cut of shallow sub-circular pit. Measured 0.44m x 0.38m x 0.13m. Had a gradual break of slope from the top on the east and sharp on the west, gradually sloping sides towards the west and sharp on the east, the break of slope to the base was gradual on the east, sharp on the west and a rounded base. Filled with F017. Above subsoil F002, below fill F017.
F017	Fill of pit F043, with soft mid grey-brown clayey sand. Measured 0.38m x 0.42m x 0.14m. Above cut F043, below topsoil F001.

Pit F045 (Figure 8)

F045	Cut of teardrop-shaped pit. There is no feature sheet for this in the reg. Measured *c*. 0.45m x *c*.0.24m. Filled with F020. Above subsoil F002, below fill F020.

F020	Fill of pit F045. There is no feature sheet for this in the reg. Above cut F045, below topsoil F001.

Pit F047 (Figures 8 and 13; Plate 7)

F047	Cut of circular pit. Measured 0.58m x 0.55m x 0.40m. Had a gradual break of slope from the top on the north and west and sharp on the east and south; vertical sides, a sharp break to the base and a sloped base towards the south-east. Filled with F009. Above subsoil F002, below fill F009.
F009	Fill of pit F047, with soft but sticky mid greyish brown sandy clay with occasional small stones. It contained one medium sized stone measuring 0.10m x 0.06m x 0.05m. Measured 0.58m x 0.55m x 0.40m. Soil sample (3). Above cut F047, below topsoil F001.

Pit F049 (Figures 8 and 13; Plate 8)

F049	Cut of sub-circular pit. Measured 0.51m x 0.45m x 0.37m. Had a sharp break of slope from the top, vertical sides (slightly undercut in the south-west), a sharp break to the base and a sloping base to the north-east and south-west. Filled with F032. Above subsoil F002, below fill F032.
F032	Fill of pit F049, with soft loose mid brown to grey clay sandy clay with occasional small stones. Measured 0.51m x 0.45m x 0.37m. Above cut F049, below topsoil F001.

Pit F051 (Figures 8 and 13; Plates 4–6)

F051	Cut of irregular shallow pit. Measured 1.40m x 1.30m x 0.10m. Had a gradual break of slope from the top, concave sides, gradual break to the base and an uneven base. Filled with F016. Above subsoil F002, below fill F016.
F016	Fill of pit F051, with loose dark black to brown silty clay with frequent charcoal, occasional burnt bone and frequent burnt stones. Measured 1.40m x 1.30m x 0.10m. Burnt bone weight 4g. Four-bag soil sample (4). Above cut F051, below topsoil F001.

Post-holes

Post-hole F041 (Figures 8 and 13)

F041	Cut of circular post-hole. Measured 0.20m in diameter x 0.45m+ deep. Had a sharp break of slope from the top, vertical sides; the cut was not bottomed. It was inclined from south to north. Filled with F010. Above subsoil F002, below fill F010.
F010	Fill of post-hole F041, with mid orange-brown silty clay with occasional small stones.

	Measured 0.20m in diameter x 0.45m+ deep. Above cut F041, below topsoil F001.

Post-hole F044 (Figures 8 and 13)

F044	Cut of oval post-hole. There is no feature sheet for this in the reg. Measured *c*.0.33m x *c*.0.25m x *c*.0.30m deep. Filled with F026. Above subsoil F002, below fill F026.
F026	Fill of post-hole F044. No feature sheet in the reg. Measured *c*.0.33m x *c*.0.25m x *c*.0.30m deep. Above cut F044, below topsoil F001.

Post-hole F046 (Figures 8 and 13)

F046	Cut of oval post-hole. There is no feature sheet in the reg. Measured *c*.0.25m x *c*.0.20m x *c*.0.48m. Filled with F011. Above subsoil F002, below fill F011.
F011	Fill of post-hole F046. No feature sheet. Measured *c*.0.25m x *c*.0.20m x *c*.0.48m. Above cut F046, below topsoil F001.

Stake-hole F042

Stake-hole F042 (Figures 8 and 13)

F042	Cut of large circular stake-hole. Measured 0.13m in diameter x 0.44m deep. Had a sharp break of slope from the top, vertical sides, a gradual break of slope at the base and an uneven base. It was inclined from east to west. Filled with F018. Above subsoil F002, below fill F018.
F018	Fill of post-hole F042, with soft mid orange-brown silty clay with occasional small stones. Measured 0.13m in diameter x 0.44m deep. Above cut F042, below topsoil F001.

Area 2

Linear features

Linear field boundary ditch F100 (Figures 9, 10, 14)

F100	Cut of linear field boundary ditch, continuing at both ends beyond the area limits. Measured 30m (recorded length) x 1.70m x 1m. Orientated north-east/south-west. Had a sharp break of slope from the top, very steep sides, and a gradual break to the base. Truncated field ditch F174. Filled with F101, F245 and F246. Above subsoil F002, below fills F101, F245 and F246.

F101	Fill of ditch F100, with soft mid greyish brown silty clay with occasional flecks of charcoal. Measured 30m x 1.70m x 1m. Contained burnt bone, weight 13g. One find, a quartz anvil stone (E2221:101:1; Figure 24). There was one bag of animal bone (the only animal bone found on the site). Above cut F100, below topsoil F001.
F245	Fill of ditch F100, with soft dark greyish brown silty clay with occasional stones and charcoal. Measured 1m x 0.25m (width x depth). Above fill F246, below fill F100.
F246	Primary fill of ditch F101, with firm mid grey-brown sandy clay with occasional large stones. Measured 0.90m x 0.28m (width x depth). Above cut F100, below fill F245.

Linear feature F174 (Figures 9, 10, 14 and 15; Plate 19)

F174	Cut of a linear field drain, continuing at both ends beyond the area limits. Measured 22m (recorded length) x 0.60m x 0.25m. Orientated south-east/north-west. Had a gradual break of slope from the top, gently sloping sides, a gradual break to the base and a concave base. Truncated large pit F178/fill F120. Truncated by larger field ditch F100. Filled with F173. Above subsoil F002, below fill F173.
F173	Fill of linear field drain F174, with firm mid orange-brown silty clay with frequent charcoal and burnt stone. Measured 22m (recorded length) x 0.60m x 0.25m. The burnt material in the fill probably originated from fill F120 of pit F178, which was truncated by the field drain. Two finds: a possible hone stone (E2221:173:1) and a shard of bottle glass (E2221:173:2). Above cut F174, below topsoil F001.

Field ditch F242 (Figures 10 and 14)

F242	Cut of linear feature with rounded corners. Measured 7.25m x 1.20m x 0.12m. Orientated north-east/south-west, parallel to field ditch F100. Had a gradual break of slope from the top, gradually sloping sides, an imperceptible break to the base and a rounded base. Filled with F241. Above subsoil F002, below fill F241.
F241	Fill of linear feature F242, with soft light grey silty clay with occasional charcoal and large stones. Measured 7.25m x 1.20m x 0.12m. Above cut F242, below topsoil F001.

Field drain F244 (Figures 10 and 14)

F244	Cut of a linear drainage ditch, located in the west corner of the area, continuing at both ends beyond the area limits. Measured 4.5m (recorded length) x 0.40m x 0.38m. Orientated north-east/south-west. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and a rounded base. Filled with F243. Above subsoil F002, below fill F243.
F243	Fill of linear field drain F244, with firm light yellow-grey sandy clay with occasional

	flecks of charcoal and moderate to large stones. Measured 4.5m (recorded length) x 0.40m x 0.38m. Above cut F244, below topsoil F001.

Pits

Pit F146 (Figures 10 and 15)

F146	Cut of shallow oval pit. Measured 0.80m x 0.55m x 0.05m. Had a gradual break of slope from the top, concave sides, an imperceptible break to the base and a rounded-concave base. Truncated by hearth F145. Filled with F103. Above subsoil F002, below fill F103.
F103	Fill of pit F146, with soft mid orange-brown silty clay with occasional flecks of charcoal. Measured 0.80m x 0.55m x 0.05m. Soil sample (15). Above cut F146, below topsoil F001.

Pit F131 (Figures 10 and 15)

F131	Cut of shallow oval pit. Measured 0.52m x 0.40m x 0.14m. Had a sharp break of slope from the top, concave sides, a gradual break to the base and a sloped base to the north. Filled with F130. Above subsoil F002, below fill F130.
F130	Fill of pit F131, with soft mid to dark greyish brown sandy clay with occasional small pebbles and organic material. Measured 0.52m x 0.40m x 0.14m. Above cut F131, below topsoil F001.

Pit F132 (Figures 10 and 15)

F132	Cut of shallow irregular pit. Measured 1.15m x 0.55m x 0.18m. Had a sharp break of slope from the top on the west, otherwise gradual; vertical sides on the west, otherwise gradually sloping; a sharp break to the base on the west, otherwise gradual and a sloped base towards the west. Filled with F102. Located 1.20m west of hearth F145. Above subsoil F002, below fill F102.
F102	Fill of pit F132, with soft dark greyish brown silty clay with moderate inclusions of charcoal and infrequent inclusions of burnt bone. Measured 1.15m x 0.55m x 0.18m. Burnt bone weight 2g. Two-bag soil sample (14). Above cut F132, below topsoil F001.

Pit F140 (Figures 9 and 15)

F140	Cut of sub-rectangular pit. Measured 0.50m x 0.40m x 0.19m. Had a sharp break of slope from the top, gradual sides on the east, otherwise vertical, a gradual break to the

	base and a concave or dish-shaped base. Filled with F107. Above subsoil F002, below fill F107.
F107	Fill of pit F140, with soft mid orange-brown silty clay with very occasional inclusion of small stones, stone fragments and charcoal flecks. Measured 0.50m x 0.40m x 0.19m. Above cut F140, below topsoil F001.

Pit F147 (Figures 10 and 15)

F147	Cut of shallow circular pit. Measured 0.46m in diameter x 0.06m deep. Had a gradual break of slope from the top, gradually sloping sides, an imperceptible break to the base and a concave base. Filled with F104. Above subsoil F002, below fill F104.
F104	Fill of pit F147, with dark grey-brown sandy clay containing occasional flecks of charcoal and very occasional inclusions of burnt bone. Measured 0.46m in diameter x 0.06m deep. Burnt bone weight 1g. Soil sample (24). Above cut F147, below topsoil F001.

Pit F157 (Figures 9 and 15)

F157	Cut of a shallow circular pit. Measured 0.55m in diameter x 0.13m deep. Had a gradual break from the top, gradually sloping sides, an imperceptible break to the base and a rounded base. Filled with F113. Above subsoil F002, below fill F113.
F113	Fill of pit F157, with soft dark brown-black silty clay with occasional flecks of charcoal and medium-sized stones; it also contained a thin lens of sand. Measured 0.55m in diameter x 0.13m deep. Finds: five sherds of prehistoric pottery (E2221:113:1–5; Plates 25-29). Soil sample (17). Above cut F157, below topsoil F001.

Pit F161 (Figures 9 and 15)

F161	Cut of irregular pit. Measured 0.83m x 0.53m x 0.24m. Had a sharp break of slope from the top, gently sloping sides, an imperceptible break to the base and a rounded base. Filled with F160. Above subsoil F002, below fill F160.
F160	Fill of pit F161, with soft light brown-grey silty clay with occasional small stones and charcoal. Measured 0.83m x 0.53m x 0.24m. Above cut F161, below topsoil F001.

Pit F178 (Figures 9 and 15)

F178	Cut of large oval pit. Measured 1.70m x 1.60m x 0.40m. Had a gradual break of slope on the east, otherwise sharp; vertical sides except on east which was gradually sloping; a gradual break to the base and a rounded but uneven base. Truncated to the south by field drain F174. Filled with F120, F175, F176, and F177. Above subsoil F002, below

	fills F120, F175–F177.
F120	Upper fill of pit F178, with soft mid grey-brown silty sand with frequent stones, occasional burnt stone and charcoal flecks. Measured 1.50m x 0.75m x 0.28m. Truncated by field drain F174. Above fill F173, below topsoil F001.
F175	Fill of pit F178, with soft black-brown silty clay with frequent charcoal inclusions and burnt stone. Measured 1.30m x 1m x 0.12m. Two-bag soil sample (28). Above fill F177, below fill F120.
F176	Fill of pit F178, with firm light orange-brown sandy clay with moderate charcoal flecks and occasional small stones. Measured 0.50m x 0.20m x 0.23m. It was found on the north side of the pit only. Above fill F177, below fill F173.
F177	Lower fill of pit F178, with firm mid orange-brown sandy clay with occasional charcoal flecks. Measured 1.20m x 0.80m x 0.45m. Located at northern side of the pit only. Above cut F178, below fills F173 and F176.

Pit F221 (Figures 9 and 15)

F221	Cut of a shallow sub-circular pit, to the east of field ditch F100 and north of field drain F174 (the most northerly feature in the area). Measured 0.70m x, 0.60m x 0.15m. Had a sharp break of slope from the top, gradually sloping sides, an imperceptible break to the base and a rounded base. Filled with F220. Above subsoil F002, below fill F220.
F220	Fill of pit F221, with soft dark grey-brown silty clay with moderate charcoal flecks and occasional stones. Measured 0.70m x 0.60m x 0.15m. Soil sample (35). Above cut F221, below topsoil F001.

Pit F223 (Figures 9 and 15; Plates 15 and 19)

F223	Cut of elongated pit, located on the north side of field drain F174. Measured 0.90m x 0.52m x 0.25m. Orientated south-east/north-west. Had a sharp break of slope from the top, concave sides, a gradual break to the base and an uneven base. Filled with F122. Above subsoil F002, below fill F222.
F222	Fill of pit F223, with soft dark grey-brown silty clay with moderate charcoal flecks and occasional stones. Measured 0.90m x 0.52m x 0.25m. Above cut F223, below topsoil F001.

Pit F248 (Figures 9 and 15)

F248	Cut of sub-circular pit. Measured 0.70m x 0.64m x 0.24m. Had a sharp break of slope from the top, steep sides, a gradual break to the base and a rounded base. Filled with F108 and F247. Above subsoil F002, below fills F108 and F247.

F108	Main fill of pit F248, with firm mid orange-grey sandy clay with occasional flecks of charcoal and frequent small pebbles. Measured 0.68m in diameter x 0.18m deep. Above cut F248, below fill F247.
F247	Upper fill of pit F248, with soft dark brown-black silty clay with moderate charcoal. Measured 0.50m x 0.43m x 0.03m. Above fill F108, below topsoil F001.

Post-holes

Post-hole F123 (Figures 10 and 17)

F123	Cut of sub-circular post-hole. Measured 0.32m x 0.30m x 0.24m. Had a gradual break of slope from the top, steep sides sloping slightly towards the centre, a gradual break to the base and a sloping base from south to north. Filled with F122. Above subsoil F002, below fill F122.
F122	Fill of post-hole F123, with soft mid orange-brown sand clay with occasional stones (no charcoal). Measured 0.32m x 0.30m x 0.24m. Above cut F123, below topsoil F001.

Post-hole F125 (Figures 10 and 17)

F125	Cut of circular post-hole. Measured 0.33m x 0.30m x 0.33m. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and a sloping base from north to south. Filled with F124. Formed an alignment with post-holes F123 and F129. Above subsoil F002, below fill F124.
F124	Fill of post-hole F125, with soft mid grey-brown silty clay with occasional stone. Measured 0.33m x 0.30m x 0.20m. Above cut F125, below topsoil F001.

Post-hole F129 (Figures 10 and 17)

F129	Cut of sub-circular post-hole. Measured 0.36m x 0.28m x 0.11m. Had a sharp break of slope from the top, slightly sloping sides, a gradual break to the base and a flat base. Filled with F126, F127, and F128. Above subsoil F002, below fills F126–F128.
F126	Fill of post-hole F129, with soft mid brown-orange silty clay with occasional stones, which appeared to be packing. Measured 0.36m x 0.28m x 0.12m. Above cut F129, below topsoil F001.
F127	Fill of post-hole F129 (post-pipe), with soft dark orange-brown silty clay with some possible organic material. Measured 0.10m in diameter x 0.10m. Above cut F129, below topsoil F001.
F128	Fill of stake-hole F129, with soft dark orange-brown silty clay, this fill containing

	organic material. Same as fill F127, but lighter in colour. Its stratigraphic relationship to post-pipe F127 and packing F126 not clear from the sheets. Measured 0.08m in diameter x 0.11m. Above cut F129, below topsoil F001.

Post-hole F134 (Figures 10 and 17)

F134	Cut of circular post-hole. Measured 0.30m in diameter x 0.48m. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F133. Adjacent to post-hole F136. Above subsoil F002, below fill F133.
F133	Fill of post-hole F134, with soft light orange-brown silty clay with occasional stones. Measured 0.26m in diameter x 0.46m. It was beside another stake hole F136.

Post-hole F136 (Figures 10 and 17)

F136	Cut of sub-circular post-hole. Measured 0.24m x 0.20m x 0.33m. Had a sharp break of slope from the top, vertical sides to the south and east, slightly undercut to the north and west; a gradual break of slope to the base and a tapered blunt base. Filled with F135. Adjacent to larger post-hole F134. Above subsoil F002, below fill F135.
F135	Fill of post-hole F136, with loose light orange-brown silty clay with occasional small stones and one large stone (possibly packing material). Measured 0.13m in diameter x 0.23m. Above cut F136, below topsoil F001.

Post-hole F139 (Figures 10 and 17)

F139	Cut of large sub-circular post-hole. Measured 0.40m in diameter x 0.35m deep. Had a sharp break of slope from the top, slightly undercut sides, a sharp break to the base and a tapered blunt base. Filled with F137 and F138. Above subsoil F002, below fills F137 and F138.
F137	Upper fill of post-hole F139, with soft dark grey-brown silty clay with occasional charcoal flecks. Measured 0.45m x 0.40m x 0.12m. Above fill F138, below topsoil F001.
F138	Lower fill of post-hole F139, with loose light orange-brown sandy clay with occasional small stones and gravel. Measured 0.28m in diameter x 0.15m deep. Above cut F139, below fill F137.

Post-hole F149 (Figures 10 and 17; Plate 9)

F149	Cut of possible oval post-hole. Measured 0.46m x 0.25m x 0.28m. Had a sharp break of slope from the top, vertical sides, a gradual break of slope to the base and a rounded base. Filled with F106 and F148.

F148	Fill of post-hole F149, with soft light greyish brown silty clay with occasional flecks of charcoal. Measured 0.25m in diameter x 0.22m deep. Above cut F149, below
F106	Upper fill of post-hole F149, with soft dark grey-brown silty clay with frequent charcoal inclusions and moderate inclusions of burnt bone. Measured 0.30m x 0.20m x 0.05m. The deposit was partly stratified on main fill F148, partly on subsoil external to the post-hole. Burnt bone weight 17g. Soil sample (26). Above fill F148, below topsoil F001.

Post-hole F151 (Figures 9 and 16)

F151	Cut of oval post-hole. Measured 0.37m x 0.30m x 0.26m. Had a sharp break of slope from the top, vertical sides (slightly inclined in the north and south), a gradual break to the base, and an uneven base. Filled with F110 and F150. Above subsoil F002, below fills F110 and F150.
F110	Upper fill of post-hole F151, with soft mid greyish-brown silty sand, with occasional charcoal flecks and small stones. Measured 0.35m x 0.28m x 0.12m. One find, flint debitage (E2221:110:1). Soil sample (25). Above fill F150, below topsoil F001.
F150	Lower fill of post-hole F151, with soft black-brown silty clay with frequent charcoal flecks. Measured 0.28m x 0.24m x 0.07m. Above cut F151, below fill F110.

Post-hole F153 (Figures 9 and 16)

F153	Cut of a large circular post-hole. Measured 0.50m x 0.45m x 0.43m. Had a sharp break of slope from the top, steep sides on the north side and vertical on the south, until halfway down where there was a break and the sides became gradually sloping; a sharp break to the base and a flat base. Filled with F111 and F152. Above subsoil F002, below fill F152.
F111	Upper fill of large post-hole F153, with soft light greyish-brown silty sand with occasional charcoal flecks and small stones. Measured 0.39m x 0.35m x 0.12m. One find, a hammerstone (E2221:111:1). Above fill F152, below topsoil F001.
F152	Main fill of post-hole F153, with soft dark black-brown clayey silt with frequent charcoal flecks and occasional shattered stones. Measured 0.50m in diameter x 0.27m deep. Above cut F153, below fill F111.

Post-hole F155 (Figures 9 and 16)

F155	Cut of large circular post-hole. Measured 0.50m in diameter x 0.45m deep. Had a sharp break of slope from the top, vertical sides, a sharp break to the base and an uneven base. Filled with F154 and F118.

F154	Lower fill of large post-hole, with soft dark brown-black silt, with frequent charcoal flecks and occasional small stones. Measured 0.50m in diameter x 0.22m deep. Above cut F155, below fill F118.
F118	Upper fill of post-hole F155, with soft light grey-brown clayey silt, with occasional charcoal flecks and possible packing stones. Measured 0.50m in diameter x 0.20m deep. One find: a sherd of prehistoric pottery (E2221:118:1). Soil sample (18). Above fill F154, below topsoil F001.

Post-hole F156 (Figures 9 and 16)

F156	Cut of large irregular post-hole, at south-west corner of a square formation of four along with F155, F170 and F172. Measured 0.70m x 0.56m x 0.25m. Had a sharp break from the top, vertical sides on the west and north, gradual elsewhere, a sharp break to the base and an uneven base. Filled with F117. Above subsoil F002, below fill F117.
F117	Fill of large post-hole F156, with soft dark brown–black silty clay, with occasional charcoal flecks and stones of mixed sizes. Measured 0.56m x 052m x 0.25m. Finds: four sherds of prehistoric pottery (E2221:117:1–4). Soil sample (44). Above cut F156, below topsoil F001.

Post-hole F170 (Figures 9 and 16)

F170	Cut of large circular post-hole. Measured 0.52m in diameter x 0.45m deep. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and an uneven base. Filled with F121. Above subsoil F002, below fills F169 and F121.
F169	Fill of post-hole F170 (post-pipe), with soft black-brown silty clay with frequent inclusions of charcoal and also containing one large stone. Measured 0.12m in diameter x 0.20m deep. Above cut F170, below topsoil F001.
F121	Fill of post-hole F170 (post-packing), with soft light greyish-brown silt with occasional flecks of charcoal and small stones, possibly heat-shattered. Contained the packing stones abutting post-pipe F169. Measured 0.26m deep. One find: a sherd of prehistoric pottery (E2221:121:1). Above cut F170, below topsoil F001.

Post-hole F172 (Figures 9 and 16)

F172	Cut of circular post-hole. Measured 0.40m in diameter x 0.48m deep. Had a sharp break of slope from the top, vertical sides, but with a step to the north, a sharp break to the base and a sloping base from south-east to north-west. Two smaller cuts were contiguous with the main cut of this feature, which appears on plan to be the larger cut in a cluster of three. This suggests the post was reinforced on two occasions. Filled

	with F119 and F171. Above subsoil F002, below fills F119 and F171.
F171	Fill of large post-hole, with soft black-brown silty clay with frequent charcoal. Measured 0.35m in diameter x 0.30m deep. Soil sample (23). Above cut F172, below fill F119.
F119	Upper fill of post-hole F172, with soft mid yellow-brown silty clay with occasional charcoal flecks and frequent packing stones, especially around the edges. Measured 0.60m x 0.50m x 0.20m. Above fill F171, below topsoil F001.

Post-hole F159 (Figures 9 and 16)

F159	Cut of oval post-hole. Measured 0.40m x 0.20m x 0.24m. Had a sharp break of slope from the top, vertical sides, a sharp break to the base and a flat base, with the mark of a post driven through the centre. Filled with F112, and F158. Above subsoil F002, below fills F112 and F158.
F112	Fill of post-hole F159 (post-pipe), with soft mid grey-brown silty clay with occasional flecks of charcoal; there was one large packing stone, measuring 0.06m x 0.14m x 010m. Measured 0.24m in diameter x 0.23m deep. Soil sample (16). Above cut F159, below topsoil F001.
F158	Fill of post-hole F159 (post-packing), with compact mixed light brown-orange sandy clay and charcoal-rich sandy clay, probably for packing. Measured 0.20m deep. Above cut F159, below topsoil F001.

Post-hole F163 (Figures 9 and 16)

F163	Cut of oval post-hole. Measured 0.33m x 0.18m x 0.18m. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and a rounded base. Filled with F115 and F162. Above subsoil F002, below fills F115 and F162.
F115	Fill of post-hole F163, with soft mid orange-red oxidised silt with occasional charcoal flecks. Measured 0.33m x 0.18m x 0.18m. Above fill F162, below topsoil F001.
F162	Fill of post-hole F163, with soft black-brown silt with moderate charcoal. Measured 0.11m in diameter x 0.08m deep. Circular charcoal-rich silt contained within burnt fill F115. Above cut F163, below fill F115.

Post-hole F199 (Figures 9 and 16)

F199	Cut of circular post-hole. Measured 0.30m in diameter x 0.26m deep. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and a rounded base. Filled with F197 and F198. Above subsoil F002, below fills F197 and F198.
F197	Fill of post-hole F199 (post-pipe), with soft dark brown silty clay with frequent

	charcoal flecks. Measured 0.20m in diameter x 0.18m deep. Soil sample (45). Above cut F199, below topsoil F001.
F198	Fill of post-hole F199 (post-packing), with firm light yellow-orange sandy clay with occasional charcoal and packing stones. Measured 0.30m in diameter x 0.26m deep. Above cut F199, below topsoil F001.

Post-hole F237 (Figures 9 and 16)

F237	Cut of sub-circular post-hole. Measured 0.34m x 0.28m x 0.08m. Had a gradual break of slope from the top on the east; otherwise sharp, gradually sloping sides, a gradual break to the base (except in the east where it was sharp), and a flat base. Filled with F236. Above subsoil F002, below fill F236.
F236	Fill of posthole F237, with soft mid orange-grey silty clay with occasional charcoal flecks. Measured 0.34m x 0.28m x 0.08m. Above cut F237, below topsoil F001.

Post-hole F240 (Figures 9 and 16)

F240	Cut of oval post-hole. Measured 0.30m x 0.23m x 0.25m. Had a sharp break of slope from the top, vertical sides, a gradual break to the base and a rounded base. Filled with F114. Above subsoil F002, below fill F114.
F114	Fill of post-hole F240, with soft black-brown silty clay with occasional packing stones (greater than 0.10m in diameter); there were frequent flecks of charcoal. Measured 0.30m x 0.23m x 0.25m. Soil sample (36). Above cut F240, below topsoil F001.

Stake-holes

Stake-hole F164 (Figures 9 and 18)

F164	Cut of circular stake-hole. Measured 0.13m in diameter x 0.18m deep. Had a sharp break from the top and a sharply pointed base. It was slightly inclined from west to east. Filled with F116. Above subsoil F002, below fill F116.
F116	Fill of stake-hole F164, with soft black-brown silty clay with frequent flecks of charcoal. It was 0.13m in diameter by 0.18m deep. Above cut F164, below topsoil F001.

Stake-hole F166 (Figures 9 and 18)

F166	Cut of circular stake-hole. Measured 0.10m in diameter x 0.25m deep. Had a sharp break of slope from the top, vertical sides, and a pointed base. It was slightly inclined

	from west to east. Filled with F165. Above subsoil F002, below fill F165.
F165	Fill of stake-hole F166, with soft mid blackish-grey sandy clay with frequent charcoal inclusions and small stones. Measured 0.10m in diameter x 0.25m deep. Above cut F166, below topsoil F001.

Stake-hole F168 (Figures 9 and 18)

F168	Cut of circular stake-hole, 0.14m east of stake-hole F165. Measured 0.07m in diameter x 0.13m deep. Had a sharp break of slope from the top, gently sloping sides and a pointed base. Filled with F167. Above subsoil F002, below fill F167.
F167	Fill of stake-hole F168, with soft light orange-grey silty sand with occasional charcoal. Measured 0.07m in diameter x 0.13m deep. Above cut F168, below topsoil F001.

Stake-hole F180 (Figures 9 and 18)

F180	Cut of circular stake-hole. Measured 0.15m in diameter x 0.16m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. It was inclined from the south-east to the north-west. Filled with F179. Above subsoil F002, below fill F179.
F179	Fill of post-hole F180, with soft mid grey-brown silty clay with occasional flecks of charcoal. Measured 0.15m in diameter x 0.16m deep. Soil sample (29). Above cut F180, below topsoil F001.

Stake-hole F182 (Figures 9 and 18)

F182	Cut of circular stake-hole. Measured 0.08m x 0.07m x 0.17m. Had a sharp break of slope from the top, vertical sides, and a pointed base. It was slightly inclined from south-east to north-west. Filled with F181. Above subsoil F002, below fill F181.
F181	Fill of stake-hole F182, with soft light greyish-brown silty clay with occasional flecks of charcoal. Measured 0.08m x 0.07m x 0.17m. Above cut F182, below topsoil F001.

Stake-hole F184 (Figure 9)

F184	Cut of circular stake-hole. Measured 0.07m in diameter x 0.12m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. The cut was slightly inclined from south-east to north-west. Filled with F183. Above subsoil F002, below fill F183.
F183	Fill of stake-hole F184, with soft light yellow-brown silty clay with occasional flecks of charcoal and small stones. Measured 0.07m in diameter x 0.12m deep. Above cut F184, below topsoil F001.

Stake-hole F186 (Figure 9)

F186	Cut of circular post-hole. Measured 0.08m in diameter x 0.20m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F185. Above subsoil F002, below fill F185.
F185	Fill of stake-hole F186, with soft mid greyish-brown silty clay with moderate flecks of charcoal and occasional small stones. Measured 0.08m in diameter x 0.20m deep. Above cut F186, below topsoil F001.

Stake-hole F188 (Figure 9)

F188	Cut of sub-circular stake-hole. Measured 0.08m x 0.06m x 0.14m. Had a sharp break of slope from the top, steep sides and a pointed base. It was inclined from south-east to north-west. Filled with F187. Above subsoil F002, below fill F187.
F187	Fill of stake-hole F188, with soft light orange-grey sand with occasional small stones. Measured 0.08m x 0.06m x 0.14m. Above cut F188, below topsoil F001.

Stake-hole F190 (Figure 9)

F190	Cut of a sub-circular stake-hole. Measured 0.06m x 0.05m x 0.16m. Had a sharp break of slope from the top, vertical sides and a pointed base. Measured 0.06m x 0.05m x 0.16m. Filled with F189. Above subsoil F002, below fill F189.
F189	Fill of stake-hole F190, with soft light greyish brown silty clay with occasional charcoal flecks. Measured 0.06m x 0.05m x 0.16m. Above cut F190, below topsoil F001.

Stake-hole F192 (Figure 9)

F192	Cut of circular stake-hole. Measured 0.06m in diameter x 0.12m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F191. Above subsoil F002, below fill F191.
F191	Fill of stake-hole F192, with soft light greyish-brown silty clay with occasional flecks of charcoal and small stones. Measured 0.06m in diameter x 0.12m deep. Above cut F192, below topsoil F001.

Stake-hole F194 (Figures 9 and 18)

F194	Cut of circular stake-hole. Measured 0.08m in diameter x 0.23m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F293. Above subsoil F002, below fill F193.
F193	Fill of stake-hole F194, with soft mid yellow-brown silty clay with occasional flecks of

	charcoal and small stones. Measured 0.08m in diameter x 0.23m deep. Soil sample (30). Above cut F194, below topsoil F001.

Stake-hole F196 (Figures 9 and 18)

F196	Cut of a large circular stake-hole. Measured 0.12m in diameter x 0.29m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F195. Above subsoil F002, below fill F195.
F195	Fill of large stake-hole F196, with soft dark greyish brown silty clay with frequent charcoal and occasional burnt stones. Measured 0.12m in diameter x 0.29m deep. A hammer stone was found close to the top of the fill (E2221:195:1; Figure 24). This was the only fill of a stake-hole to include some burnt stone. Soil sample (31). Above cut F196, below topsoil F001.

Stake-hole F201 (Figures 9 and 18)

F201	Cut of circular stake-hole. Measured 0.17m in diameter x 0.14m deep. Had a sharp break of slope from the top, vertical sides, slightly sloping to the north-east; a sharp break of slope to the base and an uneven base, sloping to the south-west. It was inclined from the south-west to north-east. Filled with F203. Above subsoil F002, below fill F200.
F200	Fill of stake-hole F201, with light reddish-brown sandy clay with no inclusions. Measured 0.17m in diameter x 0.14m deep. Above cut F201, below topsoil F001.

Stake-hole F203 (Figures 9 and 18)

F203	Cut of circular stake-hole. Measured 0.08m x 0.06m x 0.14m. Had a sharp break of slope from the top, steep sides and a pointed base. The cut was steeply inclined from south-west to north-east. Filled with F202. Above subsoil F002, below fill F202.
F202	Fill of stake-hole F203, with mid yellow-brown silty clay with occasional flecks of charcoal. Measured 0.08m x 0.06m x 0.14m. Above cut F203, below topsoil F001.

Stake-hole F205 (Figures 9 and 18)

F205	Cut of circular stake-hole. Measured 0.06m in diameter x 0.14m deep. Had a sharp break of slope from the top, steep sides and a pointed base. The cut was inclined from north-east to south-west. Filled with F204. Above subsoil F002, below fill F204.
F204	Fill of stake-hole F205, with soft light greyish-brown sandy clay with occasional stones. Measured 0.06m in diameter x 0.14m deep. Above cut F205, below topsoil F001.

Stake-hole F207 (Figures 9 and 18)

F207	Cut of circular stake-hole. Measured 0.07m in diameter x 0.18m deep. Had a sharp break of slope from the top, steep sides and a pointed base. The cut was inclined from north-west to south-east. Filled with F206. Above subsoil F002, below fill F206.
F206	Fill of stake-hole F207, with mid yellow-brown sandy cay with occasional small pebbles. Measured 0.07m in diameter x 0.18m deep. Above cut F207, below topsoil F001.

Stake-hole F211 (Figure 9)

F211	Cut of a circular stake-hole. Measured 0.06m x 0.05m x 0.14m. Had a sharp break of slope from the top, steep sides and a pointed base. The cut was inclined from west to east. Filled with F210. Above subsoil F002, below fill F210.
F210	Fill of stake-hole F211, with soft light orange-brown sandy clay with occasional charcoal flecks and small stones. Measured 0.06m x 0.05m x 0.14m. Above cut F211, below topsoil F210.

Stake-hole F213 (Figure 9)

F213	Cut of circular stake-hole. Measured 0.08m in diameter x 0.16m deep. Had a sharp break of slope from the top, vertical sides and a tapered blunt base. Filled with F212. Above subsoil F002, below fill F212.
F212	Fill of stake-hole F213, with soft dark black-brown silty clay with frequent charcoal flecks. Measured 0.08m in diameter x 0.16m deep. Soil sample (32). Above cut F213, below topsoil F001.

Stake-hole F215 (Figure 9)

F215	Cut of circular stake-hole. Measured 0.07m in diameter x 0.15m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F214. Above subsoil F002, below fill F214.
F214	Fill of stake-hole F215, with soft mid orange-brown silty sand with occasional charcoal. Measured 0.07m in diameter x 0.15m deep. Above cut F215, below topsoil F001.

Stake-hole F217 (Figure 9)

F217	Cut of circular stake-hole. Measured 0.05m in diameter x 0.11m deep. Had a sharp break of slope from the top, vertical sides and a wedge-pointed base. Filled with F216. Above subsoil F002, below fill F216.

F216	Fill of stake-hole F217, with soft light yellow-brown silty sand with occasional charcoal. Measured 0.05m in diameter x 0.11m deep. Above cut F217, below topsoil F001.

Stake-hole F219 (Figure 9)

F219	Cut of circular stake-hole. Measured 0.05m in diameter x 0.13m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F218. Above subsoil F002, below fill F218.
F218	Fill of stake-hole F219, with soft light orange-brown silty clay with occasional charcoal flecks. Measured 0.05m in diameter x 0.13m deep. Above cut F219, below topsoil F001.

Stake-hole F225 (Figure 9)

F225	Cut of circular stake-hole. Measured 0.09m in diameter x 0.20m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F224. Above subsoil F002, below fill F224.
F224	Fill of stake-hole F225, with soft light greyish-brown silty clay with occasional charcoal inclusions. Measured 0.09m in diameter x 0.20m deep. Soil sample (34). Above cut F225, below topsoil F001.

Stake-hole F227 (Figure 9)

F227	Cut of circular stake-hole. Measured 0.13m in diameter x 0.19m deep. Had a sharp break of slope, vertical sides on the south, and east gently sloping on the north and west and a rounded base. The cut was inclined from south-east to north-west. Filled with F226. Above subsoil F002, below fill F226.
F226	Fill of stake-hole F227, with mid black-brown silty clay with frequent charcoal and occasional stones. Measured 0.13m in diameter x 0.19m deep. Soil sample (33). Above cut F227, below topsoil F001.

Stake-hole F229 (Figures 9)

F229	Cut of circular stake-hole. Measured 0.08m in diameter x 0.09m deep. Had a sharp break of slope from the top, vertical sides on the north side, and sloping gently on the south and a rounded base. The cut was inclined from south to north. Filled with F228. Above subsoil F002, below fill F228.
F228	Fill of stake-hole F229, with soft light orange-brown sandy clay with occasional charcoal. Measured 0.08m in diameter x 0.09m deep. Above cut F229, below topsoil

	F001.

Stake-hole F231 (Figure 9)

F231	Cut of circular stake-hole. Measured 0.08m x 0.07m x 0.08m. Had a sharp break of slope from the top, vertical sides on the east, sloping on the west and a pointed base. Filled with F230. Above subsoil F002, below fill F230.
F230	Fill of stake-hole F231, with light orange-brown sandy clay. Measured 0.08m x 0.07m x 0.08m. Above cut F231, below topsoil F001.

Stake-hole F233 (Figures 9 and 18)

F233	Cut of sub-circular stake-hole. Measured 0.09m x 0.07m x 0.06m. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F232. Above subsoil F002, below fill F232.
F232	Fill of stake-hole F233, with soft light grey-brown silty clay with occasional charcoal and one large stone. Measured 0.09m x 0.07m x 0.06m. Above cut F233, below topsoil F001.

Stake-hole F235 (Figures 9 and 18)

F235	Cut of circular stake-hole. Measured 0.06m in diameter x 0.11m deep. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F234. Above subsoil F002, below fill F234.
F234	Fill of stake-hole F235, with soft light yellow-brown sandy clay with charcoal flecks. Measured 0.06m in diameter x 0.11m deep. Above cut F235, below topsoil F001.

Stake-hole F239 (Figure 9)

F239	Cut of circular stake-hole. Measured 0.06m in diameter x 0.12m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F238. Above subsoil F002, below fill F238.
F238	Fill of stake-hole F239, with soft light yellow-brown silty clay with occasional charcoal. Measured 0.06m in diameter x 0.12m deep. Above cut F239, below topsoil F001.

Stake-hole F252 (Figures 9 and 18)

F252	Cut of circular stake-hole. Measured 0.11m in diameter x 0.15m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F249. Above

	subsoil F002, below fill F249.
F249	Fill of stake-hole F252, with soft mid yellow-brown silty clay with occasional charcoal flecks. Measured 0.11m in diameter x 0.15m deep. Above cut F252, below topsoil F001.

Stake-hole F253 (Figures 9 and 18)

F253	Cut of sub-circular stake-hole. Measured 0.10m x 0.08m x 0.22m deep. Had a sharp break of slope from the top, vertical sides and a rounded base. Filled with F250. Above subsoil F002, below fill F250.
F250	Fill of stake-hole F253, with soft mid greyish-brown silty clay with occasional charcoal. Measured 0.10m x 0.08m x 0.22m. Above cut F253, below topsoil F001.

Stake-hole F254 (Figures 9 and 18)

F254	Cut of sub-circular stake-hole. Measured 0.12m x 0.08m x 0.14m. Had a sharp break of slope from the top, vertical sides and a pointed base. Filled with F252. Above subsoil F002, below fill F251.
F251	Fill of stake-hole F254, with mid grey-brown silty clay with occasional flecks of charcoal. Measured 0.12m x 0.08m x 0.14m. Soil sample (37). Above cut F254, below topsoil F001.

Hearth

Hearth F145 (Figures 10 and 15)

F145	Cut of sub-circular hearth-pit. Measured 1.90m x 1.20m x 0.30m. Had a gradual break of slope from the top, gently sloped sides, a gradual break of slope to the base and a flat base. Truncated pit F146. Filled with F141, F142, F143, and F144. Above subsoil F002, below fills F141–F144.
F141	Upper fill of hearth F145, with soft light brown-grey clayey silt with occasional pebbles. Measured 1m in diameter x 0.14m deep. Two-bag soil sample (19). Above fill F142, below topsoil F001.
F142	Main fill of hearth F145, with soft mid grey clayey silt with occasional charcoal flecks and occasional burnt bone inclusions. Measured 0.93m x 1.20m x 0.24m. Two-bag soil sample (20). Above cut F145, below fill F141.
F143	Secondary fill of hearth F145, with dark red-orange silt with occasional flecks of charcoal. Measured 0.75m x 0.34m x 0.02m. Soil sample (21). Below fill F143, above

	cut F145.
F144	Primary fill of hearth FI45, with soft black silty clay with frequent flecks of charcoal. Measured 1.20m x 0.74m x 0.04m. Above cut F145, below fill F143.

Area 3

Linear features

Field ditch F302 (Figures 11 and 19)

F302	Cut of linear field ditch, continuing beyond the south limit of excavation. Measured 15.40m x 1.20m x 0.28m. Aligned north-west/south-east. Filled with F315. Above subsoil F002, below fill F315.
F315	Fill of ditch F302, with brown clayey silt, containing frequent inclusions of angular and sub angular stones, and occasional flecks of charcoal. Measured 15.40m x 1.20m x 0.28m. Above cut F302, below topsoil F001.

Field ditch F312 (Figures 11 and 19)

F312	Cut of angled field boundary ditch. The eastern extent of the feature, F312, was aligned north-west/south-east. The western extent, F309, was aligned north-east/south-west. Measured 30.33m x 0.43m x 0.24m. Had a sharp break of slope from the top, uneven sides, a gradual break to the base and a generally concave base, if uneven in places. Ditches F309 and F312, along with ditches F313 and F314 formed part of a field system. Filled with F324. Above subsoil F002, below fill F324.
F324	Fill of angled field ditch F312 and F309, with soft light brown clayey silt with small red pebbles of varying shapes, and also large sub-rounded limestones and sandstones. Measured 30.33m x 0.43m x 0.20m. Above cut F312, below topsoil F001.

Field ditch F313 (Figures 11 and 19)

F313	Cut of linear field ditch. Measured 6.50m x 0.40m x 0.22m. Orientated north-west/south-east. Had a sharp break of slope from the top, concave sides, an imperceptible break of slope to the base and a rounded base. The feature was on the same axis as ditch F312 and both were probably elements of a field system that included ditches F309 and F314. Filled with F320 and F321. Above subsoil F002, below fills F320 and F321.
F320	Fill of field ditch F313, with soft brown silty fill with frequent pebbles. Measured

	6.60m x 0.40m x 0.22m. Above cut F313, below topsoil F001.
F321	Primary fill of field ditch F313, with soft yellow-brown silt containing frequent angular and rounded stones. Measured 1.22m x 0.20m x 0.20m. Above cut F313, below fill F320.

Field ditch F314 (Figures 11 and 19)

F314	Cut of a linear field ditch. Measured 3m x 0.45m x 0.26m. Orientated north-east/south-west, at right angle to ditch F313. Had a sharp break of slope from the top, concave sides, an imperceptible break to the base and a rounded base. Filled with F325. Above subsoil F002, below fill F325.
F325	Fill of field ditch F314, with soft brown clayey silt with frequent inclusions of sub-rounded and angular stones measuring up to 0.20m across. Measured 3m x 0.45m x 0.26m. Above cut F314, below topsoil F001.

Hearth pit F303

Hearth pit F303 (Figures 11 and 21)

F301	Sub-circular cut of hearth pit. Measured 0.90m x 0.70m x 0.13m. Had a sharp break of slope from the top, tapered sides, an imperceptible break to the base, and a rounded base. Filled with F303. Above subsoil F002, below fill F301.
F303	Fill of heath pit F301, with dark orange oxidised material containing occasional stones angular and some small burnt stones. Measured 0.90m x 0.70m x 0.13m. Above cut F301, below topsoil F001.

Pits

Pit F305 (Figures 11 and 21)

F305	Cut of sub-circular pit. Measured 1.55m x 1.10m x 0.30m. Had a sharp break of slope from the top, concave but irregular sides were concave, a gradual break of slope at the base and a rounded base. Filled with F306. Above subsoil F002, below fill F306.
F306	Fill of pit F305, with soft black deposit with large amounts of small fire-cracked stones, mostly sandstone. Measured 1.55m x 1.10m x 0.30m. Six-bag soil sample (9). Above cut F305, below topsoil F001.

Pit F316 (Figures 11 and 21)

F316	Cut of circular pit. Measured 0.60m x 0.56m x 0.15m. Had a sharp break of slope from the top, vertical sides, a sharp break to the base and a rounded base. Filled with F317. Above subsoil F002, below fill F317.
F317	Fill of pit F316, with soft brown silt with small amounts of charcoal and medium-sized stones. Contained seven sherds of prehistoric pottery (E2221:317:2–8) and a piece of worked stone (E2221:317:1). Measured 0.60m x 0.56m x 0.15m. Above cut F316, below topsoil F001.

Pit F322 (Figures 11 and 20)

F322	Cut of large sub-oval pit. Measured 2.50m x 2m x 0.40m. Had a sharp break of slope from the top, except in the north-west where it was gradual, concave sides, sloping gradually except in the north-east where they were steep, a gradual break of slope to the base except where a post-hole was cut into it; and an uneven base which sloped towards the south. Truncated by post-hole F341. Filled with F323 and F338–F340. Above subsoil F002, below fills F323 and F338–F340.
F338	Upper fill of pit F322, with firm grey orange mottled clayey silt with frequent amounts of stone. Measured 2.10m x 1.30m x 0.15m. It appeared to be redeposited natural possibly filled to level the feature. Above fill F323, below topsoil F001.
F340	Primary fill of pit F322, with friable mottled yellow-brown clayey silt with inclusions of stones, gravel and decayed stones. Measured 2.50m x 2m x 0.15m. Six-bag soil sample (11). Above cut F322, below fill F339.
F323	Upper middle fill of pit F322, with redeposited natural clay, friable mid brown silt, very stony in parts, and also containing inclusions of charcoal and decayed stone. Measured 2.50m x 2m x 0.40m. Above fill F339, below fill F338.
F339	Lower middle fill of pit F322, with firm orange-yellow mottled clayey silt with inclusions of charcoal and decayed stones. Measured 2.50m x 1.75m x 0.10m. Above fill F340, below fill F323.

Pit F326 (Figures 11 and 21)

F326	Cut of irregular pit. Measured 1.25m x 0.56m x 0.25m. Had a sharp break of slope at the top, concave sides, a sharp break of slope to the base and a bowl-shaped base. Filled with F327. Above subsoil F002, below fill F327.
F327	Fill of pit F326, with soft light brown silty sand with frequent irregular stones measuring up to 0.15m across and also pebbles. Measured 1.25m x 0.56m x 0.25m. Above cut F326, below topsoil F001.

Pit F328 (Figures 11 and 21)

F328	Cut of sub-oval pit, located between pits F305 and F330. Measured 1.75m x 0.60m x 0.25m. Had a sharp break of slope at the top, concave sides, a gradual break to the base and a flat base. Pit F328 was linked to pit F305 on its western side by a short gully, measuring 0.40m x 0.35m x 0.06m, containing F306 material from pit F305. Filled with F329. Above subsoil F002, below fill F329.
F329	Fill of pit F328, with soft light brown clayey silt with frequent small angular stones ranging in size from 0.01m to 0.12m. Measured 1.75m x 0.60m x 0.36m. Above cut F328, below topsoil F001.

Pit F330 (Figures 11 and 20)

F330	Cut of large linear pit. Measured 3m x 1.30m x 0.33-0.60m. Orientated north-west/south-east. The northern end of the pit was much deeper (0.60m) than the southern part of the feature (0.33m) and it is possible that the whole feature may comprise two intersecting pits, although the fill appeared to be uniform. At the north end of the feature the break of slope from the top was sharp, the sides were vertical and slightly undercut to the west; the break to the base was sharp, and the base was flat. At the south end of the feature the break of slope from the top was sharp, the sides slightly concave, and the break of slope at the base gradual; the base was irregular, with a depression at the south limit. Filled with F304. Above subsoil F002, below fill F304.
F304	Fill of pit F330, with soft black clayey silt with inclusions of charcoal and burnt stone and larger un-burnt rounded stones at the top. Measured 3m x 1.30m x 0.40m. Six-bag soil sample (7). Radiocarbon date: cal 2450–1970 BC. Above cut F330, below topsoil F001.

Pit F331 (Figures 11 and 21)

F331	Cut of sub-circular pit. Measured 1.07m x 0.90m x 0.30m. Had a sharp break of slope from the top, straight-concave sides, and a bowl-shaped base. Filled with F307. Above subsoil F002, below fill F307.
F307	Fill of pit F331, with soft black clayey silt with high charcoal content and frequent burnt stones, mostly sandstone. Measured 1.07m x 0.90m x 0.30m. Above cut F331, below topsoil F001.

Pit F332 (Figures 11 and 21; Plate 23)

F332	Cut of sub-circular pit. Measured 1.07m x 0.90m x 0.22m. Had a sharp break of slope from the top, concave sides and a bowl-shaped base. Filled with F308, F333 and F334.

	Above subsoil F002, below fills F308, F333 and F334.
F308	Fill of pit F332, with soft black charcoal-rich clayey silt with 50% burnt stone, mixed limestone and sandstone. Measured 0.85m in diameter x 0.18m deep. Above fill F333, below topsoil F001.
F333	Fill of pit F332, with soft light brown sandy silt with small angular pebbles and three large stones. Measured 0.90m x 0.33m x 0.15m. Above fill F334, below fill F308.
F334	Primary fill of pit F332, with a thin soft black silty layer of charcoal. Measured 0.60m x 0.35m x 0.02m. Soil sample (6). Above cut F332, below fill F333.

Pit F335 (Figures 11 and 20)

F335	Cut of large linear pit. Measured 3.50m x 1.50m x 0.57m. Orientated north-south. Had a sharp break of slope from the top, vertical sides at the east, and concave at the west; and a v-shaped base. Filled with F336 and F337. Above subsoil F002, below fills F336 and F337.
F336	Primary fill of pit F335, with soft fine grey silt with occasional small sandstones. Measured 3.50m x 0.63m x 0.30m. Six-bag soil sample (10). Above cut F335, below fill F337.
F337	Upper fill of F335, with soft fine brown silt with occasional orange heat-affected sandstones. Measured 3.50m x 1.50m x 0.27m. Above fill F336, below topsoil F001.

Post-holes

Post-hole F318 (Figures 11 and 21)

F318	Cut of a possible sub-circular post-hole. Measured 0.30m x 0.25m x 0.44m. Had a sharp break of slope from the top, convex sides, a sharp break of slope at the base and a rounded base. The lower sides of the cut were undercut to form a bulb shape, suggesting the feature may be natural, related to a root system. Filled with F319. Above subsoil F002, below fill F319.
F319	Fill of possible post-hole F318, with soft brown clayey silt with frequent small pebbles and occasional flecks of charcoal. Measured 0.30m x 0.25m x 0.44m. One find: a piece of worked flint (E2221:319:1). Above cut F318, below topsoil F001.

Post-hole F341 (Figures 11 and 20)

F341	Cut of circular post-hole, located on the base of pit F322 at the north-east corner. Measured 0.15m in diameter x 0.32m deep. Had a sharp break of slope from the top,

	vertical sides and a pointed base. Above subsoil F002, below fill F342.
F342	Fill of post-hole F341, with soft greyish-brown silt with inclusions of small stones and charcoal. Measured 0.15m in diameter x 0.32m. Soil sample (12). Above cut F341, below fill F340.

Deposits

Deposit F311

F002	Natural depression in subsoil. Measured 0.37m x 0.30m x 0.07m.
F311	Deposit stratified on a shallow depression in the subsoil, with soft brown sandy silt with a concentration of charcoal in the centre. Measured 0.37m x 0.30m x 0.07m. Above subsoil F002, below topsoil F001.

Test-trench T36

Pit F402 (Figures 12 and 22)

F402	Cut of an elongated pit. Measured 1.82m x 0.66m x 0.47m. Orientated north-south. Had a sharp break of slope from the top, steep and uneven sides, a sharp break at the base and a rounded base. The south end was truncated by a field ditch aligned north-north-east/west-south-west. Filled with F401, F403 and F404. Above subsoil F002, below fills F401, F403 and F404.
F401	Main fill of pit F402, with firm black clayey sand with inclusions of charcoal and stone. Measured 1.75m x 0.65m x 0.50m. Soil sample (43). Above cut F402, below fill F403.
F403	Upper fill of pit F402, with firm brown-light grey silty sand, similar to topsoil, with inclusions of sandstone. Measured 0.82m x 0.38m x 0.18m. Above fill F401, below topsoil F001.
F404	Fill of pit F402, with stiff light grey-white coarse sand, with occasional inclusions of charcoal and small stones. Measured 0.70m x 0.07m x 0.45m. The near vertical trace of the deposit between one edge of the pit and the main fill F401, suggests that it relates to root penetration following the side of the cut, and should be regarded as a product of natural activity rather than part of the archaeological fill associated with the feature. Above cut F402, below fill F401.

4.2.3 Stratigraphic Sequencing

Table … Stratigraphic Groups		
Site Name: Lismore 2		Record No.: E2221 – Scheme No.: A015/112
Period	**Phase**	**Composition**
I	1	Initial clearance of site
	2	Prehistoric Activity
	3	Abandonment of site
II	1	Post-medieval agricultural activity (1)
	2	Post-medieval agricultural activity (2)

Period 1

Phase 1 Initial clearance of the site

There is no direct archaeological evidence relating to the initial clearance of the site.

Period 1

Phase 2 Prehistoric activity

Area 1

The features in this area are assumed to be contemporary. They are all cut into the subsoil and are not stratigraphically related. Excavation of the area revealed just twelve cuts in the subsoil (Figure 8). The features are mixed in character, comprising four post-holes (F041, F046, F044 and F042), a hearth (F048) and seven pits (F051, F043, F039, F040, F047, F049 and F045).

The features as a whole in this area do not present any obvious pattern that might suggest a structure was present on the site, but appear rather randomly distributed. The majority of the features were located in the southern half of the area. The largest pit, F051, was the most easterly of the features. The fill, F016, produced a small amount of burnt bone (species unknown; Appendix 10.6). The hearth, F048 was effectively isolated in the northern half of the area, along with a single very small pit, F039. The hearth must have been established outdoors as there is no evidence to suggest it was located within a dwelling.

Area 2

This was the most interesting area, both in terms of the number of archaeological cuts revealed and for limited evidence for structural coherence. The area was located 190m north-west of Area 1. The linear features in the area are considered to relate to Period II (post-medieval) activity. Excluding those, the Period I cuts total 62, comprising 31 stake-holes, 20 post-holes, 10 pits and a hearth. The majority of the features, 50 cuts, were located towards

the north-east limit of the area. The remainder, some twelve cuts, were concentrated in a loose grouping towards the south-west limit.

The twelve cuts of the smaller south-west grouping comprised four pits (F131, F132, F146 and F147), seven post-holes (F125, F129, F139, F149, F123, F134 and F136), and a hearth (F145). The features were spread out over an area measuring *c*.13.3m (north-west/south-east) by *c*.8m (north-east/south-west) (Figure 10). Two features were stratigraphically related. Pit F146 was truncated on its west side by hearth F145. This is the only evidence to support the possibility that there could have been more than one phase of prehistoric activity on the site. None of these features produced any finds. As with the features in Area 1, there is a lack of coherence in the distribution of the features. Three post-holes (F125, F123 and F129) form a 2.75m-long alignment orientated north-north-west/south-south-east. It is possible that Period II ditch F100 obliterated a fourth post-hole in this small sequence. As in the case of the Area 1 hearth (F048), there is no structural evidence to suggest that hearth F145 was related to a dwelling of some kind. Post-holes F134 and F136 are paired at the southern end of the group, but otherwise the pits and post-holes appear randomly distributed. The only find from any of the features of this group was a piece of flint debitage (E2221:110:1) from the fill of post-hole F131 (Appendix 10.5). A small quantity of burnt bone was recovered from fill F104 associated with pit F147, from fill F102 of pit F132 (close to hearth F145), and a more substantial amount of burnt bone was recovered from upper fill F106 of post-hole F149 (species unknown; Appendix 10.6).

The larger north-east concentration of features in Area 2 comprised 31 stake-holes, 13 post-holes and six pits (50 cuts in all). They were spread out over an area measuring *c*.14.8m (north-south) by *c*.10.75m (east-west) (Figure 9). The features were not stratigraphically related. The largest pit, F178, was truncated to the south by Period II ditch F174. A number of the features can be seen to have a semblance of structural coherence. A fence orientated east-west was established on the site, with a recorded length of *c*.5.2m. The structure begins at the west with stake-hole F196, terminating at the east with stake-hole F253. Altogether the fence line incorporates at least 17 of the stake-holes recorded in Area 2. Another interesting hint at structural coherence is provided by a curving sequence of four post-holes F240, F199, F151 and F159. Together these would appear to constitute the south-west quadrant of a circular structure of *c*.7.6m diameter. What makes this evidence interesting is the fact that the east-west fence line fits neatly within the outline of this structure, with the western stake-hole F196 located *c*.0.4m on the 'inside' of post-hole F240. If this were the case, the fence line could be interpreted as an internal partition, screening the northernmost third of the circular structure from the remaining two-thirds of the building. The argument for the existence of a

relatively substantial circular structure in Area 2 is perhaps supported by the presence of an intriguing 'four-poster' arrangement of cuts on the east side of the circumference, which could be interpreted as the remains of a porch-like entrance to the building. The 'four-poster' comprises large post-holes F156, F155, F170 and F172. The features were in a square formation, measuring externally 2.7m (west-north-west/east-south-east) by 2m (north-north-east/south-south-west). The two westerly post-holes, F156 and F172, lay on the circumference of the possible circular structure, with the other two, F170 and F155, located to the east, possibly forming the external limit of the entrance. The presence of two sub-cuts attached to post-hole F172 suggests that the upright accommodated by the post-hole was reinforced during the functional life of the structure (Figure 9).

However, while in some ways the indicators of a circular structure in Area 2 are fairly promising, in other ways the evidence is less convincing. The difficulty arises mainly from an absence of structural evidence relating to the northern half of the circumference of the structure, and with regard to internal structural elements. Turning first to the archaeological detail relating to the northern outline of the structure, negative impact is caused by Period II field ditch F174, orientated north-west/south-east, which truncates the north-east quadrant of the building's outline. The ditch could have obliterated some evidence relating to the putative Area 2 round-house. The ditch certainly truncated a very large pit, F178, which appears to be prehistoric in nature (Figure 9). The pit's location straddles the circumference of the roundhouse at the north-east quadrant. This means, assuming a roundhouse really was built here, that pit F178 was not contemporary with it. If the pit post-dated the abandonment of the house, it could have obliterated a post-hole that would have been on the circumference north-north-west of the 'four-poster' entrance area. It is interesting that another pit, F223, is situated on the circumference of the building, to the north-west of larger pit F178. This seems too much of a coincidence. One possibility is that F223 was originally a post-hole related to the roundhouse, but at abandonment the post-hole was dug-around, possibly to recover the post, leaving behind the enlarged pit feature F223. Accepting these arguments, we then have two post-holes in the north-east quadrant of the structure, one obliterated by large pit F178, the other altered by digging to become pit F223, which directly correspond to post-holes F199 and F151 in the south-west quadrant. Looking then to the north-west quadrant, it is a possibility that a post-hole here was obliterated by the digging of Period II ditch F174. This part of ditch F174 was not excavated. There is no other evidence for a post-hole in this quadrant. A negative feature, *c*.0.45m across, is illustrated on the post-excavation plan (Figure 9). This appears to be truncated on the south side by the line of ditch F174, implying that it pre-dates the ditch, but although recorded on plan it must have been considered non-archaeological in nature, perhaps a stone socket left after mechanical topsoil stripping. Again,

it seems a coincidence that it lies precisely on the suspected outline of a circular structure (Figure 9). Equally intriguing is the presence of two stake-holes on the building circumference at the north-west quadrant. These are F225 and F227 (Figure 9), lying to the north-east of post-hole F240 and south-west of Period 2 ditch F174. It is a possibility, given the location of the stake-holes, that they were related to the walling of the structure, although no other stake-holes were revealed along the circumference. On balance then, the seemingly tenuous nature of the evidence with regard to the northern half of the round-house can be positively explained to a certain extent, and what evidence we must deal with does not rule out the round-house theory as a genuine possibility.

The internal space contained by the outline of the roundhouse, as described above, appears to feature a stake-hole-based fence or partition, orientated east-west, which one would not expect to find, but is marked by a distinct absence of roof supports, as well as a hearth, which should form part of the evidence. Radiocarbon dates have been obtained from wood charcoal from two stake-holes of the partition (SUERC-18003 and 18004; Appendix 10.2). A sample of fill F195 of stake-hole F196 (Figure 9) returned a calibrated date of 1220–970 BC (93.9% probability), and a sample of fill F251 of stake-hole F254 returned a calibrated date of 1210–970 BC (91.2% probability). These mid to late Bronze Age dates appear to accord well with the analysis of the prehistoric pottery recovered from the site, dated to the overlap of the middle and late Bronze Age, *c*. 1200–1000 BC (Appendix 10.3).

Aside from the stake-hole fence line, there were a very limited number of features internal to the structure. These are post-hole F163 (in the centre of the structure), large post-hole F153 (in the south-west quadrant), shallow pit F157 (in the south-east quadrant), and a sub-rectangular formation of seven stake-holes in the south-east quadrant (F164, F166, F168, F235, F233, F231 and F229). Certainly, the presence of post-hole F163 in the centre of the dwelling area seems persuasive. More roof-support evidence would be expected, but only post-hole F153 is consistent with this purpose. However, it is possible that roof supports were grounded on stone pads at floor level, and therefore would not leave an archaeological trace in the subsoil. Likewise, the hearth that would have been the focus of the dwelling could have been established on a flagstone—without a pit being dug into the subsoil, no evidence for burning would survive in the archaeological record. It is possible that the hearth lay inside the area delineated by the stake-hole formation noted on the south-east side of central post-hole F163. This grouping is spread over an area measuring *c*.1.6m (east-west) by *c*.1.4m (north-south).

To conclude, the Period I, Phase 2 evidence revealed at the north-eastern limit of Area 2, points very much to the establishment of a post-built roundhouse dwelling, diameter *c*.7.3m, featuring a porch-like entrance to the east, and an internal east-west partition, screening-off the northern third of the interior, perhaps for use as a sleeping area (Figure 9).

Three pits were located in the vicinity of the roundhouse to the south, F161, F140 and F248. A shallow pit F221 and a possible post-hole, F237, were recorded to the north of the structure. Most of the small number of artefacts recovered from Area 2 was associated with the round-house. Pot sherds were found in the fills of the two external post-holes of the entrance, F170 (E2221:121:1) and F155 (E2221:118:1; Plate 30), and from one of the internal entrance post-holes, F156 (E2221:117:1–4). Another five pot sherds were found in the in fill of pit F157 in the south-east quadrant (E2221:113:1–5; Plates 25-29) (Appendix 10.3). A possible hammerstone (E2221:111:1) was found in the fill of large post-hole F153, located west-south-west of the centre of the dwelling. However, on analysis this stone was found to be unworked (Appendix 10.4). But a worked hammerstone (E2221:195:1) was recovered from stake-hole F196, forming the west limit of the internal fence line (Appendix 10.4).

Area 3

Area 3 was located 55m north-west of Area 2. The features of interest comprised a roughly triangular concentration of twelve archaeological cuts contained in an area measuring *c*.18m (east-west) by *c*.14m (north-south). The features comprised three large pits, F322 (at the apex of the 'triangle'), F330 and F335; pits F305, F316, F326, F328, F332 and F331; post-holes F318 and F341 (at the base of large pit F322); and a hearth, F301 (Figure 11). A field drain, F309, orientated north-east/south-west, extends along the west side of this grouping of features, but close to pit F322 changes direction, continuing along the east side of the features as F312, orientated north-west/south-east. A possible post-hole was noted in the side of ditch F312, 2m from its east terminal. While it many cases field drains of this nature can be of relatively recent origin and of no archaeological significance, the fact that all the archaeological features are neatly contained in the area directly south of ditches F309/F312, raises the possibility that the ditches could be contemporary with the concentration of pits. This view is given added support by the fact that pits F331, F332 and possible post-hole F318 appear to lie parallel to ditch F309. In the absence of any finds from the ditches, the case is difficult to prove one way or the other.

There were no structural indicators in Area 3 to compare with the evidence discussed above for the north-east corner of Area 2. The only certain post-hole identified in the area, apart

from post-hole F318, was F341, located at the north-east corner of large pit F341. In common with Areas 1 and 2, this area had a hearth, F301. A number of the pits, F331, F332, F305 and large pit F330 contained burnt stone fills. Hot stone ('pyrolithic') technology was widely practised in later prehistory. This involved the production of hot water, which could be put to a number of uses, by making stones white-hot in a fire and then dropping them into an adjacent trough of cold water. The majority of sites where this technology was practised, commonly referred to as *fulachta fiadh*, are typified by a levelled mound of charcoal, ashy residues and heat-shattered stones, that accumulated as by-products of the process. In Area 3, it is clear that hot-stone activity, involving the hearth and several of the pits, was being conducted, but this did not result in a typical mound-like build-up of waste material, as the burnt-stone material was completely contained by the pits and did not spill or spread out around them. An interesting point here is that burnt-stone sites are invariably located close to a water source, for example a stream, or in low-lying places where the troughs could be replenished naturally by ground water. Area 3 at Lismore 2 occupied a relatively elevated position, and there was no adjacent water supply, making it an unusual place to encounter evidence for hot-stone activity. One possibility is that the intersecting field drain system F309 and F312, along with F313 and F314, if it was of prehistoric origin, could have conveyed the abundant water necessary for hot-stone techniques to be carried out.

A radiocarbon date has been obtained from wood charcoal sampled from fill F304 of large trough-pit F330 (Beta-218646; Appendix 10.2). This is calibrated (2 sigma) to 2450 to 1970 BC, indicating that this element of the archaeology of Lismore 2 dates from the early Bronze Age. The date is not consistent with the dates obtained for the internal partition of the Area 2 round-house, nor with the analysis of pottery from the site, which point to mid to late Bronze Age ranges for occupation of the site. Only a small number of artefacts were recovered from Area 3. Several sherds of prehistoric pottery (E2221:317:2–5, 7, 8; Plates 31-35) (Appendix 10.3) and a retouched chert flake (E2221:317:1) (Appendix 10.4) were found in the fill of pit F316, located on the north side of hearth F301. A piece of worked flint (E2221:319:1) was obtained from the fill of possible post-hole F318 (Appendix 10.5).

Area 4

Area 4 was located *c.*50m north-west of Area 3. No features, deposits or finds of archaeological significance were discovered following mechanical topsoil stripping and manual cleaning back of the area.

Test trench T36

The completion of the archaeological testing programme for Field 533, curtailed due to the waterlogged nature of part of the south-east end of the field, revealed one other feature of likely prehistoric origin, in test trench T36. This was a fairly large pit, F402, located *c*.90m south-west of Area 1. The feature measured 1.82m by 0.66m by 0.47m deep. The main fill, F401, was firm black clayey sand with inclusions of charcoal and stone. The discovery of this feature points to the existence of another concentration of archaeological features, similar to investigated areas 1–3, but in this case located west of the CPO limit of the landtake for the road scheme.

Period 1

Phase 3 Abandonment of the site

There is no direct archaeological evidence relating to the abandonment of the site following the occupation described above in Period I, Phase 2.

Period 2

Phase 1 Post-medieval agricultural features (1)

The only non-prehistoric features on the site appear to be related to agricultural improvement work, ie field drainage. No plough furrows were noted during the excavation. No features of this type were recorded in Area 1. In Area 2 two field drains intersected, F174 and F100 (Figure 9). The latter post-dated drain F174, and is discussed below in Period II, Phase 2. Ditch F174 was aligned north-west/south-east at the northern corner of Area 2. It truncated the largest Period I, Phase 2 pit in the area, F178, and as discussed above, it may well have truncated the north-east quadrant of a post-built roundhouse. The fill of the ditch produced a possible hone stone (E2221:173:1), but on analysis this was found to be an unworked stone (Appendix 10.4). But the discovery of a well-stratified shard of bottle glass (E2221:173:2) firmly establishes the ditch as a feature of post-medieval origin. A linear field drain, F244, located at the western corner of Area 2, was aligned north-east/south-west. The line of this feature, if projected north-east beyond the limit of Area 2, would intersect the similarly projected line of ditch F174, suggesting the two ditches were contemporary.

Similar field drains were investigated in Area 3 (Figure 11). An intersecting system comprising ditches F309, F312, F313 and F314 framed the archaeological features discussed above in Period I, Phase 2. No datable finds were recovered from the drains, and the fact that

ditches F309 and F312 appear to skirt around the archaeology, rather than cutting across it, raises the possibility that these linear elements are in fact contemporary with the prehistoric features. The case for an archaeological origin remains inconclusive. A larger linear element, F302, aligned north-west/south-east, was the sole feature along the southern margin of Area 3. No finds were recovered from the fill, F315, but the ditch is presumed to be of post-medieval origin.

Period 2

Phase 2 Post-medieval agricultural features (2)

The later field ditch in Area 2, F100, truncating ditch F174, was aligned north-east/south-west. Only a limited sample of the feature was excavated (Figure 9). The fill, F101, contained a small quartzite anvil stone (E2221:101:1) (Appendix 10.4), and also some animal bone (the only animal bone from the whole site) as well as a small quantity of burnt bone (found on analysis to be animal in origin; Appendix 10.6). The burnt bone was probably in redeposited material derived from a Period I, Phase 2 feature destroyed by the digging of the ditch. Three features at the south-west limit of Area 2 (cuts F132, F147 and F149) had associated fill deposits (fills F102, F104 and F106) that contained small amounts of burnt bone (species unknown; Appendix 10.6). A linear pit, F242, on the same alignment to the north of ditch F100, was probably contemporary with it (Figure 10). Two closely spaced field drains, orientated north-east/south-west, were noted on either side of Period I, Phase 2 pit F402. One of these truncated the southern edge of the pit (Figure 12).

4.2.4 Stratigraphic Discussion

Archaeological material at Lismore 2 was found in three concentrated pockets, Areas 1–3, and the discovery of a pit in test trench T36 points to the existence of a fourth area of activity in the same field, lying outside the limit of the landtake for the road. Area 2 was 190m north-west of Area 1, and Area 3 was another 60m on the other side of Area 2. The overall distance between Period I, Phase 2 features in Areas 1 and 3 is *c*.280m. The archaeology of each area, physically disconnected from the other blocks of evidence, is perhaps more likely to belong to its own time, as the detached nature of the findings makes it difficult to argue that the habitation remains are in fact contemporary and all derived from a single phase of settlement. However, Areas 2 and 3 are within close enough range to be plausibly contemporary, but it is harder to be so certain with regard to Area 1, which is relatively distant from the other two areas. Analysis of the prehistoric pottery (Appendix 10.3), which was recovered from features

in Areas 2 and 3 supports the argument that activity in the two areas is broadly contemporary, but the radiocarbon dates obtained for the site do not, as pit F330 in Area 3 appears to be significantly older than round-house-related stake-holes of Area 2 (Appendix 10.2).

The key questions are: were people living here, and what were they doing. Settlement does seem to be confirmed by the indicators of a post-built round-house located at the north-east limit of Area 2. It is tempting to speculate that the house was established within a local field system, evidence for which, in the form of field ditches, frames the northern limit of the archaeology in Area 3. The presence of bowl-shaped pits and a larger pit in Area 3, each associated with charcoal-enriched fills containing heat-shattered stones, points to the practice of hot-stone technology, widespread in the later prehistoric period in Ireland, most frequently associated with the preparation of food, but with a number of other possible applications. Burnt stones were also found in the largest feature, F051, in Area 1.

Another clue in identifying the activities taking place at Lismore 2 is provided by the small amount of burnt bone recovered from the site. Burnt bone was contained in the fill of pit F051, the largest feature in Area 1, located 7.4m south of hearth F048. Three features in the south-west limit of Area 2 also produced some burnt bone: post-hole F149 and pits F132 and F147. These features were close to hearth F145. The deliberate burning of bone in prehistoric contexts can be related to funerary practices, ie cremation, in which case the bone would be human. Burnt animal bone is considered to be an indicator of certain metal-working practices, ie smithing, where bone was introduced to regulate the temperature of the forge. The analysis of the burnt bone from five contexts, including material redeposited in post-medieval ditch F100 (Appendix 10.6) has found that it is not possible to tell if the bone was animal or human. The F101 sample from the post-medieval ditch contained fragments of animal tooth, and it is considered on that basis that all the material from this context derived from animal remains (Appendix 10.6). The excavated evidence in Areas 1 and 2 does not appear consistent with prehistoric burial practices. The burnt bone fragments are much more likely to be animal-derived, and it is possible that some type of metal-working activity, or a process requiring high temperatures, was being carried out in Area 1 and at the south-west extent of Area 2. The alignment of post-holes F123, F125 and F129 in Area 2 suggests a wind-break that could have screened such activity in Area 2, and a curving arrangement of features in Area 1, comprising post-holes F044 and F046, and pits F043 and F045, could be interpreted in the same way. However, no metal-working residues were found on the site, and in the absence of further positive indicators, such interpretation is very much a matter of speculation.

4.2.5 Stratigraphic Conclusion

The archaeology of Lismore 2 was found to be contained by three widely spaced concentrations of activity (Areas 1–3), with evidence for another area towards the south-west extent of the field, outside the limits of the roadtake. Despite the disconnected nature of the findings, it is tempting to regard the evidence for Period I, Phase 2 occupation from all three areas as broadly contemporaneous. The analysis of prehistoric pottery (Appendix 10.3) recovered from contexts in Areas 2 and 3 points to mid to late Bronze Age dating for the two areas, but while the radiocarbon determination for the Area 2 round-house partition is consistent with this evaluation, the early Bronze Age calibration obtained from a sample of fill F304 from pit F330 (Area 3) is not (Appendix 10.2).

Area 2, located 190m north-west of Area 1, was the most archaeologically significant of the three (Figure 9). A case can tentatively be made for the existence of a round-house at the north-east limit of the area, and some kind of indeterminate domestic activity, conducted in proximity to a hearth, was focussed about the south-west limit of the area. Several of the excavated contexts in Area 3 were consistent with the use of 'hot-stone' technology, typical of sites frequently referred to as *fulachta fiadh*, but there was no evidence for the levelled 'burnt mound' that characterises such sites. Field ditches forming a cordon on the north side of the archaeology in Area 3 may be contemporary with the Period I, Phase 2 remains. Area 1 was a relatively long way south-east of the core archaeology of Lismore 2, but the presence of a hearth, with a pit nearby containing both burnt bone and burnt stone, represent elements in common that link this area with the features and deposits recorded in Areas 2 and 3.

4.3 Artefactual Material

4.3.1 Pottery

(See Appendix 10.3)

Pottery Archive					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Area/and feature**	**Comments (decoration etc)**
E2221:113:1	Late Bronze Age?	Body sherd	pottery	Fill of pit F157 associated with Area 2 round-house	Vessel 4
E2221:113:2	As above	Base-angle sherd	pottery	As above	Vessel 4
E2221:113:3	As above	Body sherd	pottery	As above	Vessel 4
E2221:113:4	As above	Base-angle sherd	pottery	As above	Vessel 4
E2221:113:5	As above	Body sherd	pottery	As above	Vessel 4
E2221:117:1	Middle to Late Bronze Age	Body sherd	Pottery	Fill of post-hole F156 at entrance to Area 2 round-house	Vessel 3 or similar to it
E2221:117:2	As above	Body sherd	Pottery	As above	As above
E2221:117:3	As above	Body sherd and two fragments	Pottery	As above	As above
E2221:117:4	As above	Body sherd	Pottery	As above	'other'
E2221:118:1	As above	Rim sherd	pottery	Fill of post-hole F155 at entrance to Area 2 round-house	Vessel 3
E2221:121:1	As above	Body sherd	pottery	Fill of post-hole F170 at entrance to Area 2 round-house	'other'
E2221:317:2	As above	Body sherd	Pottery	Area 3: fill of pit F316	Vessel 1

E2221:317:3	As above	Fragment	Pottery	As above	Vessel 1
E2221:317:4	As above	Body sherd	Pottery	As above	Vessel 2
E2221:317:5	As above	Body sherd	Pottery	As above	Vessel 1
E2221:317:6	charcoal	charcoal	charcoal	Charcoal	Charcoal
E2221:317:7	Middle to late Bronze Age	Possible rim sherd	Pottery	Area 3: fill of pit F316	Vessel 1
E2221:317:8	As above	Body sherd	Pottery	As above	Vessel 1

4.3.2 Stone objects archive

(See Appendix 10.4)

Stone Objects Archive					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Rock type**	**Comments (decoration etc)**
E2221:101:1	prehistoric	Complete	Anvil stone	Quartzite	
E2221:111:1	prehistoric	Complete	Natural/unworked	Quartz	Natural/unworked
E2221:173:1	prehistoric	Complete	Natural/unworked	Quartzite	Natural/unworked
E2221:195:1	prehistoric	Complete	Hammerstone	Quartzite	May also have functioned as a grinding stone
E2221:317:1	prehistoric	Complete	knife	chert	Retouch on blade

4.3.3 Flint/chert lithics

(See Appendix 10.5)

Lithics					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Condition**	**Comments (decoration etc)**
E2221:110:1	prehistoric		Flint debitage		Platform struck flake
E2221:301:1	prehistoric		Flint retouched		Possible bipolar core

E2221:319:1	prehistoric		Flint worked	burnt	Debitage flake

4.3.4 Glass archive

Glass					
Report: Context: Find number	**Period**	**Completeness**	**Artefact type**	**Condition**	**Comments (decoration etc)**
E2221:173:2	post-medieval	Shard	Bottle glass		

4.4 Environmental Evidence

4.4.1 Animal Bone Archive

Animal bone archive					
Context (fill)	**Cut**	**Area**	**Bags**	**Comments**	**Sample No (flot)**
F101	F100	2	1	Ditch fill	

4.4.2 Burnt Bone Archive

(See Appendix 10.6)

Burnt bone archive					
Context (fill)	**Cut**	**Area**	**Weight**	**Comments**	**Sample No (flot)**
F102	F132	2	2g	Shallow pit	n/a
F016	F051	1	4g	Charcoal pit	n/a
F101	F100	2	13g	Field ditch	n/a
F104	F147	2	1g	Shallow spread	n/a
F106	F149	2	12g + 5g	Layer on top of post-hole	26

4.4.3 Botanic

Soil Flotation Results					
Context	**Sample**	**Soil Weight (g/kg)** ***Pre-sieve***	**Residue Weight (g/kg)**	**Flot Weight (g/kg)**	**Comments**
F003	1	25kg (7 bags)	1.825kg	0.0091kg	Flot: charcoal
F005	2	1.619kg	0.137kg	-	Nothing in residue.
F009	3	3.9kg	0.754kg	-	Nothing in residue.
F016	4	15.5kg (4 bags)	2.2kg	0.071kg	Flot: charcoal.
F102	14	8kg (2 bags)	0.588kg	0.025kg	Flot: charcoal
F103	15	3kg	0.253kg	0.017kg	Flot: charcoal.
F104	24	4kg	0.384kg	0.034kg	Flot: charcoal.
F106	26	2.5kg	0.246kg	0.015kg	Flot: charcoal. Residue contains crem. bone.
F110	25	2.8kg	0.211kg	0.016kg	Flot: charcoal.
F112	16	1.609kg	0.074kg	0.011kg	Flot: charcoal.
F113	17	2kg	0.153kg	0.024kg	Flot: charcoal.
F114	36	7kg (2 bags)	0.714kg	0.018kg	Flot: charcoal.
F117	44	3kg	0.233kg	0.019kg	Flot: charcoal.
F118	18	3.2kg	0.096kg	0.017kg	Flot: charcoal.
F141	19	8kg (2 bags)	0.656kg	0.002kg	Flot: charcoal.

F142	20	6kg (2 bags)	0.839kg	0.018kg	Flot: charcoal.
F143	21	3kg	0.265kg	-	Nothing in residue
F171	23	3kg	0.247kg	0.02kg	Flot: charcoal
F175	28	5.5kg (2 bags)	0.273kg	0.023kg	Flot: charcoal.
F179	29	0.744kg	0.06kg	0.007kg	Flot: charcoal.
F193	30	1.415kg	0.215kg	0.003kg	Flot: charcoal.
F195	31	3.8kg	0.743kg	0.016kg	Flot: charcoal.
F197	45	4kg	0.31kg	0.014kg	Flot: charcoal.
F212	32	0.78kg	0.021kg	0.004kg	Flot: charcoal.
F220	35	10kg (2 bags)	0.566kg	0.038kg	Flot: charcoal.
F224	34	1.887kg	0.153kg	-	Nothing in residue.
F226	33	3kg	0.228kg	0.003kg	Flot: charcoal.
F251	37	2.8kg	0.167kg	0.027kg	Flot: charcoal.
F304	7	23kg (6 bags)	8kg	0.106kg	Flot: charcoal.
F306	9	22kg (6 bags)	10kg	0.088kg	Flot: charcoal.
F334	6	1.066kg	0.176kg	0.005kg	Flot: charcoal.
F336	10	20kg (6 bags)	1.645kg	0.002kg	Flot: charcoal.
F340	11	22kg (6 bags)	3kg	0.009kg	Flot: charcoal.

F342	12	2.8kg	0.385kg	0.003kg	Flot: charcoal.
F401	43	12kg	0.7kg	0.104kg	Flot: charcoal.

4.5 Dating Evidence

(See Appendix 10.2)

Radiocarbon dates have been obtained from wood charcoal from two stake-holes of the internal partition of the Area 2 round house (Appendix 10.2). Hazel, ash and pomoideae and prunus charcoal from fill F195 of stake-hole F196 (Figure 9) returned a calibrated date of 1220–970 BC (93.9% probability; SUERC-18003). Ash charcoal from fill F251 of stake-hole F254 (Figure 9) returned a calibrated date of 1210–970 BC (91.2% probability; SUERC-18004). These Late Bronze Age dates appear to accord well with the prehistoric pottery recovered from the site (Appendix 10.3). Pot sherds were found in three of the entrance way post-holes (F156, F155 and F170) and in a pit, F157, located in the south-east quadrant of the Area 2 round-house. The pottery is dated to the overlap of the middle and late Bronze Age, *c*. 1200–1000 BC (Appendix 10.3).

In contrast, a sample of charred material from the largest of the burnt-stone pits in Area 3, cut F330/fill F304 (Figure 11), has returned an early Bronze Age date, with a 2 sigma calibration of 2450 to 1970 BC (Beta-218646; Appendix 10.2). This indicates that at least one feature recorded in Area 3 is not contemporary with the round-house-related settlement evidence of Area 2. Notwithstanding the radiocarbon dating for feature F330, the fill of nearby pit F317 (Figure 11) contained four pot sherds that are dated to the middle to late Bronze Age (Appendix 10.3). It is possible that charcoal from other Area 3 features might well return mid to late Bronze Age dates.

5. DISCUSSION

The townland name Lismore can be translated as 'big fort' or 'great enclosure' (Joyce 1972, 271). The discovery of a large early medieval enclosure at the eastern limit of the townland and extending into the adjoining townland, Bushfield or Maghernaskeagh/Lismore 1, may possibly represent the 'great enclosure' from which the area takes its name. 'Lis' or 'lios' elements in a placename often refer to the interior of the enclosed site, as opposed to the enclosing element (Limbert 1996, 270).

Lismore 2 was located *c*.600-1km north-west of the Bushfield or Maghernaskeagh/Lismore 1 enclosure. These were the only sites located in the townland of Lismore along the route of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme. Archaeological features were recorded in three of the four areas opened for full excavation, comprising pits, post-holes, stake-holes, hearths and linear features. The initial radiocarbon date obtained was from a charcoal sample from a pit in Area 3. This date (Beta-218646), calibrated to 2450-1970 BC, led to the preliminary conclusion that the site represents the remains of an unenclosed settlement dating from the early Bronze Age. However, two further radiocarbon dates (SUERC-18003 and 18004) returned from charcoal from stake-holes in Area 2, together with analysis of pottery from Areas 2 and 3, suggests that activity on the site, including the construction of a post-built round-house, dates from the mid to late Bronze Age (Figure 23). In reality, the sheltered slopes of Knockseera probably attracted activity at different stages of later prehistory, and additional radiocarbon dates would probably confirm this.

Although much of the archaeology at Bushfield or Maghernaskeagh/Lismore 1 was early medieval in date, there was an area (Zone F) detached from the enclosure on the Lismore side of the townland boundary that was prehistoric in origin. Zone F at Bushfield-Lismore 1 comprised a number of burnt spreads and troughs, representing the remains of a 'hot-stone' site, ie an area where stones heated in a fire were dropped into a trough of water to bring it to the boil, for cooking or a range of other functions. Such sites, the most commonly excavated in Irish archaeology, are usually referred to as *fulachta fiadh*. The 'hot stone' work recorded at Zone F of Bushfield/Lismore 1 can be compared to the burnt-stone pit fills excavated in Areas 1 and 3 at Lismore 2. A radiocarbon date (SUERC-18002) from hazel charcoal from a Zone F trough calibrates to 2350-2130 BC (88% probability). This places the feature firmly in the Early Bronze Age, making it broadly contemporary with the large Area 3 pit F330, which contained burnt stone fill, but much earlier than the round-house of Area 2.

Another strand of evidence that could link the Bushfield-Lismore 1 and Lismore 2 sites relates to burnt bone fragments. Several pits excavated in Zone D, centrally located within the limits of the Bushfield-Lismore 1 enclosure, and features in other areas of the site, were found to contain pieces of burnt bone (Wiggins and Kane 2007). This material can be compared to the burnt bone found in pit F051 in Area 1, and in pit F132 in Area 2. Unfortunately, analysis of the small volume of burnt bone from Lismore 2 (Appendix 10.6) is inconclusive. It is not possible to determine whether the material is derived from animal or human remains. The largest quantity came from the fill of field ditch F100 in Area 2, and this material is interpreted as being derived from animal remains, as fragments of animal tooth were positively identified in the sample. The ditch itself is not prehistoric, and the F101 burnt bone is undoubtedly residual material derived from an unknown feature of prehistoric date obliterated by the digging of the ditch. The other burnt bone was recovered from secure prehistoric contexts: fill F016 (pit F051, Area 1; Figure 8), fill F102 (pit F132, Area 2; Figure 10), fill F104 (pit F147, Area 2; Figure 10) and fill F106, (post-hole F149, Area 2; Figure 10). Corresponding analysis of burnt bone from Lismore-Bushfield 1 is similarly inconclusive. In most cases it was not possible to determine whether the burnt bone derived from animal or human remains. Burnt bone from ten contexts was identified as definite fragments of animal bone, including cattle, sheep and pig (Archaeological Services, University of Durham 2008). The identified fragments came from a large pit in the south-west quadrant (Zone B), as well as pits in the north-east quadrant (Zone C), linear features and a large pit in the south-east quadrant (Zone E) as well as from a pit in the centre of the enclosure (Zone D). It is tempting to conclude that since the only identified fragments are animal that all the burnt bone from Bushfield-Lismore 1 must be animal as well, but there is no way to be certain of this.

The north-east limit of Area 2 appears to be of particular significance. The greatest concentration of features is to be found here, although none of them are associated with burnt stone or burnt bone, and there is no hearth. However, analysis of the stake-holes and post-holes points to the possibility that a post-built round-house, diameter 7.2m, with a porch-like south-east-facing entrance, was located here (Figure 9). The most diagnostic feature of a Bronze Age round-house is probably the circular slot-trench. A round-house, diameter 10m, was excavated by Ed Danaher on Contract 2 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme at Coolfin 1. The evidence comprised discontinuous slot-trenches and four internal post-holes (Danaher 2006). Many other examples of the slot-trench-defined round-house are known, particularly from major road schemes, for example at Carrigatogher Harding, Co. Tipperary (O'Keeffe 2007, 44) and at Ballybrowney, Co. Cork (Cotter 2005). However, Bronze Age houses can be defined by post-holes only, with no evidence for a slot-trench. A site that shares many characteristics with Lismore 2 is one

excavated by Fintan Walsh at Tobar, Co. Offaly. A circular structure, with no slot-trench, was defined by a double ring of post-holes. This structure had a porch entrance at the south-east (Walsh 2007). The excavator also identified two 'four poster' structures, ie square arrangements of large post-holes, external to the round-house, similar to the square formation of post-holes F155, F156, F170 and F172 at Lismore 2. However, at Lismore 2 the 'four poster' appears integral to the round-house, not separate from it. A small quantity of prehistoric pottery was recovered from the fills of two post-holes at Tobar, identified as Late Bronze Age in date (Walsh 2007). In this regard it is interesting that many of the mid to late Bronze Age pot sherds recovered from Lismore 2 came from three of the post-holes of the Area 2 round-house. Research carried out by Kerry Cleary has drawn attention to the depositing of cultural material, such as pottery or tools, within dwellings and house entrances as an aspect of settlement and belief in the Bronze Age (Cleary 2006).

However, the most striking examples of structures similar to the Area 2 round-house comes from excavations carried out by Tara O'Neill at Clonadacasey 2, Contract 3 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme (McQuillan 2008). Three round-houses with 'porched' entrances were excavated on the site. Structure 1 at Clonadacasey 2 has a central post-hole, which compares with the central post-hole (F163) of the Area 2 structure. These structures were of the single post-ring type, perhaps the most common circular-shaped structure in Irish prehistory (Doody 2000, 139). Entrances facing south-east were common in Bronze Age round-houses (Carlin 2006, 10).

The porch entrance is a feature of other excavated prehistoric houses. At Caltragh, Co. Sligo, three round-houses (Hut I–III) were excavated by Susan McCabe. It was observed that 'each structure was formed by a series of roof-supporting post-holes and all had an entrance defined by a four-posted 'porch'' (MacDonagh 2005, 16). Cremation burials were found near the hut sites at Caltragh, although it is not possible to confirm that the burnt bone identified in the south-west of Area 2, associated with pits F132, F147 and post-hole F149 is related to burial practices. The possibility of limited cremation-burial remains turning up at a settlement cannot be ruled out. The Middle Bronze Age site Tintore 2, excavated by Eamonn Cotter on Contract 1 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, was an enclosure with a number of internal features, including a cooking pit filled with burnt stone material and a cremation pit. The cremation pit has been radiocarbon dated to 1390–1010 BC. Pits containing burnt stone material are commonly associated with activity dated to the Bronze Age. The semi-circular 'burnt mound' of the *fulacht fiadh*, essentially waste material allowed to accumulate on-site, would only develop at particular locations

subject to prolonged or frequently repeated use of 'hot-stone' technology. The discovery of pits containing burnt stone material, such as those excavated in Area 3, where no overlying mound or spread is present, most probably indicates limited or 'one-off' episodes of 'hot stone' activity. Pits containing heat-shattered stone, with no overlying burnt mound, were excavated by Ed Danaher at Coolfin 2, Contract 2 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme.

In general terms, the evidence for the Area 2 round-house with porch entrance, the remains of a number of hearths, together with artefacts such as pottery, an anvil stone and a hammerstone, despite the inconclusive nature of the burnt bone, are all indicators of settlement. The radiocarbon dating indicates that settlement existed here both in the early and the mid to late stages of the Bronze Age. Lismore 2 is not located near any major rivers and occupied an inland location. Another characteristic of the settlement is its unenclosed nature.

The significance of the burnt bone recovered at Lismore 2 is difficult to evaluate due to the inconclusive results of the analysis. The material could be human in origin, related to burial practices. Cleary (2005) has researched the deliberate deposition of human remains on settlement sites in Ireland. Closing deposits, which may have been in the form of a token cremation associated with the occupant, would have been made at the abandonment of a house, similar to the grave-goods associated with formal burials (Bruck 2001, 151). Alternatively these may represent foundation deposits associated with the construction of the dwelling. This suggestion is supported by the fact that many recorded instances of human remains on settlement sites occur in structural components of the buildings, such as the post-holes, slot-trenches and entrances (Cleary 2005, 26). However, the burnt bone at Lismore 2 is associated with features south-west of the possible round-house, and may well have been derived from animal remains. If that is the case, the purpose behind the burning of animal remains at high temperature, reducing the bone to small fragments, in a process akin to the cremation of a deceased human, is a subject meriting further research.

6. INTERPRETATION AND RECONSTRUCTION

Lismore 2 was located *c*.600-1km north-west of the Bushfield or Maghernaskeagh/Lismore 1 enclosure. These were the only sites located in the townland of Lismore along the route of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme. Three of the four areas opened for full excavation revealed archaeological potential, comprising pits, post-holes, stake-holes, hearths and linear features. Three radiocarbon dates were returned for the site indicating the remains of an unenclosed settlement dated to the early Bronze Age (Cal BC 2450-1970 BC) and activity, including the construction of a post-built round-house dated to the Mid-Late Bronze Age.

7. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

In order to assess the archaeological potential and significance of this site it needs to be discussed in association with the sites discovered at this and the neighbouring townland of Bushfield or Maghernaskeagh. A large Medieval enclosure was uncovered following the excavations on M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme. Along with this however was a *fulacht fiadh* that dated to the Bronze Age. Further east, Kilcotton 2 also contained a *fulacht fiadh* dated to the Bronze Age. These, in conjunction with the site at Lismore 2 highlight a pattern of Bronze Age activity in the area. In reality, the sheltered slopes of Knockseera probably attracted activity at different stages of later prehistory, and additional radiocarbon dates would probably confirm this.

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–Castletown/M8 Portlaoise–Cullahill Motorway Scheme, Co. Laois.

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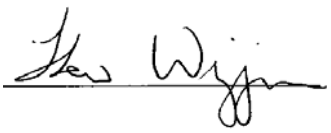

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November 2008

10. APPENDICES

10.1 Appendix 1: Charcoal identification report

Lismore 2, M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co Laois, Ireland

Species identification of charcoal samples

September 2008

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Contents

1. Introduction

Three thousand eight hundred and ninety seven charcoal fragments from one hundred and four contexts relating to twenty seven archaeological sites were analyzed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill road scheme, contract 2. Thirty four wood samples from Middle and Late Bronze Age *fulacht* sites and wooden troughs were also analyzed within the framework of these studies. Contract 2 covers a length of approx 13 km and includes numerous *fulacht fiadh* sites, charcoal production pits, bowl furnaces, cremation pit, linear feature, hearths, burnt spread, wells, kilns, pits, postholes and one ring gully.

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 purposed in this report (Grogan *et al*. 2007).

Analysis of timbers can 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 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme will add important information to the rapidly expanding database of environmental indicators particularly in relation to the Neolithic, 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 and fragments counts are required for a complete and full understanding of the immediate environment. Keepax suggests 50 samples in a European temperate climate. Charcoal is also analyzed 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 forth. 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 analyzed 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 firewood 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 KTK, 2008) highlighting the wetter environments in these particular areas of Ireland particularly during the Bronze Age. Oak and 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 Prehistoric and Medieval periods. Charcoal was analysed from a Neolithic pit at Derrinsallagh 3, numerous Bronze Age *fulacht* sites, early and Late Medieval charcoal production pits, a Late Bronze Age cremation pit from Derrinsallagh 3, the fill of an Iron Age well excavated at Bushfield 4,

a Bronze Age fire hearth from Boherard 2, early medieval and high medieval kilns from Derrinsallagh 3, several un-diagnostic pits dating to the Bronze Age, Iron Age and Medieval periods, Middle and Late Bronze Age postholes and an early Medieval ring gully from Lismore/Bushfield 1.

The analysis presented here concentrates on species identification, species selection and the composition of the local woodland during the Neolithic, Bronze Age, Iron Age and Medieval periods along the route of Contract 2, M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill motorway scheme. 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 felled from was also noted and recorded. Each piece of wood was also examined for blade signatures.

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.

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 analyzed 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 Neolithic, 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

Neolithic	*4000-2500BC*
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, plank 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. Results & Analysis

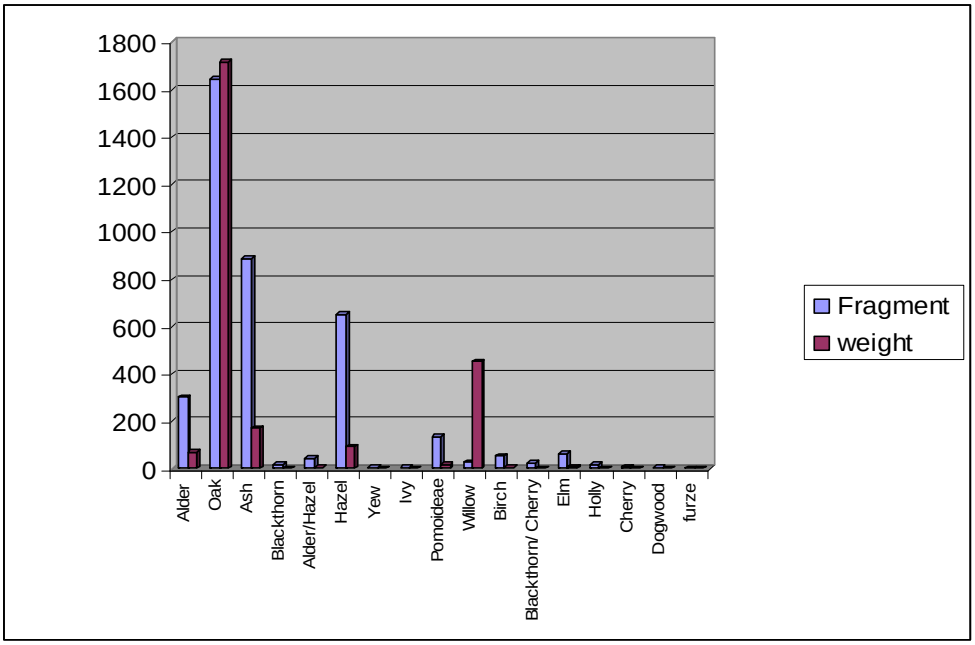
Charcoal

A total of 104 charcoal samples from trough fills, pit fills, post holes, burnt mound spreads, kilns, charcoal production pits, bowl furnaces, hearths, ring gully, cremation pit, a well and un-diagnostic pits were analysed from all periods of activity along the 13 km stretch of the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme, Contract 2. The weight and fragment count identified from each taxon type at each site analysed is represented in the Figures and Tables below.

Fifteen taxa were identified from the charcoal assemblage retrieved from the sites and features excavated from Contract 2, M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme. These were oak (*Quercus* sp), ash (*Fraxinus excelsior),* hazel (*Corylus avellana*), alder (*Alnus glutinosa),* Pomoideae (apple type), elm (*Ulmus* sp), birch (*Betula* sp), willow *(Salix* spp), blackthorn/cherry (*Prunus* spp), holly *(Ilex acquilofium*), cherry (*Prunus avium/padus*), yew (*Taxus baccata*), dogwood (*Cornus sanguina*), ivy (*Hedera helix*) and furze (*Ulex europeas*) in order of representation. The charcoal is mainly representative of fuel collection policies at the *fulacht* sites, kilns, cremation pit, hearths, bowl furnaces, ring gully, well and charcoal production sites although charcoal from postholes and stakeholes were identified from Corraun 2, Derrinsallagh 3, Derryvorrigan 2, Lismore 2 and Palmershill 1. The fills of the ring gully and well 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 analyzed. Weight in grams



Charcoal assemblage results at Lismore 2

Lismore 2, Middle Bronze Age stakeholes

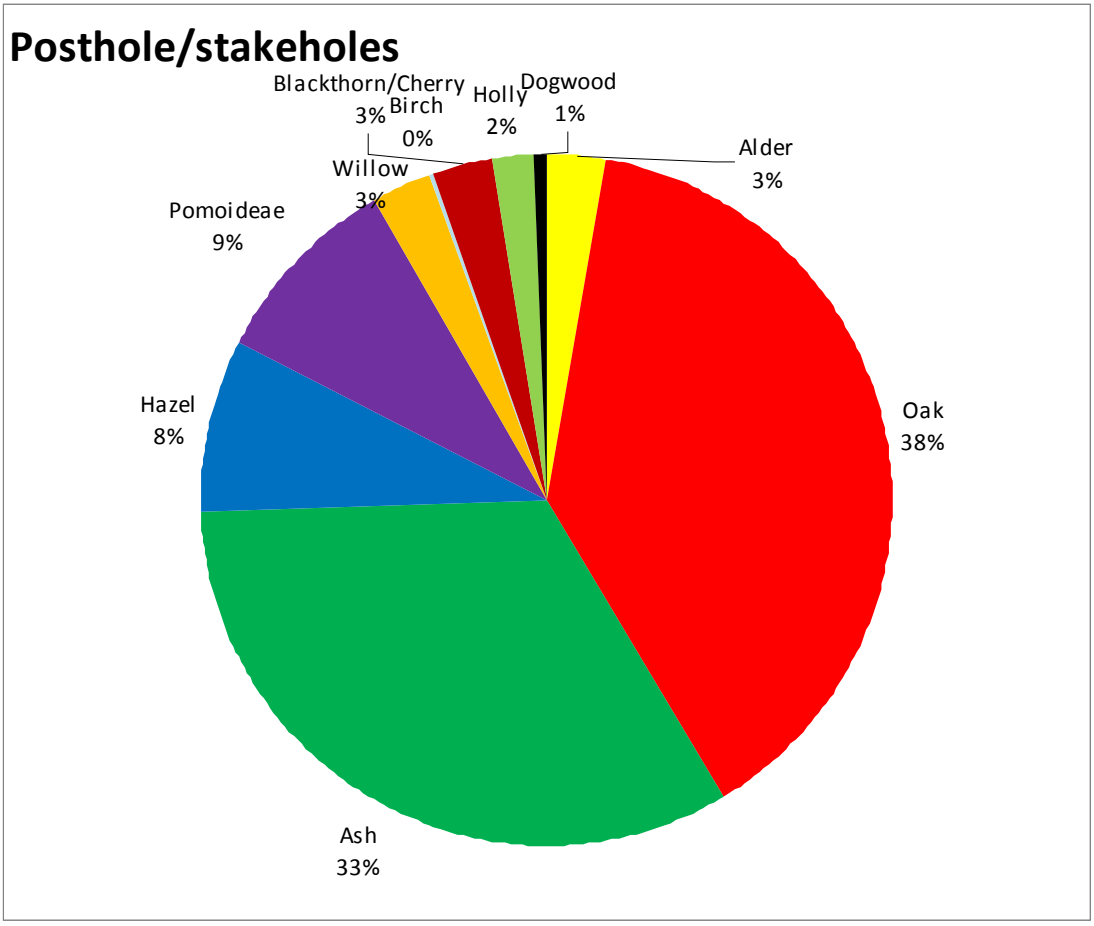
Table 1: Wood taxa present at Lismore 2

Site	E number	Feature type	Context	Sample no	Date	Identification	Comment
Lismore 2	E2221	Stakehole	F195	31	1260BC-1230BC MBA	Alder (0.1g, 2f) Ash (10g, 25f)	
Lismore 2	E2221	Stakehole	F251	37	1210-970BC LBA	Alder (0.1g, 1f) Ash (4.1g, 50f)	

Large quantities of ash were identified from both stakeholes excavated at Lismore 2. It is likely that ash was used for posthole material. Alder was also present in the area at the time of use of the sites.

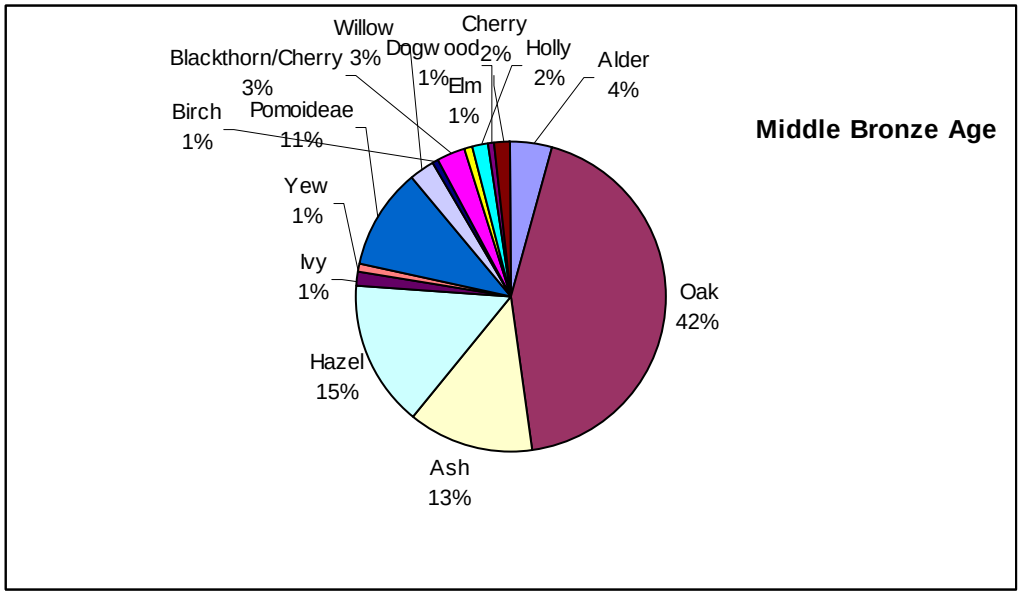
Results by feature/site types

Figure 2: Wood taxa identified from postholes/stakeholes



Middle and Late Bronze Age dated charcoal was identified from postholes and stakeholes associated with Derrinsallagh 3, Derryvorrigan 2, Lismore 2 & Palmershill 1. Although there was a range of wood taxa identified from the postholes the evidence does point to the fact that either oak, ash or hazel may have been used as post/stake material in the structures. This is particularly true in the case of the Late Bronze Age posthole at Derrinsallagh 3, **F585** where oak is exclusively identified from the feature and Lismore 2 where ash is shown to dominate at both stakehole features. The remaining posthole material analysed from the Bronze Age may have fallen into the posthole either after the structure went out of use or during the lifetime of the site's usage. One can only say with any degree of certainty that a post was constructed of a particular taxa type if the actual post is present in the posthole.

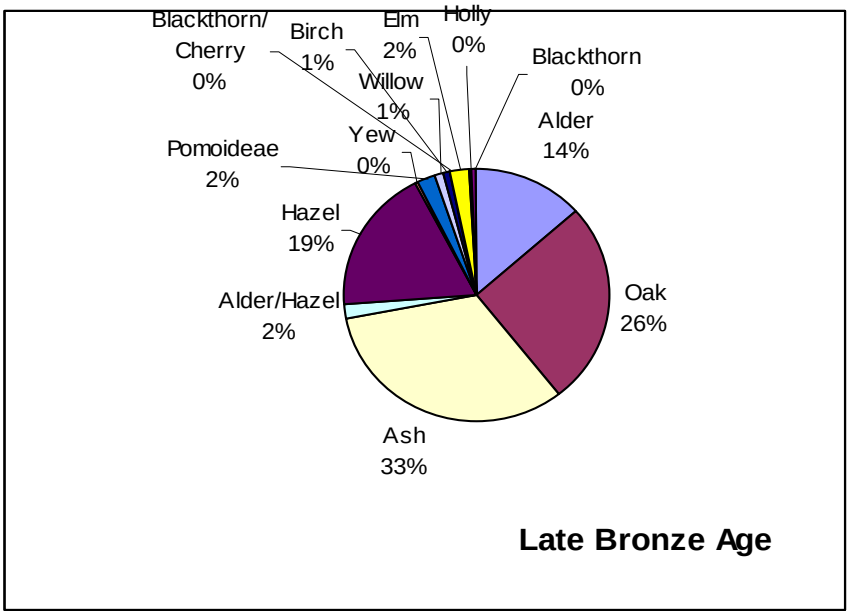
Figure 3: Taxa present in the Middle Bronze Age charcoal



Fourteen samples from six sites were analysed from the Middle Bronze Age dated sites. The sites investigated were Derryvorrigan 1 (pits), Derryvorrigan 2 (postholes), Lismore 2 (stakeholes), Coolfin 3 (*fulacht* activity), Coolfin 1 (*fulacht* activity), and Palmershill 1 (*fulacht* activity).

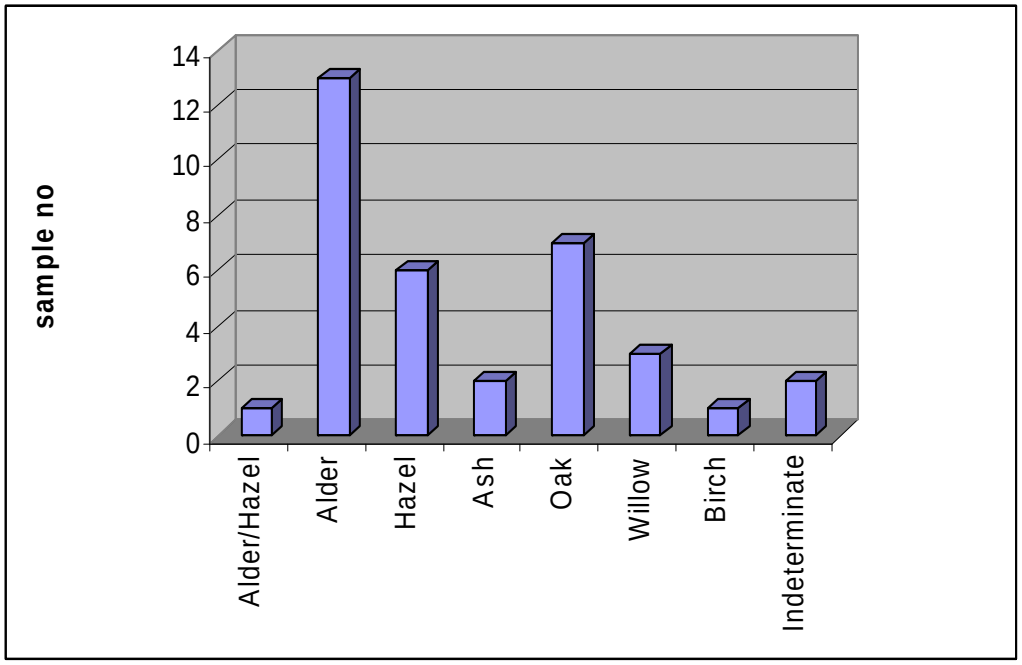
A wide range of taxa types were identified from these sites. Fourteen taxa which included oak, ash, hazel, pomoideae, alder, willow, blackthorn/cherry, holly, birch, yew, dogwood, elm and ivy in order of representation were identified from these Middle Bronze Age sites. Oak, hazel and ash again were more dominant but the ash counts were lower than in the earlier period and scrubland species were higher.

Figure 4: Wood taxa present at the Late Bronze Age sites excavated



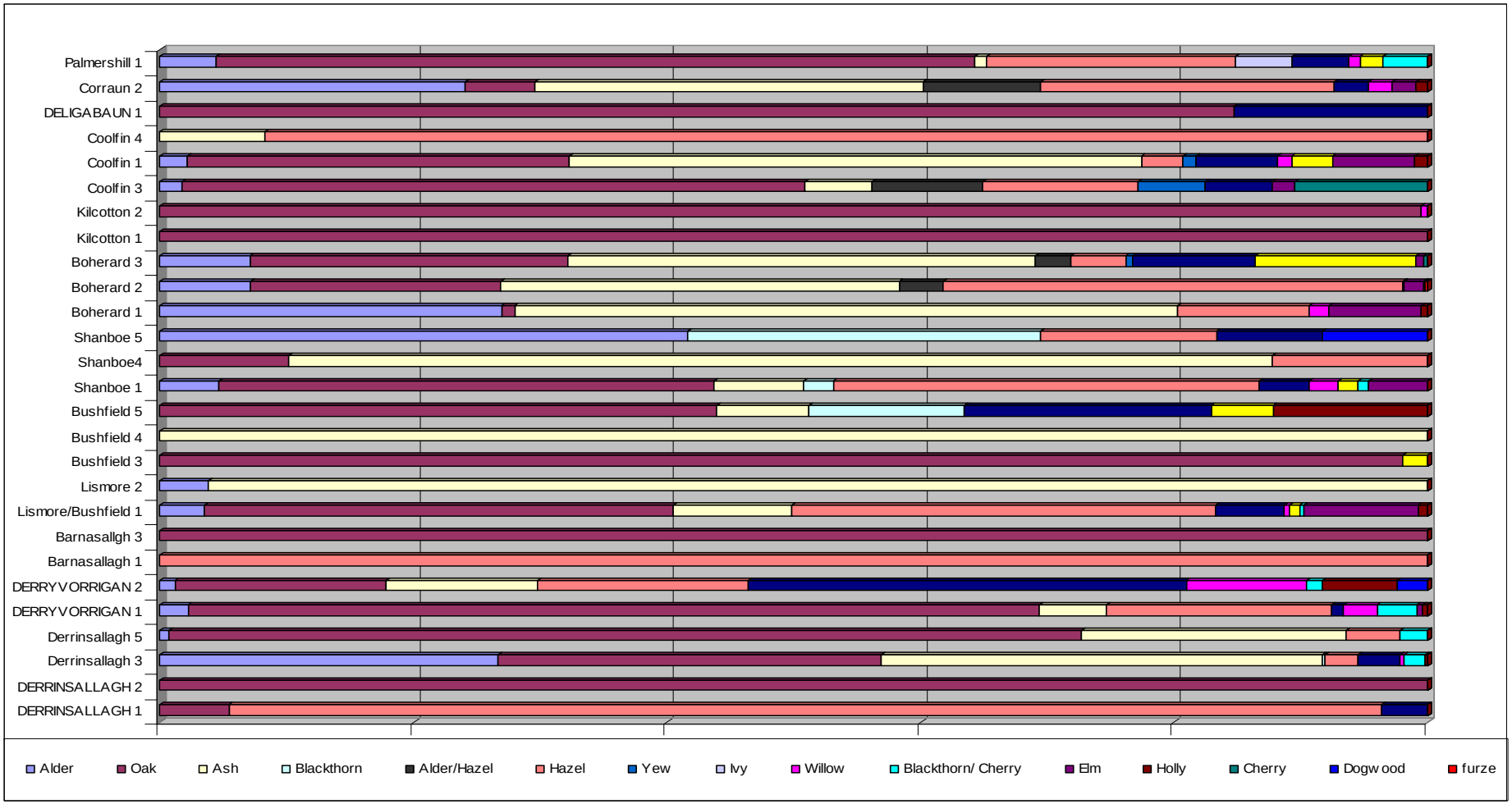
Nineteen samples from eight sites were analysed from the Later Bronze Age period. A total of thirteen features were analysed from the Late Bronze Age. These were from Derrinsallagh 3 (postholes and cremation pit), Derryvorrigan 1 (pit), Lismore 2 (Stakehole), Lismore 2 (stakehole), Shanboe 1 (*Fulacht* activity) Shanboe 4 (*Fulacht* activity), Coolfin 1 & 4 (*fulacht* activity) and Corraun 2 (*fulacht* activity). Twelve taxa were identified from these features. These were oak, ash, alder, pomoideae, hazel, blackthorn/cherry, yew, willow, birch, holly and elm. Oak and ash are present in near equal quantities and alder is represented in much higher quantities than any other period. Is this an indication of the deterioration in the climate as attested from various other palaeonvironemntal records. It is thought the Ireland saw a dramatic change in climatic weather conditions whereby the Ireland became much wetter and colder in the Later Bronze Age. The inhabitants of the Late Bronze Age moved down from the upland areas to the rivers and coastal areas to exploit the natural food sources of the rivers and lakes and as a consequence we have a larger number of Crannog sites or lake side settlements dating the Later Bronze Age.

Figure 5: All wood taxa identified from sites that produced wood along Contract 2



5. Discussion of Charcoal and wood assemblage

Table 2: Wood taxa identified from each site excavated along Contract 2, M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme



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 Neolithic, Early, Middle and Late Bronze Age, Iron Age and Medieval periods.
3. To determine use and function of particular features and their associated charcoal through the identification of taxa types

Wood types identified from charcoal and wood assemblages

Table 3: Taxa types identified from the charcoal and wood assemblage along Contract 2

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
Cornus sanguinea	Dogwood
Betula sp	Birch
Taxus Baccata	Yew
Ulex europeas	Furze
Ilex acquilofium	Holly
Hedera helix	Ivy

Three thousand eight hundred and ninety seven charcoal fragments from one hundred and four contexts relating to twenty seven archaeological sites were analyzed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill road scheme, contract 2. Thirty four wood samples from a Middle Bronze Age walkway and Late Bronze Age *fulacht* sites were also analyzed within the framework of these studies. Contract 2 covers a length of approx 13 km and includes numerous *fulacht fiadh* sites, charcoal production pits, cremation

pit, a well, kilns, bowl furnaces, a linear feature, pits, postholes and one ring gully. Possible structural wood used at the site were analysed from charcoal associated with postholes/stakeholes at Derrinsallagh 2, Derryvorrigan 2, Lismore 2 and Palmershill 1.

There were fifteen taxa present in the charcoal and wood remains. Taxa identified from the assemblage were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* Pomoideae (apple type), elm (*Ulmus* sp), birch (*Betula* sp), blackthorn/cherry (*Prunus* spp), holly *(Ilex acquilofium*), willow *(Salix* spp), yew (*Taxus baccata*), ivy *(Hedera helix),* dogwood *(Cornus sanguinea)* and *Ulex europeas* (Furze) in order of representation. The range of taxa identified from the features analysed includes large trees (elm, ash, yew and oak), medium sized trees (alder and birch) and smaller scrub or hedgerow trees like blackthorn, blackthorn/cherry, willow, dogwood, hazel, holly, furze, and pomoideae. Ivy is classed as a woody stem creeper and was very abundant on trees, walls and rocks (Webb 1953, 73).

The results from the wood analysis reflect to a certain extent surrounding tree land cover and selection of such trees for use at the Bronze Age sites. The identifications show that alder and oak wood were the main taxa used for planks and horizontals at these sites. Natural birch wood was identified from Shanboe 1 F009. The oak and ash may have been selected from woodlands within the area of Coolfin and Corraun while hazel coppice of a particular size may have been draw felled from areas of hazel coppice for the construction of the wattle lined trough at Shanboe 1. Any further analysis on the hazel wattle was impossible due to the degraded state of the wood. Wetland species identified were alder, birch and willow which are symptomatic of local wet condition along river banks or peat bogs. These wetland taxa may have been growing in close proximity to the *fulacht* sites as these site types are generally found in wetter areas.

The charcoal is mainly representative of fuel collection policies at the site although charcoal from structural features was identified from posthole and stakehole features excavated at Derrinsallagh 3, Derryvorrigan 2, Lismore 2, Corraun 2 and Palmershill 1. It is difficult to determine from the analysis of charcoal samples whether the identified taxa type is related to wood selected for posts or stakes. This can only be done if the actual post is burnt *in-situ*. Notwithstanding the above facts one can postulate at to the type of wood used as post or stake material if there is only one taxon type identified from the feature. Oak was nearly exclusively identified from the Late Bronze Age dated postholes at Derrinsallagh 3 F585 while ash was similarly identified within the Middle and Late Bronze Age stakehole F195 &

F251 material at Lismore 2 and the stakehole associated with the *fulacht* at Corraun 2. The remaining taxa, if not associated with the post or stake material may have fallen into the hole after it went out of use. Either scenario is possible.

When the charcoal is plotted against time periods we see similar data sets for oak, hazel and ash in the early and middle Bronze Age and late Bronze Age with a notable increase in alder taxon in the Later Bronze Age. Other patterns emerging from the analysis is that elm appears to occur more frequently in the Early Bronze Age sites as seen in similar analysis carried out along the route of Contract 1 and 3. Elm is thought to have extensively died out with the occurrence of an elm disease epidemic in the Neolithic period. From the very small sample set from the Neolithic period we see oak dominating along with smaller fragments of hazel and holly. This is similar to what is seen in pollen diagrams for the Neolithic periods of Ireland where oak woodlands are seen to dominate in the early pre-historic periods to be replaced by ash in the woodland clearings created by the earlier inhabitants.

6. Conclusions on Wood and charcoal Assemblage

Three thousand eight hundred and ninety seven charcoal fragments from one hundred and four contexts relating to twenty seven archaeological sites were analyzed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill road scheme, contract 2. Thirty four wood samples from a Middle Bronze Age walkway and Late Bronze Age *fulacht* sites were also analyzed within the framework of these studies. Contract 2 covers a length of approx 13 km and includes numerous *fulacht fiadh* sites, charcoal production pits, cremation pit, wells, kilns, bowl furnaces, a linear feature, pits, postholes/stakeholes and one ring gully.

There were fifteen taxa present in the charcoal and wood remains. Taxa identified from the assemblage were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* pomoideae (apple type), elm (*Ulmus* sp), birch (*Betula* sp), blackthorn/cherry (*Prunus* spp), holly *(Ilex acquilofium*), willow *(Salix* spp), yew (*Taxus baccata*), ivy *(Hedera helix),* dogwood *(Cornus sanguinea)* and *Ulex europeas* (Furze) in order of representation. The range of taxa identified from the features analysed includes large trees (elm, ash, yew and oak), medium sized trees (alder and birch) and smaller scrub or hedgerow trees like blackthorn, blackthorn/cherry, willow, dogwood, hazel, holly, furze, and pomoideae. Ivy is classed as a woody stem creeper and was very abundant on trees, walls and rocks (Webb 1953, 73). Oak along with ash, hazel and alder dominate the charcoal assemblage while alder, oak, hazel, willow and ash in that order are present in the wood

assemblage. Oak may have been used as post material at Derrinsallagh 3 and was the preferred taxon for use at metalworking activities including Medieval charcoal production pits and Iron age dated bowl furnaces. Ash stakes may have been used at Lismore 2.

In contrast to the analysis carried out along the route of Contract 1 and 3 hazel, ash, alder and oak are the dominant taxa identified from the *fulacht* sites. Alder was identified in higher quantities along this stretch of the road scheme which may indicate that the surrounding environment of these *fulacht* sites were wetter than other stretches of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme. Hazel wattle lined the trough at Shanboe 1. Oak planks were also identified from Shanboe 1. All of the wood taxa identified from the excavations were of native origin. The inhabitants of the sites along the route of Contract 2 had access to a mosaic of environment types which included oak in the Neolithic periods, primary woodland trees and many varieties of smaller and scrubland trees in the Bronze Age and Iron Age. Alder plays a more significant role in the sites analyzed along this stretch of the routeway.

It would be of great benefit to the project if the results were compared and contrasted with local and regional pollen cores from the areas that underwent excavation.

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.

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 as seen at Clonfinlough in Co. Offaly. 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).

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 (McCracken 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 bacatta 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. *Taxus bacatta* has a preference for well-drained lime rich soils. It is much less common in recent times because of over harvesting (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.

Cornus Sanguinea (Dogwood)
A medium sized shrub with reddish twigs. It is found in thickets and rocky places and is more commonly found along the western seaboards and parts of central Ireland.

Ulex europeas (Furze, Gorse or Whin)
A bushy shrub with green thorny branchlets. The furze shrub reaches a height of 2-5 feet and contains bright yellow flowers. Furze or gorse is commonly found on heaths, pastures and stony places.

Hedera Ilex (Ivy)
Ivy is a woody creeper and climbs by clinging roots. It is a native taxa and is abundantly found on trees, walls and rocks.

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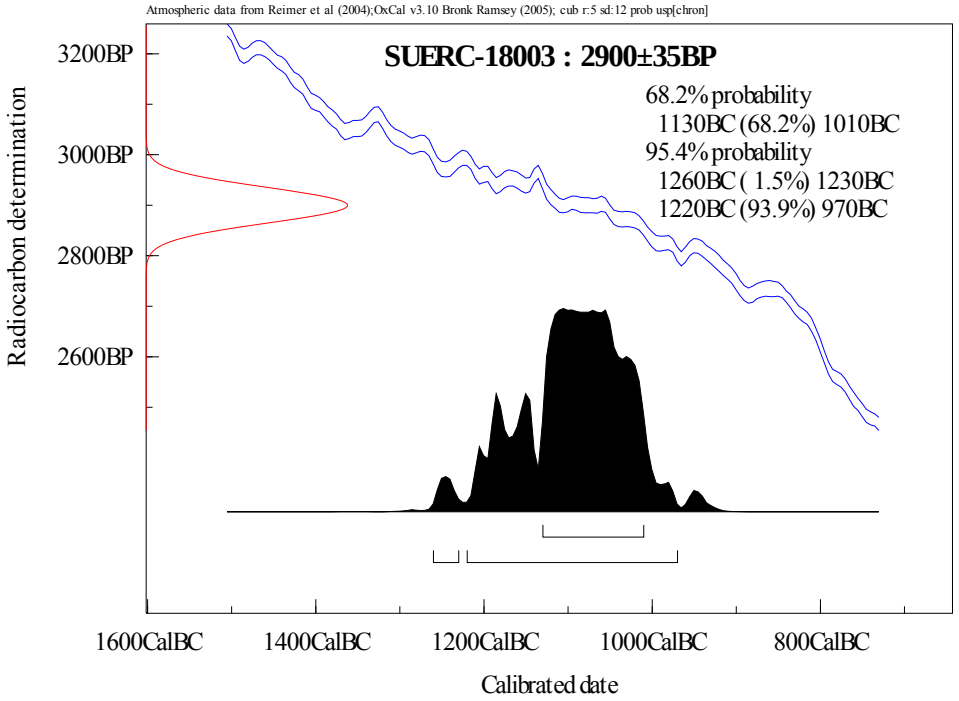
10.2 Appendix 2: Radiocarbon analysis results

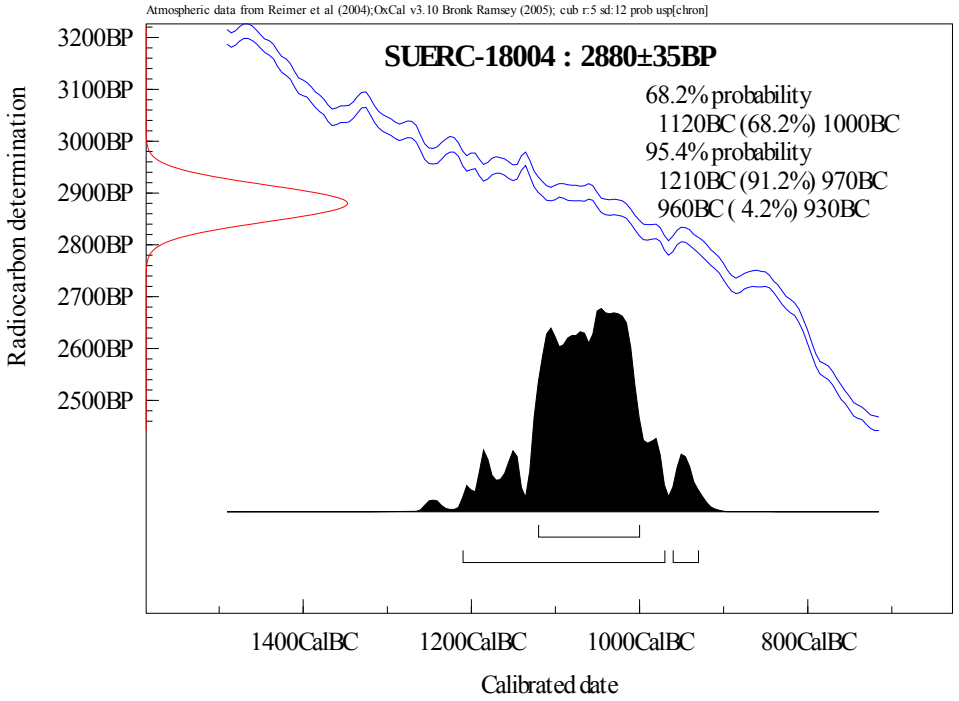
Ms. Rachel Sloane Report Date: 8/17/2006

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 218646	3820 +/- 70 BP	-28.3 o/oo	3770 +/- 70 BP
SAMPLE: A015/112:F304:S13			
ANALYSIS: Radiometric-Standard delivery			
MATERIAL/PRETREATMENT:	(charred material): acid/alkali/acid		
2 SIGMA CALIBRATION :	Cal BC 2450 to 1970 (Cal BP 4400 to 3920)		

SUERC-18003 (F195); SUERC-18004 (F251)



GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Ageerror 1 sigma
16201	18003	Charcoal	Lismore 2	Lismore 2 :E2221:F195:S31	Hazel, Ash and Pomoideae and Prunus	-26.5	2900	35



GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Ageerror 1 sigma
16202	18004	Charcoal	Lismore 2	Lismore 2 :E2221:F251:S37	Ash	-27.7	2880	35

10.3 Appendix 3: Prehistoric pottery report

The M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme

The prehistoric pottery from Lismore 2, Co. Laois

(E2221)

Eoin Grogan and Helen Roche

Summary

The site at Lismore 2 produced 16 sherds (plus 3 fragments; weight: 91g) representing at least four middle to late Bronze Age coarse domestic vessels.

Introduction

The pottery at Lismore came from the fills [**117–18, 121**] of postholes [**156, 155, 170**] that formed part of a four post arrangement, and that [**113**] of a shallow pit [**157**] *c*. 5m to the east in Area 2. Pottery also came from Area 3 in the fill [**317**] of a shallow pit [**316**]. All of the material is from middle to late Bronze Age domestic vessels.

Probable middle Bronze Age material

As there are few features sherds preserved in the assemblage the precise form of the four vessels represented cannot be determined although it is probable that all are bucket-shaped pots. The profile of No. 3, with an upright rim and a gently curved internal bevel, certainly indicates a simple open form for this example. The grey-brown to cream-buff fabric with evidence from some material for a fine external slurry finish, the dolerite inclusions (generally ≤ 6 x 5mm, up to 9 x 6.5mm), and the comparatively thin walls (9.5–12.2mm) suggest that Vessels 1–3, at least, are probably of developed middle Bronze Age date. Although much worn the Vessel 4 fabric is more similar, compact and more evenly fired, to material typical of the late Bronze Age. The assemblage may date to the overlap of these two periods, *c*. 1200–1000 BC.

Evidence for domestic use, in the form of sooting or a thick blackened accretion, occurs on No.s 1, and 3–4 and together with the fragmentary and worn condition of the material and the number of pots represented by a comparatively small number of sherds are consistent with this material being derived from a settlement context.

Regional Context

The Lismore 2 pottery, and that from Derrinsallagh (Grogan and Roche 2008) on the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme, is the first reported example of middle or late Bronze Age pottery from the area. The closest site is at Ballydavid, Co. Tipperary (Roche and Grogan 2008), although there are Bronze Age settlement indicators, including *fulachta fiadh* and barrows, as well as the hillfort at Boley Upper, along the Nore Valley.

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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

Middle to late Bronze Age pottery

Fill [**317**] of pit [**316**][1]

Vessel 1. This is represented by 4 sherds (1 possible rimsherd: **317**:7; 3 bodysherds: **317**:[2, 8], 5; 1 fragment: **317**:3) of grey soapy fabric with a black accretion on the smooth inner surface. There is a medium content of dolerite inclusions (≤ 4.3 x 4mm, up to 8.95 x 5.2mm). Body thickness: 9.54mm; weight: 13g.

Vessel 2. This is represented by a single bodysherd (**317**:4) of worn cream-buff fabric with a dark grey core and inner surface. There is a medium content of dolerite and sandstone inclusions (≤ 4 x 3mm, up to 5.5 x 4mm). Body thickness: 9.40mm; weight: 12g.

Fill [**118**] of posthole [**155**]

Vessel 3. This is represented by a single rimsherd (**118**:1) from a vessel with an upright, rounded, rim and a gently concave internal bevel. The dark grey fabric has a black accretion

[1] This context also produced a piece of charcoal (**317**:6)

on the both surfaces. There is a medium to high content of dolerite inclusions (up to 8.3 x 6.5mm). Weight: 4g.

Fill [**117**] of posthole [**156**]

There are 3 bodysherds (**117**:1–3, plus 2 fragments – same numbers) from Vessel 3 or one very similar to it. The grey-brown fabric has a dark grey core and inner surface. The outer surface is smooth but uneven with protruding inclusions masked by a slurry finish; a black accretion occurs on the inner surface and there is some external sooting. There is a medium to high content of dolerite and mica inclusions (≤ 4.7 x 3.8mm, up to 7.9 x 5.4mm). Body thickness: 12.18mm; weight: 21g.

Fill [**121**] of posthole [**170**]

This produced a small worn bodysherd (**121**:1) of cream-buff fabric with dolerite inclusions (up to 6.88 x 4.9mm). There is sooting on the dark grey inner surface. Body thickness: 10.32mm+; weight: 2g.

Fill [**113**] of a shallow pit [**157**] *c*. 2m southwest of posthole [**156**]

Vessel 4. This is represented by 5 worn sherds (2 base-anglesherds: **113**:2, 4; 3 bodysherds: **113**:1, 3, 5) from a vessel of cream-buff fabric; there is sooting on the inner surface of **113**:1. There is a low content of dolerite inclusions (up to 6.7 x 6.5mm). Weight: 23g.

Comment This vessel is of late (or possibly developed middle) Bronze Age date.

Vessel No.	Context/feature	Number of sherds	Rimsherds	Base-, base angle	Bodysherds	Fragments	Inclusions	Vessel size	Weight (g)	Pottery type
1	**317**	4	1	0	3	1	D		13	M–LBA
2	**317**	1	0	0	1	0	D S		12	M–LBA
3	**118**	1	1	0	0	0	D		4	M–LBA
3?	**117**	3	0	0	3	2	D M		21	M–LBA
Other	**117**	1	0	0	1	0	D		16	M–LBA
Other	**121**	1	0	0	1	0	D		2	M–LBA
4	**113**	5	0	2	3	0	D		23	LBA?
		16	2	2	12	3			91	

10.4 Appendix 4: Petrographical report on stone objects

Petrographical report on Stone Objects from Archaeological Excavations in advance of the

Lismore 2, M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme, Contract 2

Record Number E2221

on behalf of

ACS Ltd.

by
EurGeol Dr Stephen Mandal MIAI PGeo

May 08 CRDS Ltd Ref: 1020P10

1. Introduction

This report is based on the macroscopic (hand specimen) examination of five stone objects found as a result of archaeological excavations carried out at Lismore 2 in advance of the construction of the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme (Record No. E2221). The objects consist of: one Anvil stone; one Hammerstones; one Knife; and two natural unworked cobbles/ blocks.

The purpose of the study was to identify the rock types from which the stone objects were made, to highlight potential sources for them, and to comment on their possible function. It is important to note that macroscopic petrographical studies have been considered of limited value in comparison to microscopic (thin section and geochemical analysis) studies. On the other hand, macroscopic studies provide an excellent preliminary assessment tool and have proven to be of considerable value in petrographical studies (e.g. see Mandal 1997; Cooney and Mandal 1998).

2. Solid Geology and Soils of the Site

(see Figure 1 for a site location and geology (after 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 Ballysteen Formation (BA) of fossiliferous dark grey muddy 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.

The area is part of a physical geographical region known as the Southern Hill and Vale Area (part of the Central Lowlands). The soil types are predominantly grey brown podzolics (see Aalen *et al*. 1997, ch. 1).

3. Results

The results of the macroscopic identification of the finds are given in Table 1 and are discussed below. Based on a preliminary assessment of the material, the assemblage includes three artefacts, all of which are sedimentary (two quartzite and one chert).

Anvil stone

E2221:101:1 is a water rolled cobble of coarse grained orange quartzite. A natural break along a bedding plan has given a flat surface which has been made concave with a circular pecked hollow, consistent with use as a small anvil stone.

Hammerstone

E2221:195:1 is a fine grained quartzite water rolled cobble. One end has been ground with facets on both faces and partly pecked. The other end has been lightly pecked. This may have also functioned as a grinding or rubbing stone.

Knife

E2221:317:1 is a chert flake knife with retouch on blade.

Other Stones

The two remaining stones in the assemblage are all natural and unworked. E2221:111:1 is a water rolled cobble of red vein quartz. E2221:173:1 is a naturally cleaved block of coarse grained red quartzite. Its lower face is smooth but this appears to be natural.

4. Potential Sources

It is likely that the sources for all of these objects are local. There are abundant sources for rocks of these types in the area (see Figure 1). It is, however, important to note that these objects did not arrive on site from bedrock, but from secondary sources, such as a water-rolled river cobbles / pebbles, or in the till.

5. Conclusions

It is not possible to determine a definitive source for these objects based on macroscopic examination alone. Furthermore detailed microscopic analysis would also be unlikely to identify exact sources. On the other hand, it can be stated that the materials from which these objects were manufactured are available locally in outcrop and within the glacial tills. Thus it is probable that these objects were derived from local sources.

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Table 1 – Results of petrographical assessment

Scheme #	Find #	Rock type	Description	Function	Description
AO15/112	E2221 : 0101:0001	Quartzite	coarse grained orange	Anvil stone	made from water rolled cobble; break along bedding plan gives a flat surface which has been made concave with a circular pecked hollow, consistent with use as a small anvil stone
AO15/112	E2221 : 0111:0001	Quartz	vein, red	Natural	water rolled cobble
AO15/112	E2221 : 0173:0001	Quartzite	coarse grained red	Natural	cleaved block; lower face smooth but appears natural
AO15/112	E2221 : 0195:0001	Quartzite	fine grained	Hammerstone	water rolled cobble; one end ground; facets on both faces and partly pecked; other end lightly pecked; may have also functioned as a grinding stone
AO15/112	E2221 : 0317:0001	Chert		Knife	flaked piece of chert with retouch on blade

10.5 Appendix 5: Preliminary analysis of lithic pieces

Preliminary analysis of the lithic pieces from Lismore 2, Co. Laois

(Archaeological Record No: E2221)

Scheme AO15/112

by

Dr. MARIA B. O'HARE

Statement of Significance

Three lithic pieces were recovered from the excavations at Lismore 2, Co. Laois from as many features. These include a possible debitage flake which is burnt, an ad-hoc platform flake and a possible bipolar core. These latter two pieces in particular are fairly characteristic of later prehistoric type material.

Introduction

Three lithic artefacts were derived from the Portlaoise to Castletown/Culahill, contract 2 of the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme, Lismore 2, Co. Laois under excavation record number E2221, and scheme AO15/112. These lithic pieces have an individual entry and are listed within the database (Microsoft excel) for Contract 2, report number six and is accompanied by a glossary of terms corresponding to this database.

Description of artefacts

A platform struck flake (E2221:110:001) was derived from feature (F110). It is made on honey coloured type flint, is semi-translucent and has no cortex remaining. The length, breadth and thickness dimensions are 17x20x3.9mm. This flake has scalar attributes which is suggestive of a more ad-hoc approach to knapping and is characteristic of later prehistoric industries (O' Hare 2005 and O' Hare forthcoming). Another possible diagnostic of a later prehistoric period was derived from feature (F301) which is a possible bipolar core (E2221:301:001); although is uncertainly diagnostic due to the fact that it is heavily rolled/polished and patinated. It is black in colour and made on flint with greatest dimensions of <30mm (these cannot be orientated like platform produced pieces and therefore are measured at 10mm intervals).

The third piece appears to be burnt and is debitage flake (E2221:319:001) and was derived from within feature (F319). It is light grey in colour without cortex and opaque. Debitage flakes are typically <20mm and are the by-product of platform technology; although they can occur within bipolar produced assemblages (O' Hare 2005 and O' Hare forthcoming).

Discussion

In the absence of more contextual information or more diagnostic lithic pieces from this site the small lithic collection from Lismore 2 from three individual features are tentatively assigned to the later prehistoric period. It is hoped that future excavations within the Lismore

2 site would reveal more meaningful lithic material with a much clearer indication of the prehistoric period and nature of activity within this area.

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*

10.6 Appendix 6: Cremated bone analysis

Lismore 2, M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme, Co Laois, Ireland

Cremated bone analysis

on behalf of

Archaeological Consultancy Services Ltd

Report 1890

April 2008

archaeological.services@durham.ac.uk
www.durham.ac.uk/archaeological.services

Contents

1. Summary

The project

1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Lismore 2, Co Laois, Ireland. This report presents the results of cremated bone analysis of five contexts.

Results

1.2 The amount of cremated bone present was small, and the two heaviest deposits with the largest fragments derived from the ditch and post-hole fills. The former contained fragments of animal tooth, and it is likely that all the material in this context derived from animal remains. None of the fragments in the remaining contexts could be identified, and it was not possible to tell if the bone was human or animal. All bone had been burnt at high temperatures and was fully oxidised.

2. Project background

Location and background

2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at an unenclosed Bronze Age settlement at Lismore 2, Co Laois, Ireland. This report presents the results of analysis of cremated bone recovered from two pits, a ditch, a post-hole, and a spread at this site.

Objective

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

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. Cremated bone was analysed by Dr Anwen Caffell, with faunal identifications by Ms Louisa Gidney.

Archive

2.5 The record number is A015/112 (E2221). The bone samples are currently at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Methods

3.1 Six samples from the five contexts were presented for analysis, weighing 32.1g in total. Each sample was 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.

4. Results and interpretation

4.1 Summary data for each context is presented in Table 1, the fraction weights and fragment size data for each individual sample are given in Appendix 1, with the combined weights per context given in Table 2.

4.2 The amount of cremated bone recovered from all contexts was small, ranging from 0.2g to 15.2g (Table 1). Maximum fragment size ranged from 10.4mm to 44.3mm, with a mean of 20.6mm. The ditch fill (context 101) and post-hole fill (context 106)

contained the most cremated bone and also the largest fragments. The bone in most of the contexts was severely fragmented, with the bulk of the material located in the smallest sieved fraction with no material in the largest fraction (Table 2). The exception was the ditch fill (context 101), where 77.6% of the material was in the 10mm+ fraction.

Table 1: Summary of cremated remains

Context	Context Detail	Bone Colour	Species	Weight (g)
16	Fill of pit in cutting (1)	White	Unknown	3.4
101	Fill of ditch in cutting (2)	Beige/ white	Animal	12.5
102	Spread in cutting (2)	White	Unknown	0.8
104	Fill of pit in cutting (2)	White	Unknown	0.2
106	Fill of post-hole in cutting (2)	Pale grey/ white	Unknown	15.2

4.3 The bone from all contexts was white to pale grey in colour (Table 1), suggesting that it had been exposed to temperatures in excess of *c.* 600ºC and had achieved full oxidation (McKinley 2004).

Table 2: Fraction weights and fragment size

Context	Total Weight	Fraction Weights						Max. Frag Size
		>10mm		5-10mm		2-5mm		
	g	g	%	g	%	g	%	mm
16	3.4	0.0	0.0	1.8	52.9	1.6	47.1	12.7
101	12.5	9.7	77.6	2.3	18.4	0.5	4.0	44.3
102	0.8	0.0	0.0	0.0	0.0	0.8	100.0	10.4
104	0.0	0.0	0.0	0.0	0.0	0.2	100.0	10.5
106	15.2	0.7	4.6	6.6	43.4	7.9	52.0	24.9

4.4 All fragments were examined with a view to identification. The ditch fill (context 101) contained definite fragments of animal teeth, and all the material in this context

probably derived from animal remains. The identifiable fragments included a horse incisor, two pig molars, one pig premolar and a sheep/goat premolar. The bone in the remaining contexts was too small and lacking in distinctive features to be identified, and it was not possible to determine whether the bone was human or animal.

5. Sources

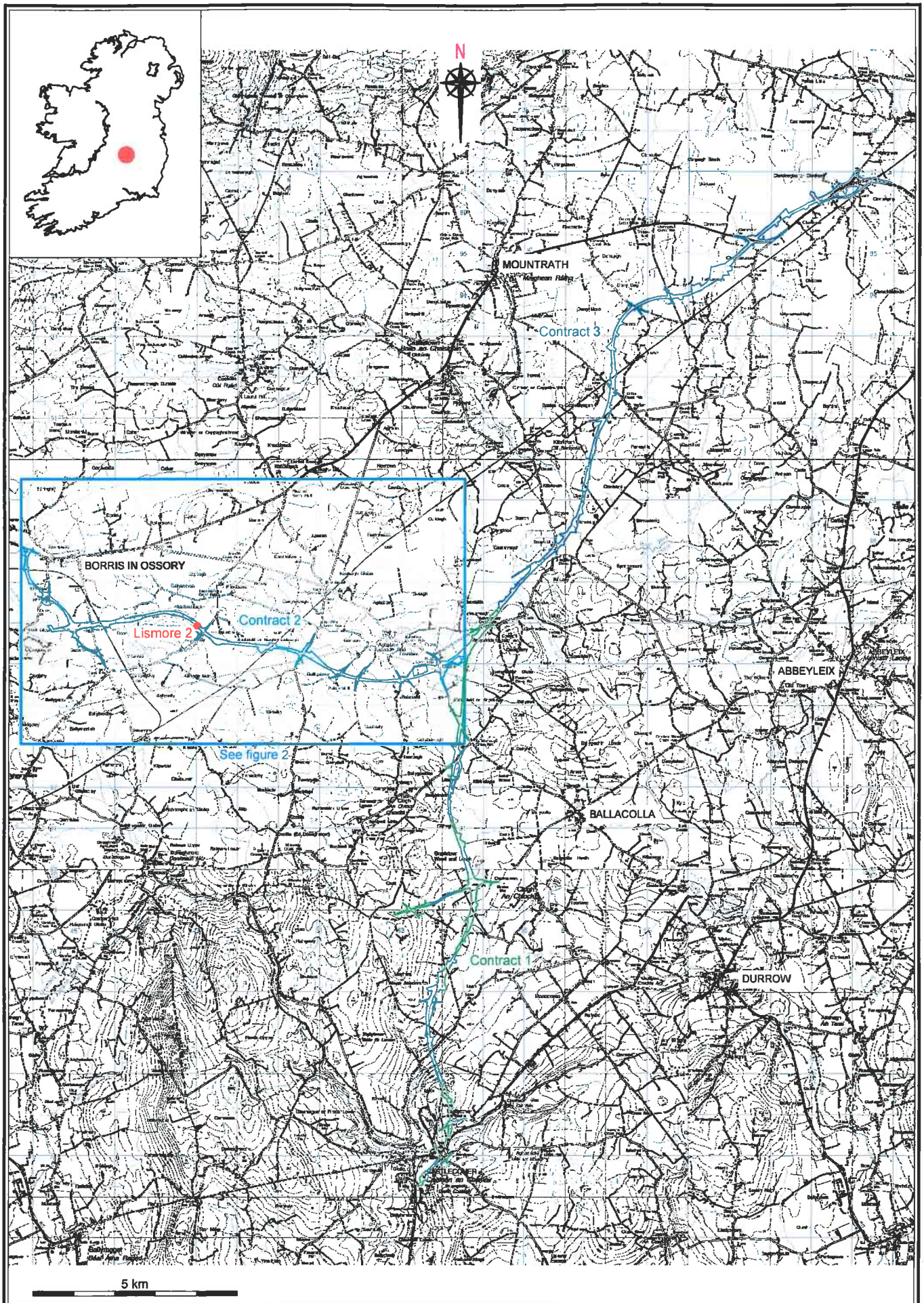
McKinley, J I, 2004 Compiling a Skeletal Inventory: Cremated Human Bone, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, 9-13, Southampton and Reading

Appendix 1: Cremated bone – fraction weights and maximum fragment size / sample

Context	Sample	Total Weigh t	Fraction Weights						Max. Frag Size
			>10mm		5-10mm		2-5mm		
		g	g	%	g	%	g	%	mm
16	1	3.4	0.0	0.0	1.8	52.9	1.6	47.1	12.7
101	1	12.5	9.7	77.6	2.3	18.4	0.5	4.0	44.3
102	1	0.8	0.0	0.0	0.0	0.0	0.8	100.0	10.4
104	1	0.2	0.0	0.0	0.0	0.0	0.2	100.0	10.5
106	1	11.5	0.7	6.1	6.0	52.2	4.8	41.7	24.9
106	2	3.7	0.0	0.0	0.6	16.2	3.1	83.8	10.4

10.7 Appendix 7: Site archive

Lismore 2 Site Archive			
Type	**Description**	**Quantity**	**Notes**
Contexts	Validated contexts from excavation	227	
Plans	'A2' sheets 1:20 or 1:50 scale	16	Plan register includes sections and profiles.
Sections and profiles.	'A2' sheets 1:10 scale	75	See above.
Matrices		1	Full site matrix (Paper copy only). Checked and cross-referenced.
Photographs		Colour print (187)	All photographs have been checked and labelled.
Registers	Plan Register Photographic Register Finds Register Sample Register	1 1 1 1	All Registers have been checked and cross-referenced.
Diaries	Director's Diary Supervisor's Diary	1 1	All Diaries 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 2, Lismore 2	Scale: 1: 125,000 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: Courtesy of client
	Client: Laois County Council	Drawing no.: 05_09_C7325

Figure 1: General plan of M7/M8 Motorway Scheme, Contracts 1-3, showing location of Lismore 2.

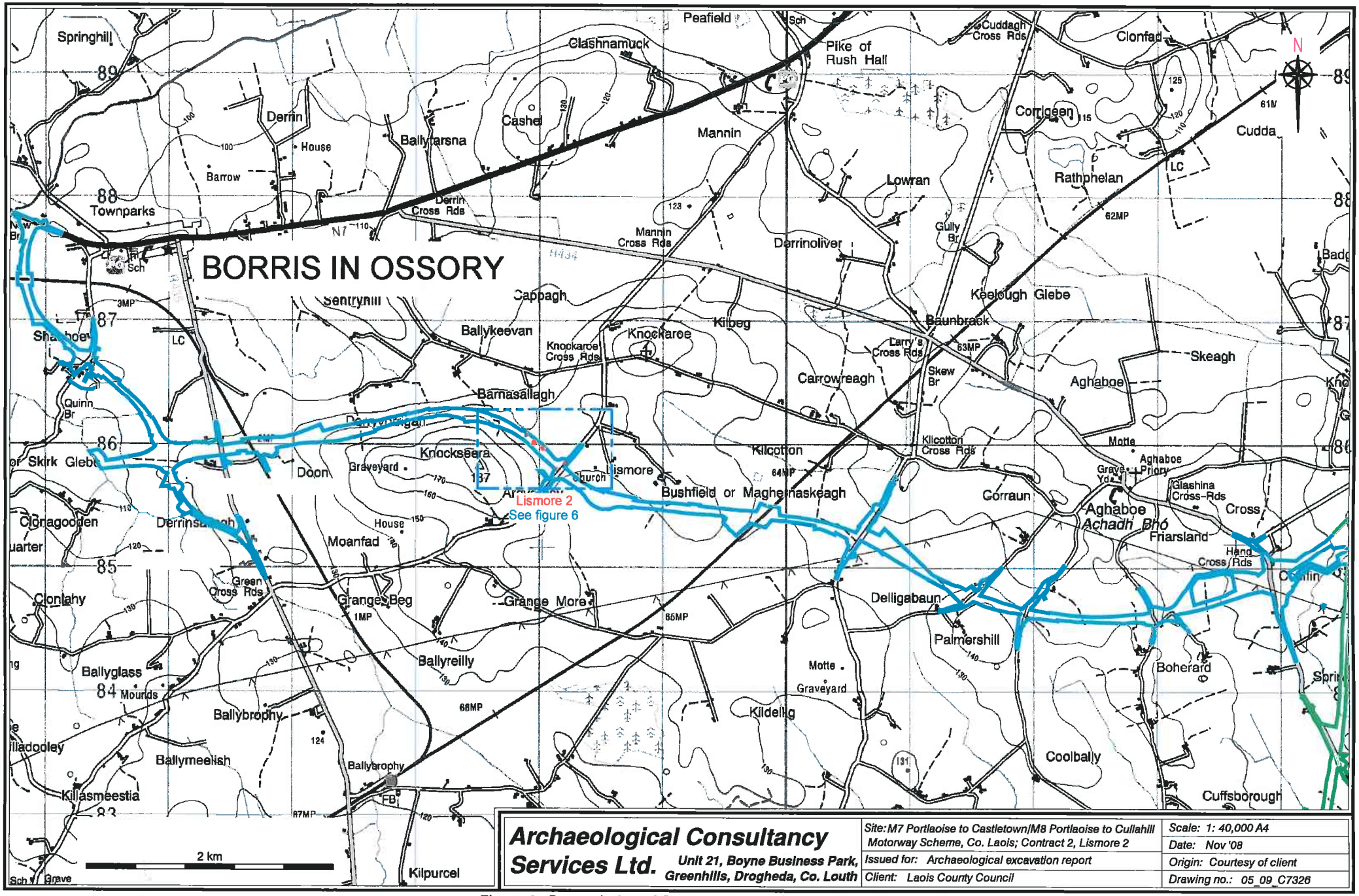


Figure 2: General plan of Contract 2, showing location of Lismore 2.

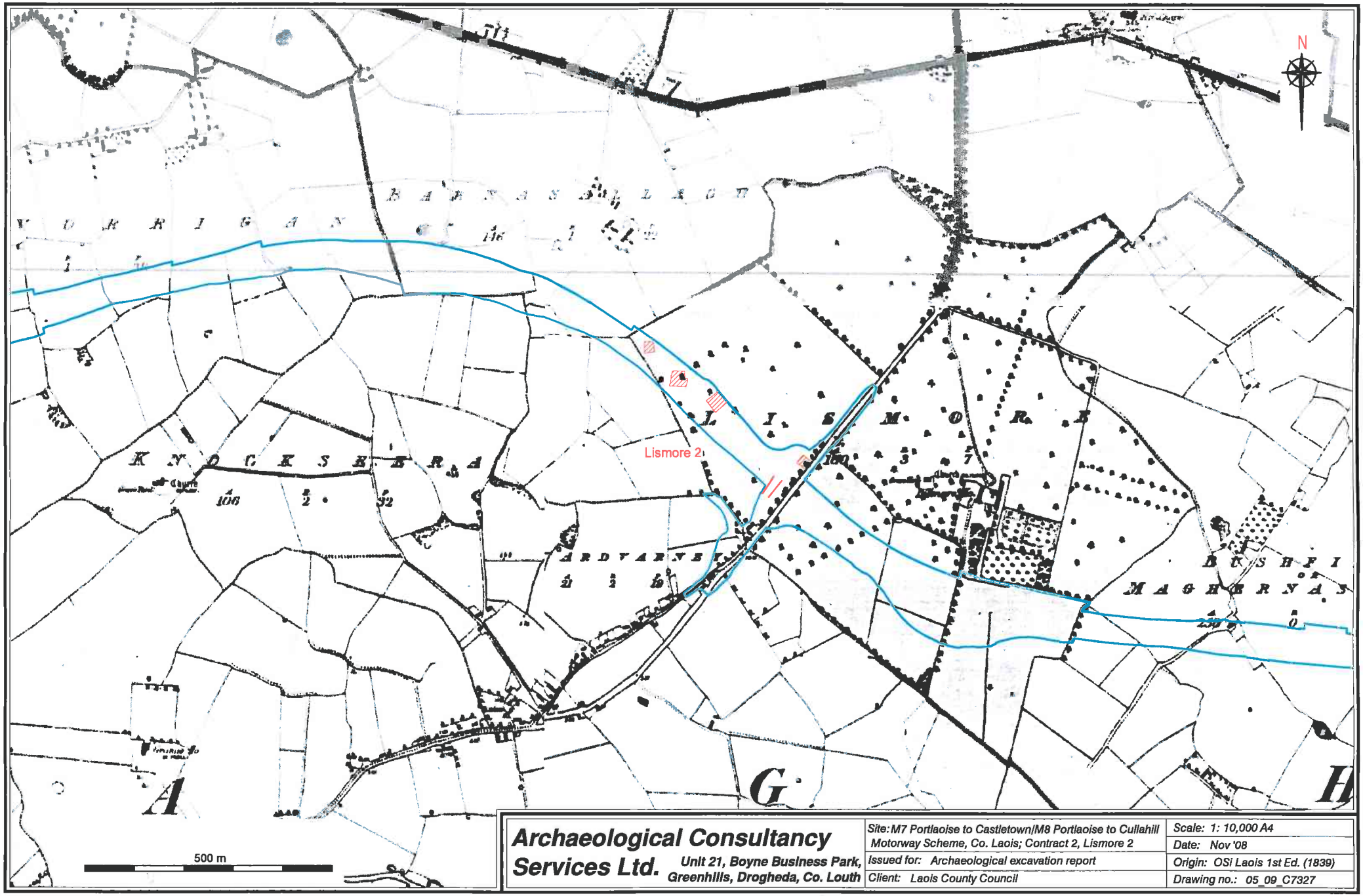


Figure 3: Outline plan of Lismore 2, superimposed on O.S. 1st edition map (1839).

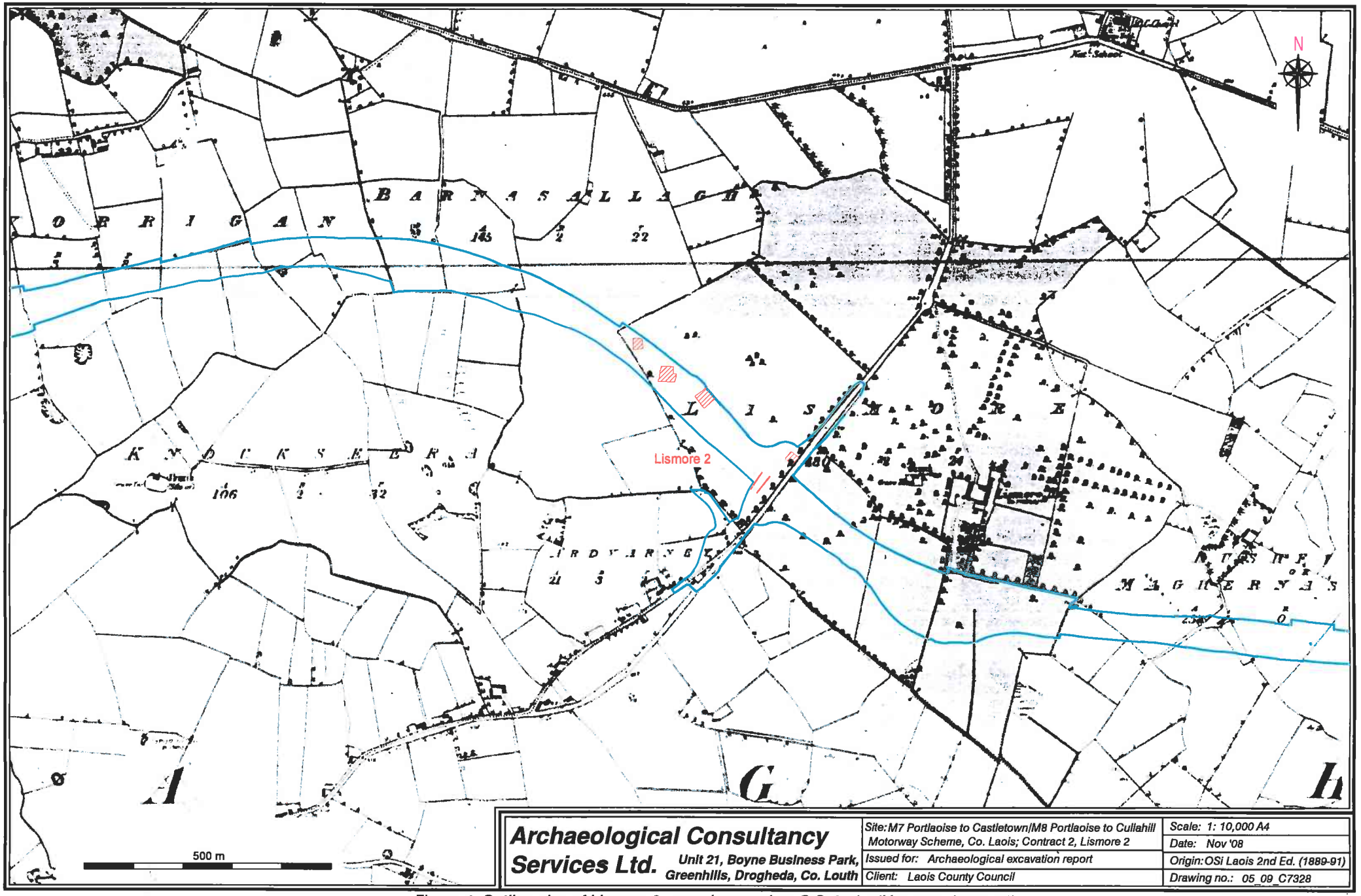


Figure 4: Outline plan of Lismore 2, superimposed on O.S. 2nd edition map (1889-91).

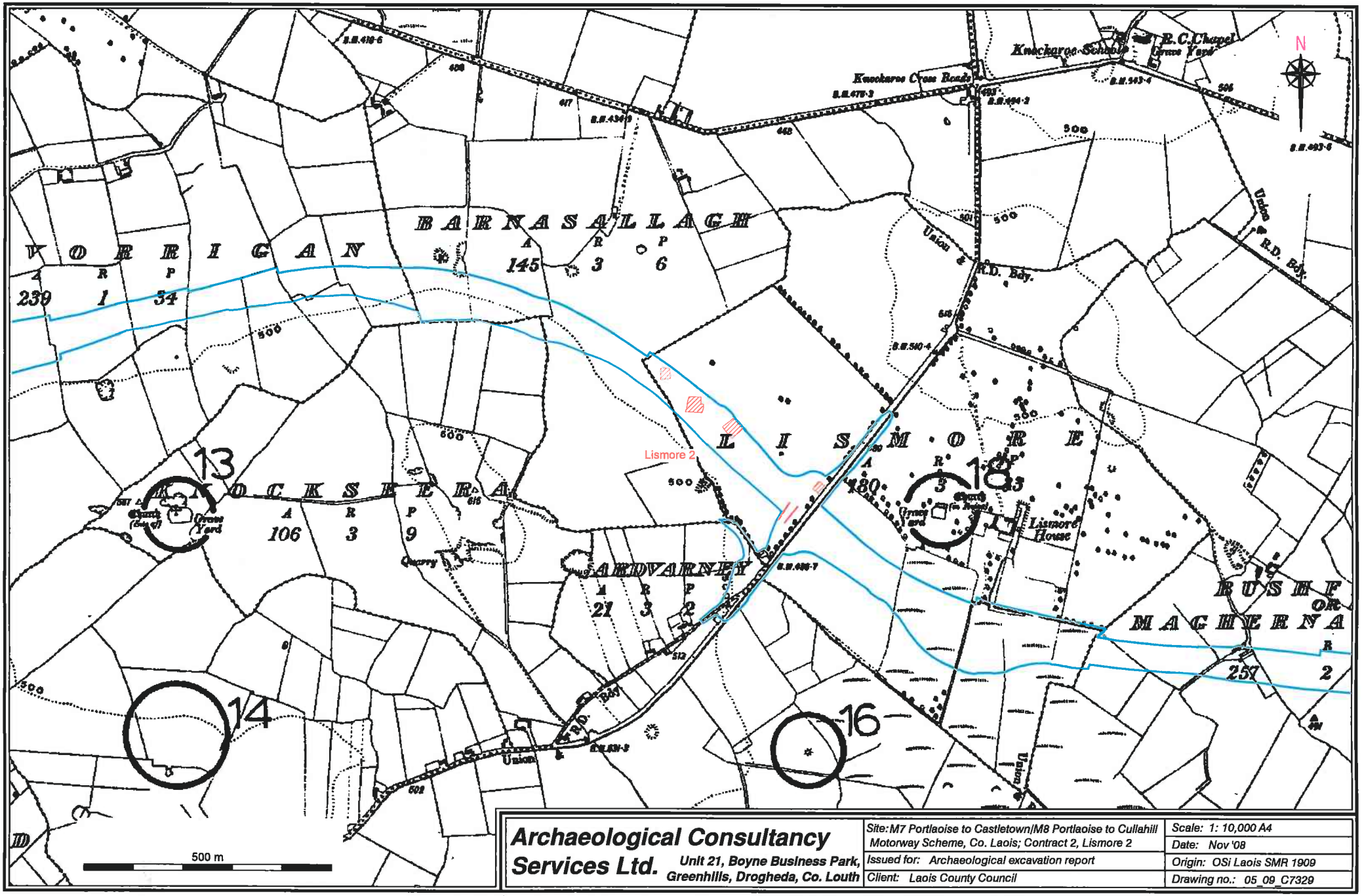


Figure 5: Outline plan of Lismore 2, superimposed on O.S. 3rd edition (RMP) map (1909).

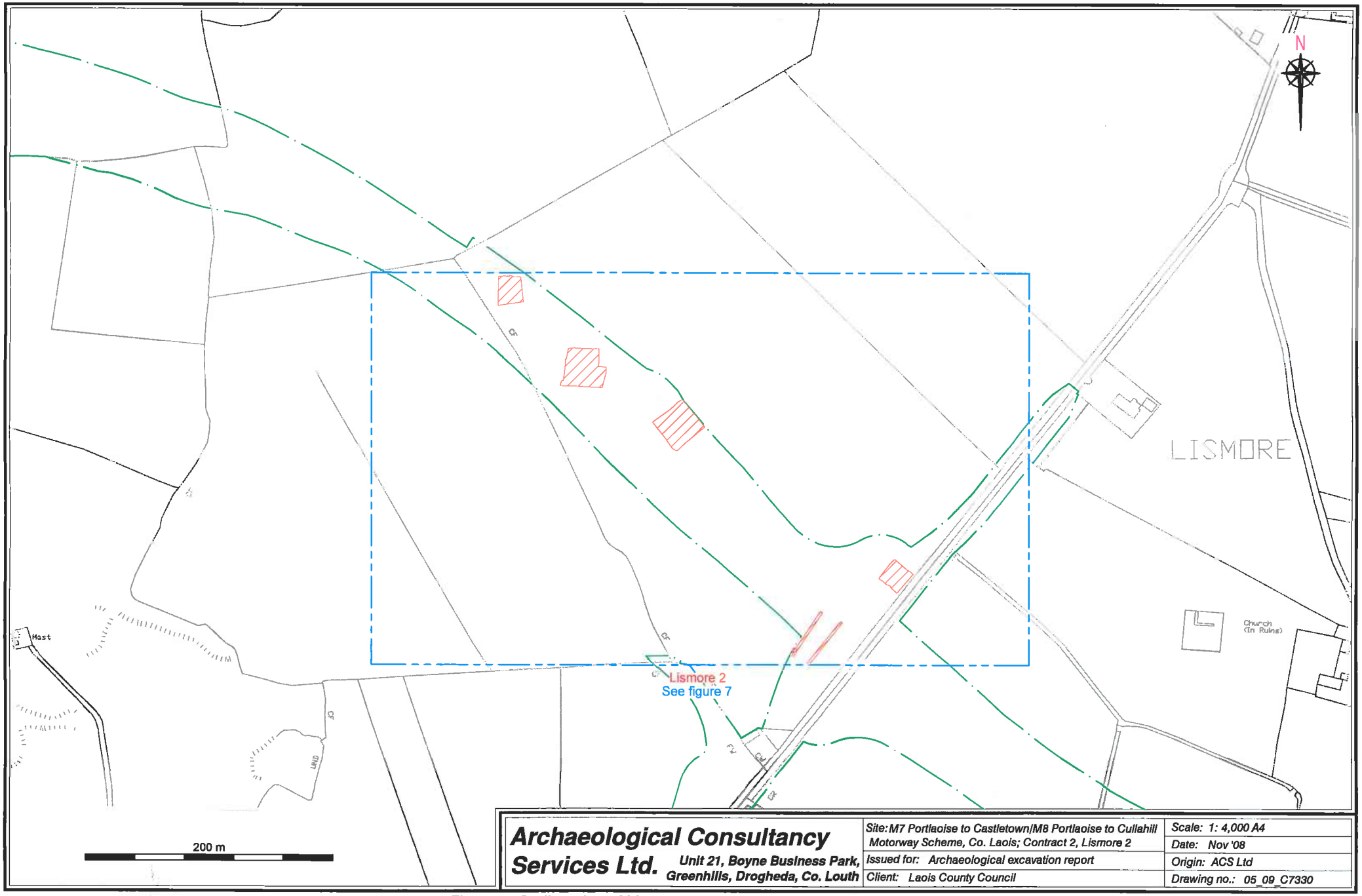


Figure 6: Outline plan of Lismore 2, superimposed on detailed location map.

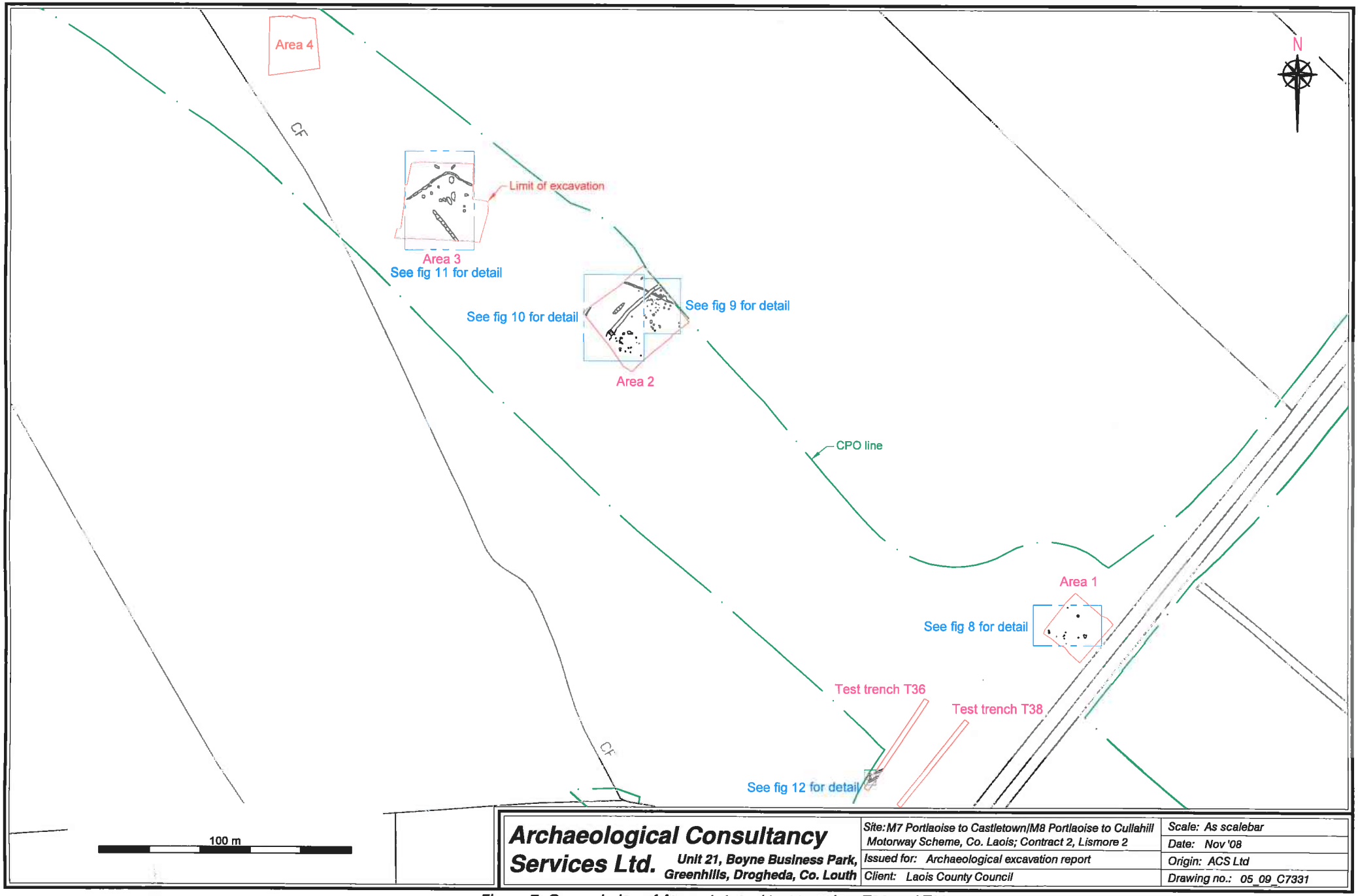


Figure 7: General plan of Areas 1-4, and test trenches T36 and T38.

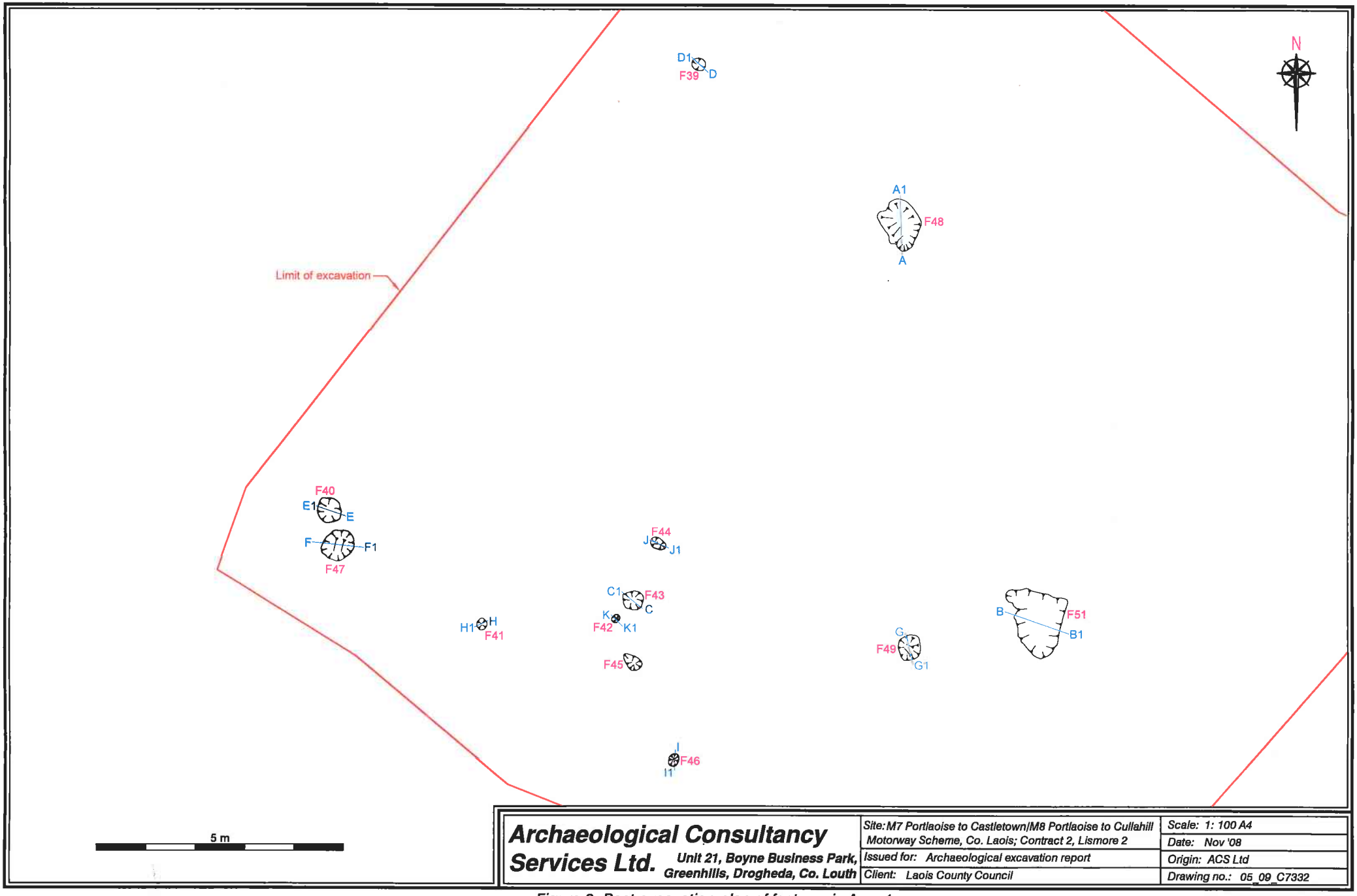
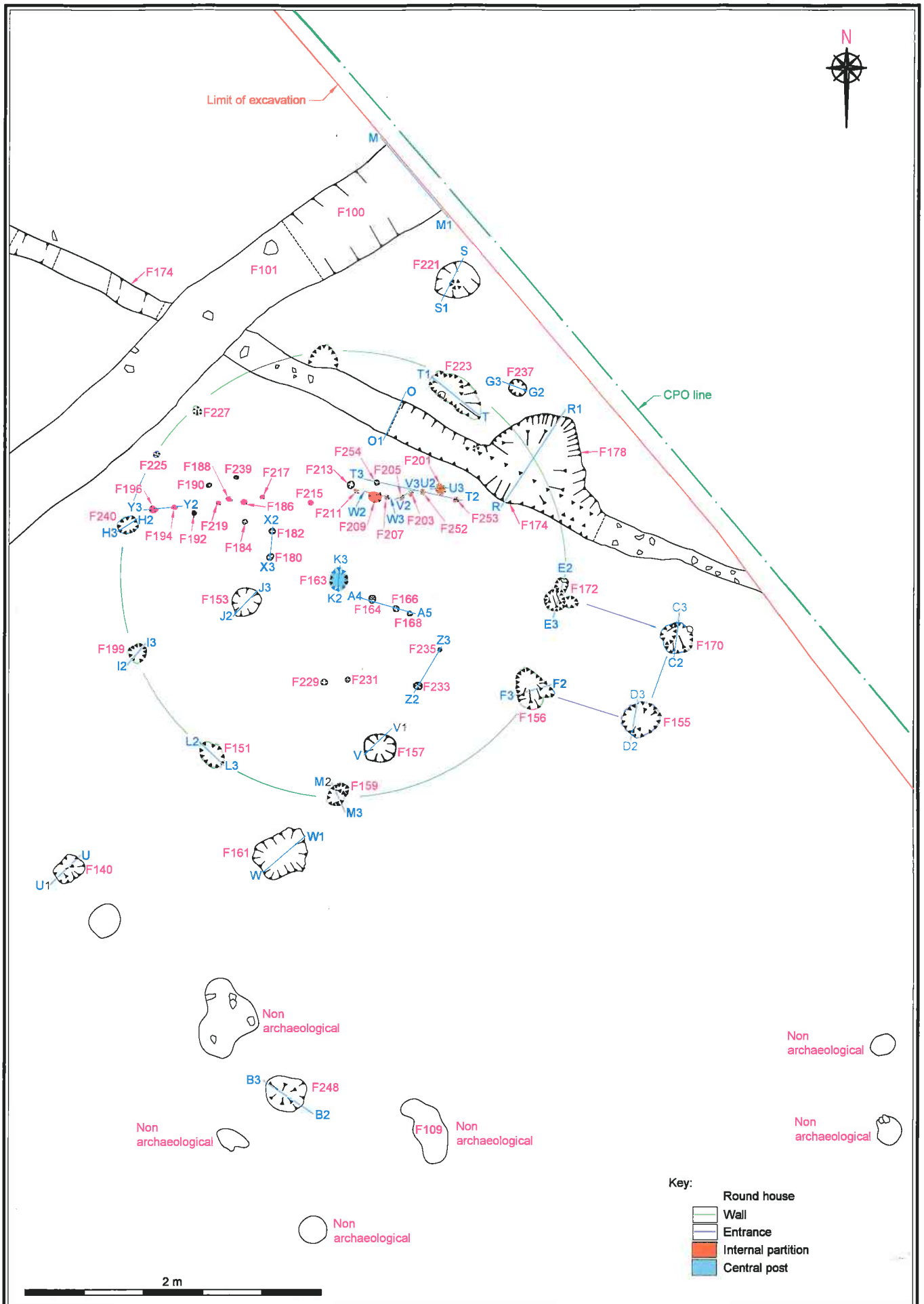
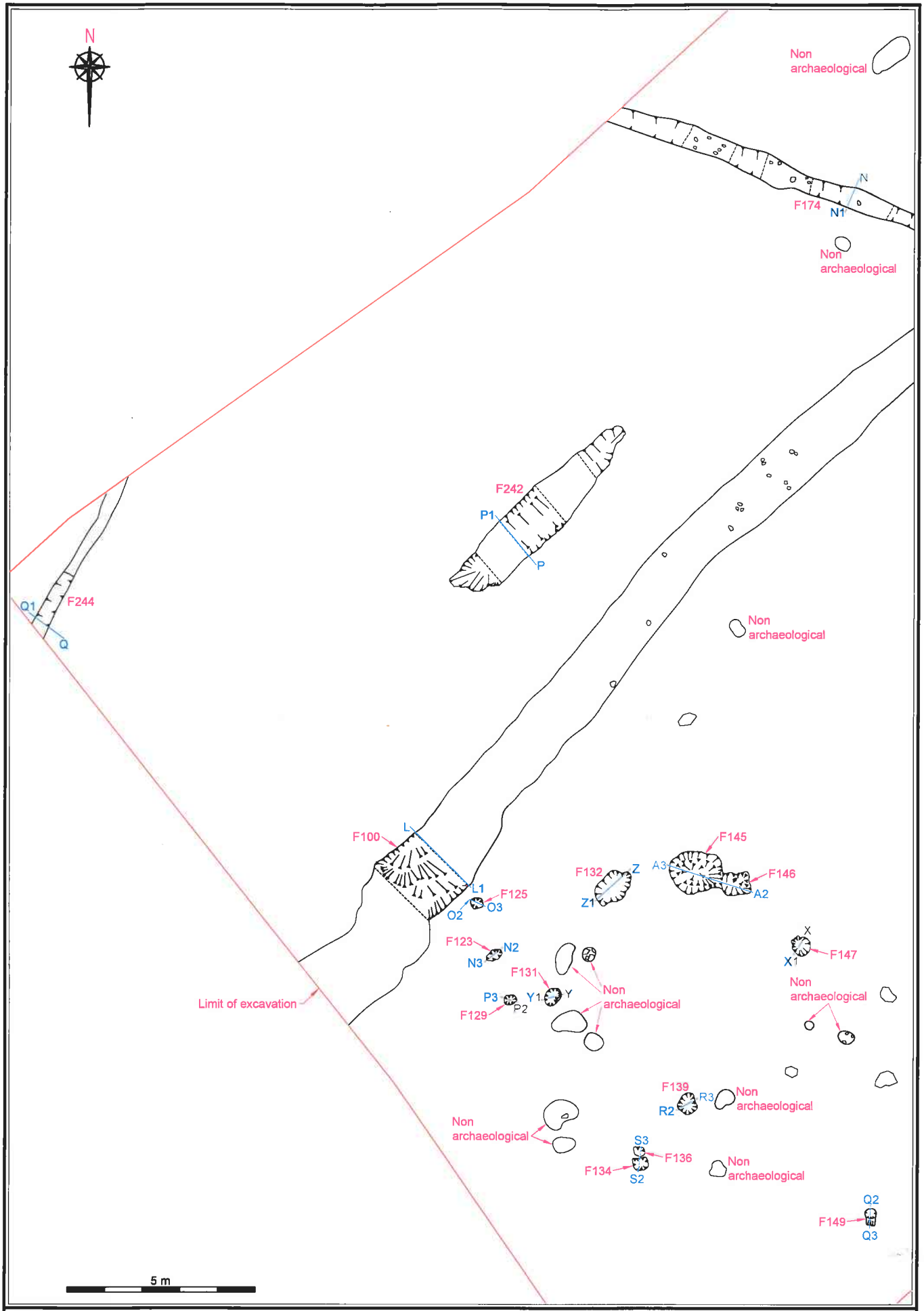


Figure 8: Post-excavation plan of features in Area 1.



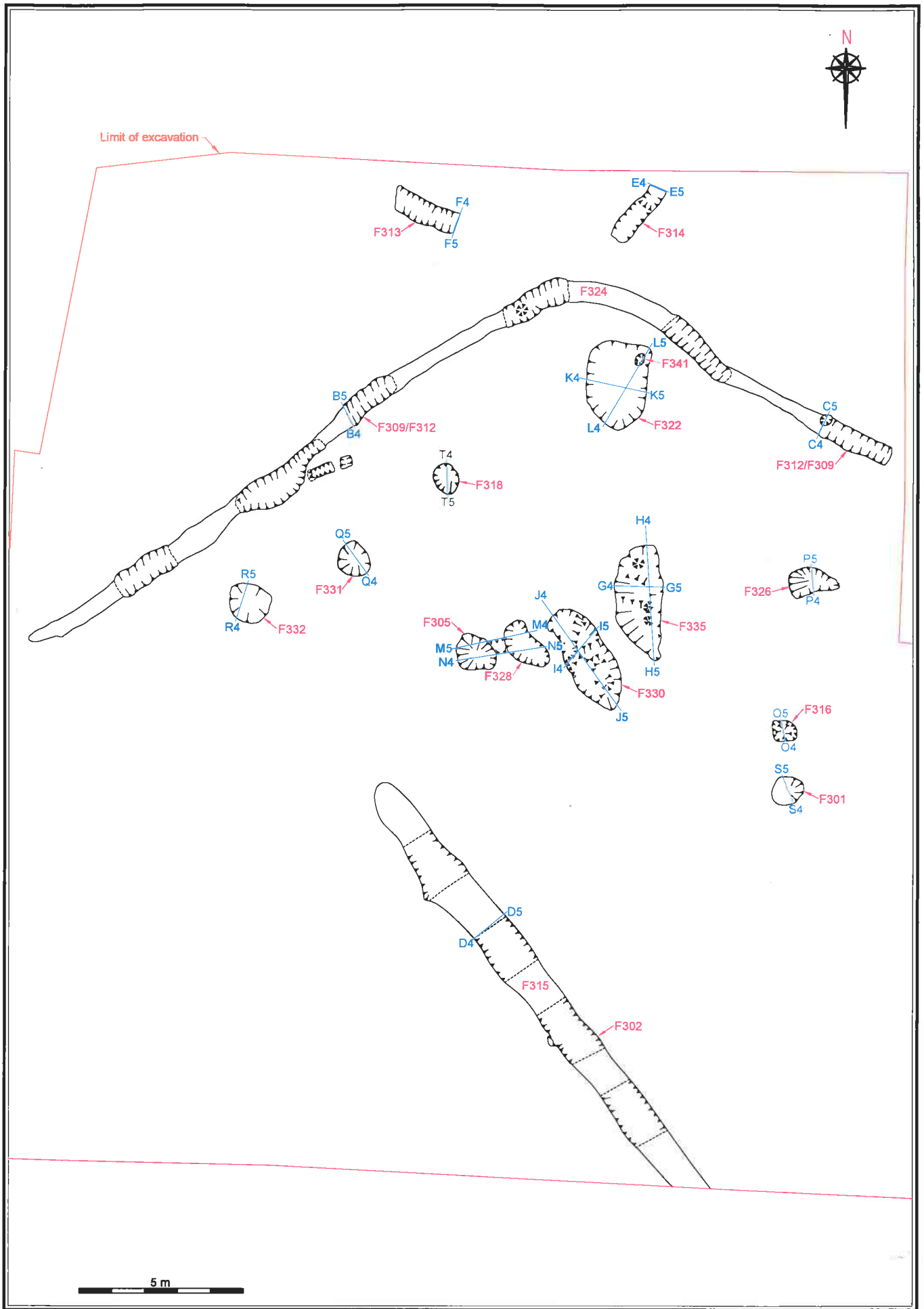
Archaeological Consultancy Services Ltd. *Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth*	*Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2*	*Scale: As scalebar*
	Issued for: Archaeological excavation report	*Date: Nov '08*
	Client: Laois County Council	*Origin: ACS Ltd*
		Drawing no.: 05_09_C7333

Figure 9: Post-excavation plan of features in Area 2 (eastern extent).



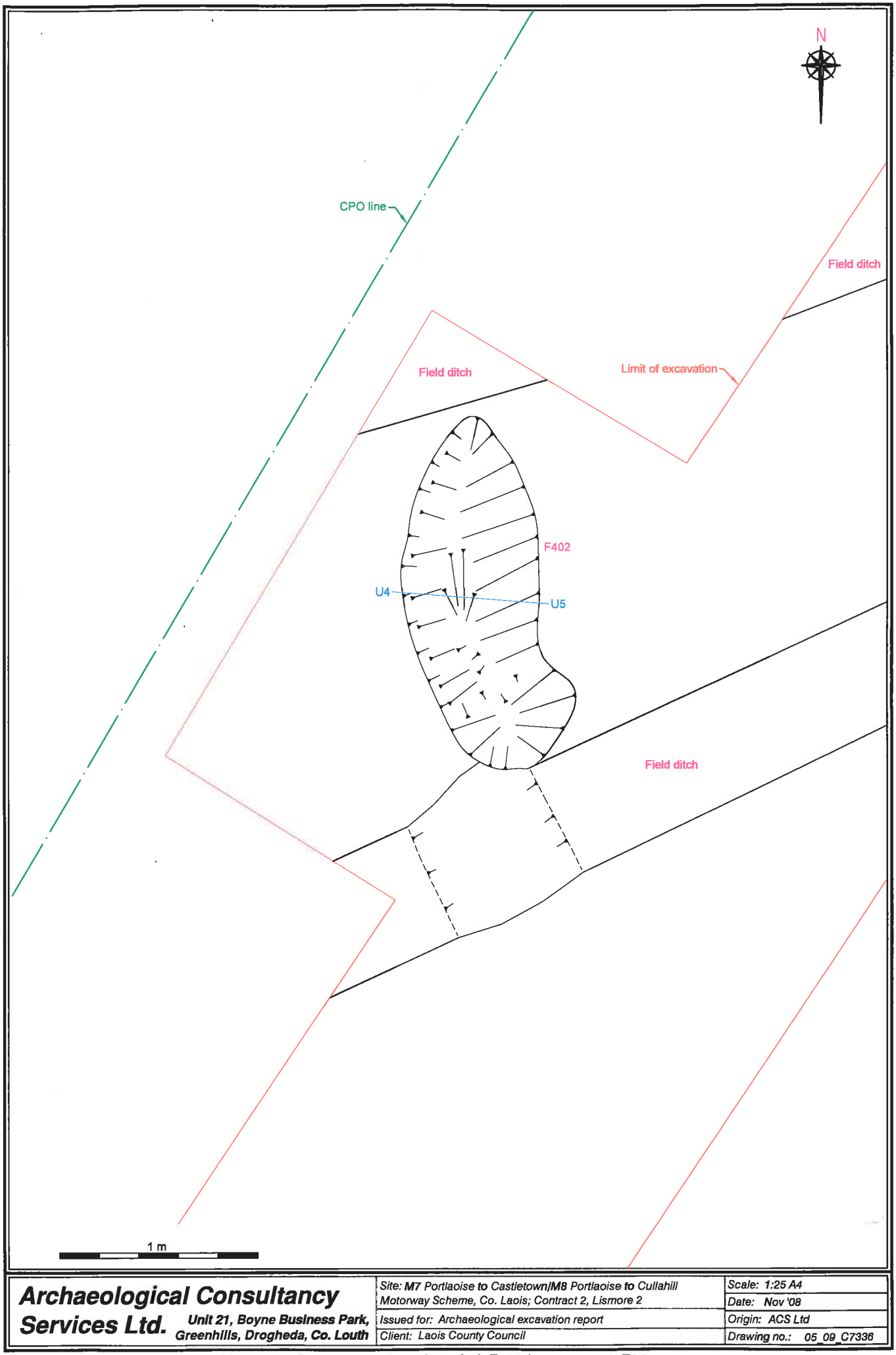
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: As scalebar
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7334

Figure 10: Post-excavation plan of features in Area 2 (western extent).



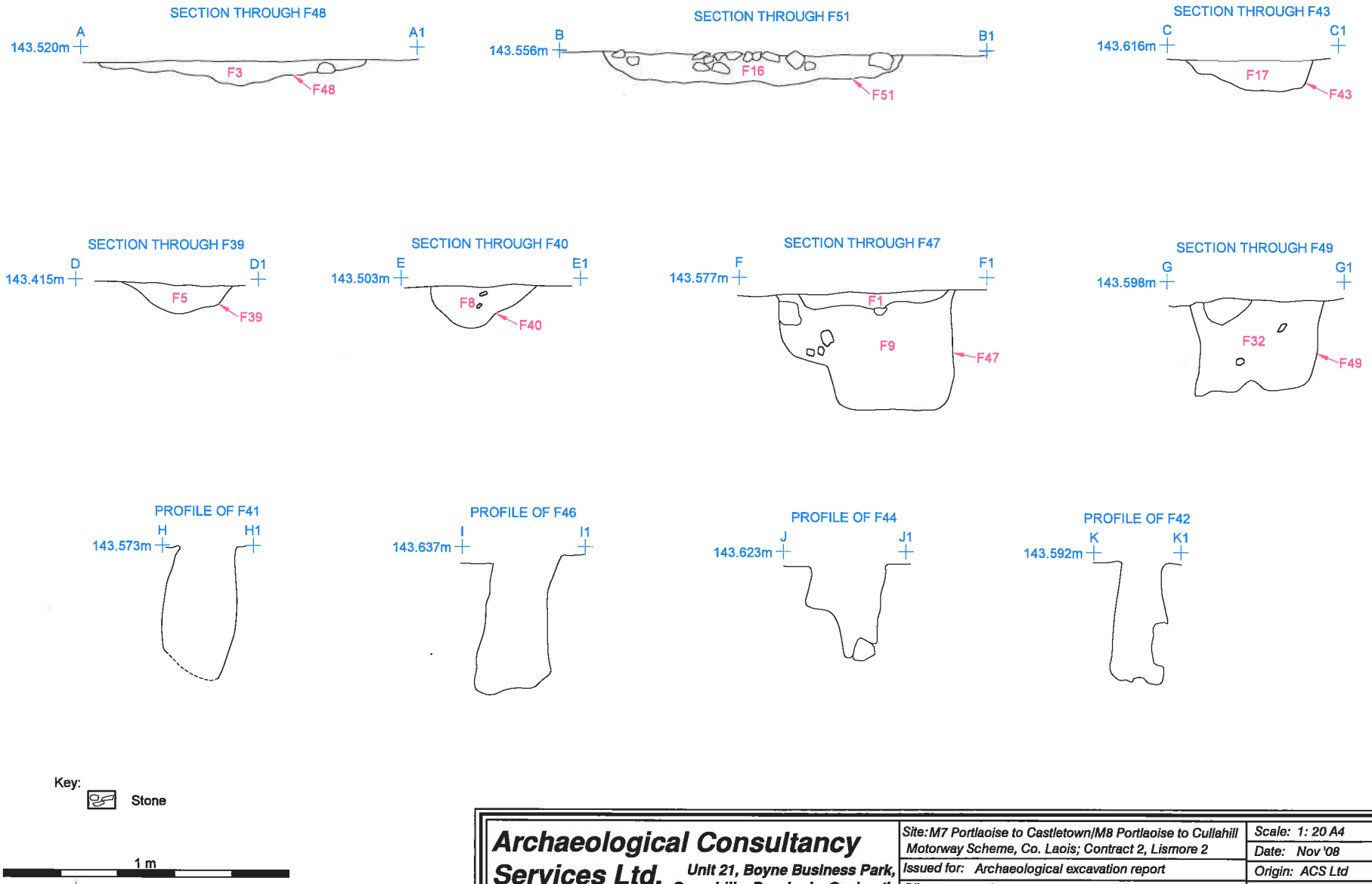
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: As scalebar
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7335

Figure 11: Post-excavation plan of features in Area 3.



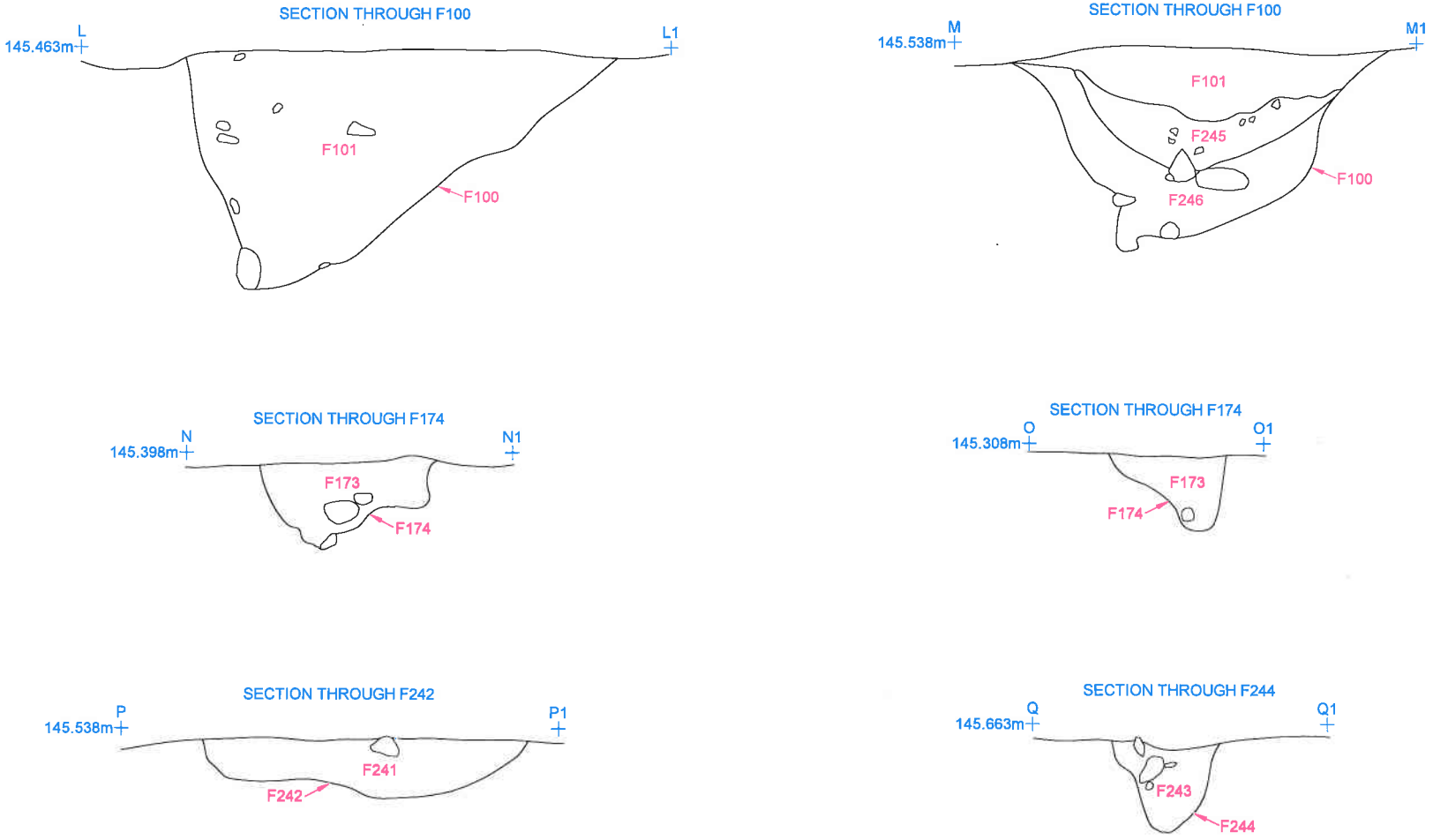
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1:25 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7336

Figure 12: Post-excavation plan of pit F402 in test trench T36.



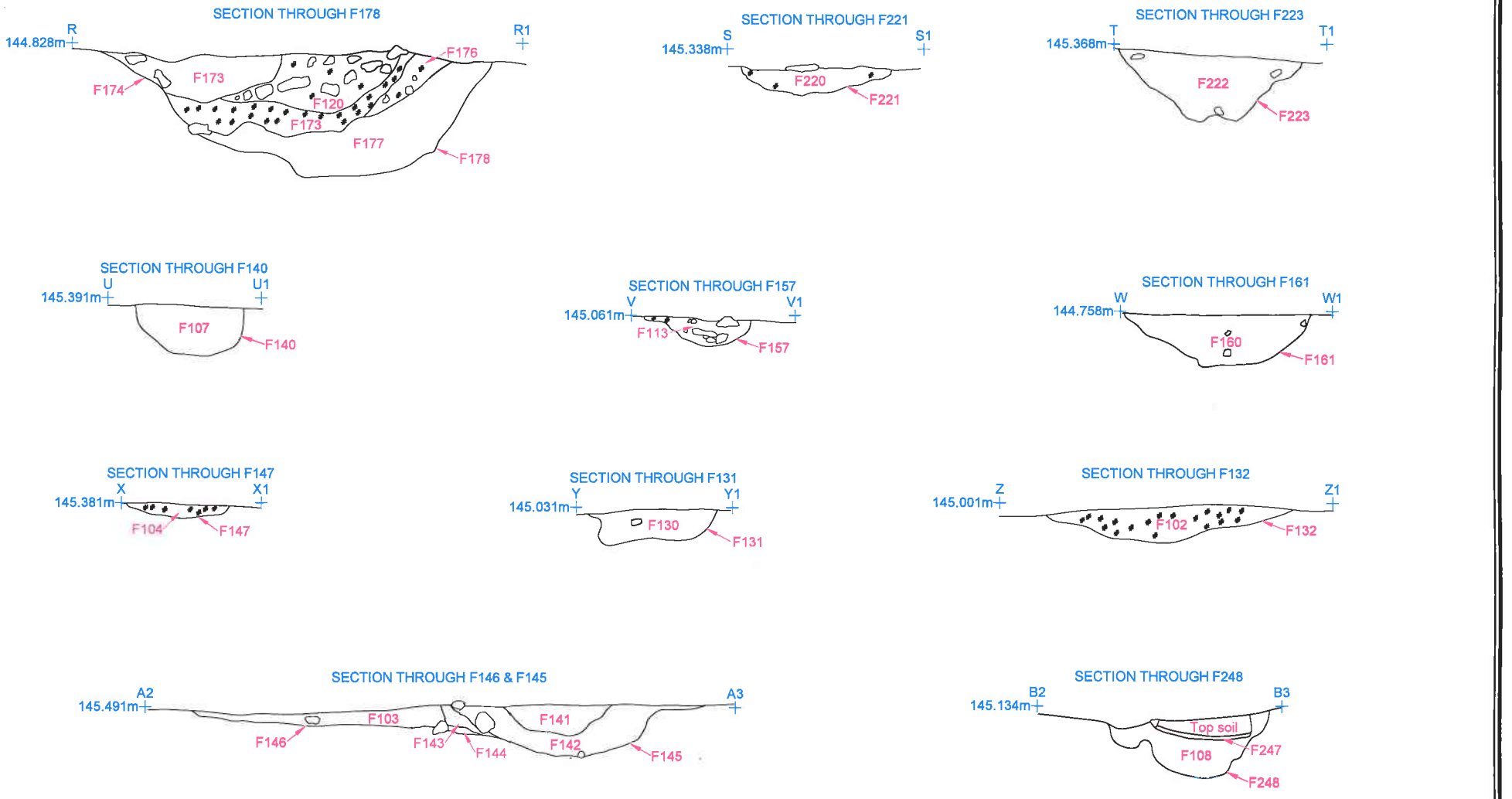
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 20 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7337

Figure 13: Sections of pits F039, F040, F043, F047, F049 F051, and hearth F048; and profiles of post-holes F042, F041, F044, F046 in Area 1.



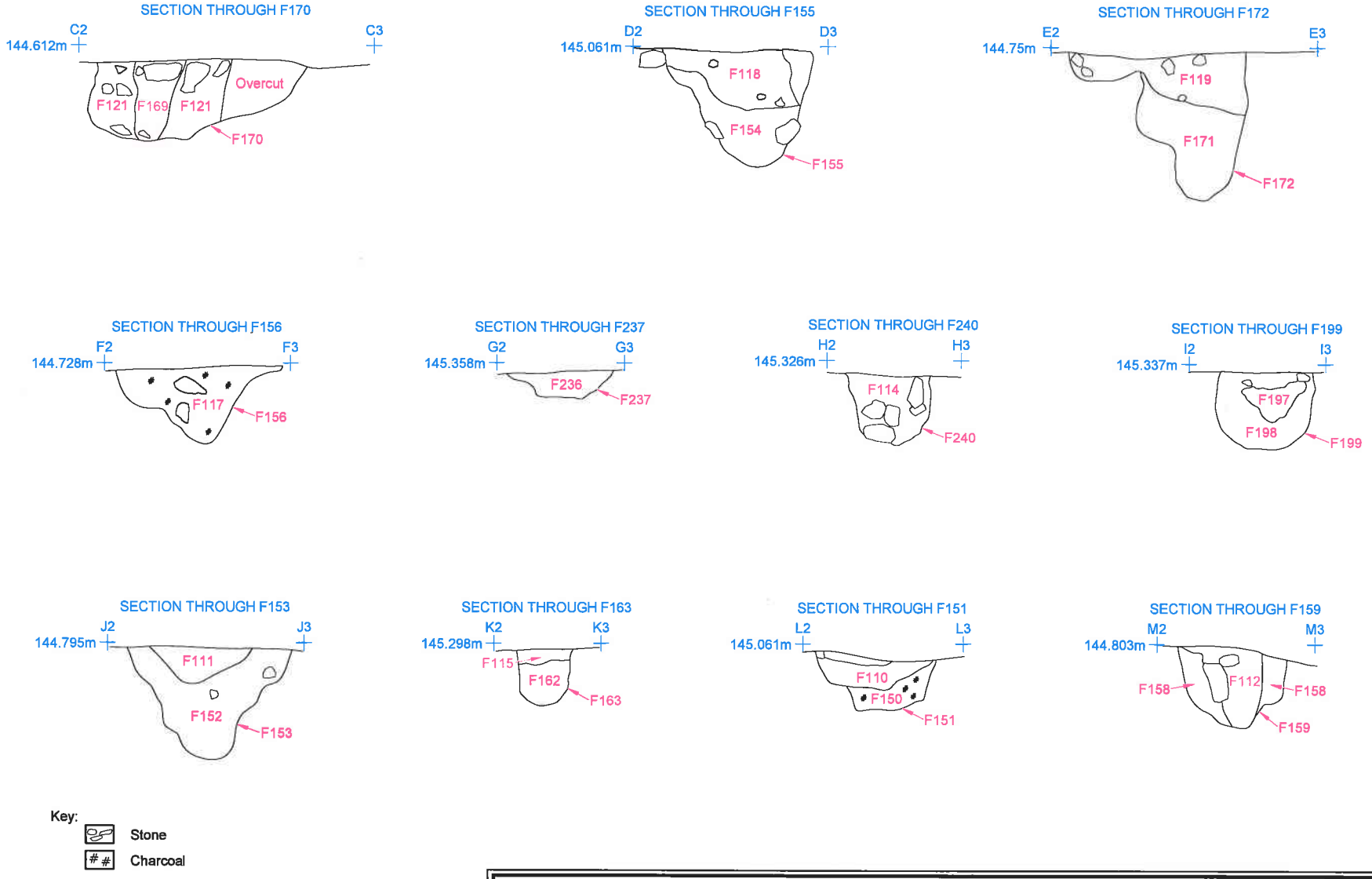
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 25 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7338

Figure 14: Sections of linear features F100, F174, F242 and F244 in Area 2.



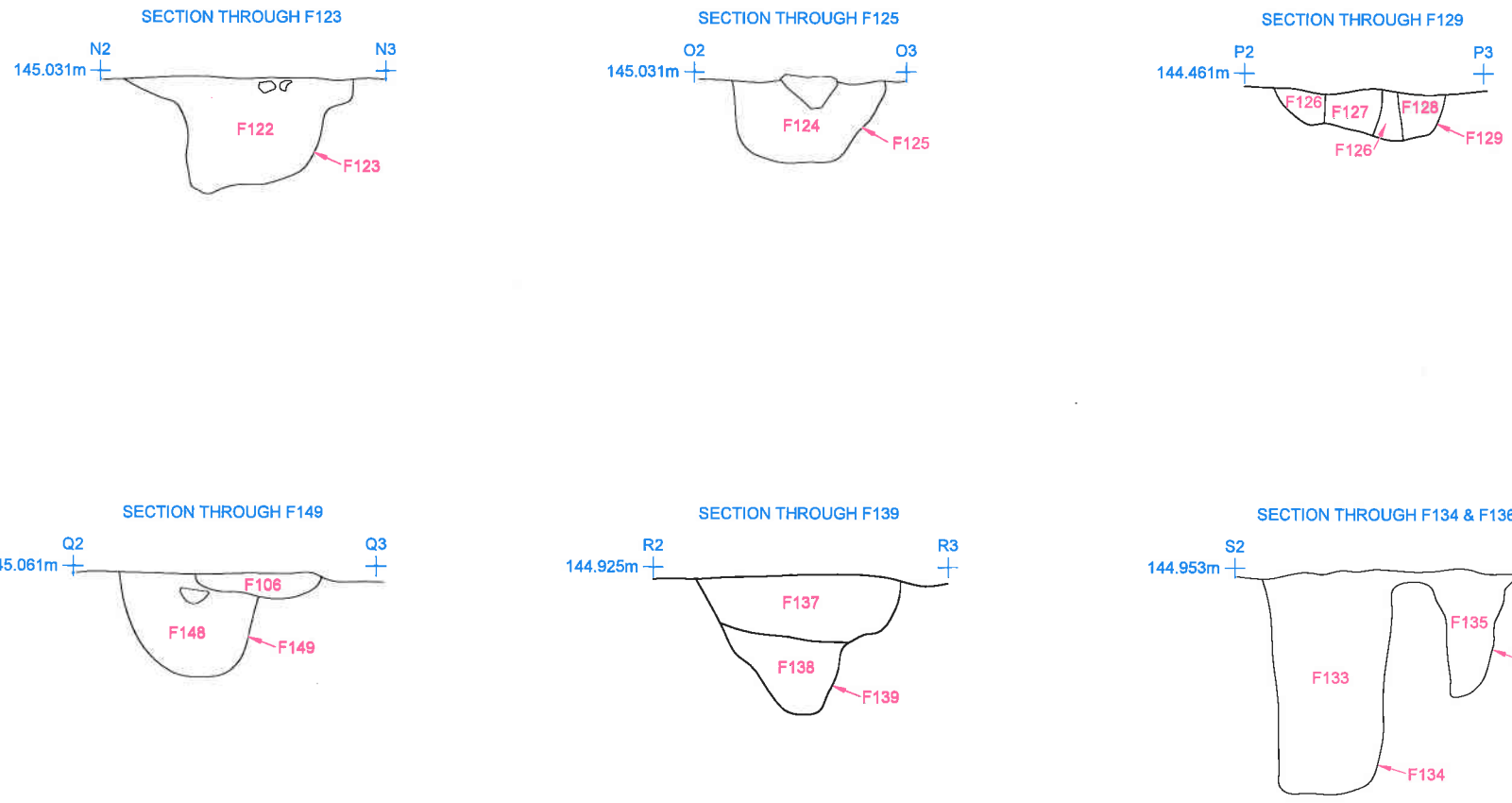
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 25 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7339

Figure 15: Sections of pits F131, F132, F140, F146, F147, F157, F161, F178, F221, F223, F248, and hearth F145 in Area 2 (pit F178 truncated by linear feature F174).



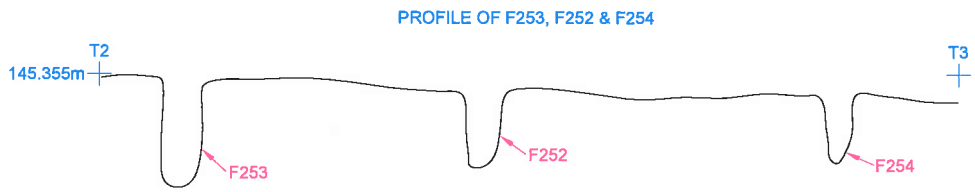
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 20 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7340

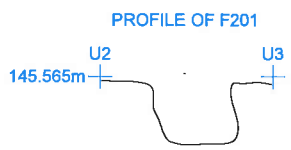
Figure 16: Sections of post-holes F151, F153, F155, F156, F159, F163, F170, F172, F199, F237, F240, in eastern extent of Area 2.

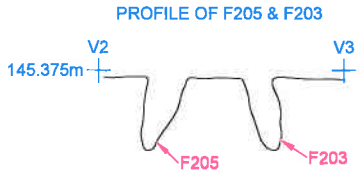


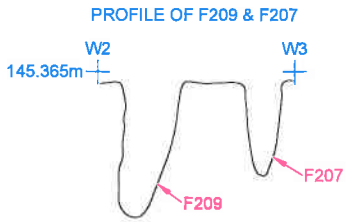
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 15 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7341

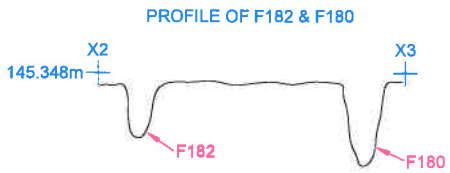
Figure 17: Sections of post-holes F123, F125, F129, F139, F149, F134 and F136 in western extent of Area 2.

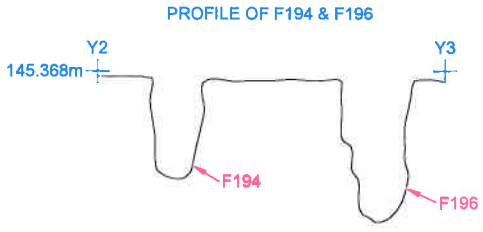


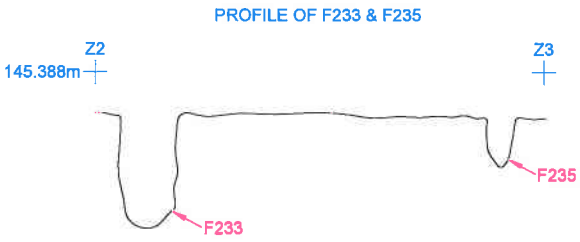


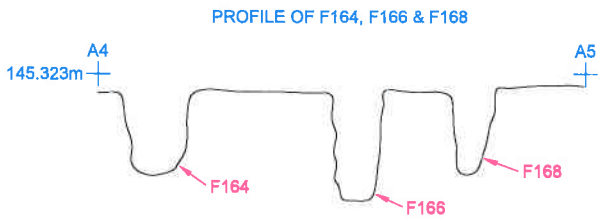








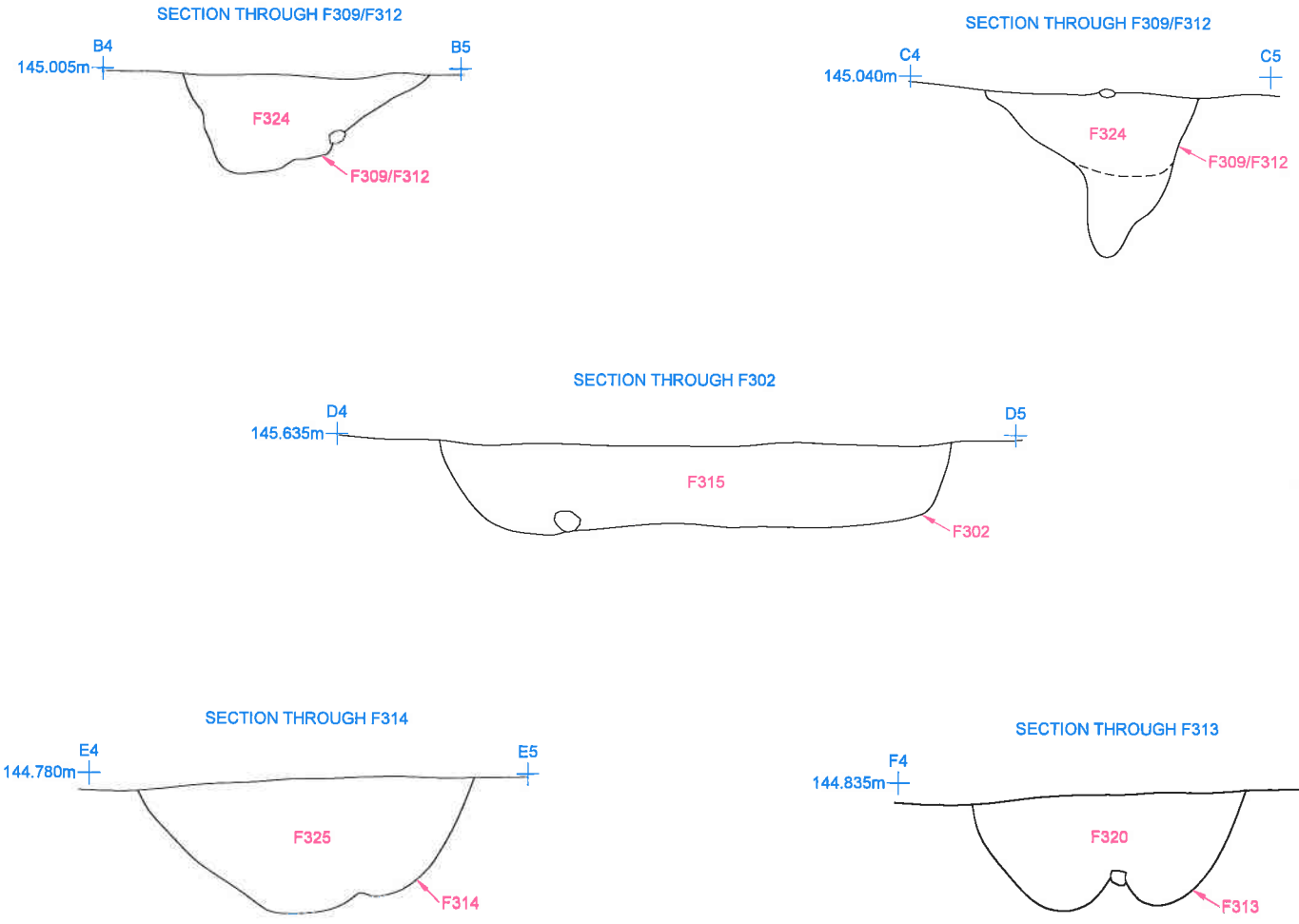




50 cm

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 2, Lismore 2	Scale: 1: 15 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7342

Figure 18:Profiles of stake-holes F164, F166, F168, F180, F182, F194, F196, F201, F203, F205, F207, F209, F233, F235, F252, F253, and F254, in 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 2, Lismore 2	Scale: 1: 15 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7343

Figure 19: Sections of linear features F302, F309/F312, F313 and F314 in Area 3.

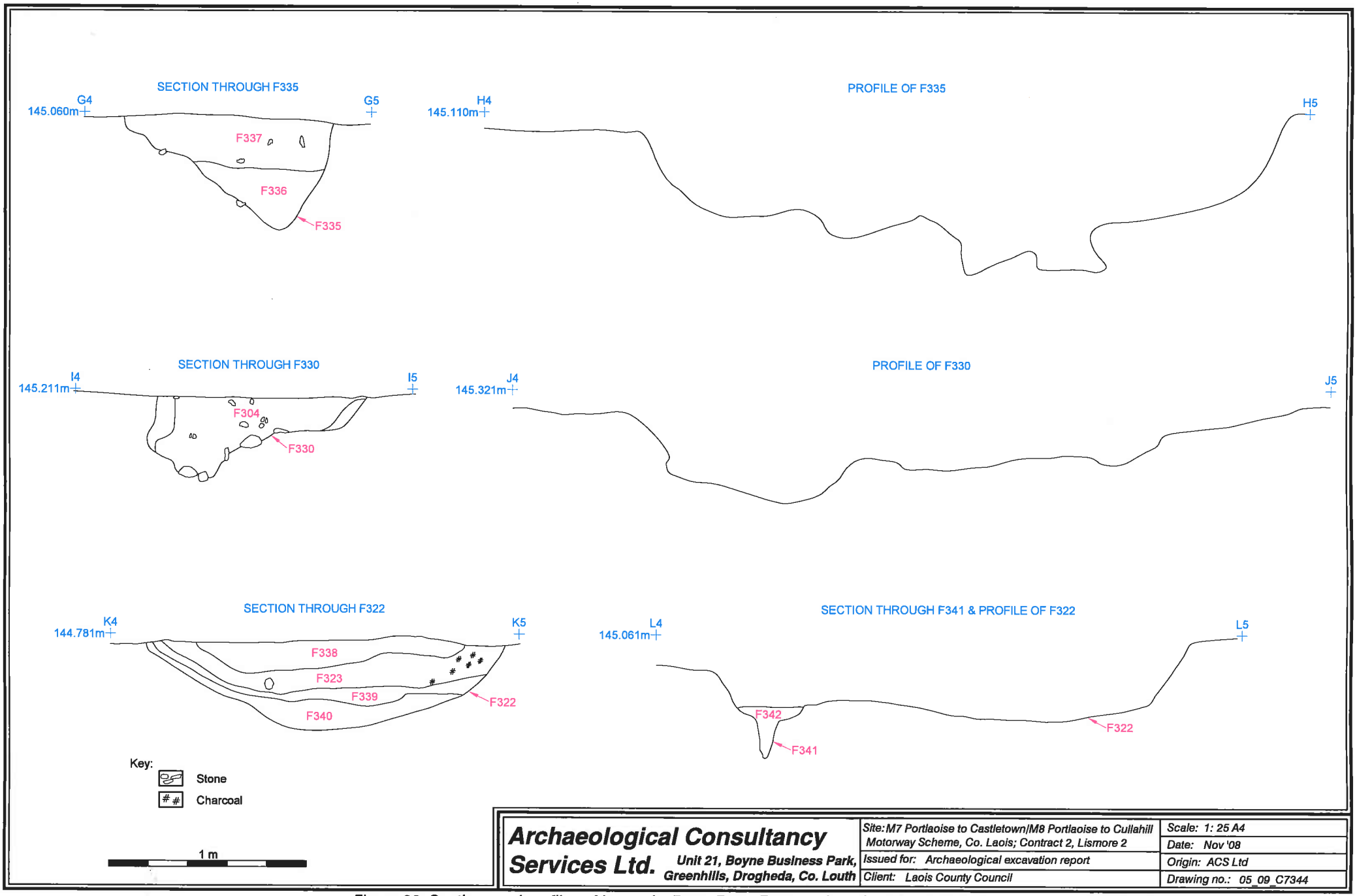
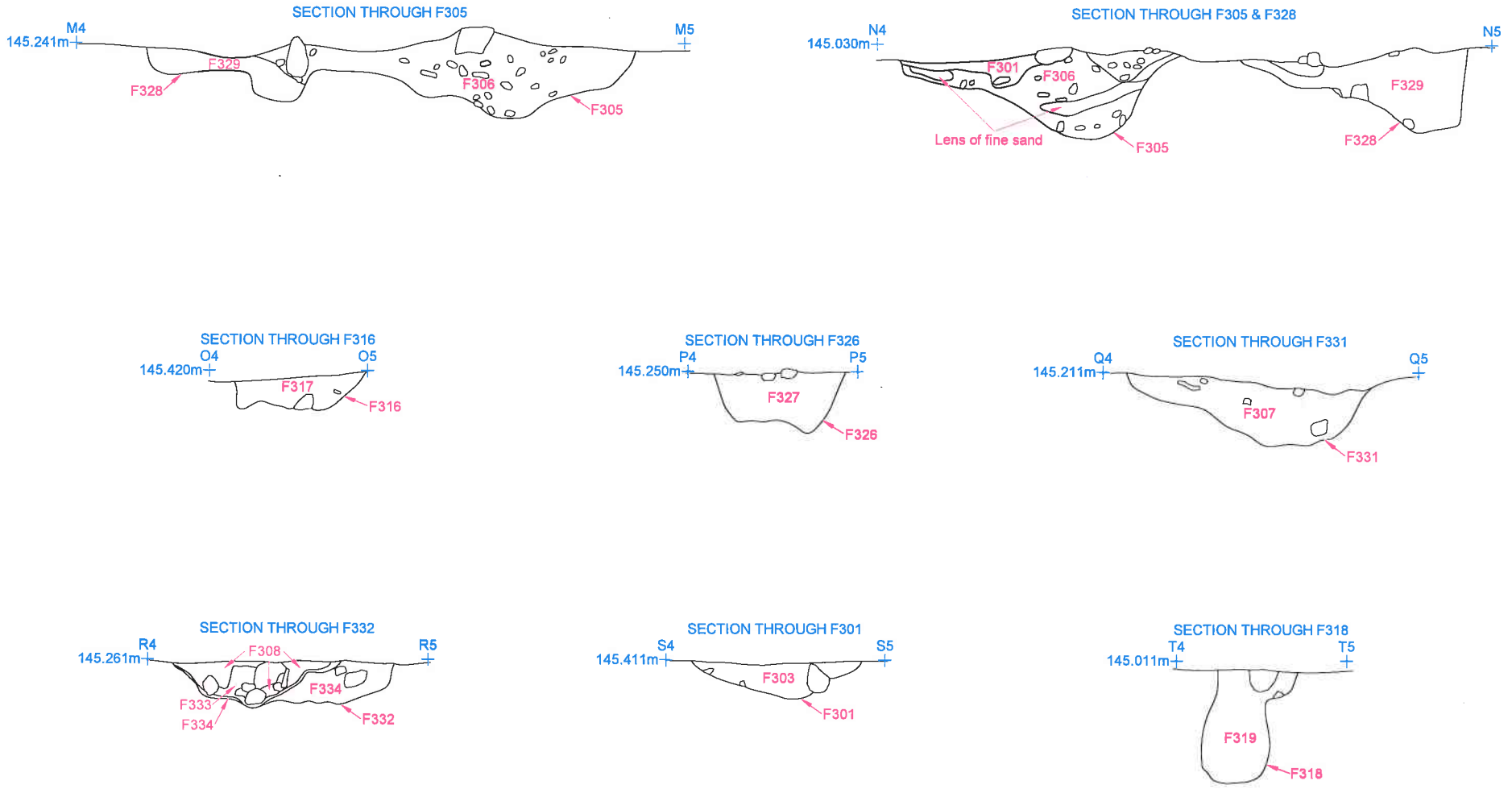
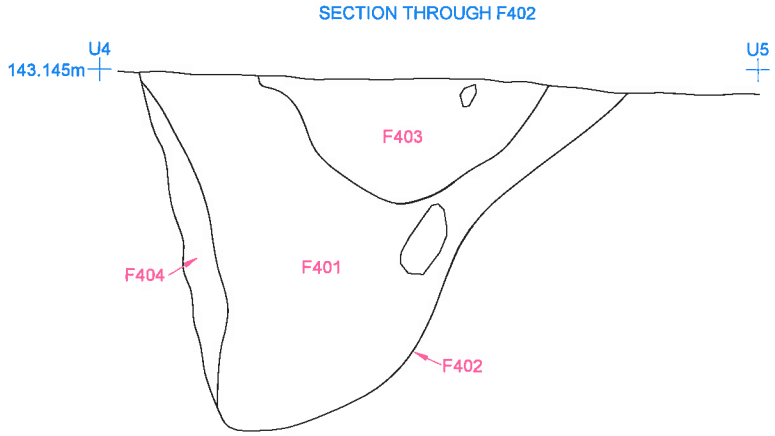


Figure 20: Sections and profiles of large pits F322, F330, F335, and section of post-hole F341 in Area 3.



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 2, Lismore 2	Scale: 1: 25 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7345

Figure 21: Sections of pits F301, F305, F316, F318, F326, F328, F331, and F332 in Area 3.

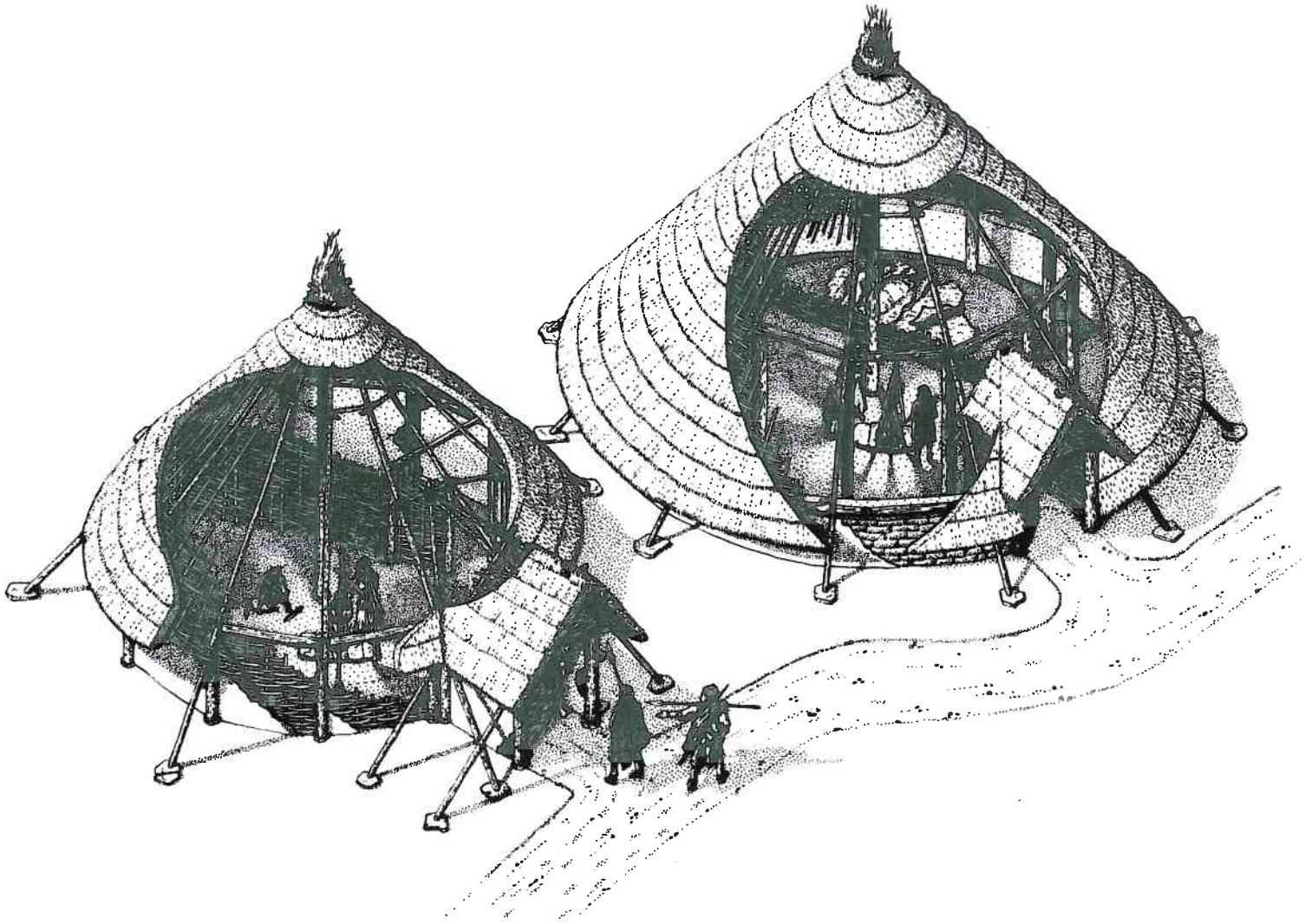


Key:
Stone

50 cm

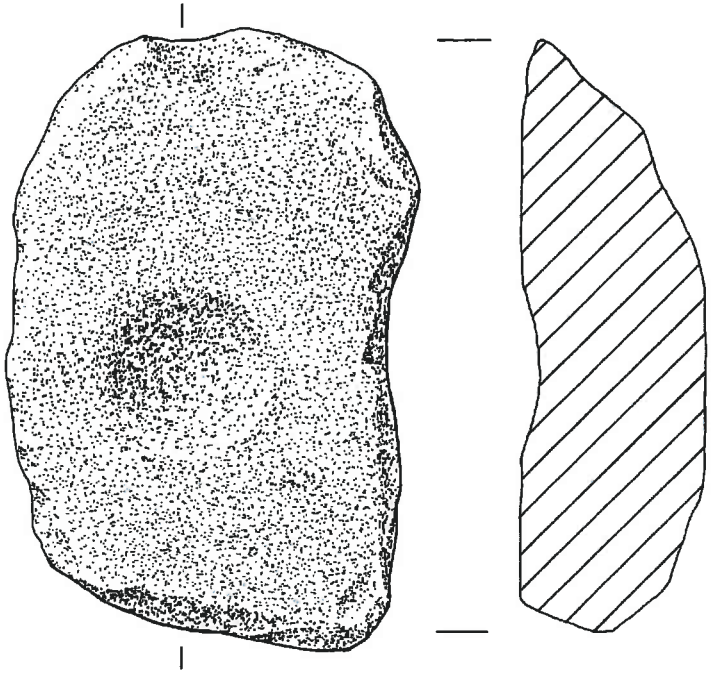
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: 1: 10 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C7346

Figure 22: Section of pit F402 in test trench T36.

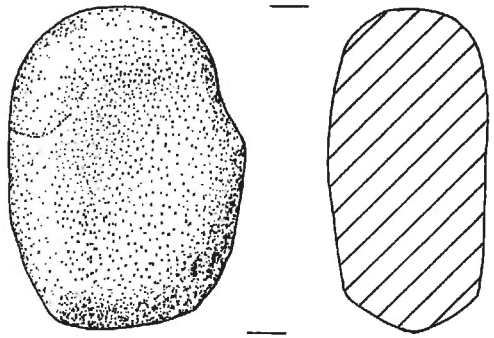


Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 2, Lismore 2	Scale: D. N. S.
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: Daniel Tietzsch-Tyler
	Client: Laois County Council	Drawing no.:05_09_C7347

Figure 23: Reconstruction drawing of the Bronze Age houses



Quartz anvil stone E2221_101_1



Hammerstone E2221_195_1

10 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 2, Lismore 2	Scale: 1:2 A4
		Date: Nov '08
	Issued for: Archaeological excavation report	Origin: Kurkowicz & Wolff
	Client: Laois County Council	Drawing no.:05_09_C7348

Figure 24: Illustration of Quartz anvil stone E2221_101_1 & hammerstone E2221_195_1

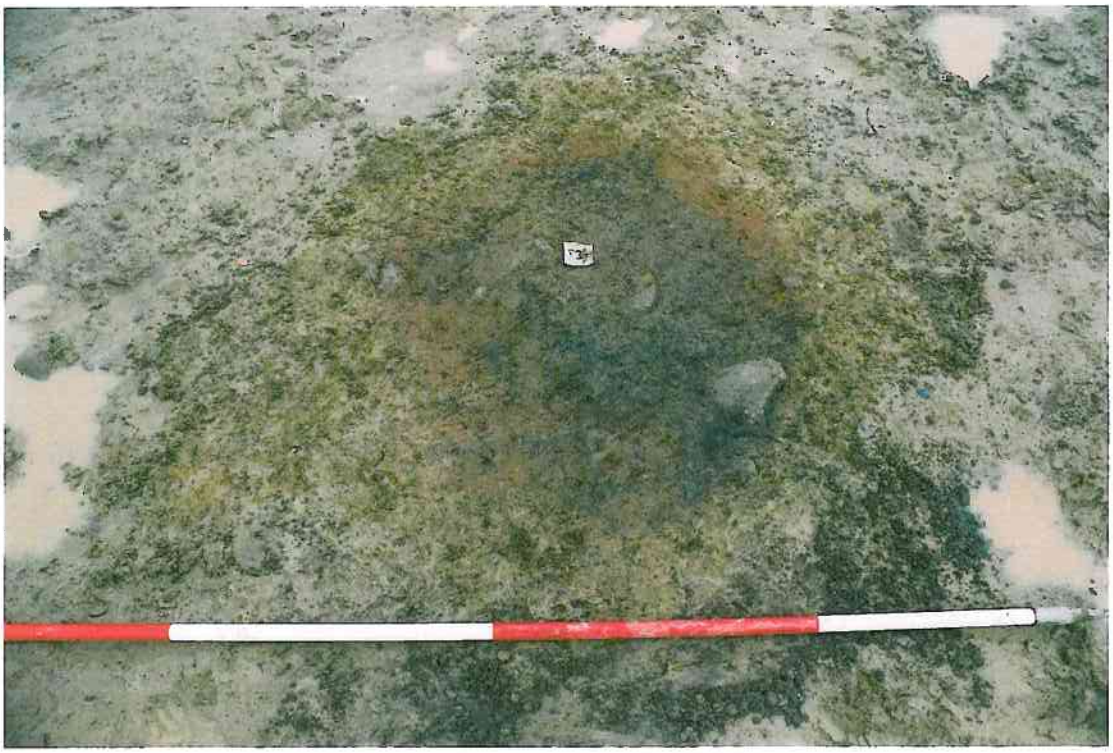


Plate 1: Pre-excavation view of hearth F048/deposit F3 (Area 1), facing north (CP017_17)

Plate 2: Half-section of deposit F003/hearth F048 (Area 1), facing west (CP017_09)

Plate 3: Section of oxidised clay at base of hearth F048 (Area 1), facing west (CP019_25)

Plate 4: Pre-excavation view of fill F016/pit F51 (Area 1), facing west (CP017_08)

Plate 5: On-going excavation of fill F016/F051 (Area 1), facing north (CP018_20)

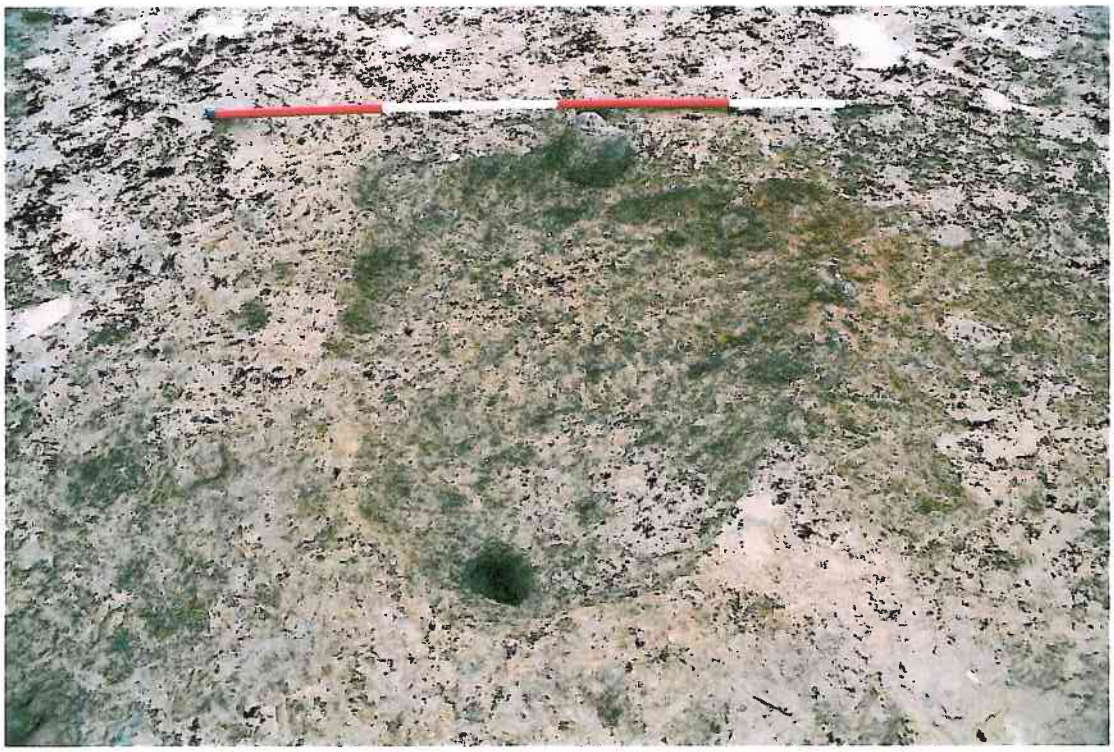


Plate 6: Post-excavation view of large pit F051 (Area 1), facing north (CP019_13)

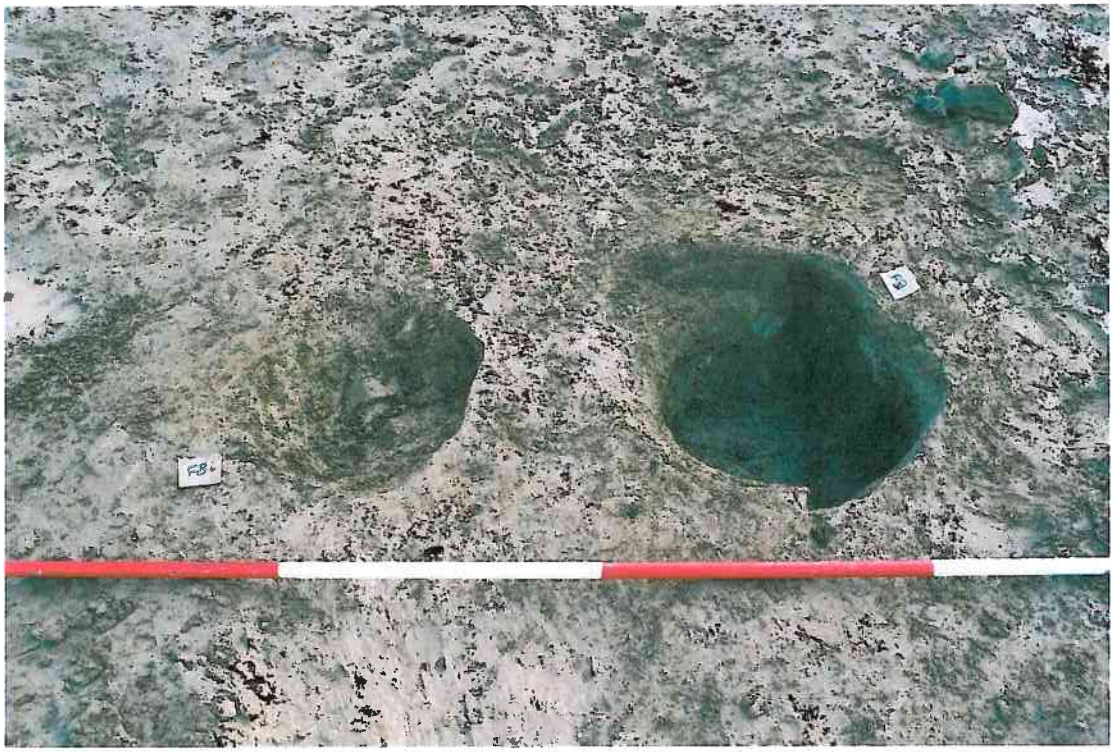


Plate 7: Post-excavation view of pits F040 and F047 (Area 1), facing east (CP018_25)

Plate 8: Post-excavation view of pit F049 (Area 1), facing north (CP019_26)

Plate 9: Deposit F106, containing flecks of burnt bone, overlying post-hole F149 (Area 2), facing north (CP016_05)

Plate 10: Pre-excavation view of large post-holes F155/fill F118 and F170/fill F121 (Area 2), facing north-west (CP017_20)

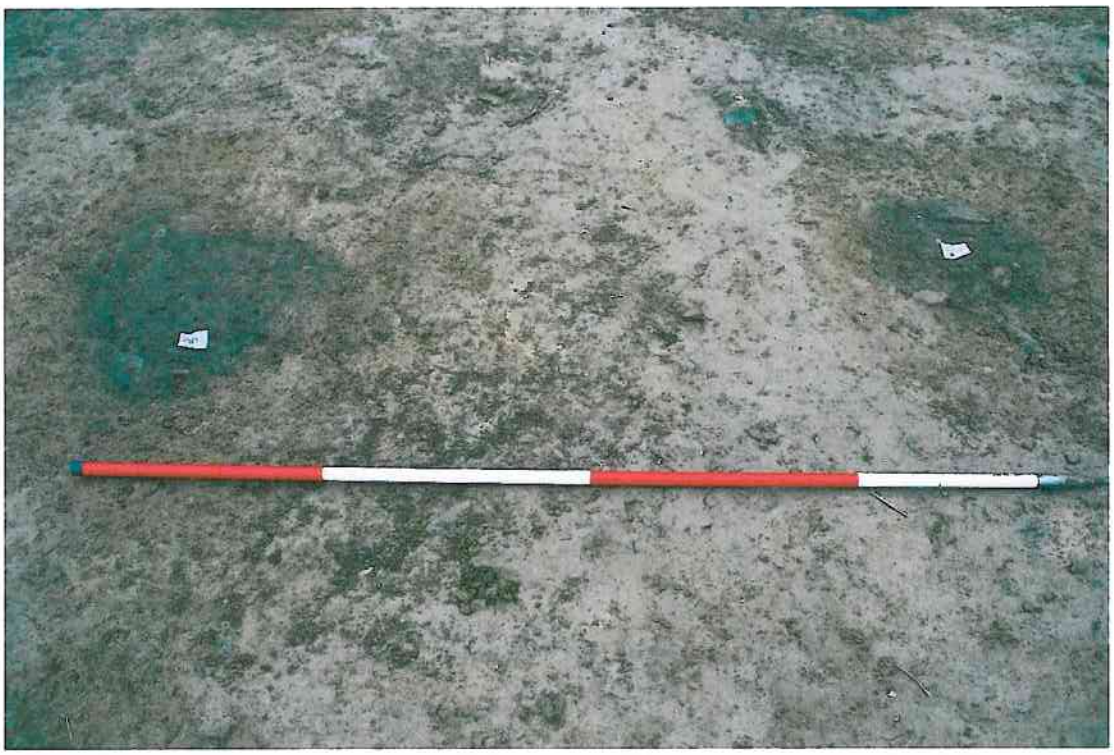


Plate 11: Pre-excavation view of large post-holes F156/fill F117 and F155/fill F118 (Area 2), facing north (CP017_23)

Plate 12: Half-section of large post-hole F155/fill F118 (Area 2), facing west (CP023_23)

Plate 13: Post-excavation view of square formation of large post-holes F172, F170, F156 and F155 (Area 2), facing south-west (CP027_21)

Plate 14: Mid-excavation view of hearth F145/lower fill F142 (Area 2), facing south (CP023_09)

Plate15: Post-excavation view of pits F223 and F237 (Area 2), facing south-east (CP027_08)

Plate16: View of aligned stake-holes F213, F209, F207, F205, F203, F252, F201 (Area 2), facing east (CP027_10)

Plate 17: View of aligned stake-holes F164, F166 and F168 (Area 2), facing east (CP027_11)

Plate 18: Ongoing work to the south of field ditch F100 (Area 2), facing south-east. The features above the ranging rod are stake-holes F164, F166 and F168, to the left of post-hole F240; large post-hole F153 is to the left of centre (CP027_15)

Plate 19: Ongoing work (Area 2), facing south-west. Field ditch F174 is along the bottom of the picture, with part of pit F223 at the bottom right-hand corner. The alignment of stake-holes, commencing with F201 near the edge of the ditch, extends towards the top right-hand corner of the picture (CP027_16)

Plate 20: Pre-excavation view of deposit F303/hearth F301 (Area 3), facing north (CP017_06)

Plate 21: Pre-excavation view of fill F304/large pit F330 (Area 3), facing north-north-east (CP017_05)

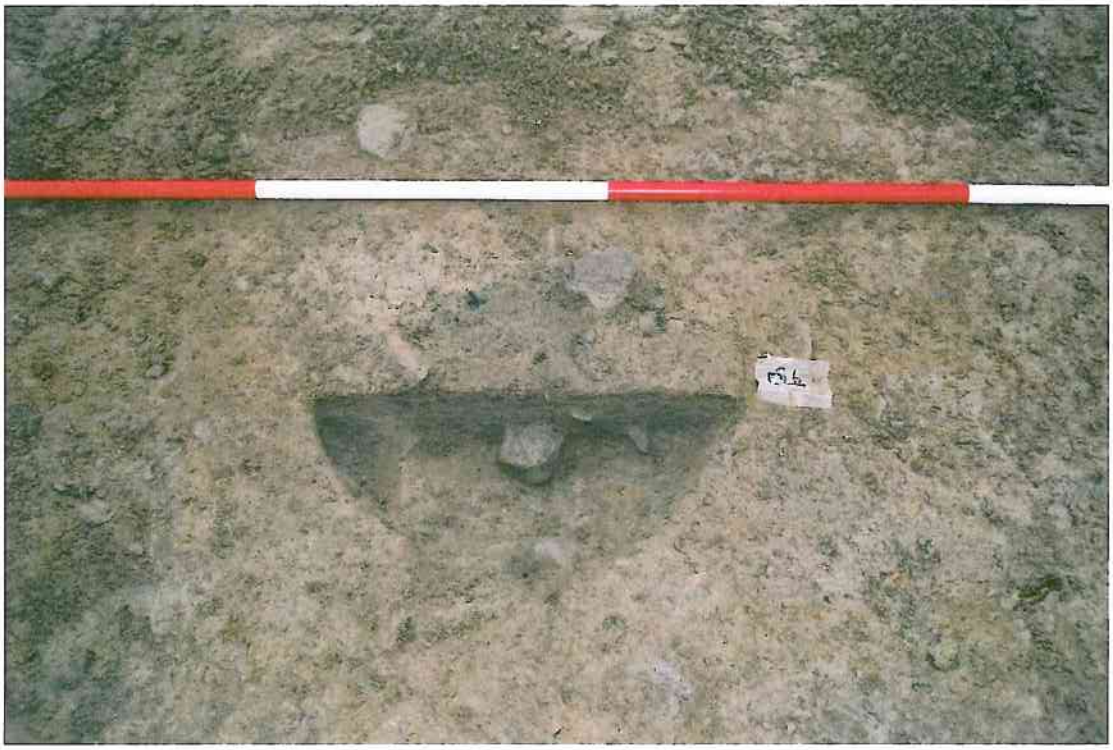


Plate 22: Half-section of pit F316/fill F317 (Area 3), facing north (CP019_11)

Plate 23: Half-section of pit F332/fills F308, F333, F334 (Area 3), facing north (CP021_20)

Plate 24: Post-excavation view of pits F305, F328 and F330 (Area 3), facing south (CP023_17)

Plate 25: Prehistoric pottery base angle (05_09_E2221_113-1 (vessel 4) ceramics 002)

Plate 26: Prehistoric pottery base angle (05_09_E2221_113-2 (vessel 4) ceramics 002)

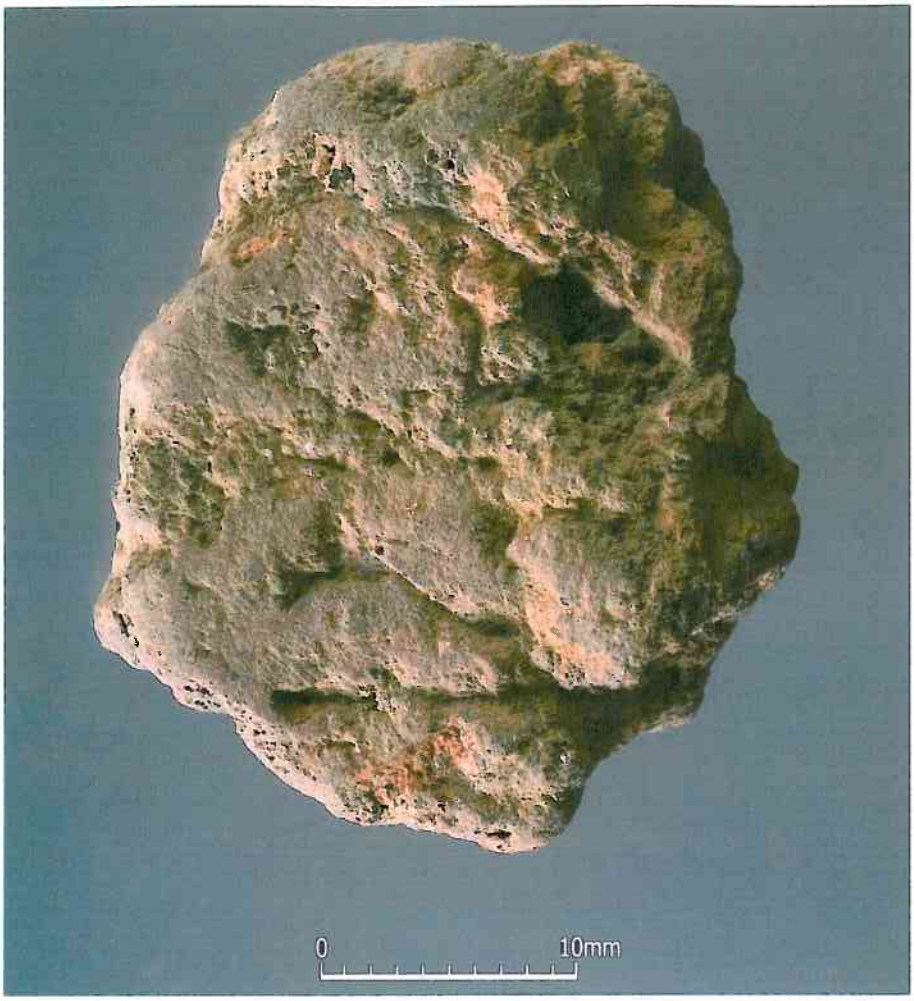


Plate 27: Prehistoric pottery base angle (05_09_E2221_113-3 (vessel 4) ceramics 001)

Plate 28: Prehistoric pottery base angle (05_09_E2221_113-4 (vessel 4) ceramics 002)

Plate 29: Prehistoric pottery base angle (05_09_E2221_113-5 (vessel 4) ceramics 002)

Plate 30: Prehistoric pottery rim sherd (05_09_E2221_118-1 (vessel 3) ceramics 001)

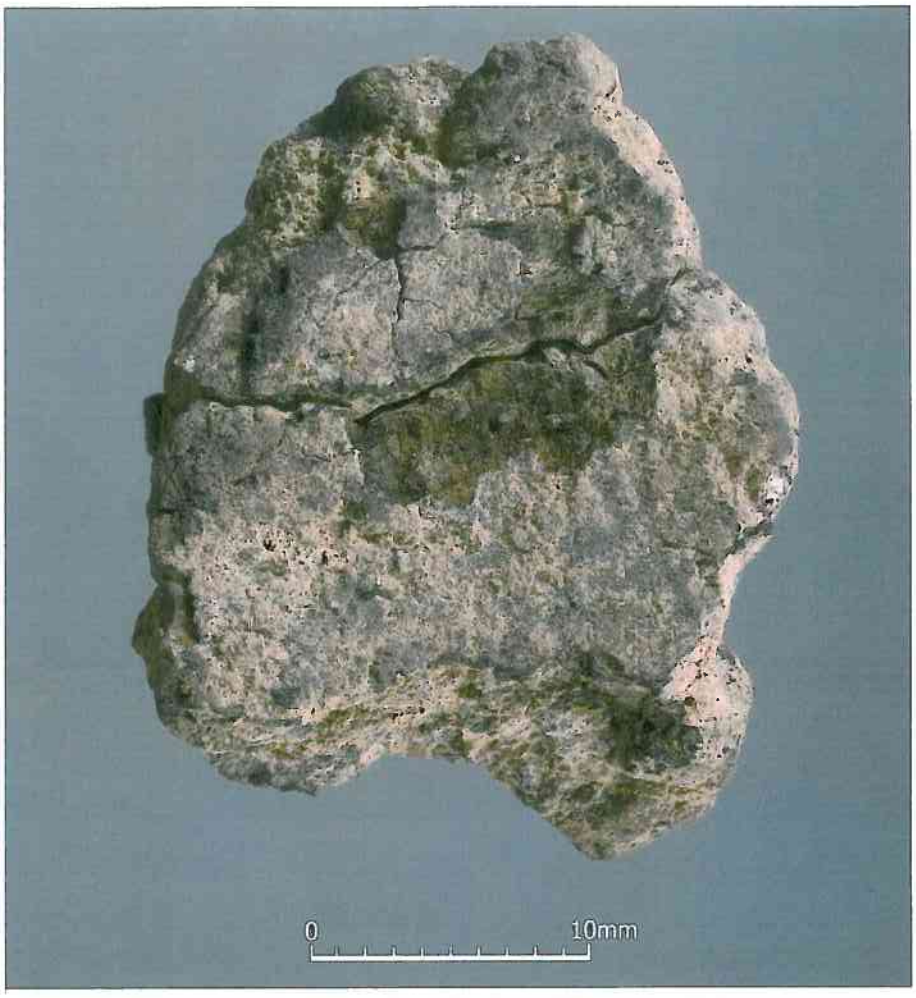


Plate 31: Prehistoric pottery sherd (05_09_E2221_317-2&8 ceramics (vessel 1) 001)

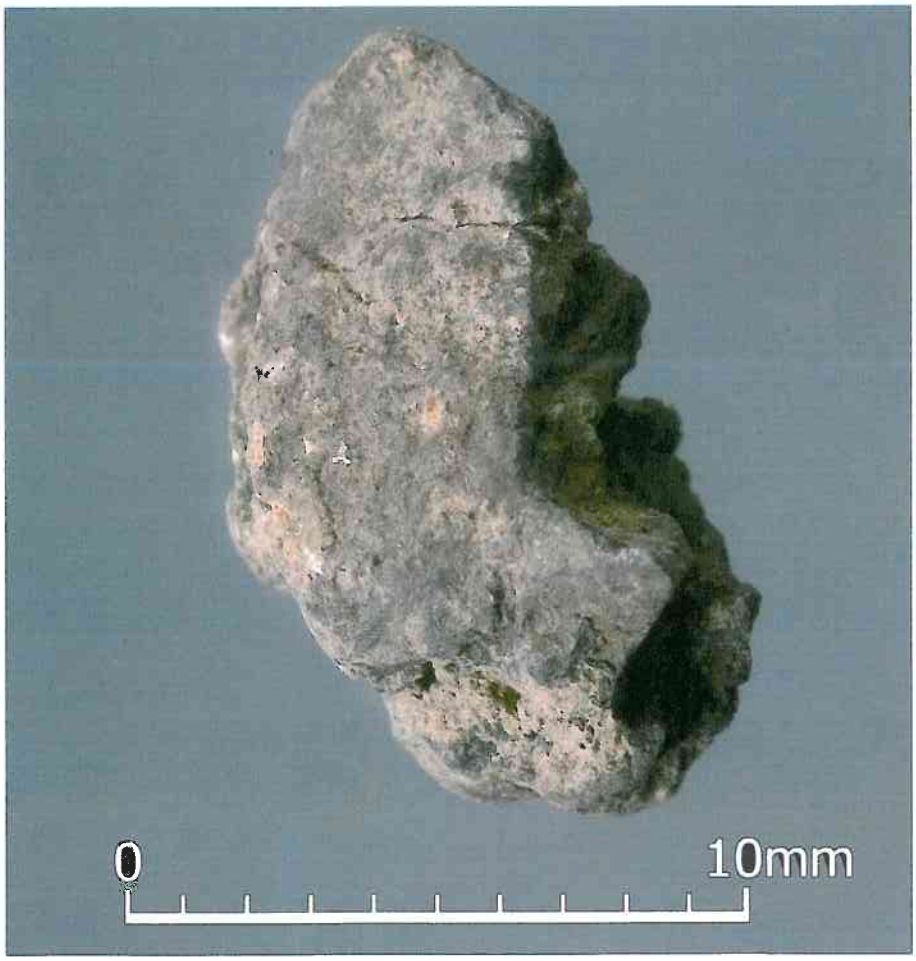


Plate 32: Prehistoric pottery sherd (05_09_E2221_ 317-3 ceramic (vessel 1) 001)

Plate 33: Prehistoric pottery sherd (05_09_E2221_ 317-4 ceramic (vessel 2) 001)

Plate 34: Prehistoric pottery sherd (05_09_E2221_ 317-5 ceramic (vessel 1)

Plate 35: Prehistoric pottery sherd (05_09_E2221_317-7 ceramic (vessel 1) 001)