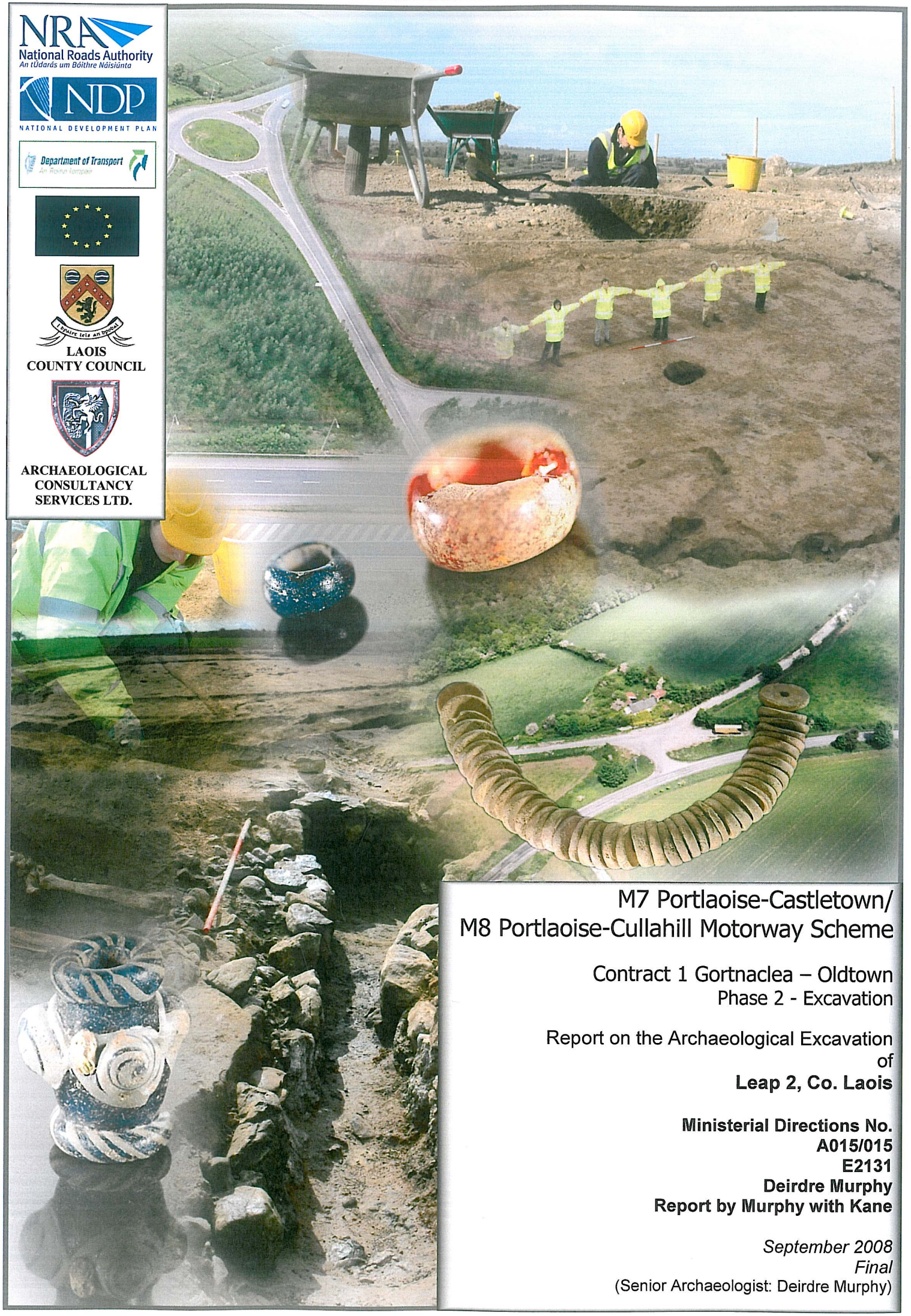

NRA
National Roads Authority
An tÚdarás um Bóithre Náisiúnta

NDP
NATIONAL DEVELOPMENT PLAN

Department of Transport
An Roinn Iompair

LAOIS
COUNTY COUNCIL

ARCHAEOLOGICAL
CONSULTANCY
SERVICES LTD.

M7 Portlaoise-Castletown/ M8 Portlaoise-Cullahill Motorway Scheme

Contract 1 Gortnaclea – Oldtown
Phase 2 - Excavation

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

Ministerial Directions No.
A015/015
E2131
Deirdre Murphy
Report by Murphy with Kane

September 2008
Final
(Senior Archaeologist: Deirdre Murphy)

PROJECT DETAILS

Project	M7 Portlaoise to Castletown/ M8 Portlaoise to Cullahill Motorway Scheme
Client	Laois County Council, County Hall, Portlaoise, County Laois
Contract	Contract 1
Site Name	Leap 2
Townland	Leap
Nat. Grid Ref.	234456, 182557
OS Map Ref.	OS 6 inch sheet 28
Chainage	20650
Ministerial Directions No.	A015/015
Record No.	E2131
Archaeologists	Deirdre Murphy and Deirdre McCarthy
Senior Archaeologist	Deirdre Murphy
Report Type	Final
Report Status	Final
Report by	Murphy with Kane
Date of Submission	September 2008
Distribution	Elspeth Logan & Mary Deevy

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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.

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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 1 extends from the townland of Gortnaclea to Oldtown and consists of approximately 14km of motorway, which extends from Aghaboe to south of Cullahill through the townlands from Gortnaclea to Oldtown.

The following report describes the results of archaeological excavation along one section of the planned M8 Portlaoise to Cullahill Motorway Scheme, at Leap, County Laois, Contract 1.The site was identified during a second phase of archaeological testing carried put by Deirdre Mc Carthy of Archaeological Consultancy Services Ltd in June 2006. This additional archaeological assessment of Contract 1: Testing Area 3 involved the mechanical excavation of one trench in Field 147 (Plot 360) and potential archaeological features were identified. The site was designated Leap 2.

Archaeological resolution of the site was undertaken immediately by Deirdre McCarthy under instruction from the Project Archaeologist. For recording purposes the site was designated the Scheme number A015/015 and Record number E2131. Topsoil stripping on this site revealed the remains of a ploughed out burnt mound spread/*fulacht fiadh*. No artefacts were recorded.

Radiocarbon analysis of charcoal recovered from this feature returned a date of Cal BC 2230-2030 placing this site in the Early Bronze Age.

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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 Leap 2, Contract 1, County Laois (Ordnance Survey six-inch sheet 28, National Grid Co-ordinates 234456, 182557; Figures 1-2). The site at Leap 2 was situated *c.*3.5km south of the foundation of Aghaboe and was located to the south of the River Nore approximately halfway between Borris-in-Ossory and Durrow. It was located at Chainage 20650 of the proposed scheme, in the townland of Leap 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 Deirdre McCarthy. The site was identified during additional archaeological testing carried out by Deirdre McCarthy of Archaeological Consultancy Services Ltd in June 2006 under ministerial direction number A015/015. One trench was excavated within this field and a small number of potential archaeological features were identified. The site was designated Leap 2.

1.4 Date and Duration of Excavation Works

Excavation of this site was carried out in June 2006 during additional archaeological testing.

1.5 Size and Composition of the Excavation Team

The excavation team was composed of:

One director
One supervisor

2. RECEIVING ENVIRONMENT

2.1 Detailed Overview of the receiving environment

2.1.1 Topographic

The topography of the Leap and Cuffsborough area is one of undulating countryside, well drained by free flowing streams and streamlets. The current landscape is characterised by rolling tracts of fertile land interspersed with pockets of less fertile and more low-lying, wetter and boggier areas. In prehistoric times, it is likely that this region was much more heavily wooded and probably less well drained than it is today. However, in the greater Leap and Cuffsborough area grey-brown podzolic (medium textured, moderately deep) soils are prevalent (Feehan 1983, 90-3). The grey-brown podzolic soils are among the best soils in Ireland. The soils in this area are medium textured, well-drained, friable podzolics and are especially good for tillage farming, although these soils are also highly suitable for grass production and grazing (Feehan 1983, 92). Consequently it is easy to see why this area became a haven for Bronze Age settlement in the past.

It is clear that the domestic settlement in the area occurred in the drier and slightly higher lying areas (such as at Cuffsborough 4) while *fulacht fiadh* activity occurred right across the wetter and more lower-lying landscape (Cuffsborough 1, 3 and Leap 2) in the vicinity of free flowing streams such as the one at Cuffsborough 3, which flows southwards draining the land of excess water and eventually flowing into the river Erkina.

2.1.2 Archaeological

The earliest evidence for human occupation in County Laois consists of a small number (eight) of recorded megalithic tombs, one such possible tomb in the townland of Cuffsborough adjacent to the townland of Leap. Graves (1852, 358) documented the discovery of a 'beehive-shaped chamber' beneath a mound of earth. The chamber measured *c.*1.50m in diameter and was reputedly built with large orthostats supporting tiers of corbelling and a roof stone *c.*1.05m high (Sweetman *et al* 1995, 1). The bones of two skeletons were found on the floor of the chamber. The location of this possible tomb was not properly documented or dated and no longer exists. It is possible that this tomb, like other chamber tombs recorded under mounds of earth in Leinster, could date to the Neolithic Period or early Bronze Age (Sweetman *et al* 1995, 1). The evidence for early Bronze Age activity in the Leap and Cuffsborough area consists of a documented cist burial. A crouched inhumation accompanied by a pottery vessel was discovered within a short cist at this site (Sweetman *et al* 1995, 5). Although this find was documented, the original location of the cist burial was not properly recorded. In the townland of Kilminfoyle, directly to the southeast of Cuffsborough and Leap, a *fulacht fiadh* was recorded (Candon 1987, 23).

Two further *fulachta fiadh* were recorded east in the townlands of Fearagh and Ballygeehin Lower. However, no visible surface traces of any are evident (Sweetman *et al* 1995, 12). In total, nineteen *fulachta fiadh* or burnt mound sites (including one possible site) were recorded in Co. Laois (Sweetman et al 1995, 12-3), prior to the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme. While there is definite evidence for prehistoric settlement activity in Cuffsborough prior to recent excavations we do not know the exact (scientific) nature of this activity or where it was located. A hillfort situated *c.*5km to the northeast of Cuffsborough and Leap in the townland of Boley Upper comprised a circular enclosure on high ground commanding views of the entire surrounding area. It is defined by a bank of earth and stone and has an external fosse (Sweetman *et al* 1995, 17). No other diagnostic Neolithic, Bronze Age or Iron Age monuments occur within the vicinity besides that which was excavated during the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme recently (discussed below). While there is a dearth in the range and number of prehistoric monuments and sites in the surrounding area, the chance recovery of a number of diagnostic artefacts (e.g. two bronze axeheads were

found at Aghaboe, *c.*3.5km to the northeast of Leap) indicates that other activities took place in the region.

2.1.3 Historic

The place-name Leap translates as *léim* which tends to refer to a place where animals were in the habit of passing or moving through – such as a narrow part of a river or a narrow ridge/mountain pass (Joyce 1887, 171; 1883, 317). The place-name Leap also tends to refer to legends associated with ancient heroes – places where they supposedly leaped/moved through (Joyce 1887, 171; 1883, 317).

The famous 6th century early ecclesiastical foundation of Aghaboe is situated *c.*3.5km to the north of Leap. The exact date the monastery was founded is unknown; however, we do know that this important monastic centre was founded by St. Canice (or Kenny) in the second half of the 6th century (Gwynn & Hadcock 1970). St. Canice also established other smaller ecclesiastical sites throughout the surrounding area and founded another large foundation in Kilkenny (Carrigan 1905, 30). The ecclesiastical settlement at Aghaboe was the wealthiest and most influential monastic site in the region. It was targeted and raided by the Vikings in 845 AD and 913 AD and it has also been recorded that the monastery was burned to the ground in 1116 AD (Mac Airt & Mac Nioca 1983, AU 845; O' Donovan 1856 2nd Ed., AFM 913; Kennedy 2003, 12). The last abbot of Aghaboe was Cian Ua Gerachan who died in 1154 AD. After the Synods of Rath Breasail (1111 AD) and Kells (1152 AD), Aghaboe became the Episcopal See of the Diocese of Ossory, however, this status was short lived due to the first Anglo-Norman bishop of Ossory making Kilkenny the Episcopal See of Ossory after the Norman invasion (Lewis 1837, 11). Under Anglo-Norman control, the monastic lands became a parish as well as an Anglo-Norman manor (Kennedy 2003, 12). Dermot MacGillapatrick attacked Aghaboe in the 14th century during a period of Irish resurgence and took control of the Anglo-Norman settlement and ecclesiastical complex resulting in the replacement of the 13th century Augustinian settlement with a Dominican order. This order resided in Aghaboe until the priory was suppressed in 1540 AD (Kennedy 2003, 13).

A church site is recorded in the southern part of the townland of Cuffsborough, just north of Leap (Sweetman *et al* 1995, 79). This church and graveyard site was in use in the late 18th and early 19th centuries and possibly even earlier (Carrigan 1905, 58). Folklore sources indicate that the church may have had a pre-Cromwellian origin and it was under the influence of Aghaboe. A holy well is recorded *c.*200m to the west of this church site in the townland of Ballygowdan. There are traditions of other church sites in the area; e.g. in the townlands of Dairyhill and Kilminfoyle.

Considering their proximity to Aghaboe it is possible that these sites formed part of the Medieval or the Early Medieval ecclesiastical landscape, dominated by the influential Aghaboe. Secular settlement in the area in the Early Medieval period consists of ringfort/enclosure sites recorded in the surrounding townlands (e.g. Palmershill, Tinnaragh and Boherard) (Sweetman *et al* 1995). Secular settlement in the area in 13th and 14th centuries includes the moated sites recorded at Garryduff and Kilminfoyle and a motte and bailey recorded at Aghaboe (Sweetman *et al* 1995). Secular settlement in the area in the 15th and 16th centuries includes the tower houses recorded in the townlands of Gortnaclea and Grantstown (Sweetman *et al* 1995).

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

3. RESEARCH FRAMEWORK

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

(i) The extent of the archaeological site/activity
(ii) The location and distribution of known contemporary sites in the local, regional and national (and international, if appropriate) context.
(iii) The nature and composition of the archaeological finds, features, layers and deposits on site.
(iv) The phases of activity on site
(v) The nature and phases of construction, use, repair and abandonment of the site.
(vi) Why the site location would have been chosen
(vii) The function of the site and its likely interrelationships with the contemporary

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

social, economic, cultural and natural environment.

(viii) 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 was carried out in June 2006 during the testing phase under Ministerial Direction Number A015/015. 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 scheme number and feature number, i.e. E2131:3:1 represents find number 1 within feature number 3 in Leap 2, which was excavated under scheme number E2131. Unless otherwise stated, the features have been measured length-width-depth. All measurements are in metres. Upon completion of excavation all cuttings were surveyed using GPS equipment and only areas within the CPO were resolved.

4.2 Full Stratigraphic Report

4.2.1 List of features

F001 Topsoil

F002 Natural subsoil

F003 *Fulacht fiadh*/Burnt mound spread

F004 *Fulacht fiadh*/Burnt mound spread

F005 Spread of grey silty clay

4.2.2 Stratigraphical matrix

Natural deposits

F001	Topsoil: Consisted of mid-brown, silty clay. Measured 0.20-0.40m (depth). No artefacts recorded.
F002	Natural subsoil: Consisted of orange, boulder clay with some evidence of gorse burning north of the testing trench. Stony shale was located towards the centre of the same trench.

***Fulacht fiadh*/Burnt mound spread (See Figure 7)**

F003	Deposit of burnt mound material, with grey and black silty clay. Frequent heat shattered sandstone and occasional charcoal flecks included. Measured 4m x 4.2m x 0.05m. No artefacts or samples taken. Above F002, below F001.
F004	Deposit of burnt mound material, with grey and black silty clay. Frequent heat shattered sandstone and occasional charcoal flecks (Oak, Alder/Hazel, Hazel and Elm) included (See Appendix 10.1). Measured 4m x 3m x 0.05m. No artefacts recorded. One soil and charcoal sample taken. A radiocarbon date of Cal BC 2230-2030 was retrieved (See Appendix 10.2). Above F002, below F001.
F005	Deposit of grey, silty clay with occasional sandstone included. Measured 3m x 2m x 0.05m. No artefacts or samples taken. Above F002, below F001.

4.2.3 Stratigraphic Sequencing

Table … Stratigraphic Groups		
Site Name: Leap 2		**Record No.: E2131**
Period	**Phase**	**Composition**
I	1	Formation of subsoil
II	1	Initial clearance of site
	2	Early Bronze Age: Remains of *fulacht*/burnt mound
III	1	Cultivation destruction of abovementioned feature

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

Period 2 Early Bronze Age

Phase 2

Remains of *fulacht fiadh*/burnt mound (See Figure 7)

A spread of material containing three deposits (F003, F004 and F005) was recorded following the removal of topsoil. The former two deposits (4m x 3-4.2m x 0.05m) consisted of grey-black silty clay, with heat shattered stones and charcoal flecks (Oak, Alder/Hazel, Hazel and Elm). A radiocarbon date of Cal BC 2230-2030 was retrieved from a soil and charcoal sample of F004 (See Appendices 10.1 & 10.2). F005 (3m x 2m x 0.05m) contained a spread of grey, silty clay with occasional inclusions of sandstone. No associated features were recorded on site. No artefacts were recovered.

4.2.4 Stratigraphic Discussion

The excavations at Leap 2 revealed the remains of a *fulacht fiadh*/burnt mound, dated to Cal BC 2230-2030 in the Early Bronze Age (See Appendix 10.2) (See Figs. 1-7). A technical description can be found in the matrix and sequencing above. A spread of material was noted within a single excavated testing trench (measuring 15m x 20m) following the removal of topsoil. It comprised three deposits, two of which (F003, F004) had similar grey-brown silty clay. Both also included heat shattered stones and charcoal flecks (the latter of which was made up of Oak, Alder/Hazel, Hazel and Elm: See Appendix 10.1). The third deposit (F005) contained grey silty clay and occasional sandstone only. There was no associated trough or features. As very little archaeological evidence remains at this site, it is difficult to stratigraphically interpret it. However, that which does exist would appear to be remnants of a *fulacht fiadh*/burnt mound that was ploughed away by agricultural practices or the part remains of a *fulacht fiadh*/burnt mound located outside the CPO. This *fulacht* activity involved heating water (supplied by a well/stream) through

'hot stone technology' and was conducted within a trough or large pit (none of which was recorded at this site) in the aim of implementing domestic and other activities. Burnt mound spreads (like that noted at this site) are just one component of this activity left in the archaeological record. A by-product of hot stone technology, they generally comprise heat shattered stones and charcoal. The lack of further associated features and any artefacts hinders further analysis beyond initial identification of the site. See Section 5 for the main discussion.

4.2.5 Stratigraphic Conclusion

Through the testing phase of archaeological investigation the remains of *fulacht fiadh*/burnt mound activity were revealed, dated to the Early Bronze Age (See Appendix 10.2). Three deposits comprising dark silty clay, heat shattered stones and charcoal were noted. The lack of any further evidence including artefacts hinders further analysis beyond initial identification of the site's activity. When comparing Leap 2 with neighbouring archaeological sites (particularly those within the townland of Cuffsborough), a pattern of large-scale *fulacht*/burnt mound activity across the locale emerges.

4.3 Artefactual evidence

4.3.1

No artefacts were recovered.

4.4 Environmental Evidence

4.4.1 Wood identification/Charcoal analysis

See Appendix 10.1

Table: Charcoal sampled for Wood identification					
Site Name: Leap 2				Record No.: E2131	
Context number	Sample number	Feature type	Date obtained	Sample type	Analysis results
F004	1	*Fulacht*/Burnt mound spread	Cal BC 2230-2030 Early Bronze Age	Charcoal	Oak, Alder/Hazel, Hazel and Elm

4.5 Dating Evidence

See Appendix 10.2

Table: Charcoal sampled for Radiocarbon dating				
Site Name: Leap 2			Record No.: E2131	
Context number	Sample number	Feature type	Sample type	Date obtained
F004	1	*Fulacht*/Burnt mound spread	Charcoal	Cal BC 2230-2030

5. DISCUSSION (Information provided by Niall Kenny)

Fulachta fiadh or burnt mounds tend to survive as low grass covered mounds, usually horseshoe/crescent shaped, consisting of large accumulations of heat shattered stones mixed with black soil and charcoal (Brindley *et al* 1989/90, 25; Power *et al* 1997, 75). When levelled, these monuments are often visible as black spreads of heat shattered stone in ploughed fields. *Fulachta fiadh* normally consist of a hearth, trough and the associated mound of material (Brindley *et al* 1989/90, 25). However, not all sites consisting of quantities of charcoal and heat shattered stone may be classified as a *fulacht fiadh* as they may lack the all important associated trough and hearth features. A number of different factors can contribute to the absence of a trough/hearth and these include: the trough/hearth may have been destroyed by agricultural activity such as ploughing, the trough/hearth may lie outside the limits of the excavation or portable or wooden containers may have been used as water receptacles and were removed when the site went out of use. We do know that by the mid-second millennium BC elongated, single-piece wooden troughs fashioned and carved from dugout boats were in use (O' Neill 2000, 19: O' Kelly 1954, 132) and so the use of these could account for some (not all) of the sites lacking troughs. Furthermore, if the stones were heated on simple bonfires and not in cut or lined hearth places then traces of this may not be visible in the archaeological record (due to deep ploughing etc). Therefore, the absence of a trough/ hearth at such sites does not automatically imply that these sites were not *fulachta fiadh*.

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

of heat shattered stone and charcoal around the trough in a crescent shape mound is the result of continued use and emptying of the trough.

The majority of *fulachta fiadh* and burnt mound sites have been firmly placed in the second millennium BC and the earlier part of the first millennium BC (1500 – 500BC) (Brindley *et al* 1989/90; Brindley & Lanting 1990; Waddell 1998, 177). However, through development led excavations it is becoming increasingly clear that their use may have a much earlier antiquity. The earliest sites appear to date from the early 3rd millennium BC while the latest sites possibly survive into the Iron Age and even beyond into the early and later Medieval periods (O' Neill 2000; O' Neill 2003-4, 83). The site at Leap returned an Early Bronze Age date of Cal BC 2230-2030 (See Appendix 10.2).

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

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

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

surveys in the area) and these occur throughout the county near streams and streamlets in limestone and sandstone rich areas (Condit 1990).

The exact function of *fulachta fiadh* is rather ambiguous and despite the vast number of these monuments occurring throughout Britain and Ireland, they still remain somewhat enigmatic. There are many different theories as to the function of *fulachta fiadh* and briefly these include: cooking places (O' Kelly 1954; O' Drisceoil 1988), prehistoric bathing places/ saunas (Barfield & Hodder 1987) as well as semi-industrial functions such as leather working/ production, fulling cloth, soap production, garment waterproofing, processing cremations, brewing, boat building, brine evaporation and so on (as listed by Barfield & Hodder 1987, 371; Waddell 1998, 177 and O' Neill 2000, 19; Monk 2007, 24). While there has been much debate and discussion over the possible function of these monuments, it is generally accepted that they were used to bring troughs of water to a boil through a form of hot stone technology (Waddell 1998, 177). It is also accepted that some of these sites were used continuously over long periods of time which accounts for the resultant accumulation of quite large mounds of heat-shattered stone at these sites (e.g. at Shanboe 1) (Waddell 1998). It has been suggested that 'if a single function could be proposed (for *fulachta fiadh*) it would be expected that all of these sites would have a similar form' (O'Connor 2007, 9). It is also stressed that it is futile searching for one single function when it is clear that so many of the *fulachta fiadh* sites are different in form. Most academics are agreed on the fact that these sites were used to boil water through the use of hot stones, it is probable then that this hot water was used in the undertaking of a variety of different tasks and functions. Research studies carried out by ACS Ltd on the M3 excavations of the size and arrangement of pits, troughs, hearths and other features associated with *fulachta fiadh* sites indicates that perhaps the variation in the form of these features and sites may be to do with the fact that these sites served different multiple functions (O'Connor, 2007).

O' Kelly (1954) and others (such as Lawless 1990 and even the chef Darina Allen 1994) have adequately demonstrated that *fulachta fiadh* could at least theoretically have functioned as ancient cooking sites. This theory has dominated academic discourse since the 1950s, however it appears that there are inherent problems with it; the general absence of animal bones from many *fulacht fiadh* sites severely undermines this theory and high acidic levels and bad preservation cannot always explain their wide-scale absence. O' Kelly (1954) has suggested that the lack of bone on some sites may be due to the fact that the meat was not consumed on site (but instead at settlement sites) or that scavenging animals and dogs may have retrieved the bones. The 'cooking site theory' cannot be applied universally to all *fulacht fiadh* sites, however it is certain that some sites did function as cooking places amongst other things. Quantities of animal bone have been recorded on

other *fulachta fiadh* sites excavated on the same road scheme i.e. at Cuffsborough 1 and Cuffsborough 3. A large number of bovine bone fragments (25 in total) were recorded at the late Bronze Age *fulacht fiadh* site excavated ten years ago in Cloonaddadoran Co. Laois and these were actually found in the basal fill of the trough (Crumlish 1997). The animal bone recovered from Cuffsborough 1 and 3 and Cloonaddadoran in Laois could very well be the vestiges of ancient cooking practices and so these sites could very well have functioned as cooking sites (both ritual and functional) for nearby settlement sites such as Cuffsborough 4 and possibly even Cuffsborough 2. However, the complete absence of animal bone on such sites as Shanboe 1 and 5, Contract 2 of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme indicates that perhaps other activities were possibly being carried out at these sites.

6. INTERPRETATION AND RECONSTRUCTION

Leap 2 was the remains of an Early Bronze Age *fulacht fiadh*/burnt mound site situated in a landscape rich with similar, relatively contemporary activities. A date of Cal BC 2230-2030 was retrieved from one of three *fulacht*/burnt mound spreads recorded on site (See Appendix 10.2). No associated trough or feature was recorded adjacent to these spreads. As very little archaeological evidence remains at this site, it is difficult to stratigraphically interpret it. However, that which does exist would appear to be remnants of a *fulacht fiadh*/burnt mound that was ploughed away by agricultural practices or the part remains of a *fulacht fiadh*/burnt mound located outside the CPO. The lack of any major structural evidence suggests that the site was not intended for habitation and was utilised for a task. This task was most likely cooking of foodstuffs as there is no evidence to state otherwise. What is certain is that water was boiled on or near this site using hot stone technology, evidence of which was found in the site features (See Section 4).

7. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL AND SIGNIFICANCE

Although, no specific trough was recorded and the site contained only scattered remains of burnt mound activity, Leap 2 highlights that across this particular landscape, burnt mound activity was prevalent. As the townland itself lies within a marshy area and does not contain very productive soil (See Section 2), it would not have benefited farming (See Section 5). The date (Cal BC 2230-2030) provided by this site through radiocarbon dating also furthers our understanding of the importance and frequency of this type of activity within the Bronze Age (See Appendix 10.2). As a result, this site joins an increasingly rich record of Bronze Age *fulacht*/burnt mound sites, which

alone makes it significant. The lack of artefacts recorded at Leap 2 does not detract from the activity known to have taken place here, as this absence is a common trait of such sites. The significance of *fulacht*/burnt mound sites within the vicinity in the townland of Cuffsborough would be greatly expanded on by a collective study.

8. CONCLUSION

This site has been adequately archaeologically assessed and resolved. There are no other archaeological features within the limits of the roadtake. Consequently no further work is required prior to the construction phase of the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme.

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1909 Ordnance Survey Revision edition RMP map

Signed:

_____

Deirdre Murphy
Senior Archaeologist

September 2008

10. APPENDICES

10.1 Appendix 1: Wood Identification/Charcoal analysis report

Leap 2, M7Portlaosie to Castletown/M8 Portlaoise to Cullahill Motorway Project, Co Laois, Ireland

Species identification of charcoal samples July 2008

Record number: 05E2131

Ministerial/Scheme number: A015/015

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1. Introduction
2. Methods
3. Definitions of time period, element types and woodworking terminology
4. Results and Analysis
5. Summary and Conclusions on Wood and Charcoal Assemblage
6. References

1. Introduction

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

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

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

Analysis of timbers can also provide information on two different levels. These can be seen as the structural and constructional aspects gained from studying the timbers as ‘timber’ and also the environmental and dendrochronological aspects gained from a study of the timber as ‘wood’. From preliminary analysis of some of the work in progress on the wood assemblages it is clear that oak was the most common species used for wall-posts and planks, hazel was preferred

for wattle structures and species such as pomoideae, ash, willow, alder, birch and holly were utilised for a variety of other structural requirements. Alder, ash and oak are the most frequent species used in the construction of plank-lined troughs while hazel and ash are selected for wattle posts also used in the construction of wattle troughs. The analysis completed from the wood and charcoal excavated along the M7/M8 Cullahill to Cashel will add important information to the rapidly expanding database of environmental indicators particularly in relation to the Bronze Age and Medieval periods in the area. This area of work is especially important in Ireland where there are no written records up to the 18th century relating to the amount and type of woodland in Ireland (McCracken 1971, 15).

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

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

The analysis presented here concentrates on species identification, species selection and the composition of the local woodland during the Bronze Age, at Aghmacart 1. Woodworking analysis was completed on timbers that contained evidence of tooling, which includes recording facets and jam curves and is sometimes a useful indicator of tool types being used on a given site at a given period. Split timber types, preserved point types, annual tree-ring counts and average growth rates of the trees that the wood was drawn from was also noted and recorded. Each piece of wood was also examined for blade signatures.

In general the charcoal analysed was quite fragmented and iron stained with few large brushwoods or roundwoods with pith to bark charcoal samples were encountered. As a

consequence determining ring width growths and ring counts on the charcoal samples was not completed for the majority of the samples.

2. Methods

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

Wood

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

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

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

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

Charcoal

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

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

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

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

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

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

3. Definitions of Element Types and woodworking terminology

Dates and timeframes

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

Constructional Elements

Brushwood:	Stems or rods measuring 6 cm or less in diameter.
Roundwood:	A piece of worked or unworked wood in the round and over 6 cm in diameter.
Vertical Stake/Post:	Upright brushwood or roundwood driven vertically or at an angle into the ground. Sometimes but not always used for stabilization.
Horizontal:	Brushwood or roundwood laid flat on the ground.
Twigs:	Small shoots or branches measuring around 1 cm in diameter.
Split timber:	Wood converted from the round including planks, half splits and split pegs.

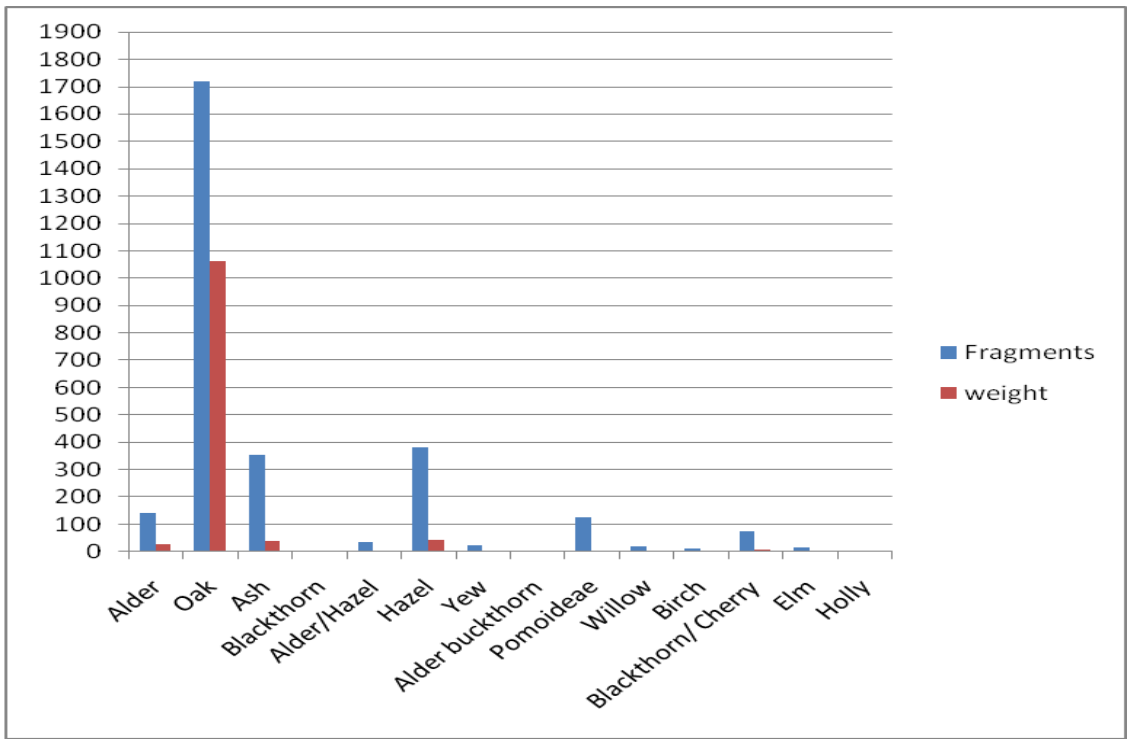
Woodworking terms and definitions

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

4. Results & Analysis

Charcoal assemblage, all sites

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



Charcoal assemblage results at Leap 2

Leap 2, *Fulacht* spread, Early Bronze Age

Table 1: Wood taxa present at Leap 2

Site	E number	Feature type	Context	Sample no	Date	Identifications	Comment
Leap 2	E2131	FF spread	F004	1	2230BC-2030BC EBA	Oak (0.1g, 10f) Alder/Hazel (0.1g, 3 f), Hazel (0.1g, 4 f) Elm (0.1g, 4 f)	Tiny fragments

Tiny fragments of oak, alder/hazel, hazel and elm were identified from an Early Bronze Age *fulacht* spread. Elm is generally identified from early dated sites after which it is thought to have declined due to an elm disease epidemic.

Results by feature/site types

***Fulacht fiadh* sites**

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

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

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

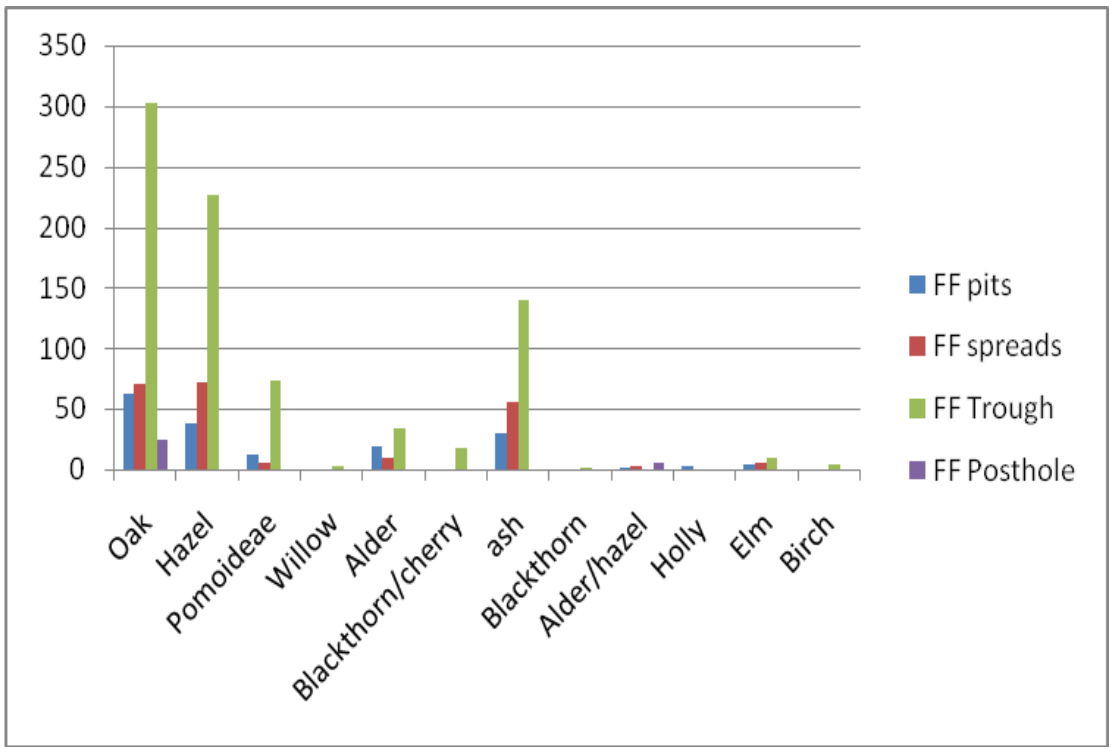
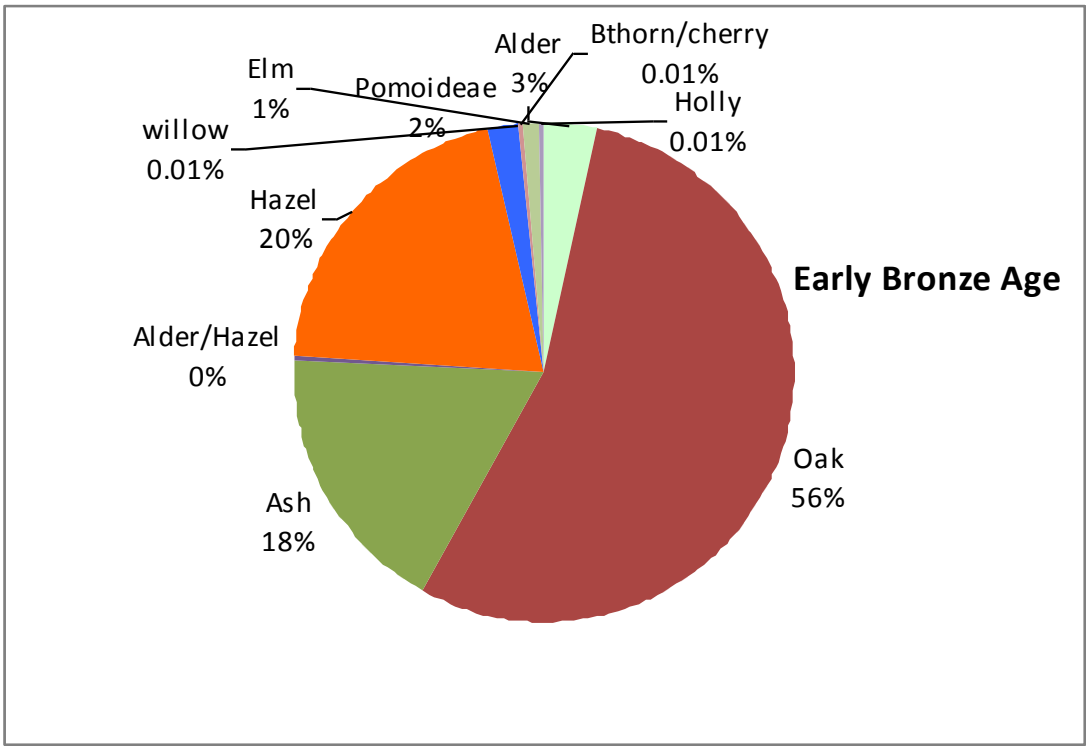


Figure 3: Taxa present in charcoal from the Early Bronze Age sites investigated



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

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

5. Summary and Conclusions on Wood and charcoal Assemblage

Two thousand seven hundred and ten charcoal fragments from sixty two contexts related to twenty seven archaeological sites were analysed from excavations along the M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill, contract 1. Thirteen wood samples including a hazel wooden artifact was also analyzed from the assemblage. Fourteen taxa were identified from the charcoal and wood assemblage retrieved from the sites and features excavated along the routeway.

These were oak (*Quercus* sp), hazel (*Corylus avellana*), ash (*Fraxinus excelsior),* alder (*Alnus glutinosa),* Pomoideae (apple type), blackthorn/cherry (*Prunus* spp), yew (*Taxus baccata*), willow *(Salix* spp), birch (*Betula* sp), holly *(Ilex aquilofium*), elm (*Ulmus* sp) and alder buckthorn *(Frangula alnus)* and pine (*Pinus sylvestris*) in order of representation. The charcoal is mainly representative of fuel collection policies at the Bronze Age *fulacht* sites.

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

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

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

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

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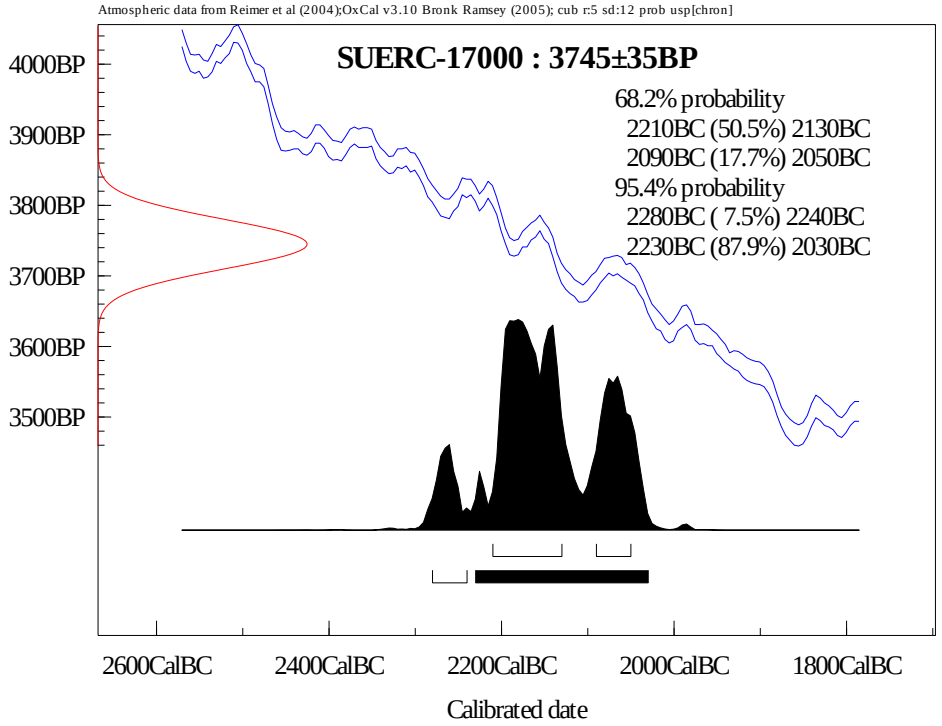
10.2 Appendix 2: Radiocarbon dating analysis report



GU No.	Reporting Number	Sample Type	Site	Sample Id	Species Dated	d13C	Age % Modern	Ageerror 1 sigma
16355	SUERC-17000	Charcoal	Leap 2	05_09:E2131:F4:S1	Alder/Hazel	-25.9	3745	35

10.3 Appendix 3: Summary of Fulachta Fiadh on the M7-M8

Townland	Contract No.	Site Type	Description	Provisional Date
Addergoole 1	1	Burnt mound	2 burnt spreads and several paleochannels.	Late Bronze Age
Addergoole 2	1	Burnt mound	Several burnt spreads, 2 troughs and other features	Late Bronze Age
Aghmacart 1	1	Burnt mound	3 burnt spreads	Early Bronze Age
Aghmacart 2	1	Burnt mound	1 burnt spread and 1 trough	Early Bronze Age
Ballycuddahy 1	1	Burnt Mound(s)	2 small burnt spreads, 2 troughs (1 oval and 1 rectangular) and 1 pit	Bronze Age
Ballyhinode 1	1	Burnt Mound	Remains of fulacht/burnt mound	-
Ballyhinode 2	1	Burnt Mound	Remains of fulacht/burnt mound	-
Boherard 1	2	Burnt Mound	Burnt Spread	Bronze Age
Boherard 2	2	Burnt Mound	Burnt Spread and associated pits	Bronze Age
Boherard 3	2	Burnt Mound	Burnt Spread and pit furnace	Bronze Age
Bushfield 1	2	Burnt Mound	Several burnt spreads and troughs	Bronze Age
Bushfield 4	2	Burnt Mound	Several burnt spreads and troughs	Bronze Age
Bushfield 5	2	Burnt Mound	Several burnt spreads and troughs	Bronze Age
Cannonswood 2	1	Burnt Mound	Several burnt spreads and troughs	Bronze Age

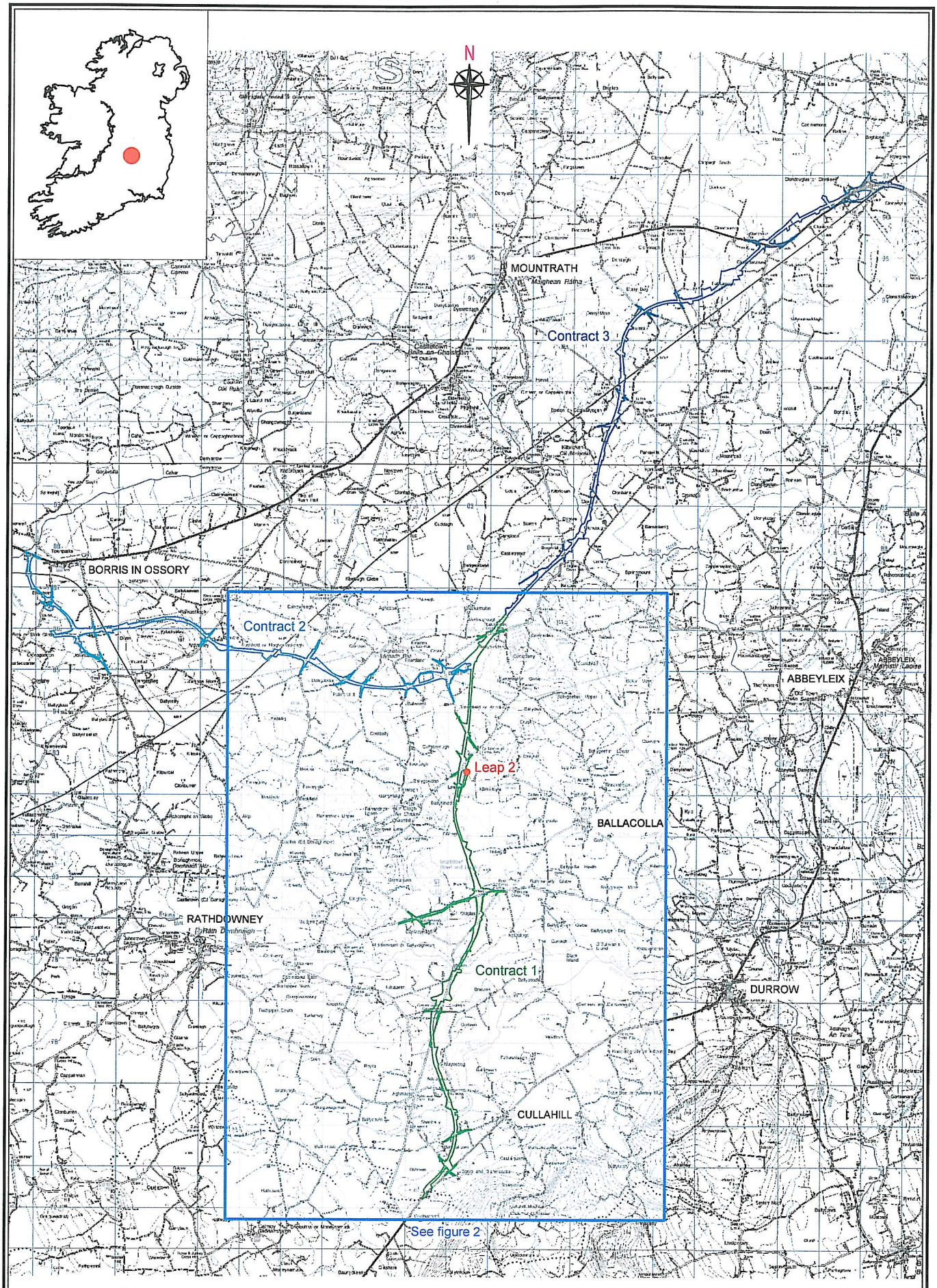
Cappaloughlin 5	3	Burnt mound	Remains of three *fulacht*/burnt spreads and two pit-like troughs	Bronze Age
Cappaloughlin 6	3	Burnt mound	Remains of fulachta fiadh activity: 8 troughs and associated spreads	Bronze Age
Clonadacasey 3	3	Burnt mound	A small number of archaeological features including a trough and two *fulacht*/burnt spreads.	Bronze Age
Clonadacasey 4	3	Burnt mound	A small number of archaeological features including a number of *fulacht*/burnt spreads, stakeholes and troughs.	Bronze Age
Clonboyne 2	3	Burnt mound	Remains of a ploughed out *fulacht fiadh.* A possible flint plough pebble and hone stone were recorded	Bronze Age
Coolfin 2	2	Burnt Mound Activity	Four small pits containing heat shattered stone. The pits ranged from circular to sub-oval in shape and had an average diameter of less than a meter and depth of 200mm.	Bronze Age
Coolfin 3	2	Burnt Mound	Burnt spread (c.12m in length). A large sub-rectangular pit situated to the north of this feature was interpreted as a well (over 3m in length, 2m in width and a metre deep) and contained a timber walkway leading from outside the northern edge to its centre. The cut for this 'U' – shaped well was while a single timber plank supported by uprights provided access into it. A stream apparently truncated the spread in the past.	Bronze Age
Coolfin 4	2	Burnt Mound	Rectangular pit measuring 1.6m E-W and 1.05m N-S and a depth of 0.15m. The burnt mound material and the four corner postholes suggest that this feature probably held a trough. A north-south orientated stream was situated 8m to the west.	Bronze Age
Corraun 1	2	Burnt Mound	Burnt mound activity	Bronze Age

Corraun 2	2	Burnt Mound	Substantial burnt mound & associated pits, hearths & 3 troughs	Bronze Age
Corraun 3	2	Burnt Mound	Extensive burnt mound activity	Bronze Age
Cross 1	1	Burnt Mound	Burnt stone spread and an associated trough	Bronze Age
Cuffsbororough 1	1	Burnt Mound Site	Burnt stone spread, 3 sub-rectangular troughs, 1 sub-circular trough & 2 large pits. Linear ditches. Finds included pottery & deer antler.	Bronze Age
Cuffsborough 3	1	Burnt Mound Site Possible well	2 large deep pit features & 2 large shallow pit features (containing burnt stone), associated pits & ditches. Post-Medieval well?	Bronze Age Post-Medieval?
Curragh 1	1	Burnt mound	2 distinct fulachta fiadh	Early Bronze Age
Curragh 2	1	Burnt mound	1 fulacht fiadh and other post medieval features	Late Bronze Age/ Late Medieval period
Friarsland 1	2	Burnt Mound	Burnt spread (15 x 10m). This site very small and was completed during the testing phase.	Bronze Age
Friarsland 2	2	Burnt Mound	Burnt spread (5 x 2m)	Bronze Age
Gortnagroagh 1	1	Burnt Mound/ Industrial Activity	Drains, a large oval pit & a smaller rectangular pit all containing post-Medieval pottery while both pits contained heat shattered sandstone and dated to the Bronze Age. A number of cow-horns were also found on site	Bronze Age/Post-Medieval
Leap 2	1	Burnt Mound	Ploughed out remains of fulacht/burnt mound or spread	-

Oldglass 1	1	Burnt Mound	Remains of fulacht/burnt mound and a circular structure.	Iron Age
Oldglass 2	1	Burnt Mound	Remains of fulacht/burnt mound and associated pits	-
Oldglass 3	1	Burnt Mound	Remains of fulacht/burnt mound	Bronze Age
Shanboe 1	2	Burnt Mound	*Fulacht*/burnt mound spread, which covered a number of troughs and pits. One chert arrowhead was recovered.	Bronze Age
Shanboe 4	2	Burnt Mound	Ploughed out remains of a *fulacht fiadh*/burnt mound	Late Bronze Age
Shanboe 5	2	Burnt Mound	Ploughed out remains of a *fulacht*/burnt mound spread and associated pits	Early Medieval
Springfield 2	1	Burnt Mound	Troughs, pits, postholes and associated burnt mound activity	Bronze Age
Springfield 3	1	Burnt Mound	Burnt stone spread and a metalled surface	Bronze Age
Tintore 1	1	Burnt mound	2 fulachta fiadh and troughs	Bronze Age
Tintore 2	1	Burnt mound	Several fulachta fiadh spreads and associated pits	Late Bronze Age

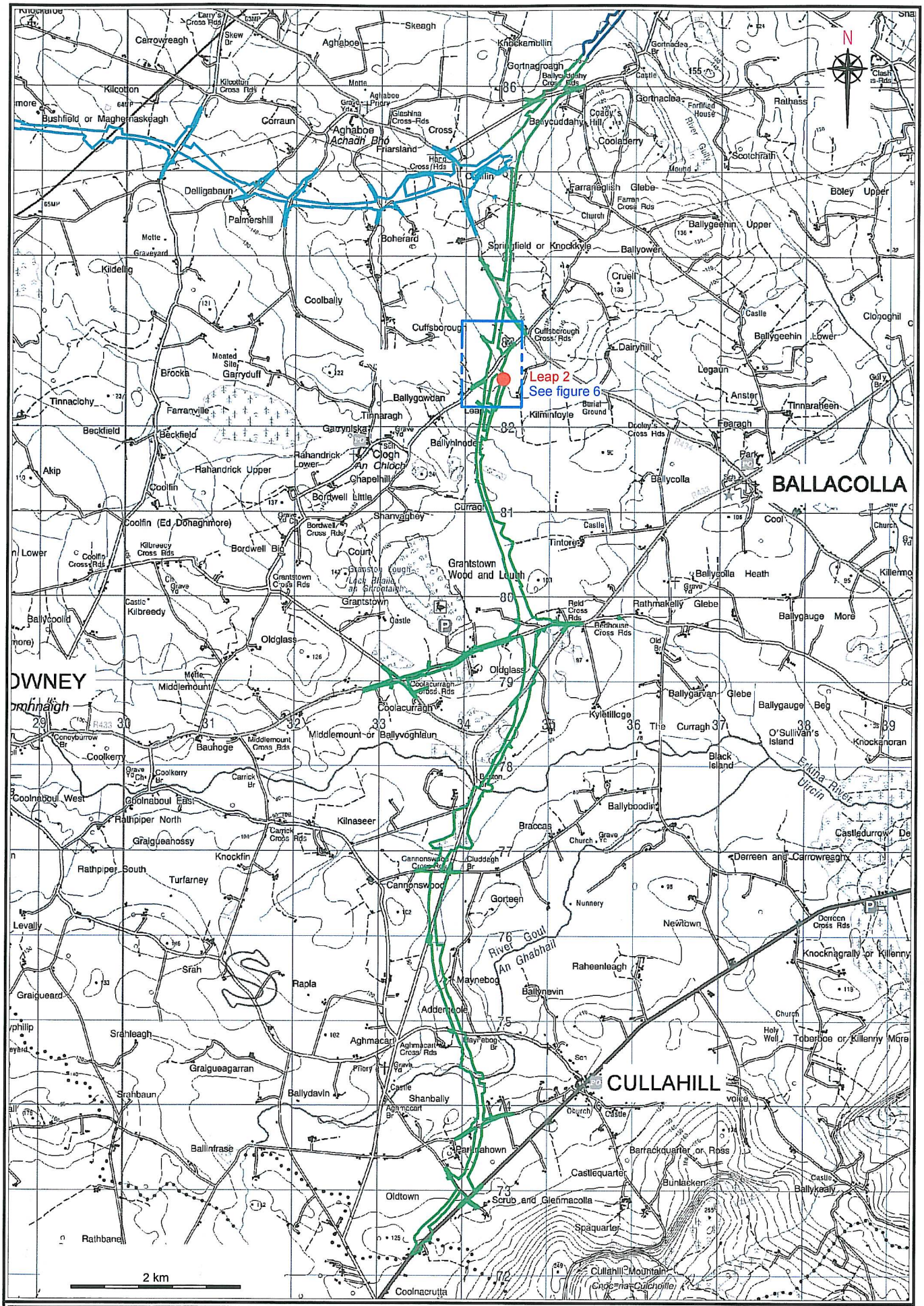
10.4 Appendix 4: Archive Contents

Table …. Site Archive (Basic) Summary			
Site Name: Leap 2		Record No.: E2131	
Type	Description	Quantity	Notes
Contexts	Validated contexts from excavation	5	All contexts sheets have been checked and cross-referenced.
Plans	'A4' 1:20 (no. of sheets)	1	Pre-ex plan.
Sections	None	0	Spread too thin to draw section
Photographs		24	Digital Version only.
Registers	Plan Register Photographic Register Sample Register	1 1 1	All Registers have been checked and cross-referenced.



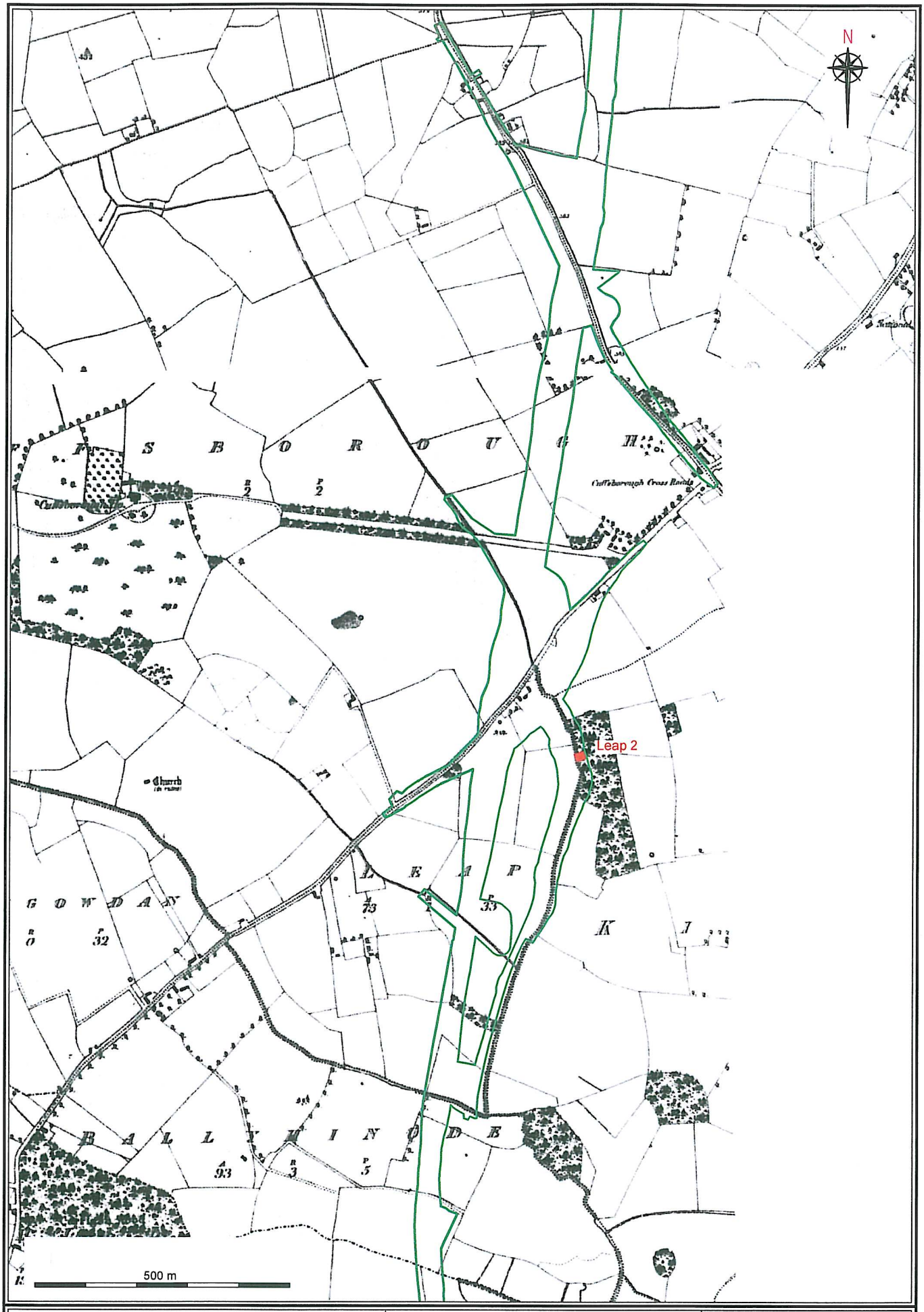
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1: 125,000 A4
		Date: Sept '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C14001

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



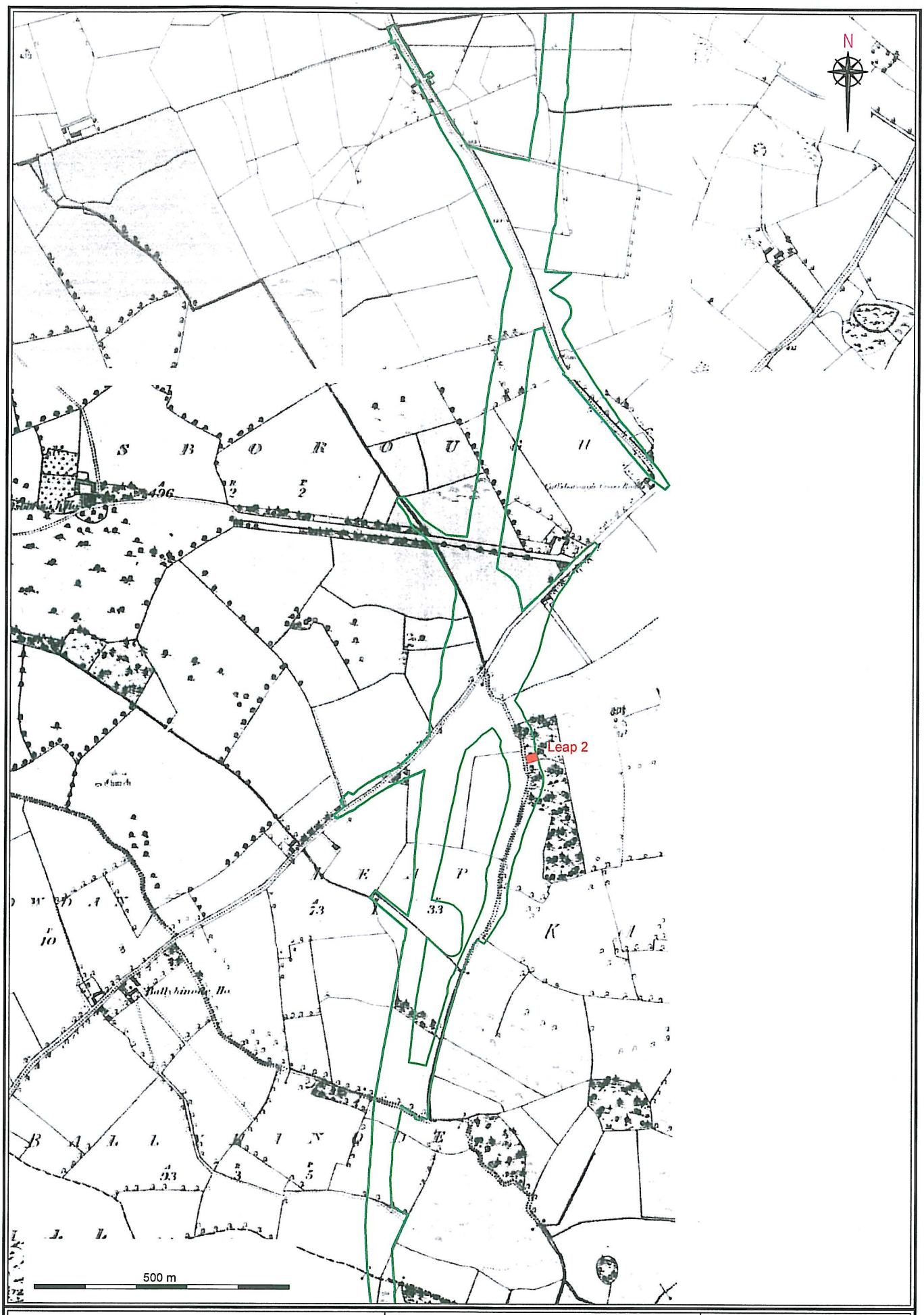
Archaeological Consultancy Services Ltd. *Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth*	*Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2*	*Scale: 1: 60,000 A4*
	Issued for: Archaeological excavation report	*Date: Sept '08*
	Client: Laois County Council	*Origin: ACS Ltd*
		Drawing no.: 05_09_C14002

Figure 2: Location of Contract 1 showing Leap 2



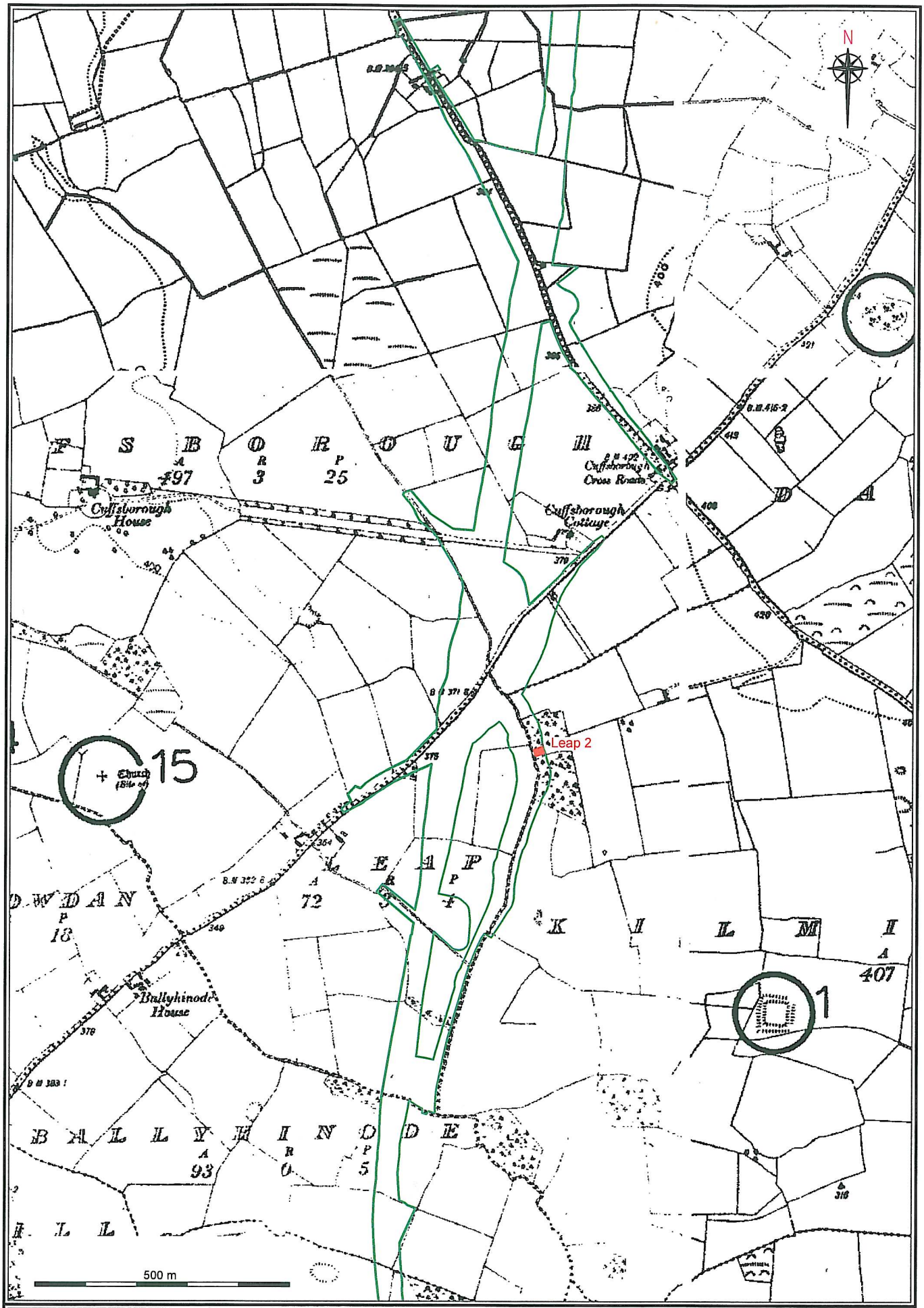
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1: 10,000 A4
		Date: Sept '08
	Issued for: Archaeological excavation report	Origin: OSi Laois 1st Ed. (1839)
	Client: Laois County Council	Drawing no.: 05_09_C14003

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



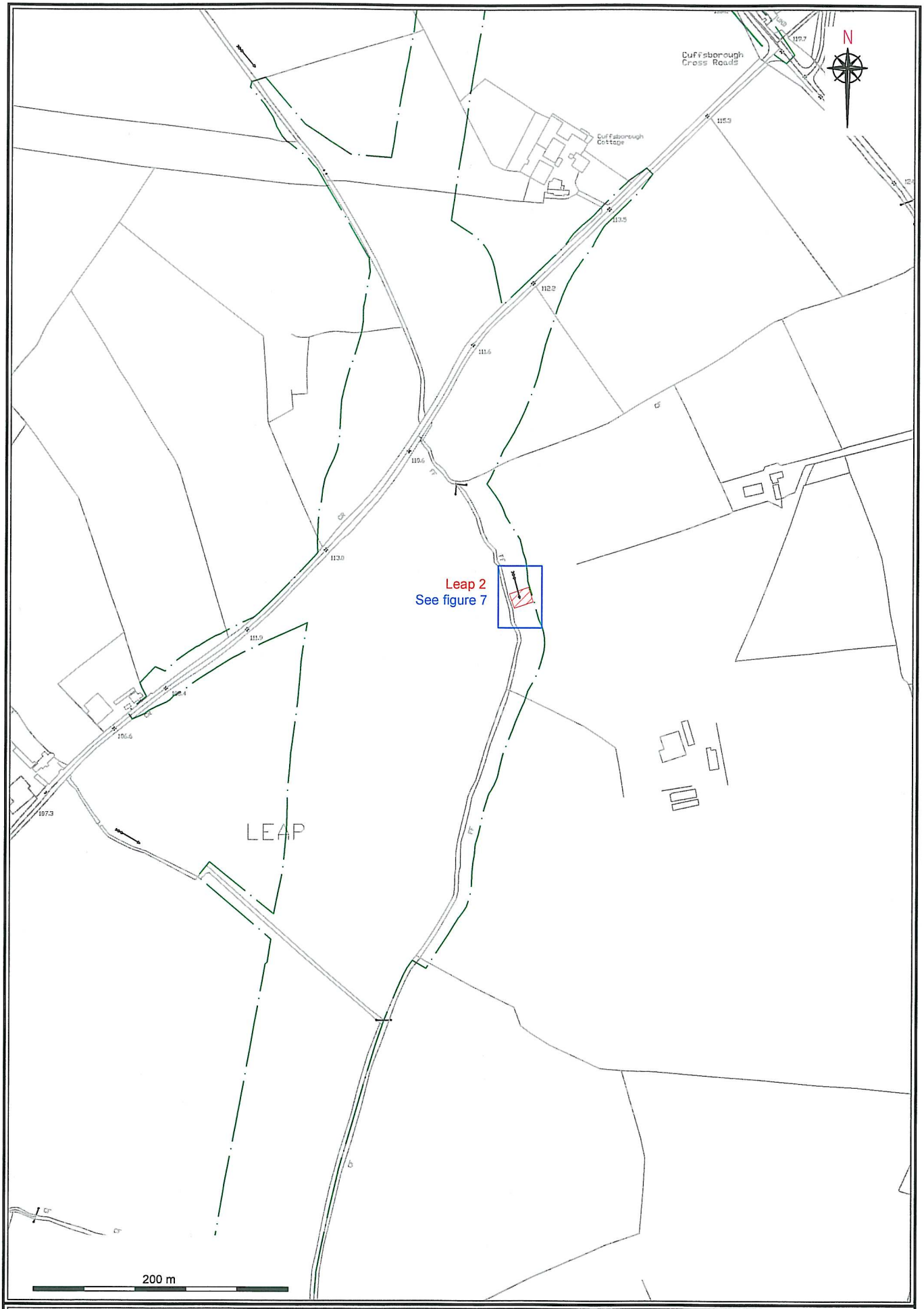
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1: 10,000 A4
		Date: Sept '08
	Issued for: Archaeological excavation report	Origin: OSi Laois 2nd Ed. (1889-91)
	Client: Laois County Council	Drawing no.: 05_09_C14002

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



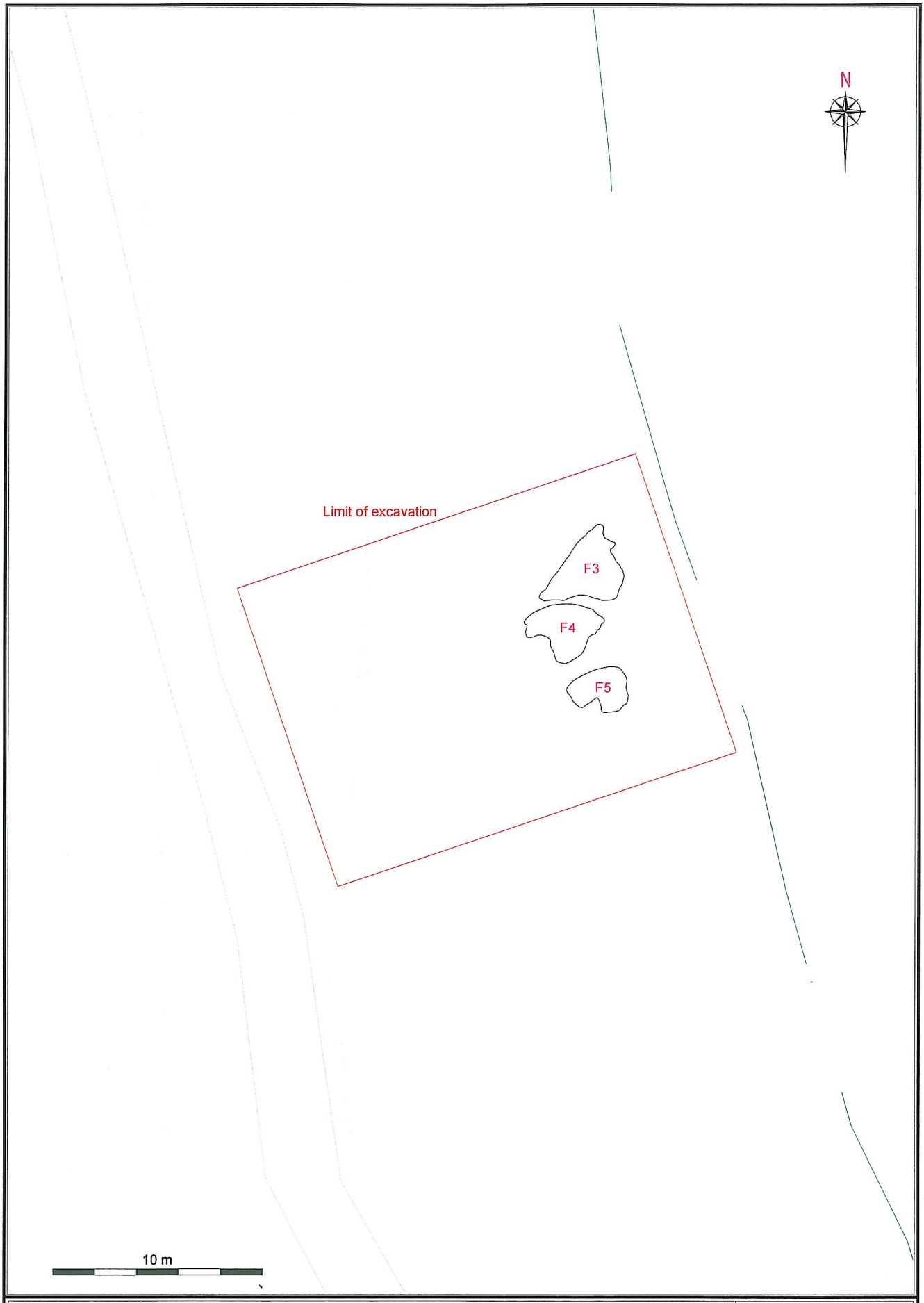
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1: 10,000 A4
		Date: Sept '08
	Issued for: Archaeological excavation report	Origin: OSi Laois SMR 1909
	Client: Laois County Council	Drawing no.: 05_09_C14005

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



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1: 4,000 A4
		Date: Sept '08
	Issued for: Archaeological excavation report	Origin: ACS Ltd
	Client: Laois County Council	Drawing no.: 05_09_C14006

Figure 6: Location of Leap 2



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M7 Portlaoise to Castletown/M8 Portlaoise to Cullahill Motorway Scheme, Co. Laois; Contract 1, Leap 2	Scale: 1:250 A4
		Date: Sept '08
	Issued for: Archaeological Excavation Report	Origin: ACS Ltd.
	Client: Laois County Council	Drawing no.: 05_09_C14007

Figure 7: Detail of archaeological features

Plate 1: Location of Leap 2 along field boundary (05_09_CP829_01)

Plate 2: Remains of ploughed out fulacht fiadh (05_09_CP829_03)