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N3 Meath Consult
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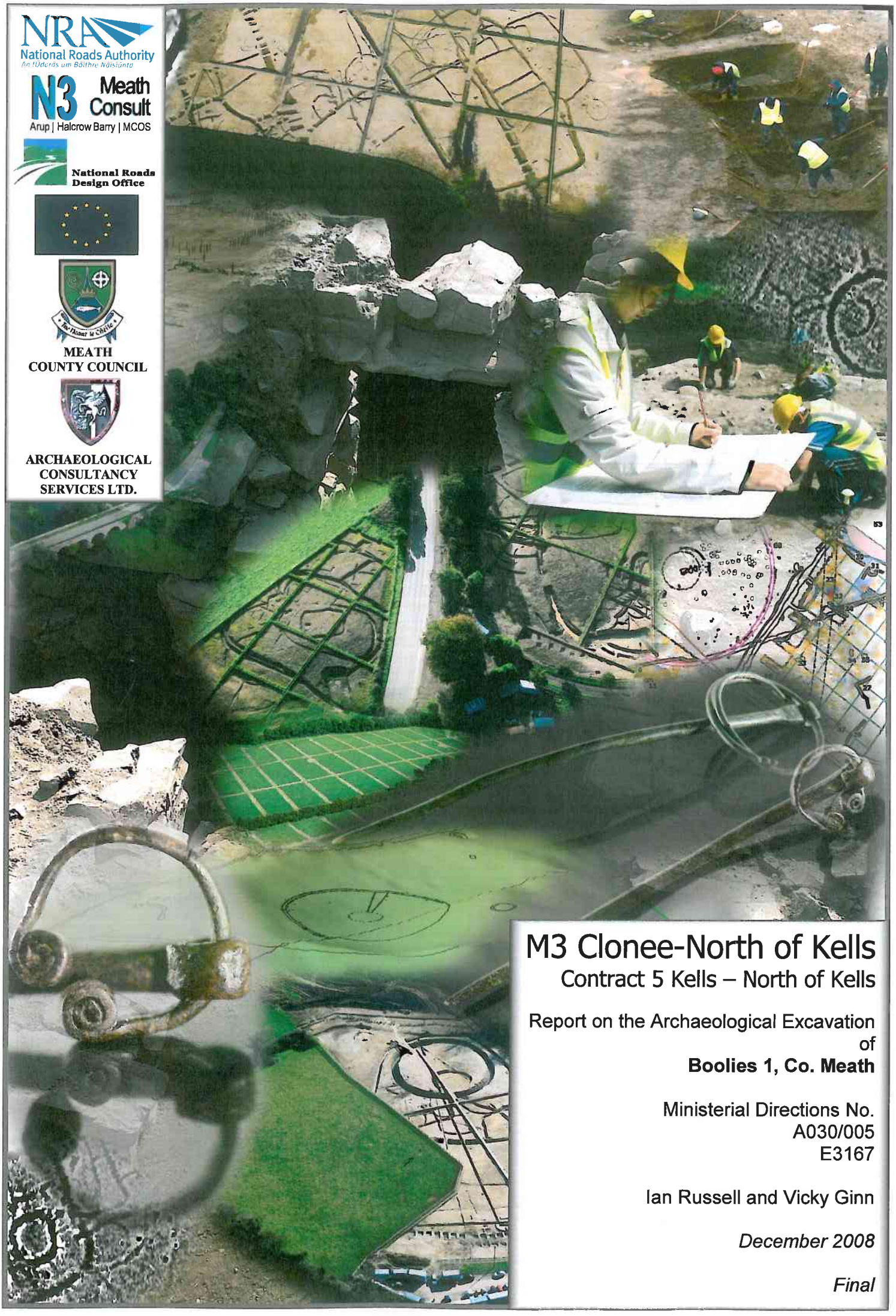

M3 Clonee-North of Kells

Contract 5 Kells – North of Kells

Report on the Archaeological Excavation
of
Boolies 1, Co. Meath

Ministerial Directions No.
A030/005
E3167

Ian Russell and Vicky Ginn

December 2008

Final

PROJECT DETAILS

Project	M3 Clonee–Kells Motorway
Site Name	Boolies 1
Ministerial Direction Number	A030/005
Registration Number	E3167
Senior Archaeological Consultant	Donald Murphy
Site Director	Ian Russell
Excavated	31 October 2006 – 13 November 2006
Client	Meath County Council, National Roads Design Office, Navan Enterprise Centre, Navan, County Meath
Townland	Boolies
Parish	Burry
County	Meath
National Grid Reference	271052 274634
Chainage	81890–81900
Height	98.34m OD
Report Type	Final
Report Status	Submitted
Date of Report	December 2008
Report by	Ian Russell and Vicky Ginn

ACKNOWLEDGEMENTS

This report has been prepared by Archaeological Consultancy Services Ltd on behalf of Meath County Council National Roads Design Office (NRDO) and the National Roads Authority (NRA). The excavation was carried out under Ministerial Directions issued by the Department of the Environment, Heritage and Local Government (DOEHLG) in consultation with the National Museum of Ireland (NMI).

Consulting Engineers - N3 Meath Consult

Engineer – Peter Thorne and Thomas Meagher

Engineer's Representative– Conor Wilkinson

Meath County Council, National Roads Design Office

Senior Engineer – John McGrath

Project Archaeologist – Mary Deevy

Project Liaison Officer – Ambrose Clarke

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

Archaeologist – Martin Reid

Irish Antiquities Division, National Museum of Ireland

Keeper – Nessa O'Connor

NON-TECHNICAL SUMMARY

This site at Boolies 1 was excavated by Archaeological Consultancy Services Ltd (ACS) as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council NRDO and the NRA. The excavation was carried out between 31 October and 13 November 20006 under Ministerial Direction Number A030/005 issued by DOEHLG in consultation with the NMI. Two burnt mounds of charcoal and heat-shattered stone (14m x 12m x 0.19m and 11.50m x 10.50m x 0.24m) were identified during testing. Upon full excavation it was observed that each spread covered two pits which were all filled with similar burnt mound material. One of these, a trough (1.90m x 1.52m x 0.27m), had five stakeholes, probably used to support a wooden lining. The fill of this trough/pit has been dated to 1266 – 1009 BC. There were no finds or animal bones recovered from the site.

CONTENTS

FIGURE LIST

PLATE LIST

1 INTRODUCTION

The site at Boolies 1 (Figures 1–7, Plates 1–2) was identified during advance testing carried out by Gillian McLoughlin of Irish Archaeological Consultancy Ltd during August 2004 under licence number 04E1053 (McLoughlin 2005). Testing revealed the presence of two mounds of burnt material (11.00m x 13.00m x 0.20m and 13.50m x 10.60m x 0.30m) positioned within 10m of each other (McLoughlin 2005). Full resolution of the site occurred in 2006 and excavated these mounds revealing the presence of two pits/troughs under each.

1.1 Development

Meath County Council is constructing 49km of two-lane, dual-carriageway motorway between Clonee and Kells and 10km of single carriageway from Kells to just north of Kells alongside additional road upgrades, realignments and associated ancillary works. The scheme has been subdivided into five separate sections as follows: Clonee to Dunshaughlin (Contract 1), Dunshaughlin to Navan (Contract 2), the Navan Bypass (Contract 3), Navan to Kells and the N52 Kells Bypass (Contract 4), and Kells to North of Kells (Contract 5). This section of the scheme (Contract 5) will commence at the N52 Mullingar Road situated to the southwest of Kells in the townland of Calliaghstown and runs to the northwest, crosses the River Blackwater at Balgree and terminates in the townland of Derver at the existing border between counties Meath and Cavan.

The desk-based study and the field survey for the whole scheme, carried out in 2000–2001, were divided into sections which were investigated by Valerie J Keeley Ltd and Margaret Gowan and Company Ltd. The Record of Monuments and Places, the Sites and Monuments Record, Topographical files, and literary sources were all consulted. This information was augmented by geophysical testing conducted by Bartlett-Clark Consultancy who undertook a magnetometer survey across sample transects which was then supplemented by magnetic susceptibility, and also by GSB Prospection who undertook gradiometer scanning and a detailed gradiometer survey. The Environmental Impact Survey (EIS) compiled this data set to identify approximately 100 sites of interest either along the route or in its proximity (500m of the landtake). Advance archaeological testing was completed in 2004 by ACS and Irish Archaeological Consultancy Services Ltd (IAC). Excavation of the sites identified during testing was conducted by ACS and IAC on behalf of Meath County Council, and the NRA under directions issued by the Minister for the Environment, Heritage and Local Government following consultation with the Director of the National Museum of Ireland.

2 EXCAVATION

Excavation occurred between 31 October 2006 and 13 November 2006 under Ministerial Direction Number A030/005 issued to Meath County Council NRDO. The work was carried out by Ian Russell on behalf of ACS. The topsoil (0.30m depth) was removed by machine equipped with a toothless grading bucket. A yellow-orange gravel (F5) comprised the subsoil.

All archaeological features exposed were recorded and excavated by hand using the single context method. Each feature was assigned a context number, with the exception of six stakeholes F16–F20 where the fills and cuts were given the same number. Where appropriate, samples were retrieved in an attempt to obtain evidence for the date and function of these features (Appendix 3). Unless otherwise stated, the features have been measured length-width-depth. All measurements are in metres. All finds were numbered according to the requirements of the National Museum of Ireland from 1 onwards consistent with licence and feature number.

2.1 Results

Twenty contexts were identified within the excavation area, all of which were of archaeological interest (Figures 7–9, Plates 1–2). Full details of all these contexts are located in Appendix 1.

A mound of heat-shattered, burnt stone and charcoal flecks (F6: 14.00m x 12.00m x 0.19m), revealed during testing, was relocated. When F6 was removed one irregularly shaped pit (F14: 1.63m x 1.19m x 0.18m) and one sub-rectangular trough (F15: 1.90m x 1.52m x 0.27m; Plates 3–4) were revealed. F14 and F15 each contained one fill of similar burnt mound material (F10 and F11, respectively). A sample of charcoal derived from hazel (*corylus avellana)* was retrieved from the fill (F11) of the sub-rectangular trough (F15) (Appendix 5). This has been dated to 1266 – 1009 BC (Beta 247135; Appendix 4). Five stakeholes (F16–F20) were located in the corners of F15's base (two in the northwest corner) all of which contained burnt mound material which was sampled (See Appendix 3). A small quantity of cremated bone (0.7g) was retrieved from one of these stakeholes (F20). The white colour of this sample of bone indicated that it was exposed to temperatures in excess of 600ºC. Consequently, the individual bone fragments were too small to determine if the bone was human or animal (Appendix 5).

Located less than 10m away was a second mound of heat-shattered, burnt stones and charcoal flecks (F7: 11.50m x 10.50m x 0.24m), part of which extended beyond the area of excavation. Two pits containing one fill of burnt mound material were also located beneath this mound,

F12 (2.00m x 1.05m x 0.71m, fill F8) and F13 (2.30m x 1.80m x 0.33m, fill F9) (Plates 5–6). F12 was sub-rectangular with steep sides and a flat base and may represent a trough.

No animal bone was revealed during the excavations.

2.2 Finds
No artefacts were recovered.

3 DISCUSSION

3.1 Form and function
The two burnt mound complexes at Boolies 1 are characteristic of burnt mound sites. Each mound (F6 and F7) has a pit (F14 and F13, respectively) and a possible trough (F15 and F12, respectively) associated with it. The stakeholes (F16–F20) associated with F15 and positioned in its corners would have secured a wooden lining, of which no other trace survived.

The shattered nature of the stone, often sandstone, associated with these sites and their characteristic proximity to a water source indicates that water was heated by the stones. Traditional interpretations of burnt mound complexes centre upon the use of this hot-stone technology designed to heat water (O'Neill 2000, 19) for cooking, bathing, textile dyeing (Buckley 1990a, 9) or brewing (Quinn & Moore 2007) although multifunctional sites are also probable. When the activity ceased the heat-shattered and fire-cracked stones would have been cleared from the trough and either placed in pits, such as those in association with the troughs (F14 and F13) or left to form mounds of such material.

3.2 Date and sequence
Burnt mounds most often date to the Bronze Age (Brindley & Lanting 1990) but such sites have been dated from as early as the late Neolithic (see Clowanstown 1, A008/031) to as late as the medieval period (Walsh 1990). The lack of associated artefacts is a common feature of burnt mound sites and the dating of the activities conducted therein is reliant on radiocarbon analysis of any suitable charcoal. At Boolies 1, it was only possible to date the trough associated with the northern burnt mound. This returned a date of 1266 – 1009 BC (Beta 247135; Appendix 4). It is unlikely, although not improbable, that the two burnt mounds at Boolies 1 were used concurrently; they most likely represent two phases of use on the site.

This site represents one of approximately 61 on the M3 Motorway Scheme where similar burnt mounds were excavated including adjacent examples at Boolies 2 (A020/004), Chapelbride 5 (A030/006) and Drumbaragh 3 (A030/011) which suggests the nearby presence

of prehistoric settlement, as found at Chapelbride 4 (A030/007) and Drumbaragh 1 (A030/013).

4 CONCLUSIONS

Boolies 1 (A030/005) was excavated from 31 October to 13 November 2006 by Ian Russell (ACS) as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council NRDO and the NRA. The two proximate mounds of heat-shattered, burnt stone and charcoal which were identified during testing were fully excavated in 2006. Beneath each of these mounds a pit and a trough were located, both of which were filled with similar, burnt mound material. The trough associated with the northern mound was dated to 1266 – 1009 BC (Beta 247135; Appendix 4). Five stakeholes were cut into one of the troughs and indicate the presence of a wooden lining. No artefacts or animal bones were recovered and the dating of the site is therefore dependent on radiocarbon dating.

5 REFERENCES

Brindley, AL & Lanting, J 1990 'The dating of fulachta fiadha' *in* Buckley, V (ed.), *Burnt Offerings: International Contributions to Burnt Mound Archaeology*, 55–56. Dublin, Wordwell.

Buckley, V 1990a 'Preface' *in* Buckley, V (ed.), *Burnt Offerings: International Contributions to Burnt Mound Archaeology*, 9. Dublin, Wordwell.

Buckley, V 1990b (ed.), *Burnt Offerings: International Contributions to Burnt Mound Archaeology*, 9. Dublin, Wordwell.

McLoughlin, G 2005 *Report on Archaeological Assessment at Testing Area 2, Boolies, Co. Meath, Licence Number: 04E1053*. Unpublished report prepared for Irish Archaeological Consultancy Ltd.

O'Neill, J 2000 'Just another fulachta fiadha story', *Archaeology Ireland* 52, 19.

Quinn, B & Moore, D 2007 'Ale, brewing and *fulachta fiadh*', *Archaeology Ireland*, Volume 21 No.3 Issue No. 81.

Walsh, C 1990 'A Medieval Cooking Trough from Peter Street, Waterford' *in* Buckley, V (ed.), *Burnt Offerings: International Contributions to Burnt Mound Archaeology*, 47–48. Dublin, Wordwell.

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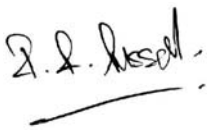

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Ian Russell and Vicky Ginn

December 2008

APPENDIX 1 *Context Details*

Boolies 1: A030/005											
No	**Type**	**Fill of/ Filled with**	**Strat above**	**Strat below**	**Description**	**Interpretation**	**Group**	**Artefacts**	**Animal bone**	**Cremated bone**	**Samples**
1-3					used previously during Topsoil Assessment						
4	topsoil	N/A	5	N/A	Grey brown loam 0.30-40m in depth	topsoil					
5	subsoil	N/A	N/A	4	Grey silt	subsoil					
6	spread	N/A	10, 11	4	dark-brown material with frequent charcoal flecks and sub-angular and angular stones. 14m x 12m x 0.19m	burnt mound spread					#4 soil and charcoal
7	spread	N/A	8, 9	4	loose, dark-brownish-grey clay with frequent charcoal flecks and angular, burnt stones. 11.50m x 10.50m x 0.24m	burnt mound spread					
8	fill	12	12	7	loose, dark-grey clay with frequent sub-angular, angular and burnt stones and charcoal flecks. 2.00m x 1.05m x 0.70m	fill of pit 12					#1 soil and charcoal
9	fill	13	13	7	dark-black clay with frequent sub-angular, angular, burnt stones and charcoal flecks. 2.30m x 1.80m x 0.35m	fill of pit 13					
10	fill	14	14	6	dark-brown clay with frequent charcoal flecks and sub-angular, angular, burnt stones. 1.60m x 1.19m x 0.19m	fill of pit 14					#2 soil and charcoal
11	fill	15	15	6	dark-black clay with frequent charcoal flecks and sub-angular, angular and burnt stones. 1.90m x 1.52m x 0.27m	fill of trough 15					#3 soil and charcoal
12	cut	8	5	8	sub-rectangular, east-west cut (2.00m x 1.05m x 0.71m) with rounded corners, a gradual break of slope, steep sides and a sharp break of slope (imperceptible in south) leading to a flat base	possible trough/ pit					
13	cut	9	5	9	oval/sub-rounded, east-west cut (2.30m x 1.80m x 0.33m) with a gradual break of slope, steep sides and a gradual break of slope (imperceptible in west) leading to an uneven base	possible pit					

14	cut	10	5	10	irregular cut (1.63m x 1.19m x 0.18m) with rounded corners, a gradual break of slope, concave sides and a gradual break of slope leading to the base	irregular pit					
15	cut	11	5	11	sub-rectangular cut (1.90m x 1.52m x 0.27m) with a sharp break of slope and concave sides	trough					
16	cut and fill	N/A	15	11	dark-brownish-black clay with moderate charcoal flecks and angular, small stones. Dimensions unknown. Located within trough 15	stakehole, used to support wood lining, NW corner					#5 soil and charcoal
17	cut and fill	N/A	15	11	dark-brownish-black clay with moderate charcoal flecks and angular, small stones. Dimensions unknown. Located within trough 15	stakehole, used to support wood lining, NW corner					#6 soil and charcoal
18	cut and fill	N/A	15	11	dark-brownish-black clay with moderate charcoal flecks and angular, small stones. Dimensions unknown. Located within trough 15	stakehole, used to support wood lining, SW corner					#7 soil and charcoal
19	cut and fill	N/A	15	11	dark-brownish-black clay with moderate charcoal flecks and angular, small stones. Dimensions unknown. Located within trough 15	stakehole, used to support wood lining, NE corner					#8 soil and charcoal
20	cut and fill	N/A	15	11	dark-brownish-black clay with moderate charcoal flecks and angular, small stones. Dimensions unknown. Located within trough 15	stakehole, used to support wood lining, SW corner					#9 soil and charcoal

APPENDIX 2 *Finds List*

There were no artefacts associated with Boolies 1.

APPENDIX 3 *Sample List*

Sample No	Context No	Results
1	8	charcoal flecks in residue
2	10	3g charcoal flecks in residue
3	11	organic material in flot, 7g charcoal flecks in residue
4	6	8g charcoal flecks in residue
5	16	nothing
6	17	charcoal flecks in residue
7	18	2g charcoal flecks in residue
8	19	2g charcoal flecks in residue
9	20	2g cremated bone in residue

APPENDIX 4 *Radiocarbon Dating*

Context	Sample No	Material	Species id/	Lab	Lab code	Date Type	Date	Conventional Date (BP)	13C/12C Ratio ‰
11; Fill of pit F15, below mound 1	3	Charcoal	Hazel (786 mg)	Beta	247135	AMS (std)	1266 – 1009 BC	2930±40	-24.9

APPENDIX 5 *Environmental Report*

Archaeological Services
University of Durham

Boolies 1, M3 Motorway Project, Co Meath, Ireland

plant macrofossil, charcoal and cremated bone analysis

on behalf of
Archaeological Consultancy Services Ltd

Report 2070
November 2008

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Boolies 1, M3 Motorway Project, Co Meath, Ireland

plant macrofossil, charcoal and cremated bone analysis

Report 2070
November 2008

Archaeological Services Durham University

on behalf of

Archaeological Consultancy Services Ltd
Unit 21 Boyne Business Park, Greenhills, Drogheda, Co. Louth, Ireland

Contents

1. Summary

The project

1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Boolies 1, Co Meath, Ireland, at which burnt mound activity was identified. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the fill (context 11) of pit C15, and the fill (context 20) of a stakehole within this pit. A radiocarbon date of charcoal from context (11) indicated a Bronze Age date.

Results

1.2 The environmental analysis suggests that deciduous woodland grew locally, which would have provided an important resource for fuel for the burnt mound activities. Hazel, ash and alder were the most frequently recorded charcoal taxa, but Maloideae, cherries and willow/poplar were also present.

1.3 A small amount of well-oxidised cremated bone (0.7g) was recovered from context (20). It was not possible to tell whether the bone was human or animal.

2. Project background

Location and background

2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Boolies 1, Co Meath, Ireland (NGR 271052 274634). Two burnt mounds of charcoal and heat-shattered stone were revealed. Each spread covered two pits, one of which had five stakeholes, which were probably used to support a wooden lining. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the fill (context 11) of pit C15, and the fill (context 20) of a stakehole within this pit.

Objective

2.2 The objective was to analyse the plant macrofossils, charcoal, and cremated bone from the site, in order to provide information about the diet, land use and local environment.

Dates

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

Personnel

2.4 Sample processing was undertaken by Archaeological Consultancy Services Ltd. Plant macrofossil and charcoal analysis were carried out by Mr Lorne Elliott. Cremated bone analysis was by Dr Anwen Caffell. The residues were sorted by Dr Charlotte Henderson and Mr Bryan Atkinson.

Archive

2.5 The licence number is A030/005. The charcoal, flots and bone samples are currently held at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Plant macrofossil and charcoal analysis

Methods

3.1 The residues were examined for plant remains, shells, bones, pottery sherds and metalworking debris. The dry flots were scanned at up to x60 magnification using a Leica MZ7.5 stereomicroscope for charred and waterlogged plant remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

3.2 Charcoal was collected from the residues and flots and added to pre-sorted material. Following Boardman (1995), identifications were made on all fragments >4mm. The transverse, radial and tangential sections were examined at up to x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Hather (2000) and Schweingruber (1978), and modern reference material held in the

Environmental Laboratory at Archaeological Services Durham University. The different species were weighed separately. A single entity of hazel charcoal from context (11), weighing 786mg, was provided for radiocarbon dating.

Results

3.3 Charcoal and heat-shattered stones were present in the residues. The charcoal included alder, hazel, ash, Maloideae (Hawthorn, whitebeams, apple and pear), cherries and willow/poplar. Charred plant macrofossils were absent from both contexts. The results of the environmental analyses are presented in Table 3.1 and Figure 3.1.

Table 3.1: Environmental analysis from Boolies 1

Context	11	20
Sample	3	9
Feature	Pit	Stakehole
Material available for radiocarbon dating	✓	✓
Volume of flot (ml)	30	20
Residue matrix (relative abundance)		
Charcoal	3	2
Cracked, burnt stones	2	1
Flot matrix (relative abundance)		
Charcoal	2	2
Charcoal (g/number of fragments)		
Total charcoal (g)	19.279	9.380
Percentage of sample analysed	100	100
Total charcoal analysed >4mm (g)	9.006	2.232
Number of analysed charcoal fragments >4mm	78	39
Alnus glutinosa (Alder)	1.040 (12F)	0.774 (15F)
Corylus avellana (Hazel)	2.712 (26F)	0.276 (7F)
Corylus/Alnus (Hazel/Alder)	1.374 (11F)	0.347 (5F)
Fraxinus excelsior (Ash)	1.422 (12F)	0.140 (2F)
Maloideae (Hawthorn, whitebeams, apple, pear)	0.193 (1F)	0.075 (1F)
Prunus spp (Cherries)	0.931 (4F)	-
Salicaceae (Willow or poplar)	-	0.282 (5F)
Diffuse porous	0.982 (8F)	0.209 (3F)
Unidentified >4mm fraction	0.352 (4F)	0.129 (1F)
Unidentified <4mm fraction	10.273	7.148

F = number of charcoal fragments.
Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

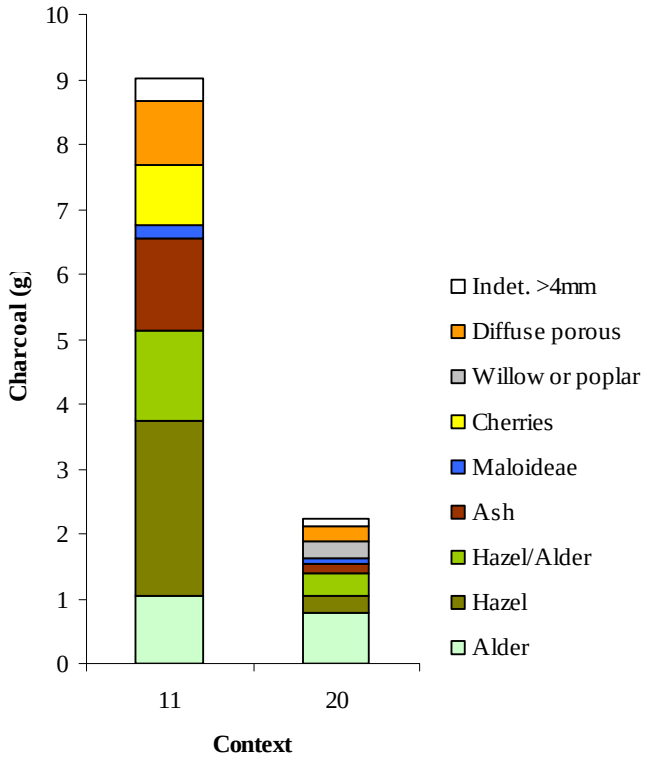


Figure 3.1: Proportions of identified charcoal from Boolies 1

Discussion

3.4 The charcoal was in a poor condition, and showed orange mineral discolouration. This is a common phenomenon of features associated with burnt mounds, as the waterlogged conditions of the troughs can result in the charcoal incorporating minerals such as calcium and iron, which hinders identification (Stuijts 2007).

3.5 The charcoal in the fills is likely to reflect wood collected near the site, and therefore the results suggest that deciduous scrub woodland was growing locally. Ash would have formed a higher canopy, with hazel, cherries and Maloideae growing in the understorey or by the woodland margins. Alder would have occupied wetland areas, for example along riverbanks or in carr vegetation. Willow and poplar charcoal cannot be differentiated with certainty (Hather 2000), and therefore the Salicaceae charcoal may derive from willows growing in similar wetland areas to the alders, or poplar trees which would have thrived on rich, alluvial soils.

3.6 The charcoal probably relates to fuel used for burnt mound activities. A range of wood species appear to have been employed, but the results are broadly in line with a recent study of charcoal from Bronze Age sites in central and western Ireland, which has provided evidence that hazel, alder, ash and oak were the main trees selected for fuel on burnt mound sites (O'Donnell 2007).

It has been suggested that this choice of fuel reflects the marginal situation of most burnt mounds, between wet and dryland areas (ibid).

4. Cremated bone analysis

Methods

4.1 Burnt bone was discovered in the fill (context 20) of a stakehole within pit (C15), located beneath a burnt mound. The bone 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.

Results and interpretation

4.2 Summary data is presented in Table 4.1, and the fraction weights and fragment size data are given in Table 4.2.

4.3 Context (20) contained a very small amount of cremated bone, weighing 0.7g. The fragment size was moderate, with the largest fragment measuring 22.7mm and all the bone located in the largest sieved fraction (Table 4.2).

Table 4.1: Summary of cremated remains

Context	Context Detail	Bone Colour	Species	Weight (g)
20	Fill of stakehole within pit (C15)	White	Unknown	0.7

4.4 The bone was white in colour suggesting exposure to temperatures in excess of *c.* 600ºC with a plentiful supply of oxygen (McKinley 2004).

4.5 The fragments were examined with a view to identification, but it was not possible to determine whether the bone was human or animal.

Table 4.2: Fraction weights and fragment size

Context	Total Weight	Fraction Weights						Max. Frag Size
		>10mm		5-10mm		2-5mm		
	g	g	%	g	%	g	%	mm
20	0.7	0.7	100.0	0.0	0.0	0.0	0.0	22.7

5. Sources

Boardman, S J, 1995 Charcoal and charred macrofossils, in K, Branigan & P, Foster (eds) *Barra: archaeological research on Ben Tangaval, Sheffield*: SEARCH Volume **1**, 149-157

Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*, London

O'Donnell, L, 2007 Charcoal and wood, in Grogan, E, O'Donnell, L, & Johnston, P, *The Bronze Age landscapes of the Pipeline to the West, an integrated archaeological and environmental assessment*, Wicklow

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

Schweingruber, FH, 1978 *Microscopic wood anatomy*, Birmensdorf

Stace, C, 1997 *New Flora of the British Isles*, 2nd Edition, Cambridge

Stuijts, I, 2007 Wood and Charcoal Research in Ireland, in Murphy, EM & Whitehouse, NJ (eds), *Environmental Archaeology in Ireland*, Oxford

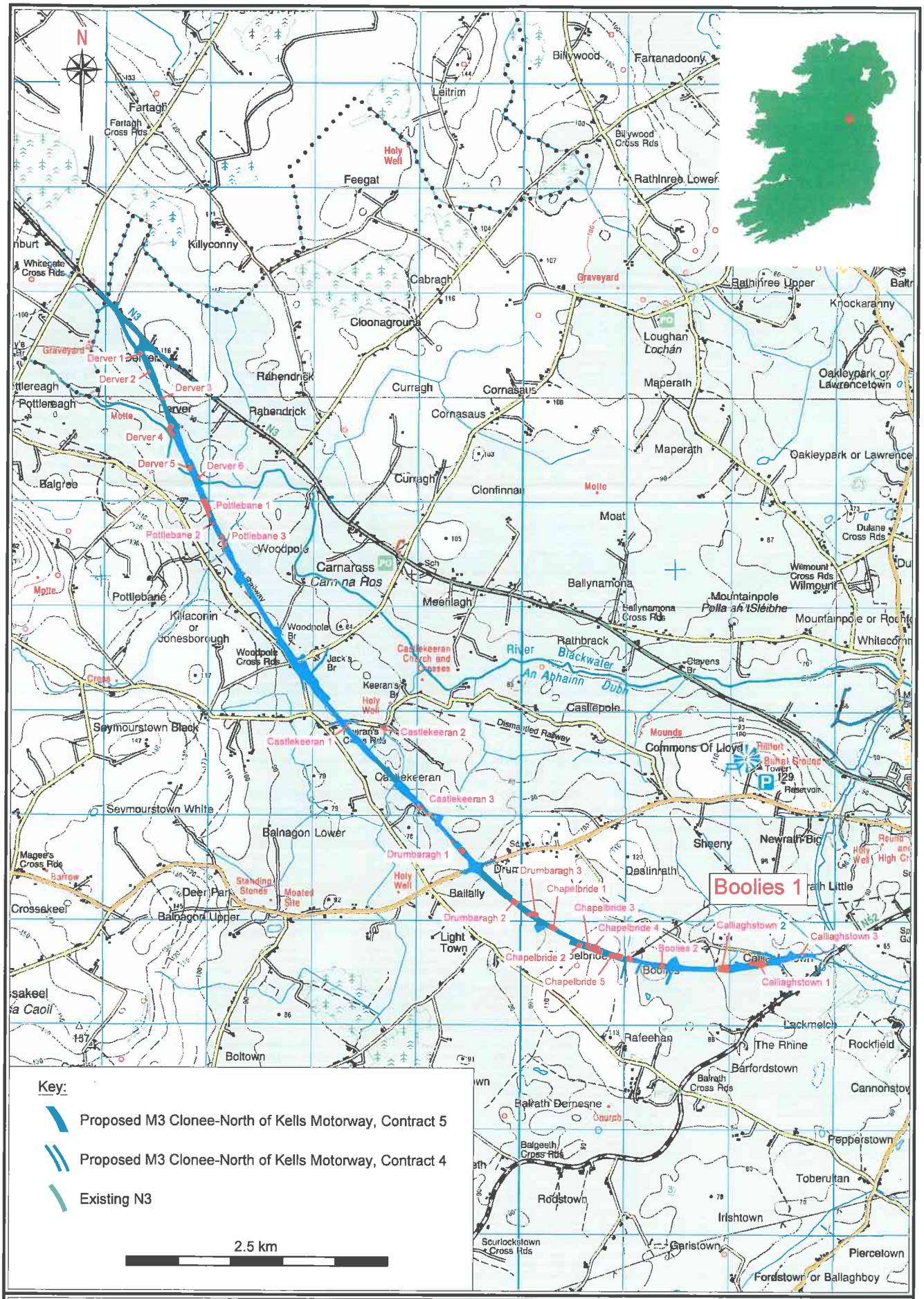
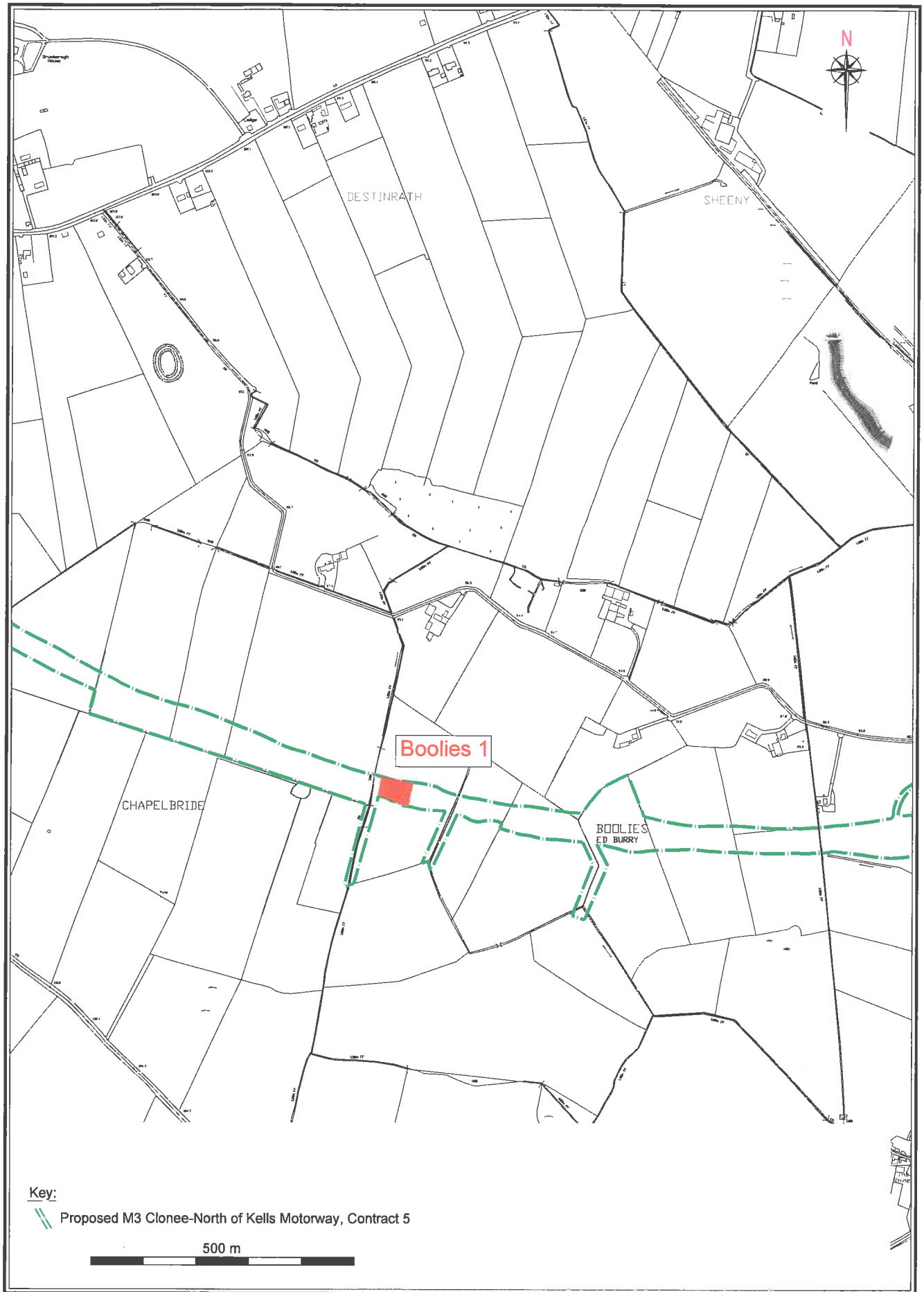


Figure 1: Location of Boolies 1



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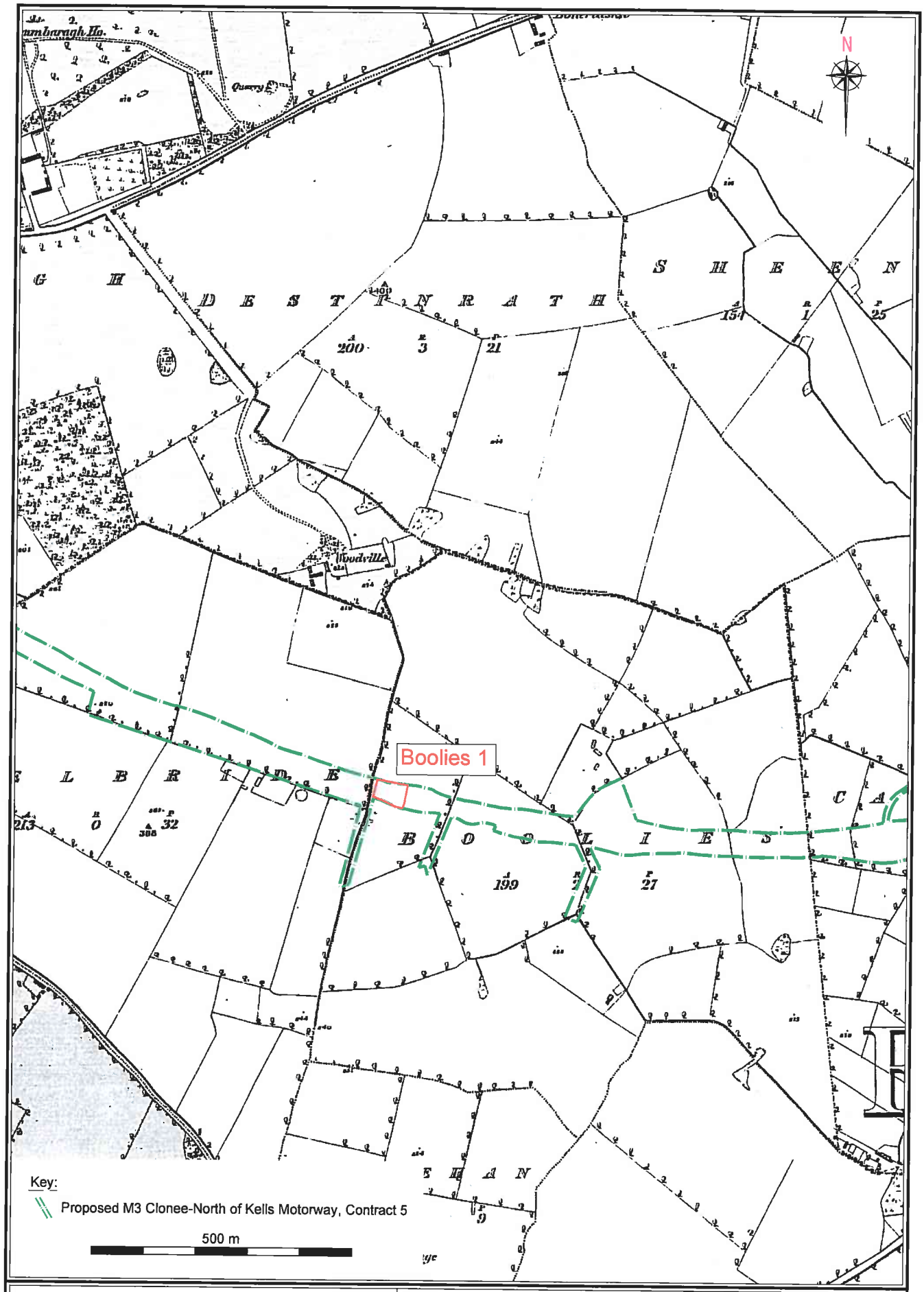
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: Client/ACS Ltd.
		Drawing no.: 04_01_C9102

Figure 2: Location of Boolies 1 on current OS background



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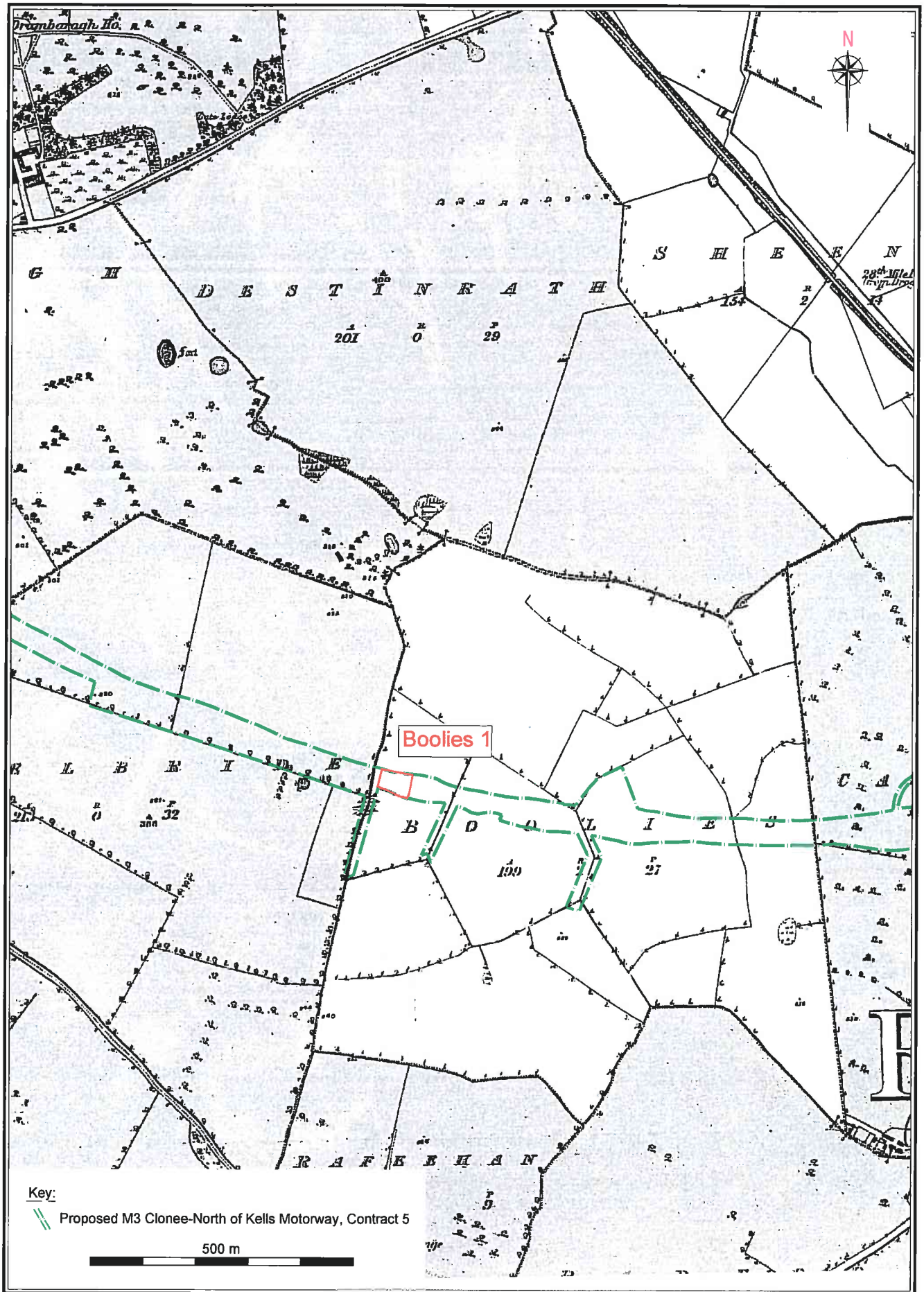
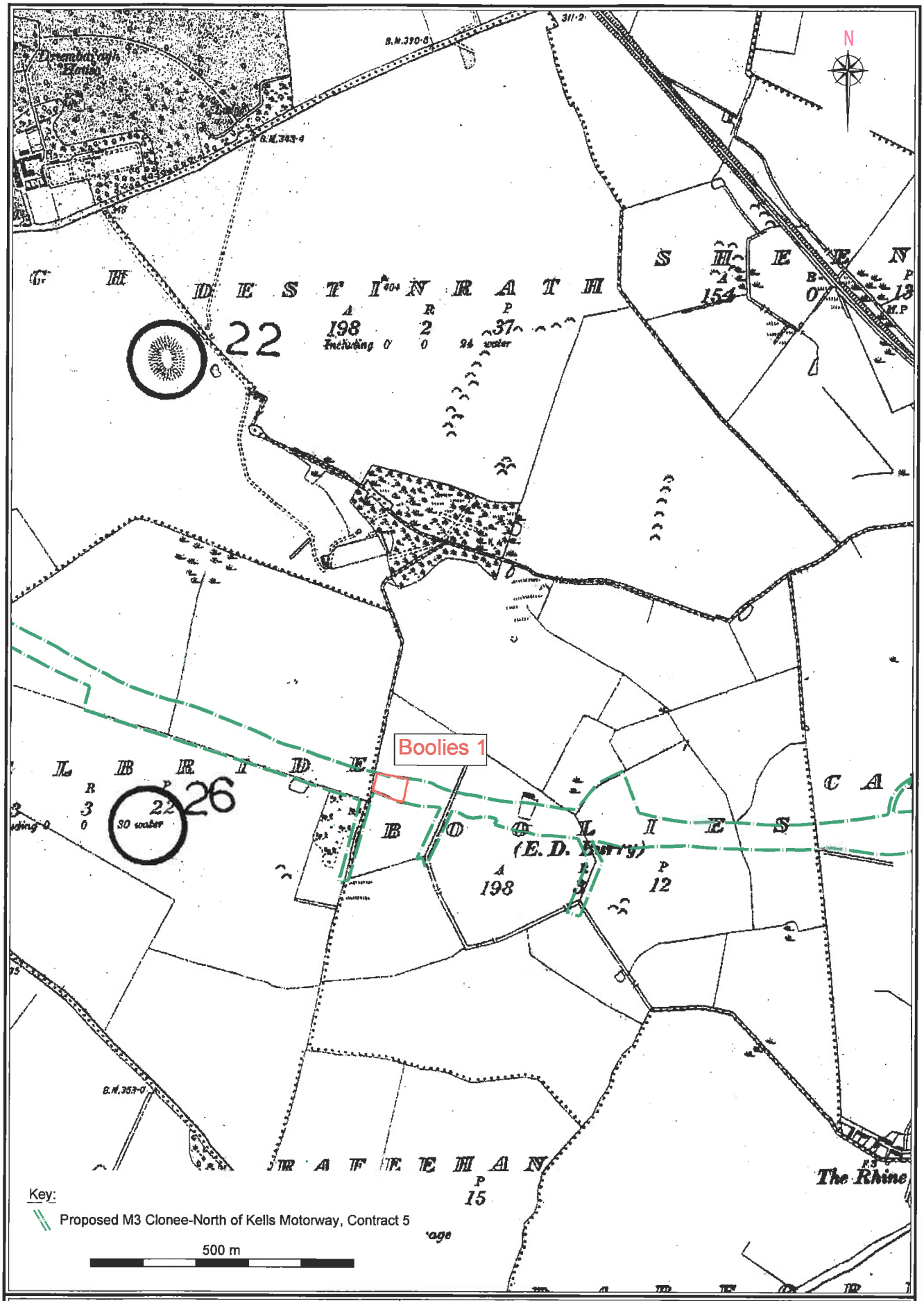
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: OSi (1836)
		Drawing no.: 04_01_C9103

Figure 3: Boolies 1, extract from 1st edition OS map, Meath sheet 16



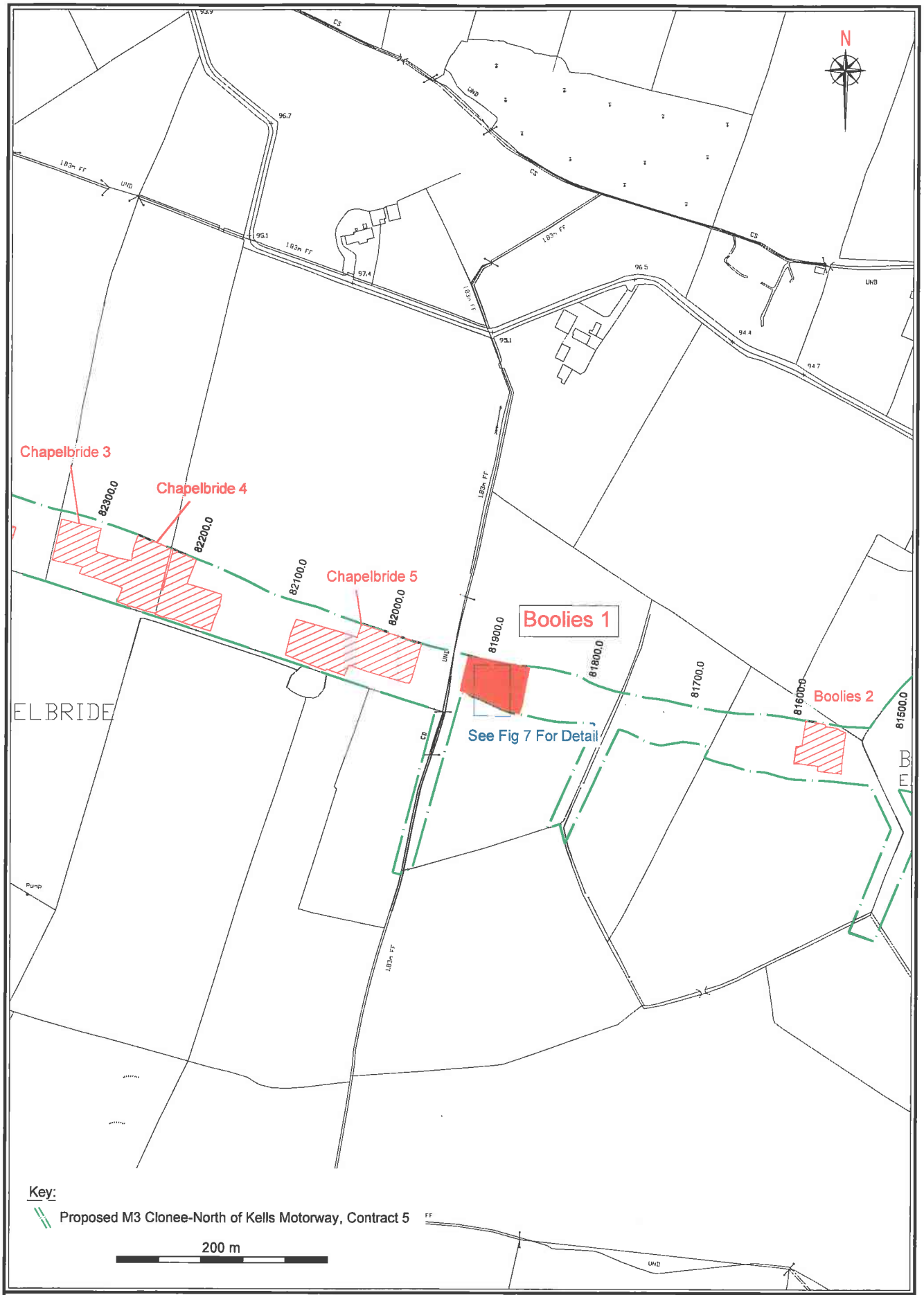
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:10,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: OSi (1882)
	Client: Meath County Council	Drawing no.: 04_01_C9104

Figure 4: Boolies 1, extract from 2nd edition OS map, Meath sheet 16



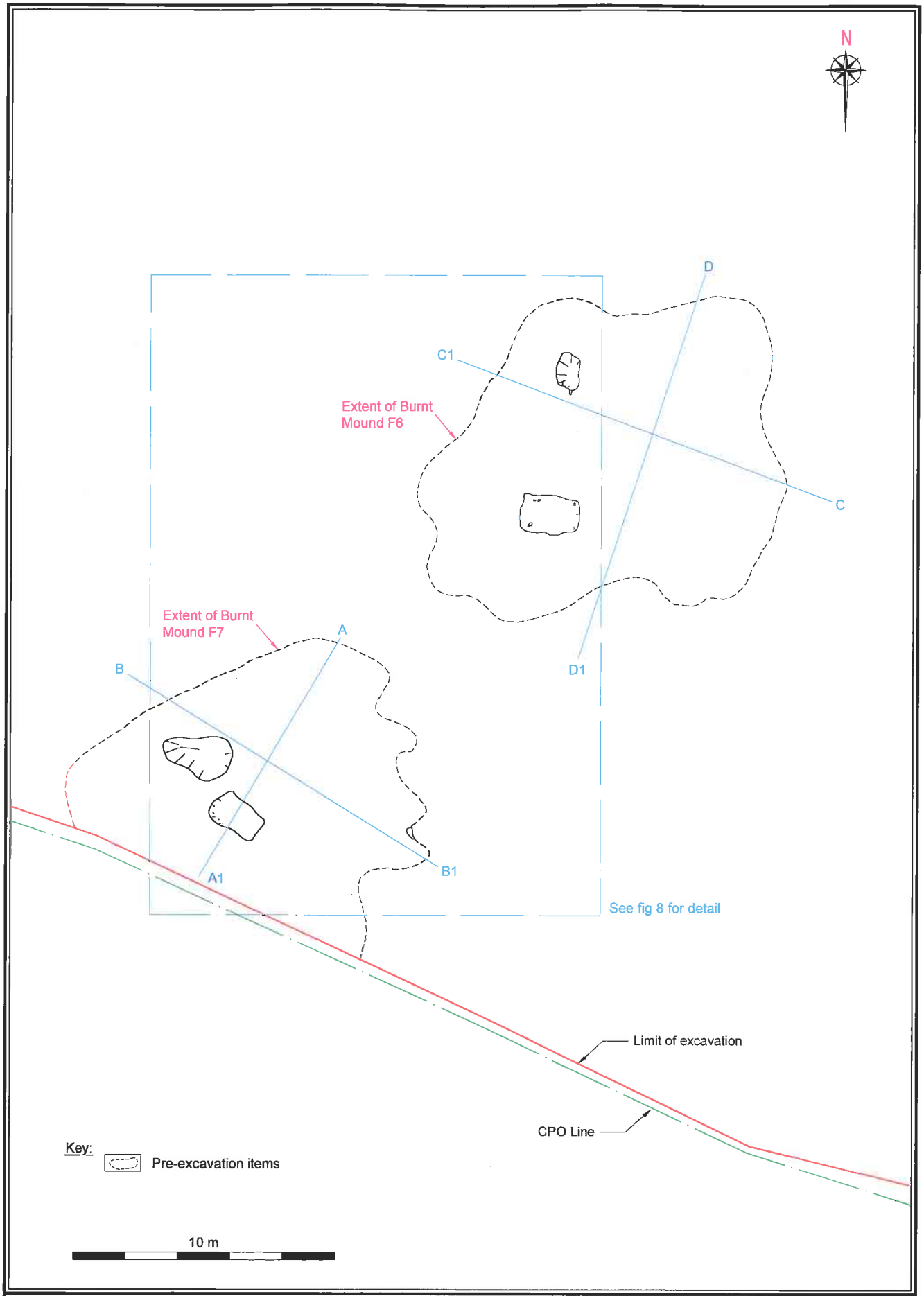
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:10,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: OSi (1910)
	Client: Meath County Council	Drawing no.: 04_01_C9105

Figure 5: Boolies 1, extract from 3rd edition OS map, Meath sheet 16



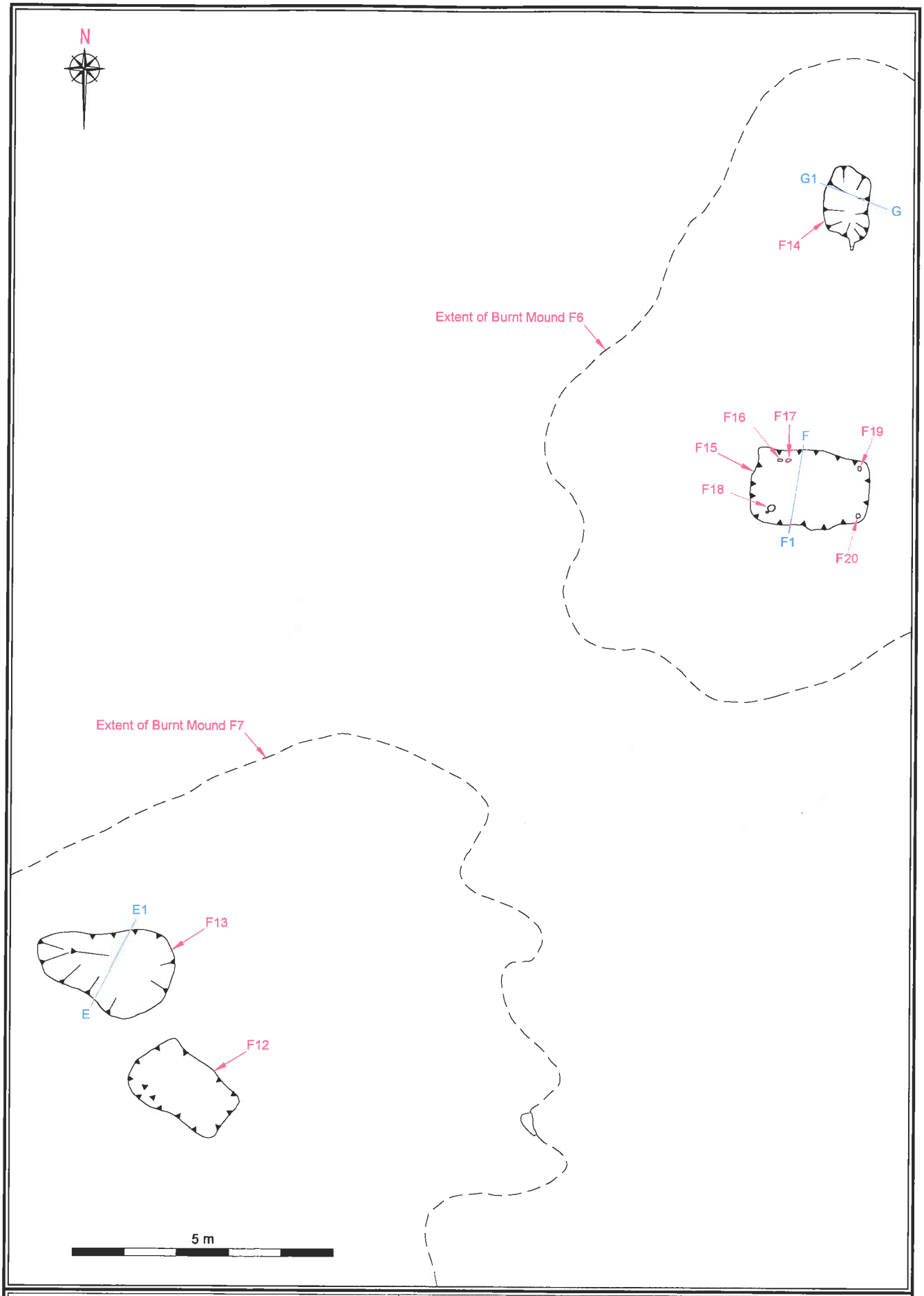
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:5,000 A4
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: Client/ACS Ltd.
		Drawing no.: 04_01_C9106

Figure 6: Detailed location of Boolies 1



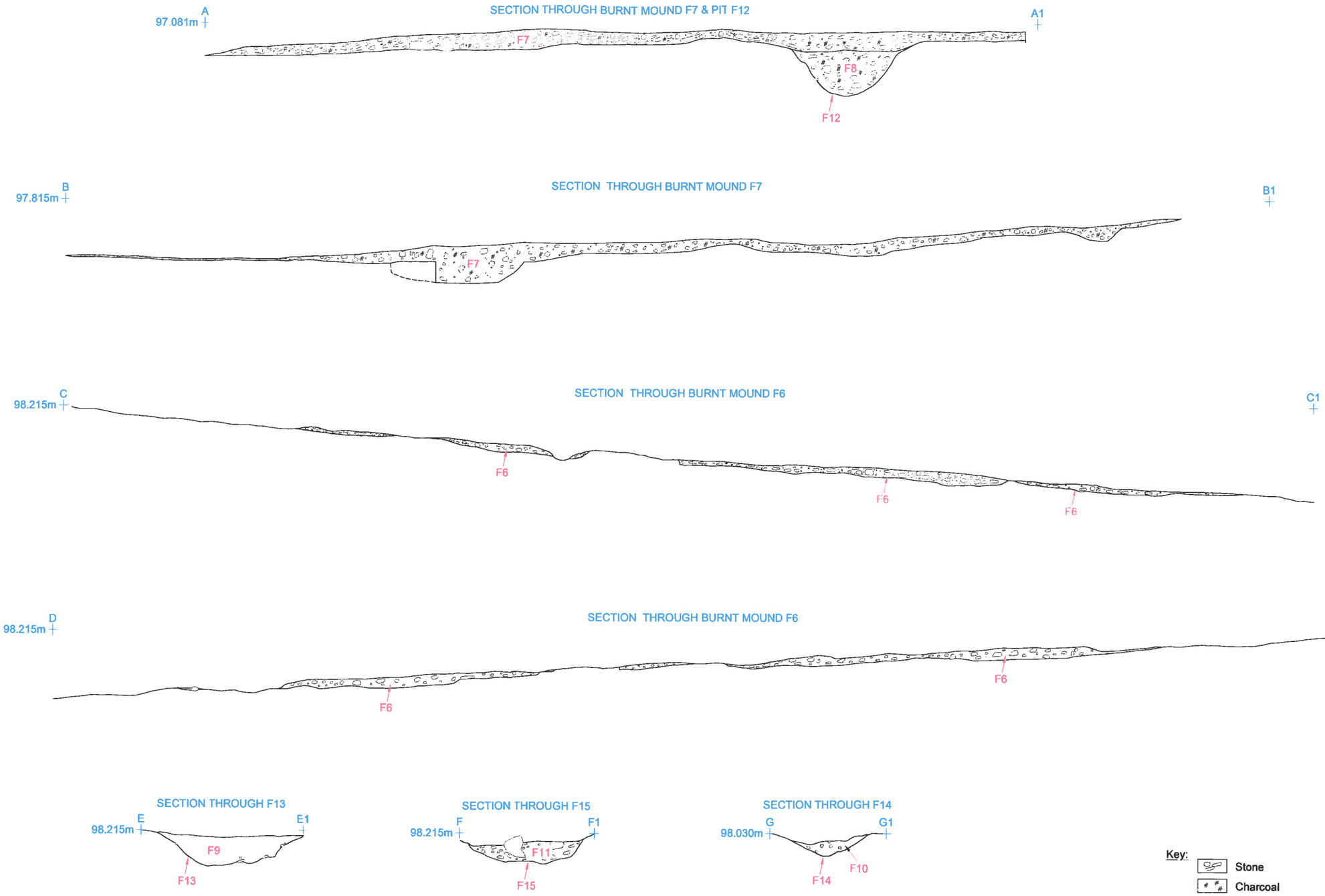
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:200 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: Client/ACS Ltd.
	Client: Meath County Council	Drawing no.: 04_01_C9107

Figure 7: Pre- and post-excavation features at Boolies 1



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:100 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: Client/ACS Ltd.
	Client: Meath County Council	Drawing no.: 04_01_C9108

Figure 8: Detail of features



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth

Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 1	Scale: 1:50 A3
	Date: Jul '08
Issued for: Excavation Report	Origin: Client/ACS Ltd.
Client: Meath County Council	Drawing no.: 04_01_C9109

Figure 9: Sections of Boolies 1

Plate 1: Pre-excavation of both burnt mounds, from the northwest (04_01_Boolies 1_CP03_3)

Plate 2: Spread F7, from the north (04_01_ Boolies 1_CP03_1)

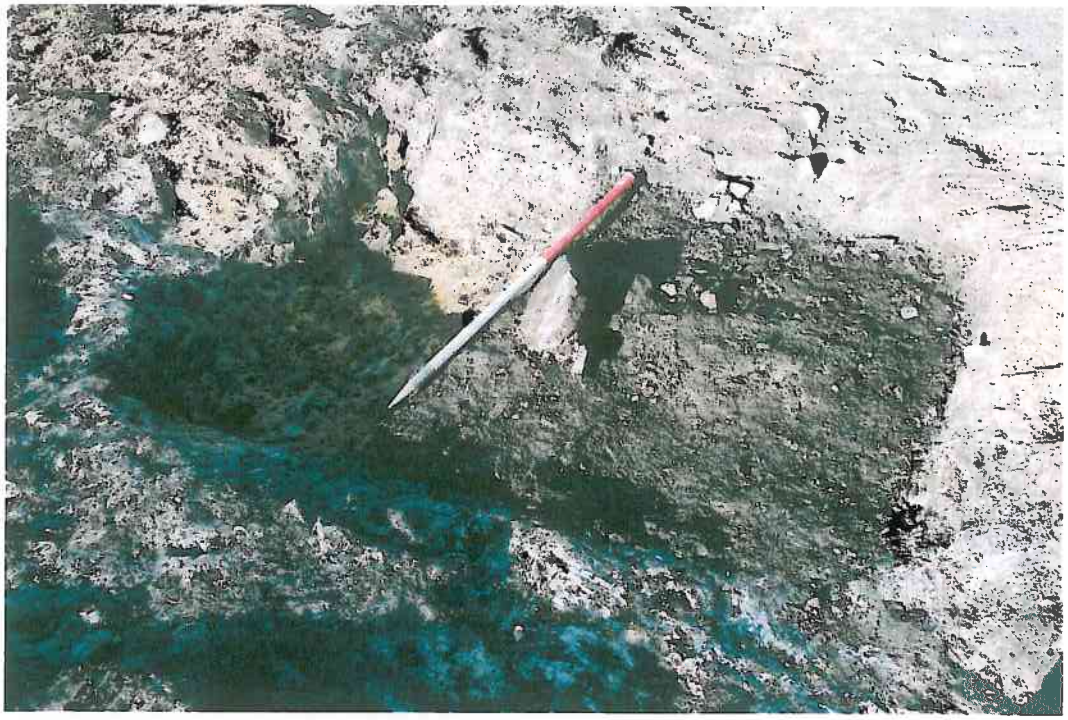


Plate 3: Trough F15, mid-excavation, from the northeast (04_01_ Boolies 1_CP04_5)

Plate 4: Trough F15, from the west, with stakeholes F16, F18, F19, and F20 clearly visible (04_01_ Boolies 1_CP04_24)

Plate 5: Pit F13, from the northwest (04_01_ Boolies 1_CP04_20)

Plate 6: Pit F12, from the west (04_01_ Boolies 1_CP04_14)