

**NRA**  
National Roads Authority  
An Údarás um Bóithre Náisiúnta

**N3 Meath Consult**  
Arup | Halcrow Barry | MCOS

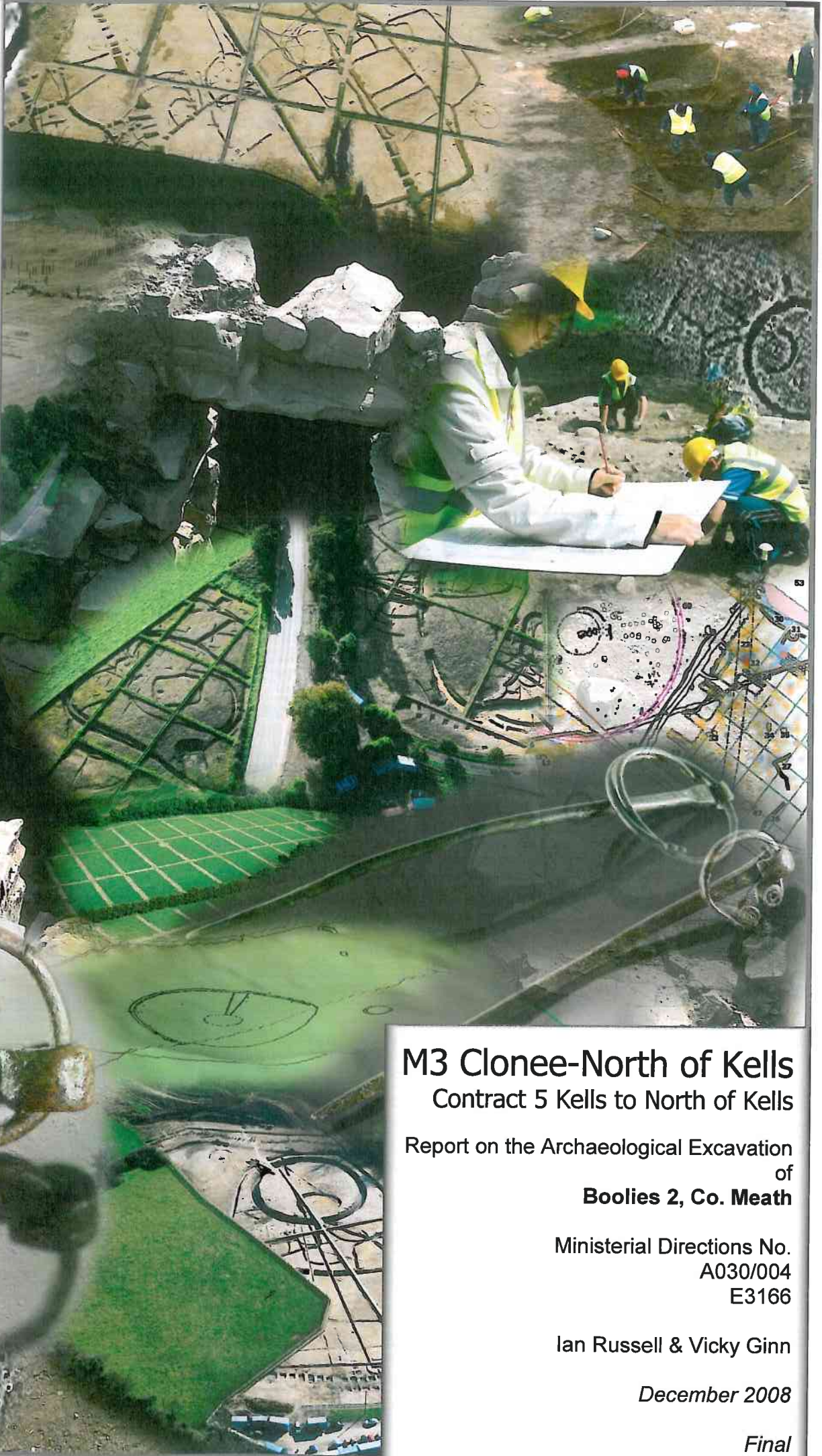
**National Roads Design Office**



**MEATH COUNTY COUNCIL**



**ARCHAEOLOGICAL CONSULTANCY SERVICES LTD.**



# M3 Clonee-North of Kells

## Contract 5 Kells to North of Kells

Report on the Archaeological Excavation  
of  
**Booilies 2, Co. Meath**

Ministerial Directions No.  
A030/004  
E3166

Ian Russell & Vicky Ginn

December 2008

Final

## PROJECT DETAILS

<b>Project</b>	M3 Clonee–Kells Motorway
<b>Site Name</b>	Boolies 2
<b>Ministerial Direction Number</b>	A030/004
<b>Registration Number</b>	E3166
<b>Senior Archaeological Consultant</b>	Donald Murphy
<b>Site director</b>	Ian Russell
<b>Excavated</b>	23 October 2006 – 17 November 2006
<b>Client</b>	Meath County Council, National Roads Design Office, Navan Enterprise Centre, Navan, County Meath
<b>Townland</b>	Boolies
<b>Parish</b>	Burry
<b>County</b>	Meath
<b>National Grid Reference</b>	271363 274569
<b>Chainage</b>	81560
<b>Height</b>	96.92m OD
<b>Report Type</b>	Final
<b>Report Status</b>	Submitted
<b>Date of Report</b>	December 2008
<b>Report by</b>	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 Booles 2 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 23 October and 17 November 2006 under Ministerial Direction Number A030/004 issued by DOEHLG in consultation with the NMI. Full resolution revealed a burnt mound of black, coarse clay with heat-shattered stone. Three possible pits, two oval pits and an oval spread contained burnt mound material. One of the oval pits had three stakeholes in its base. Two sub-rectangular troughs were also discovered. Both of these troughs had four stakeholes, one in each corner, which may have provided support for a wooden lining. One of the oval pits has been dated to 2271 – 1977 BC. There were no finds or animal bones recovered from this site.

**CONTENTS**

1 INTRODUCTION..... 1  
 1.1 Development..... 1  
 2 EXCAVATION..... 2  
 2.1 Results..... 2  
 2.2 Finds ..... 3  
 3 DISCUSSION ..... 3  
 3.1 Form and function..... 3  
 3.2 Date and sequence ..... 4  
 4 CONCLUSIONS ..... 4  
 5 REFERENCES ..... 4

**APPENDIX 1** *Context Details*

**APPENDIX 2** *Finds List*

**APPENDIX 3** *Sample List*

**APPENDIX 4** *Radiocarbon Dating*

**APPENDIX 5** *Environmental Report: Archaeological Services, University of Durham*

**FIGURE LIST**

- Figure 1: Location of Boolies 2
- Figure 2: Location of Boolies 2 on current OS background
- Figure 3: Boolies 2, extract from 1st edition OS map, Meath sheet 16
- Figure 4: Boolies 2, extract from 2nd edition OS map, Meath sheet 16
- Figure 5: Boolies 2, extract from 3rd edition OS map, Meath sheet 16
- Figure 6: Detailed location of Boolies 2
- Figure 7: Pre-excavation plan of Boolies 2
- Figure 8: Detail of features at Boolies 2
- Figure 9: Sections and profile of Boolies 2

**PLATE LIST**

- Plate 1: General view of Boolies 2, from south
- Plate 2: Spread F6, from the west
- Plate 3: Spread F6, from the east
- Plate 4: Trough F25, from the south
- Plate 5: Trough F25, from the north, with stakeholes clearly visible
- Plate 6: Trough F24, from the north, with stakeholes clearly visible
- Plate 7: The site, from the south

## 1 INTRODUCTION

The site at Booles 2 (Figures 1–7) was identified during advance testing carried out by Gillian McLoughlin of Irish Archaeological Consultancy Ltd during August 2004 under licence number 04E1053 (McLoughlin 2005). A spread of burnt mound material (8.00m x 5.80m x 0.19m) was observed along with several field drains and boundaries (ibid.). The spread was re-located during full resolution of the site in 2006 when five pits and two troughs filled with similar heat-shattered stone and charcoal were revealed.

### *1.1 Development*

Meath County Council and the National Roads Authority are constructing 49km of two-lane, dual-carriageway motorway between Clonee and Kells and 10km of single carriageway from Kells to Carnross, north of Kells, along with additional road upgrades, realignments and associated ancillary works. For the purposes of the Environmental Impact Assessment and the subsequent archaeological investigations the scheme was subdivided into five separate sections as follows: Clonee to Dunshaughlin (Contract 1), Dunshaughlin–Navan (Contract 2), the Navan Bypass (Contract 3) Navan to Kells (Contract 4) and 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 (NGR 272828 274647) 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 (NGR 266012 280943).

The archaeological components of the Environmental Impact Statement published in 2002 where carried out by Valerie J. Keeley Ltd (VJK) and Margaret Gowen and Co. Ltd (MGL) in 2000–2001. This included desk-based studies and field surveys of each section (VJK Sections 1 & 3 and MGL Sections 2, 4 & 5). Additionally on behalf of MGL geophysical survey was undertaken on the Dunshaughlin–Navan section and at Nugentstown on the Navan–Kells section by GSB Prospection (2000 & 2001). These studies carried out as part of the Environmental Impact Assessment were augmented by further geophysical survey conducted by Bartlett-Clark Consultancy on the remainder of the scheme (2002). Archaeological testing was completed by ACS and Irish Archaeological Consultancy Ltd (IAC) in 2004 (ACS Sections 1–3 and IAC Sections 4–5). Excavation of the sites identified during testing was conducted by ACS and IAC between 2005 and 2008 (ACS Sections 1–3 & 5 and IAC Section 4).

## 2 EXCAVATION

Excavation occurred between 23 October 2006 and 17 November 2006 under Ministerial Direction Number A030/004 issued to Meath County Council NRDO. The work was carried out by Ian Russell on behalf of ACS. The topsoil (F4: 0.38m depth) consisted of a mid-dark-grey, sandy clay with stones and was removed by machine equipped with a toothless grading bucket. An orange, sandy clay mottled with light-grey clay and with angular stones comprised the subsoil (F5).

All archaeological features exposed were recorded and excavated by hand using the single context method. The majority of features were assigned a single context 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

Forty two contexts were identified within the excavation area, all of which were of archaeological interest. Only the principal archaeological features of Booles 2 (Plates 1 and 7) will be discussed within this report; full details of all these, and further, contexts are located in Appendix 1.

A spread of dark-grey-black clay with burnt stones and charcoal (F6: approx. 12m x 5m x 0.25m) was located (Figure 7; Plates 2–3). It covered three pits (F14, F22 and F23) and two troughs (F24 and F25) (Figures 8–9). F22 (1.60m x 1.50m x 0.42m) contained one fill (F26) which consisted of a dark, almost black clay with burnt stones and charcoal flecks. F14 (0.40m length x 0.44m width) had a dark-grey, silty clay fill containing burnt mound material (F14: the cut and fill were given the same context number). The third pit (F23: 2.24m x 2.10m x 0.16m), while containing burnt and heat-shattered stones and charcoal remains similar to the other pits, also displayed evidence for seven associated stakeholes (F36–F42) two of which (F37 and F39) had been cut into its base and southeastern side respectively. This pit (F23) may have been associated with troughs F24 and F25, also recorded with stakeholes in their bases.

The two troughs were both sub-rectangular (F24: 2.00m x 1.32m x 0.23m and F25: 1.88m x 1.48m x 0.29m) with one fill (F21 and F20, respectively) comprising a dark-grey clay and stones (Plates 4–6). At the base of both troughs each corner had a stakehole cut into it (F24:

F32–F35 and F25: F28–F31). The stakeholes ranged from 0.07–0.15m x 0.07–0.17m x 0.04–0.19m and all consisted of a mid-grey, silty clay.

No datable material was recovered through flotation of soil samples from the burnt spread or underlying pits and troughs.

The two remaining pits (F18 and F19) were not directly associated with the burnt spread. F18 was located c. 12m to southwest and may have been associated with an adjacent spread of black, sandy clay with stones and charcoal flecks (F13: 0.90m length x 0.67m width). The pit (F18) contained one fill (F12) which consisted of a dark, almost black clay with burnt stones and charcoal flecks. The charcoal recovered from this fill was predominantly derived from hazel with much smaller quantities of hazel/alder and ash (Appendix 5). A sample of hazel charcoal from this fill has been dated to 2271 – 1977 BC. The charcoal recovered from the spread (F13) mainly comprised oak. Charred seeds including 28 blackberry pips, 1 hazelnut fragment and 1 ribwort plantain seed were also recovered from the spread.

F19 (0.93m x 0.75m x 0.17m) was located c. 18m to the north of the burnt spread (F6). It contained 1 fill (F11) which consisted of a dark, almost black clay with burnt stones and charcoal flecks.

Several drains were represented by F7 (0.31m width x 0.38m depth). A further three stone field drains of varying orientation were also noted (F15–F17).

## **2.2 Finds**

No artefacts were recovered from the excavations at Booles 2.

## **3 DISCUSSION**

### **3.1 Form and function**

The burnt stone and charcoal inclusions in the fills of many of the pits and troughs, combined with the two spreads/mounds of similar material, suggest that the site at Booles 2 was associated with burnt mound activity. The stakeholes (F28–F35) indicate that the troughs (F24 and F25) were wooden-lined, although no trace of this wood now survives, and it was into these troughs that heated stones would have been placed. The stakeholes (F36–F42) associated with the irregularly shaped pit F23 may indicate a similar function for this feature. This hot-stone technology served to heat water (O’Neill 2000, 19) which could then be used for a variety of purposes although traditional interpretations concentrate on cooking, bathing and textile dyeing (Buckley 1990a, 9) while more recent theories have highlighted the possibility of brewing (Quinn & Moore 2007). Once the water had cooled, and presumably the related activity had ceased, the shattered stones and charcoal remains would have been cleared and dumped either in nearby pits or left to form spreads and mounds.

### 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). While the burnt spread at Booles 2 has not been dated, the use of the adjacent pit (F18) is probably broadly contemporary (2271 – 1977 BC; Beta 247136; Appendix 4). However, it should be noted that the 2 troughs may represent at least two phases of use for the burnt mound activity.

This site represents one of approximately 61 on the M3 Motorway where similar burnt mounds were excavated including adjacent examples at Booles 1 (A020/005), 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).

The field drains, two of which (F7 and F17) cut through the mound F6, are later than the burnt mound activity and most likely date to the medieval period.

## 4 CONCLUSIONS

Booles 2 (A030/004) was excavated from 23 October to 17 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 archaeological features discovered at Booles 2 suggest that it primarily served as a burnt mound complex. The two troughs would have been lined with wooden planks, of which only evidence for the securing mechanism – the stakeholes – survived. One of the five pits identified on site also displayed evidence for stakeholes in its base which suggests that it perhaps fulfilled a similar function to the troughs. Another of these pit has been dated to 2271 – 1977 BC. 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.

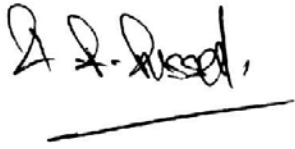
McLoughlin, G 2005 *Report on Archaeological Assessment at Testing Area 2, Booles, Co. Meath, Licence Number: 04E1053*. Unpublished report prepared for Irish Archaeological Consultancy Ltd.

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.

Signed:

A handwritten signature in black ink, appearing to read 'I. Russell', written over a horizontal line.

Ian Russell and Vicky Ginn

December 2008

**APPENDIX 1** Context Details

<b>Booilies 2: A030/004</b>											
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	compact, mid-dark-grey, sandy clay with moderate angular stones. 0.38m depth	topsoil					
5	subsoil	N/A	N/A	04	orange, sandy clay mottled with light-grey clay and with angular stones	subsoil					
6	spread	N/A	5	7, 17	dark-grey-black clay with angular, sub-rounded, burnt stones.Approx. 12m x 5m x 0.25m. Cut by 7 and 17	burnt mound spread					#5 soil and charcoal
7	cut and fill	N/A	5, 6	4	compact, mid-grey, sandy clay with occasional rounded, angular stones. 0.31m width x 0.38m depth. Cuts 6	possible furrow/ drain and fill					
8	fill	15	15	4	mid-brown, sandy clay with moderate angular and sub-angular stones. 0.12m width x 0.29m depth	fill of field drain 15					
9	fill	16	16	4	loose, light-mid-brown, gravelly clay with frequent angular stones. 0.77m width x 0.23m depth. Similar to 10	fill of field drain 16					
10	fill	17	17	4	moderately compact, mid-grey, sandy clay with frequent large, rounded and sub-rounded stones. 1.40m width x 0.25m depth. Similar to 8 and 9	fill of field drain 17					
11	fill	19	19	4	black clay with frequent angular, burnt stones and occasional charcoal flecks. 0.93m x 0.75m x 0.17m	fill of pit 19					
12	fill	18	18	4	compact, dark-brown-black, coarse clay with moderate-frequent angular, burnt stones and occasional charcoal flecks. 0.73m x 0.38m x 0.39m	fill of pit 18					#2 soil
13	spread	N/A	5	4	black, sandy clay with frequent charcoal flecks and occasional angular stones. 0.90m length x 0.67m width	charcoal spread, possibly associated with pit 18					#1 soil and charcoal
14	cut and fill	N/A	5	4	dark-grey, sandy clay with frequent angular stone inclusions and occasional charcoal flecks. 0.40m length x 0.44m width	possible pit and fill					

15	cut	8	5	8	linear, NNE-SSW cut (0.90m width x 0.20m depth) with concave sides leading to a concave base. Cut by 17	field drain					
16	cut	9	5	9	linear, north-south cut (0.77m width x 0.23m depth) with concave sides leading to a flat base. Cut by 18	field drain					
17	cut	10	6	10	linear, east-west cut (1.40m width x 0.25m depth) with moderate sides leading to a flat base. Cuts 6	field drain					
18	cut	12	5	12	oval cut (0.73m x 0.58m x 0.39m) with straight sides leading to a concave base	pit, possibly associated with 13					
19	cut	11	5	11	oval cut (0.93m x 0.75m x 0.17m) with an imperceptible break of slope and vertical sides leading to a flat base	shallow pit					
20	fill	25	25	6	compact, dark-grey-black clay with frequent angular, burnt stones. 1.88m x 1.48m x 0.29m	fill of trough 25					#3 soil
21	fill	24	24	6	dark-grey clay with frequent angular, rounded and burnt stones. 2.00m x 1.32m x 0.23m. Contains stakeholes 32-35	fill of trough 24					#4 soil and charcoal
22	cut	26	5	26	oval cut (1.60m x 1.50m x 0.42m) with a gradual break of slope at the top and a flat base. Associated with pit 23 and troughs 24 and 25	pit					
23	cut	27	5	27	irregular cut (2.24m x 2.10m x 0.16m). Contains stakeholes 36-42	pit					
24	cut	21	5	21	sub-rectangular cut (2.00m x 1.32m x 0.23m) with vertical sides leading to a flat base. Contains stakeholes 32-35	trough					
25	cut	20	5	20	sub-rectangular cut (1.88m x 1.48m x 0.29m) with vertical sides leading to a flat base. Contains stakeholes 28-31	trough					
26	fill	22	22	4	black clay with frequent burnt, angular stone inclusions and occasional charcoal flecks	fill of pit 22					
27	fill	23	23	4	compact, black clay with frequent angular, burnt stones and occasional charcoal flecks. 0.14m depth	fill of pit 23					
28	fill	N/A	25	20	mid-grey, silty clay. 0.11m x 0.09m x 0.13m	stakehole in the base of trough 25					

29	fill	N/A	25	20	mid-grey, silty clay. 0.09m x 0.07m x 0.06m	stakehole in the base of trough 25						
30	fill	N/A	25	20	mid-grey, silty clay. 0.07m x 0.10m x 0.07m.	stakehole in the base of trough 25						
31	fill	N/A	25	20	mid-grey, silty clay. 0.10m diameter x 0.10m depth	stakehole in the base of trough 25						
32	fill	N/A	24	21	mid-grey, silty clay. 0.13m x 0.12m x 0.17m	stakehole in the base of trough 24						
33	fill	N/A	24	21	mid-grey, silty clay. 0.11m x 0.10m x 0.17m	stakehole in the base of trough 24						
34	fill	N/A	24	21	mid-grey, silty clay. 0.09m x 0.11m x 0.14m	stakehole in the base of trough 24						#6 soil
35	fill	N/A	24	21	mid-grey, silty clay. 0.11m diameter x 0.19m depth	stakehole in the base of trough 24						
36	fill	N/A	23	27	mid-grey, silty clay. 0.13m x 0.11m x 0.12m	stakehole in the base of pit 23						
37	fill	N/A	23	27	mid-grey, silty clay. 0.15m x 0.17m x 0.09m	stakehole in the base of pit 23						
38	fill	N/A	23	27	mid-grey, silty clay. 0.10m x 0.07m x 0.09m	stakehole in the base of pit 23						
39	fill	N/A	23	27	mid-grey, silty clay. 0.09m x 0.12m x 0.04m	stakehole in the base of pit 23						
40	fill	N/A	23	27	mid-grey, silty clay. 0.10m x 0.07m x 0.07m	stakehole in the base of pit 23						
41	fill	N/A	23	27	mid-grey, silty clay. 0.09m x 0.11m x 0.09m	stakehole in the base of pit 23						
42	fill	N/A	23	27	mid-grey, silty clay. 0.11m x 0.08m x 0.08m	stakehole in the base of pit 23						

**APPENDIX 2** *Finds List*

No artefacts were recovered from excavations at Booies 2.

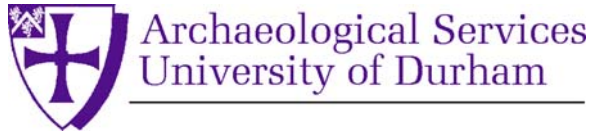
**APPENDIX 3** *Sample List*

<b>Sample No</b>	<b>Context No</b>	<b>Results</b>
1	13	organic material and 14g charcoal flecks in residue, 1g cremated bone in residue
2	12	organic material and 5g charcoal
3	20	No archaeological material recovered
4	21	No archaeological material recovered
5	6	No archaeological material recovered
6	34	No archaeological material recovered

**APPENDIX 4 Radiocarbon Dating**

<b>Context</b>	<b>Sample No</b>	<b>Material</b>	<b>Species id/</b>	<b>Lab</b>	<b>Lab code</b>	<b>Date Type</b>	<b>Date</b>	<b>Conventional Date (BP)</b>	<b>13C/12C Ratio ‰</b>
12; Fill of pit C18	2	Charcoal	Hazel 782mg	Beta	247136	AMS (std)	2271 – 1977 BC	3710±40	-27.4

APPENDIX 5 *Environmental Analysis*



**Boolies 2, M3 Motorway Project, Co Meath,  
Ireland**

**plant macrofossil, charcoal and cremated  
bone analysis**

*on behalf of*

**Archaeological Consultancy Services Ltd**

**Report 2071**  
November 2008

---

***Archaeological Services***  
***Durham University***

South Road

Durham DH1 3LE

Tel: 0191 334 1121

Fax: 0191 334 1126

[archaeological.services@durham.ac.uk](mailto:archaeological.services@durham.ac.uk)

[www.durham.ac.uk/archaeological.services](http://www.durham.ac.uk/archaeological.services)

---

# **Boilies 2, M3 Motorway Project, Co Meath, Ireland**

## **plant macrofossil, charcoal and cremated bone analysis**

***Report 2071***

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 . . . . .	1
2. Project background . . . . .	2
3. Plant macrofossil and charcoal analysis . . . . .	2
4. Cremated bone analysis . . . . .	5
5. Sources . . . . .	6

## **1. Summary**

### ***The project***

- 1.1 A burnt mound was excavated by Archaeological Consultancy Services Ltd at Boolies 2, Co Meath, Ireland. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the fill of pit C18 and an oval spread.

### ***Results***

- 1.2 The charcoal analysis indicates that oak, ash, hazel and possibly also alder were growing near the site, and would have provided an important source of food, fuel and building materials. Charred blackberry pips and a hazel nutshell fragment may represent the remains of burnt food offerings or domestic waste.
- 1.3 A small amount of well-oxidised cremated bone (<0.1g) was recovered from the oval spread. It was not possible to identify whether the bone was human or animal.

## 2. Project background

### *Location and background*

- 2.1 A burnt mound was excavated by Archaeological Consultancy Services Ltd at Booles 2, Co Meath, Ireland (NGR 271363 274569). Features on the site included pits, pits/troughs and an oval spread of burnt mound material. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the fill of pit C18 and the oval spread. A radiocarbon date of charcoal from pit fill context (12) indicates a Bronze Age date for the site.

### *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 Mr Bryan Atkinson.

### *Archive*

- 2.5 The licence number is A030/004. The charcoal, flots and bone sample 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 (12), weighing 782mg, was provided for radiocarbon dating.

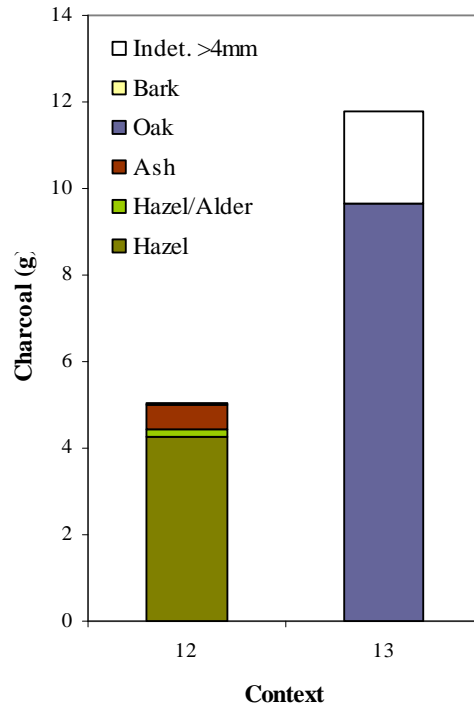
**Results**

3.3 The residues contained charcoal and heat-shattered stones. The charcoal in the pit fill (context 12) comprised hazel and ash, while oak timber dominated the charcoal assemblage of the spread (context 13). Charred seeds were present in context (13) and included numerous blackberry pips, a hazel nutshell fragment and a ribwort plantain seed. The results of the plant macrofossil and charcoal analyses are presented in Table 3.1. The proportions of charcoal species are presented in Figure 3.1.

**Table 3.1:** Plant macrofossils and charcoal from Booles 2

Context	12	13
Sample	2	1
Feature	Pit	Spread
<i>Material available for radiocarbon dating</i>	✓	✓
<i>Volume of flot (ml)</i>	40	400
<i>Residue matrix (relative abundance)</i>		
Charcoal	2	4
Cracked/angular stones	3	1
<i>Flot matrix (relative abundance)</i>		
Charcoal	2	4
Roots (modern)	1	-
<i>Charcoal (g/number of fragments)</i>		
Total charcoal (g)	17.132	118.711
Percentage of sample analysed	100	100
Total charcoal analysed >4mm (g)	5.038	11.761
Number of analysed charcoal fragments >4mm	71	227
<i>Corylus avellana</i> (Hazel)	4.272 (56F)	0.005 (1F)
<i>Corylus/Alnus</i> (Hazel/Alder)	0.163 (1F)	-
<i>Fraxinus excelsior</i> (Ash)	0.565 (13F)	-
<i>Quercus</i> sp (Oak)	-	9.636 (195F)
Bark	0.038 (1F)	-
Unidentified >4mm fraction	-	2.120 (31F)
Unidentified <4mm fraction	12.094	106.95
<i>Charred remains (total number)</i>		
(r) <i>Plantago lanceolata</i> (Ribwort plantain) seed	-	1
(t) <i>Corylus avellana</i> (Hazelnut) nutshell fragment	-	1
(t) <i>Rubus fruticosus</i> agg. (Bramble) fruitstone	-	28

[r-ruderal; t-tree]. 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 Booles 2

**Discussion**

- 3.4 If the wood was collected locally, the charcoal analysis indicates that oak, ash, hazel and possibly also alder, were growing near the site. The charcoal may represent fuel used for burnt mound activities, and 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).
- 3.5 The hazel charcoal was dominated by roundwood (branchwood) fragments, indicating that small branches and twigs of this species were collected, while the ash and oak were predominantly timber (stemwood), suggesting that mature trees were felled to provide the wood (Table 3.2). While oak was an important fuel in prehistory (Stuijts 2007), the abundance of oak timber fragments in context (13) may indicate that this assemblage represents the remains of a burnt structure. Oak was often selected for large structural timbers, as it is easy to work and has a durable heartwood (O’Donnell 2007). In addition, recent studies suggest it was the main species used for prehistoric cremation pyres, as it can achieve the high temperatures required for the process (ibid.). Although a small amount of burnt bone was recovered from context (13), it was not possible to identify if this was animal or human (see section 4). The charred blackberry pips and hazel nutshell fragment could represent burnt food offerings or may be the remains of domestic waste. A charred seed of ribwort plantain, a weed commonly found in meadows and pastures (Preston *et al* 2002), was also recorded in context (13). This seed may

have been introduced with dried grass etc used for kindling, or may have come from a plant growing at the site.

**Table 3.2:** Stemwood/branchwood fragment counts

Context		12	13
<i>Corylus avellana/ Alnus glutinosa</i> (Hazel/alder)	Stemwood	-	-
	Branchwood	-	-
	Indet.	1	-
<i>Corylus avellana</i> (Hazel)	Stemwood	5	-
	Branchwood	23	1
	Indet.	28	-
<i>Fraxinus excelsior</i> (Ash)	Stemwood	10	-
	Branchwood	1	-
	Indet.	2	-
<i>Quercus</i> sp (Oak)	Stemwood	-	192
	Branchwood	-	3
	Indet.	-	-
Indeterminate >4mm	Stemwood	-	-
	Branchwood	-	-
	Indet.	-	31
Indeterminate bark		1	-

#### 4. Cremated bone analysis

##### *Methods*

- 4.1 Burnt bone was recovered from an oval spread associated with the 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 (13) contained a very small amount of cremated bone, weighing <0.1g. The bone was severely fragmented, with the largest fragment measuring 10.7mm and all the bone located in the smallest sieved fraction (Table 4.2).

**Table 4.1:** Summary of cremated remains

Context	Context Detail	Bone Colour	Species	Weight (g)
13	Oval shaped spread	White	Unknown	<0.1

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

- 4.5 The fragments were examined with a view to identification, but they could not be differentiated between animal or human bone.

**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
13	<0.1	0.0	0.0	0.0	0.0	<0.1	100.0	10.7

## 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

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

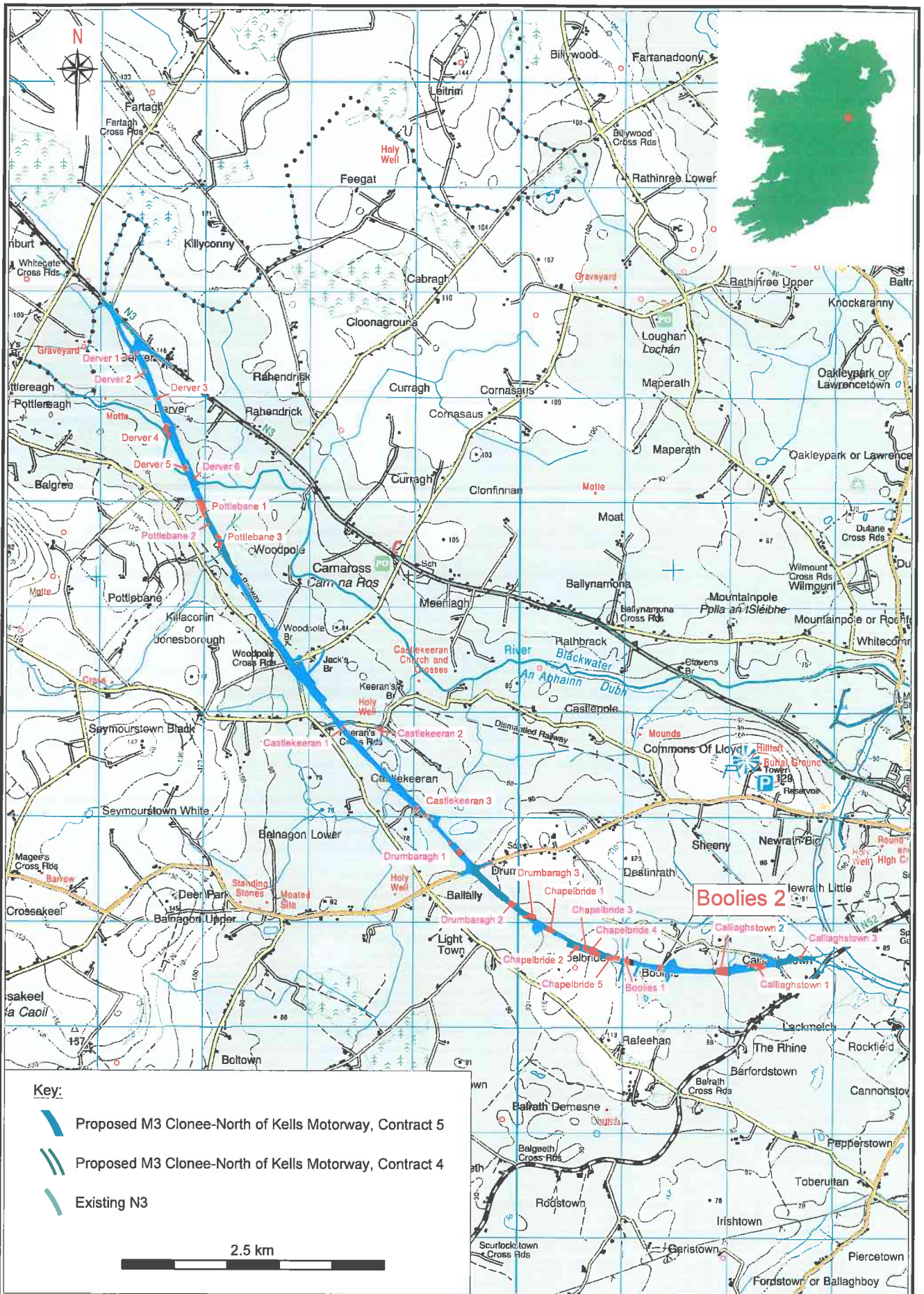
O’Donnell, L, 2007 Charcoal and wood, in Grogan, E, O’Donnell, L, & Johnston, P, *The Bronze Age landscapes of the Pipeline to the West, an integrated archaeological and environmental assessment*, Wicklow

Preston, C D, Pearman, D A. & Dines, T D, 2002 *New Atlas of the British and Irish Flora*. Oxford

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

Stace, C, 1997 *New Flora of the British Isles*, 2<sup>nd</sup> Edition, Cambridge

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

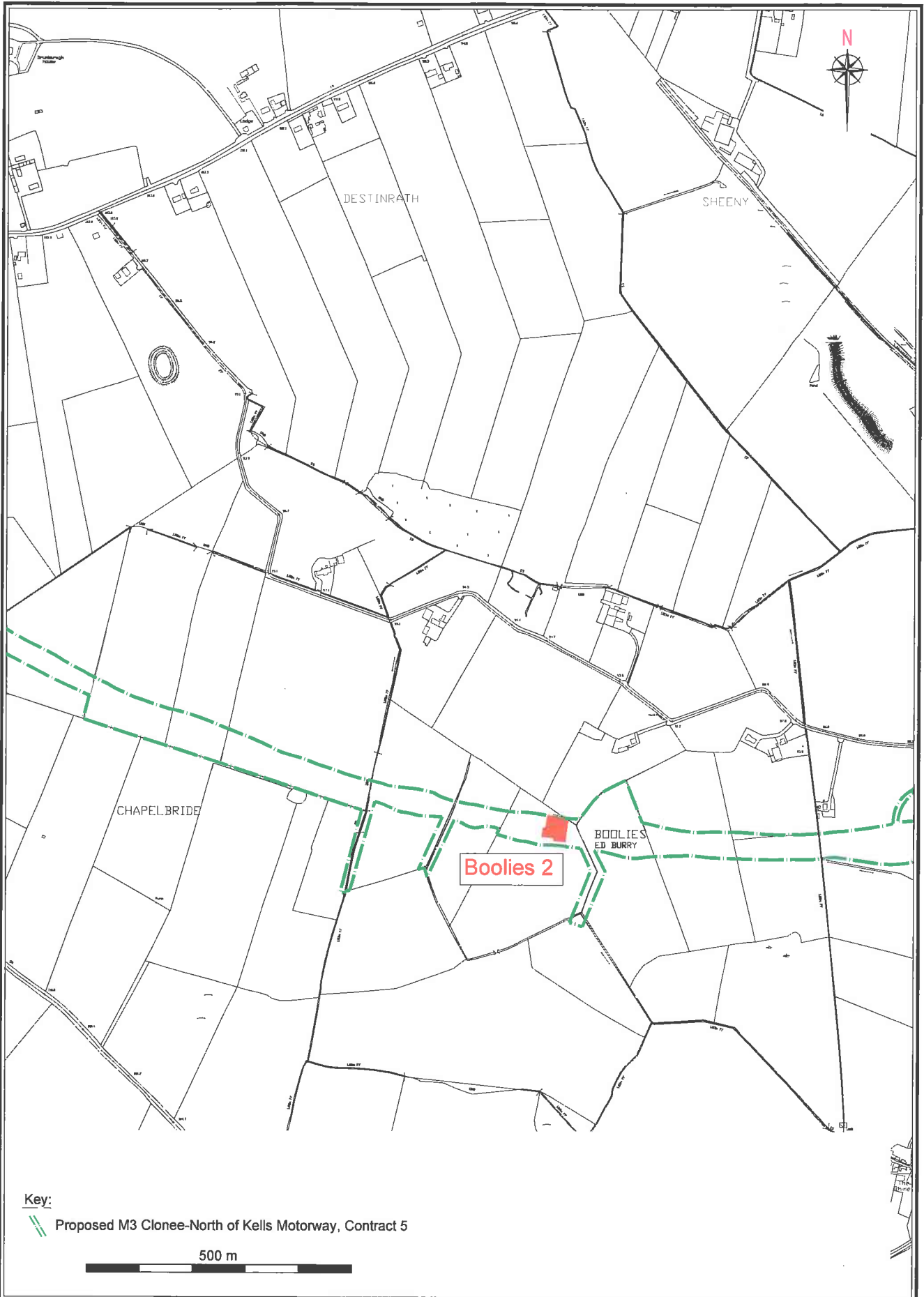


**Archaeological Consultancy Services Ltd.** Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth

Site: M3 Clonmel-North of Kells PPP Scheme Contract 5, Booies 2  
 Issued for: Excavation Report  
 Client: Meath County Council

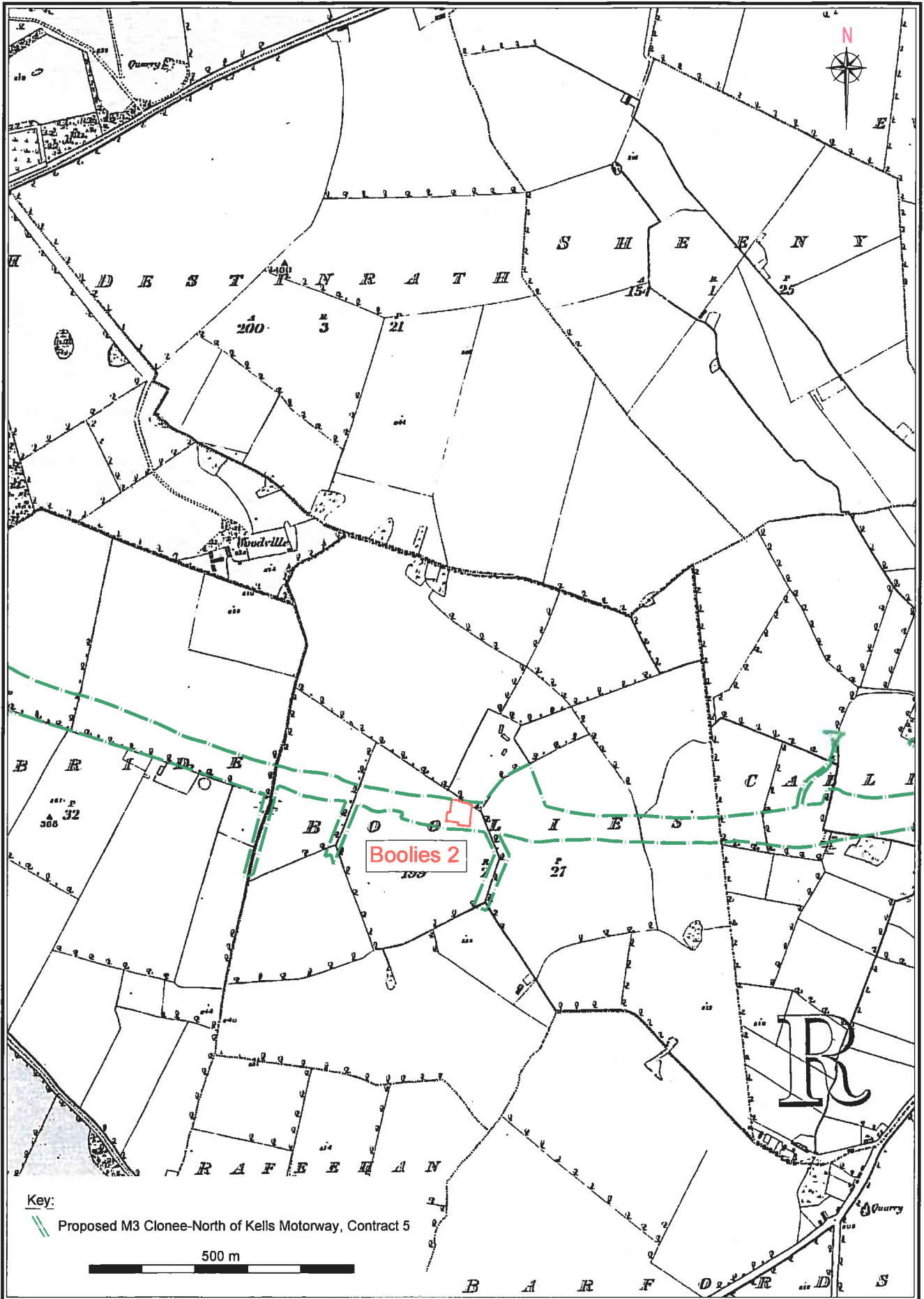
Scale: 1:50,000 A4  
 Date: Jul '08  
 Origin: OSi Discovery Series  
 Drawing no.: 04\_01\_C4121i

Figure 1: Location of Booies 2



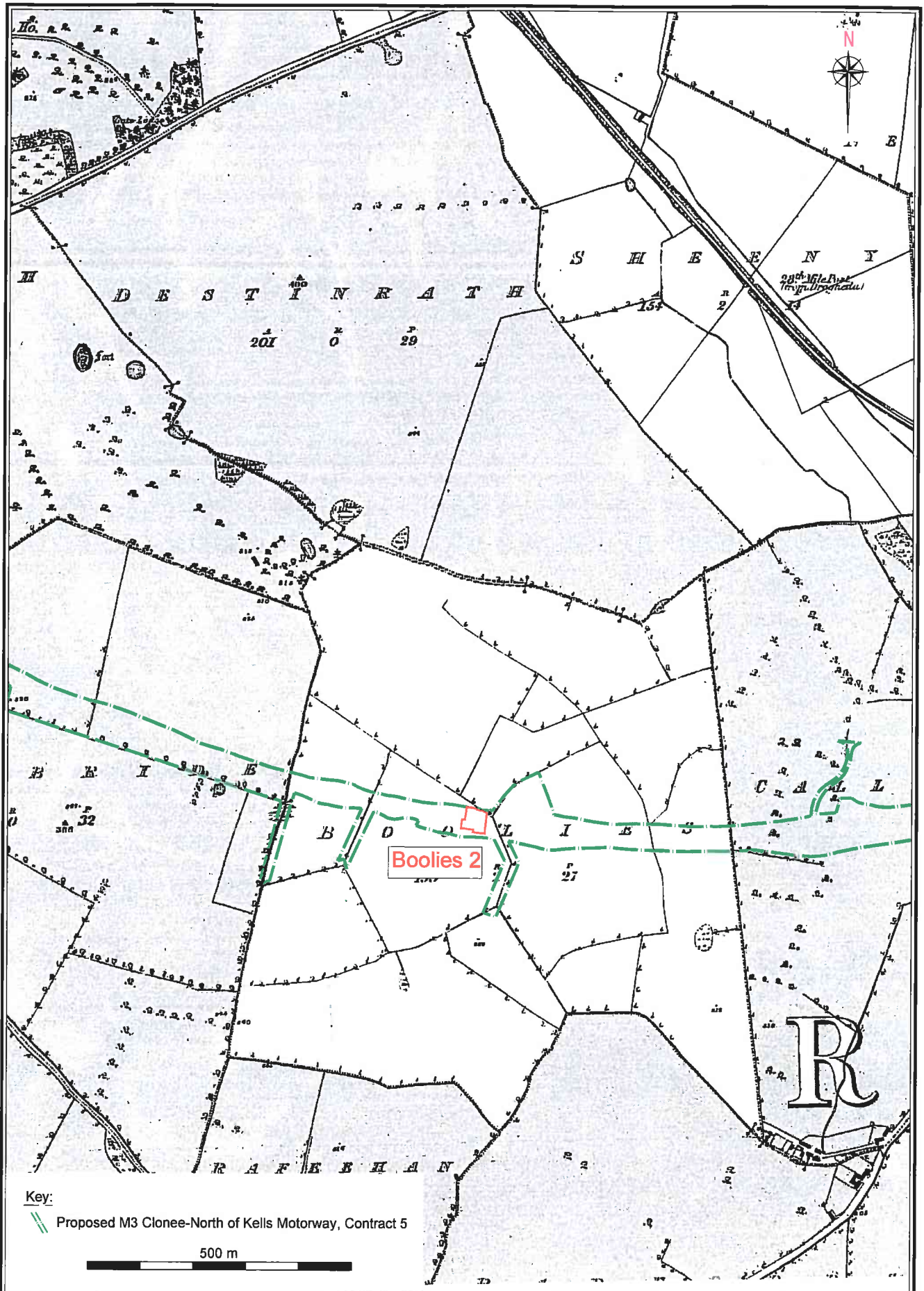
<b>Archaeological Consultancy Services Ltd.</b> Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 2	Scale: 1:10,000 A4
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: Client/ACS Ltd.
		Drawing no.: 04_01_C4122i

Figure 2: Location of Boolies 2 on current OS background



<b>Archaeological Consultancy Services Ltd.</b> Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Booles 2	Scale: 1:10,000 A4
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: OSi (1836)
		Drawing no.: 04_01_C4123i

Figure 3: Booles 2, extract from 1st edition OS map, Meath sheet 16



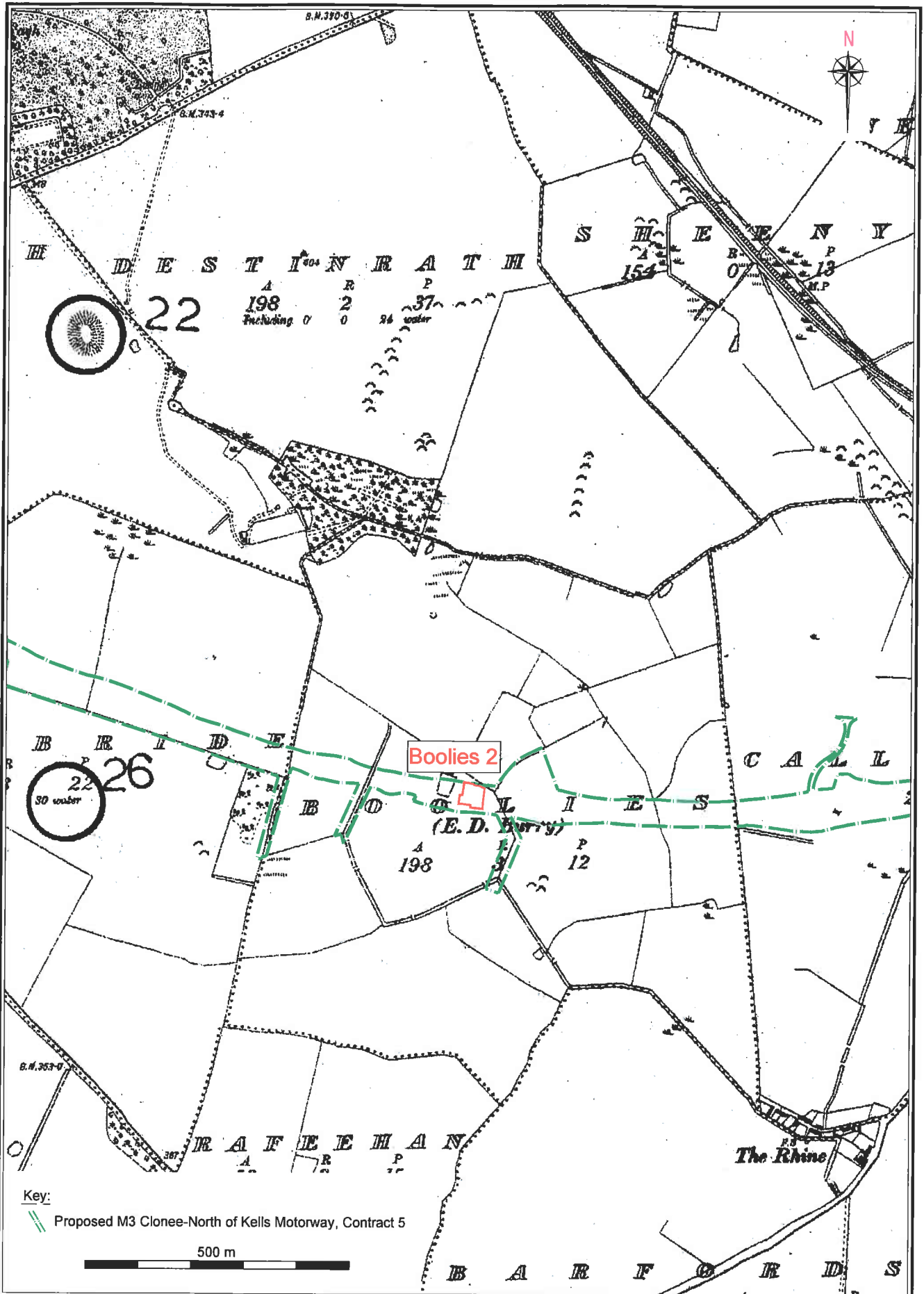
Key:  
 Proposed M3 Clonee-North of Kells Motorway, Contract 5  
 500 m

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

Site: M3 Clonee-North of Kells PPP Scheme  
 Contract 5, Boolies 2  
 Issued for: Excavation Report  
 Client: Meath County Council

Scale: 1:10,000 A4  
 Date: Jul '08  
 Origin: OSi (1882)  
 Drawing no.: 04\_01\_C4124i

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

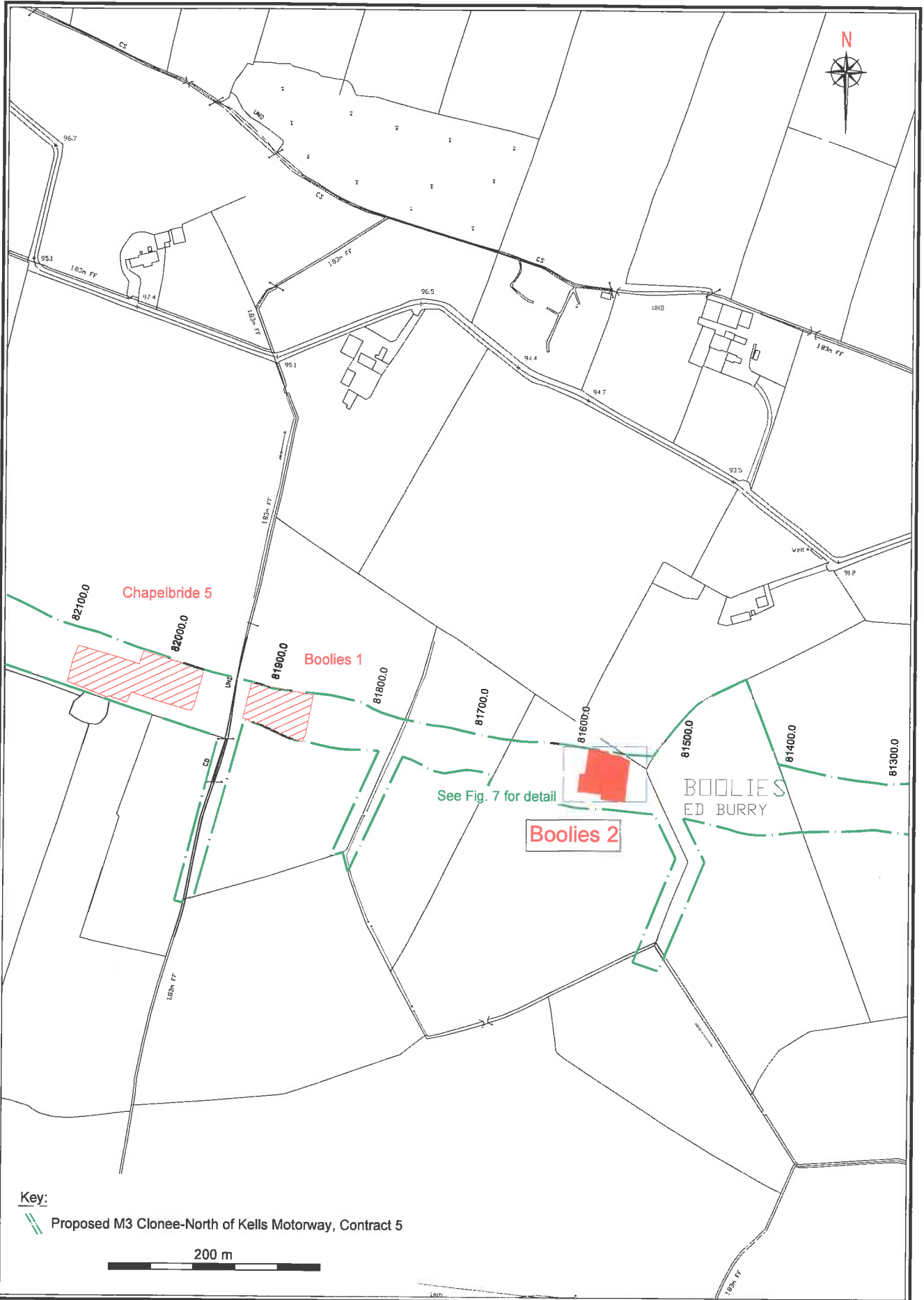


**Archaeological Consultancy Services Ltd.**  
 Unit 21, Boyne Business Park,  
 Greenhills, Drogheda, Co. Louth

Site: M3 Clonee-North of Kells PPP Scheme  
 Contract 5, Boolies 2  
 Issued for: Excavation Report  
 Client: Meath County Council

Scale: 1:10,000 A4  
 Date: Jul '08  
 Origin: OSi (1910)  
 Drawing no.: 04\_01\_C4125i

Figure 5: Boolies 2, extract from 3rd edition OS map, Meath sheet 16



Key:

 Proposed M3 Clonee-North of Kells Motorway, Contract 5

 200 m

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

Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Boolies 2

Issued for: Excavation Report

Client: Meath County Council

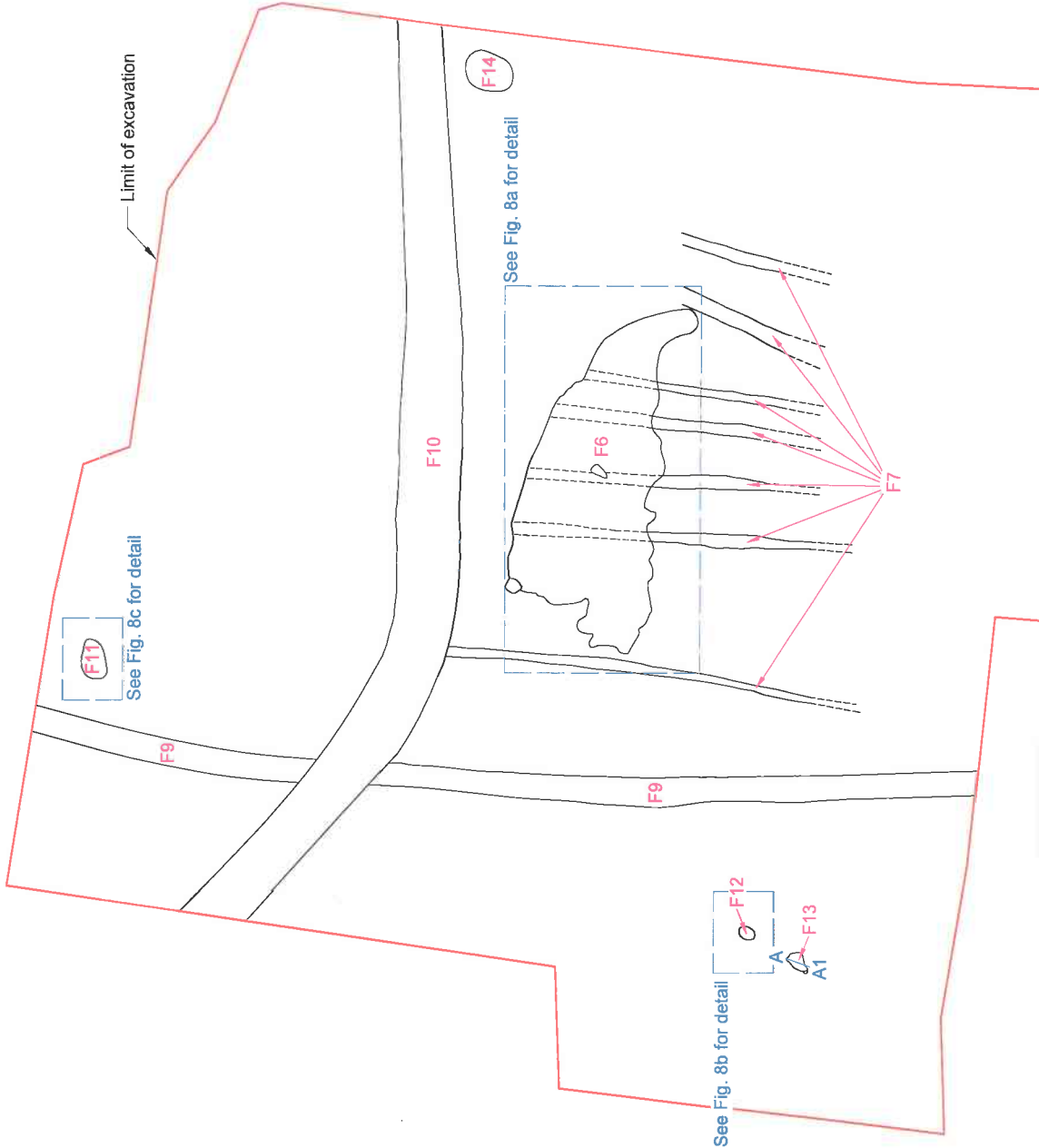
Scale: 1:5,000 A4

Date: Jul '08

Origin: Client/ACS Ltd.

Drawing no.: 04\_01\_C4126i

Figure 6: Detailed location of Boolies 2



15 m

Site: M3 Clonee-North of Kells PPP Scheme  
Contract 5, Boilies 2  
Issued for: Excavation Report  
Client: Meath County Council

Scale: 1:300 A4  
Date: Jul '08  
Origin: ACS Ltd.  
Drawing no.: 04\_01\_C4127I

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

Figure 7: Pre-excavation plan of Boilies 2

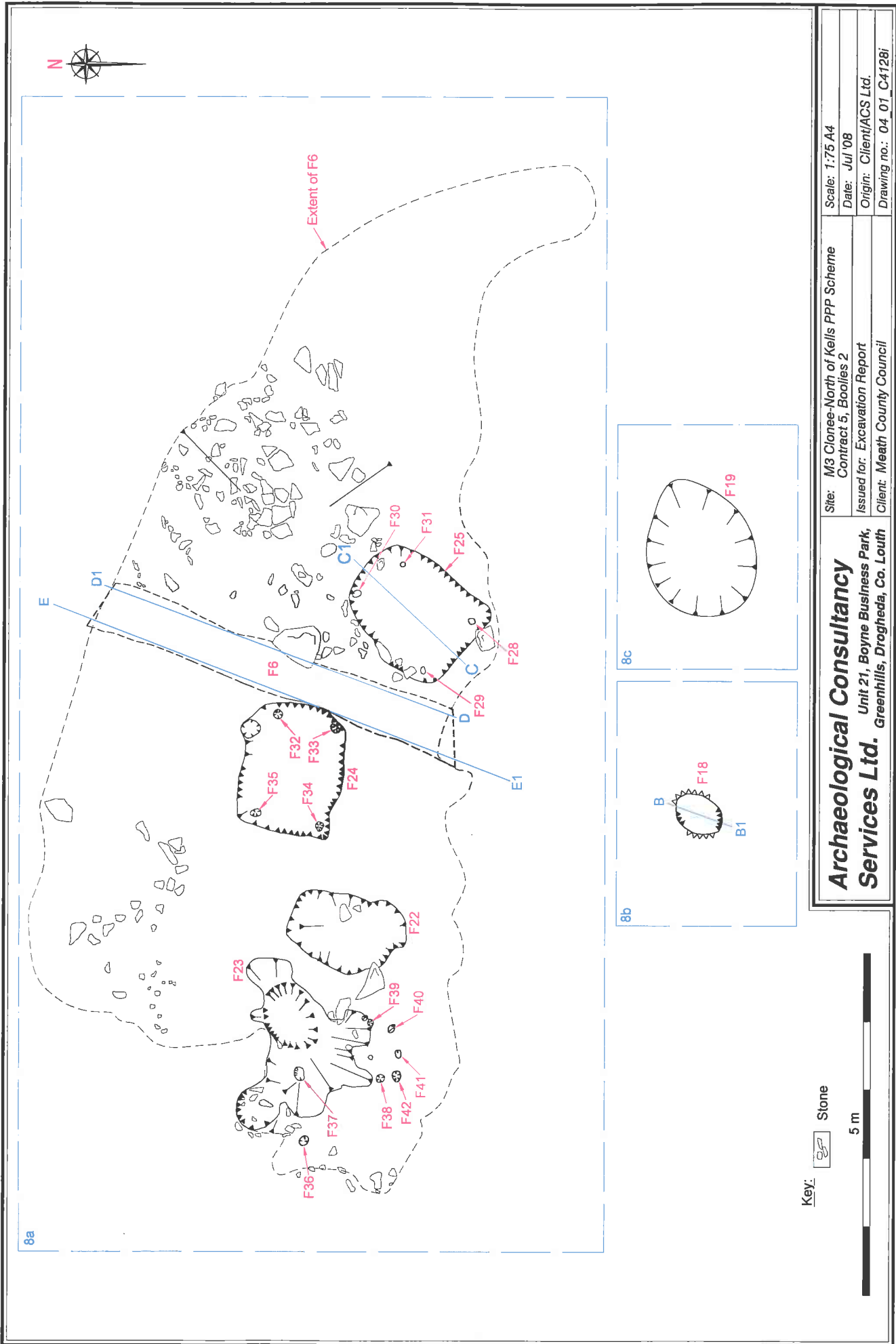
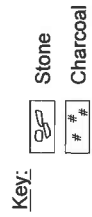
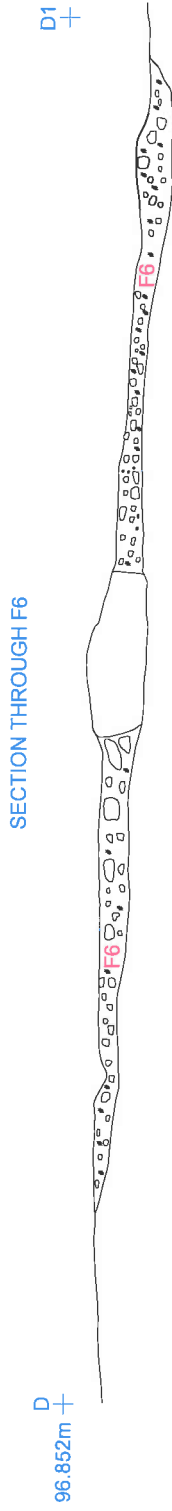
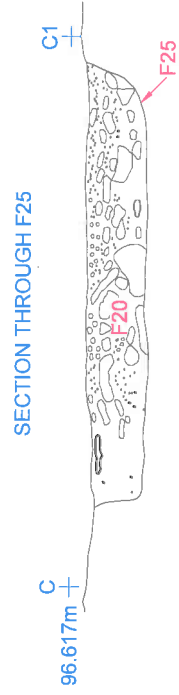
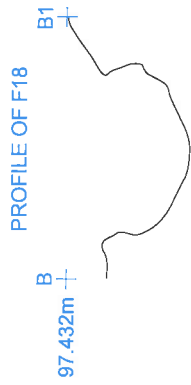
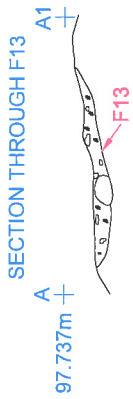


Figure 8: Detail of features at Boolies 2



<b>Archaeological Consultancy</b> Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth		Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Booles 2	Scale: 1:30 A4
Services Ltd.		Issued for: Excavation Report	Date: Jul '08
		Client: Meath County Council	Origin: ACS Ltd.
			Drawing no.: 04_01_C4129j

Figure 9: Sections & profile of Booles 2



Plate 1: General view of Boolies 2, from south (04\_01\_Booilies 2\_CP01\_23)



Plate 2: Spread F6, from the west (04\_01\_Booilies 2\_CP01\_16)



Plate 3: Spread F6, from the east (04\_01\_Boolies 2\_CP01\_13)



Plate 4: Trough F25, from the south (04\_01\_Boolies 2\_CP02\_16)

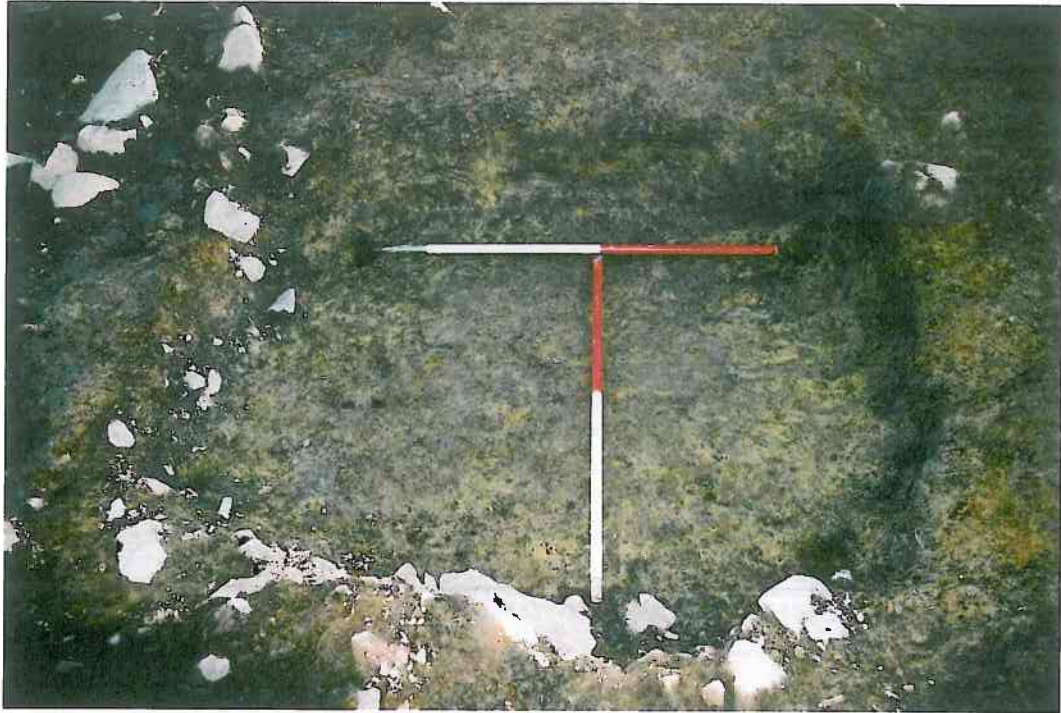


Plate 5: Trough F25, from the north, with stakeholes clearly visible (04\_01\_Booles 2\_CP03\_14)



Plate 6: Trough F24, from the north, with stakeholes clearly visible (04\_01\_Booles 2\_CP03\_12)



Plate 7: The site, from the south (04\_01\_Boodies 2\_CP03\_13)