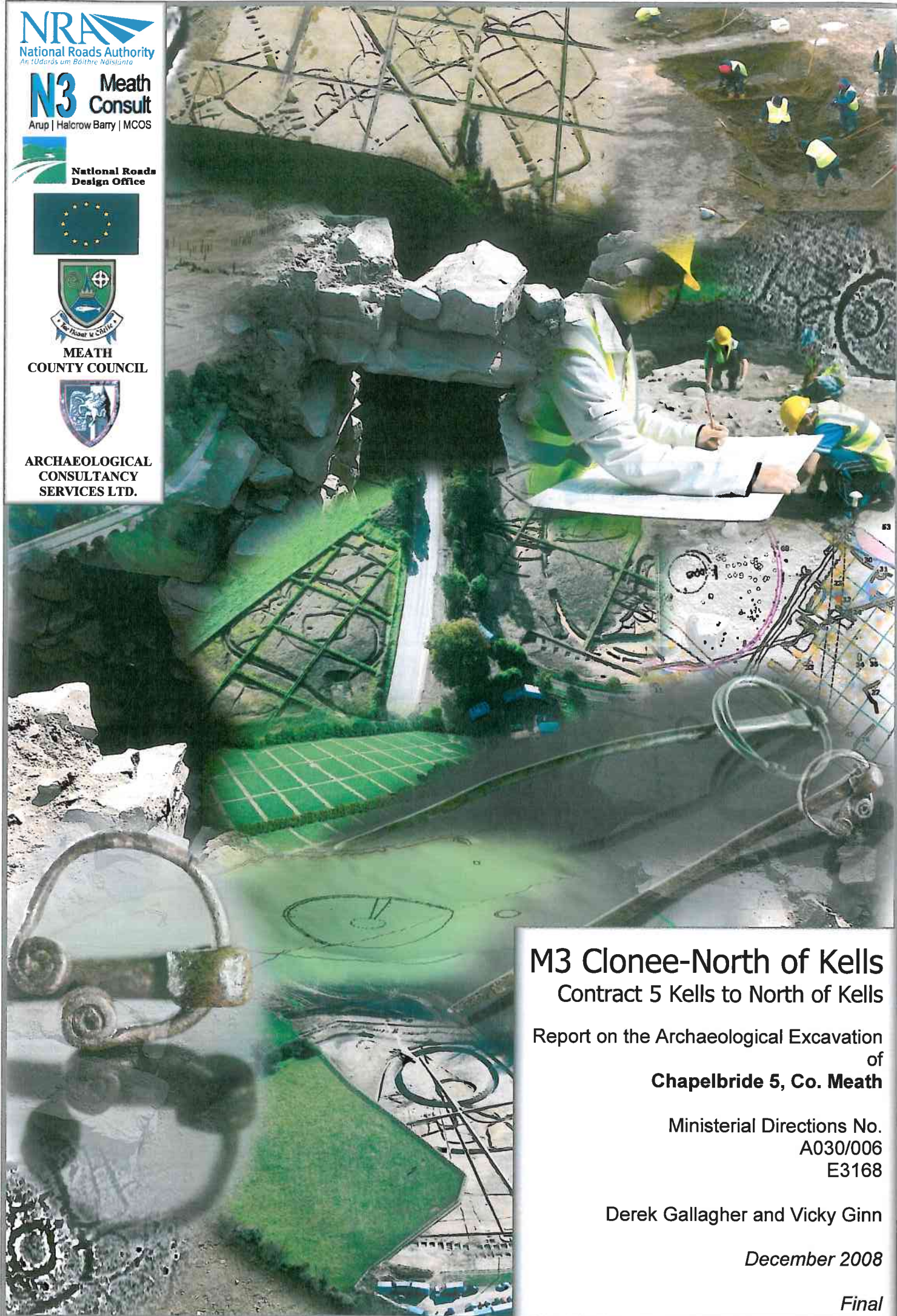




MEATH COUNTY COUNCIL



ARCHAEOLOGICAL CONSULTANCY SERVICES LTD.



M3 Clonee-North of Kells Contract 5 Kells to North of Kells

Report on the Archaeological Excavation
of
Chapelbride 5, Co. Meath

Ministerial Directions No.
A030/006
E3168

Derek Gallagher and Vicky Ginn

December 2008

Final

PROJECT DETAILS

Project	M3 Clonee–Kells Motorway
Site Name	Chapelbride 5
Ministerial Direction Number	A030/006
Registration Number	E3168
Senior Archaeological Consultant	Donald Murphy
Site Director	Derek Gallagher
Excavated	08–15 November 2006
Client	Meath County Council, National Roads Design Office, Navan Enterprise Centre, Navan, County Meath
Townland	Chapelbride
Parish	Kells
County	Meath
National Grid Reference	276947 274659
Chainage	82000–82100
Height	96.98m OD
Report Type	Final
Report Status	Submitted
Date of Report	December 2008
Report by	Derek Gallagher 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 Direction Number issued by the Department of the Environment, Heritage and Local Government (DOEHLG) in consultation with the National Museum of Ireland (NMI).

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NON-TECHNICAL SUMMARY

This site at Chapelbride 5 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 from the 8–15 November 2006 under Ministerial Direction Number A030/006 issued by DOEHLG in consultation with the NMI. The site was divided into three areas: western, central and eastern. Area A consisted of a *fulacht fiadh*-type burnt stone deposit and all contexts were overlaid by this feature. Area B consisted of a cluster of pits and spreads to the north the burnt stone deposit. Area C consisted of five pits scattered across the eastern part of the site.

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1 INTRODUCTION

The site at Chapelbride 5 (Figures 1–7) was identified during advance testing carried out by David Bayley on behalf of IAC during 2005 when two pits and one spread of heat-fractured stone and charcoal-rich material were observed (Bayley 2005). Full resolution occurred in November 2006 when further, similar pits and spreads were located.

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 8 and 15 November 2006 under Ministerial Direction Number A030/006 issued to Meath County Council NRDO. The work was carried out by Derek Gallagher on behalf of ACS. The topsoil F4 was stripped by machine equipped with a grading bucket under strict archaeological supervision. 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. 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. The artefacts recovered from the site underwent an initial archaeological assessment and where deemed appropriate further specialist analysis was carried out on each artefact type.

2.1 Results

Forty-five contexts of archaeological interest were identified within the excavation area. Only the principal archaeological features of Chapelbride 5 will be discussed within this report; full details of all these, and further, contexts are located in Appendix 1. The site was situated at the base of a small hill, adjacent to a pond.

2.1.1 Western area (Figures 7–8 & 11–12)

Spread F8 (11.00m x 10.00m x 0.10–0.15m) comprised loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones (Plate 1). Four further spreads of burnt mound material; F9 (0.70m x 0.30m x 0.01–0.08m), F14 (2.10m x 1.20m x 0.01–0.03m), F15 (2.75m x 1.70m x 0.02–0.10m), and F16 (0.45m x 0.30m x 0.02m) were also present in this area and could indicate the original extent of mound F8.

F8 overlay four pit and/or linear features (F36, F38, F45, F47). Sub-rectangular F47 (2.25m x 1.00m x 0.16m) contained one fill (F46), dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones and most likely represented a trough. Sub-rectangular F38 (2.50m x 1.00m x 0.15m) was of similar size and profile and is also likely to have functioned as a trough. Its fill (F37) was identical to F46. Two linear features were also covered by the spread and may have been used as water channels associated with these troughs. F45 (2.00m x 0.60m x 0.15m), filled with F44 also a dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones, and F36 (8.50m x 1.75m x 0.18m) which contained two fills, F42 (brown silty clay) and F35 (charcoal and heat-affected stones).

Further associated features may include a small clay spread F34 (2.50m x 1.00m x 0.01–0.20m) and sub-oval pit F41 (3.00m x 1.75m x 0.47m) which, although not covered by the spread of burnt mound material, may be associated with that activity. F41 was filled with three layers of charcoal-rich material and decayed stones (F40, F39 and F48) and may have functioned as a pit for waste material derived from the troughs.

Approximately 5m northeast of F8 and the above features were three trough features and spread F15. Sub-rectangular trough F7 (1.99m x 1.60m x 0.40m; Plates 2–3) filled with four layers (F30, F29, F6, and F28) of burnt mound material (excepting F29 which comprised a grey/yellow silty clay). A diverse assemblage of charcoal from F6 was identified as alder (*Alnus glutinosa*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), cherry (*Prunus* spp), with Maloideae (Hawthorn, whitebeams, apple, pear) and Salicaceae (Willow or poplar) also present. Alder was the most common species identified within this context and a sample of this material was dated to the Middle Bronze Age (MBA) period (1612–1433 BC; Beta 247137; Appendix 5). Ash was the only species identified with F30 and also belonged to the MBA (1687–1496 BC; Beta 247139; Appendix 5).

A circular trough, F11 (0.10m diameter x 0.30m depth) filled with two layers (F27 and F10) of dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. A large boulder apparent in the section of F11 (Figure 11) may have been deliberately placed as a closing deposit at the end of its use. It is unlikely to have functioned as part of the trough's apparatus during its use-life. A stakehole (F33: 0.07m diameter x 0.25m depth) was associated with F11 and filled with identical material (F32). Sub-oval pit F13 (0.81m x 0.50m x 0.17–0.22m) was also filled with dark-grey silty clay containing charcoal inclusions and heat-shattered stone (F12). The similarities of these fills and those of the troughs covered by the burnt mound spread would indicate both similar functions.

2.1.2 Central area (Figures 7, 9 & 13)

In the central area of the site were three similarly sized pits: sub-circular F18 (1.15m x 1.00m x 0.06–0.16m), circular F20 (1.10m diameter x 0.15m depth) and sub-circular F22 (1.45m x 1.17m x 0.10m) which were all filled (F17, F19 and F21, respectively) with burnt mound material in a dark clayey silt / silty clay matrix.

2.1.3 Eastern area (Figures 7, 10 & 14)

Two irregular pits were noted in the eastern area. F24 (0.85m x 0.40–0.50m x 0.12–0.16m) contained a primary layer (F31) of moderately compact, light-grey, silty clay with frequent charcoal (hazel) inclusions; above which was dark-grey, silty clay with charcoal inclusions

and heat-affected stones (F23). This pit dated to the Early Bronze Age (EBA) with a calibrated range of 2465–2206 BC (Beta 247140; Appendix 5). F26 (1.30m x 0.80–1.20m x 0.13m) had a primary stone layer, F43, which was covered by charcoal rich clay F25. Charcoal from this layer was identified as hazel, alder, ash and oak (*Quercus* sp.) and also dated to the EBA (2195–1939 BC; Beta 247138; Appendix 5)

2.2 Finds

No artefacts were recovered from the excavations at Chapelbride 5.

3 DISCUSSION

3.1 Form and function (after O'Connor 2007 with additions)

The sub-rectangular troughs with their associated charcoal-rich and heat-affected stone fills and spreads indicate that this site was the location of successive burnt mound activities, the origin of which was in the EBA (perhaps as early as 2465 BC), but which continued, perhaps sporadically, as far as the MBA.

Dating predominantly to the Bronze Age, burnt mounds or *fulachta fiadh* and burnt mounds served a number of functions, central to each being the requirement for hot water, provided by hot-stone technology (Brindley *et al.* 1989–90, 25; O'Neill 2000, 19). Fire heated stones were placed into a trough of water causing the water to boil. After each use the stones were removed from the trough and either reused or dumped around three sides of the trough, leaving one side free of debris in order to provide access to and from the site, and forming the crescent shaped mound associated with 'classic' *fulachta fiadh*. Apart from the general acceptance that *fulachta fiadh* were used to boil water, a more in depth understanding of the function of these sites has not been agreed upon.

3.1.1 Cooking

One of the most enduring explanations for the function of *fulachta fiadh*, and burnt mounds, is that they were used as cooking places for the boiling of meat. Ethnographical comparisons, cooking experiments and references made in Early Irish literature can all be used to support this argument. O' Kelly's experimental work at the excavated site at Ballyvourney 1, County Cork demonstrated how a 4.5kg leg of mutton wrapped in straw could be cooked in three hours and forty minutes, the same amount of time it would take using a modern methods (1954, 122). Similar experiments by Lawless (1990) and others have corroborated that *fulachta fiadh* could have been efficiently used for cooking and provides a plausible explanation for the association of a trough with a build up of shattered stones. However the general absence of animal bone and artefacts from *fulachta fiadh* sites is often used to argue

for an alternative function. Be that as it may there are a number of explanations for the scarcity of finds. Rather than consuming the food in a wet and charcoal ridden area it is more plausible that cooked food was brought to a drier and more appropriate place for consumption. O' Kelly suggests that scavenging dogs and wild animal may have taken the bones or that they were dissolved by the acidity of the peaty soil they were deposited in (1954, 141). The possibility that these sites may have been used for the preparation of non-meat foodstuff, such as porridge or pottage (Feehan, 1991, 205), cannot be ruled out as these would leave little archaeological trace. However of the limited number of finds associated with the sites on this project, the recovery of animal bone is the most recurrent find. Other cooking methods, such as steaming or roasting, may account for the number of small pits that occur on many sites. Both processes would necessitate the use of a small enclosed space where heated stones could be placed around the food in order for it to cook, with the former method using small quantities of water. However such methods could not account for the large accumulations of heat shattered stone and charcoal at most sites, thus they may have been used in conjunction with the boiling method.

3.1.2 Bathing or Saunas

An alternative preferred by some scholars is that the *fulachta fiadh* were prehistoric saunas or bathing sites (Lucas 1960, Barfield and Hodder 1987, O' Drisceoil 1991). Barfield and Hodder (1987) argue that the lack of finds and animal bones from *fulachta fiadh* could be accounted for if the sites were used in this manner. This subject has been addressed above. Barfield and Hodder suggest that there were two basic requirements for a sauna: a heat source and enclosed space which may have been a simple tent covered with skins (1987, 372). Nevertheless very few excavations of *fulachta fiadh* sites have produced evidence of structures. The *fulacht fiadh* at Ballyvourney 1 is one of the notable exceptions. At this site a small hut was located to the west of the *fulacht fiadh* on a drier patch of ground (O' Kelly, 1954). Although steam can be produced using a trough of boiling water it is a more efficient method to produce steam by pouring cold water on heated stones. Thus such a function does not explain the numerous pits that are frequently associated with *fulachta fiadh*. Very few heated stones would be needed to create steam in this manner, therefore, it is difficult to account for the large build up of heat-shattered stones at most *fulachta fiadh*, unless they were repeatedly used over generations. The fragmentary nature of the heat affected stones at most sites could only have been achieved by immersing the heated stones into cold water. However bathing by immersion into hot water contained in a trough or pit would have been impractical. Nevertheless it is impossible to prove or disprove such a function and some scholars argue that a dual washing and cooking function may have been performed at many *fulachta fiadh*

sites as recounted in the Early Irish tale ‘The Romance of Mis and Dubh Ruis’ (Ó Drisceoil, 1991, 5).

3.1.3 *Alternative functions*

A number of other functions have been proposed for burnt mounds (Barfield and Hodder, 1987, 371) such as boat building, butter production, brine evaporation, brewing (see Quinn & Moore 2007), pottery filler, fulling and dyeing of textiles (Buckley 1990a, 9), leather working and metallurgy. Processes such as textile fulling and leather working may leave little or no archaeological remains and thus cannot be discounted. However it may be expected that the other procedures would result in the occurrence of pottery vessels, metal slag, etc. in *fulachta fiadh*. The deficiency of these types of finds in burnt mounds makes it difficult to support these functions.

Water was an essential component of this activity and the majority of burnt mound sites are located close to a river, stream or wetland area. At Chapelbride 5 the site was situated adjacent to a small pond and several small streams were present in the vicinity and while it is unknown if the pond existed in prehistory, it is obvious that some water source did, as indicated by the silty nature of the clays. The linear features associated with troughs F47 and F38 may have functioned as water channels and been integral to the operations at Chapelbride 5. The longevity of activity at the site, as indicated by the span of dates, suggest the site was may have been a significant local site in the earlier Bronze Age period. The distribution of the features and the recorded radiocarbon dates probably indicates that the activity at the three locations (western, central and eastern) represents separate activity across the Bronze Age and that later activity (agriculture, land improvement etc) has removed the mounds or spreads associated with the central and eastern activity.

Surrounding Environment

The charcoal in the pit fills is likely to reflect wood collected near the site, and therefore the results suggest that scrub woodland dominated by hazel, was growing locally. Ash and oak would have formed a higher canopy woodland, and hazel, cherries and Maloideae may have also grown 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 fragment of 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. 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). The fact that hazel is a slow-burning wood, which provides large amounts of heat, is also a probable reason for its predominance at Chapelbride 5.

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). Two phases of activity are indicated at the site. Early Bronze Age features F24 and F26 predate the trough F7, which it was suggested may be contemporary with the disturbed spread F8. This cannot be conclusively determined. There is sufficient distance between F7/F11/F15 and F8 etc to suggest these are separate events.

This site represents one of approximately 61 on the M3 Motorway where similar burnt mounds were excavated including adjacent sites to the east at Boolies 1 (1266-1009 BC; Beta 247135; Russell and Ginn 2008a), and Boolies 2 (2271-1977 BC; Beta 247135; Russell and Ginn 2008b); with long-lived Bronze Age activity represented by a span of dates from EBA activity during the mid third millennium BC (e.g. 2335–2037 BC; Beta 247148) through to Late Bronze Age activity at the beginning of the first millennium BC (1187-906 BC; Beta 247145; Gallagher and Ginn 2008). The site at Boolies 1 was located just 40m east of Chapelbride 5 and Boolies 2 some 300m distant (also to the east). The activity at both sites consisted of burnt stone mounds with associated pits and/or troughs. The activity at Boolies 1 dated to the Later Bronze Age whereas the activity at Chapelbride 5 and Boolies 2 dated to the Early Bronze Age. This cluster of sites are all part of the same landscape and indicate continuous burnt mound activity in this area throughout the Bronze Age.

4 CONCLUSIONS

Chapelbride 5 (A030/006) was excavated from 8–15 November 2006 by Derek Gallagher (ACS) as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council NRDO and the NRA. Several pits and troughs along with two possible water channels were covered by a large spread of burnt mound material, traces of which were present across the site indicating later disturbance. The site had elements dating to the Early and Middle Bronze Ages and is part of a wider complex of features in this locality (across Chapelbride and Boolies townlands) from the same period.

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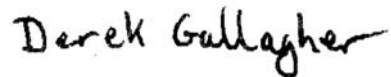
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Signed:



Derek Gallagher and Vicky Ginn

December 2008

APPENDIX 1 Context Details

Chapelbride 5: A030/006											
No	Type	Fill of/ Filled with	Strat above	Strat below	Description	Interpretation	Group	Artefacts	Animal bone	Cremated bone	Samples
1-3					Used previously in topsoil assessment						
4	Topsoil				Mid-brown loam	Topsoil					
5	Subsoil				Sandy clay	Subsoil					
6	Fill	7	29	28	Loose, dark-grey, silty clay with frequent heat-affected stones and charcoal inclusions. 0.25-0.30m depth	Fill of possible trough 7					#1, 5 14g charcoal, stone
7	Cut	6, 28-30	5	30	Sub-rectangular, northeast-southwest cut (1.99m x 1.60m x 0.40m) with a sharp break of slope, steep sides and a gradual break of slope leading to a flat base	Possible trough					
8	Spread	N/A	35, 44, 37, 46, 34	4	Loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. 11.00m x 10.00m x 0.10-0.15m	Burnt mound spread					
9	Spread	N/A	5	4	Moderately compact, dark-grey/black, silty clay with frequent charcoal inclusions. 0.70m x 0.30m x 0.01-0.08m	Spread					
10	Fill	11	27	4	Moderately compact, mid-brown-grey, silty clay with frequent heat-affected stones and occasional charcoal inclusions. 0.30m av depth	Upper fill of trough 11					
11	Cut	10, 27	5	27	Circular cut (1.70m diameter x 0.30m depth) with a sharp break of slope, steep sides and a gradual break of slope leading to a flat base	Trough					
12	Fill	13	13	4	Moderately compact, dark-grey, silty clay with frequent heat-affected stones and moderate charcoal inclusions. 0.17m depth	Fill of pit 13					

13	Cut	12	5	12	Sub-oval, northeast-southwest cut (0.81m x 0.50m x 0.17-0.22m) with a sharp break of slope, concave sides and a sharp break of slope leading to an irregular base	Pit						
14	Spread	N/A	5	4	Moderately compact, mid-grey, silty clay with moderate charcoal inclusions and frequent stones. 2.10m x 1.20m x 0.01-0.03m	Spread						
15	Spread	N/A	5	4	Moderately compact, dark-brownish-grey, silty clay with frequent heat-affected stones and occasional charcoal inclusions. 2.75m x 1.70m x 0.02-0.10m	Spread						
16	Spread	N/A	5	4	Moderately compact, dark-grey, silty clay with frequent fire-affected stones and moderate charcoal inclusions. 0.45m x 0.30m x 0.02m	Spread						
17	Fill	18	18	4	Loose, dark-brownish-grey, clayey silt with frequent heat-affected stones and occasional charcoal inclusions. 0.06-0.16m depth	Fill of pit 18						
18	Cut	17	5	17	Sub-circular, north-south cut (1.15m x 1.00m x 0.06-0.16m) with a gradual break of slope steep sides and a gradual break of slope leading to a flat base	Pit						
19	Fill	20	20	4	Loose, dark-greyish-brown, silty clay with occasional charcoal and frequent heat-affected stones. 0.10-0.15m depth	Fill of pit 20						
20	Cut	19	5	19	Circular cut (1.10m diameter x 0.15m depth) with an imperceptible-gradual break of slope, irregular sides and an imperceptible-gradual break of slope leading to an irregular base	Pit						
21	Fill	22	22	4	Moderately compact, mid-dark grey, silty clay with frequent charcoal inclusions and heat-affected stones. 0.10m depth	Fill of pit 21						

22	Cut	21	5	21	Sub-circular cut (1.45m x 1.17m x 0.10m) with an imperceptible-gradual break of slope, irregular sides and an imperceptible-gradual break of slope leading to an irregular base	Pit					
23	Fill	24	31	4	Moderately compact, dark-grey, silty clay with moderate charcoal inclusions and frequent heat-affected stones. 0.02-0.06m depth	Fill of pit 24					
24	Cut	23, 31	5	31	Irregular, northeast-southwest cut (0.85m x 0.40-0.50m x 0.12-0.16m) with a sharp break of slope, steep sides and a gradual break of slope leading to a flat base	Pit					
25	Fill	26	43	4	Loose, dark-grey/black, silty clay with frequent charcoal inclusions and heat-affected stones. 0.07-0.13m	Fill of pit 26					#2 77g charcoal, stone
26	Cut	25, 43	5	43	Sub-oval cut (1.30m x 0.80-1.20m x 0.13m) with a sharp break of slope, almost vertical sides and a sharp break of slope leading to a flat base	Pit					
27	Fill	11	11	10	Moderately compact, dark-grey, silty clay with moderate charcoal inclusions and frequent heat-affected stones. 0.22-0.25m depth	Primary fill of trough 11					
28	Fill	7	6	4	Loose, dark-brown-grey, silty clay with occasional charcoal inclusions and frequent heat-affected stones. 0.30m depth	Upper fill of pit 7					
29	Fill	7	30	6	Compact, greyish-yellow, silty clay with occasional gravel. 0.01-0.08m depth	Layer in fill 7					
30	Fill	7	7	29	Moderately compact, dark-grey, silty clay with moderate heat-affected stones and frequent charcoal. 0.01-0.03m depth	Fill of pit 7					#4 2g charcoal
31	Fill	24	24	23	Moderately compact, light-grey, silty clay with frequent charcoal inclusions. 0.06-0.08m depth	Fill of pit 24					#3 16g charcoal

32	Fill	33	33	4	Moderately compact, dark-grey, silty clay with moderate charcoal inclusions 0.25m depth	Fill of stakehole 33						
33	Cut	32	5	32	Circular cut (0.07m diameter x 0.25m depth) with a sharp break of slope, vertical sides and a sharp break of slope leading to a U-shaped base	Stakehole						
34	Spread	N/A	5	8	Compact, orange-yellow clay. 2.50m x 1.00m x 0.01-0.20m	Spread						
35	Fill	36	42	8	Loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. 8.50m x 1.75m x 0.14m	Fill of linear 36						
36	Cut	35, 42	5	42	Linear, east-west cut (8.50m x 1.75m x 0.18m) with an imperceptible break of slope, gently sloping sides and an imperceptible break of slope leading to a U-shaped base	Linear feature, possible water channel						
37	Fill	38	38	8	Loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. 2.50m x 1.00m x 0.15m	Fill of pit 38						
38	Cut	37	5	37	Sub-rectangular, east-west cut (2.50m x 1.00m x 0.15m) with an imperceptible-gradual break of slope, steep sides and an imperceptible-gradual break of slope leading to a flat base	Pit						
39	Fill	41	40	48	Compact, black, silty clay with 70% charcoal and occasional stones. 3.00m x 1.75m x 0.14m	Fill of pit 41						
40	Fill	41	41	39	Compact, mid-brown, silty clay with occasional charcoal flecks and moderate organic material. 0.06m depth	Fill of pit 41						
41	Cut	39, 40, 48	5	40	Sub-oval, northwest-southeast cut (3.00m x 1.75m x 0.47m) with a sharp break of slope, irregular sides and a gradual break of slope leading to an irregular base	Pit						

42	Fill	36	36	35	Moderately compact, mid-brown, silty clay with frequent organic material. 8.50m x 1.75m x 0.05m	Fill of pit 36					
43	Fill	26	26	25	Stones. 1.20m x 1.10m x 0.01-0.05m	Stone fill in pit 26					
44	Fill	45	45	8	Loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. 2.00m x 0.06m x 0.15m	Fill of linear 45					
45	Cut	44	5	44	Linear, east-west cut (2.00m x 0.60m x 0.15m) with an imperceptible break of slope, steep sides and an imperceptible break of slope leading to a U-shaped base	Linear feature					
46	Fill	47	47	8	Loose, dark-grey, silty clay with frequent charcoal inclusions and heat-affected stones. 2.25m x 1.00m x 0.16m	Fill of possible trough 47					
47	Cut	46	5	46	Sub-rectangular, northeast-southwest cut (2.25m x 1.00m x 0.16m) with a sharp break of slope, irregular sides and a sharp break of slope leading to an irregular base	Possible trough					
48	Fill	41	39	4	Compact, mid-grey, silty clay with occasional charcoal inclusions and decayed stone. 2.80m x 1.70m x 0.20-0.32m	Fill of pit 41					

APPENDIX 2 *Finds List*

There were no artefacts recovered from the excavations at Chapelbride 5.

APPENDIX 3 *Sample List*

Sample No	Context No	Results
1, 5	6	14g charcoal, stone
2	25	77g charcoal, stone
3	31	16g charcoal
4	30	2g charcoal

APPENDIX 4 *Plant macrofossil and charcoal analysis by Durham University*



Chapelbride 5, M3 Motorway Project, Co Meath, Ireland

plant macrofossil and charcoal analysis

on behalf of

Archaeological Consultancy Services Ltd

Report 2087
November 2008

Archaeological Services

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1. Summary

The project

- 1.1 A burnt mound was excavated at Chapelbride 5, Co Meath, Ireland by Archaeological Consultancy Services Ltd. This report presents the results of environmental analysis of 4 pit fills sampled on the site.

Results

- 1.2 Charcoal analysis suggests that scrub woodland grew locally, which would have provided an important resource for fuel for the burnt mound activities. Hazel was the most frequently recorded charcoal taxon, but oak, ash, Maloideae, cherries, willow/poplar and alder were also present.

2. Project background

Location and background

- 2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Chapelbride 5, Co Meath, Ireland (NGR 270947 274659). Three separate areas of burnt mound activity were revealed at this site, and the features included pits, troughs and a burnt mound. This report presents the results of plant macrofossil and charcoal analysis of 4 pit fills (contexts 6, 25, 30 and 31). Radiocarbon dates indicate a Bronze Age date for the site.

Objective

- 2.2 The objective was to analyse the plant macrofossils and charcoal from the fills, in order to provide information about activities on the site, and to identify material suitable for radiocarbon dating.

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. The residues were sorted by Dr Charlotte Henderson and Mr Bryan Atkinson. The plant macrofossil and charcoal identifications were carried out by Mr Lorne Elliott. Report preparation was by Dr Charlotte O'Brien.

Archive

- 2.5 The licence number is A030/006. The flots and charcoal samples are currently at the Environmental Laboratory at Archaeological Services Durham University awaiting collection or return.

3. Methods

- 3.1 The residues were examined for plant remains, shells, bones, pottery sherds and metalworking debris. The charred remains were scanned at up to x60 magnification using a Leica MZ7.5 stereomicroscope and charred seeds were identified 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 fragments >4mm. At least 100 fragments were identified from each context, where available. 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. A single entity of charcoal from each of the contexts was provided for radiocarbon dating. These included alder charcoal, weight 256mg, from context (6); hazel charcoal, weighing 602mg, from context (25); ash charcoal, weighing 40mg, from context (30); and hazel charcoal, weighing 1158mg, from context (31).

4. Results

- 4.1 The residues comprised charcoal and heat-shattered stones, and charcoal was also present in the flots. A few insects and modern roots were recorded, but these are likely to be later intrusive material. Plant macrofossils were absent from all of the pit fills. The quantities and proportions of charcoal species varied. Hazel was most frequently recorded, with oak, ash, Maloideae (Hawthorn, whitebeams, apple and pear), cherries, alder and willow/poplar, also present. The results are presented in Table 4.1 and Figure 4.1.

Table 4.1: Plant macrofossils and charcoal from Chapelbride 5

Context	6	25	30	31
Sample	1, 5	2	4	3
Feature	Pit	Pit	Pit	Pit
<i>Material available for radiocarbon dating</i>	✓	✓	✓	✓
<i>Volume of flot (ml)</i>	20	20	2	-
<i>Residue matrix (relative abundance)</i>				
Charcoal	2	3	1	-
Cracked/angular stones	3	4	1	-
<i>Flot matrix (relative abundance)</i>				
Charcoal	2	2	1	-
Insect	1	1	-	-
Roots (modern)	1	1	-	-
<i>Charcoal (g/number of fragments)</i>				
Total charcoal (g)	17.679	97.228	0.731	13.136
Percentage of sample analysed	100	33	100	100
Total charcoal analysed >4mm (g)	6.401	27.061	0.106	10.988
Number of analysed charcoal fragments >4mm	76	125	4	23
<i>Alnus glutinosa</i> (Alder)	2.051 (24F)	-	-	-
<i>Corylus avellana</i> (Hazel)	0.962 (14F)	14.843 (57F)	-	6.249 (13F)
<i>Corylus/Alnus</i> (Hazel/Alder)	0.745 (9F)	1.601 (3F)	-	-
<i>Fraxinus excelsior</i> (Ash)	0.566 (8F)	0.951 (5F)	0.106 (4F)	-
Maloideae (Hawthorn, whitebeams, apple, pear)	0.444 (2F)	-	-	-
<i>Prunus</i> spp (Cherries)	0.516 (6F)	-	-	-
<i>Quercus</i> sp (Oak)	-	0.831 (6F)	-	-
Salicaceae (Willow or poplar)	0.095 (1F)	-	-	-
Diffuse porous	0.269 (2F)	-	-	-
Ring porous	-	0.351 (3F)	-	-
Unidentified >4mm fraction	0.753 (10F)	8.484 (51F)	-	4.739 (10F)
Unidentified <4mm fraction	11.278	14.391	0.625	2.148

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

5. Discussion

5.1 The charcoal was generally in a poor condition, and some of the >4mm fragments could not be identified. This may be due to the former presence of water in the features, as, for example, the waterlogged conditions of burnt mound troughs, often provide a poor environment for the preservation of charcoal (Stuijts 2007).

5.2 The charcoal in the pit fills is likely to reflect wood collected near the site, and therefore the results suggest that scrub woodland dominated by hazel, was growing locally. Ash and oak would have formed a higher canopy woodland, and hazel, cherries and Maloideae may have also grown 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 fragment of 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.

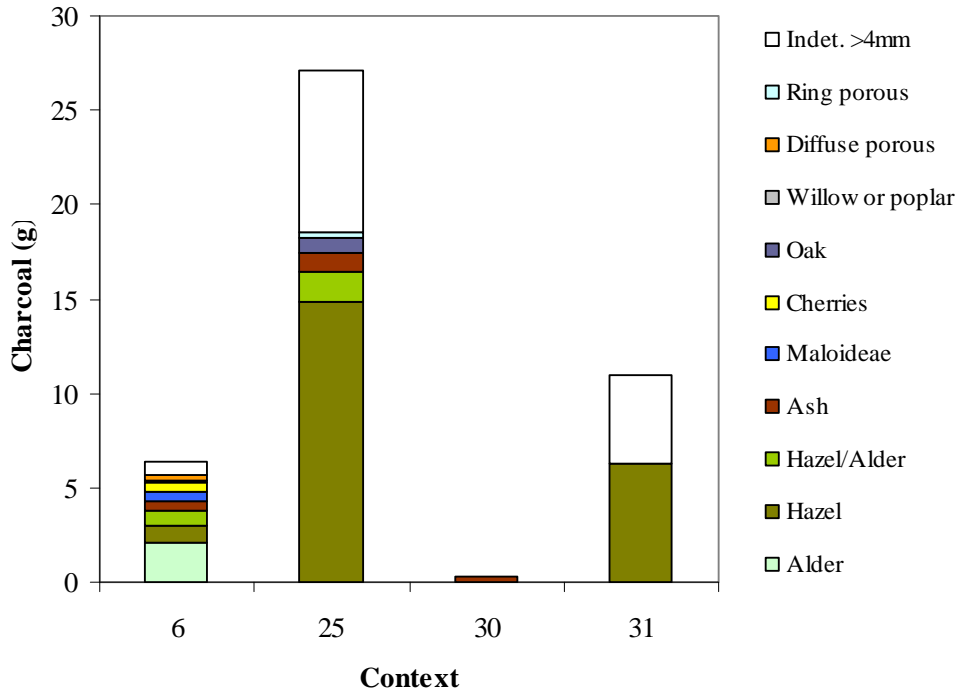


Figure 4.1: Proportions of charcoal species from Chapelbride 5

5.3 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). The fact that hazel is a slow-burning wood, which provides large amounts of heat, is also a probable reason for its predominance at Chapelbride 5.

6. Sources

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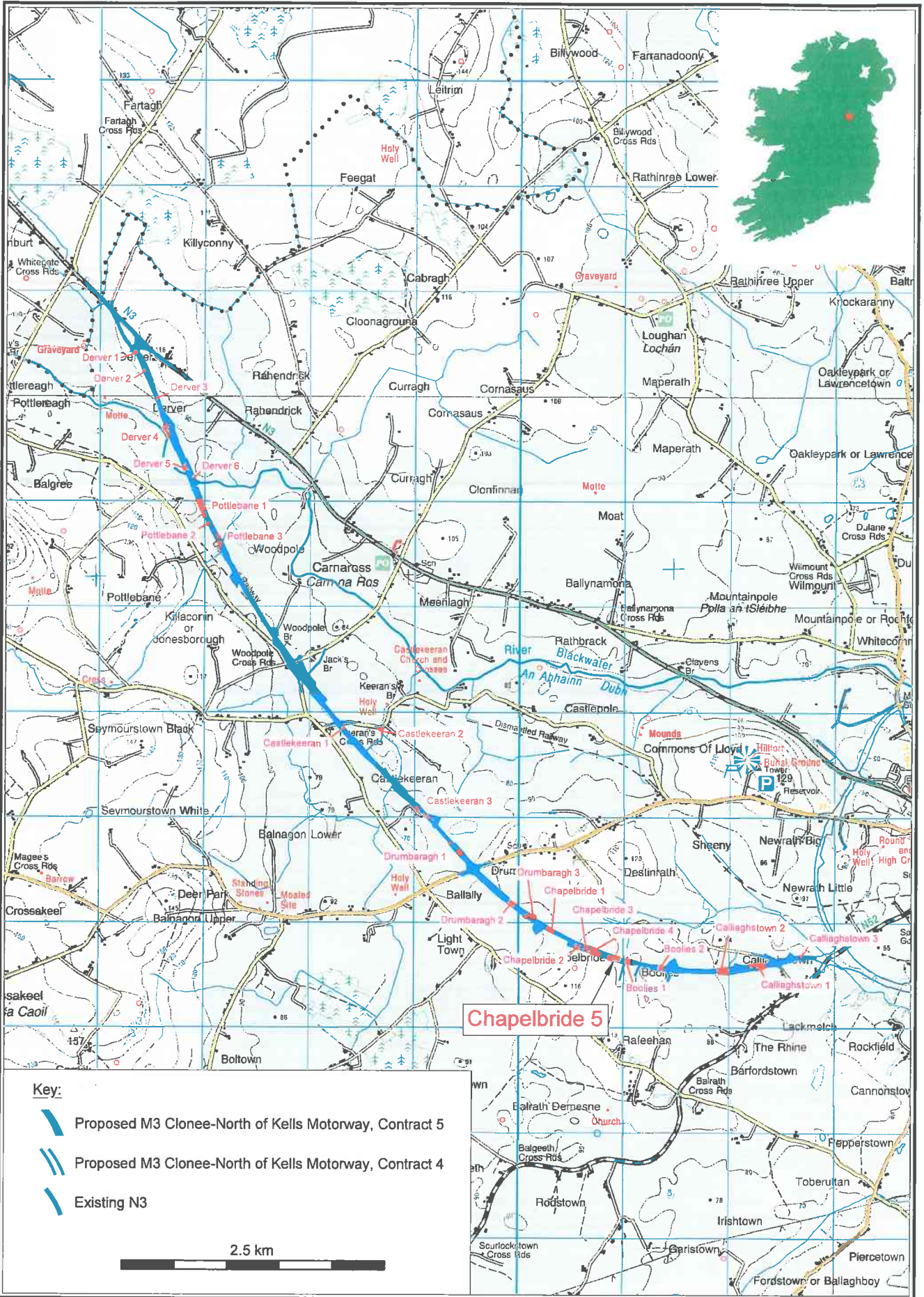
Schweingruber, FH, 1978 *Microscopic wood anatomy*, Birmensdorf

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APPENDIX 5 Radiocarbon dating by Beta Analytic

Context	Sample No.	Material	Species I.D.	Lab	Number	Date Type	Lab Calibrated Date	Conventional Date (BP)	Oxcal Calibrated Date	$^{13}\text{C}/^{12}\text{C}$ Ratio ‰
6	5	Charcoal	Alder	Beta	247137	AMS (Std)	Cal BC 1610–1430	3240 +/-40BP	1612–1433 BC	-27
25	2	Charcoal	Hazel	Beta	247138	AMS (Std)	Cal BC 2190–2180 & Cal BC 2140–1940	3670 +/-40BP	2195–1939 BC	-24.1
30	4	Charcoal	Ash	Beta	247139	AMS (Std)	Cal BC 1680–1500	3300 +/-40BP	1687–1496 BC	-25
31	3	Charcoal	Hazel	Beta	247140	AMS (Std)	Cal BC 2470–2200	3860 +/-40BP	2465–2206 BC	-27.1

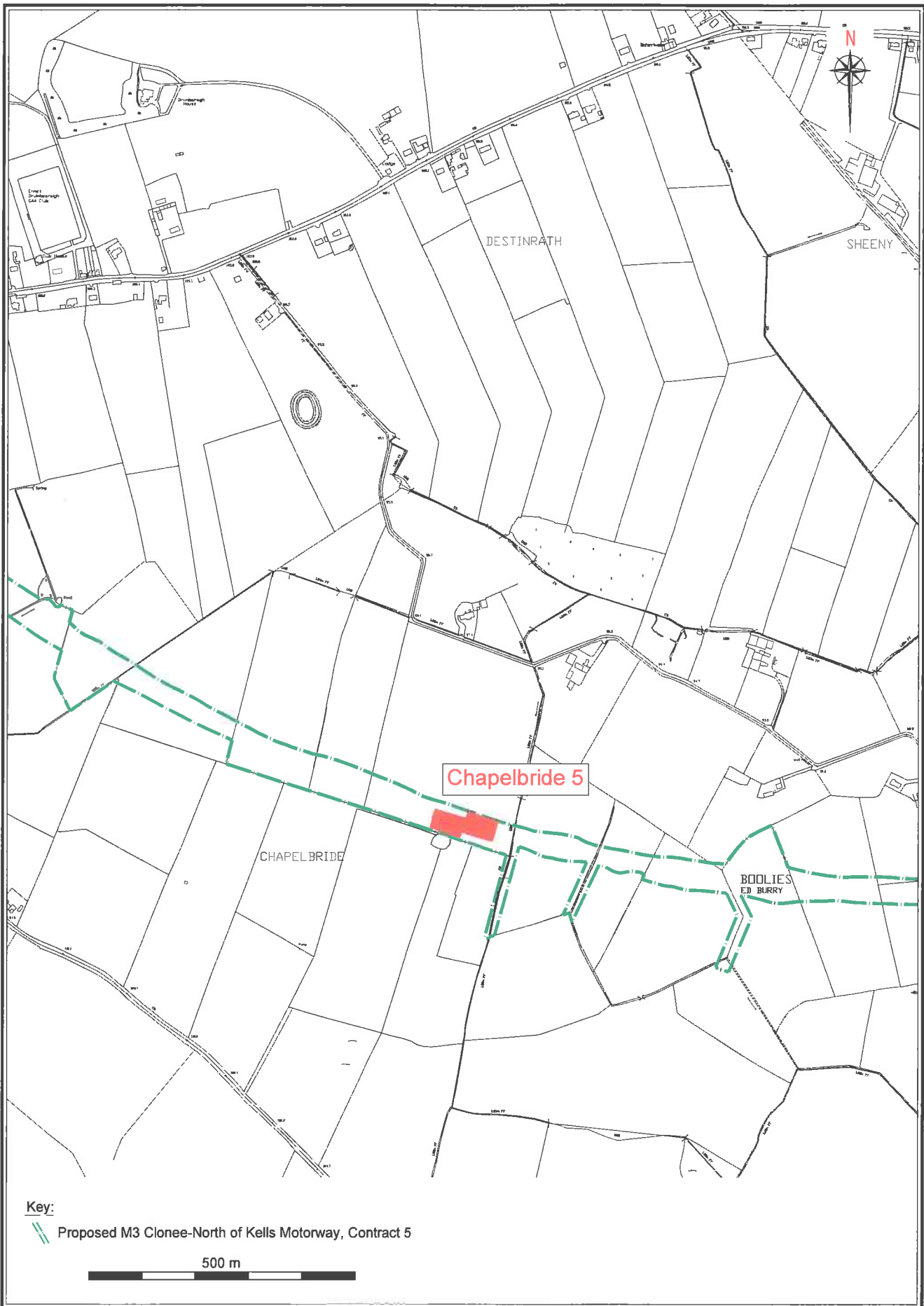


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Site: M3 Clonree-North of Kells PPP Scheme Contract 5, Chapelbride 5
 Issued for: Excavation Report
 Client: Meath County Council

Scale: 1:50,000 A4
 Date: Jul '07
 Origin: OSI Discovery Series
 Drawing no.: 04_01_C2791

Figure 1: Location of Chapelbride 5



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, Chapelbridge 5

Issued for: Excavation Report

Client: Meath County Council

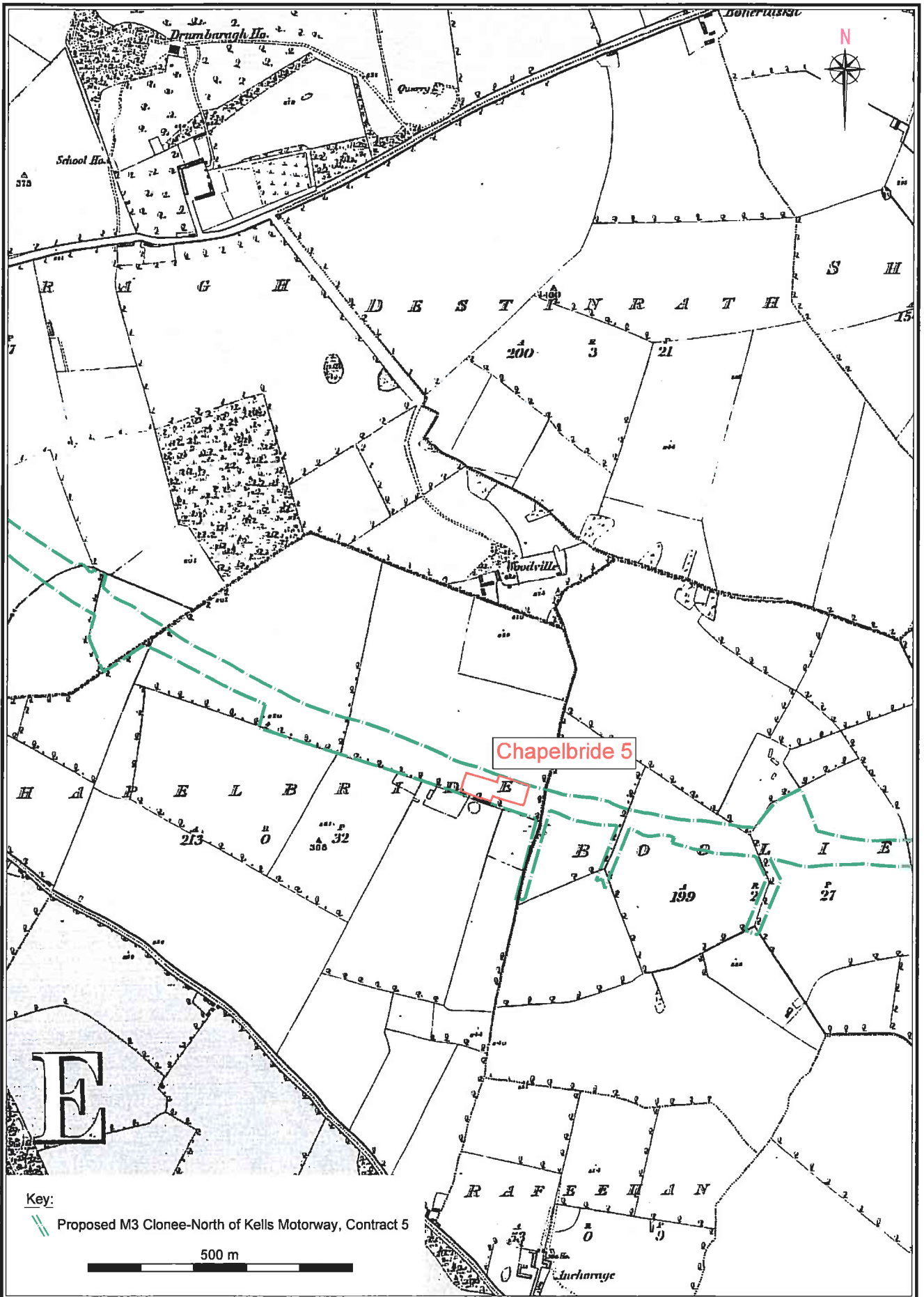
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Date: Jul '07

Origin: Client/ACS Ltd.

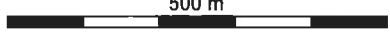
Drawing no.: 04_01_C2792

Figure 2: Location of Chapelbridge 5 on current OS background



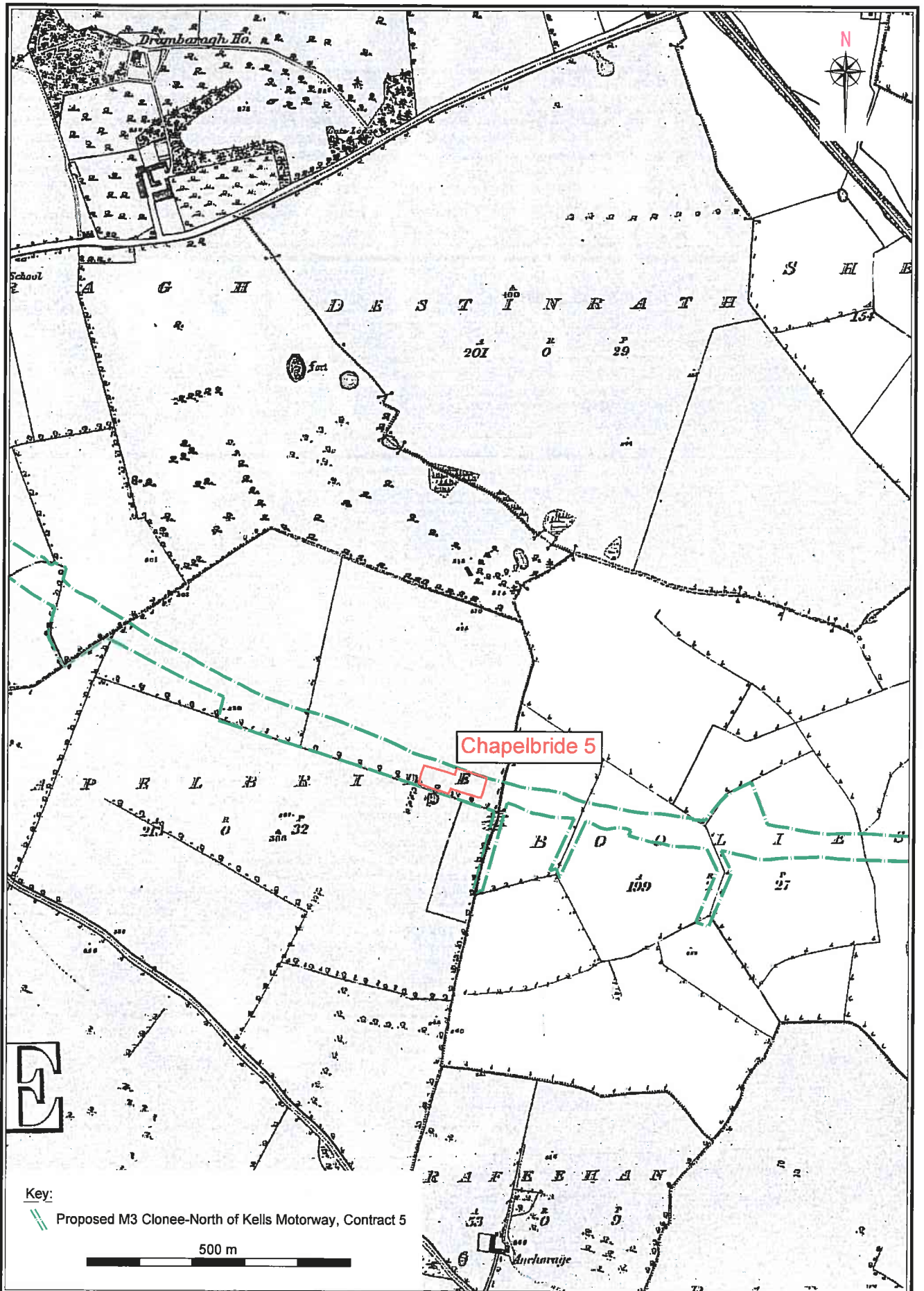
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500 m



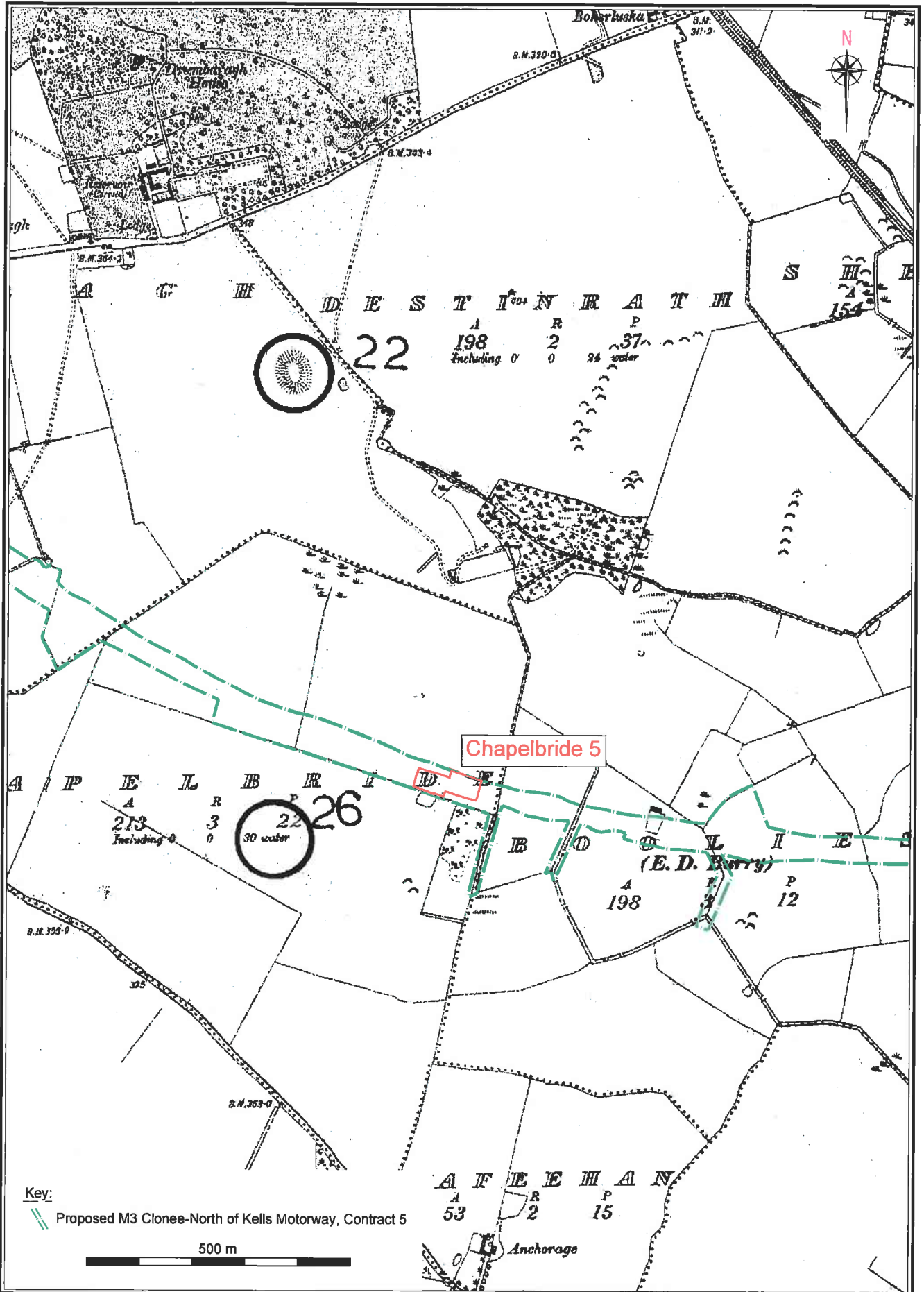
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Chapelbridge 5	Scale: 1:10,000 A4
	Issued for: Excavation Report	Date: Jul '07
	Client: Meath County Council	Origin: OSI (1836)
		Drawing no.: 04_01_C2793

Figure 3: Chapelbridge 5, 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, Chapelbridge 5	Scale: 1:10,000 A4
	Issued for: Excavation Report	Date: Jul '07
	Client: Meath County Council	Origin: OSi (1882)
		Drawing no.: 04_01_C2794

Figure 4: Chapelbridge 5, extract from 2nd edition OS map, Meath sheet 16



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Contract 5, Chapelbride 5

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Client: Meath County Council

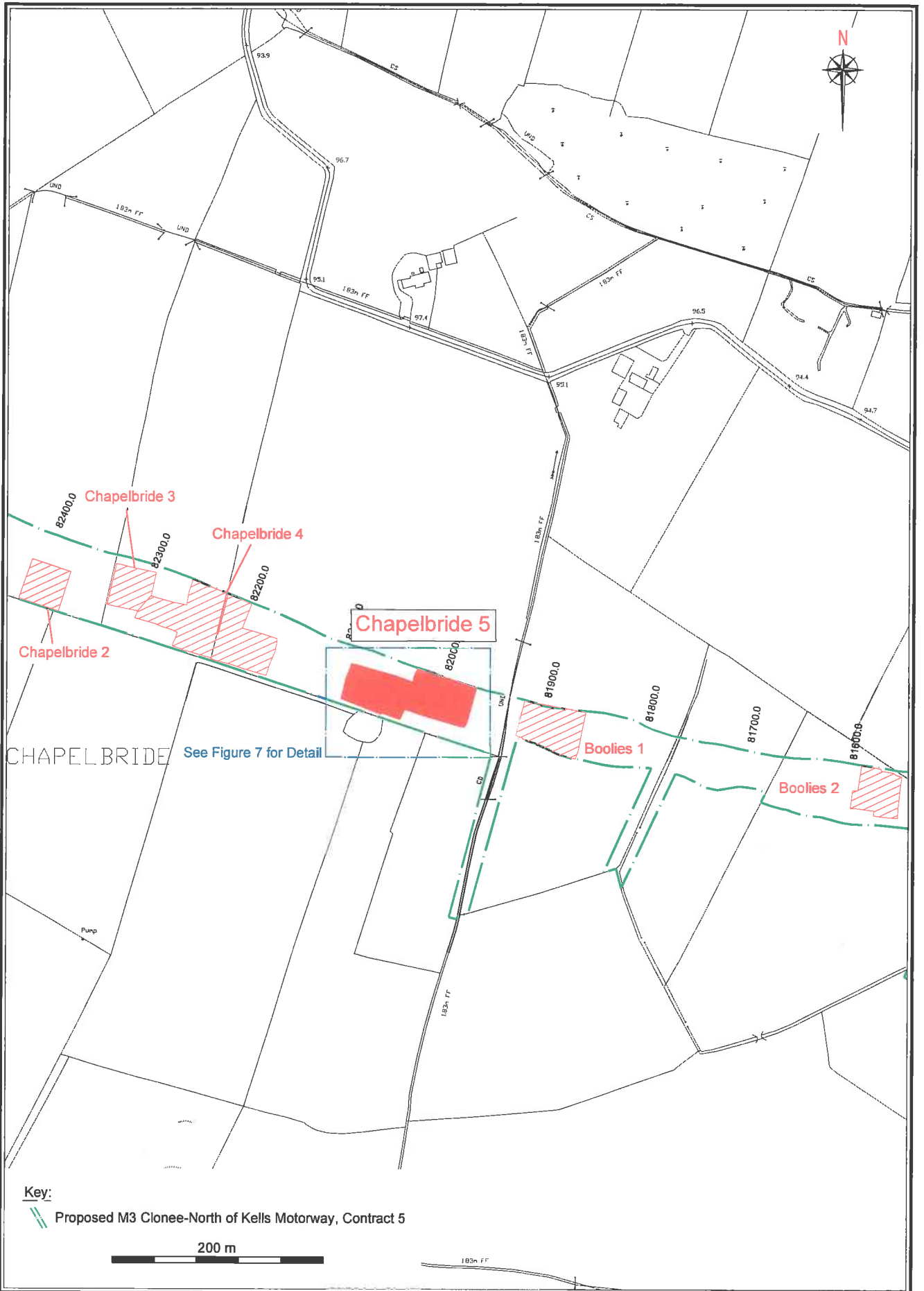
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Date: Jul '07

Origin: OSI (1910)

Drawing no.: 04_01_C2795

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



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

Issued for: Excavation Report

Client: Meath County Council

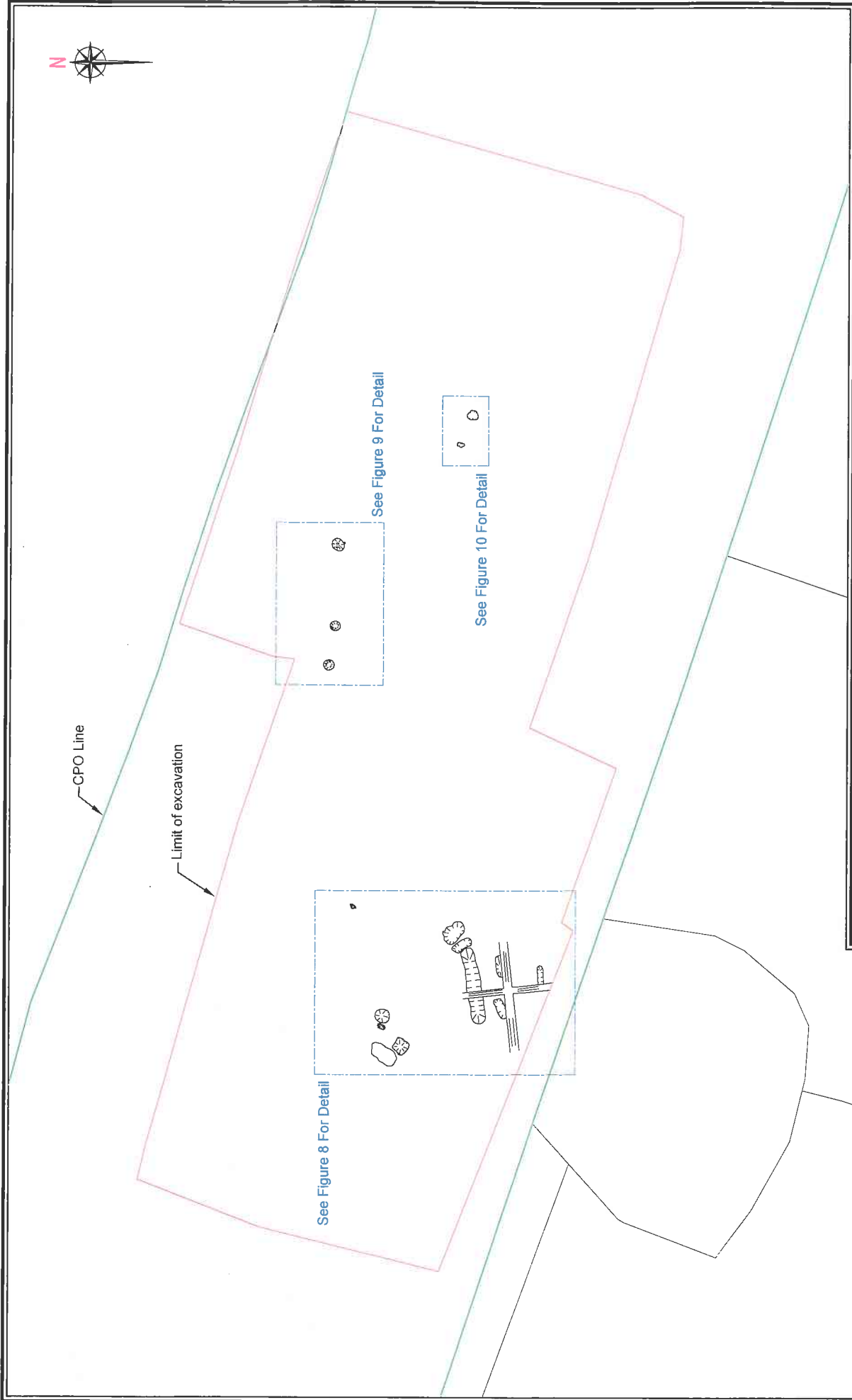
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Origin: Client/ACS Ltd.

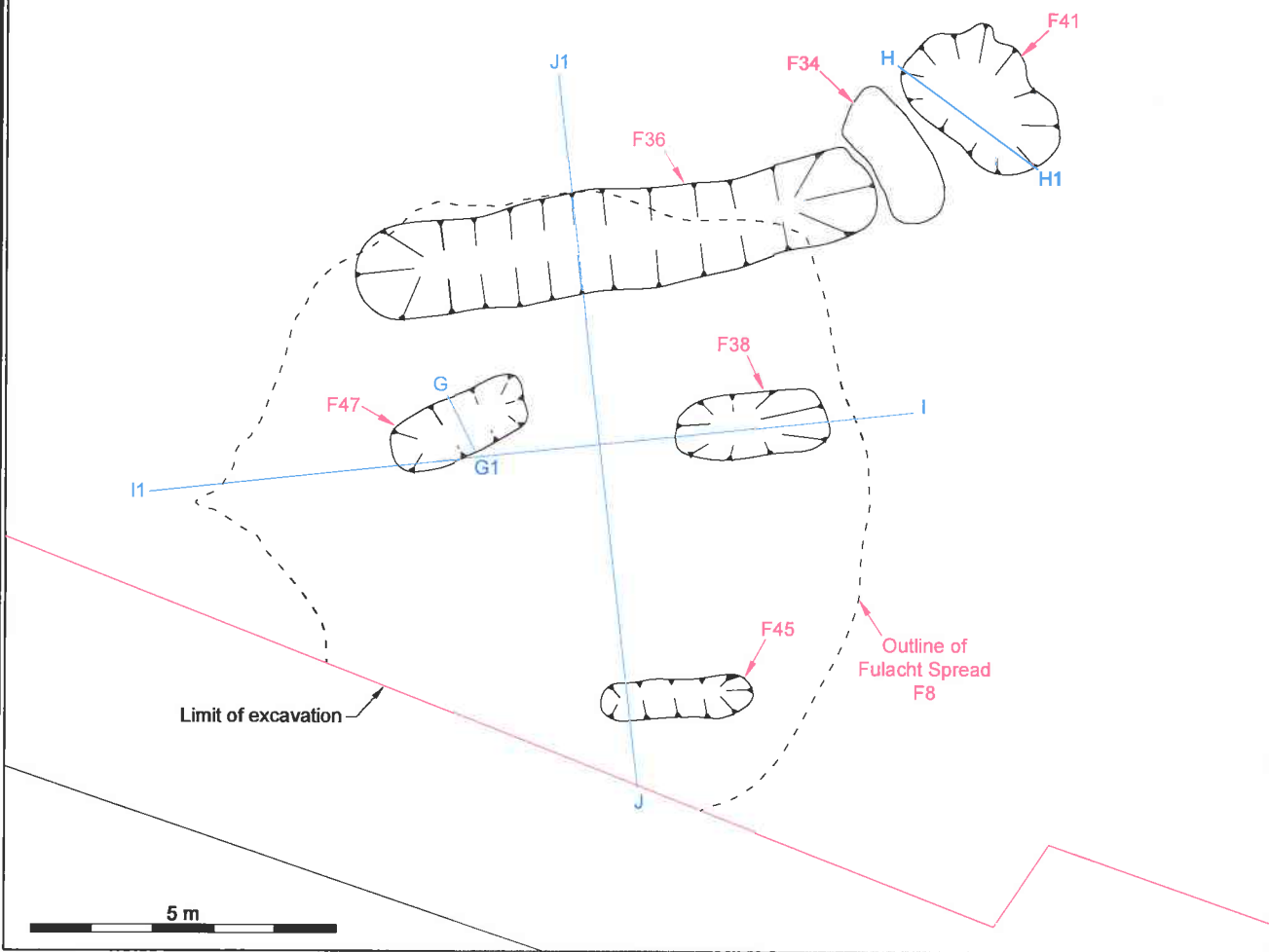
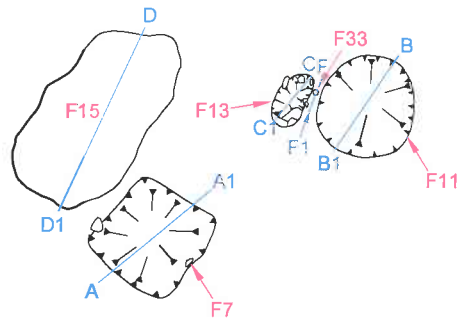
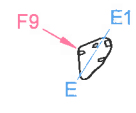
Drawing no.: 04_01_C2796

Figure 6: Detailed location of Chapelbride 5



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Figure 7: Detail of Chapelbride 5

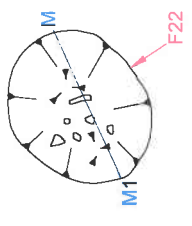
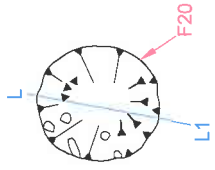
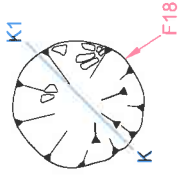


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Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Chapelbride 5
Issued for: Excavation Report
Client: Meath County Council

Scale: 1:120 A4
Date: Jul '07
Origin: Client/ACS Ltd.
Drawing no.: 04_01_C2798

Figure 8: Detail of Chapelbride 5; Western area

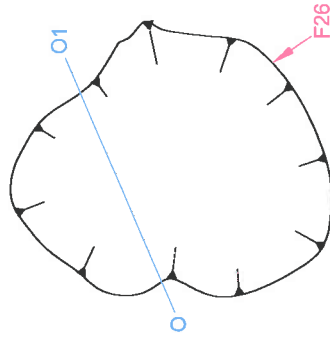
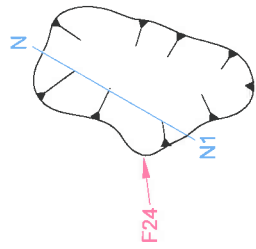


Limit of excavation



Archaeological Consultancy Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth		Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Chapelbride 5		Scale: 1:70 A4
		Issued for: Excavation Report		Date: Jul '07
		Client: Meath County Council		Origin: Client/ ACS Ltd.
				Drawing no.: 04_01_C2799

Figure 9: Detail of Chapelbride 5; Central area



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

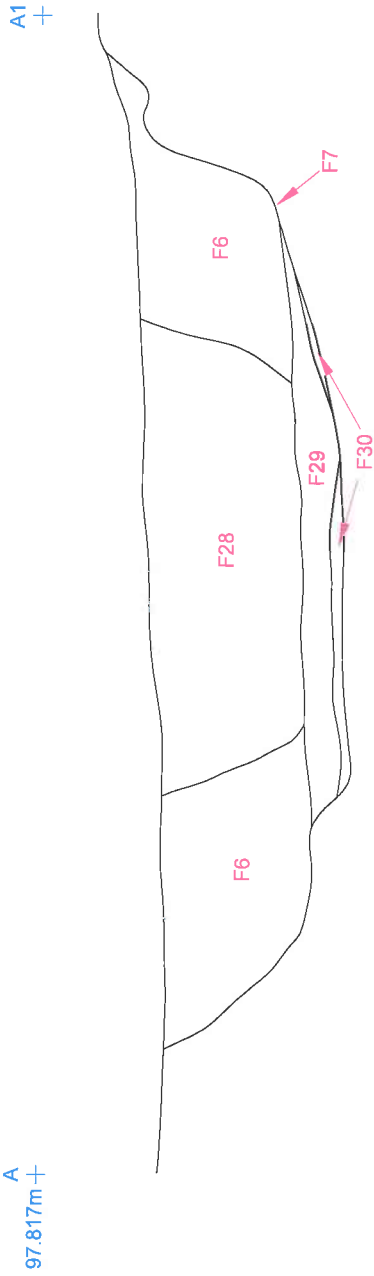
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Client: Meath County Council

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Date: Jul '07

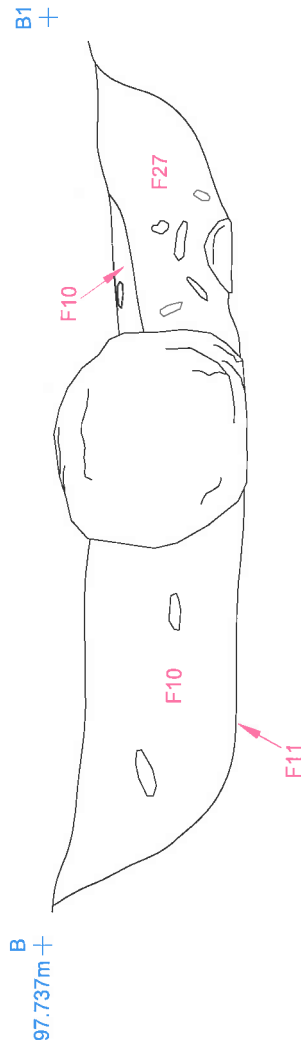
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Drawing no.: 04_01_C2800

Figure 10: Detail of Chapelbride 5; Eastern area

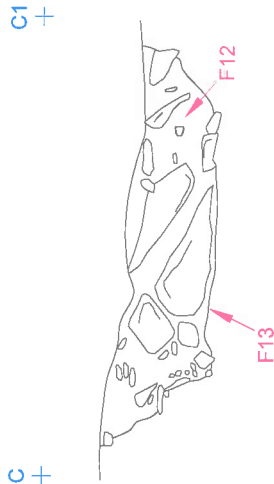
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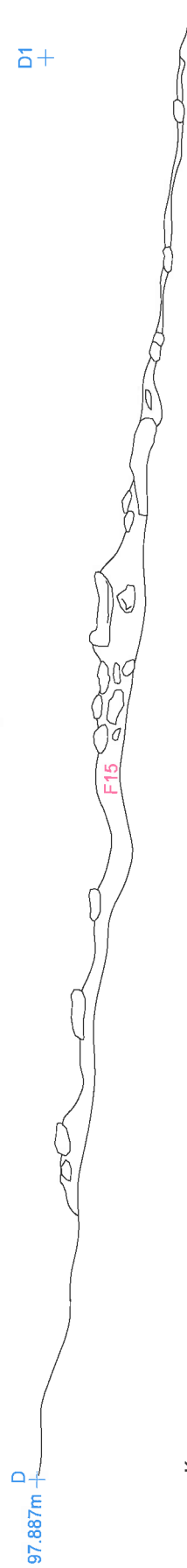
SECTION THROUGH F11



SECTION THROUGH F13



SECTION THROUGH SPREAD F15

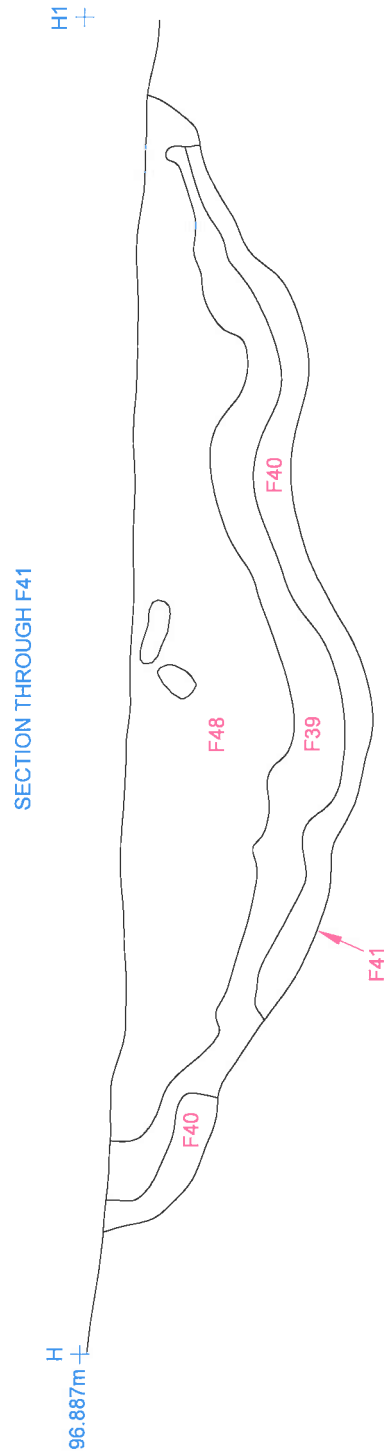
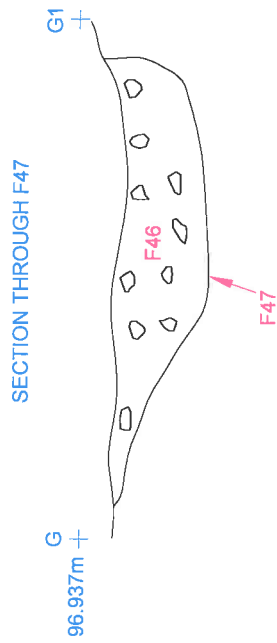


Key:  Stone



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Scale: 1:15 A4 Date: Jul '07 Origin: Client/ ACS Ltd. Drawing no.: 04_01_C2801			

Figure 11: Sections of Chapelbride 5



Key:  Stone



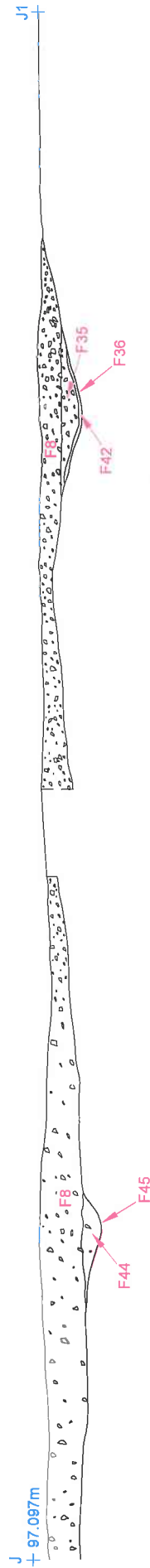
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Services Ltd.		Issued for: Excavation Report	
Client: Meath County Council		Origin: Client/ ACS Ltd.	
		Drawing no.: 04_01_C2802	
		Scale: 1:15 A4	
		Date: Jul '07	

Figure 12: Sections and profile of Chapelbride 5

SECTION THROUGH F8 & F38



SECTION THROUGH F8, F45 & F36



Key:  Stone

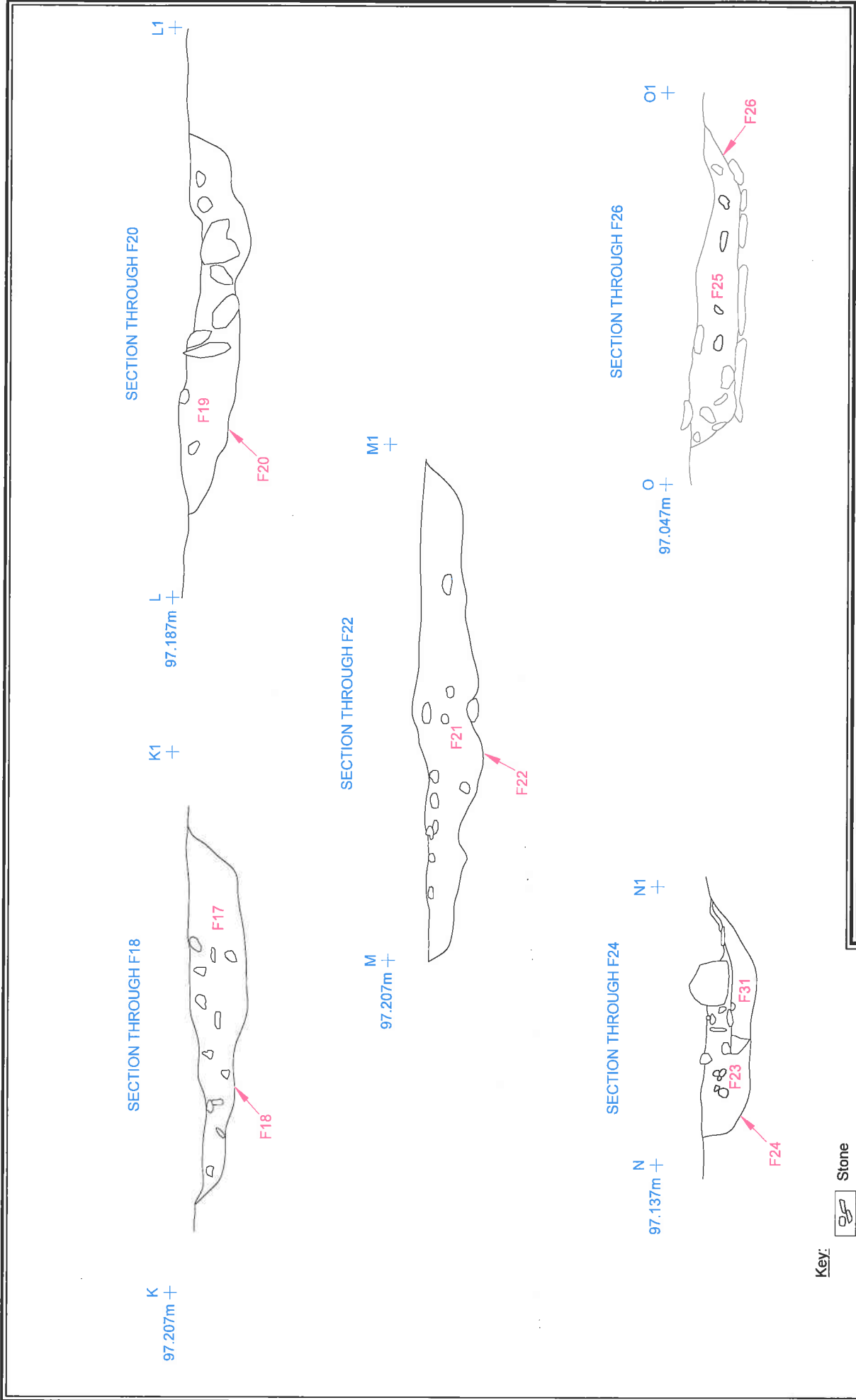


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Scale: 1:50 A4
 Date: Jul '07
 Origin: Client/ ACS Ltd.
 Drawing no.: 04_01_C2803

Figure 13: Sections of Chapelbride 5



Key:  Stone



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		Issued for: Excavation Report	Date: Jul '07
		Client: Meath County Council	Origin: Client/ ACS Ltd.
			Drawing no.: 04_01_C2804

Figure 14: Sections of Chapelbride 5



Plate 1: Area of burnt spread, F8, from the west (04_01_Chapelbride 5_CP100_16)



Plate 2: Pre-excavation of trough F7, from the southwest (04_01_Chapelbride 5_CP100_6)



Plate 3: Trough F7, from the north (04_01_Chapelbride 5_CP100_18)



Plate 4: Pit F26, from the south (04_01_Chapelbride 5_CP13_22)