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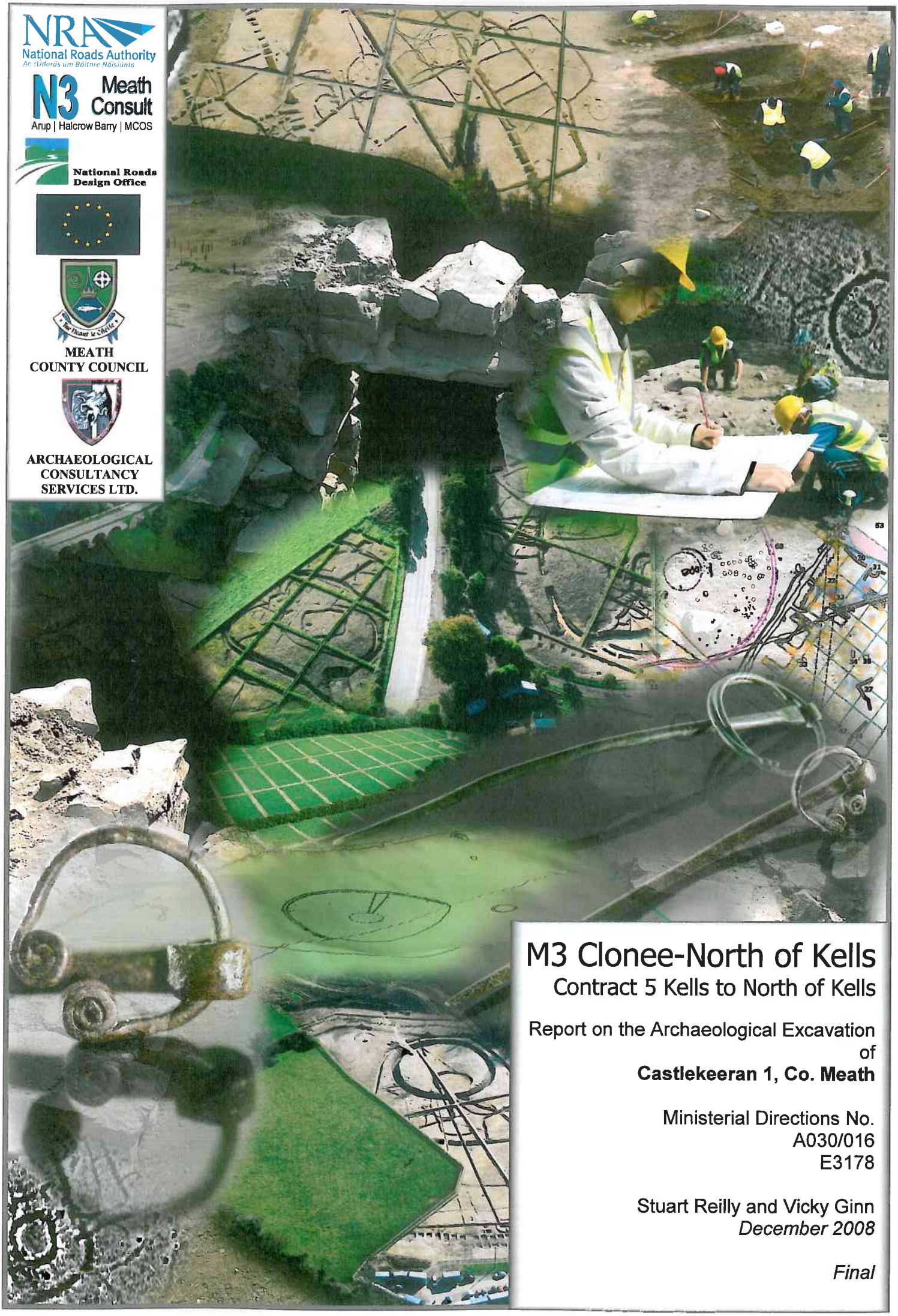

M3 Clonee-North of Kells

Contract 5 Kells to North of Kells

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

Ministerial Directions No.
A030/016
E3178

Stuart Reilly and Vicky Ginn
December 2008

Final

PROJECT DETAILS

Project	M3 Clonee–Kells Motorway
Site Name	Castlekeeran 1
Ministerial Direction Number	A030/016
Registration Number	E3178
Senior Archaeological Consultant	Donald Murphy
Site Director	Stuart Reilly
Excavated	02 – 08 January 2007
Client	Meath County Council, National Roads Design Office, Navan Enterprise Centre, Navan, County Meath
Townland	Castlekeeran
Parish	Castlekeeran
County	Meath
National Grid Reference	268332 276847
Chainage	85450
Height	85.71m OD
Report Type	Final
Report Status	Submitted
Date of Report	December 2008
Report by	Stuart Reilly 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).

Consulting Engineers - N3 Meath Consult

Engineer – Peter Thorne and Thomas Meagher

Resident Engineer – 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 Castlekeeran 1 was excavated by Gahan and Long for 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 02 and 08 January 2007 under Ministerial Direction Number A030/016 issued by DOEHLG in consultation with the NMI. The site consisted of a figure-of-eight shaped, corn-drying kiln (2.30m by 1.50m by 0.74m) with evidence for stone lining. Small, sub-rounded stones were set within an earlier fill which indicated that the kiln was used on at least two occasions and had been slightly altered in shape and size. The kiln has been dated to AD 392 – 562. Some 8m to the southwest of the kiln was a large, sub-circular pit (3m max diameter by 0.76m depth). Containing small quantities of cremated bone and three fills with high levels of organic material, it probably represents a rubbish pit. The remains of a post medieval field boundary, which, due to the frequency of roots and organic material within its fill, was probably a hedge, were also observed.

CONTENTS

FIGURE LIST

PLATE LIST

1 INTRODUCTION

The site at Castlekeeran 1 (Figures 1–6; Plate 7) was identified during advance testing carried out by Gill McLoughlin on behalf of Irish Archaeological Consultancy during August 2004 (04E1056) when a pit was identified (McLoughlin 2004). The geophysical survey of the area by Bartlett-Clark Consultancy (Bartlett 2002) revealed a possible enclosure site but no trace of this was discovered during either testing or excavation of the site. Full resolution of the site occurred in January 2007 and a kiln and a pit were discovered.

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 02 and 08 January 2007 under Ministerial Direction Number A030/016 issued to Meath County Council NRDO. The work was carried out by Stuart Reilly of Gahan and Long Ltd on behalf of ACS. The topsoil (F118: 0.20m depth) was stripped by machine equipped with a grading bucket. A mid-brown sand comprised the subsoil (F119).

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.

2.1 Results

Sixteen contexts of archaeological interest were identified within the excavation area (Figures 7-8). Only the principal archaeological features of Castlekeeran 1 will be discussed within this report; full details of all these, and further, contexts are located in Appendix 1.

The figure-of-eight shaped kiln (F100: 2.30m x 1.50m x 0.74m; Plates 1–4) had a layer of brown and red sandy clay (F107) set under a layer of stones indicating a previous use before the placement of the stone lining. F107 contained 3g cremated bone (possibly animal) charcoal flecks and seeds (Appendix 5). Cereal grains comprising wheat, rye, barley and oats were identified within this fill. However, barley was the predominant cereal (Appendix 5). The fill above the stone lining (F104) consisted of loose, brownish-red, silty clay with occasional burnt bone (0.6g) and charcoal (17g) as well as cereal grains. The species of the burnt bone was not determined. The charcoal was mainly derived from oak but smaller quantities of ash, hazel willow and birch were also present. The cereal grains identified within this context were wheat, wheat/rye, barley and oat. Barley was again the most prevalent cereal grain present. Small quantities of seed and fruits were also identified (Appendix 5). Charcoal (species ID willow) retrieved from this fill has been radiocarbon dated to AD 392 – 562 (Appendix 4). A second fill containing charcoal, cereal grains, cremated bone and stones was also observed (F108). This had a similar cereal grain assemblage to the two earlier fills (barley, wheat, oat, and rye) and also contained smaller quantities of fruit. Small quantities of hazel and ash were also identified. The cremated bone in this fill was possibly derived from animal bone (Appendix 5).

To the southwest of the kiln was a circular pit (F103: 3.00m diameter x 0.76m depth; Plates 5–6) which contained seven fills (F105, F110–116). A reddish-pink, sandy silt with seeds, charred grain and 1.4g of charcoal formed the primary fill (F115). Barley, wheat and oat cereal grains have all been identified in this fill and the species identification of the charcoal indicates that birch and ash were present. A small quantity of cremated bone was retrieved for analysis but the species was not determined (Appendix 5). The second fill (F114) was a loose, black, sandy silt with charcoal flecks, cereal grains, occasional bone and frequent stone inclusions. The cereal grains identified in this fill included 116 hulled barley grains (Appendix 5). The fills above these layers contained considerable quantities of organic material. 2g of charcoal and small quantities of cereal grains and seeds were derived from F105, charcoal flecks, seeds and 1g of cremated bone from F112 and 0.5g cremated bone (animal) from F111 (Appendix 5).

A post-medieval field boundary / hedge was also noted (F102).

2.2 Finds

The only find recovered was a sherd of post-medieval pottery from the topsoil (See Appendix 2).

3 DISCUSSION

3.1 Form and function

A single kiln and pit were contained within this site. Kinsella (2007) has defined a kiln as a structure specifically designed for the drying of a commodity and they were essential for cereal crop processing and especially to ripen the crop after damp harvests and/or in short growing seasons. An equally important function of the cereal-drying kiln is to harden the grain to allow for effective milling (Monk 1994, 217). Kilns are typically associated with the late prehistoric/early medieval period and associated sites in Ireland and are a common feature found as a result of many large-scale developments carried out in recent years throughout the Irish countryside. Although various shapes and forms have been identified, the most common kiln types identified include oval/sub oval shaped kiln, figure-of-eight shaped kilns and keyhole shaped kilns with figure-of-eight shaped kilns being the most predominant.

The kiln at Castlekeeran 1 can be described as a figure-of-eight shaped kiln. It had an overall length of 2.30m and was aligned north-south. The dimensions and alignment of this feature is typical of that noted by Monk and Kelleher who concluded that oval and figure-of-eight shaped kilns varied in length from 2-3m and were generally aligned east-west or north-south (2005, 83). It differed slightly from the majority of figure-of-eight shaped kilns in that it was

partially stone lined along the sides of the bowl and flue. These stones were placed on top of a red sandy clay that indicated an earlier phase of use. Although this is not a feature that is typically noted in figure-of-eight shaped kilns it has been observed elsewhere - a layer of stones also sealed a layer of burnt clay and partially lined the flue in a figure-of-eight shaped kiln at Colp West (Murphy & Clarke 2001).

Monk & Kelleher (2005) also attempted to formulate a preliminary chronological framework of kilns and have suggested that figure-of-eight shaped kilns date to the Early Medieval period and are followed by keyhole shaped kilns which are late Medieval in date. A detailed study of kilns was carried out by Kinsella (2007) and he concluded that oval/sub oval shaped kilns date from the middle Iron Age to approximately the 4th century AD, figure-of-eight shaped kilns date from approximately the 4th-7th century AD whilst keyhole shaped kilns occur from this date onwards. The date recovered from the kiln (4th-6th century AD) at Castlekeeran 1 matches the timeframe proposed by Kinsella for figure-of-eight shaped kilns.

To date in excess of ninety kilns have been identified along the proposed M3 Motorway (analysis on going so figures may change). The majority of the identified kilns were figure-of-eight in shape and they have been identified at Drumree 1 (A017/027), Baronstown 1 (A008/017), Castletown Tara 1 (A008/025), Lismullin 1 (A008/021), Roestown 2 (A008/002), Grange 1(A029/007), Grange 3 (A029/005), Kilmainham 1A (A029/053), Kilmainham 1C (A029/022), Boyerstown 3 (A023/015), Chapelbride 4 (A030/007), Pottlebane 3 (A030/017) and Castlekeeran 1. Only a small proportion of the identified kilns (4) were located along section 5 of the proposed motorway - at Pottlebane 3 (a suboval/figure-of-eight shaped kiln), Castlekeeran 1 (a figure-of-eight shaped kiln) and Chapelbride 4 (a figure-of-eight shaped kiln and a suboval shaped kiln). All of the figure-of-eight shaped kilns identified at these three sites were similar in construction and date and were broadly contemporary. The kiln at Pottlebane 3 was dated from the 5th - 7th century AD (see report A030/017), the kiln at Castlekeeran 1 was dated from 4th - 6th century AD and the kiln at Chapelbride 4 (see report A030/007) was dated from the 5th - 6th century and therefore all fit into the chronological framework proposed by Kinsella (that figure-of-eight shaped kilns date from the 4th-7th century AD). It also confirms that similar techniques with regard to grain drying were being carried out along this section of the proposed route in the early historic period. It may be significant to note that although Castlekeeran 1 and Pottlebane 3 were not located in close proximity to each other (Castlekeeran 1 was located 2110m southeast of Pottlebane 3) no additional sites were identified during the course of archaeological works between these two sites. It is possible therefore that these two features were constructed and utilised by the same population. Figure-of-eight-shaped kilns are a common feature found

throughout the Irish landscape and have been identified at Johnstown, Co. Meath (Clarke & Carlin 2008), Colp West, Co. Meath (Murphy and Clarke 2001), at Corbally, Co. Kildare (Tobin 2003), Jordanstown, Co. Dublin (Tobin 2002) and Raystown, Co. Meath (Seaver 2006).

Aside from a single pit (possibly used as a refuse pit/excavated to contain waste from kiln) no additional associated settlement was identified in the vicinity of the kiln at Castlekeeran 1. Although figure-of-eight shaped kilns have been identified in proximity to and in association with large-scale enclosure sites (i.e Baronstown 1, Boyerstown 3 and Roestown 2 etc), it is not unusual for these features to be found in relative isolation with no identified associated settlement. It is possible that they were located on the margins of a settlement area (perhaps a precautionary measure taken to combat the spread of fire) and that an associated settlement exists as of yet undiscovered beyond the roadtake.

The environmental analysis at the site indicates that barley was the predominant cereal grain identified in the Castlekeeran soil samples. The seeds identified in the Castlekeeran samples indicate that contamination of the cleaned grain occurred at the time that the kiln was in use. The main fuel for the kiln (inferred from charcoal species ID) would appear to have been oak and ash while hazel, alder, birch and willow were used as kindling (Appendix 5).

3.2 Date and sequence

All of the features that were uncovered and investigated at Castlekeeran 1 were subsoil cut and did not directly interact with one another. The figure-of-eight shaped drying kiln has been dated to AD 392 – 562 (BETA 247180; Appendix 4), a transitional period between the late Iron Age and early medieval periods. Figure-of-eight shaped kilns have been assigned to the early medieval period by Monk and Kelleher and from the 4th-7th century AD by Kinsella (2007). This kiln therefore fits within the timeframe proposed by Kinsella and has returned a radiocarbon date that is broadly contemporary with many other figure-of-eight shaped kilns identified during the course of archaeological excavations carried out along the entire M3 Motorway (ie. Pottlebane 3, Chapelbride 4 etc). While the field boundary/hedge and rubbish pit are not directly linked to the kiln it is possible that they are broadly contemporary, as the hedge, may have already existed when the kiln was built nearby to make use of the local air circulation and the pit F103 may have been dug to receive the by-products of the kiln. Therefore all of the features may be contemporary.

4 CONCLUSIONS

Castlekeeran 1, (A030/016), excavated (02 – 08 January 2007) by Stuart Reilly of Gahan and Long for ACS as part of the M3 Clonee–North of Kells Motorway Scheme on behalf of Meath County Council, NRDO, and the NRA, represented a keyhole-shaped/corn-drying kiln and a rubbish pit of late prehistoric/early medieval date. In essence, the site represents a small part of the agricultural past in this corner of Co. Meath, which indicates the immediate area may once have been used for cereal production.

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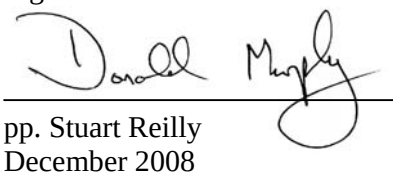

pp. Stuart Reilly
December 2008

APPENDIX 1 *Context Details*

Castlekeeran 1 A030/016											
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						
4-99	NOT ASSIGNED										
100	cut	104, 107, 108	119	107	keyhole-shaped, north-south cut (2.30m x 1.50m x 0.74m) with a sharp break of slope, steep sides and a gentle break of slope leading to a flat base. Stone lined	kiln					#1-2 soil and bone
101-102	NON ARCHAEOLOGICAL					hedge/field boundary					
103	cut	105, 110-116	119	115	circular cut (3.00m diameter x 0.76m depth) with a sharp break of slope, gradually sloping sides and a gentle break of slope leading to a relatively even base	pit					
104	fill	100	107	108	loose, brownish-red, silty clay with occasional cremated bone and frequent small stone inclusions (0.05 to 0.20m in thickness)	fill of kiln 100					#14 charcoal, #15 burnt bone
105	fill	103	110	118	moderately compact, dark-brown/black, silty clay with cremated bone and organic material (0.40m in depth)	upper fill of pit 103					#5 soil
106	NON ARCHAEOLOGICAL					hollow under 102					
107	fill	100	100	104	firm, brown and red, sandy clay (0.10m in thickness)	primary fill of kiln 100					#8 soil

108	fill	110	104	118	brown, silty sand with moderate charcoal and frequent stone inclusions (0.80m in depth)	fill of kiln 100					#9, 10 soil
109	NON ARCHAEOLOGICAL										
110	fill	103	111, 112	105	loose, mid-brown, coarse, sandy clay with stones (0.50m in maximum depth)	upper fill of 103					
111	fill	103	116	110	loose, yellow-red sandy grit with frequent stones (0.40m in depth)	fill of 103					#13 bone
112	fill	103	113	110, 116	loose, black, clayey silt with stones and organic inclusions (0.10m in thickness)	fill of 103					#7 soil, #11 bone
113	fill	103	114	112	loose, coarse, gritty, silty sand with frequent stone inclusions (0.20m in thickness)	fill of 103					
114	fill	103	115	113	loose, black, sandy silt with occasional bone and frequent stone inclusions (0.20m in maximum thickness)	fill of 103					#4 soil, #12 bone
115	fill	103	103	114	reddish-pink, sandy silt with gravel and stone inclusions (0.10m thick)	primary fill of 103					#3, 6 soil
116	fill	103	112	111	reddish-pink, firm, fine sand (0.10m thick)	fill of 103					
117	fill	102	102	118	loose, black, fine-grained organic material with stone inclusions (0.40m in maximum thickness)	fill of 102					
118	topsoil	N/A	119	N/A	0.20m depth			pottery			
119	subsoil	N/A	N/A	118	mid-brown sand						

APPENDIX 2 *Finds List*

List of Finds

Find Number	Description
A030/016:118:1	Post medieval red glazed earthenware body sherd

APPENDIX 3 *Sample List*

Sample No	**Context No**	**Results**
2	100	3g cremated bone
4, 12	114	charcoal flecks, seeds
5	105	4g charcoal, seeds
6, 53	115	seeds, 2g charcoal, charred grain
7, 11	112	charcoal flecks, seeds, 1g cremated bone
8	107	3g cremated bone, charcoal flecks, seeds
9, 10	108	cremated bone flecks, charcoal flecks, seeds
13	111	2g cremated bone
14, 15	104	17g charcoal, 2g cremated bone, seeds

APPENDIX 4 *Radiocarbon Dating*

Context	**Sample No**	**Material**	**Species id/**	**Lab**	**Lab code**	**Date Type**	**Date**	**Conventional Date (BP)**	**13C/12C Ratio ‰**
104: Fill of keyhole shaped kiln/furnace	14	Charcoal	Willow (560mg)	Beta	247180	AMS (std)	AD 392 – 562	1590±40	-24.7

APPENDIX 5 *Environmental Report*

Archaeological Services
University of Durham

Castlekeeran 1, M3 Motorway Project, Co Meath, Ireland

plant macrofossil, charcoal and cremated bone analysis

on behalf of
Archaeological Consultancy Services Ltd

Report 2075
November 2008

Archaeological Services
Durham University
South Road
Durham DH1 3LE
Tel: 0191 334 1121
Fax: 0191 334 1126
archaeological.services@durham.ac.uk
www.durham.ac.uk/archaeological.services

Castlekeeran 1, M3 Motorway Project, Co Meath, Ireland

plant macrofossil, charcoal and cremated bone analysis

Report 2075
November 2008

Archaeological Services Durham University

on behalf of

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

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1. Summary

The project

1.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Castlekeeran 1, Co. Meath, Ireland. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the fills of a kiln and pit identified on the site.

Results

1.2 The samples contain botanical evidence for the use of a corn-drying kiln. The main crops are those common in Ireland in the early medieval period, namely barley (possibly 6-row), wheat, oats and rye.

1.3 The kiln appears to have been fuelled with the native woods, ash and oak, with hazel, alder, willow/poplar and birch used as kindling. Peat may have been used as fuel, and the presence of seeds of plants that may have been deposited during peat formation (most prevalent were seeds of amphibious bistort) suggest that this could be the case. However, the remaining seeds were those of ruderals that could also have easily arrived with the grains.

1.4 A small amount of cremated bone (6.2g) was recovered from the corn-drying kiln and the nearby rubbish pit. Fragmentation of the bone was fairly severe, and in most cases it was not possible to determine whether the bone was human or animal. One context associated with the kiln contained a fragment of animal bone, and two other contexts contained possible animal bone. Most of the bone had been burnt at high temperatures and achieved full oxidation.

2. Project background

Location and background

2.1 An excavation was undertaken by Archaeological Consultancy Services Ltd at Castlekeeran 1, Co. Meath, Ireland (NGR 268332 276847). Features on the site included a corn-drying kiln and a large, sub-circular pit. A radiocarbon date of charcoal from the kiln provided an early medieval date for the feature. This report presents the results of plant macrofossil, charcoal and cremated bone analysis of the kiln and pit fills.

Objective

2.2 The objective was to analyse the plant macrofossils, charcoal and 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. Charcoal and plant macrofossil analysis was carried out by Ms Lisa Gray. 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 A030/016. 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. Some of the flots contained large numbers of charred grains, and were sub-sampled using a riffle box. The whole and sub-sampled flots were examined under a low-powered stereo microscope with magnifications of 10 to 40x. The plant macrofossils were identified as closely as their quality of preservation allowed. Intact charred remains and identifiable fragments (distal and embryo ends) were counted. Fragments of unidentifiable grain tissue and flecks (<4mm^2) of charcoal were given estimated levels of abundance as follows: + =1-10, ++ =11-50, +++ = 51-150, ++++ = 150-250 and +++++ = >250. Identifications were made using modern reference material (Gray's own and the European Seed Reference collection at the Institute of Archaeology, University College London). Manuals were also used, including Beijerinck 1947, Cappers *et al.* 2006, Charles 1984, Hillman *et al.* 1996 and Jacomet 2006). Nomenclature was taken from Stace (1997). Correct botanical terms for the plant macrofossils are given in the table. In the

text 'seed' should be considered to mean 'achene' and 'fruit'. Identifications were made to species level where possible and genus and family where diagnostic features were less clear. An identification prefixed 'cf ' or '?' has been used where the plant macrofossil closely resembled the species named, but the identification was not entirely certain.

3.2 Charcoal fragments larger than 4mm^2 were examined. Fragments larger than this size are easier to break to reveal the cross-sections necessary and allow more diagnostic features to survive (Smart & Hoffman 1988). It has been observed that fragments smaller than 4mm^2 have a greater chance of being windblown or reworked (Boardman 1995). Each selected fragment was examined under a binocular stereo microscope with magnifications of between 10 to 40x. At this stage, fragments of oak were removed and remaining fragments were separated into groups based on the pattern of porosity of the transverse section.

3.3 Identifications of non-oak fragments were made using an epi-luminating metallurgical microscope. Examinations were made of the transverse, radial longitudinal and transverse longitudinal sections. Diagnostic features were noted and identifications were made using anatomical guides (Gale & Cutler 2000; Hather 2000; Schweingruber 1978) and modern reference material. Identifications were made to species where diagnostic features were clear in all three sections, and given possible identifications (e.g. cf. *Corylus* sp.), where one section was not clear.

3.4 Fragment counts were made before splitting to reveal sections. This was followed by weighing of each taxa and the unidentified <4mm^2 fraction.

Results

3.5 The pit and kiln features contained similar assemblages of charred plant macrofossils, so will be described here together, with differences highlighted as necessary. Details are given in Appendix 1.

3.6 Charred plant macrofossils (seeds, grains, chaff) were the main components of both features. The only uncharred plant material were fragments of root/rhizomes present in low quantities in contexts (107), (108) and (115).

3.7 The preservation of remains varied. Many of the grains and seeds were too distorted or abraded to allow species identification. Each sample was dominated by cereal grains. The best preserved macrofossils were those of barley grains. Seeds were present in lower numbers, and chaff was only observed in pit fills (105), (114) and (115), and kiln fill (108). These chaff fragments were barley rachis fragments. Unfortunately they were too poorly preserved to determine whether they were from 6 or 2-row barley varieties. Other chaff consisted of 1 fragment of oat awn in the kiln fill (108).

3.8 For all grains there appeared to be little variation between the two features in terms of quantity and distribution of grain types. Grains of barley were the most abundant find in each flot. Some of these were twisted and some appeared to be naked barley. The best preserved and most frequent were those

of hulled, mostly straight, barley grains. These were present in similar proportions in the kiln fill (104) and pit fill (114). Other grains represented were oats, rye and free-threshing type wheat.

3.9 All of the seeds were the same size or smaller than the grain. They were given habitat classifications based on those devised by Glynis Jones, Vanessa Straker and Anne Davis in their survey of early medieval plant use in London (Jones *et al.* 1990):

A weeds of cultivated ground
B weeds of waste places and disturbed ground
C plants of woods, scrub and hedgerows
D grassland plants
E plants of damp or marshy land

3.10 The most frequent seeds in each feature were those of the damp ground plant, amphibious bistort, followed by a ruderal, fat hen (Stace 1997). Plants from cultivated/disturbed ground, and those able to live in a variety of habitats, were the dominant habitat preferences of the non-cereal plants recorded in both features.

3.11 The charcoal fragments consisted of hardwoods native to Ireland (O' Donnell 2007). There was a slight difference between the distribution of charcoal taxa between the two features; oak was the most frequent type in the kiln, and birch was the most frequent type in the pit. The remaining charcoal types, for both features, were alder, hazel and ash. A fragment of willow/poplar was found in kiln fill (104) prior to this analysis, and was used for radiocarbon dating.

Discussion

Corn Driers

3.12 Corn driers have been identified in many parts of the British Isles, from sites dating from the late prehistoric to the medieval period (van der Veen 1989). They have been found in areas where summers were cool and moist (Gibson 1989), meaning harvests were damp (Monk 1986) and grains needed to be dried to prevent spoilage by germination or insect damage (Van der Veen 1989). In this case, only one straight hulled barley grain and one naked straight grain appeared to have sprouted, and insect damage was not evident. Where damage was present it appeared to be due to the effects of charring and burial.

The Cereals

3.13 The cereals observed in these samples include the 'three staples', barley, oat, and rye, of the early medieval period in Ireland (Monk 1986). Unfortunately, no floret bases of the oat grains survived, so it cannot be determined whether these were from wild or cultivated grain.

3.14 A dominance of barley, as seen in these samples, has also been observed in prehistoric and early medieval Ireland (Monk 1986). Monk noted that 6-row barley was the main form. Many of the grains in these samples exhibited the straight, symmetrical, smooth surface (Jacomet 2006) morphology of hulled

barley. Twisted grains were present, but in much lower numbers than straight grains. Ratios of straight to twisted hulled barley grains for each context are listed in Table 3.1. The ratio for 6-row barley should be 1:2 (1 straight to 2 twisted), so it is clear that the hulled grains do not show this pattern. Naked grains were present, with their distinctive morphology and wrinkles on the grain surface (Jacomet 2006). Only one of these grains appeared to be twisted.

Table 3.1: Ratio of straight to twisted hulled barley grains in each context

Context	Ratio of straight to twisted hulled barley grains
104	14:1
105	20:1
107	4.5:1
108	5.5:1
112	19:1
114	only straight hulled grains
115	only straight hulled grains

3.15 There were no fragments of the distinctive internodes 'with three robust pedicels' (Miller 1999). Those recovered at this site were very abraded. The twisted grains could be distortions due to charring, but the author feels these were clearly twisted in the way one would expect for the lateral grains in 6-row barley. More of the twisted laterals could have been lost during sieving. This has been observed during ethnographic studies of traditional cereal processing (Hillman in Milles 1986 cited by Jones 1996). This fact, and the absence of well-preserved chaff, means it would be unwise to identify the barley grains any further than being possible 6-row barley.

The Seeds and Chaff

3.16 As already noted, the charred plant macrofossil assemblages from this site were dominated by grains. Assemblages where chaff was scarce, and seeds were the same size or smaller than the grain, have been observed during ethnographic studies of non-industrial cereal processing in Turkey, at the final stage of sieving before kiln drying (Hillman 1984).

3.17 The seeds and chaff could have arrived in the deposits as contaminants of the cleaned grain (Jones 1981; Hillman 1984) or as fuel for the kiln. Some may also have formed part of the dormant seed bank in peat cut for fuel, as plants such as amphibious bistort, are common in seasonal lakes, or 'Turloughs', in Southern Ireland where the basal sediment includes peat (Anon 2008b).

3.18 If the seeds are present as crop weeds, they could indicate the fertility of the fields the crops grew in and the time of year of sowing or harvest. Fat hen seeds were one of the most frequent seeds recovered from the samples. Fat hen presents the taphonomic problem of producing thousands of seeds per plant (Hanf 1983), but there is documentary evidence for fat hen seeds being used to bulk out cereal flour (Stokes & Rowley-Conwy 2002). Monk noted the frequency of fat hen seeds in some Irish deposits and suggested that, as they had been found in faeces, they might have been growing as a crop (Monk

1986). In this case fat hen seeds might be present as an acceptable crop weed. The possibility of fat hen being a consciously gathered food crop, rather than a contaminant of cereals was tested by Stokes & Rowley-Conwy (2002), when they compared the viability of harvesting and processing fat hen seeds compared to cereals. They concluded that although the yield was less than cereals, the quicker processing time for fat hen meant that the caches of seed found in sites across Europe, could have been the remains of fat hen cultivated or deliberately gathered for food. Ecologically fat hen is common among spring cereals growing in loose, damp, nitrogenous loams and sandy soils (Hanf 1983).

3.19 Other plants identified to species were fig-leaved goosefoot, pale persicaria and hedge bedstraw. Fig-leaved goosefoot is a plant found in waste and arable ground (Stace 1997), particularly near manure heaps (Clapham *et al*. 1952). Pale persicaria is another plant producing many seeds per individual, and is found among arable crops and in exposed mud beside ponds (Grime *et al*. 1990). This seed was an unusual find in that, unlike the ruderal preferences of many of the others, it is a plant of hedgerow and scrub with a preference for base-rich soils (Clapham *et al*. 1952). This seed was recovered from pit fill (112), which also contained the only occurrence of seed of pale persicaria and euphrasia/red bartsia. It does not seem possible to conclude any particular source of these seeds, although they may have come from crop weeds or within peat used as fuel.

The Charcoal

3.20 Oak fragments were the most frequent type in the kiln, and were present in smaller quantities in the pit. Oak has two species native to Ireland, but it can only be identified to genus microscopically (Hather 2000). Oak species prefer damp, non-calcareous soils, and often grow with hazel and ash (Gale & Cutler 2000). As a firewood, if seasoned well, it burns slowly giving off a 'good lasting heat' (Skellern 2000).

3.21 Ash fragments were recovered from context (104) and (108) of the kiln, and from context (115) of the pit. Ash burns steadily and well, and can be burnt while green (Skellern 2000). It grows with oak on damp soils (Gale & Cutler 2000).

3.22 The alder and hazel fragments were less easy to identify, because the sclariform plates that distinguish the wood of these trees, were often damaged or unclear. Fragments of hazel were found in contexts (104) and (108) of the kiln, and context (105) of the pit. Fragments of alder were also found in context (104). Alder tends to grow in damp woodlands with oak (Gale & Cutler 2000). It burns quickly giving off little heat (O'Donnell 2007). Hazel needs to be seasoned and burns well and fast (Skellern 2000). It grows in wet, but not waterlogged, conditions in basic to moderately acid soils (O'Donnell 2007) among oak and ash (Gale & Cutler 2000).

3.23 Birch fragments were only observed in pit fill (115), and kiln fill (104). The two native birches cannot be distinguished microscopically (O'Donnell 2007). It is also associated with oak, preferring non-calcareous soils (Gale & Cutler

2000). Birch can be used as firewood without seasoning, and burns quickly (Skellern 2000). It makes good charcoal and is a hot, short-lived fuel (Gale & Cutler 2000 citing Lines 1984).

3.24 Willow and poplar are difficult to separate because their microscopic anatomy is so similar (Hather 2000). They are both less useful firewoods than the preceding type, and willow burns well only if seasoned (Skellern 2000).

3.25 The charcoal assemblages in both features may be showing that the main kiln fuel was oak and ash, while hazel, alder, birch and willow/poplar were used as the kindling wood, as this would need to burn quickly.

4. Cremated bone analysis

Methods

4.1 Burnt bone was recovered from contexts associated with a corn-drying kiln, and from a nearby rubbish pit. Seven contexts were presented for analysis, with a total weight of 6.2g. Each context 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 for each context is presented in Table 4.1, and the fraction weights per context are given in Table 4.2.

4.3 The amount of cremated bone recovered from all contexts was small, ranging from 0.5g to 1.9g, and most of the material was recovered from contexts associated with the kiln (Table 4.1). In most cases the bone was severely fragmented, with the bulk of the material in the middle or smallest sieved fraction; only context (100) had the greatest portion in the largest sieved fraction (Table 4.2). Maximum fragment size ranged from 9.3mm to 24.2mm.

Table 4.1: Summary of cremated remains

Context	Context Detail	Bone Colour	Species	Weight (g)
100	Key-stone kiln/ furnace	Buff/ white	Unknown	1.6
104	Fill of (C100)	White, some mid-pale grey	Unknown	0.6
107	Fill of (C100)	White/ pale grey	Animal?	1.9
108	Fill of (C100)	Buff/ white	Animal?	0.6
111	Fill of (C100)	Buff/ white	Animal	0.5
112	Fill of (C103) (multi-use pit)	Buff/ white	Unknown	0.5
115	Fill of (C103) (multi-use pit)	White/ pale grey	Unknown	0.5

4.4 The majority of bone was buff or white, occasionally a pale grey, implying exposure to high temperatures in excess of *c.* 600ºC with a plentiful supply of oxygen (McKinley 2004).

4.5 All fragments were examined with a view to identification. Context (111), associated with the kiln, contained a fragment of animal bone (0.4g), but this could not be identified to species. Two other contexts associated with the kiln (107 and 108) contained small fragments of rib that might have been animal bone, although it was difficult to be certain. None of the remaining contexts contained any identifiable bone, and 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
100	1.6	1.1	68.8	0.3	18.8	0.2	12.5	24.2
104	0.6	0.0	0.0	0.4	66.7	0.2	33.3	14.8
107	1.9	0.4	21.1	0.7	36.8	0.8	42.1	17.1
108	0.6	0.0	0.0	0.5	83.3	<0.1	16.7	14.6
111	0.5	0.0	0.0	0.4	80.0	0.1	20.0	17.3
112	0.5	0.0	0.0	0.4	80.0	0.1	20.0	9.3
115	0.5	0.0	0.0	0.3	60.0	0.2	40.0	15.3

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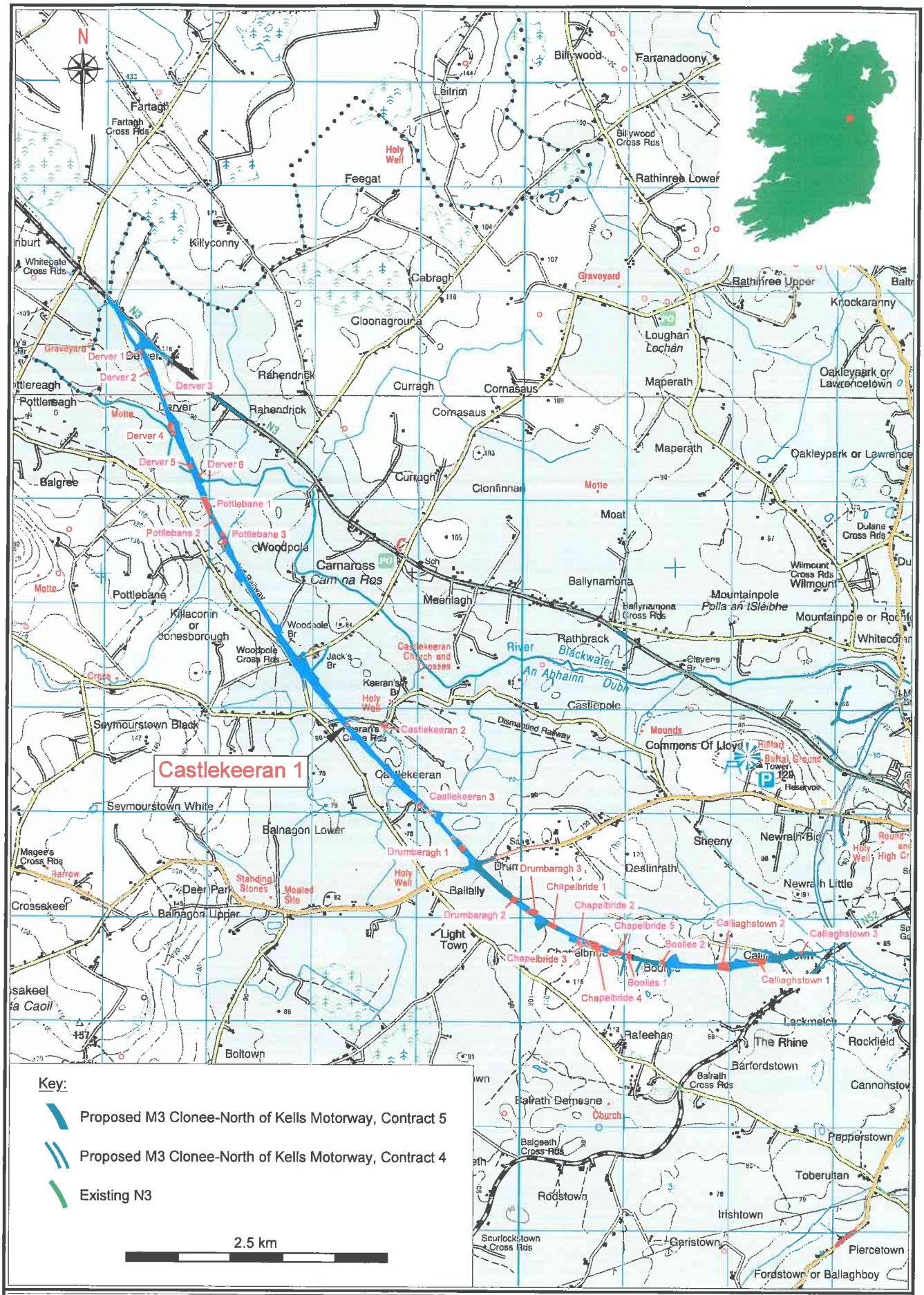
Appendix 1: Plant macrofossil and charcoal analysis from Castlekeeran 1

Context		104	104	107	108	111	105	112	114	115	115
Sample		1	14	1	9, 10	13	5	7	4	6	53
Feature		Kiln	Kiln	Kiln	Kiln	Kiln	Pit	Pit	Pit	Pit	Pit
Material available for radiocarbon dating		✓	✓		✓	-	✓	-			✓
Volume of flot (ml)		10g	NA	3g	7g	NA	4g	2g	2g	?	4g
Sub-sample % raw scores given		12.5%	NA	50%	25%	NA	25%	100%	100%	100%	25%
Residue matrix (relative abundance)											
Burnt bone		-	-	-	1	-		-		-	1
Charcoal		1	-	1	1	-	1	1	-	-	2
Charcoal (g/number of fragments)											
Total charcoal (g)		6.568	8.645	-	0.264	-	2.899	-	-	-	1.396
Percentage of sample analysed		100	100	-	100	-	100	-	-	-	100
Total charcoal analysed >4mm (g)		1.45	4.625	-	0.224	-	0.889	-	-	-	0.581
Number of analysed charcoal fragments >4mm		25	35	-	10	-	10	-	-	-	-
Betula sp.		-	-	-	-	-	-	-	-	-	0.414 (6F)
cf. *Betula* sp.?birch)		-	0.217 (3F)	-	-	-	-	-	-	-	-
Alnus sp. (alder)		0.126 (4F)	-	-	-	-	-	-	-	-	-
cf. *Alnus* sp. (?alder)		0.140 (2F)	-	-	-	-	-	-	-	-	-
Quercus sp. (oak)		0.796 (11F)	3.747 (26F)	-	0.067 (4F)	-	0.022 (1F)	-	-	-	-
Fraxinus excelsior L. (ash)		-	0.066 (1F)	-	-	-	-	-	-	-	0.111 (1F)
cf. *Fraxinus excelsior* L. (ash)		0.039 (1F)	0.272 (1F)	-	0.040 (2F)	-	-	-	-	-	-
Corylus avellana L. (hazel)		-	0.323 (5F)	-	0.117 (4F)	-	0.496 (5F)	-	-	-	-
cf. *Corylus avellana* L. (?hazel)		0.349 (7F)	-	-	-	-	0.371 (4F)	-	-	-	-
Hardwood semi-ring porous undifferentiated		-	-	-	-	-	-	-	-	-	0.056 (1F)
unidentified <4mm^2 fraction		5.118	4.020	-	0.040	-	2.010				0.815
Charred remains (total number)											
cf. *Triticum aestivum/turgidum* (bread/club/rivet wheat)	grain fragments	3	-	-	-	-	-	-	-	-	5
Triticum aestivum/turgidum (bread/club/rivet wheat)	grain fragments	-	-	-	6	-	-	4	1	-	-
Triticum aestivum/turgidum (bread/club/rivet wheat)	grain	2	-	2	12	-	-	2	-	-	-
cf. *Triticum aestivum/turgidum* (bread/club/rivet wheat)	grain	16	-	4	9	-	3	4	-	-	-
Triticum sp. (wheat undifferentiated)	grain	8	-	3	-	-	-	-	1	-	6
Triticum sp. (wheat undifferentiated)	grain fragments	10	-	-	9	-	-	-	-	2	14
Secale cereale (rye)	grain	-	-	1	8	-	-	-	-	-	-
Secale/Triticum sp. (rye/wheat)	grain	6	-	-	2	-	-	3	-	-	-
cf. *Hordeum* sp. (barley undifferentiated)	rachis fragment	-	-	-	1	-	-	-	-	1	-
Hordeum sp. (barley undifferentiated)	rachis fragments	-	-	-	-	-	2	-	1	-	-
Hordeum sp. (barley undifferentiated)	grain	12	-	6	9	-	-	1	-	-	-
cf. *Hordeum* sp. (barley undifferentiated)	grain fragment	2	-	34	35	-	10	-	8	5	-
cf. *Hordeum* sp. (barley undifferentiated)	grain	16	-	8	17	-	5	25	8	5	37
Hordeum sp. (barley undifferentiated)	straight grain	56	-	14	30	-	7	25	12	-	19
Hordeum sp. (naked barley)	twisted grain	-	-	1	-	-	-	-	-	-	-
Hordeum sp. (naked barley)	straight sprouted grain	-	-	1	-	-	-	-	-	-	-
Hordeum sp. (hulled barley)	straight grain fragment	-	-	-	-	-	-	-	-	1	-
Hordeum sp. (hulled barley)	straight sprouted grain	-	-	-	1	-	-	-	-	-	-

Context		104	104	107	108	111	105	112	114	115	115
Sample		1	14	1	9, 10	13	5	7	4	6	53
Feature		Kiln	Kiln	Kiln	Kiln	Kiln	Pit	Pit	Pit	Pit	Pit
Hordeum sp. (hulled barley)	twisted grain	4	-	2	12	-	1	2	-	-	1
Hordeum sp. (naked barley)	straight grain	41	-	2	5	-	4	5	7	-	4
Hordeum sp. (hulled barley)	straight grain	112	-	8	66	-	20	38	116	3	39
Hordeum/Triticum sp. (barley/wheat)	grain	5	-	-	9	-	-	1	-	-	7
Avena sp. (oat)	awn fragment	-	-	-	1	-	-	-	-	-	-
cf. *Avena* sp. (oat)	grain	-	-	-	1	-	-	-	-	-	-
cf. *Avena* sp. (oat)	grain fragments	-	-	6	-	-	-	-	-	-	-
Avena sp. (oat)	grain fragments	1	-	6	2	-	-	-	-	-	5
Avena sp. (oat)	grain	14	-	2	6	-	-	-	-	-	10
Cerealia indeterminate	grain	20	-	-	10	-	-	1	21	5	41
Cerealia indeterminate	grain fragments	++++	-	+++++	+	-	++	++	++	+	++++
(abcde) *Ranunculus acris/repens/bulbosus* (buttercup)	achene	-	-	-	-	-	-	1	-	-	-
(abcde) *cf. Ranunculus acris/repens/bulbosus* (buttercup)	achene	3	-	-	-	-	-	-	-	-	-
(abcde) *Silene* sp. (campion type)	seed	-	-	-	-	-	-	-	-	-	1
(ab) *Chenopodium album* L. (fat hen)	fruit	18	-	18	15	-	-	3	1	-	12
(ab) *Chenopodium album* L. (fat hen)	testa fragments	-	-	-	18	-	-	2	-	-	9
(ab) *Chenopodium ficifolium* Sm. (Fig-leaved goosefoot)	fruit	-	-	-	-	-	2	1	1	-	-
(ab) Chenopodiaceae (undifferentiated)	fruit	17	-	-	25	-	-	7	2	-	-
(ab) Chenopodiaceae (undifferentiated)	testa fragments	13	-	-	-	-	-	-	-	-	-
(ab) *Atriplex hortensis/ prostrate* (garden/spear-leaved orache)	fruit	2	-	-	-	-	-	1	-	-	-
(ab) *Atriplex hortensis/prostrate* (garden/spear-leaved orache)	testa fragments	8	-	-	-	-	-	-	-	-	-
(d) Fabaceae (legume undifferentiated)	seed fragment	-	-	-	-	-	-	1	-	-	-
(e) *Persicaria amphibia* (L.) Gray (amphibious bistort)	fruit fragments	2	-	-	-	-	-	4	-	-	-
(e) *Persicaria amphibia* (L.) Gray (amphibious bistort)	fruit	5	-	16	23	-	9	5	-	2	27
(e) *Persicaria amphibia* (L.) Gray (amphibious bistort)	testa fragments	7	-	5	12	-	-	-	-	-	7
(acd) Asteraceae (daisy family undifferentiated)	fruit	-	-	-	-	-	-	-	1	-	1
(abcde) *Polygonum* sp. (knotgrass type)	fruit	3	-	-	1	-	-	-	1	-	-
(abe) *Polygonum lapathifolia* (L.)Gray (pale persicaria)	fruit fragments	-	-	-	-	-	-	2	-	-	-
(abe) *Polygonum lapathifolia* (L.)Gray (pale persicaria)	fruit	-	-	-	-	-	-	7	-	-	-
(abcde) *Rumex* sp. (dock type undifferentiated)	fruit	1	-	-	-	-	1	-	-	-	-
(abcde) Polygonaceae (knotgrass family undifferentiated)	fruit	-	-	-	5	-	-	-	-	-	-
(abcde) *Rumex* sp. (dock type)	fruit	1	-	3	6	-	-	-	-	1	3
(abcde) *Euphrasia/Odontites* sp. (euphrasia/ red bartsia)	seed	-	-	-	-	-	-	2	-	-	-
(abcd) cf. *Galeopsis* sp. (hemp nettle type)	fruit	-	-	-	-	-	-	1	-	-	-
(cd) *Galium mollugo* L. (hedge bedstraw)	fruit	-	-	-	-	-	-	1	-	-	-
(abd) *Bromus* sp. (brome)	fruit	-	-	-	-	-	-	-	-	1	1
(abd) cf. *Bromus* sp. (brome)	fruit fragment	1	-	-	-	-	-	1	-	-	1
(abcde) Poaceae (grass undifferentiated)	fruit	3	-	2	-	-	2	-	5	1	-

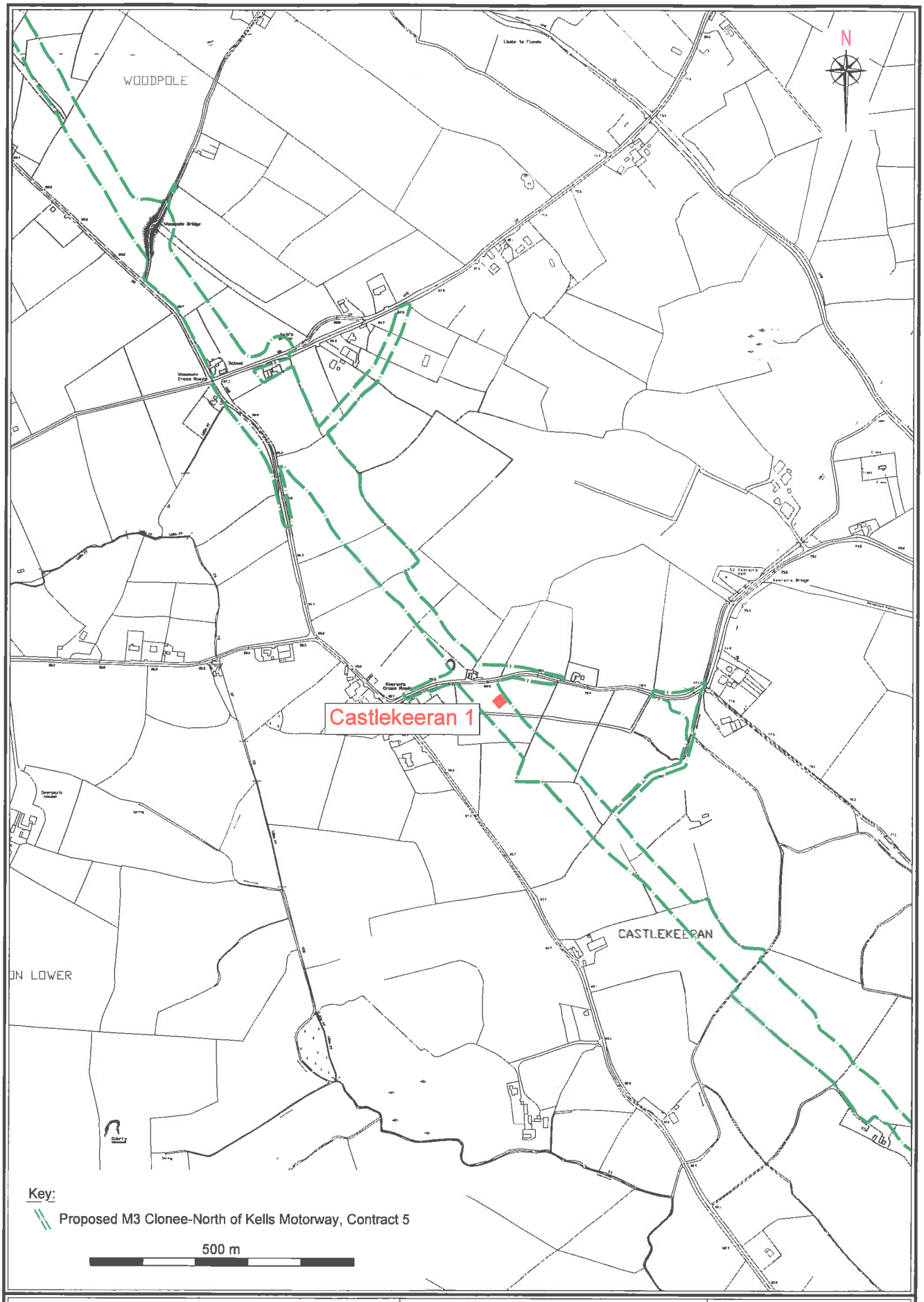
(a: weeds of cultivated ground, b: weeds of waste places and disturbed ground, c: plants of woods, scrub and hedgerows, d: grassland plants, e: plants of damp or marshy land)

Abundance key: + =1-10, ++ =11-50, +++ = 51-150, ++++ = 150-250 and +++++ = >250. F = number of charcoal fragments. Relative abundance is based on a scale from 1 (lowest) to 5 (highest)



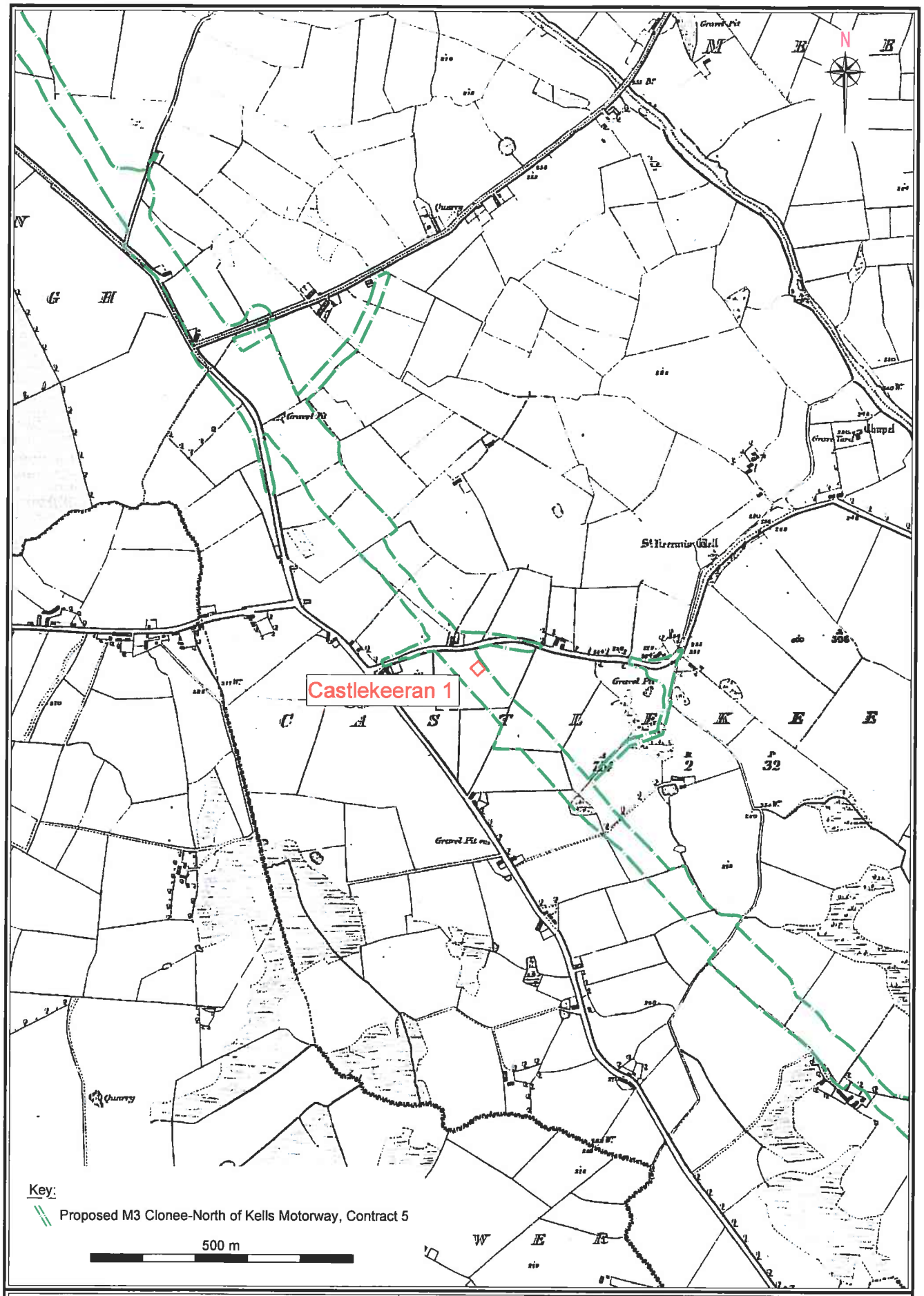
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1:50,000 A4
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: OSi Discovery Series
		Drawing no.: 04_01_C9311

Figure 1: Location of Castlekeeran 1



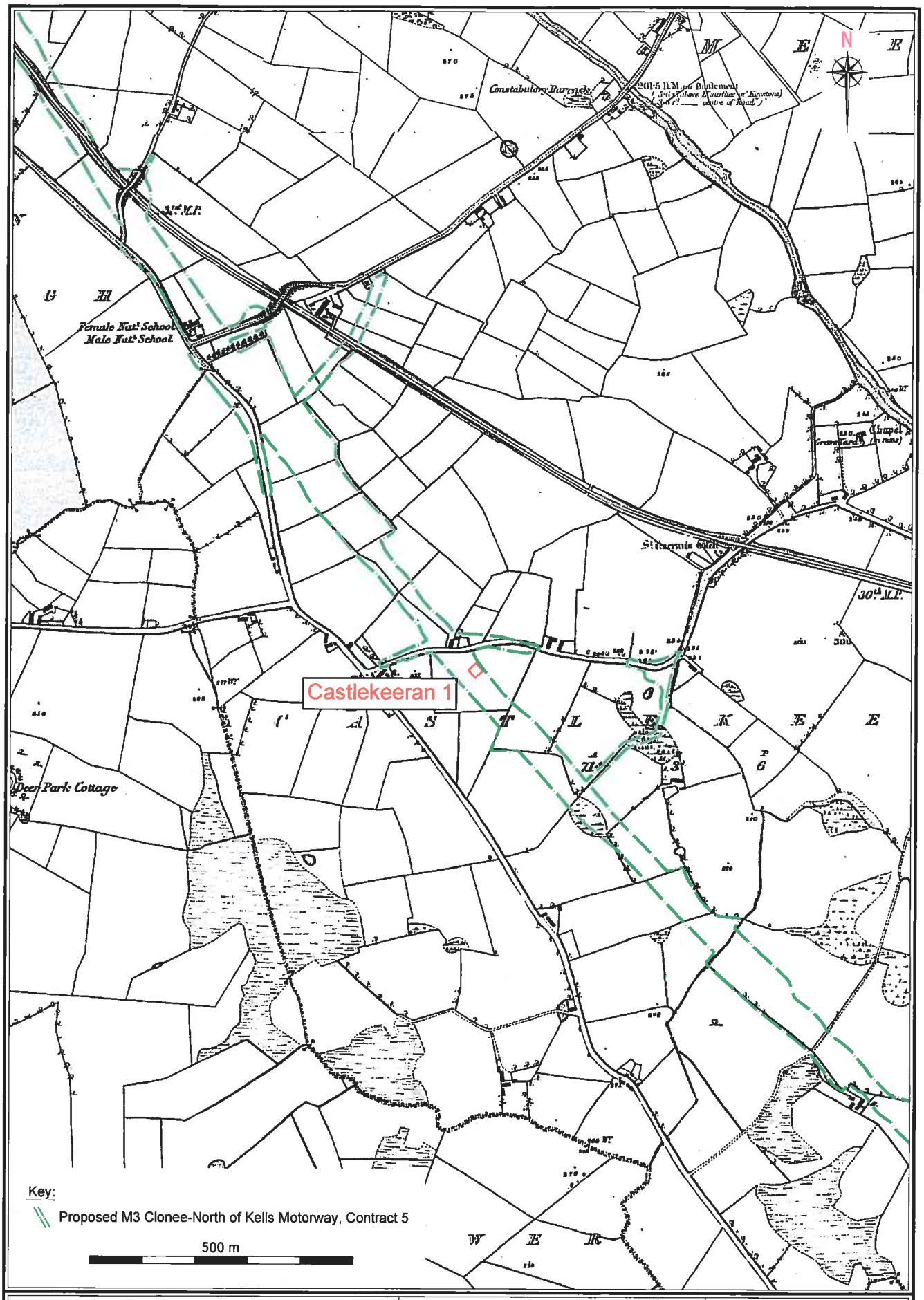
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1: 10,000 A4
	Issued for: Excavation Report	Date: Jul '08
	Client: Meath County Council	Origin: Client/ACS Ltd.
		Drawing no.: 04_01_C9312

Figure 2: Location of Castlekeeran 1 on current OS background



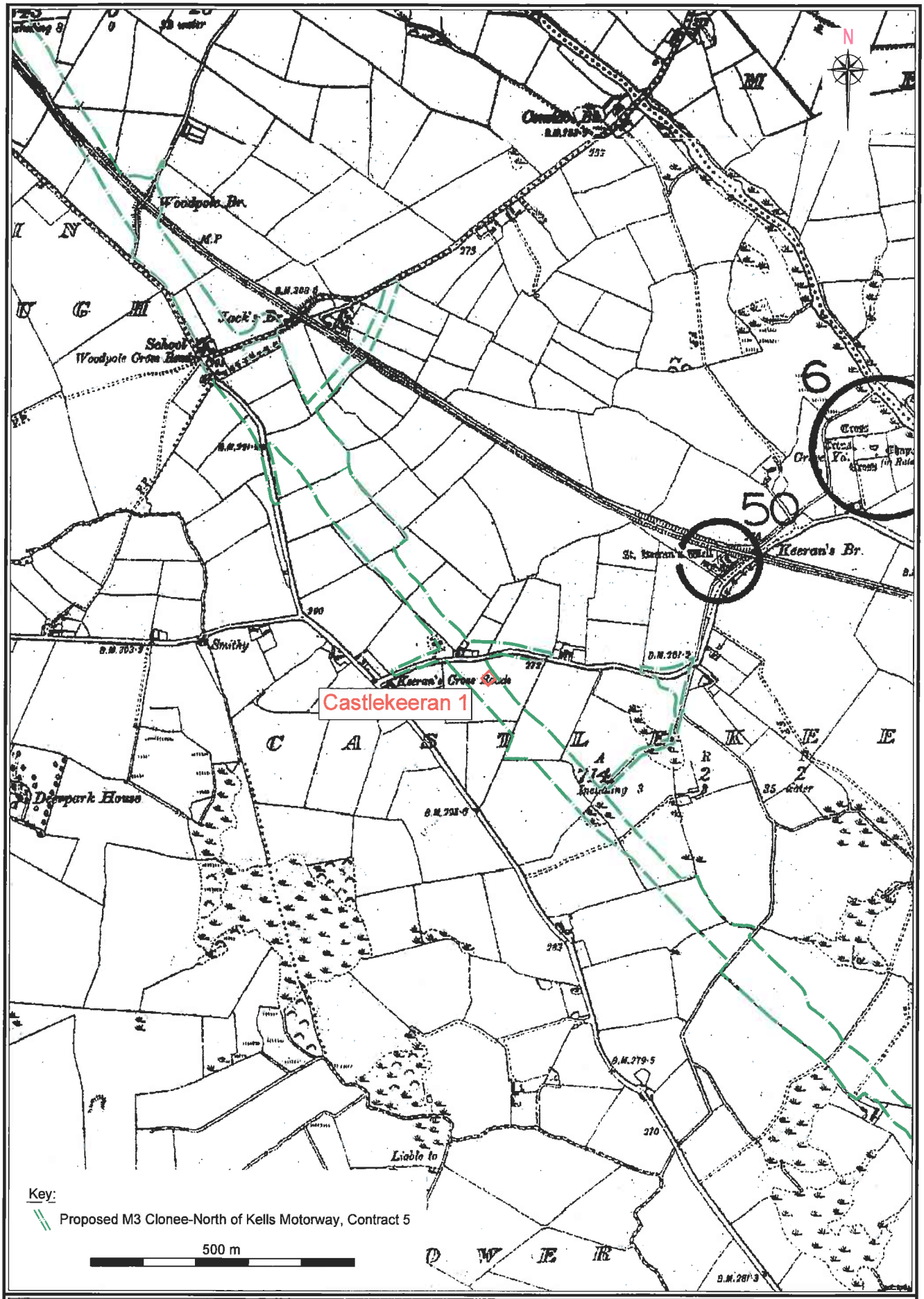
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1: 10,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: OSi (1836)
	Client: Meath County Council	Drawing no.: 04_01_C9313

Figure 3: Castlekeeran 1, extract from 1st edition OS map, Meath sheets 10 & 16



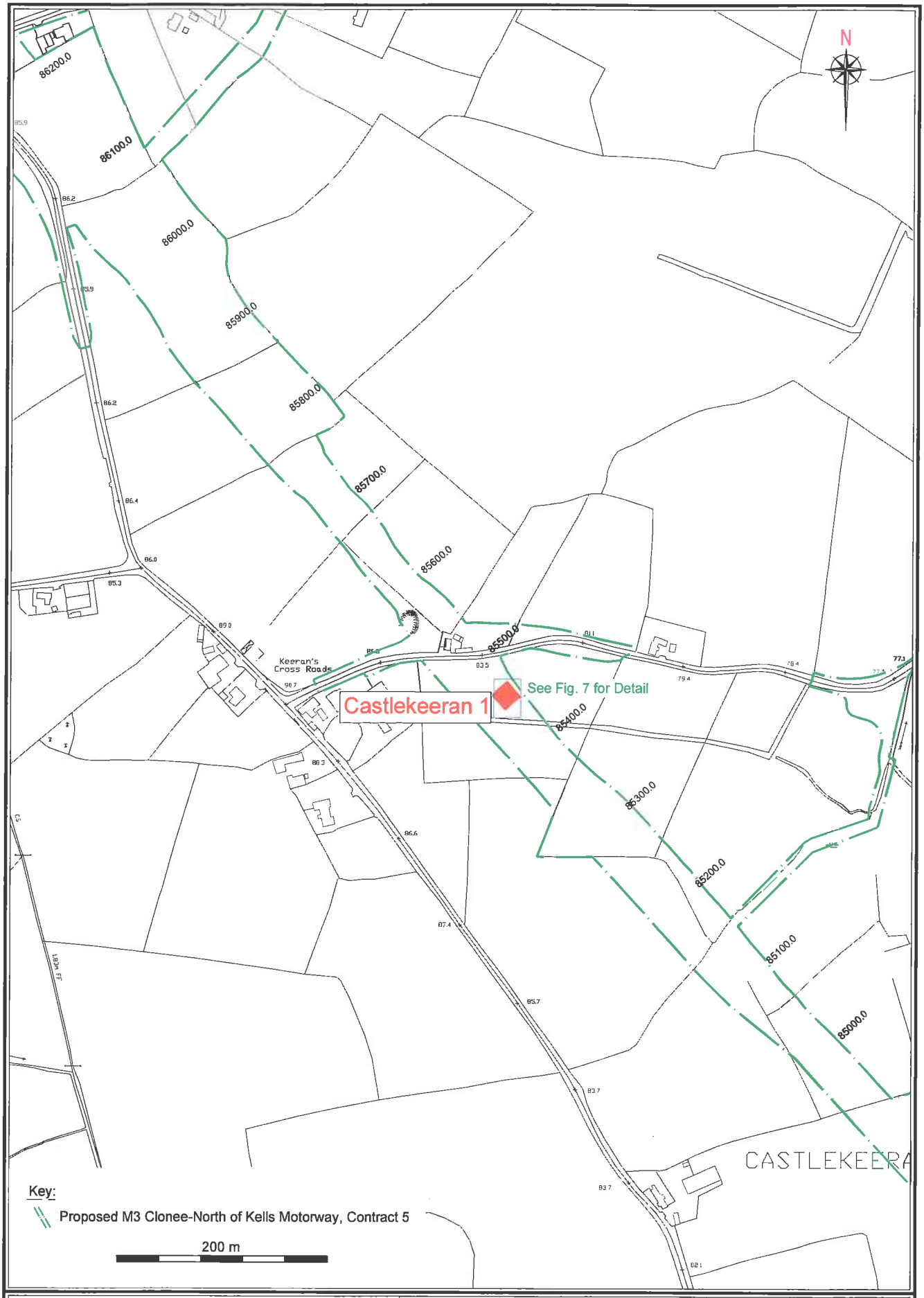
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1:10,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: OSi (1882)
	Client: Meath County Council	Drawing no.: 04_01_C9314

Figure 4: Castlekeeran 1, extract from 2nd edition OS map, Meath sheets 10 & 16



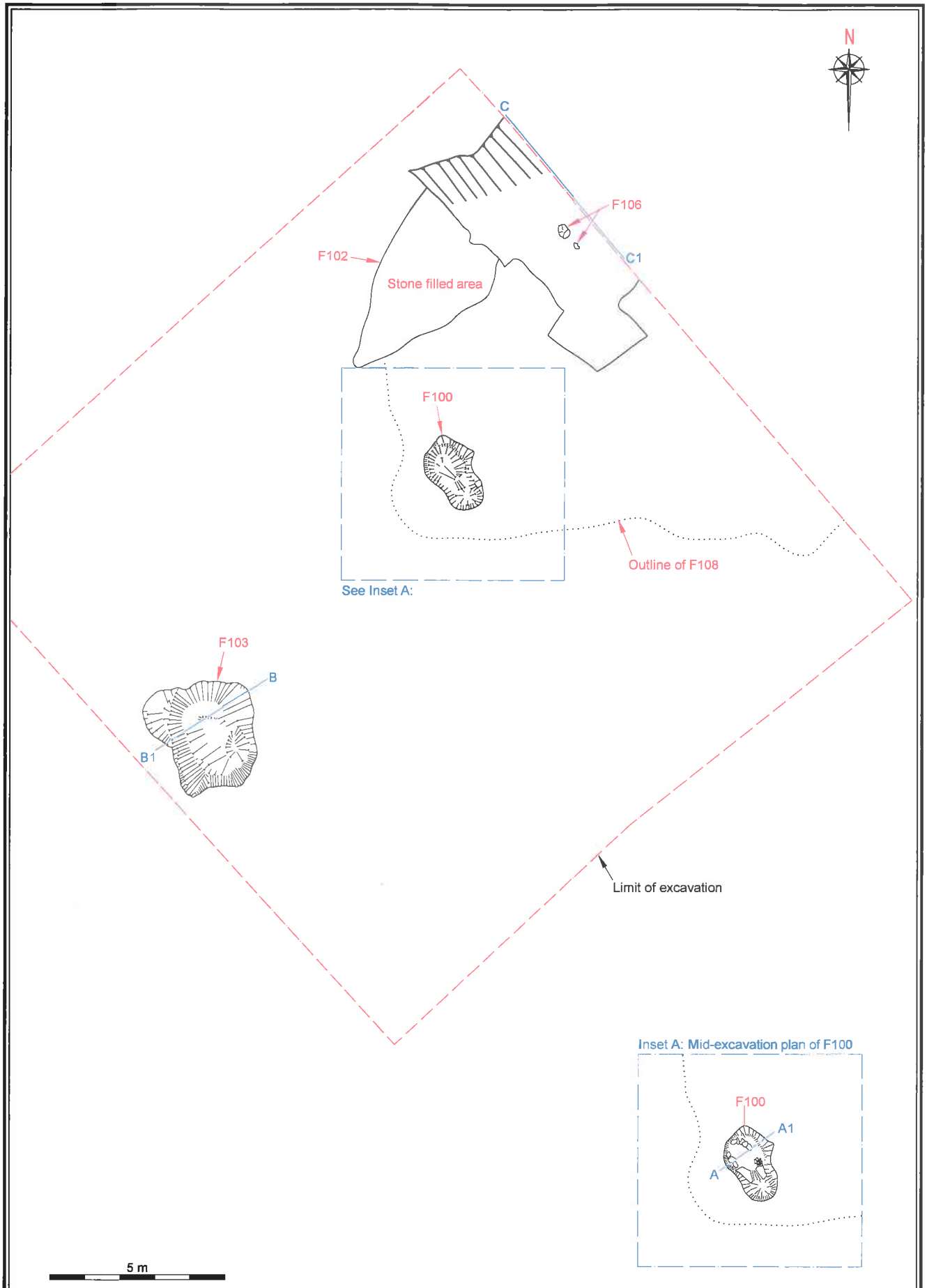
Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1:10,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: OSi (1910)
	Client: Meath County Council	Drawing no.: 04_01_C9315

Figure 5: Castlekeeran 1, extract from 3rd edition OS map, Meath sheets 10 & 16



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1:5,000 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: Client/ACS Ltd.
	Client: Meath County Council	Drawing no.: 04_01_C9316

Figure 6: Detailed location of Castlekeeran 1



Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth	Site: M3 Clonee-North of Kells PPP Scheme Contract 5, Castlekeeran 1	Scale: 1: 150 A4
		Date: Jul '08
	Issued for: Excavation Report	Origin: Client/ACS Ltd.
	Client: Meath County Council	Drawing no.: 04_01_C9137

Figure 7: Plan of features at Castlekeeran 1

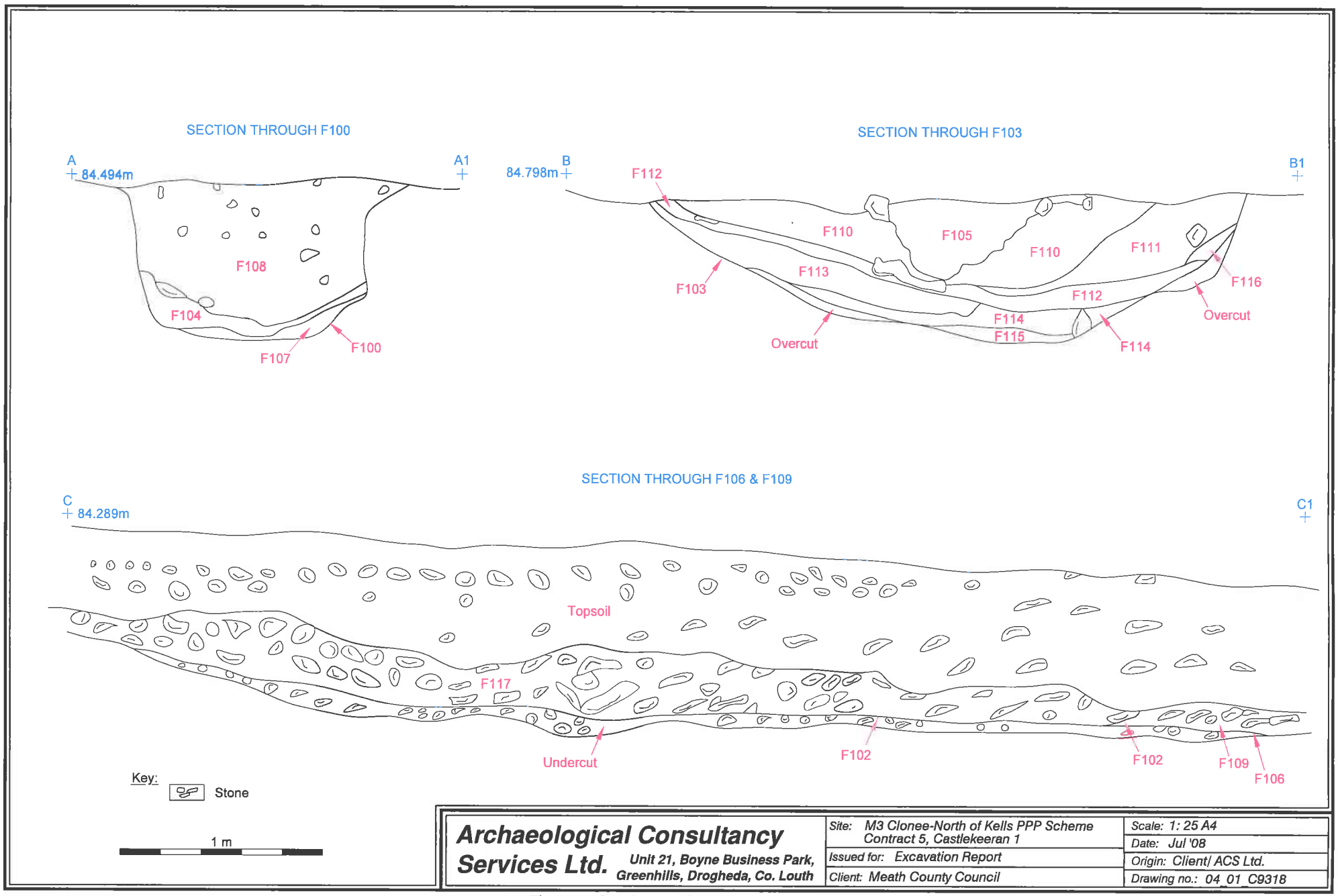


Figure 8: Sections of Castlekeeran 1

Plate 1: Kiln F100, south-facing section (04_01_Castlekeeran 1_CP8_1)

Plate 2: Post-excavation of kiln F100, looking west (04_01_Castlekeeran 1_CP8_10)

Plate 3: Post-excavation of kiln F100, looking west, close up (04_01_Castlekeeran 1_CP8_12)

Plate 4: Post-excavation of kiln F100, looking northwest (04_01_Castlekeeran 1_CP8_15)

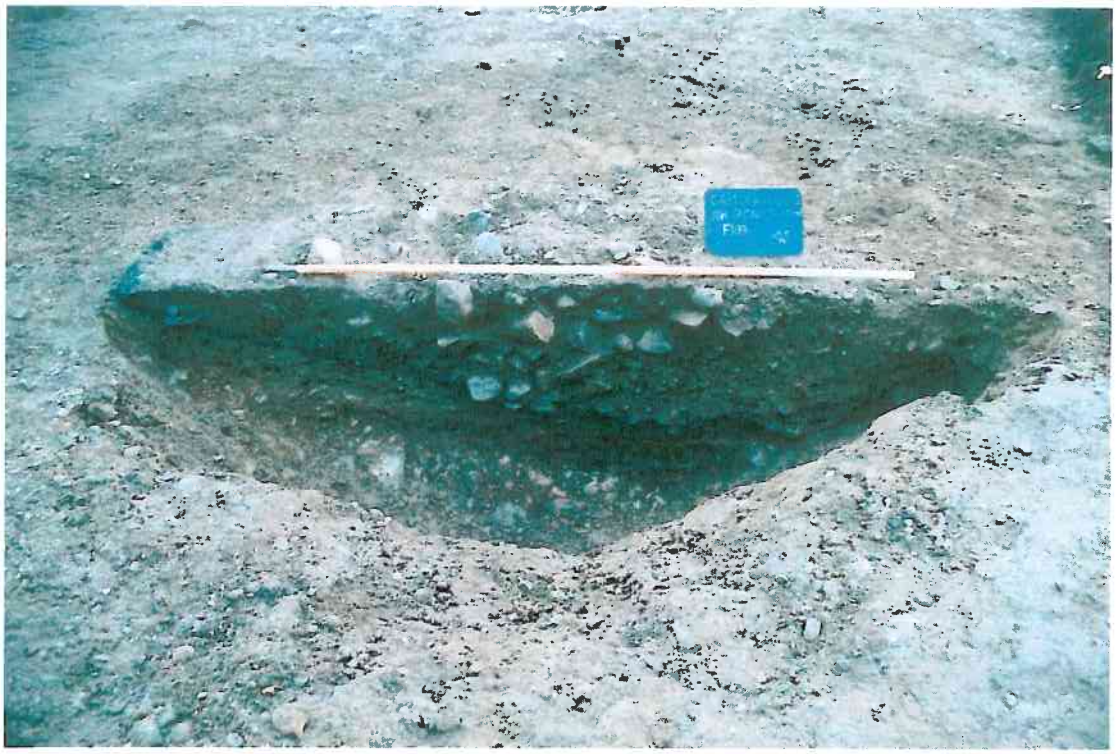


Plate 5: Pit F103, northwest-facing (04_01_Castlekeeran 1_CP8_5)

Plate 6: Post-excavation of pit F103, looking northeast (04_01_Castlekeeran 1_CP8_14)

Plate 7: Post-excavation of the site, looking southwest (04_01_Castlekeeran 1_CP8_23)