Relieving Floods, Revealing History: Early Prehistoric Activity at Knocknagael Farm, Inverness

Maureen C Kilpatrick
with contributions by
Torben Bjarke Ballin, Beverley Ballin Smith and Susan Ramsay

Address
GUARD Archaeology Limited, 52 Elderpark Workspace, 100 Elderpark Street, Glasgow, G51 3TR

Author contact
Maureen.kilpatrick@guard-archaeology.co.uk

Funding
GUARD Archaeology Ltd

e-ISSN: 2056-7421
http://dx.doi.org/10.9750/issn.1473-3803.2016.64
Published by the Society of Antiquaries of Scotland with the Archaeology Data Service archaeologydataservice.ac.uk.

Society of Antiquaries of Scotland
National Museums Scotland
Chambers Street
Edinburgh EH1 1JF
United Kingdom

Managing Editor: Erin Osborne-Martin
Copy-editor: Paula Martin
Production: Raspberry Creative Type, Edinburgh

www.socantscot.org
Registered Scottish charity no SC010440

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. ABSTRACT

A programme of archaeological work prior to the construction of a flood-relief channel at Knocknagael Farm, south-west of Inverness, revealed a series of prehistoric features including pits, hearths, fire-spots and possible structural features. Finds included sherds from a Neolithic bowl and a Bronze Age cordoned urn. Palaeo-botanical remains were present in many features and included the carbonised remains of cereal grains including naked six-row barley and spelt. Radiocarbon dating revealed that activity at the site ranged from the 7th millennium BC to the 1st millennium AD. This is one of the earliest dates yet obtained from the Culduthel valley, which has already produced much evidence of prehistoric activity including the high-status Iron Age site of Culduthel Farm (Highland HER MHG49950).

2. INTRODUCTION

Between spring 2009 and summer 2010 a programme of archaeological works was conducted along the wayleave for the construction of a flood-relief channel round the south-west of Inverness (Kilpatrick 2010). This wayleave extended in a multi-angled strip from Essich Road (NGR: NH 656 414) in the west to Culduthel Road (NGR: NH 668 414) in the east and in an area of land at Slackbuie (centred on NGR: NH 675 422). Evaluation in advance of construction uncovered two clusters of features (Trenches 1 & 2) which were excavated to reveal a series of pits and post-holes, which were provisionally assigned a prehistoric date on the basis of several finds of hand-made pottery and flint tools.

This work was followed by a watching-brief phase where further archaeological features were uncovered containing similar finds (Areas A, B, C & D). In total 59 archaeological features, predominantly pits, with several possible structural features, were excavated along the wayleave. Radiocarbon dating of these features has provided a period of use from the Late Mesolithic to the Late Iron Age, although the main focus of activity appears to be in the 4th millennium BC. This paper presents the results of the excavation and analysis, which was funded by The Highland Council. The project archive will be deposited with the National Monuments Record of Scotland and the finds allocated to a museum through the Treasure Trove process.

3. THE SITE

The site is located to the south-west of Inverness at Knocknagael Farm, on relatively low-lying open pasture fields on the eastern side of the River Ness (Illus 1). This area has undergone rapid development in recent years, with housing and associated new roads, particularly to the north and east, while open fields remain to the south and west. Relatively shallow topsoil covered most of the features in Areas A & B where the ground was predominantly flat. However, features in the south-western end of Area B and in Areas C & D and Trenches 1 & 2 were also sealed by a 0.2m–1m deposit of colluvium (hillwash). The features were located between 40m and 80m OD on a terrace which sloped down in a north-west direction towards the River Ness. All features were cut into the underlying subsoil, which consists of Devensian Till (sand and gravel deposits), while the solid geology consists of Mid-Devonian sandstone sequences (British Geological Survey, Geology Digimap www.digimap.edina.ac.uk).

4. THE FEATURES

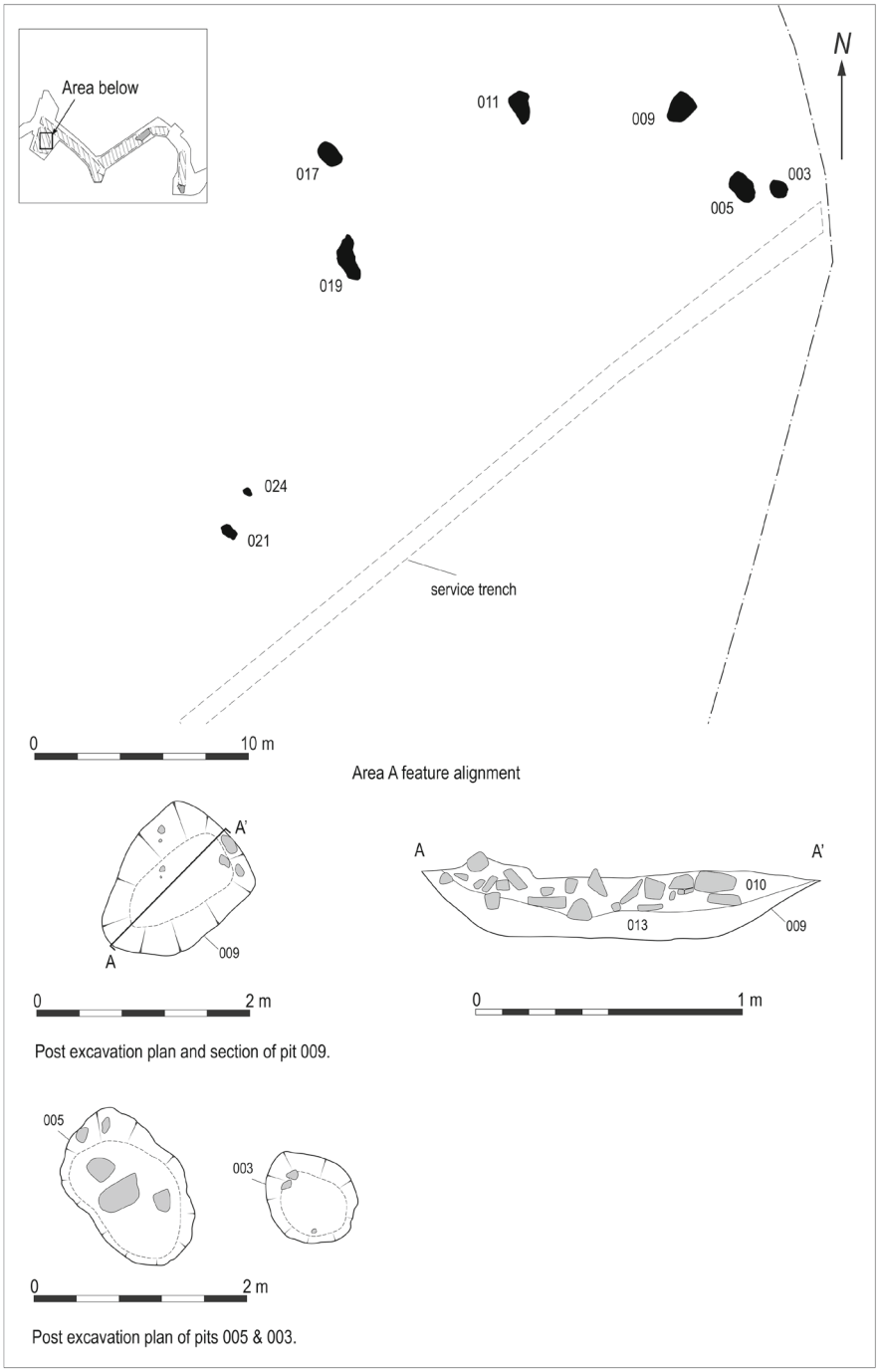
The excavated features appeared to be located within distinct clusters along the channel wayleave (Trenches 1 & 2 and Areas A & B), though with several in more out-lying, isolated positions (Areas C & D). However, due to the limits of the excavation the true extent of the site remains unknown, with the possibility of further archaeological features in the unexcavated areas. The majority of features encountered were pits, with very few structural remains. These pits had little or no weathering on their sides, suggesting that they had been rapidly backfilled following their initial excavation. Most pits contained only one fill, generally comprising hearth-waste and re-deposited spoil. Where

Illus 1 Site location

features were radiocarbon dated there appeared to be an assortment of dates within the same clusters (Trenches 1 & 2 and Areas A & B), suggesting re-use of the area over an extended period. Very few features, however, had evidence of re-cutting by later features, except in Area B and Trench 1. Due to the relatively high number of features excavated, only those containing datable and artefactual material will be discussed in detail below.

4.1 Area A

Eight features were found in Area A (Illus 2) – seven pits (one containing a post-hole) and one single post-hole. All were in a roughly curved line running north-east/south-west and were generally similar, oval to sub-oval in plan and between 0.9m and 2.2m in diameter, with a depth of between 0.23m and 0.34m. All the pits contained carbonised remains



Illus 2 Area A feature locations and section and plan drawings

of woodland species such as alder, willow and hazel, with oak and birch also present to a lesser extent. Three pits were of particular interest.

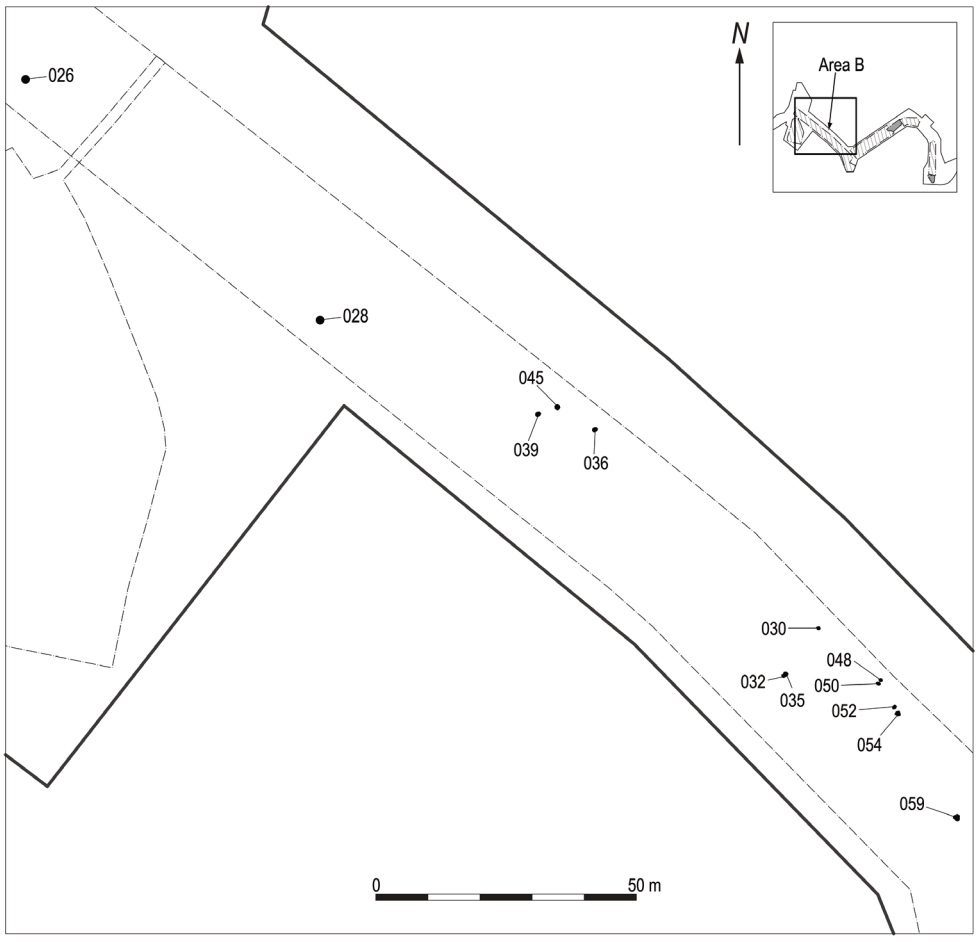
Pit C009 measured 1.52m by 1.04m with a depth of 0.32m. No artefacts were recovered from the fill, which consisted of a silty matrix with a large quantity of cobbles and pebbles. It contained carbonized hazelnut-shell fragments. Radiocarbon dating provided the earliest evidence for activity on site, with a Late Mesolithic date of 6530–6390 cal BC.

Only two pits, C003 & C005, contained a more diverse botanical assemblage. This included not only carbonised cereal grains such as naked six-row barley and emmer/spelt wheat, but also wild plants such as black bindweed, sedge and cleavers. Carbonized material thought to be burnt herbivore dung was also recovered from both pits (see Ramsay below). Radiocarbon dating of Pit C003 provided an Early Neolithic date of 3640–3500 cal BC. Artefactual material from its fill included 11 fragments of pottery (SF1) from either two or three different vessels (see Ballin Smith below), 31 lithic fragments and part of a leaf-shaped arrowhead. There were also very small fragments of burnt animal bone from a young, unidentified mammal, possibly sheep, goat or even roe deer (pers comm C Smith, zooarchaeologist, Perth).

Pit C005 differed slightly in construction from Pit C003 and contained three fills. One of these contained packing-stones for a probable post, one piece of burnt quartzite (S6), a burnt fragment of flint side scraper and a burnt flint flake (see Ballin below). Another fill contained five very small body-sherd fragments from an unknown vessel. The similarity of the carbonised assemblage of Pits C003 & C005 suggests that they were contemporaneous.

4.2 Area B

Thirteen pits were located in this area (Illus 3) with only seven containing artefactual material. Four of



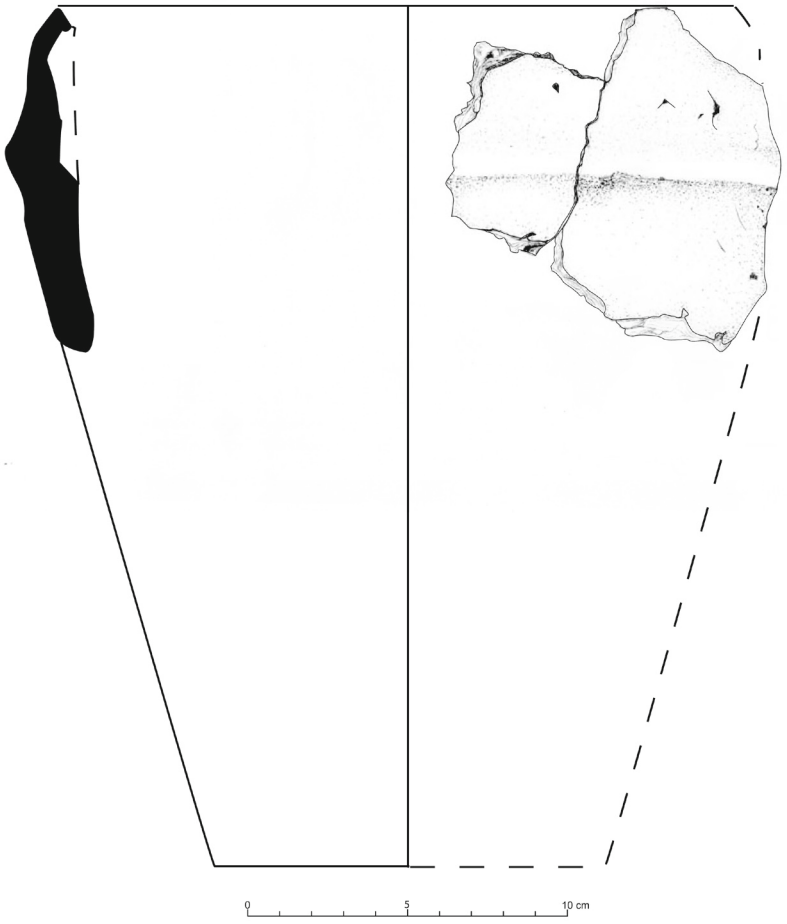
Illus 3 Area B feature locations

these, Pits C028, C048, C052 & C054, contained possible Neolithic vessel fragments (SF3, 7, 9 & S29) within their fills, while the fill of Pit C054 also contained fragments from a Bronze Age cordoned-ware urn (SF8) (see Ballin Smith below). Three small fragments of flint were also recovered from Pits C032, C039 & C050. Carbonised plant remains were recovered from all pit-fills and included species similar to those in Area A as well as elm charcoal and cereal grains (in C028 & C059). Radiocarbon dating of the fill of Pit C028 provided an Early Neolithic date of 3770–3630 cal BC, which is similar to Pit C003 in Area A.

Two pits were of further interest. Pit C052, which measured 0.86m by 0.85m with a depth of 0.4m, contained fragments of a possible Neolithic cooking-pot (SF9), positioned in the south-west corner of the base, immediately above a large flat stone. The pit had been deliberately backfilled with large cobbles, probably obtained from the upcast subsoil. The nearby Pit C054 contained two fills, with the upper fill containing a significant number of fragments of a Bronze Age cordoned-ware urn (SF8, Illus 4). Intermixed were several relatively small fragments from a Neolithic vessel (S29). The lower fill of this pit contained cinder and carbonised oak species, radiocarbon dated to 3960–3770 cal BC. This suggests that the pit was initially excavated and used in the Early Neolithic but re-cut and re-used in the Bronze Age with the insertion of an urn which had disturbed the earlier pottery fragments (see Ballin Smith below). The urn was found at the centre of the base of the re-cut pit, with large cobbles placed above, again probably derived from the upcast subsoil deposit.

4.3 Area C

Only one small pit was found here, and although not radiocarbon dated, its similarity to other pits on the site would suggest that it is also of prehistoric



Illus 4 The urn fragments (SF8)

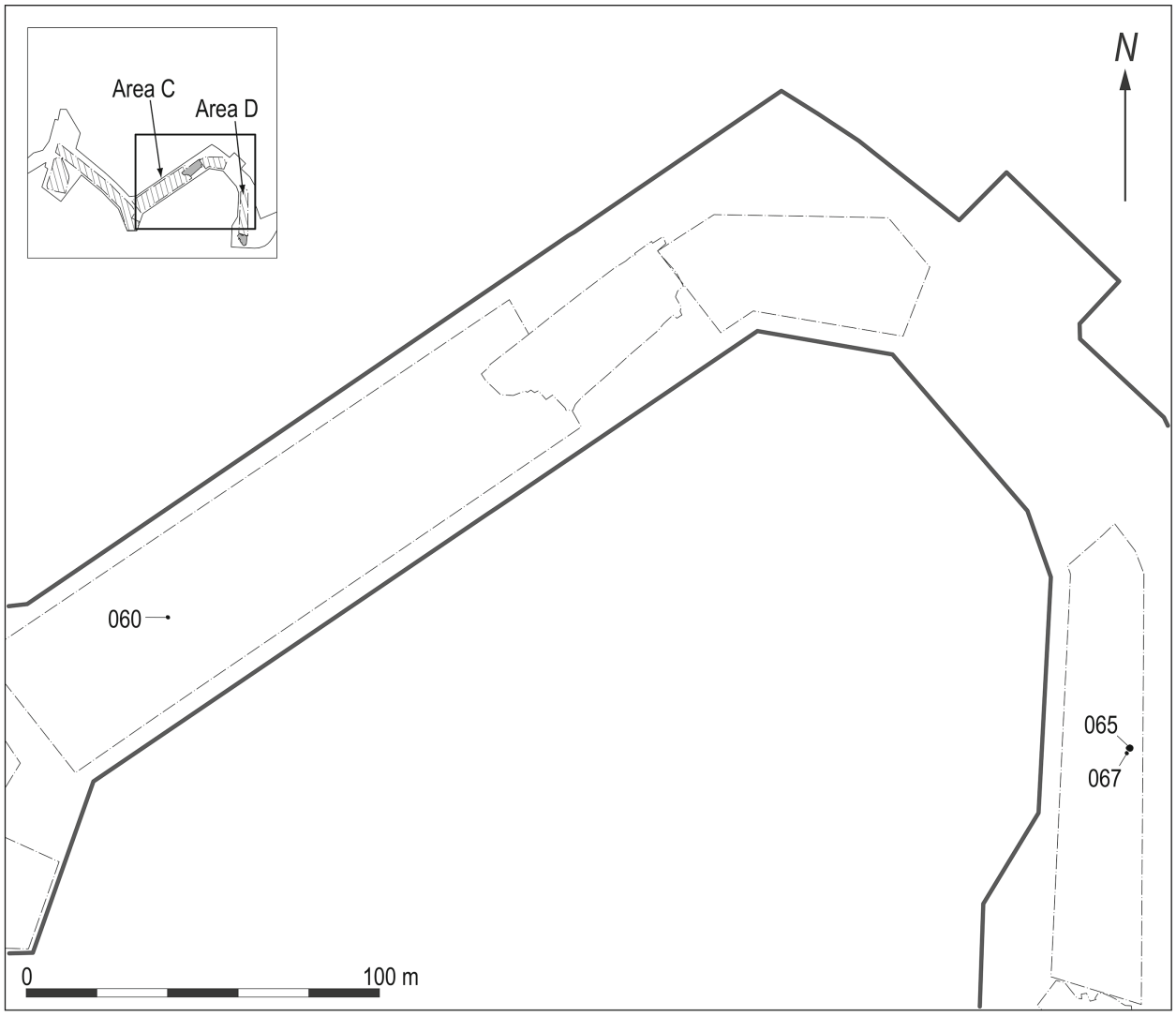
date. Like most pits it contained carbonised remains of species such as alder, birch and hazel and a fill consistent with deposited hearth-waste.

4.4 Area D

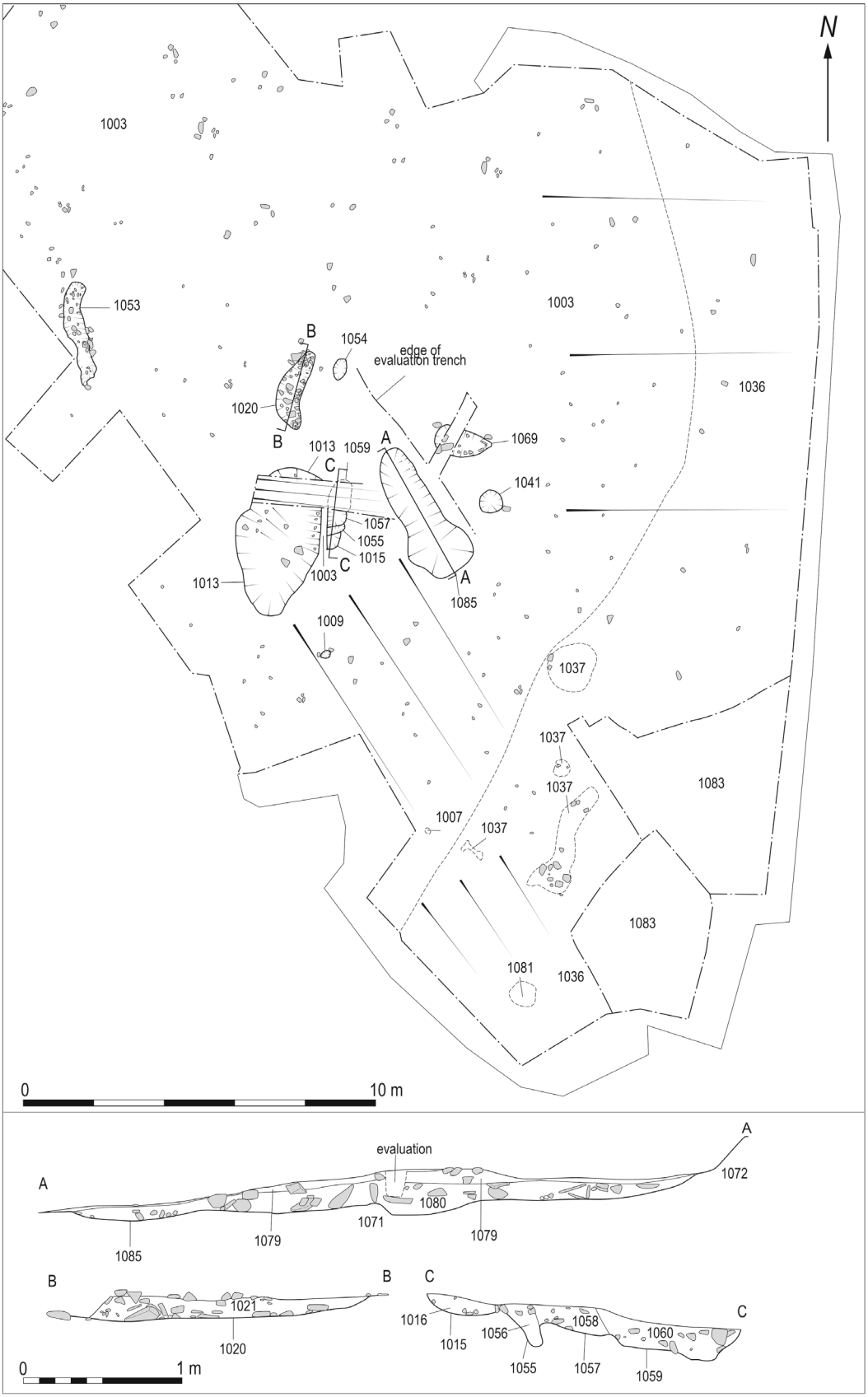
Two pits were excavated in Area D, to the north of Trench 1 (Illus 5). The fill of Pit C065 contained a number of heat-affected stones and a carbonised assemblage consisting of hazel, alder, willow and oak species. The smaller Pit C067 contained birch charcoal, suggesting that it may have had a structural origin (see Ramsay below). A Late Iron Age date of 400–560 cal AD was obtained, making this pit the latest on the site.

4.5 Trench 1

Trench 1 (Illus 6) was located to the south of Area D on raised ground which sloped slightly southwards towards a small natural burn, and lay immediately west of the Iron Age site of Culduthel Farm (Highland SMR MHG49950). All the features were located below the topsoil and deposit of colluvium (hillwash), which protected them from weathering and truncation by later agricultural activities. Eleven pits were present, but little evidence for structural remains. There was no discernable pattern to their placement although they were all close to a palaeo-water channel C1036. Charcoal flecks were present in most pits, with alder, oak and hazel the most



Illus 5 Areas C and D feature locations



Illus 6 Trench 1 feature locations and section and plan drawings

commonly identified species (see Ramsay below). Pit C1054 also contained hazel and oak suggesting the presence of an oak post burnt in situ. However, no packing-stones nor a post-pipe were present to confirm whether this was a post-hole. A fragmented burnt bipolar flint blade was found within this fill.

Two possible Hearths/Fire-Pits C1020 & C1085 were present and were possibly the source of the hearth-waste found in Pits C1041, C1054, C1059 & C1069. Pit C1020 (Illus 6) contained an abundance of hazel charcoal with a smaller amount of oak, suggesting their use as fuel (see Ramsay below). A blade fragment of Yorkshire flint (SF5) was recovered from the fill and radiocarbon dated to use in 3130–2920 cal BC. Pit C1085 (Illus 6) contained four fills, the lowest three containing charcoal from alder, hazel and oak, and a small flint chip.

A small linear Gully C1053 was also present, but no botanical remains were found in the fill. Five deposits (C1037 & C1081) of charcoal-rich silt, 40mm deep, were found within the palaeo-water channel. They contained traces of alder and hazel species, suggesting that the origin of the charcoal was human action rather than a natural event. A small flint flake was also recovered from the alluvial silts (C1036) of the palaeo-water channel.

Two pits (C1057 & C1015) had evidence of re-cutting by later pits (C1055 & C1059), although the overall similarity in botanical remains and pit-fills made it difficult to date the features with any certainty (Illus 6). Artefacts included a flint chip from the fill of Pit C1057, a flint microblade from Pit C1055 and a further microblade from Pit C1059. Dates derived from nearby features suggest that activity ranged from the Neolithic period (C1020) to the Middle Bronze Age (1450–1390 cal BC, Pit C1041).

4.6 Trench 2

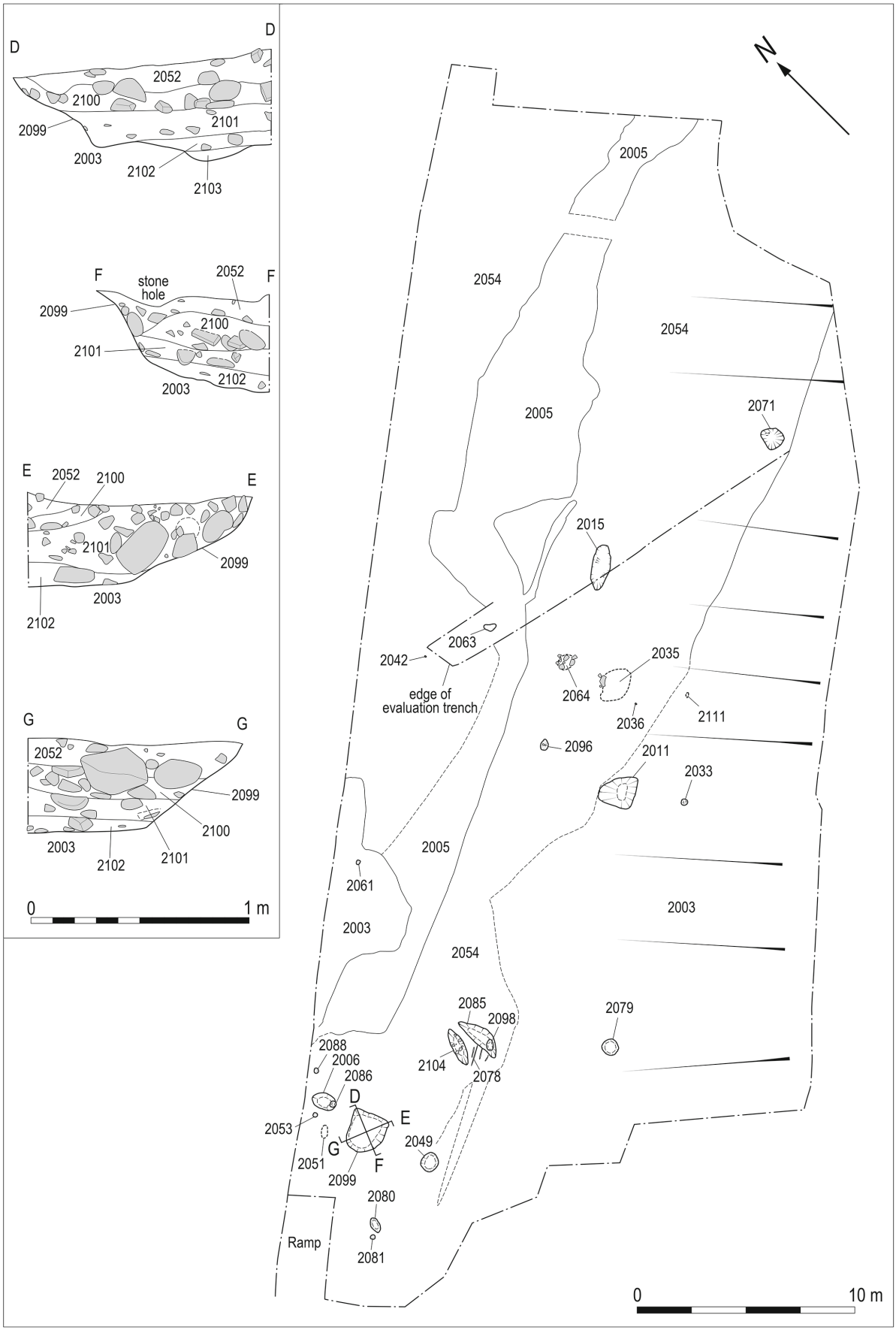
Trench 2 was located at the base of the sand and gravel terrace and comprised a total of 24 features dug into the natural subsoil (Illus 7). The subsoil, as in Trench 1, was located below a deep hillwash deposit. Sixteen pits were excavated, with most containing charcoal deriving from the most common species present on the site, hazel and alder.

The largest, Pit C2099, measured 2m by 1.8m with a depth of 0.35m, and contained five fills consistent with hearth-waste and a charcoal assemblage which included alder, hazel, oak, willow and rose family. These were radiocarbon dated to 2490–2290 cal BC, consistent with the Late Neolithic period. Nearby Pit C2049 contained a slightly different charcoal assemblage including cereal grains such as six-row barley, and wild species such as hazelnut-shells (see Ramsay below), and was radiocarbon dated to 2150–1950 cal BC. A further pit, C2011, contained three fills and included a slightly more diverse charcoal assemblage of hazel, alder, willow, gorse/broom and cherry species. A rim-sherd from a possible Neolithic vessel was obtained from the upper fill (S3, see Ballin Smith below). Pit C2033, 0.44m long and 0.23m deep, contained a thumbnail flint scraper within its fill. Radiocarbon dating of the carbonized remains provided a Late Bronze Age date of 900–790 cal BC.

Very few structural elements were revealed, with only two post-holes, C2071 and C2098, identified with any certainty. Post-hole C2098 was located within the southern end of a linear feature C2085 (Illus 4) and contained hazel and oak charcoal, and two body sherds from a possible Neolithic vessel (SF11). The Linear Feature C2085 was 2m long, 0.7m wide and 0.2–0.6m deep. The sides were lined with stones which were pressed into the sides and probably acted as packing material. The fill comprised carbonized hazel and willow species. The presence of hazel and willow together may suggest that a wattle panel/structure was located within the feature, and that it was supported by an oak post (C2098). Artefacts included a bipolar flint core and flint flake and both features were radiocarbon dated to the Early Neolithic, between 3250 and 3100 cal BC.

A further ephemeral linear feature (C2104) lay parallel to C2085 (Illus 7). This also contained stones pressed into its sides suggestive of packing-stones. Several very shallow possible plough-marks (C2078), oriented ENE/WSW, were also noted adjacent to the hypothesised wattle-work panel (C2085). They contained no datable material, although could be contemporary with the panelling.

Four small charcoal-rich silty deposits (C2035, C2036, C2042 & C2051) were also found in Trench 2. They all contained carbonised remains similar to those in the surrounding pits, with



Illus 7 Trench 2 feature locations and section drawing of C2099

one deposit (C2042) also containing oak species and an undiagnostic ceramic body sherd with soot on its surface (S22). Two further deposits (C2064 and C2111) contained fire-cracked stones, which had resulted in localised scorching of the subsoil and probably represented the remains of small fires. Deposit C2035 also contained a flint flake with use-wear along one side.

5. RADIOCARBON DATES

Fourteen radiocarbon dates obtained from individual features across the site in Areas A, B & D and Trenches 1 & 2 were submitted to the Scottish Universities Environmental Research Centre (SUERC) for AMS radiocarbon dating (Table 1). These dates revealed that activity at the site extended from the Late Mesolithic period (mid 7th millennium BC) into the Late Iron Age (1st millennium AD) with a concentration of activity in the Early Neolithic (4th millennium BC).

6. ARCHAEOBOTANY

Susan Ramsay

6.1 Fuel

The excavated features show that a wide range of tree taxa were used for fuel on the site. Ten different fuel taxa were recorded, although some, such as elm, gorse/broom, cherry-type, heather-type and rose family, were only identified from single contexts. This suggests that the occupants of the site were using locally-available resources for fuel and not travelling any significant distances to collect wood. There was no evidence for selection of fuel-types for particular purposes. Alder and hazel were the most common types found as hearth-waste, but it is likely that they were also the commonest types present in the local area. Evidence from the excavations suggests that a river-channel ran through the site and the banks of this river would have provided an ideal habitat for the growth of hazel and especially alder.

Within Pits C003 & C005 from Area A there was evidence for the burning of herbivore dung. This may have been used as a fuel during drying of grain as part of the parching process prior to grinding. Dung would have provided a slow, gentle heat rather than a hot flame, thus aiding drying, rather than burning, of the grain.

6.2 Cereals and Wild Food Plants

Cereal grains were found in only seven contexts and were generally present in trace quantities only. However, Pits C003 and C005 from Area A produced significant numbers of carbonised cereal grains, with naked six-row barley and emmer/spelt wheat being particularly notable. This abundance of naked barley is often associated with Neolithic sites, as is the presence of small quantities of emmer wheat (Bishop et al 2009: 87). Naked barley is rarely found after the end of the Neolithic period in Scotland, and from the Bronze Age to the Medieval period hulled six-row barley was the dominant cereal grown in Scotland (Dickson & Dickson 2000: 231–2). In naked barley the grain is loose in the spikelets, and threshing produces grain that can be used immediately, whereas in hulled barley the *palea* and *lemma* (the 'hulls' that form a component of chaff) are fused to the grain and cannot be removed by threshing alone. Extra processing is required to produce grain that is suitable for human consumption. However, it seems likely that the move to hulled barley was the result of a climatic downturn and a trend towards cooler, wetter summer weather towards the end of the Neolithic (Veen 1992: 74–5).

The only other food-plant remains recorded were frequent fragments of hazelnut-shell. Although found in many contexts, the greatest concentrations were identified from the same contexts that produced the abundant cereal grain – Pits C003 & C005 from Area A. This suggests that there was Neolithic occupation on this site, with both food-processing and consumption occurring. The presence of hazelnut-shell in many contexts over the entire site may suggest that the majority of contexts are prehistoric in date (as confirmed by radiocarbon dating), as hazelnut-shell tends to be most commonly found on prehistoric Scottish sites (Bishop et al 2009: 90).

Table 1 South-west Inverness Flood-Relief Channel, radiocarbon dating results

Sample	Material	Context	Description	Depositional Context	Uncal	Calibrated 1-sigma	Calibrated 2-sigma	$\delta^{13}C$ relative to VPDB
SUERC-34978 (GU-24267)	Cereal grain: *Hordeum vulgare var nudum*	004	Fill of pit 003	Primary	4755±35	3640-3550Bc	3640-3500BC	-24.9‰
SUERC-34979 (GU-24268)	Charcoal: *Corylus*	013	Lower fill of pit 009	Primary	7610±40	6480-6430Bc	6530-6390BC	-23.7‰
SUERC-34980 (GU-24269)	Charcoal: *Corylus*	029	Fill of pit 028	Primary	4890±35	3700-3645Bc	3770-3630BC	-24.8‰
SUERC-34981 (GU-24270)	Charcoal: *Corylus*	041	Lower fill of pit 039	Primary	4675±35	3470-3370Bc	3530-3360BC	-25.2‰
SUERC-34982 (GU-24271)	Charcoal: *Salix*	049	Fill of pit 048	Primary	4665±35	3520-3420Bc	3530-3360BC	-23.5‰
SUERC-34983 (GU-24272)	Charcoal: *Alnus*	058	Lower fill of pit 054	Primary	5060±35	3950-3790Bc	3960-3770BC	-25.7‰
SUERC-34984 (GU-24273)	Charcoal: *Betula*	066	Fill of pit 065	Primary	1585±35	480-540AD	400-560AD	-24.9‰
SUERC-34988 (GU-24274)	Charcoal: *Alnus*	1063	Lower fill of pit 1041	Primary	3105±35	1430-1370Bc	1450-1390BC	-28.2‰
SUERC-34989 (GU-24275)	Charcoal: *Corylus*	2055	Fill of curvilinear feature 2085	Primary	4530±35	3240-3110Bc	3250-3100BC	-25.1‰
SUERC-34990 (GU-24276)	Charcoal: *Alnus*	2083	Fill of pit 2049	Primary	3685±35	2140-2020Bc	2150-1950BC	-28.1‰
SUERC-34991 (GU-24277)	Charcoal: *Corylus*	2093	Fill of post-hole 2098	Primary	4565±35	3370-3320Bc	3240-3100BC	-26.5‰
SUERC-34992 (GU-24278)	Charcoal: *Corylus*	2101	Upper fill of pit 2099	Secondary	3920±35	2480-2340Bc	2490-2290BC	-25.3‰
SUERC-34992 (GU-24279)	Charcoal: *Betula*	2107	Fill of pit 2033	Primary	2670±35	845-795Bc	900-790BC	-24.3‰
SUERC-34994 (GU-24280)	Charcoal: *Corylus*	12005	Fill of pit 1020	Primary	4440±35	3120-3010Bc	3130-2920BC	-27.4‰

7. LITHIC ARTEFACTS

Torben Bjarke Ballin

7.1 Assemblage

Forty-eight lithic artefacts were recovered (Table 2), of which 83% is debitage, 13% tools and 4% cores.

7.2 Raw Materials – Types, Sources and Condition

Apart from one piece in quartzite (B6), all artefacts are of flint. One of those (SF5 from Trench 1) is in fine-grained dark-brown Yorkshire flint with soft cortex. It was probably acquired by exchange (either directly or indirectly) with groups in north-east England, where this sort of flint occurs in primary and secondary contexts (Ballin 2011). The remainder is in various types of local flint, most of which is fine- to medium-grained material in light or red/orange/yellow colours. The local flints were probably procured along the nearby shores of the North Sea (Saville 1994; also Harker 2002). Quartzite occurs in the Grampian bedrock, as well as west and north-west of Inverness (Johnstone & Mykura 1989: 6–12; Stephenson & Gould 1995: 7–11). The quartzite for S6 may have been brought in from one of these areas, or it may have been obtained locally in the form of a glacially transported pebble or cobble.

7.3 Discussion and Summary

The lithic assemblage (48 pieces) consists of four small sub-assemblages from Trenches 1 (seven pieces) and 2 (four pieces), and Areas A (34 pieces) and B

Table 2. General lithic artefact list. Apart from the denticulated piece (quartzite), all artefacts are in flint

	Excavation		Watching Brief		Total
	Trench 1	Trench 2	Area A	Area B	
Debitage				2	31
Chips	2		27		6
Flakes	1	2	3		1
Blades	1				2
Microblades	2			2	40
Total debitage	**6**	**2**	**30**		
Cores					
Irregular cores				1	1
Bipolar cores		1			1
Total cores		**1**		**1**	**2**
Tools					
Leaf-shaped arrowheads			1		*1*
Short end-scrapers		1			*1*
Side-scrapers			1		*1*
Truncated pieces			1		*1*
Denticulated pieces			1		*1*
Pieces with edge-retouch	1				*1*
Total tools	**1**	**1**	**4**		**6**
TOTAL	**7**	**4**	**34**	**3**	***48***

(three pieces). Apart from one piece in quartzite (S6) and one piece in 'imported' Yorkshire flint (SF5), all remaining pieces are thought to be in local flint. The four sub-assemblages are tentatively dated as follows: Trench 1, Late Neolithic (based on a true blade in Yorkshire flint, SF5); Trench 2, Early Bronze Age (based on a well-executed thumbnail scraper, S20); Area A, Early Neolithic (based on a leaf-shaped arrowhead, S1); and Area B, later Early Bronze Age (based on the association with cordoned-urn sherds, SF8).

Two pieces were found in two spreads (C1036 & C2035), with the remaining 46 artefacts recovered from pit/post-hole clusters. There is no certainty that the artefacts and the features are contemporary, as the lithics could be residual pieces which entered the pits/post-holes with the backfill. Only the sub-assemblage from Area A appears different. About one-quarter of the flint was fire-crazed (including the diagnostic leaf-shaped point), suggesting that it may form a chronological unit. Irrespective of whether the pit was used for rubbish or ritual/burial, it was probably dug to hold this assemblage, along with its other finds (charcoal, burnt bone, hazelnut-shell fragments, and fragments of prehistoric pottery).

8. POTTERY

Beverley Ballin Smith

The archaeological interventions produced a small pottery assemblage with many abraded fragments. The best-preserved examples, including the largest and heaviest pieces, came from the upper fill of Pit C054 in Area B, and were identified as pieces of a Bronze Age cordoned urn (SF8). A fragmentary and badly-preserved Neolithic bowl (S29) was found in the same pit as the urn. Evidence for another Neolithic vessel (SF11) was found in a pit-fill from C2093 in Trench 2. The remainder of the assemblage, comprising small sherds and abraded fragments, derived from soil samples.

8.1 Analysis and Description

This is a relatively small collection, totalling a minimum of 181 sherds, with many abraded fragments less than 7mm long. The total weight of sherds (minus dust) is 2732g. Pottery was found at all three sites, but the majority of sherds came from Areas A & B, while those from Trench 2, consisting of small and abraded fragments, generally of low weight, derived from soil samples.

There were seven rim fragments: the remainder were body sherds and there were no recognisable bases. The average sherd thickness of 14.7mm was obtained from those pieces with both surfaces surviving to be measured. Actual thickness varied from 11mm to 16.4mm. Due to the high level of fragmentation and lamination of sherds, further statistical analysis was not attempted. The largest and heaviest sherds came from Area B, Pit C054 (SF8) and were identified as fragments of a cordoned urn.

The pottery is hand-made and probably produced near the site. The assemblage was very homogeneous in clay colour, and in the temper that was added, indicating little variation in fabric. Small coarse grits or chunks of quartz were present in all sherds, but there were occasional occurrences of other minerals and possibly the occasional grass-tempered sherd. Quartz rock rather than sand was the preferred temper, producing a sandy/gritty texture to the pottery. The mineral mica, often found with quartz, was also a common component, most noticeable as flecks on sherd surfaces. However, mica was not added to any slip. The latter was often applied to fully-formed vessels such as the cordoned urn, and before any burnishing or decoration was carried out.

The assemblage is not particularly well preserved. A Neolithic bowl (SF7 & 9) is very fragmentary with loss of its surface due to lamination and spalling of the clay. Low temperatures during firing and the penetration of grass and other roots during burial has contributed to the disintegration and fragmentation of the pottery. The poor condition of some sherds (eg SF7 & 9), suggests that there could have been post-depositional disturbances, such as during the burial of Urn SF8.

8.2 Vessel Form and Function

The function, range and type of vessels is discussed below, by site and by sample (S) or small-find (SF) number.

8.2.1 Areas A & B

SF1 group. Sherds are from two or three different vessels. SF01.1 is a heavy, thick body sherd with

quartz temper. SF01.2 comprises several friable dark-brown body sherds with quartz temper, which are badly laminated by root action. SF01.3 is a number of small body sherds with a pink/brown exterior colour. They contain much white coarse angular quartz temper but could be from the same vessel as SF01.2.

SF3 is similar to SF7 & 9. Its temper is identical and it is possibly from the same pot. This sherd is burnt through use, suggesting it derived from near the base of the vessel which may have been used on the hearth.

SF7 & 9 are possibly from the same vessel, which appears to be a Neolithic bowl of between 11mm and 14mm thick. SF9 is a poorly-preserved flat rim with a diameter of *c*250mm. The rim was a single coil of clay with a concave lower edge, attached to a large slab with a slightly convex upper edge. Due to erosion of the sherd surface the join can clearly be seen. Quartz rock and mica, either quarried or collected as field- or river-stone, was broken up, crushed into small angular fragments and used as temper in the clay. Although it is not confirmed that vegetable matter was also added to the temper, the presence of seed and grass impressions on the surviving surfaces of the sherds, and especially on the rim, indicates that the pottery was packed around with dry grasses once it had been formed. The grasses may have aided drying of the wet pot and also been used as fuel in the kiln or hearth during firing. SF7 is curved, and the lack of any base sherds suggest this was a bowl. The sooting of its exterior surface indicates that it was used on the hearth, presumably as a cooking-pot, although it could have been used for food preparation as well as food storage during its life.

SF8 comprises 102 sherds of a cremation urn that weighed a minimum of 2.278kg and had a rim diameter of *c*200mm, and walls *c*15.5mm thick. Like other pottery found in Area B, this had predominantly quartz temper, possibly with other minerals and vegetable temper deliberately added to the clay. The rim was simple, rounded and slightly inturned, and *c*17% of it survives. At a distance of 45–60mm below the rim a single plain horizontal cordon *c*15mm wide was added by positioning a strip of clay around the pot. The cordon was fixed with wet clay and then smoothed over with a thin slip. The body of the vessel was quite rounded towards its flat base, but no base sherds survived.

The interior of the vessel was roughly wiped or smoothed by finger-tips and its exterior was slipped to hide the surface inconsistencies of joins and protruding grits. The pale-grey/brown colour of the natural clay of the interior of the vessel contrasts with the pale-pink shades of its exterior. Although there are grass-marks on the exterior from wiping or packing around the pot, these marks are clear and unworn, as are those on the interior. There is some surface discolouration around the surviving rim sherds, but there are no soot-marks from use. This indicates that this vessel was purposely manufactured for a single use, as a container for cremated human remains. Once it had been filled it was inverted and placed in the ground in a pit.

S29 contains the largest sherd from this sub-assemblage. It is buff coloured and undiagnostic, was slipped and has some sooting on its external surface. This sherd has quartz temper with occasional flecks of mica.

8.2.2 Trench 2

Most of the sherds from this site are derived from soil samples and are therefore small, less than 10mm^2, and mainly body sherds.

SF11 consists of two small sherds, so it is difficult to be definite about the vessel to which they belonged. They have quartz temper, there is evidence of sooting on one, and they are well fired. The presence of an external slip with mica dust suggests that the vessel was well finished. It is possible, given the presence of other Neolithic sherds in the wider assemblage, that these sherds are also from an unspecified Neolithic vessel.

Sample BS3 from the same site contains a small undiagnostic rim sherd.

8.3 Sherd Distribution

All the pottery except for one sherd (S22, C2042) was found in the fill of pits, and one post-hole. Contexts C048, C052 & C054 were a close group of pits, which produced most of the pottery (one definite Neolithic bowl and one cordoned urn) suggesting their close association with funeral and burial activities. This was by far the most important

distribution of pottery across the project area. All other sherds and fragments were from isolated pits and one post-hole, and did not contribute further to the understanding of the assemblage. Another possible Neolithic vessel was represented by two sherds (SF11) from Trench 2.

8.4 Comparative Material and Dating

With such a small and poorly-preserved assemblage it is difficult to produce a meaningful comparison with other assemblages and sites. The two vessels SF7 & 9 (Neolithic), and SF8 (Bronze Age) are different in form and function as well as date. It is suggested that either the Neolithic pottery was residual or a Neolithic feature was disturbed or re-used for the later burial of a cremation during the Middle Bronze Age.

Pottery from the Middle Neolithic to the Bronze Age was found at Thornhill, Moray, by Alba Archaeology in 2007, in pits similar to those at Knocknagael (see Moray SMR NJ26SW0130). The assemblage was comparable in size but better preserved, including fragments of a Middle Neolithic carinated bowl, a sherd of Middle-Later Neolithic impressed ware, and a partial bucket-shaped vessel of probable Middle Bronze Age date (radiocarbon date of 1960–1750 cal BC). This occurrence is not an isolated one and is not confined to the Aberdeenshire area.

Pits seem to be a common place for the burial of Neolithic pottery (Sheridan 2007a: 448) and two further examples of isolated sherds have been found at Laigh Newton, South Lanarkshire (Ballin Smith 2011: 23, illus 14), and at Midross, Loch Lomond, in both domestic and ritual contexts (Ballin Smith forthcoming). Occasionally Neolithic sherds were associated with Beaker and later pottery in the same feature. Another important group of carinated bowls, including one simple undecorated bowl, not unlike that from south-west Inverness came from pits associated with the Neolithic structure at Claish in Stirlingshire (Sheridan 2002: 81–8, illus 19.11). Sheridan's table (2002: table 3) of radiocarbon dates from north-east Scotland indicates a currency of use for carinated bowl pottery of *c*4250 to *c*3000 cal BC in the area.

An attempt to narrow the dating of vessel SF7 & 9 within the Neolithic has not been made because of its poor preservation. However, the dating of Cordoned Urn SF8, an otherwise plain vessel, lies within an accepted date-range suggested by Sheridan (2007b: 164, fig 14.1) of between 1900 and 1500 cal BC. This vessel is similar to Vessel 8 found at Midross, Loch Lomond (Ballin Smith forthcoming), which was dated to 2040–1880 cal BC (SUERC 20351) and to 1690–1520 cal BC (SUERC 20349), both at 2σ. The Knocknagael urn SF8 and that from Midross are similar to two from Skilmaffilly (Sheridan 2007b: fig 14.2, nos 9 & 19) with radiocarbon dates of 1920–1680 cal BC (GrA –26529, 3490±40BP) and 1860–1520 cal BC (GrA –26521, 3390±40BP) both at 2σ (see also Sheridan 2003: 201–6).

The occurrence of the urn in south-west Inverness indicates the use of a specific pit for a burial. Unlike the cemetery at Skilmaffilly (Sheridan 2007b), further urns or vessels associated with burial ritual were not found, suggesting this was a single event. The rare finds of Neolithic pottery hint at occupation and ritual activities in the same area.

9. BONE

Maureen C Kilpatrick

Bone fragments were obtained from six contexts in Areas A & B only. Most of the bone was very small and unidentifiable as to species, with only three contexts containing bone which could be positively identified as animal or probably animal in origin. These were from pits C003 & C005. Only the fragments from Pit C005 were large enough for possible species identification. This context contained very small fragments of long bone and one fragment of unfused epiphyses from a young animal of possible sheep, goat or roe deer species (pers comm C Smith, zooarchaeologist, Perth).

Four contexts also contained bone in which the surface erosion was quite marked (C006 & C008 from Pit C005, and Pits C048 & C050). All the surfaces appeared smooth with rounded edges and were slightly 'chalky', which could suggest that the bone may have been uncovered and exposed to the weathering process prior to its final deposition within the pit.

10. DISCUSSION

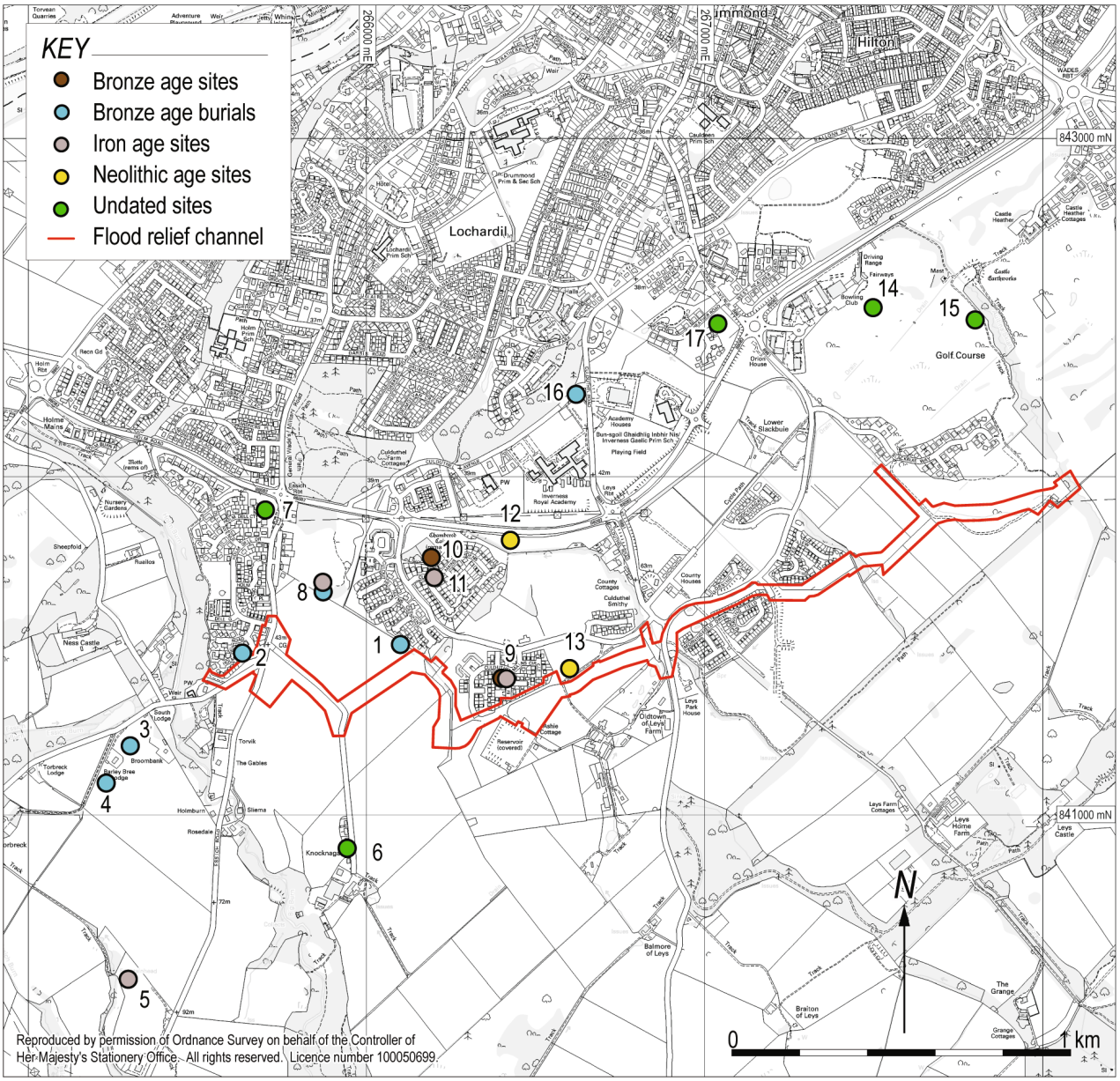
The work at Knocknagael Farm has added to a growing list of prehistoric evidence uncovered in Inverness and its surroundings, with the Culduthel Valley particularly rich in archaeological sites (Illus 8). This evidence includes the Neolithic dated pits at Lochardil Burn (Murray 2007) and Inverness Flood-Relief Channel Phase 3 (Peteranna 2012), funerary monuments such as the Clava-type ring-cairn at Culduthel (Henshall 1963) and round barrow (Highland HER MHG17655), cremation burials and cists at Holm Mains (Highland HER MHG32414 and 4784), Slacknamarnock Quarry (Murray 2009), Culduthel Mains (Low 1929) and Knocknagael (Highland HER MHG3779). A palisaded enclosure and ring-ditch excavated at Culduthel Mains (Highland HER MHG38229) provides evidence for settlement, while to the immediate east of Knocknagael recent excavations uncovered the high-status Iron-Age site of Culduthel Farm (Highland HER MHG49950) where a number of roundhouses with both domestic and industrial functions were uncovered. Further Iron Age activity is indicated by the presence of iron waste at Slacknamarnock Quarry (Murray 2009).

However, the Late Mesolithic date obtained from the present work is one of the earliest from the Culduthel Valley and adds to the growing evidence of Mesolithic activity within the Inverness area, which includes a possible hearth and flint artefacts recovered from Castle Street in Inverness (Wordsworth 1985). No artefacts were recovered from the present pit (C009), although the carbonised assemblage within the fill suggests the exploitation of local woodland resources for fuel and food. The morphological likeness of several other undated pits (C011, C017 and C019) within the immediate vicinity of this pit may also suggest a similarly early date.

Pits were the most common feature excavated on the site, with very few structural remains recovered. Despite this, several of the excavated pits contained material which could suggest that by the early 4th millennium BC a more settled occupation involving crop and animal husbandry was present within the vicinity. The presence of pottery fragments in several pits may also indicate a more settled form of habitation (Barclay 2003: 73). However, the actual location of this settlement is unknown at present; the nearest known Neolithic dated building is a Late Neolithic rectangular timber structure to the north-east of the site at Raigmore (Barclay 1996; 2003).

Isolated pits and pit-clusters are a common feature on archaeological sites, and are often the only evidence of early settlement within an area, although their interpretation can be difficult (Brophy & Noble 2012: 63; Thomas 2012). In the past they have been described as either domestic in function (Connolly & MacSween 2003: 43) or as a means of ritual (structured) deposition (Cook 2000: 108; Pollard 2001). More recently, however, it has been suggested that even domestic actions can have ritualistic connotations (Brophy 2006: 19; Brophy & Noble 2012: 63) and that their use can be interpreted as 'neither wholly ceremonial nor completely mundane' (Brophy & Noble 2012: 63). According to Thomas (2012: 7) pit deposition can be used as a means of creating memory at a location of importance, and this re-use can extend over a long period (Brophy & Noble 2012: 63). This importance and prolonged association may be highlighted by the fact that at the present site the features encompass a wide range in date from the Mesolithic through to the Iron Age, suggesting the re-use of the site, albeit possibly intermittently, over a long period. This similar re-use of a site was also found at the Neolithic pit-alignment site at Eweford in East Lothian, which had a period of use spanning several hundred years, suggesting that places were revisited and modified by individuals often over long periods (MacGregor & Lelong 2007: 64).

The absence of any obvious or extensive structural features may suggest that more permanent occupation was located elsewhere, possibly within the wider locale. According to Brophy & Noble (2012: 69) pit-clusters are often found alongside other features including hearths and post-holes, which is comparable to the present site. However, by the Iron Age it could be suggested that the main focus of settlement was located to the immediate east at the high-status site of Culduthel Farm (Highland HER MHG49950).



SITE KEY

1 - Culduthel Round Barrow
2 - Holm Mains Farm Cist Burials
3 - Knocknagael Square Barrow and Ring Ditch
4 - Torbreck Pit and Cremation Burial
5 - Torbreck Round House and Pits
6 - Knocknagael Farm Pit
7 - Culduthel Mains Palisaded Enclosure
8 - Slacknamarnock Cist Burial and Iron Waste
9 - Culduthel Farm Domesticated Industrial Site
10 - Culduthel Ring Cairn
11 - Culduthel Mains Find Spot, Flint and Bead
12 - Lochardil Burn Pits
13 - Culduthel Mains Pits
14 - Castle Heather Ring Ditch
15 - Balloan Enclosure
16 - Culduthel Cists
17 - Lower Slackbuie Unenclosed Settlement

Illus 8 Prehistoric sites within the immediate locality

11. CONCLUSION

The excavation and post-excavation analysis of the features at Knocknagael Farm has revealed that the Culduthel Valley was populated from as early as the 7th millennium BC, with evidence suggesting that more settled occupation was present from at least the 4th millennium BC onwards. However, due to the limits of the excavation, it must be stressed that many features may still remain to be discovered in association with the findings here, which would help to elucidate the nature of settlement within the Culduthel Valley.

12. ACKNOWLEDGMENTS

The work was funded by The Highland Council with advice provided by Kirsty Cameron and Andrew Puls of the Historic Environment Team. Thanks are also extended to Colin Howell of Highland Council and the staff of George Leslie Ltd. The excavation team were Christine Rennie, Iraia Arabaolaza, Paul Murtagh, Fiona Jackson, Marella Arcidiacono, Ross Cameron, Fraser MacRae, Mark Macdonald, Kevin Mooney and Edouard Masson-MacLean. The illustrations were provided by Gillian McSwan and the survey data by Fiona Jackson.

13. REFERENCES

Ballin, T B 2011 *Overhowden and Airhouse, Scottish Borders. Characterization and Interpretation of two lithic assemblages from sites near the Overhowden Henge*. BAR British Series 539. Oxford: Archaeopress.

Ballin Smith, B 2011 'The prehistoric coarseware', in R Toolis *Neolithic Domesticity and other Prehistoric Anomalies: Excavations at Laigh Newton, East Ayrshire* 20-24. Scottish Archaeological Internet Reports 49, http://www.sair.org.uk/.

Ballin Smith, B forthcoming 'The prehistoric pottery', in A Becket et al *Living and dying on the Bonnie Banks: Ten thousand years at the Carrick, Midross, Loch Lomond.* Scottish Archaeological Internet Reports.

Barclay, G J 1996 'Neolithic buildings in Scotland', in T Darvill & J Thomas (eds) *Neolithic Houses in Northwest Europe and Beyond* 61-75. Oxford: Oxbow Monograph 57.

Barclay, G J 2003 'Neolithic settlement in the lowlands of Scotland: a preliminary survey', in I Armit, E Murphy, E Nelis & D Simpson (eds) *Neolithic Settlement in Ireland and Western Britain,* 71-83. Oxford: Oxbow.

Bishop, R R, Church, M J & Rowley-Conwy, P A 2009 'Cereals, fruits and nuts in the Scottish Neolithic', *Proceedings of the Society of Antiquaries of Scotland* 139: 47-103.

British Geological Survey, Geology Digimap, https://digimap.edina.ac.uk/.

Brophy, K 2006 'Rethinking Scotland's Neolithic: combining circumstance with context', *Proceedings of the Society of Antiquities of Scotland* 136: 7-46.

Brophy, K & Noble, G 2012 'Within and beyond pits: deposition in lowland Neolithic Scotland', in H Anderson-Whymark & J Thomas (eds) *Regional Perspectives on Neolithic Pit Deposition: Beyond the Mundane*, 63-76. Oxford: Oxbow.

Connolly, R & MacSween, A 2003 'A Possible Neolithic Settlement at Milton of Leys, Inverness', *Proceedings of the Society of Antiquities of Scotland* 133: 35-45.

Cook, M 2000 'Excavation of Neolithic and Bronze Age settlement features at Lamb's Nursery, Dalkeith, Midlothian', *Proceedings of the Society of Antiquities of Scotland* 130: 93-113.

Dickson, C A & Dickson, J H 2000 *Plants and People in Ancient Scotland*. Stroud: Tempus.

Harker, S 2002 Cretaceous, in N H Trewin (ed) *The Geology of Scotland*. London: Geological Society.

Henshall, A S 1963 *The Chambered Tombs of Scotland,* vol 1. Edinburgh: Edinburgh University Press.

Highland Council Historic Environment Record, http://her.highland.gov.uk/.

Johnstone, G S & Mykura, W 1989 *The Northern Highlands of Scotland. British Regional Geology 2*. London: British Geological Survey.

Kilpatrick, M C 2010 Inverness Flood Relief Channel. Unpublished Data Structure Report 3151. Glasgow: GUARD Archaeology Ltd.

Low, A 1929 'A short cist at Culduthel, Inverness', *Proceedings of the Society of Antiquiries of Scotland* 63: 217-24.

MacGregor, G & Lelong, O 2007 *The Land of Ancient Lothian: Interpreting the Archaeology of the A1*. Edinburgh: Society of Antiquaries of Scotland.

Moray SMR, https://online.aberdeenshire.gov.uk/smrpub/master/detail.aspx?redirect=y&refno=NJ26SW0130 (accessed 21 June 2011).

Murray, R 2007 Lochardil Burn Flow Control and Infiltration Basin Monitored Topsoil Strip, unpublished Data Structure Report, Headland Archaeology Ltd, in Highland Council HER, http://www.highland.gov.uk/environment/conservation/archaeology.

Murray, R 2009 Slacknamarnock Quarry, Inverness: Excavation of a cist and cremation burials, unpublished Data Structure Report, Headland Archaeology Ltd in Highland Council HER, http://www.highland.gov.uk/environment/conservation/archaeology.

Peteranna, M 2012 South-West Inverness Flood Relief Channel Phase 3, Archaeological Watching Brief and Excavation, unpublished Data Structure Report, Ross and Cromarty Archaeological Services, see http://her.highland.gov.uk/.

Pollard, J 2001 'The aesthetics of depositional practice', *World Archaeology* 33.2: 313-33.

Saville, A 1994 'Exploitation of Lithic Resources for Stone Tools in Earlier Prehistoric Scotland', in N Ashton & A David (eds) *Stories in Stone*

57-70. London: Lithic Studies Society, Occasional Paper 4.

Sheridan, A 2002 'Pottery and other ceramic finds', in G J Barclay, K Brophy & G MacGregor 'Claish, Stirling: an early Neolithic structure in its context', *Proceedings of the Society of Antiquaries of Scotland* 132: 79-88.

Sheridan, A 2003 'New dates for Scottish Bronze Age cinerary urns: results from the National Museums of Scotland Dating Cremated Bones Project', in A Gibson (ed) 2003 *Prehistoric Pottery: people, pattern and purpose* 201-26. Oxford: BAR International Series 1156.

Sheridan, A 2007a 'From Picardie to Pickering and Pencraig Hill? New information of the 'Carinated Bowl Neolithic' in northern Britain', in A W R Whittle & V A Cummings (eds) *Going Over: the Mesolithic-Neolithic Transition in North-west Europe* 441-92. Oxford: Oxford University Press/British Academy.

Sheridan, A 2007b 'Dating the Scottish Bronze Age: There is clearly much that the material can still tell us', in C Burgess & P Topping (eds) *In the Shadow of the Age of Stonehenge* 162-85. Oxford: Oxbow.

Stephenson, D & Gould, D 1995 *The Grampian Highlands. British Regional Geology 4*. London: British Geological Survey.

Thomas, J 2012 'Introduction: beyond the mundane?' in H Anderson-Whymark & J Thomas J (eds) *Regional Perspectives on Neolithic Pit Deposition: Beyond the Mundane* 1-12. Oxford: Oxbow.

Veen, M van der 1992 *Crop Husbandry Regimes*. Sheffield: University of Sheffield Archaeological Monographs 3.

Wordsworth, J 1985 'The Excavations of a Mesolithic Horizon at 13-24 Castle Street, Inverness', *Proceedings of the Society of Antiquities of Scotland* 115: 89-103.