

**Mercia Marina, Findern Lane,  
Willington, Derbyshire**

**Report on an Archaeological Excavation**



Bronze Age Ring Ditch

**ARS Ltd Report 2008/43**  
February 2009

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## ***Executive Summary***

*An archaeological excavation was conducted by Archaeological Research Services Ltd (ARS Ltd) on selected areas at the site of the Mercia Marina development, Findern Lane, Willington, Derbyshire. The investigation took the form of strip, map and sample, involving the topsoil stripping of three areas highlighted by the Derbyshire County Council (DCC) Development Control Archaeologist as having evidence for surviving archaeological remains, known through aerial photography and earlier evaluation work.*

*Archaeological remains were excavated dating from most periods of prehistory including:*

- *Possible Late Upper Palaeolithic stone tools recovered from the glacial sands and gravels which form the first natural substratum on the site.*
- *Mesolithic flints and a possible Mesolithic pit feature.*
- *Early Neolithic 'midden pits' that contained Carinated Bowl ceramics and a small amount of Impressed Ware ceramics together with a few lithics.*
- *Early Bronze Age funerary monuments in the form of two ring ditches, one of which was closely associated with two cremation pits.*
- *Early Bronze Age structural remains comprising four discrete post-built structures.*
- *Middle-Late Bronze Age pit containing ceramics.*
- *Later prehistoric linear boundary features of probable Iron Age date.*

*Detailed analysis of the pottery and lithic assemblages has provided information relating to the changing character and use of this site over the millennia, whilst analysis of the pollen remains and botanical macrofossils has shed light on its environmental history. The palaeoenvironmental evidence suggests that during the Bronze Age, the site was part of a riverine landscape with stands of deciduous trees and pools of standing water in which both arable agriculture and herding of domestic animals took place. A comprehensive programme of radiocarbon dating has helped unravel the chronology of the various remains on the site and one of the more interesting outcomes has been the observation that the Early Bronze Age funerary remains appear to be contemporary with the adjacent structural remains which could relate to contemporary settlement or perhaps structures relating to the funerary process.*

*The archaeological features and small finds from the site add important new information to the wider story of prehistory both in the Trent Valley and the wider region. The data collected during this study, together with that from sites in the surrounding landscape, offer a significant opportunity for engaging with a wider audience and telling the story of early settlement and land use in the Trent Valley.*

## 1 Introduction

- 1.1 This document reports on the findings of an archaeological investigation in the form of a strip, map and sample project on two areas at the development site of Mercia Marina, Findern Lane, Willington, Derbyshire. The development is creating Europe's largest inland marina at the site.

## 2 Location, Land Use and Geology

- 2.1 The Mercia Marina site is located on Findern Lane c. 500m northeast of the village of Willington, Derbyshire. The southern area of the site (Area One) is centred on SK 3027 2929 while the northern area that was investigated (Area Two) is centred on SK 3010 2959.

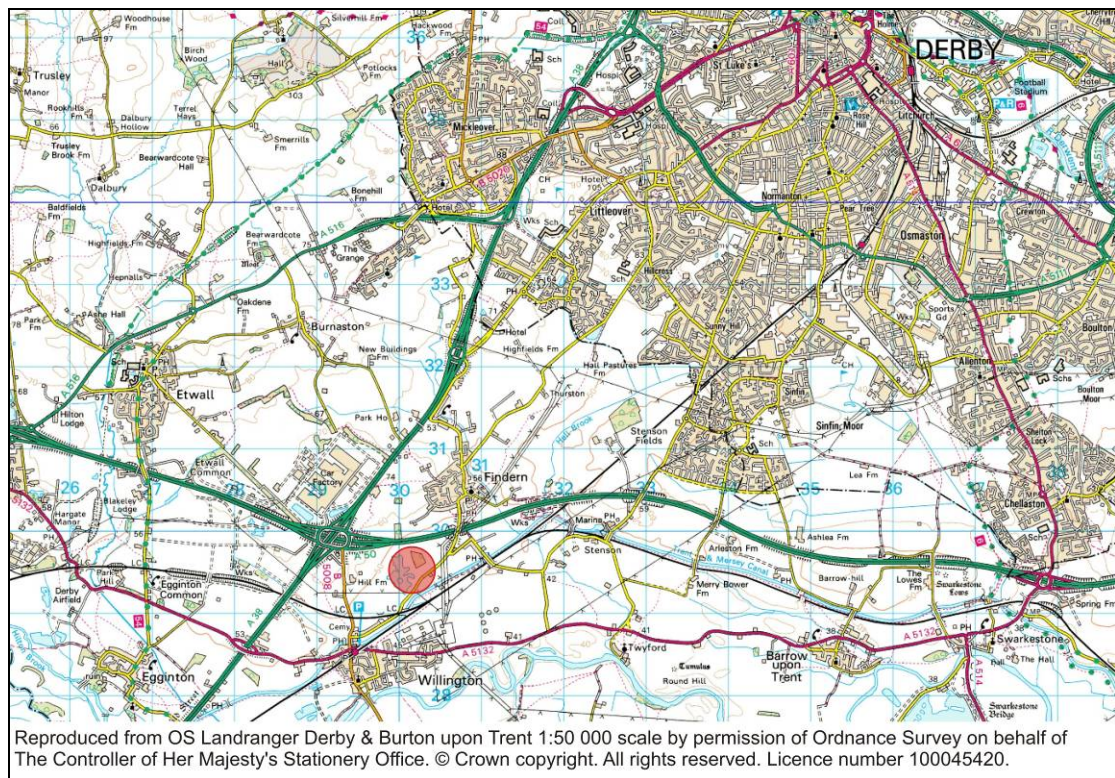


Fig. 1 Location of the Willington Marina site.

- 2.2 Area One is a large field under pasture in between Findern Lane and the Trent and Mersey Canal. Area Two is an area on the banks of the large lake which is currently in use for fishing but will be converted into the new Marina. This area was excluded from the original gravel extraction which created the lake due to the potential archaeological sensitivity of the remains here, informed through evaluation trenching and excavation of the surrounding area in the mid-late 90's (Hughes and Jones 2001).
- 2.3 The underlying geology of both areas is the same. While the solid geology in this part of the Trent Valley is a complex mix of mudstones, sandstones and other sedimentary rocks, the dominant geology is the overlying fluvio-glacial sands and gravels (Knight and Howard 2004, 5-6). River valleys containing glacially deposited

deep sands and gravels are traditional foci of settlement throughout human history as they are free-draining and fertile places to settle.

### **3 Archaeological and Historical Background**

- 3.1 Prior to excavation on the Willington Marina site, it was known through aerial photograph and cropmark evidence that there were surviving archaeological deposits. These most clearly took the form of a ring ditch feature and linear boundary features extending across much of the northern area under investigation.
- 3.2 The Mercia Marina site itself has been subject to archaeological investigation in the recent past. In the early-mid 1990s, work was undertaken prior to gravel extraction associated with the construction of the Derby Southern Bypass (A50). The work was carried out by the Birmingham University Field Archaeology Unit (Hughes and Jones 1995; 2001) and consisted of geophysical survey, evaluation trenching and targeted excavation. While the geophysical survey was largely indeterminate, the evaluation trenching highlighted the existence of sub-surface archaeological deposits including a possible late-Neolithic/Early Bronze Age ring ditch (Ring Ditch 2 excavated during this work), and a pit containing probable Early Neolithic pottery (Hughes and Jones 2001, 4).
- 3.3 Following later permission to extract gravel from the area which is now Mercia Marina, full excavation was conducted within the affected area in order to preserve by record all archaeological remains. The excavation recorded a large volume of Neolithic pit features, 49 of which were dated by association with Early-Middle Neolithic pottery sherds, with some dated by thermoluminescence to the mid 4<sup>th</sup> – early 3<sup>rd</sup> millennia cal. BC; indeed of the pottery assemblage for the site, 94% of the sherds were from Early-Middle Neolithic vessels (Woodward and Hancocks 2001, 10). The key features of the site were seven discernible clusters of Neolithic pits, and two Early Bronze Age Ring Gullies or ditches (Hughes and Jones 2001, 6-9), one of which is the same monument as Ring Ditch 2 exposed as part of this work (see below). The only non-prehistoric element to the site were two sherds of residual early 1<sup>st</sup> Millennium AD pottery (Hughes and Jones 2001, 9). Environmental sampling of some of the Neolithic pits also revealed evidence for cereal cultivation (wheat and barley seeds) and exploitation of natural resources (abundance of charred hazelnut shells) (Monckton 2001, 14).
- 3.4 The area around Willington, in this middle portion of the Trent Valley, is known to be an archaeologically rich landscape and has been the focus of fieldwork for a substantial portion of the last century. To the west of Willington, at Willington Quarry, excavations were conducted in advance of gravel extraction from 1970-72 (Wheeler 1979). The site yielded archaeological remains from the Early Neolithic through to the Early Medieval period, and included settlement evidence for the Early and Late Neolithic/Early Bronze Age Periods, as well as Bronze Age 'barrows' or ring ditch funerary monuments, Iron Age roundhouses and linear boundary features, and Anglo-Saxon post-built and sunken-featured buildings (Wheeler 1979). More recent excavations at the Willington Quarry site have revealed more prehistoric features, including pits, and two burnt mounds with a potentially Late Neolithic/Early Bronze Age date (Beamish 2001, 9-10).

- 3.5 Other known sites within the immediate Willington area include: Two cursus monuments known from aerial photograph and invasive investigation at Aston-upon-Trent (Elliott and Garton 1995; Gibson and Loveday 1989; Reaney 1968) and at Potlock (Findern) to the south east of the Willington Marina site (Guilbert 1996; Wheeler 1970); a multi-period site at Swarkestone Lowes famous for its upstanding barrows (Posnansky 1955) but which has also yielded an occupation site contemporary with beaker pottery, predating a ring ditch (Greenfield 1960), and recent work has revealed finds and remains from the Mesolithic through to the Romano-British period (Elliott and Knight 1999; Guilbert and Elliott 1999). The only known Scandinavian cremation cemetery in the British Isles lies nearby at Heath Wood, Ingleby, where recent excavations have suggested that it could house the remains of the dead from the Great Army of AD 873-8 (Richards 2004). As well as the wealth of investigated sites on the Trent gravels, there are many sites known from aerial photography which survive as cropmarks. Types of sites recognised in the mid-Trent area around Willington include: Ring ditches, pit alignments, linear boundaries and enclosures, and a droveway (data supplied by Derbyshire HER; also Knight and Howard 2004)

#### **4 Aims of the Project**

- 4.1 The aims of the project were to record, and where appropriate retrieve, all archaeological deposits which occurred in the identified areas of interest.


#### **5 Methodology**

- 5.1 The two areas (three trenches) (Fig. 2) to be investigated had been set out by the client prior to arrival on site. The topsoil and any unstratified modern material was removed by a 360° tracked excavator in spits with a toothless ditching bucket, revealing the underlying sand and gravel substratum. The entire process was observed by an archaeologist.
- 5.2 The three trenches were all cleaned by hand to ensure that all archaeological features were identified. All archaeological features were recorded in plan at this stage. A decision was then made, in consultation with the Senior Conservation Archaeologist of the Derbyshire County Council and ARS Ltd's environmental specialist as to the sampling strategy to be employed.
- 5.3 It was noted on site that the clarity and visibility of cut features in plan changed due to the prevalent conditions and moisture. What was particularly noted was that the greatest visibility was afforded not when wet or dry, but when the ground was undergoing change from one state to the other. This is the same as was noted by Wheeler during the excavations at Willington Quarry (1979).
- 5.4 Each of the features identified during the stripping process was subject to excavation and recording. This involved the sectioning of deposits to determine their form and dimensions, and the collection of artefacts and samples suitable for radiometric and environmental sampling. All excavation was undertaken by trowel and small tools, and the content of all deposits with the potential for providing organic material was subject to flotation through graduated sieves (5mm, 2mm, 1mm, 500 micron). After sectioning each deposit, the section was photographed using colour slide, monochrome print and digital formats. All sections were drawn



at 1:10, and the feature plans were amended to account for the shape of the cut. The datum lines relating to each section were surveyed using a Leica TCR307 Total Station Theodolite to provide an Ordnance Survey datum for each feature. The remaining halves of the any features which yielded small finds or palaeobotanical evidence of a significant quality or quantity were removed, as were the remaining halves of any features which showed evidence of burning *in-situ*. All the deposits and cuts were described on *pro-forma* context sheets.



Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB	<p style="text-align: center;"><b>Figure 2</b></p> <p style="text-align: center;">Location of trenches on site</p>	Key:  Areas investigated 	Copyright/Licencing: This drawing © A.R.S. Ltd  Ordnance Survey data if applicable © Crown Copyright, all rights reserved reproduced with permission. Licence No. 100045420
Site Code: WILL 07 Drawing Ref: Report Fig Date: June 2008 Drawn: JS & JB Scale: 1:5000 at A4	Notes:		

- 5.5 All artefacts were bagged individually and assigned a discrete number, with the site code and the deposit from which they were recovered clearly indicated. Where finds did not come from a discrete feature, they were recorded in three dimensions so their position could be plotted on the overall site plan. Pottery was wrapped in pierced bubble wrap for protection before being placed in pierced finds bags, clearly labeled. Lithic material was placed directly in bags without any intervening packaging or treatment.
- 5.6 Flotation was undertaken on site. The sieves measured 5mm, 2mm, 1mm and 500 microns. All flotated material was dried and then bagged, clearly marked with site code and context number. Any single-entity charred material samples considered to be especially suited for radiocarbon dating were placed in aluminium foil, placed in a bag and assigned a discrete charred material sample number.
- 5.7 An overall site plan was made using a Leica TCR307 Total Station Theodolite which accurately recorded the position of the three trenches, and all archaeological features and finds, in relation to the Ordnance Survey National Grid and Ordnance Survey Datum.

## **6 Stratigraphic Report for Area 1 (South of the road)**

- 6.1 This section describes the features and deposits encountered during the course of investigations in Area 1 (Trench 1 (main trench) and Trench 1a (small trench)) (Figs 3 and 4). All features on the site were truncated with no intact archaeological deposits surviving within the topsoil. The start of the archaeological horizon coincided with the start of the sand and gravel substratum. The features and deposits are discussed under headings according to their type or their association with other features (*i.e.* when they comprise features within a discrete structure). The first category concerns the topsoil deposit, followed by a description of the underlying geological deposits on the site; this is followed by a description of the features in Area 1.
- 6.2 The topsoil at Willington Marina was a thin loamy dark brown soil, which had very probably been specially imported to the site during the previous groundworks and reinstatement following the gravel extraction.
- 6.3 The principal underlying drift geology at Willington is alluvial sands and gravels.
- 6.4 One of the immediately noticeable aspects of the site was its truncation by ploughing, especially in Area Two north of the road. Following the removal of the topsoil, a large number of parallel plough marks were evident, some cutting through archaeological features.
- 6.5 As shown in the plan of Area One (Fig. 3) there was a large portion in the south of the trench which became inaccessible during the stripping process due to waterlogging. In concert with the Development Control Officer for Derbyshire County Council a decision was made to 'write off' the inaccessible portion of the site, and a further area was identified where rough recording and find retrieval could be attempted if conditions improved. Ultimately due to the condition of the

site, full recording was only possible in the northern portion of the site and it is the features in this area that are summarised and discussed below.

6.6 The first group of features discussed for Area 1 is the pit alignment which is associated with a broken linear feature extending across the trench (Fig. 3).

Feature Number	Trench	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001			Topsoil					
002			Natural sand and gravel substratum					
<b>Pit Alignment</b>								
F037	1	037, 038	Sub-oval pit	650 x 400	100	Dark Brown (7.5 YR 4/3)	Sandy Silt	
F039	1	039, 040	Sub-oval pit	600 x 380	110	Dark Brown (7.5 YR 4/3)	Silty Sand	
F041	1	041, 042	Sub-rectangular pit	680 x 500	120	Black (10 YR 1.5/2)	Silty Sand	
F043	1	043, 044	Sub-rectangular pit	820 x 400	140	Black (10 YR 1.5/2)	Silty Sand	
F045	1	045, 046	Sub-rectangular pit	820 x 360	190	Black (10 YR 1.5/2)	Silty Sand	
F047	1	047, 048	Sub-rectangular pit	1400 x 420	170	Black (10 YR 1.5/2)	Silty Sand	
F073	1	073, 074	Oval pit	300 x 420	70	Dark Brown (7.5 YR 3/4)	Silty Sand	
F157	1	157, 158	Oval pit	500 x 400	110	Dark Brown (7.5 YR 3/4)	Silty Sand	
F159	1	159, 160	Oval pit	540 x 430	140	Dark Brown (7.5 YR 3/4)	Silty Sand	
F161	1	161, 162	Oval pit	790 x 430	110	Dark Brown (7.5 YR 3/4)	Silty Sand	
F163	1	163, 164	Oval pit	200 x 400	130	Dark Brown (7.5 YR 3/4)	Silty Sand	
F165	1	165, 166	Oval pit	650 x 580	140	Dark Greyish Brown (10 YR 4/2)	Silty Sand	
F167	1	167, 168	Oval pit	500 x 910	170	Greyish Brown (10 YR 5/2)	Silty Sand	
F169	1	169, 170	Oval pit	890 x 500	210	Dark Greyish Brown (10 YR 4/2)	Silty Sand	
<b>Linears</b>								
F027	1	027, 028	Linear feature extending across trench poss. associated with pit alignment	Across whole area x 700 max.		Predominantly dark brown (7.5 YR 3/3) though variable	Sandy Silt	✓

Table 1 Feature descriptions for pit alignment and associated linear feature in Area One.

Figure 3

Plan of Area 1  
Main Trench

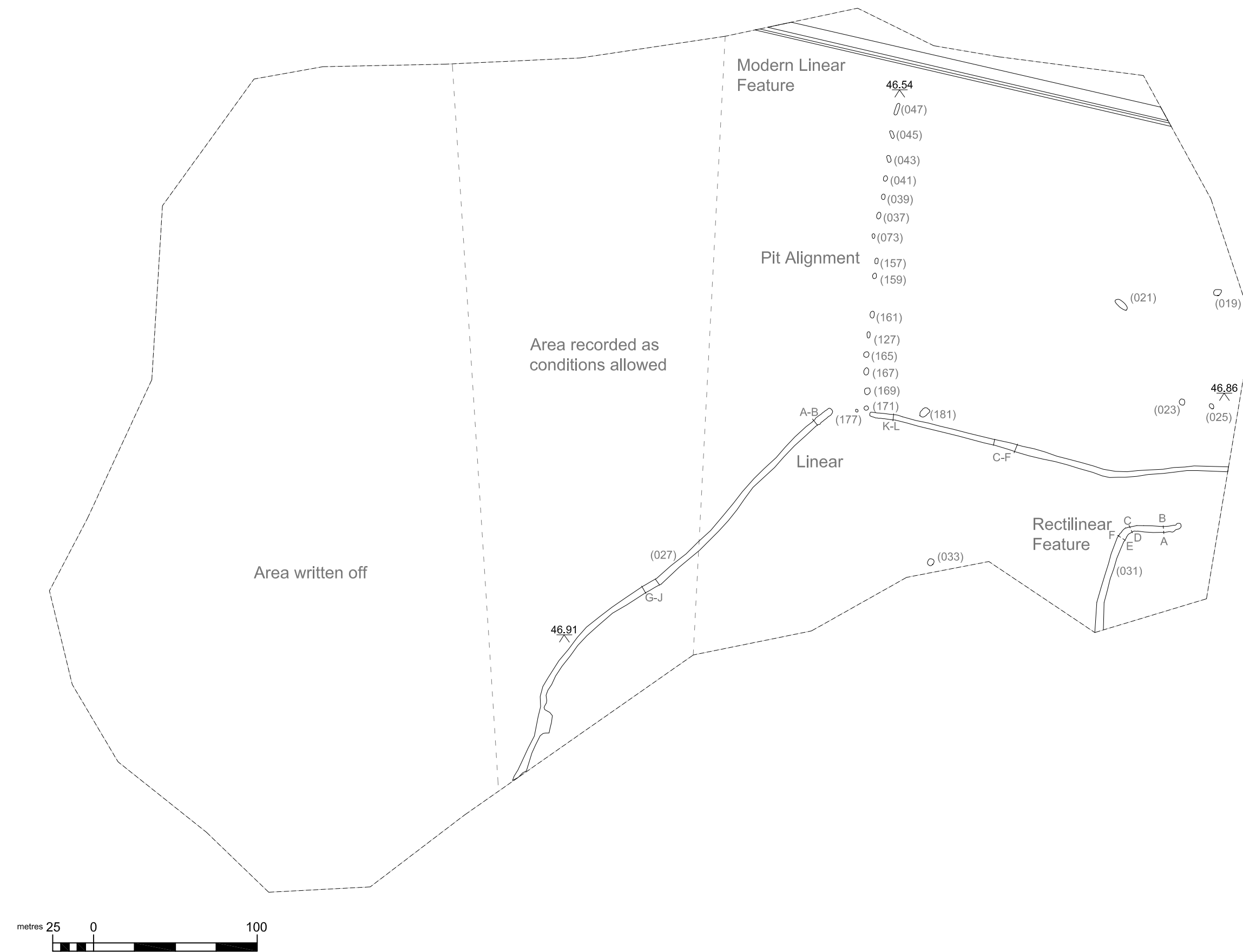
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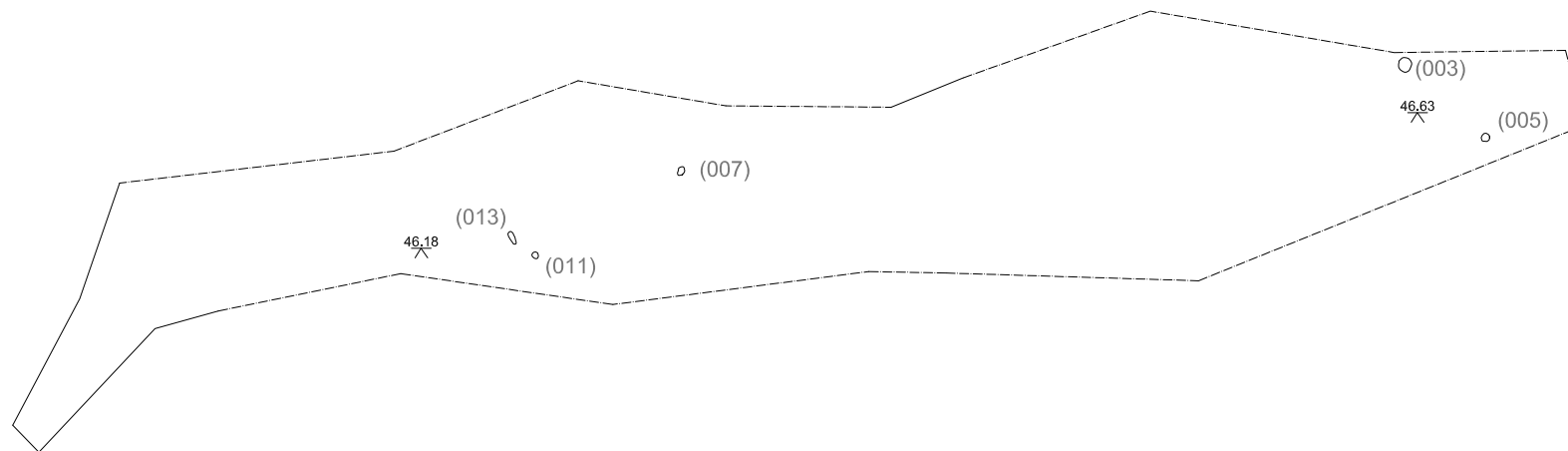


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Figure 4  
Plan of Area 1  
Small Trench

Key:



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6.7 The pit alignment ran east-west across Area 1. All the individual pit features were of similar dimensions and contained fills of similar composition. There were no small finds within the deposits. The clear linear alignment of the pits indicates that they are associated and probably contemporary, especially when viewed along with the near-homogeneity of their fills. The pit alignment terminates at a break in the linear feature F027 indicating that there is a clear association between the pit alignment and the linear boundary feature, though without clear dating evidence or diagnostic small finds it is impossible to ascertain whether they are contemporary or one was deliberately placed to align on the other.

Feature Number	Trench	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001			Topsoil					
002			Natural sand and gravel substratum					
<b>Pits</b>								
F003	1a	003, 004	Oval pit	680 x 580	250	Dark Brown (7.5 YR 4/3)	Sandy Silt	✓
F005	1a	005, 006	Oval pit	500 x 450	80	Dark Brown (7.5 YR 4/3)	Sandy Silt	
F007	1a	007, 008	Oval pit	460 x 480	140	Dark Brown (7.5 YR 3/4)	Sandy Silt	
F019	1	019, 020,	Oval flat-based pit	760 x 500	280	Dark Brown (7.5 YR 3/4)	Sandy Silt	
F023	1	023, 024	Steep-sided oval pit	520 x 560	170	Dark Greyish Brown (10 YR 4/2)	Sandy Silt	
F025	1	025, 026	Oval pit	380 x 570	250	Brown (7.5 YR 4/4)	Sandy Silt	
F171	1	171, 172	Oval pit	850 x 510	170	Greyish Brown (10 YR 5/2)	Silty Sand	
F173	1	173, 174	Oval pit	420 x 400	170	Dark Brown (7.5 YR 3/3)	Sandy Silt	✓
F177	1	177, 178	Oval pit	670 x 340	150	Dark Brown (7.5 YR 2/3)	Sandy Silt	
F181	1	181, 182	Oval pit	1490 x 1020	210	Dark Brown (7.5 YR 2/3)	Sandy Silt	
<b>Postholes</b>								
F011	1a	011, 012	Small oval posthole or pitlet	300 x 400	120	Dark Brown (7.5 YR 3/4)	Sandy Silt	
F175	1	175, 176	Steep-sided circular posthole	280 x 210	210	Dark Brown (7.5 YR 4/4)	Sandy Silt	
<b>Hearths</b>								
F021	1	021, 022	Steep-sided oval hearth pit containing CBM and pot.	1500 x 550	190	Dark Brown (7.5YR 4/3)	Sandy Silt	✓
F033	1	033, 034	Sub-circular hearth pit containing CBM and pot	480 x 380	120	Black (10 YR 1.5/2)	Sandy Silt	✓
<b>Linears</b>								
F031	1	031, 032	Portion of sub-rectilinear ditch with posthole/pit cut into the terminal	22m visible in trench x 0.5m width	400	Dark Brown (7.5 YR 4/3)	Sandy Silt	✓

Table 2 Feature descriptions for Area 1 (Trenches 1 and 1a)

Pit Features

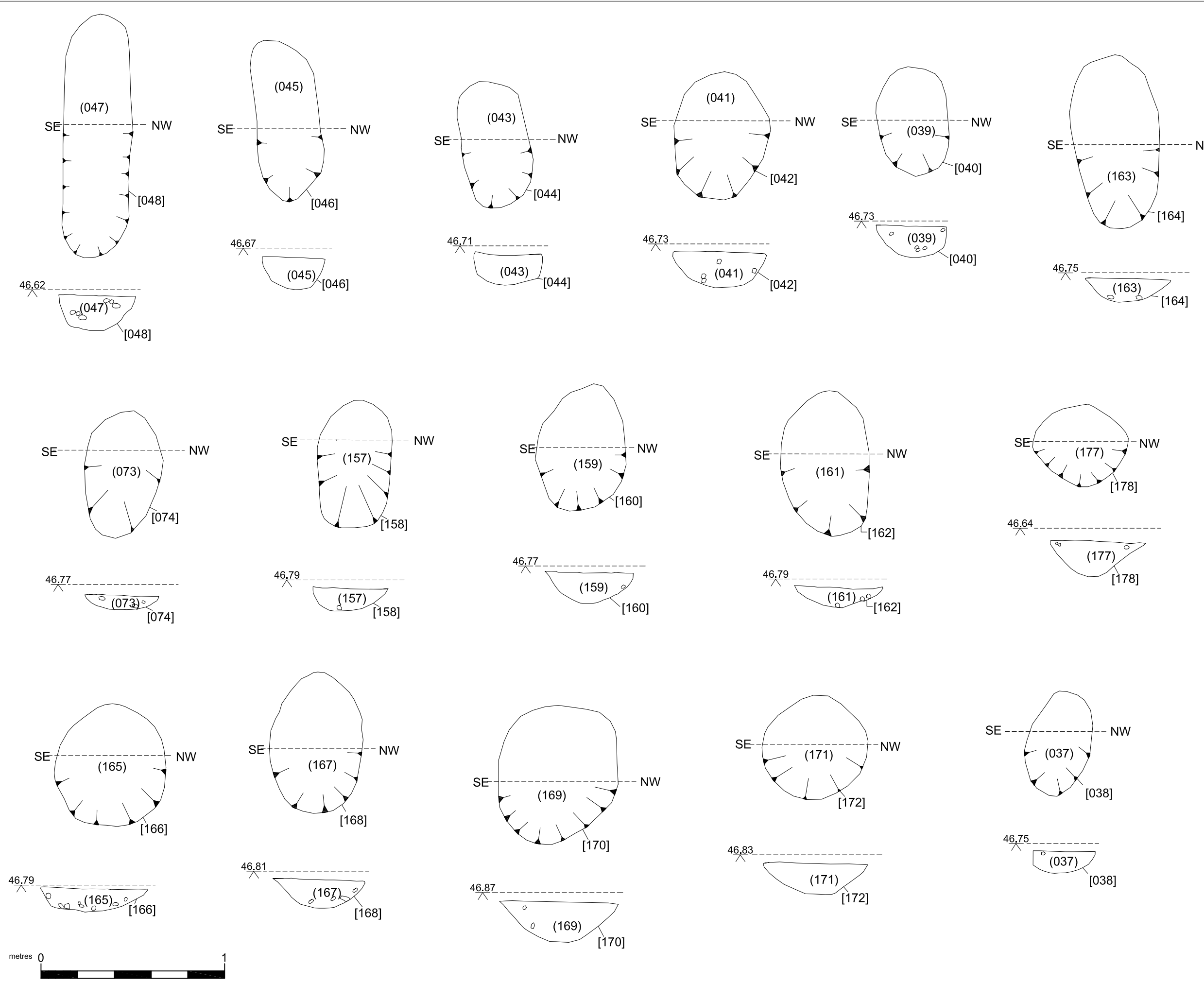
- 6.8 The other pit features encountered and excavated in Area One were spread across the northern portion of the trench and, with the exception of F003 contained no small finds. Pit F003 contained a large volume of Bronze Age Deverel-Rimbury Ware pottery (see ceramics report below). Two radiocarbon dates were obtained on separate single entity charred grain samples from this feature, which returned a total possible date range of 1930-1440 cal. BC (see C<sup>14</sup> dating and modeling below for full details).

Linear and associated pit feature

- 6.9 F031 was a ditch section describing a portion of a rectilinear enclosure. The profile of the ditch showed that the interior slope was gradual while the external slope was steeped and had irregular cut marks within it that may have represented some form of fencing or small palisade. The idea of a fence or palisade is supported by the fact the portion of the ditch feature observed terminated at a posthole. Pit F073 was closely associated with the ditch feature F031 and contained pottery sherds most likely dating to the Iron Age (see ceramics report below).



Figure 5  
 Plans and sections of Pit Alignment



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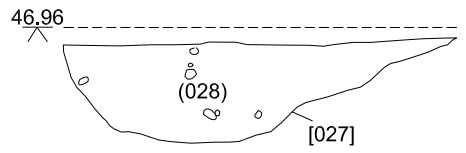
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Figure 6  
 Features in Area 1

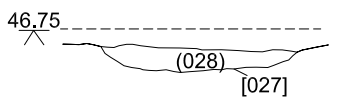
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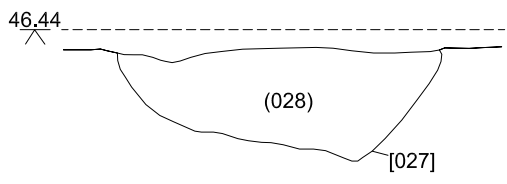
North west facing section (AB) of linear (027)



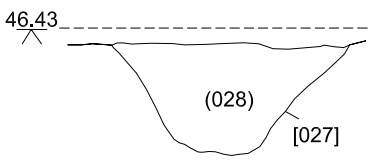
North facing section (CD) of linear (027)



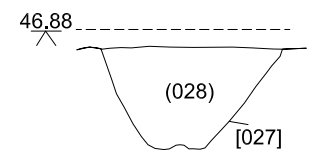
South facing section (EF) of linear (027)



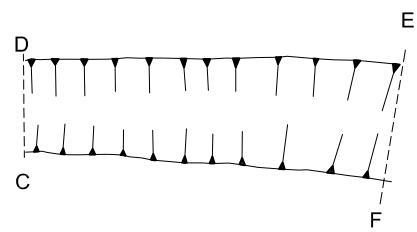
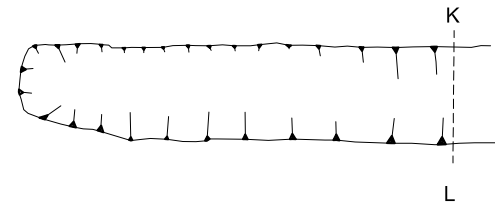
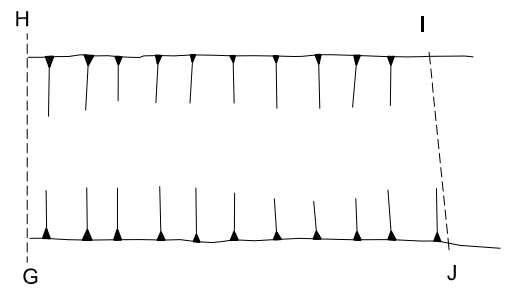
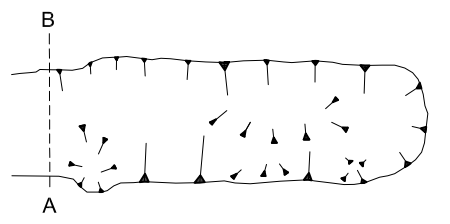
North facing section (GH) of linear (027)



South facing section (IJ) of linear (027)



North west facing section (KL) of linear (027)



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Figure 7  
Features in Area 1

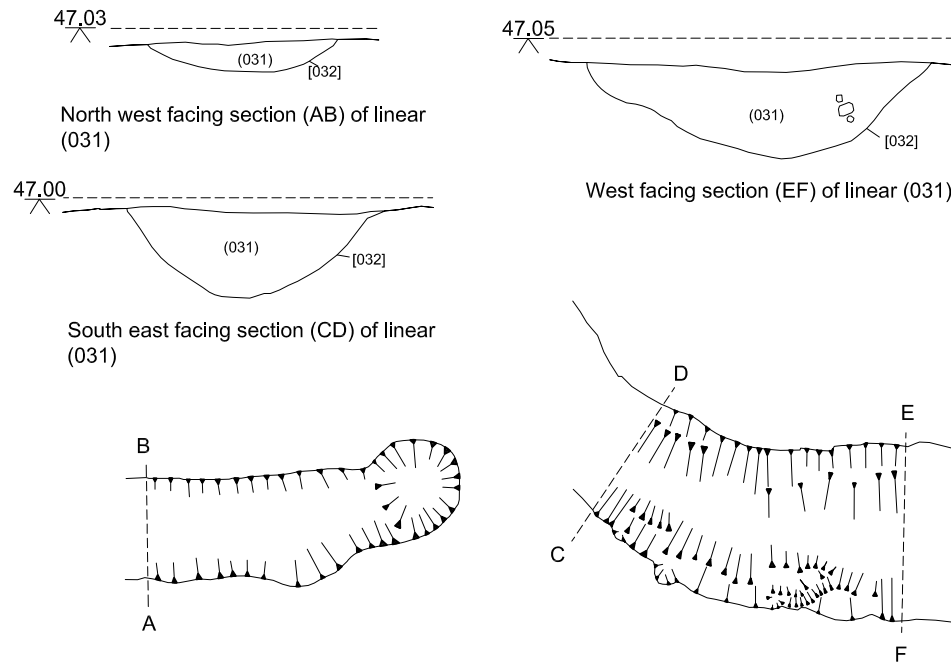
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Figure 8

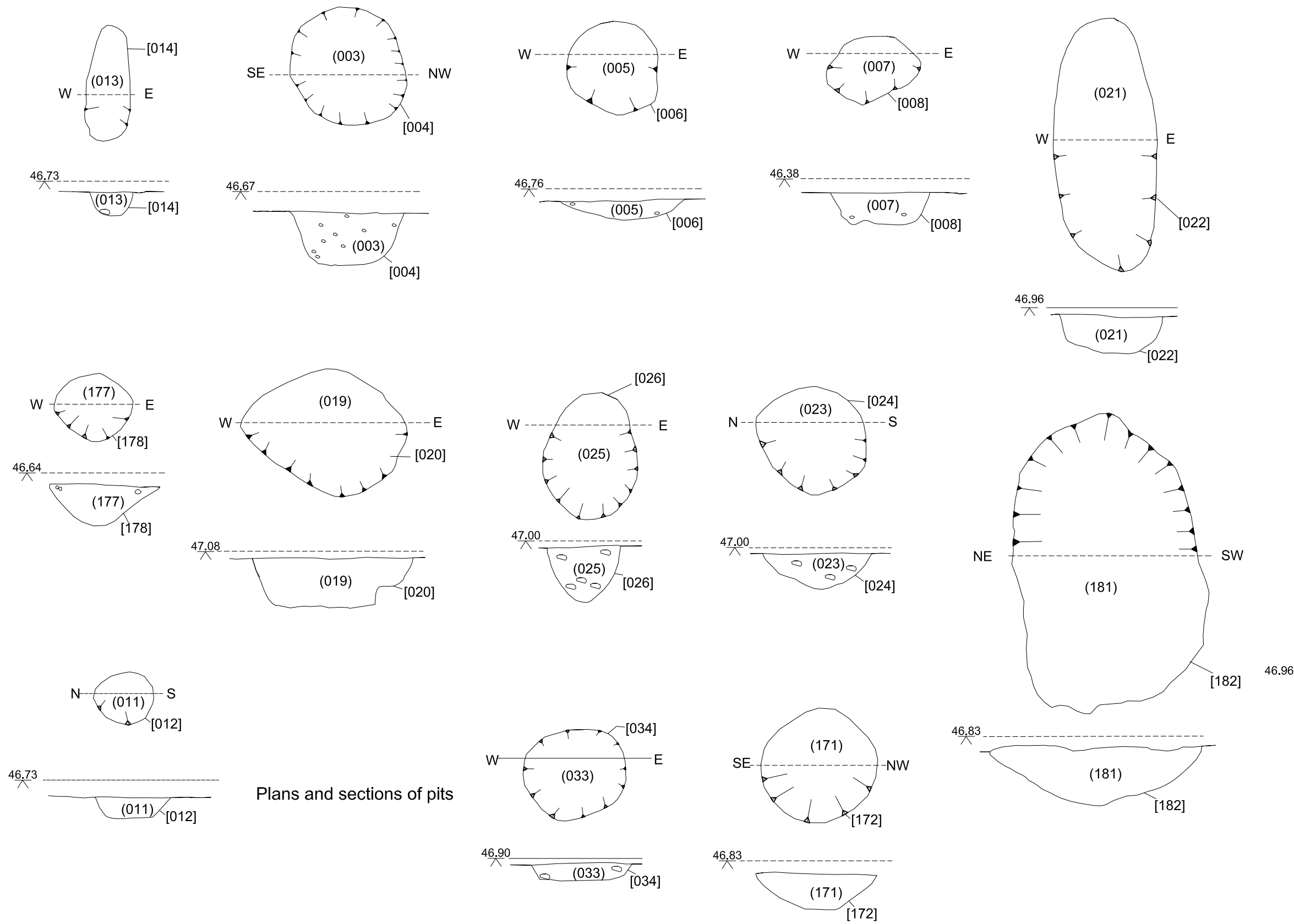
Sections and plans of pit,  
 posthole and hearth  
 features in Area 1

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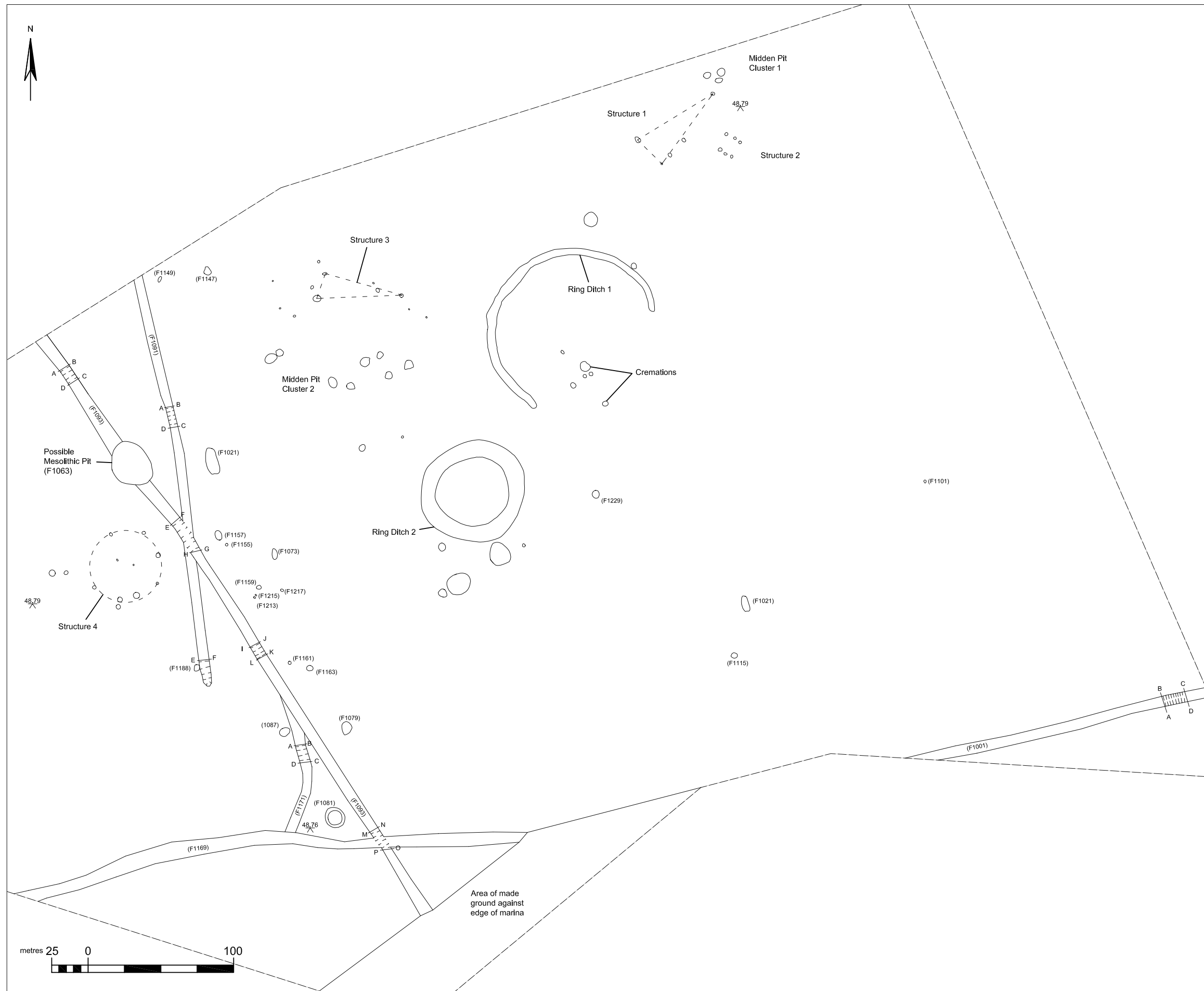
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## **7 Stratigraphic Report for Area 2 (North of the Road)**

- 7.1 This section describes the features and deposits encountered during the course of investigations in Area 2 (Trench 2). All features on the site were truncated with no intact archaeological deposits surviving within the topsoil. The start of the archaeological horizon coincided with the start of the sand and gravel substratum. A number of the features in trench 2 occurred as clusters, mainly as groups of pits or postholes, some associated with the large ring ditch (Ring Ditch 2) and penannular ditch (Ring Ditch 1). Where features occurred in clusters, these are discussed as such below, followed by general discussions of any remaining features by feature type.



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Figure 9  
Plan of Area 2

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Structure 1, Structure 2 and pit cluster 1 (Figs 10-11)

- 7.2 The first group of features discussed is the cluster of pits and postholes in the northern corner of Trench 2, which form two structures and a cluster of midden pits. The features are tabulated below and are shown on Figs. 10-11 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Structure 1</b>							
<b>Postholes</b>							
F1269	1269, 1270	Small sub-oval possible posthole	310 x 220	160	Reddish Brown (5YR 4/4)	Silty Sand	
F1271	1271, 1272	Small sub-circular stakehole	130 x 110	100	Yellowish Brown (10YR 5/6)	Silty Sand	
F1273	1273, 1274	Small sub-oval possible posthole	300 x 200	110	Dark Reddish Brown (5YR 4/4)	Silty Sand	
F1277	1277, 1278	Small sub-oval/irregular possible posthole	370 x 260	90	Dark Reddish Brown (5YR 4/4)	Silty Sand	
F1283	1283, 1284	Small sub-oval posthole	280 x 220	120	Dark Reddish Brown (5YR 4/6)	Silty Sand	
<b>Structure 2</b>							
<b>Postholes</b>							
F1231	1231, 1232	Small sub-circular posthole	250 x 220	80	Dark Yellowish Brown (10YR 4/4)	Silty Sand	
F1233	1233, 1234	Small shallow sub-circular posthole	230 x 180	30	Dark Reddish Brown (5YR 3/3)	Silty Sand	
F1235	1235, 1236	Small sub-circular posthole	170 x 150	80	Reddish Brown (5YR 4/4)	Silty Sand	
F1237	1237, 1238	Small circular posthole	180 x 180	90	Dark Yellowish Brown (10YR 4/4)	Silty Sand	
F1239	1239, 1240	Small sub-oval posthole	170 x 120	50	Dark Reddish Brown (5YR 3/3)	Silty Sand	
F1241	1241, 1242	Small circular posthole	220 x 220	130	Dark Reddish Brown (5YR 3/3)	Silty Sand	
<b>Midden Pits</b>							
F1245	1245, 1246	Fairly deep sub-circular pit	440 x 460	340	Dark Yellowish Brown (10YR 4/6)	Silty Sand	✓
F1247	1247, 1248	Fairly deep sub-circular pit	530 x 440	230	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1285	1285, 1286	Shallow sub-oval pit	370 x 280	80	Dark Brown (7.5YR 3/2)	Silty Sand	✓

Table 3 Feature descriptions for structure 1, structure 2 and associated midden pits in northern corner of Trench 2

### *Structure 1*

- 7.3 Structure 1 is a post-built structure comprising four postholes (F1269, F1273, F1277 and F1283) and one stakehole (F1271). The form of the structure in plan is an isosceles triangle with the long sides measuring c.6m in length. Structurally it is very similar in form and scale to a number of triangular post-built structures observed at excavations in Northumberland (Waddington and Davies 2002; Waddington 2006; Stafford 2007), which appear to have a long currency of usage

dating from the Early Neolithic period through to the Early Bronze Age. Two charred samples from posthole F1283 returned a total possible date range of 1760-1450 cal. BC (see C<sup>14</sup> dating and modeling below for full details).

#### *Structure 2*

- 7.4 The second arrangement of postholes in this group has been labelled as structure 2. The arrangement comprises three sets of opposed postholes forming a rough square approximately 1.2m on each side. The six postholes were all shallow and extremely truncated with an average depth of c.75mm. While it may appear that postholes of this size could not support any substantial arrangement of posts, the fact that these deposits cut into the substratum indicates that they were originally deeply set. The postholes were too shallow to discern whether the original posts were angled or upright, and so it is difficult to offer any sound interpretation of how this structure may have originally appeared. Two charred samples from posthole F1231 were submitted for radiocarbon dating. One sample returned a date range of 1690-1500 cal BC, and the second returned a clearly residual date of cal AD 980-1120 (see C<sup>14</sup> dating and modeling below for full details).

#### *Midden Pits*

- 7.5 The three pit features in this cluster lay close against the trench edge towards the northern corner of the trench. All three contained a similar; though not identical, dark fill of silty sand. Two of the pit features contained Early Neolithic pottery, and appear to be truncated midden pits, a common feature of Early Neolithic sites. Two radiocarbon dates on samples taken from pit F1285 returned a total date range of 3650-3370 cal. BC (see C<sup>14</sup> dating and modeling below for full details).



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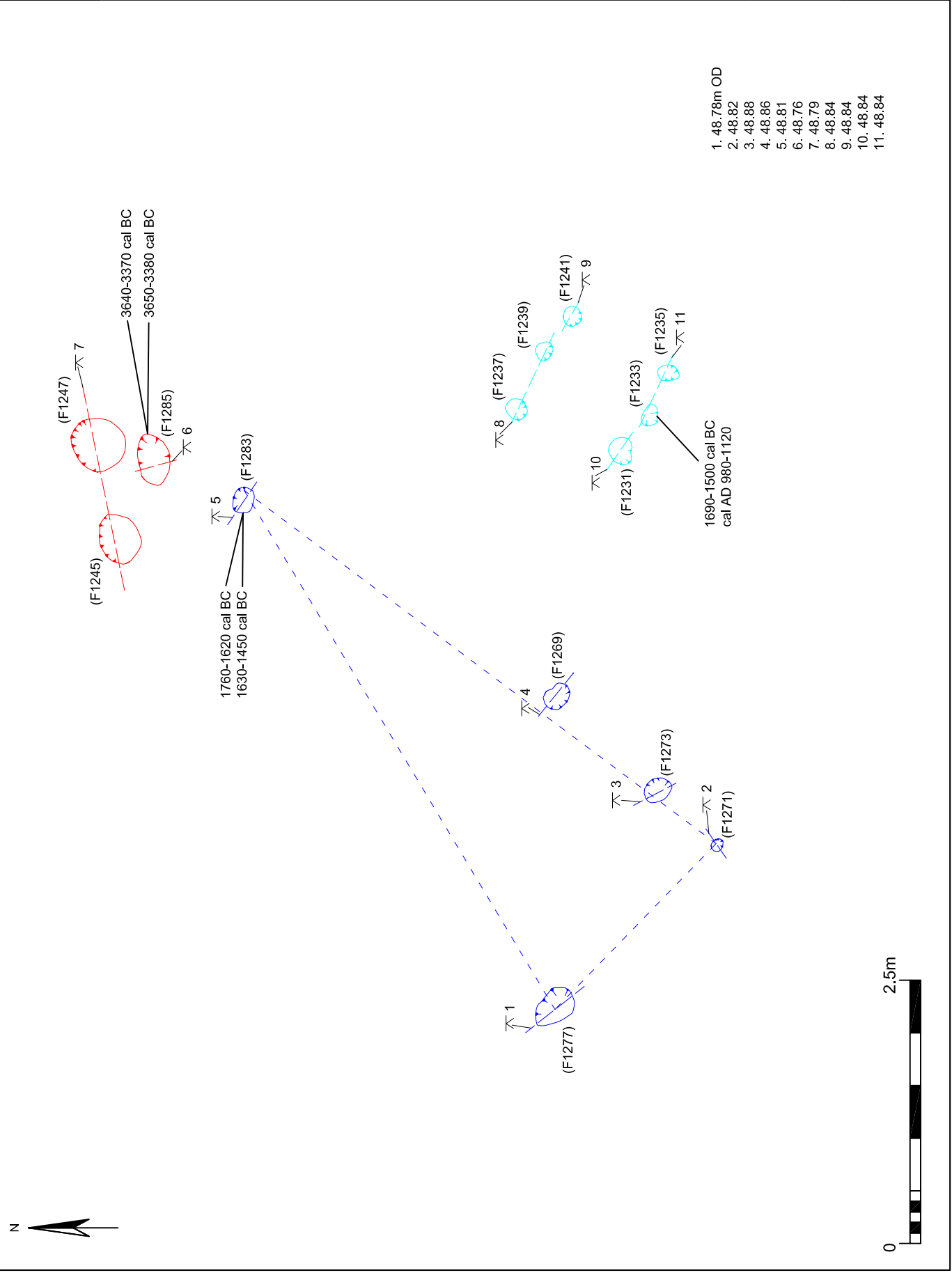
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Figure 10  
 Midden Pit Cluster 1  
 Structures 1 and 2

Key:  
■ Triangular structure 1  
■ Structure 2  
■ Midden pits

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Fig. 11

Sections of features  
 Structures 1 and 2

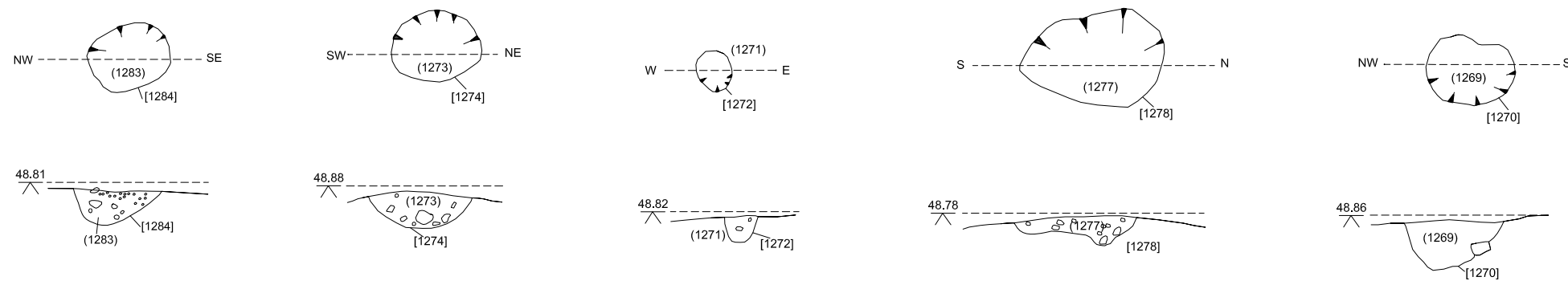
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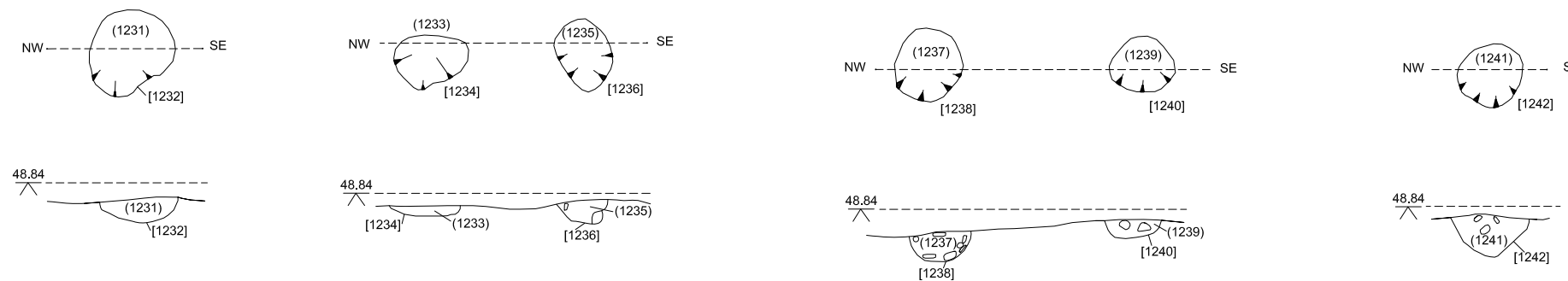
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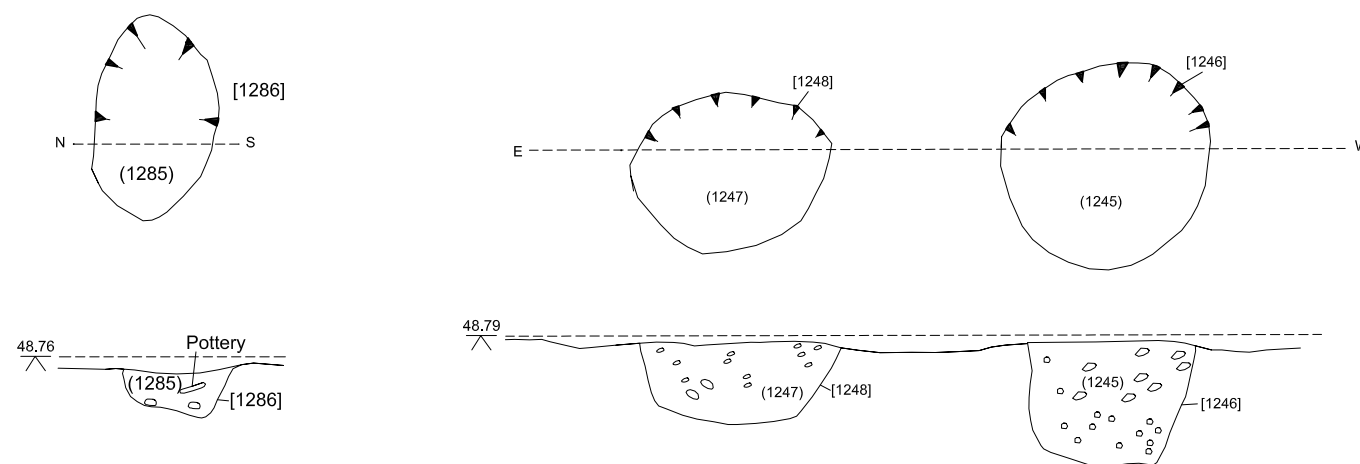
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Plans and sections of the postholes from Structure 1



Plans and sections of the postholes from Structure 2



Plans and sections of the midden pits in Cluster 1



Structure 3 and midden pit cluster 2 (Figs 12-14)

7.6 The third group of features discussed is the clusters of pits and postholes in Trench 2 to the north and west of the two ring ditches. The features are tabulated below and are shown on Figs. 12-14 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Structure 3</b>							
<b>Postholes</b>							
F1051	1051, 1052	Small sub-oval posthole	330 x 170	180	Dark Reddish Brown (5YR 3/3)	Silty Sand	
F1053	1053, 1054	Small sub-circular posthole	200 x 190	170	Dark Reddish Brown (5YR 4/3)	Silty Sand	
F1121	1121, 1122	Small sub-circular posthole	250 x 240	100	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1123	1123, 1124	Small sub-oval posthole	310 x 230	160	Dark Reddish Brown (5YR 3/3)	Silty Sand	
F1131	1131, 1132	Shallow sub-oval stakehole	110 x 70	30	Yellowish Brown (10YR 4/4)	Silty Sand	
F1133	1133, 1134	Shallow sub-oval stakehole	140 x 110	90	Yellowish Brown (10YR 4/4)	Silty Sand	
F1135	1135, 1136	Shallow sub-oval stakehole	130 x 90	50	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1139	1139, 1140	Small sub-circular posthole	200 x 180	230	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1141	1141, 1142	Small sub-circular posthole	180 x 150	130	Mid Reddish Brown (2.5YR 3/4)	Silty Sand	
F1143	1143, 1144	Small sub-oval posthole	200 x 150	70	Light Brown (7.5YR 4/6)	Sand	
F1145	1145, 1146	Small circular stakehole	90 dia.	110	Dark Reddish Brown (5YR 4/4)	Silty Sand	
F1243	1243, 1244	Small sub-oval posthole	180 x 140	150	Strong Brown (7.5YR 4/6)	Silty Sand	
<b>Hearth</b>							
F1057	1057, 1058	Small sub-circular pit containing fire-reddened stones	580 x 510	200	Dark Reddish Brown (5YR 3/3)	Silty Sand	
<b>Midden Pit Cluster</b>							
F1041	1041, 1042	Small sub-oval pit	730 x 650	140	Mid Reddish Brown (2.5YR 6/4)	Silty Sand	
F1043	1043, 1044	Small sub-circular pit	580 x 560	70	Mid Dark Reddish Brown (10R 4/4)	Sandy Silt	✓
F1045	1045, 1046	Small sub-circular pit	770 x 630	100	Dark Yellowish Brown (10YR 4/4)	Sandy Silt	✓
F1079	1079, 1080	Irregular-shaped pit	710 x 880	270	Dark Reddish Brown (10YR 5/6)	Silty Sand	✓
F1127	1127, 1128	Small shallow sub-oval pit	510 x 420	100	Mid-Reddish Brown (2/5YR 4/4)	Silty Sand	✓
F1211	1211, 1212	Steep-sided sub-circular pit	560 x 490	220	Dark Yellowish Brown (10YR 4/4)	Silty Sand	✓
F1219	1219, 1220,	Sub-oval pit. Cut by pit F1281	860 x 800	180	Yellowish Brown (10YR 5/4)	Sandy Silt	✓
F1281	1281,	Sub-circular pit containing	400 x 380	180	Reddish Brown	Silty	

	1282	possible burnt stone. Cuts pit F1219			(5YR 4/4)	Sand	✓
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Table 4 Feature descriptions for structure 3 and midden pit cluster 2 in Trench 2

*Structure 3*

- 7.7 Structure 3 is comprised of 4-6 larger postholes forming a central triangular arrangement, with between 7 and 9 smaller postholes and stakeholes spread out around. The ambiguity in numbers is due to the fact that two of the small-mid size postholes (F1053, F1135) could represent either part of the central triangular arrangement or the outlying smaller posts. Two radiocarbon dates on samples taken from posthole F1141 returned a total date range of 1690-1490 cal BC (see C<sup>14</sup> dating and modeling below for full details).

*Midden Pits and Hearth*

- 7.8 The cluster of midden pits close to structure three represent the largest concentration of features producing small finds in Trench 2. Of the 7 midden pits excavated, 6 produced prehistoric pottery, with most producing significant quantities. All the midden pits were of medium size and similar, though not identical fill. F1057 was interpreted as a hearth, as it contained a significant amount of fire-reddened and cracked rock. While the similarity of form and proximity between the midden pits and the hearth initially suggested that they were part of a contemporaneous group of features, the midden pits can be dated to the Early Neolithic period through their association with the distinctive Carinated Bowl pottery, and 2 charred samples from F1057 returned radiocarbon dates in the range 1950-1740 cal BC (see C<sup>14</sup> dating and modeling below for full details) making it contemporary with the post-built structures on the site.

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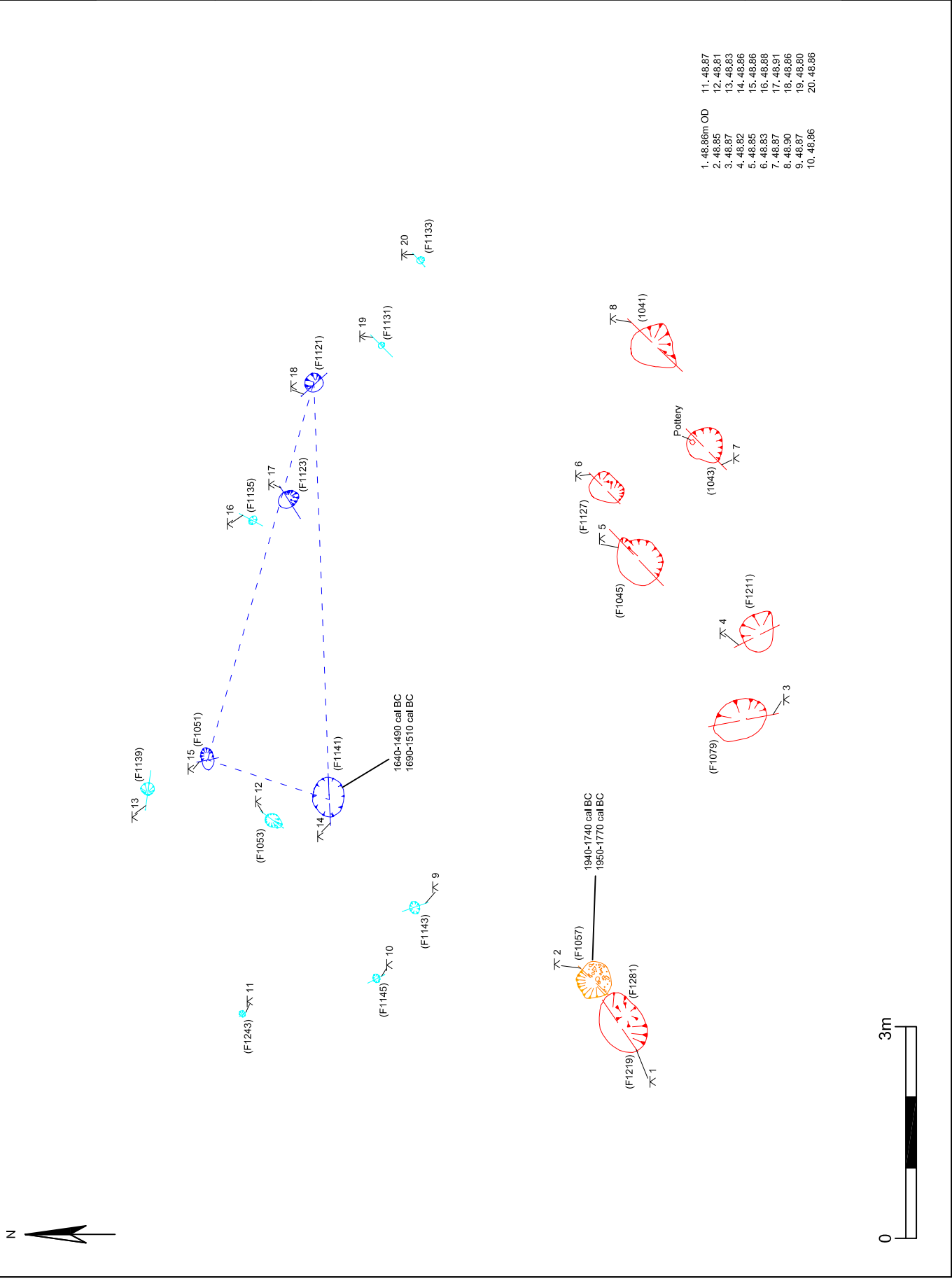
Figure 12  
 Structure 3 and Midden Pit  
 Cluster 2

Key:

- Triangular structure
- Outlying postholes
- Midden pits
- Hearth pit

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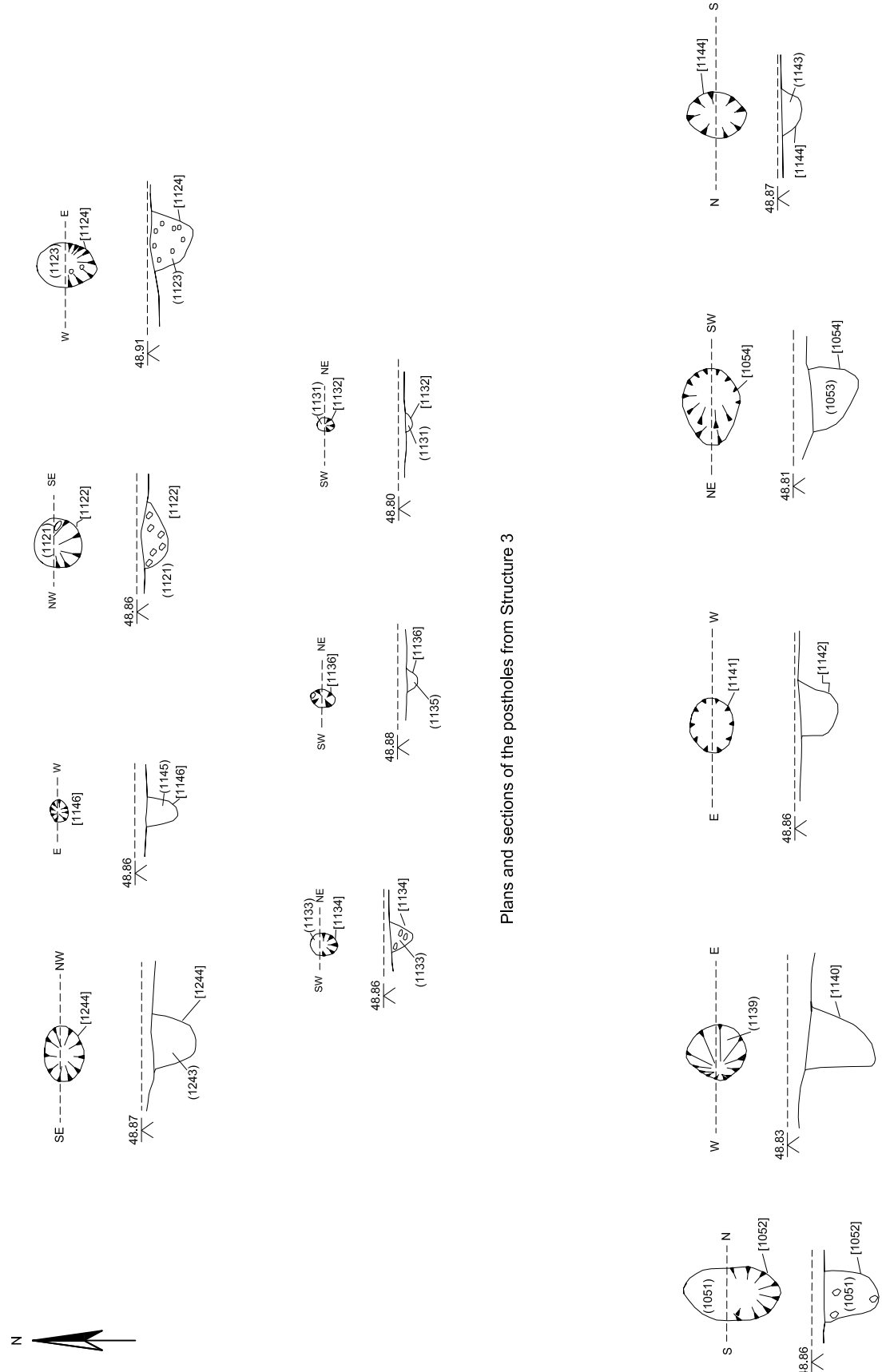
Fig 13

Features comprising  
 structure 3

Key:

Notes:

Plans and sections of the postholes from Structure 3



Plans and sections of the postholes from Structure 3



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Fig. 14

Features associated with  
 midden pit cluster 2

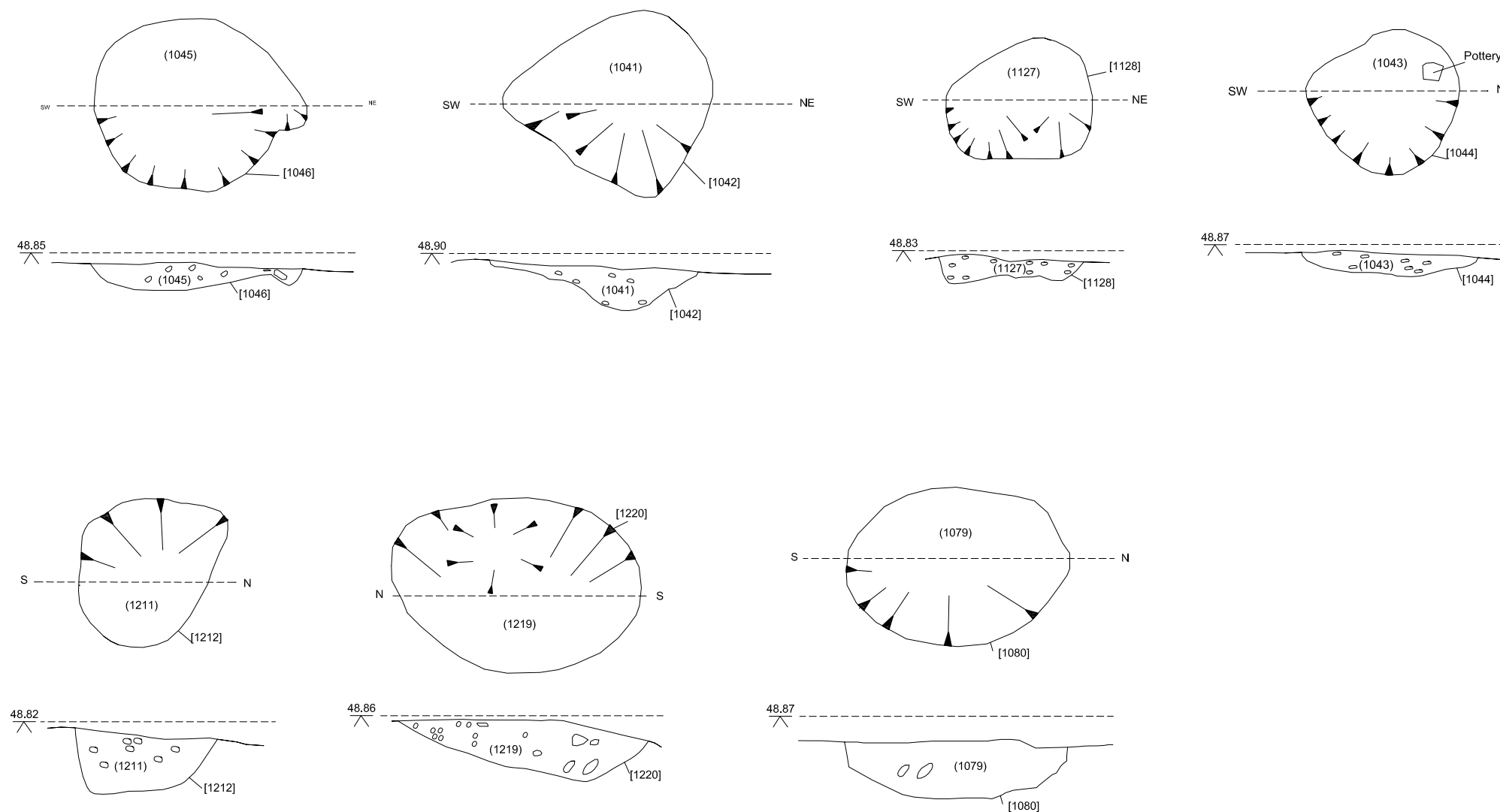
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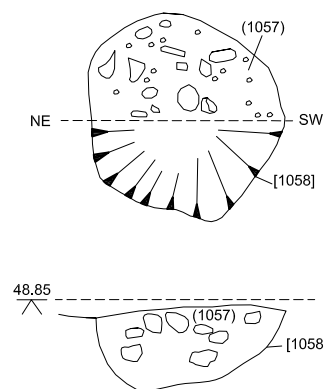
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Plans and sections of the midden pits in Midden Pit Cluster 2



Plan and section of the hearth associated with Structure 3



Cremation Pits and Ring Ditch 1 (penannular) (Figs 15-16)

7.9 The third group of features discussed is the cremation pits with associated ring ditch and postholes. The features are tabulated below and are shown on Figs. 15-16 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Ditch Features</b>							
F1111	1111, 1112, 1166	penannular ring ditch enclosing a number of pit and cremation pit features			Dark greyish brown (10YR 4/2)	Sandy Silt	
<b>Cremation Pits</b>							
F1109	1109, 1110, 1167,	Heavily truncated circular pit containing burnt bone and fragments of cremation vessel	400 dia.	180	Greyish Brown (10 YR 5/2)	Sand	✓
F1113	1113, 1114, 1165, 1288	Truncated pit with secondary insertion of cremation - complete base of cremation vessel.	730 x 630	130	Reddish Brown (2.5 YR 4/3)	Silty Sand	✓
<b>Postholes</b>							
F1103	1103, 1104	Small circular posthole	230 dia.	80	Dark greyish brown (10YR 4/2)	Sandy Silt	
F1105	1105, 1106	Small circular posthole	220 dia.	90	Dark greyish brown (10YR 4/2)	Silt	
F1107	1107, 1108	Small sub-circular posthole	340 x 140	190	Dark greyish brown (10YR 4/2)	Sandy Silt	
<b>Pits</b>							
F1265	1265, 1266	Large sub-circular pit	840 x 800	240	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1267	1267, 1268	Small sub-circular pit	380 x 320	100	Dark Reddish Brown (5YR 3/3)	Silty Sand	

Table 5 Feature descriptions for penannular ditch, cremation pits and associated features in Trench 2.

7.10 During hand-cleaning of the site, a horseshoe-shaped (penannular) ring ditch feature (Ring Ditch 1) was observed with a number of cut pit features in the centre of the open side (Fig. 15). Ring Ditch 1 measured 11.7m in diameter at its widest point with a 10m wide opening to the south-east. It was generally narrow and had an average depth of c.300mm. There were two distinct fills within F1111, (1111) and (1166). The deposit (1111) was the upper, secondary fill and was sandy silt with a large volume of gravel inclusions. The primary fill of the ditch (1166) was a darker, siltier fill, with fewer inclusions. No small finds were recovered from the primary fill, though some lithics were recovered from the upper, secondary fill.



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Figure 15  
 Ring ditch 1 and cremation pits

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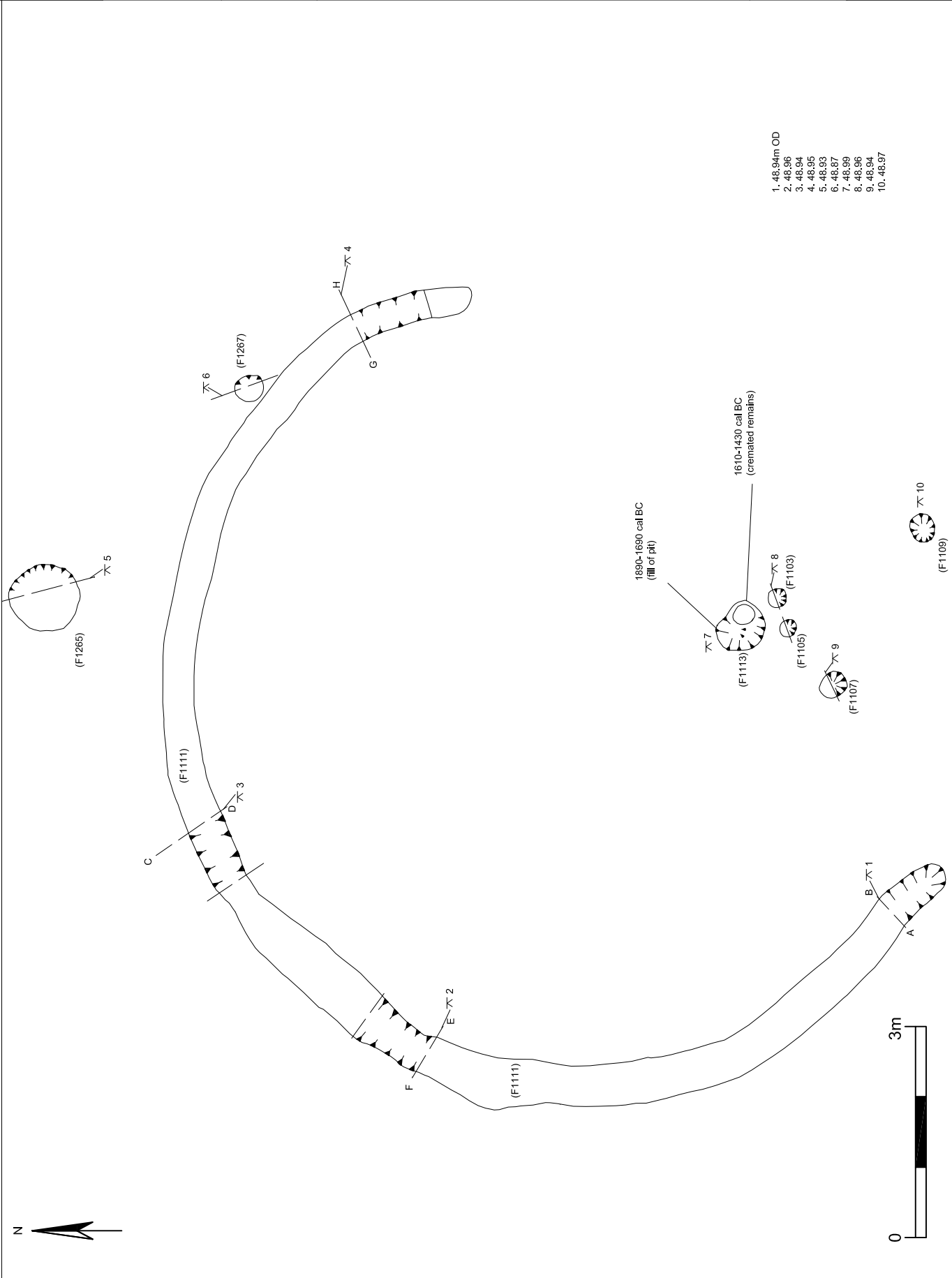


Fig 16

Ring Ditch 1 and associated features

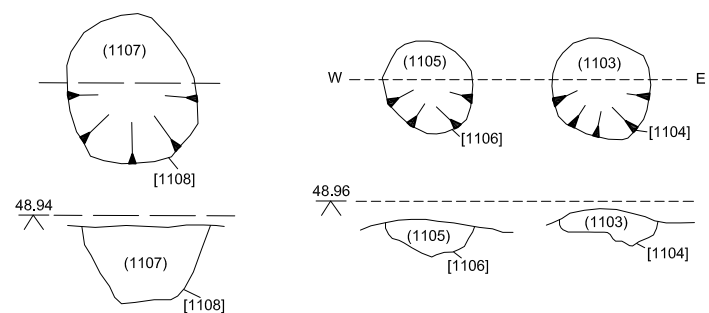
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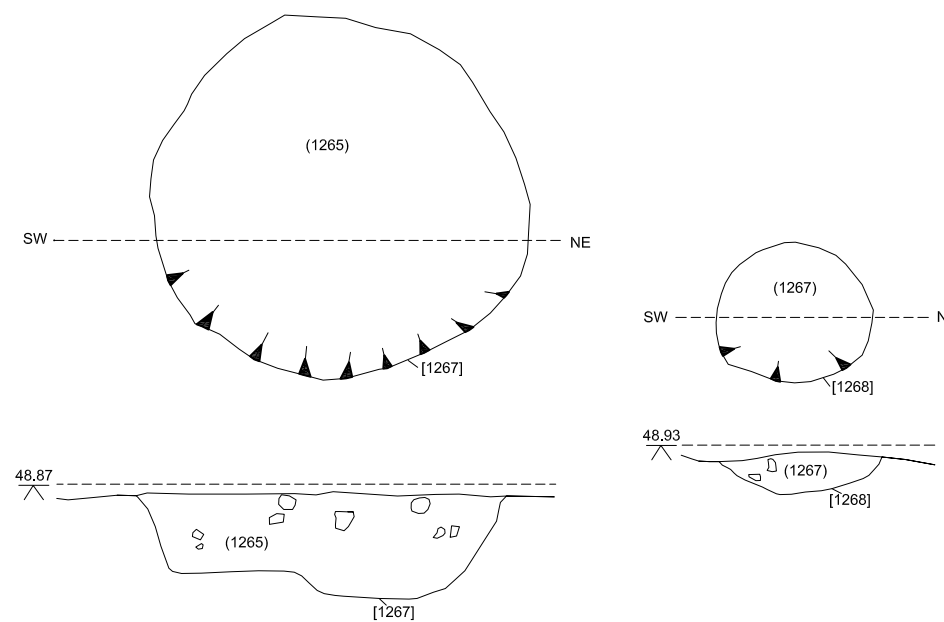
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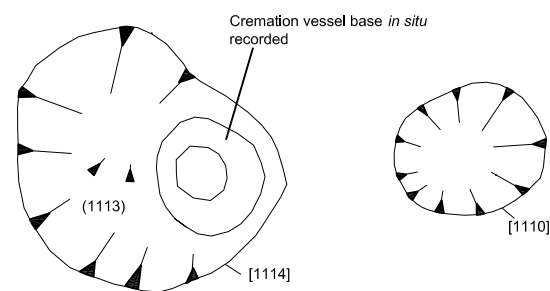
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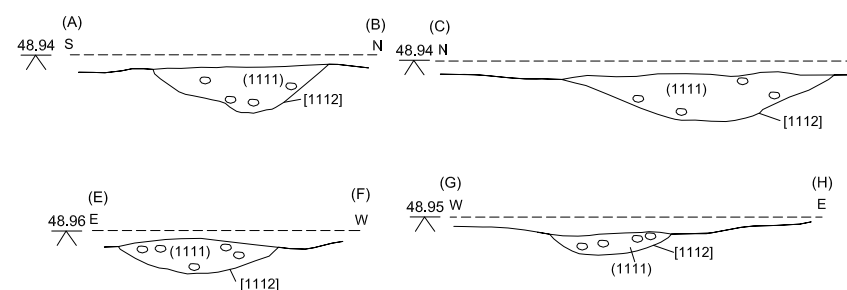
Plans and sections of the postholes associated with the Ring Ditch 1



Plans and sections of the pits associated with the Ring Ditch 1



Plans of the cremation pits associated with the Ring Ditch 1



Sections of Ring Ditch 1



- 7.11 Within the open side of Ring Ditch 1, there was a cremation vessel inserted into an earlier pit (F1113), and a small possible cremation pit containing large pottery sherds and a small quantity of burnt bone. Both of these features were heavily truncated, with modern ploughmarks running through the deposits.
- 7.12 The principal cremation pit (F1113) lay in the opening of the ditch circuit at almost the centre point. The main fill of the pit (1113) was reddish-brown silty sand which contained fragments of rough Early Bronze Age pottery (Ceramic Analysis pot 2), different from the main cremation vessel and also fragmentary remains of burnt bone. Within a secondary cut, the base of the cremation vessel (Ceramic Analysis pot 78) remained complete to a height of approximately 100mm (Fig. 17) with a large amount of burnt bone and sherds from the body of the pot in a mixed silty upper fill (1165) (see Human Bone Analysis below for full details of the cremated material). Pottery analysis shows that the largely complete cremation vessel is of an Early Bronze Age date, with the pottery sherds from the primary fill of the pit being probably an earlier type of Durrington Walls Grooved Ware or similar pottery style with related features. During analysis of the pottery within the upper fill, it became evident that there was a further Early Bronze Age cremation vessel, now fragmentary, inserted into the pit (Ceramic Analysis Pot 1).
- 7.13 The second cremation pit lay 2.4m south-east of F1113 and was a much smaller feature. There was a small amount of burnt human bone recovered from this feature along with fragments of Early Bronze Age pottery.
- 7.14 The complete cremation vessel base from F1113 was lifted with the surrounding fill and soil in order to maintain its integrity prior to consolidation and analysis.



Fig. 17 Complete base of the cremation vessel as a secondary insertion in an earlier pit F1113. (scale = 0.25m).



Fig. 18 Pottery sherd in smaller possible cremation pit F1109. (Scale = 0.25m).

7.15 Between the two cremation pits, there were three postholes. Two of the postholes were of almost identical dimensions lying adjacent to the main cremation pit (F1113), and the third was slightly larger and lay c.1m south-west of the others, towards the south-western terminal of Ring Ditch 1. While no small finds were recovered from the postholes, their proximity to the other features in this group, and their position within the opening of Ring Ditch 1 suggests that they are related to one of the phases of activity represented by the other features in this group.

7.16 The final two features in this group are the two larger pit features (F1265 and F1267) which lay outside Ring Ditch 1 to the north. It was originally suspected that the proximity of these features to the ditch meant that they were related, however no datable material culture was retrieved from these pits, and it is unclear whether they have any relationship to the other features in this group.

#### Ring Ditch 2 and Associated Features

7.17 The fourth group of features discussed is the ring ditch feature (Ring Ditch 2) with nearby pit features, which are possibly associated. The features are tabulated below and are shown on Figs. 19-20, 24 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Ditch Features</b>							
F1259	1256, 1257, 1258, 1259, 1287, 1288	Ring ditch feature with a primary fill and two indistinct upper fills	1200 wide	400	Primary Fill Orange (7.5 YR 4/6) Middle Fill Grey (10YR 5/1)	Primary Fill – Sand with gravel.	✓

					Upper Fill Brown (10YR 4/3)	Upper Fills – mainly sandy clay	
<b>Pits</b>							
F1027	1027, 1028	Small sub-oval pit to south of ring ditch feature F1259	500 x 450	110	Dark Reddish Brown (5YR 3/2)	Silty Sand	
F1077	1077, 1078	Small sub-circular pit	560 x 520	110	Dark Brown (7.5YR 3/2)	Silty Sand	✓
F1193	1193, 1194	Sub-oval/irregular pit	770 x 580	130	Dark Reddish Brown (10R 4/4)	Silty Sand	✓
F1225	1225, 1226, 1249	Large sub-circular pit	1200 x 1000	100	Red (2.5YR 4/8)	Silty Sand	
F1227	1227, 1228	Small sub-circular pit	580 x 520	180	Dark Reddish Brown (5YR 3/3)	Silty Sand	
<b>Postholes</b>							
F1195	1195, 1196	Small sub-circular pit or possible posthole	170 x 160	80	Dark Reddish Brown (10R 4/3)	Silty Sand	
F1223	1223, 1224	Small sub-oval posthole	190 x 150	100	Red (2.5YR 4/6)	Silty Sand	

Table 6 Feature Descriptions for Ring Ditch 2 and associated features in Area 2

#### *Ring Ditch 2*

7.18 The principal feature in this group was the large, roughly circular ring ditch. It had a maximum external diameter of c. 7.3m and a maximum ditch width of c. 1.2m. The fill of the ditch consisted of three separate deposits, which appear to represent three separate phases of cutting and deposition, indicating periods of use and disuse throughout the feature's history. The primary cut of the ring ditch [1256] was trapezoidal in section with straight sides and a flat base. This was filled with the natural orange sandy gravel. There was then a smaller ditch cut into the backfilled natural which varied in width between 600-850mm. This was filled with a distinctive grey clay deposit which appears markedly different to all the other deposits on the site and probably represents some purposely imported material. The final phase of re-cutting cuts through both these previous deposits. It is a shallow cut filled with a brown deposit with a clay fraction though not as marked as the secondary deposit. This upper fill contained fragmentary remains of pottery or burnt clay of an indeterminate prehistoric date.

7.19 Ring Ditch 2 is one of the few features within the excavated area which is clearly visible on the aerial photographs. Ring Ditch 2 was also sampled by evaluation trench during the earlier evaluation work conducted by Birmingham University Field Archaeology Unit (Hughes and Jones 2001). In this work, Ring Ditch 2 was referred to as Ring Gully B, though only one homogenous fill was noted as opposed to the three separate fills noted here. During the earlier evaluation, three small pits close to Ring Ditch 2 were excavated, two of which contained fragments of burnt bone and charcoal interpreted as being suggestive of redeposited cremation material.

#### *Associated features*

7.20 In the immediate vicinity of the ring ditch, there were five pit features and two possible postholes. As with the rest of the site, all the deposits were heavily truncated. Of the five pits, two contained prehistoric pottery sherds. Pit F1077

contained fragments of probably Early Neolithic Carinated Bowl pottery, while Pit F1093 contained the remains of at least five highly-decorated Late Neolithic Impressed Ware vessels, the only feature on site containing this type of ceramics. The two probable postholes were found in isolation and do not appear to represent any arrangement or structure, whether associated with the ring ditch or otherwise.

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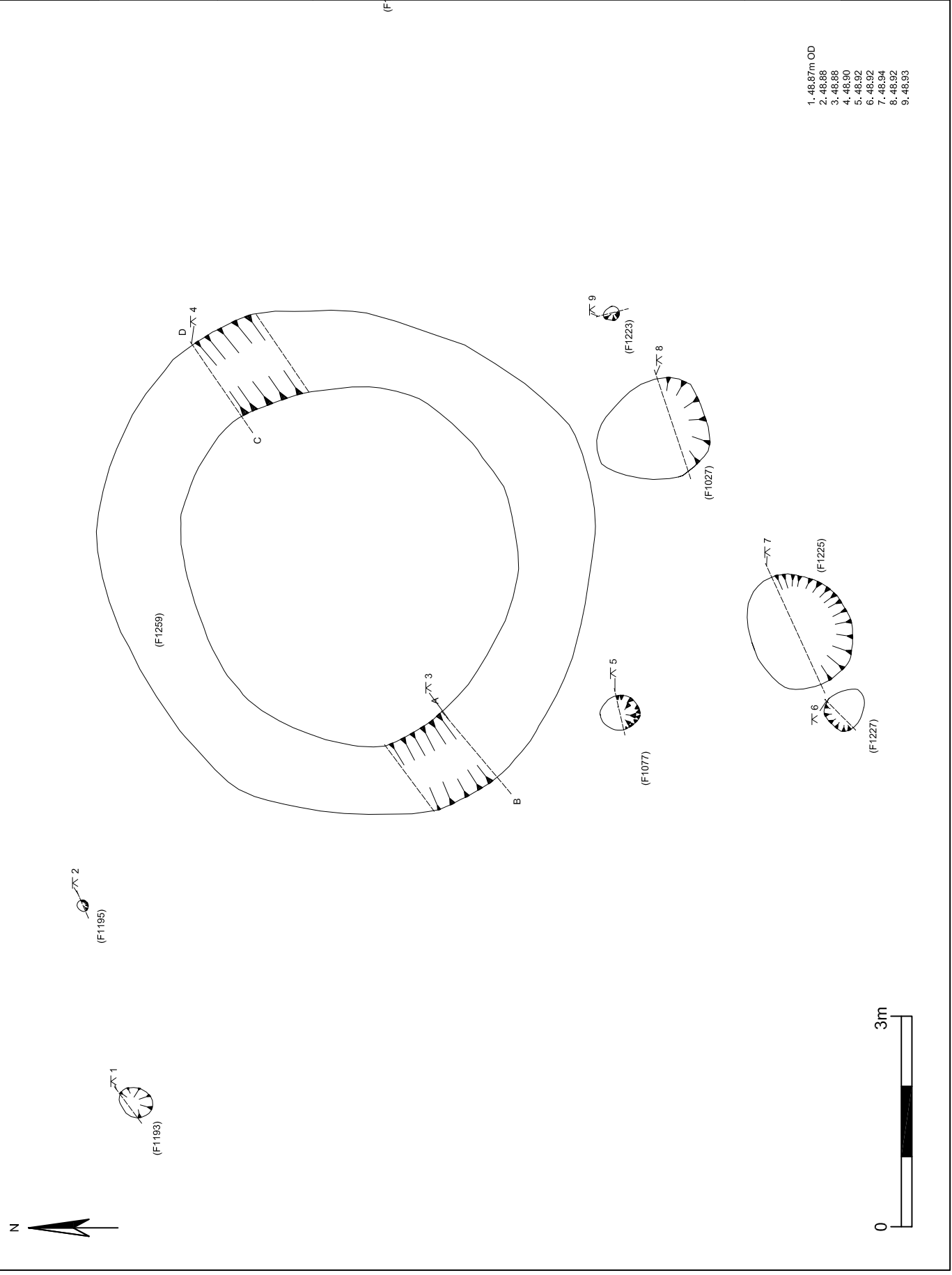
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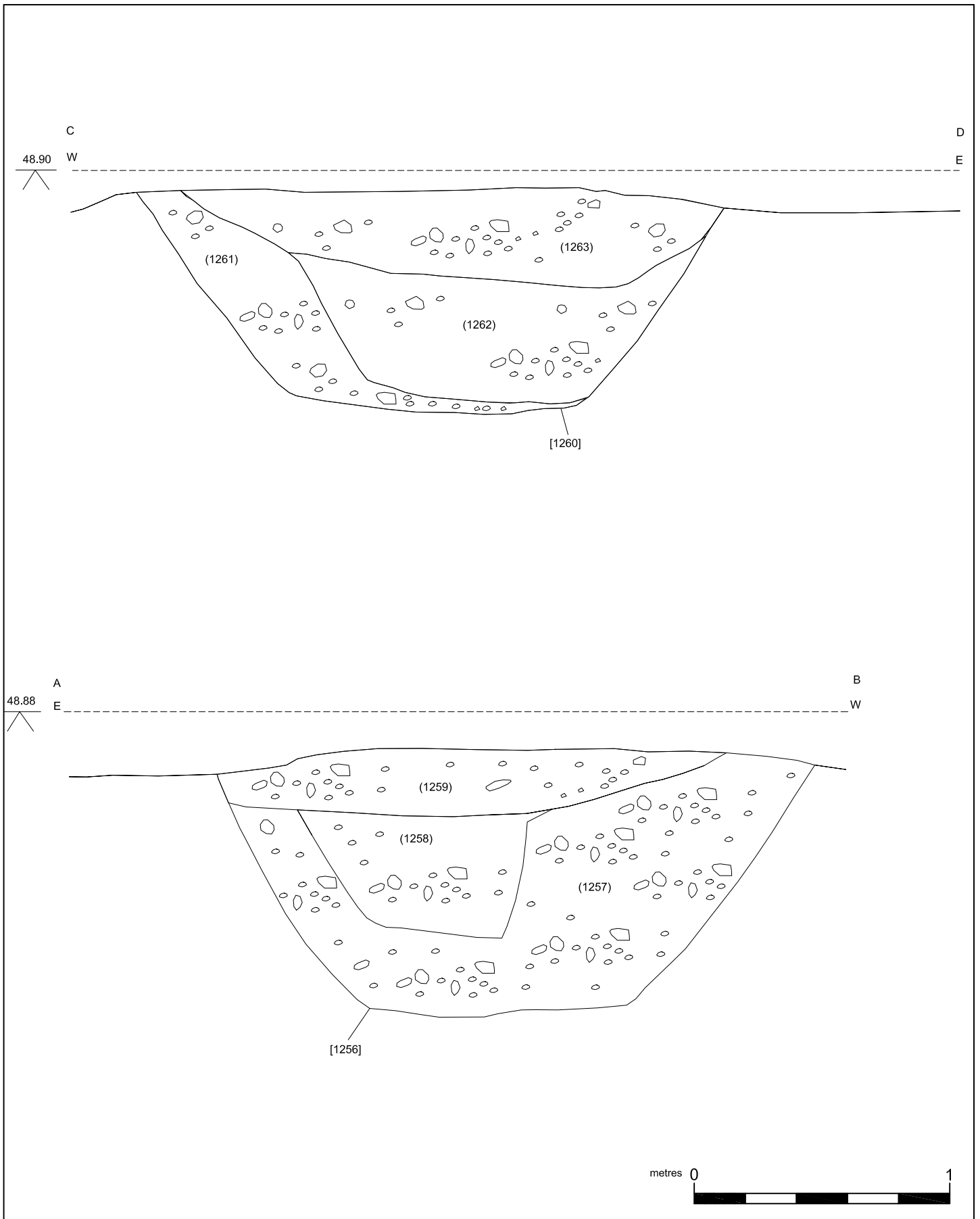
Figure 19  
 Ring ditch 2 and  
 associated pit features

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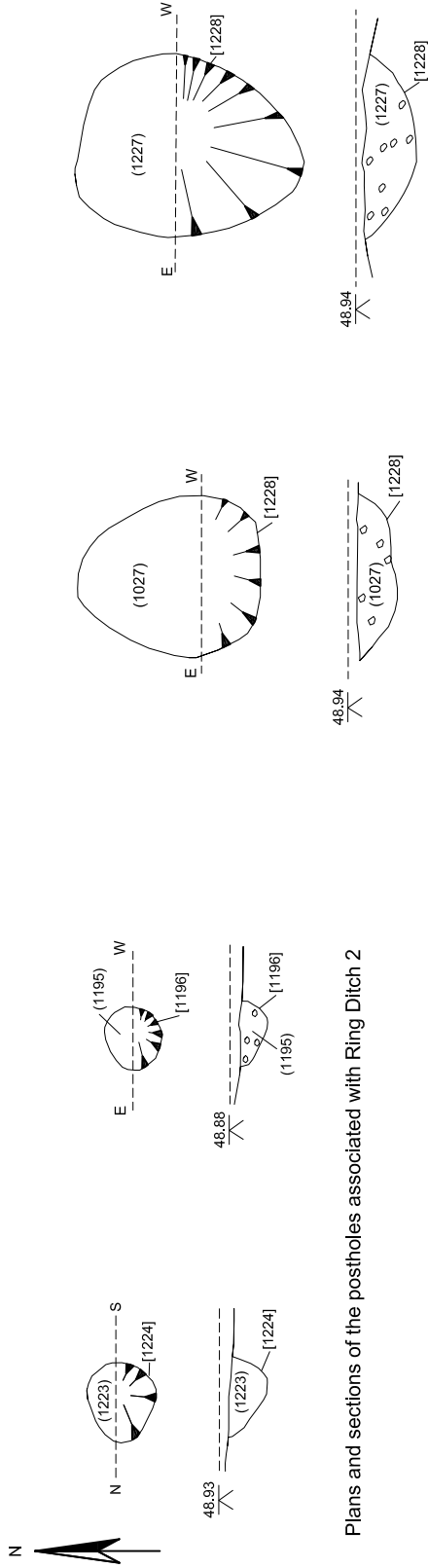
Fig 21  
 Features associated with  
 Ring Ditch 2

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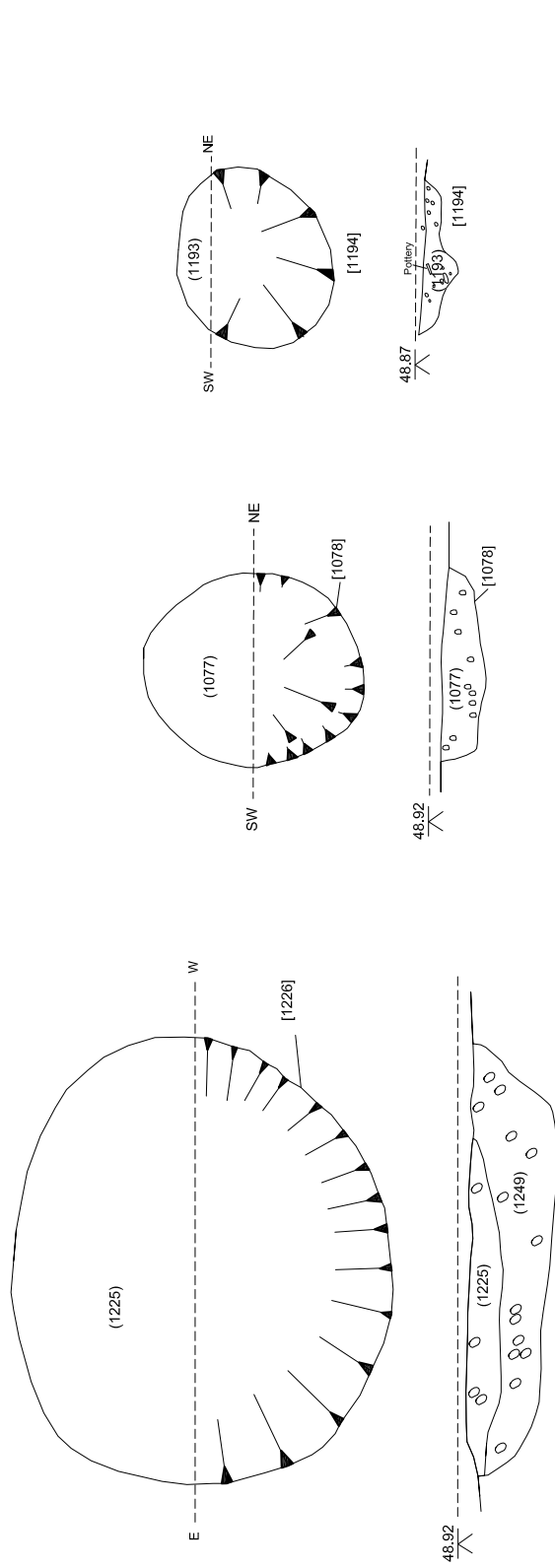
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Plans and sections of the postholes associated with Ring Ditch 2

Plans and sections of the pits associated with Ring Ditch 2



Plans and sections of the pits associated with Ring Ditch 2



## Structure 4

7.21 The fifth group of features discussed is the circular arrangement of postholes to the west of the linear features which bisect Trench 2. The features are tabulated below and are shown on Figs. 22-23 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Circular Structure</b>							
F1031	1031, 1032	Small shallow posthole/stakehole	170 x 140	70	Dark Yellowish Brown (10 YR 4/6)	Silty Sand	
F1065	1065, 1066	Small sub-circular posthole	370 x 350	90	Dusky Red (10R 3/3)	Sandy Silt	
F1067	1067, 1068	Small but deeper posthole next to posthole F1174	280 x 300	340	Dark Yellowish Brown (10YR 3/6)	Sandy Silt	
F1069	1069, 1070, 1190	Medium-sized sub-circular posthole	320 x 330	60	Very Dusky Red (2.5YR 2.5/2)	Sandy Silt	
F1174	1174, 1175	Small sub-circular posthole	320 x 300	110	Strong Brown (7.5 YR 4/6)	Silty Sand	
F1176	1176, 1177	Small tapered sub-circular stakehole	120 x 100	80	Dark brown (10YR 3/3)	Silty Sand	
F1178	1178, 1179	Small but deep tapered sub-circular stakehole	100 x 80	120	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1180	1180, 1181	Small sub-circular posthole	330 x 300	170	Dark Yellowish Brown (10YR 4/4)	Silty Sand	
F1182	1182, 1183	Small sub-circular posthole	290 x 280	140	Yellowish Brown (10YR 5/6)	Silty Sand	
F1184	1184, 1185	Small shallow sub-oval posthole	270 x 210	40	Dark Yellowish Brown (10YR 4/4)	Silty Sand	
F1186	1186, 1187	Small tapered sub-circular posthole	230 x 200	150	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1191	1191, 1192	Small shallow sub-circular pit	530 x 500	40	Mid Yellowish Brown (10YR 4/6)	Silty Sand	✓

Table 7 Feature Descriptions for Structure 4 in Area 2

7.22 Structure 4 comprises 12 postholes and stakeholes, 8 of which form the outer ring of a post-built circular structure. Posthole F1180 is positioned c. 1.5m outside the ring to the west next to feature F1191, which may represent a shallow pit or substantial round-based posthole. The two stakeholes (F1176 and F1178) were positioned in the centre of the circular structure and may represent some form of narrow central upright. Postholes F1067 and F1174 lie next to each other within the outer ring and could represent either a double posthole, for example at the entrance to the structure, or may represent the replacement of a post, indicating repair and reuse of the structure over a period of time. There were no small finds recovered from the postholes themselves, though prehistoric pottery and lithics were recovered from the pit/posthole feature F1191. Two radiocarbon dates on samples taken from the fill of posthole F1182 returned a total date range of 1730-1430 cal. BC at a 95% confidence (see Radiocarbon dating and modeling below).

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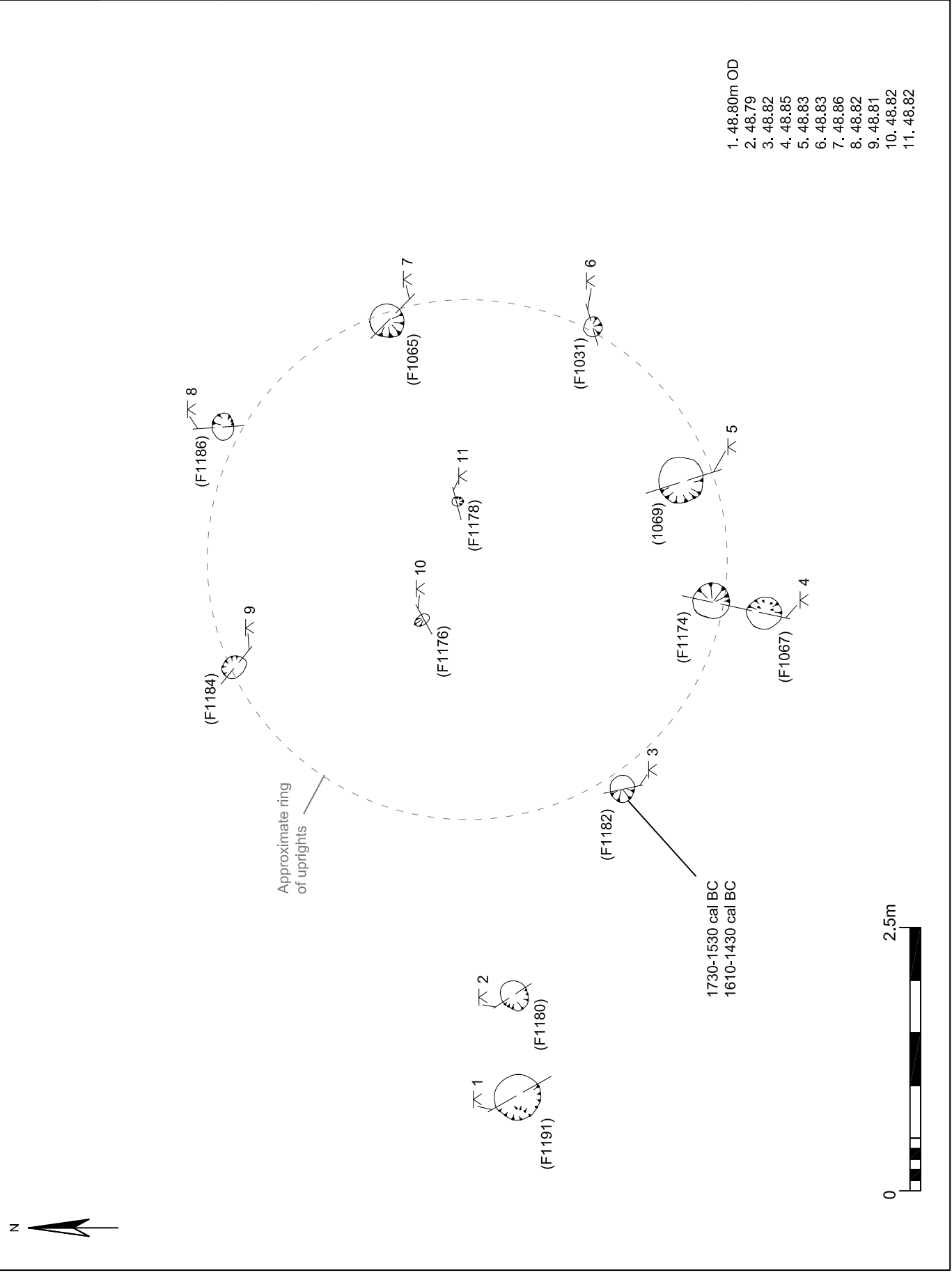
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Figure 22  
 Structure 4

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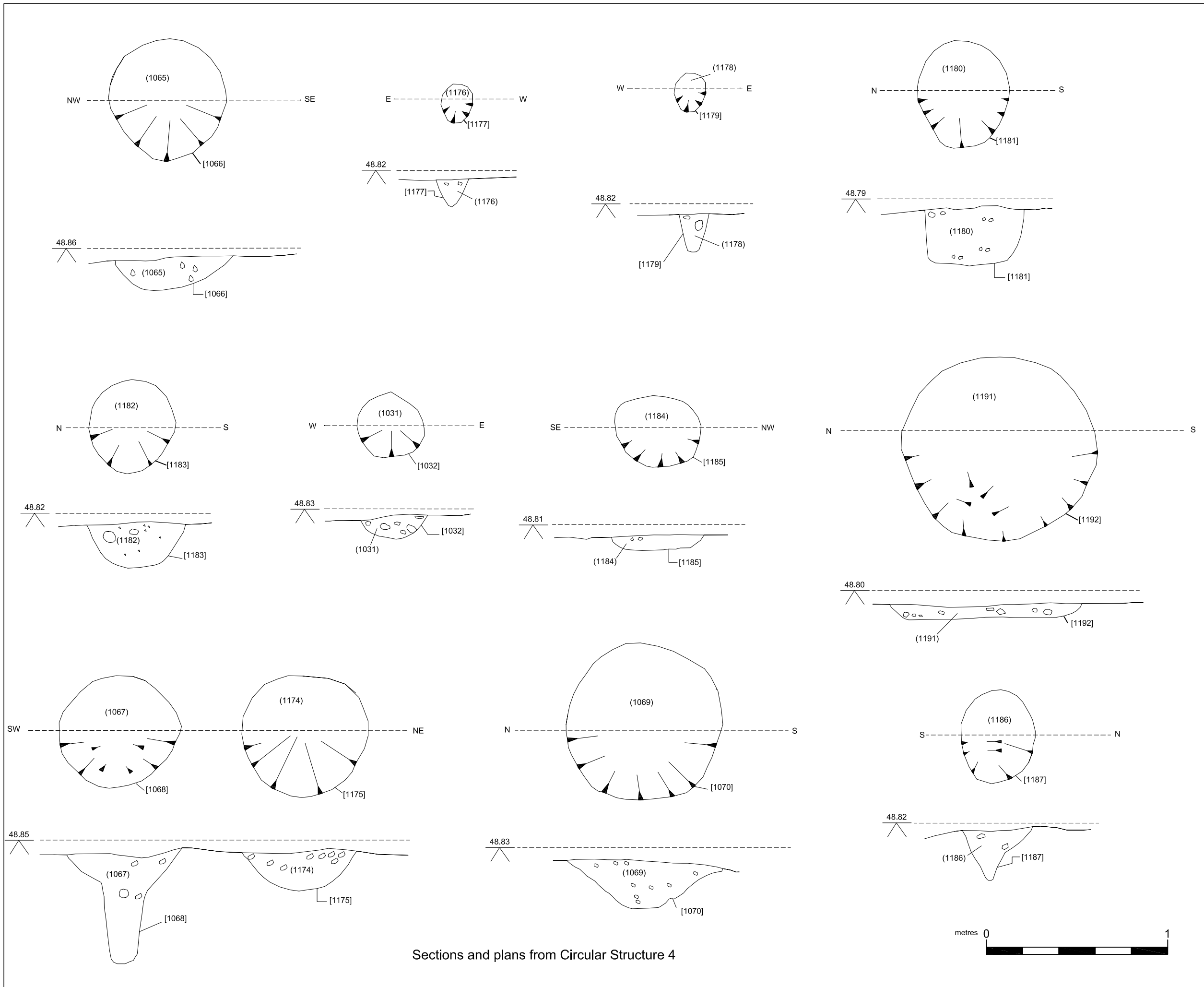
Fig 23  
 Features comprising  
 structure 4

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Remaining features in Area Two

7.23 The final section of discussion deals with the remaining features in Trench 2 which have not been discussed as part of a discrete group above. The features are tabulated below and are shown on Figs. 24-28 below.

Feature Number	Ass. Contexts	Description	Max. Dimensions (mm)	Max. Depth (mm)	Colour of Fill	Composition	Small Finds
001		Topsoil					
002		Sand natural substrate					
<b>Large Pit</b>							
F1063	1063, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1205, 1206, 1207, 1208, 1209, 1250, 1251, 1252, 1253, 1254, 1255, 1264	Large pit – possibly incorporating a tree-throw. Complex layers of infill and slumping					✓
<b>Pits</b>							
F1021	1021, 1022	Moderate-size shallow sub-oval pit	1850 x 800	60	Brown (10 YR 4/3)	Sandy Silt	✓
F1073	1073, 1074	Shallow irregular-shaped pit	820 x 400	40	Dark Reddish Brown (5YR 3/3)	Sandy Silt	
F1087	1087, 1088	Small sub-oval pit	800 x 600	100	Light-Mid Yellowish Brown (10YR 5/8)	Sand	✓
F1147	1147, 1148	Small shallow sub-oval pit	630 x 510	50	Dark Reddish Brown (2.5YR 4/4)	Silty Sand	
F1149	1149, 1150	Small sub-oval/irregular pit	440 x 220	130	Dark Reddish Brown (2.5YR 4/3)	Silty Sand	
F1157	1157, 1158	Small sub-oval pit	720 x 490	100	Brown (10YR 4/3)	Sandy Silt	
F1163	1163, 1164	Small sub-oval pit	500 x 400	310	Dark Yellowish Brown (10YR 4/4)	Sandy Silt	
F1188	1188, 1189	Small shallow sub-oval pit	480 x 390	80	Reddish Brown (5YR 4/3)	Sandy Silt	
F1229	1229, 1230	Small sub-circular pit	520 X 470	140	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
<b>Postholes</b>							
F1011	1011, 1012,	Small posthole	280 x 210	130	Dark greyish brown (10YR 4/2)	Sandy Silt	
F1023	1023, 1024	Small circular posthole	340 dia.	100	Dark greyish brown (10YR 4/2)	Silt	
F1115	1115, 1116	Heavily-truncated circular posthole containing CBM	420 dia.	50	Black (5YR 2.5/1)	Silt	
F1155	1155, 1156	Small sub-oval posthole	230 x 150	170	Dark Reddish Brown (5YR 3/3)	Silty Sand	
F1159	1159, 1160	Sub-circular posthole	320 x 310	100	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1161	1161, 1162	Circular posthole	250 dia.	190	Reddish Brown (5YR 4/4)	Silty Sand	
F1217	1217, 1218	Small sub-circular posthole	210 x 170	150	Dark Yellowish Brown (10YR 4/6)	Silty Sand	

<b>Stakeholes</b>							
F1213	1213, 1214	Small sub-oval stakehole	140 x 100	170	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
F1215	1215, 1216	Small sub-circular stakehole	90 x 90	80	Dark Yellowish Brown (10YR 4/6)	Silty Sand	
<b>Ditch Features</b>							
F1081	1081, 1082	Small shallow ring-shaped feature	4000 total dia. x 250 width	340	Dark Brown (7.5YR 4/3)	Silty Sand	
<b>Linears</b>							
F1001	1001, 1002	Linear ditch aligned E-W	25m visible x 460mm	210	Dark Brown (7.5YR 3/2)	Silty Sand	
F1091	1091, 1092	N-S aligned linear feature mainly parallel to F1171	28.2m long x 700mm wide	190	Reddish Brown (5YR 4/4)	Silty Sand	
F1169	1169, 1170	NNW-SSE aligned linear which runs across the site cutting linears F1091, F1171 and large pit F1063	48m x 660mm	180	Brown (7.5YR 3/3)	Sandy Silt	✓
F1171	1171, 1172, 1173	Small N-S aligned linear	4.9m x 560mm	230	Dark Yellowish Brown (10YR 4/4)	Silty Sand	

Table 8 Trench Two Feature Descriptions

#### Large Pit F1063

7.24 Feature F1063 appeared as a large oval in plan on the surface with what appeared to be a homogenous dark brown fill. The pit was excavated in quarters to provide a clear understanding of the complex stratigraphic sequence of deposition that formed the overall fill, and also to ascertain the relative dates of the pit and the linear which runs across it. The complex stratigraphic sequence is open to a number of interpretations, with the following representing the best to account for the observed sequence. The first action appears to have been the creation of a large, reasonably steep-sided pit, most probably a tree-throw that was enlarged by hand. The second action within the sequence was then to partially fill this pit with a sandy clay deposit (1264). This primary fill was only located in the centre and western edge of the pit, where it was truncated by later deposits, and it may represent some form of lining. Following this, there are a series of deposits which represent natural slumping and silting, filling up the pit, but there may also be an anthropogenic element to these, as some of them contained worked lithic tools. The final stage in the stratigraphic sequence is represented by the upper deposits in the western quarter which contained a large amount of wood. Analysis has shown that this wood does not appear to be worked and most likely represents the root system of a beech tree, probably the original tree which created the pit falling back into the upper levels.

7.25 Linear feature F1169 cuts pit F1063 and is therefore chronologically later.

#### Pit Features

7.26 The remaining pit features in Area Two that did not form part of a coherent group are detailed in the table above. F1021 contained sherds of Early Neolithic pottery and can therefore be ascribed to roughly the same phases of activity as the midden pits clusters 1 and 2, while F1087 contained undiagnostic lithic fragments, possibly

residual (see lithics report below). The remaining pit features contained no datable material.

#### Postholes and Stakeholes

- 7.27 There were nine post or stake holes in total which could not be ascribed to a larger grouping. These are detailed in the table above.

#### Small ditch feature F1081

- 7.28 F1081 is discussed in its own section as its ring form is anomalous. It took the form of a small ring ditch, but was too small to actually represent a ditch of any kind. There were no finds from the fill and it is possible that it represents a modern cut feature, perhaps the base of some agricultural machinery or device. The author has previously observed similar features created by large metal cow-feeders dug into the ground, though this is only a tentative suggestion.

#### Linear Feature

- 7.29 The linear features encountered in Area Two were all roughly similar in composition of fill and depth of deposit. Linear feature F 1169 cut all other linear features and the tree-throw pit F1063 and represents one of the later phases of activity on the site. There were no diagnostic small finds from a secure context in any of the linear features, with only F1169 yielding a few lithic pieces – all early prehistoric material and therefore residual.
- 7.30 F1169 represents one of the long linear features identifiable from the aerial photograph, though unfortunately none of the other linear features coincide with the cropmark evidence.

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Figure 24

Tree-throw pit

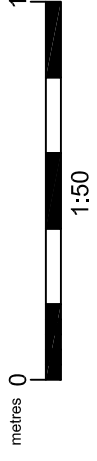
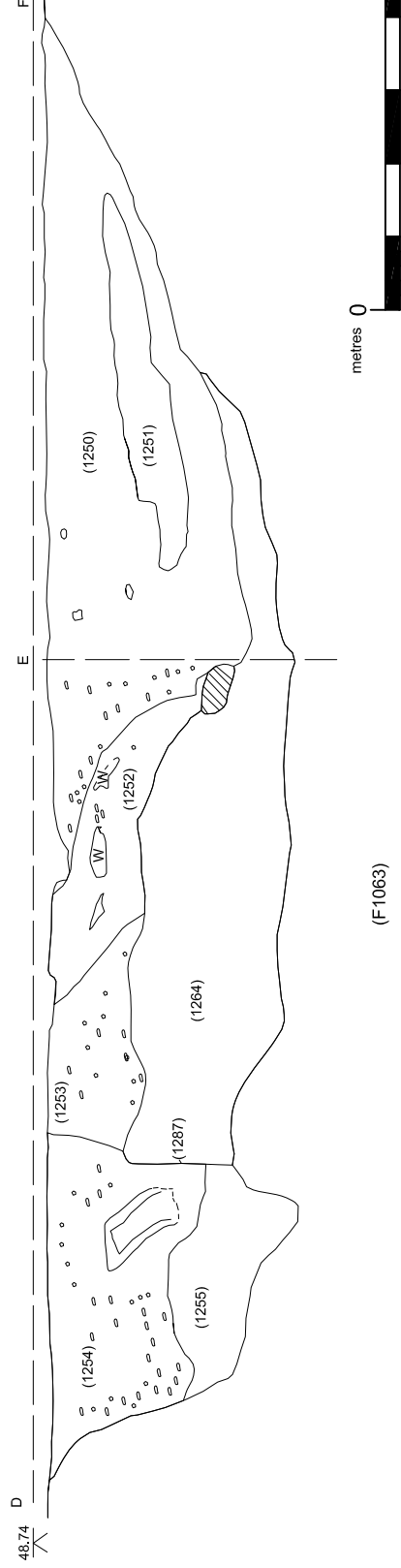
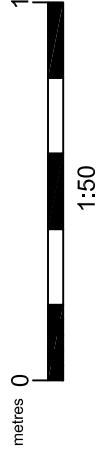
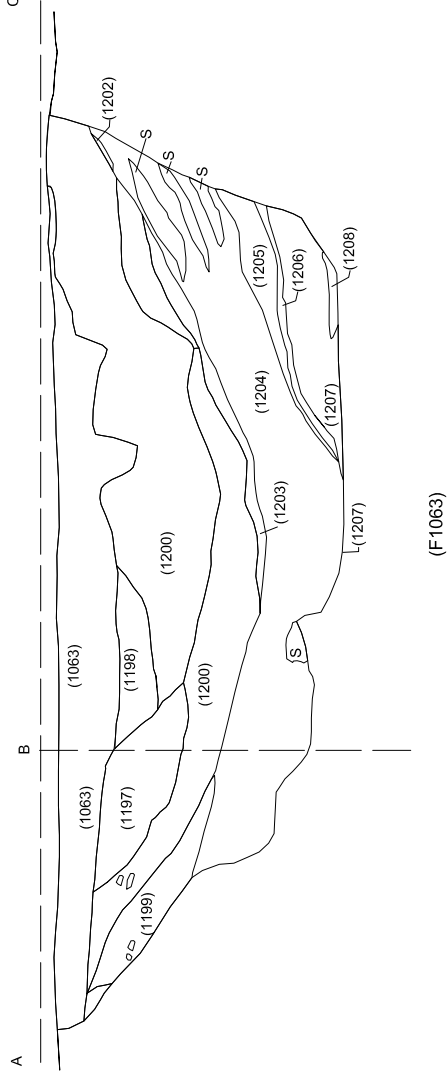
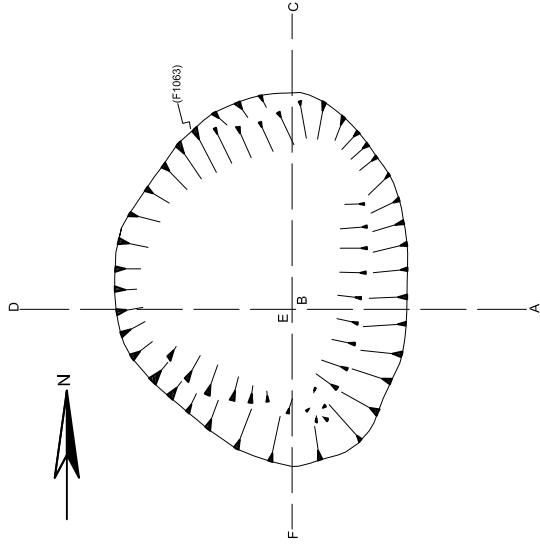
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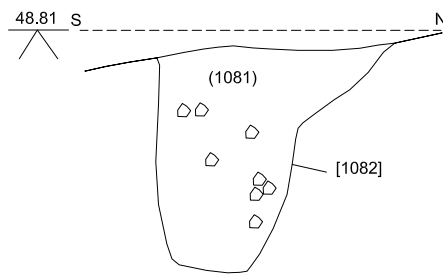
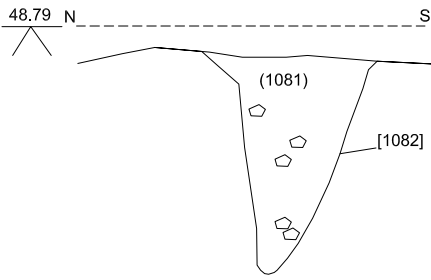
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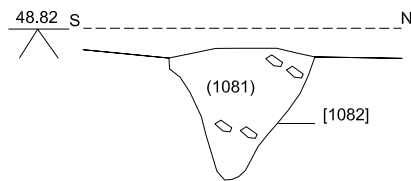
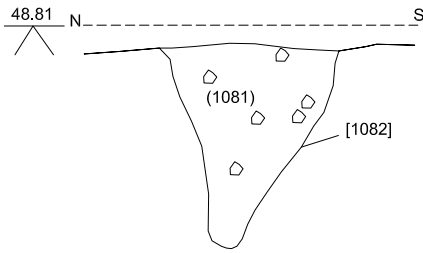
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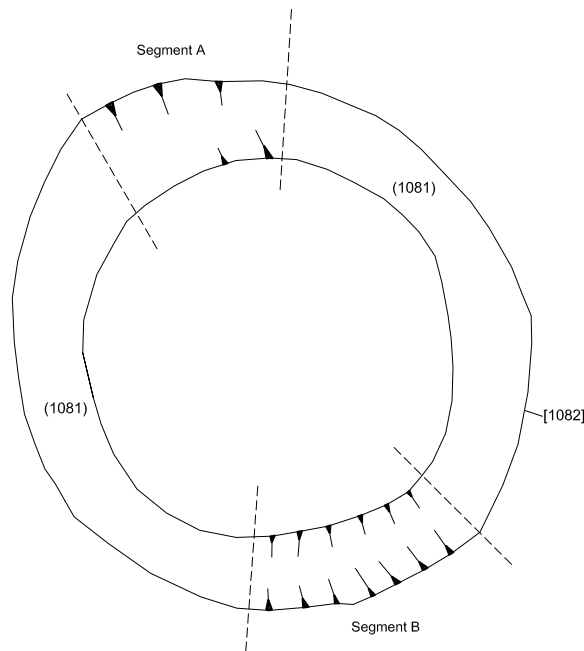




Sections from Segment A (1:10)



Sections from Segment B (1:10)



Plan of ring ditch (1081) showing locations of sections excavated (1:20)



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Fig 25  
 Ring Ditch F1081

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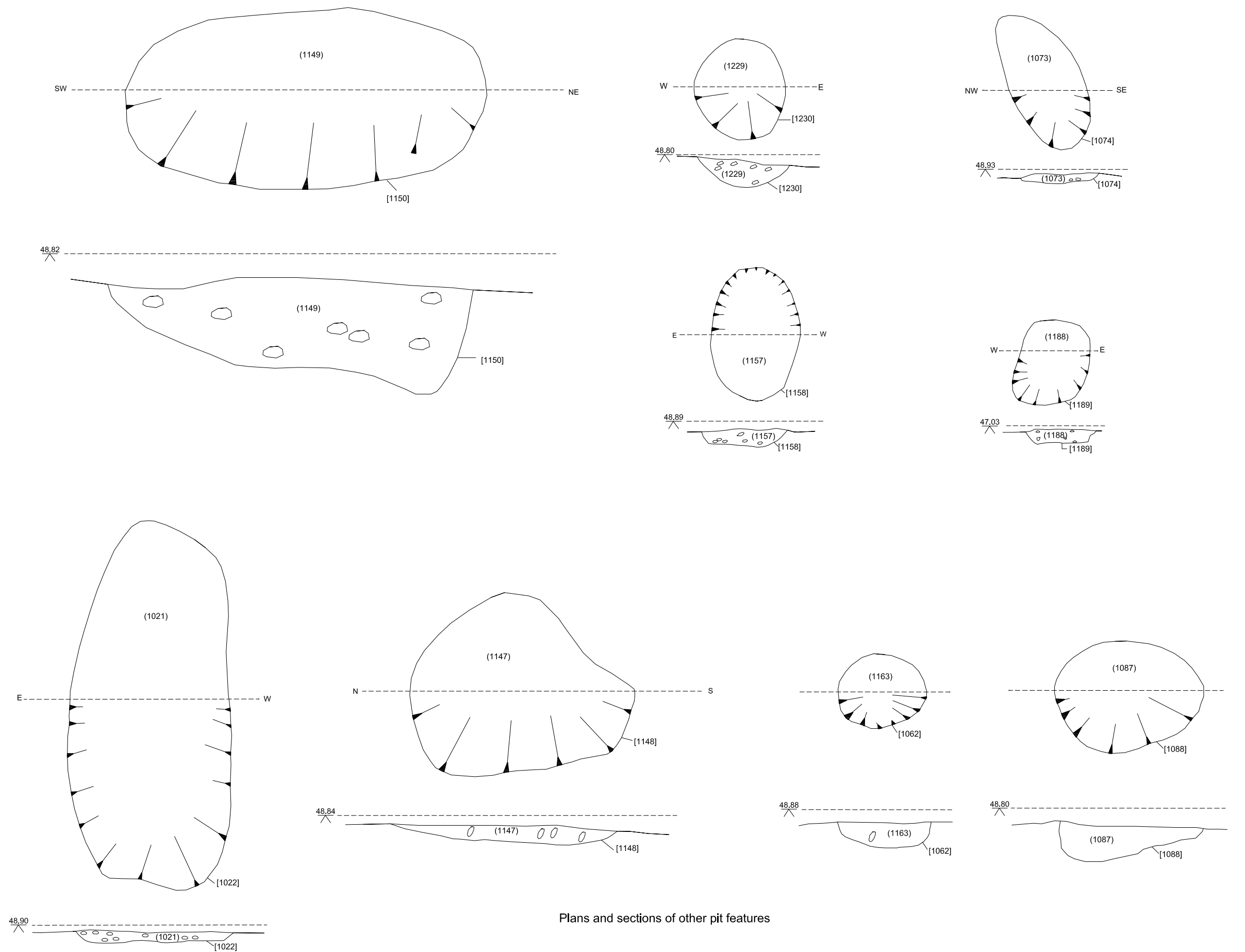
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 Other pit features in area 2

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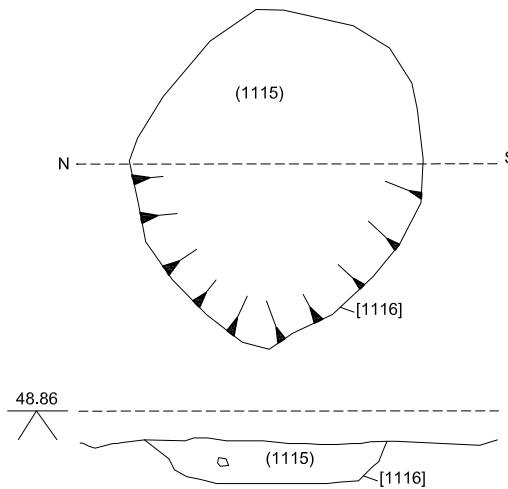
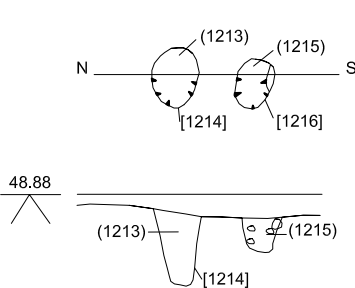
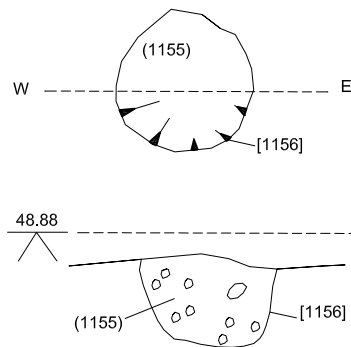
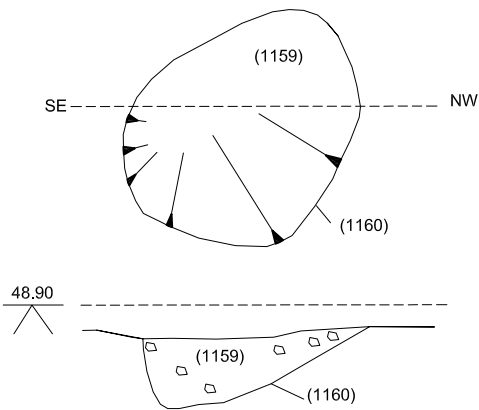
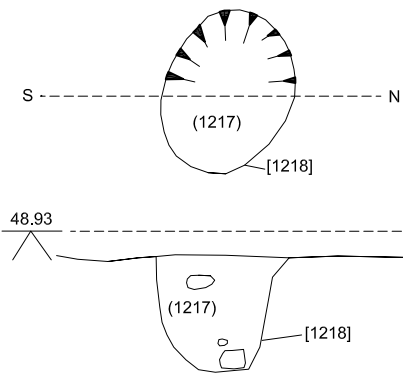
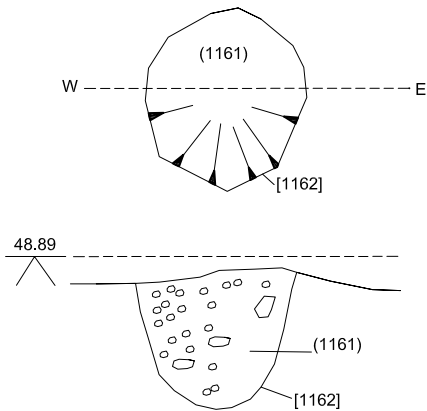
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Plans and sections of other pit features





Plans and sections of other posthole features



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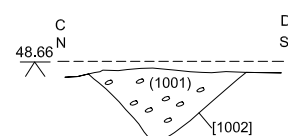
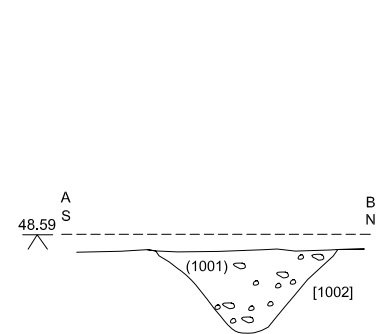
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 Sections of Linear  
 Features in area 2

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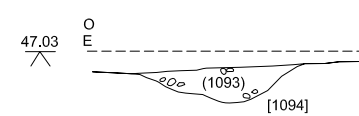
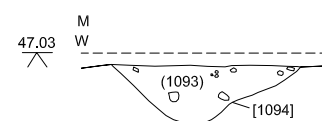
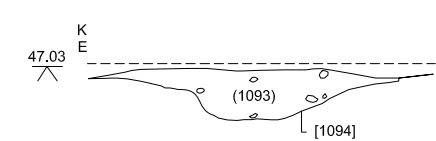
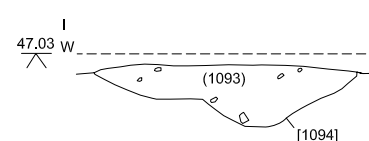
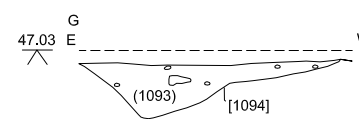
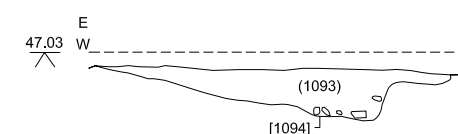
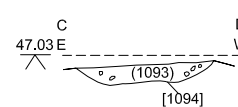
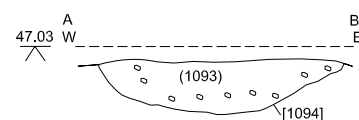
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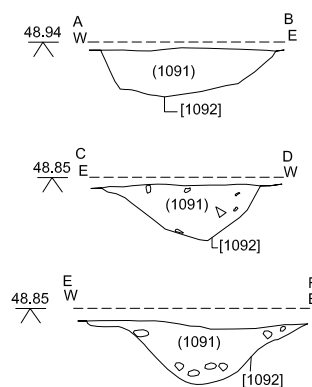
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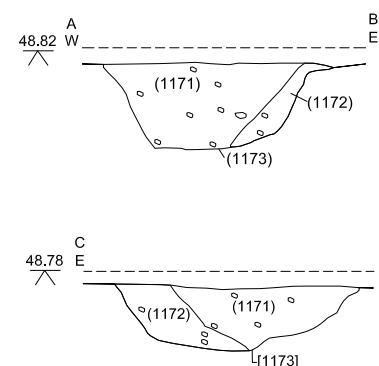
Sections of linear feature (1001)



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## 8 Lithics Report

Clive Waddington

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### Introduction

- 8.1 A total of 189 lithics were submitted for analysis. The lithics come from a range of contexts from areas 1 and 2, although most were retrieved from pit features associated with Neolithic activity with some from the unstratified topsoil. Those from the unstratified topsoil were bagged by area whilst those from archaeological features were bagged according to their context. A catalogue with details of each individual lithic is presented in Appendix 1 below. Measurements are given for complete pieces only in accordance with lithic recording conventions (Saville 1980). Cores have only their two longest measurements recorded. Although the assemblage of lithic material is of a moderate size, comprising 189 pieces, a large proportion of these pieces (33.3%) are formal tools that include many chronologically diagnostic pieces, and this allows some important inferences to be drawn from this assemblage.

### Chronology

- 8.2 Although much of the assemblage comprises Mesolithic and Neolithic material there is also what appears to be a small Late Upper Palaeolithic (LUP) component. The latter material includes occasional blade-based tools (e.g. 376) together with chipped material that has been recycled into other tool forms during the Mesolithic and Neolithic. The LUP component is usually heavily patinated, often a milky white colour, and has heavily rounded edges and 'arrêt-rounding' giving an almost 'melted' look (see Collcut 2006, 48). This material survives as residual inclusions in the fills of later features or as material collected in order to rechip it. The dates of LUP activity in the region come primarily from Creswell Crags but also from two cave sites in Earl Sterndale (all Derbyshire) and date from around c.13000 cal BC through to c.11000 cal BC (Jacobi 2006, 44-5). The Mesolithic material is also of interest as it may include both early and late Mesolithic material, at least if patina development is anything to go by. The raw material used for the Mesolithic pieces appears to have come from a wide variety of sources although most of it from secondary geological sources. Some of the material is very heavily patinated, such as the short stubby edge-trimmed microliths (e.g. 350, 380, 491, 496) with their distinctive v-shaped profile. These are considered the most likely contenders for early Mesolithic material. The later Mesolithic component includes more typical 'narrow blade' forms which usually have a complete absence of patina development. Although recortication is a chemical process that can be influenced by a range of factors including soil chemistry and so forth, there is clearly also a link between time and the acquisition of a patina. Much of the Trent valley lithic material belonging to the LUP and Mesolithic has well-developed patination and one reason for this is that, not only is there a considerable time-depth apparent in the lithic assemblages of the valley, but also some of the raw material has a coarse texture which may facilitate the rehydration of the chipped stone – as patina development occurs due to the gradual absorption of water into the outer layer of flint. The early Mesolithic material could potentially date from as early as 10,500 cal BC whilst the later Mesolithic material is unlikely to date from before 7800 cal BC, given that the earliest dates for the later 'narrow blade' material now appear to come from North-East Britain and could be associated with the spread of this kind

of technology as a consequence of the on-going inundation of the North Sea Plain at this time due to rising sea levels and its effect on pushing populations out from the North Sea plain to surrounding areas of higher ground (see Waddington 2007). The Neolithic component of the assemblage corresponds with the structural remains on the site and should be considered as contemporary with the various episodes of Neolithic activity. The Neolithic material includes readily recognisable pieces, such as end scrapers (e.g. 47, 310, 527), notched blades (e.g. 493 and 514) and other types of blade forms as well as other tools and modified blades that do not conform to any of the typical lithic type fossils usually ascribed to this period. The Neolithic pieces recovered from Willington sit most comfortably in an early Neolithic context and are therefore thought most likely to date from *c.* 4000 – 3000 cal BC. The Neolithic material includes flint obtained from both local and distant sources, although there is possibly a preference for imported nodular flint, as can be seen with the high quality dark grey flint tools that still have small areas of chalky cortex surviving on their surface (e.g. end scraper 47). This observation correlates with that from other sites where Mesolithic groups were more self-reliant and engaged in using raw materials close to hand, as well as recycling pieces in a more frugal way, whilst during the Neolithic a preference can be seen for utilising high quality imported flint that is rarely recycled. This is a feature recognised in other Mesolithic assemblages across northern England (Waddington 2004) suggesting that self-reliance was an important impulse of Mesolithic economic and social organisation.

#### Distribution

- 8.3 The distribution of the lithics reveals a degree of patterning. Of the various Mesolithic or probable Mesolithic flints, five were retrieved from the fills of the tree-throw pit F1063. Most of the other material is likely to be residual as three were recovered from one of the Neolithic midden pits (F1211) associated with structure 3 and four from one of the stakeholes (F1123) associated with structure 3 all the latter of which were patinated, whilst three more came from the large linear ditch feature F1169 in Area 2 which is thought to be late prehistoric in date. All the other diagnostic Mesolithic pieces occurred as the only identifiably Mesolithic flint in that given context and, like the groups referred to above, are thought to be residual finds in later contexts which comprise predominantly pits and postholes. Apart from two residual Mesolithic pieces recovered from the Bronze Age pit in Area 1 (F003) the rest of the diagnostic Mesolithic material was recovered from Area 2 indicating a preference for Mesolithic activity on the slightly higher river terrace.
- 8.4 Three of the six definite Neolithic pieces (1079, 1219, 1281) come from midden pits associated with structure 3 in Area 2, one of the triangular-shaped posthole structures, whilst one was from another pit in Area 2 and two were from the secondary fill of the tree-throw pit (F1063). Two of the Neolithic flints from the midden pits were scrapers and the other was a retouched blade – all suggesting processing activities taking place close to structure 3. Of the five probable Neolithic pieces, three came from the fill of linear ditch feature F31 in Area 1 and these are probably residual, as this linear feature is thought to be of late prehistoric date. Another probable Neolithic piece was recovered from the fill of linear ditch F1091 in Area 2 and another one from the tree-throw pit fills from F1063. The presence of diagnostic Neolithic material in the features in Area 2 are to be expected, however the presence of Neolithic material in Area 1, albeit residual,

implies that Neolithic activity also took place on the lower river terrace where Area 1 is located closer towards the river channel.

#### Raw Material

- 8.5 The lithic material is composed predominantly of flint (98.9%), although there are two chert pieces (1.1%). Only a very small number of lithics were able to be broadly provenanced to a glacial or nodular source as this depends primarily on the survival of cortex on part of the chipped piece. A total of 18 were ascribed to a river gravel source on account of their thin, abraded and smoothed cortex, and six were ascribed to a nodular source, on account of the white chalky cortex, and are evidently imported to the area. The flint pieces dating to the Neolithic are generally made on high quality flint and account for most of those made on nodular flint. The nearest sources of nodular flint are the Yorkshire and Lincolnshire Wolds and East Anglia, and some of the flint is of such high quality (e.g. 47, 493) that they may be the prized 'floorstone' flint that was obtained from the Neolithic flint mines in Norfolk (see Barber *et al.* 1999). The presence of nodular flint in the Neolithic assemblage indicates that an exchange system existed at this time that allowed groups inhabiting the Trent Valley to obtain materials from distant sources. With the exchange of materials there must have also been an exchange of ideas indicating that Neolithic groups in the Trent Valley had access to widespread communication networks, and this is also reflected in the use of pottery traditions typical of other Neolithic groups across Britain at this time (see Ceramic report). In contrast, the pieces that are Mesolithic or probably Mesolithic, occur on flint that is of more local origin, probably having come from river valley till and/or fluvio-glacial deposits. A range of colours is present but colour is not always a useful indicator of a flint's provenance, and in the case of the Willington assemblage many of the flints are heavily patinated (29.1%) and so the actual colour of the interior flint could not be ascertained. The main colours of flint present include 23.8% light grey, 21.2% medium grey, 7.4% white, 5.3% dark grey, 4.2% orange-grey and 4.2% cream. It is noticeable that some Mesolithic material is completely unpatinated (e.g. lithics from tree throw pit F1063) whilst other Mesolithic material in the assemblage is fairly heavily patinated. This is thought to be primarily a function of the different age of these pieces rather than resulting from localised differences in soil chemistry or the effects of wetting and drying. It is perhaps important that all the stubby edge-trimmed bladelets that form an unusual class of steep v-shaped profile microliths are all patinated whilst those conforming to the more recognizable forms are unpatinated. It was noted on several pieces that had acquired a thick white patina that the internal colour of this flint was usually a light grey.

#### Flaking and Manufacture

- 8.6 The assemblage displays evidence for the use of both hard and soft hammer working of the flints, with most of the retouch being unifacial, although there is much use of only very slightly modified blades and flakes, usually in the form of edge-trimming and/or only minimal retouch. This is no doubt a response to the limitations of the raw materials being exploited as the presence of cortex on many pieces indicates that the size of many of the nodules must have been small in the first instance. The manufacturing tradition for both the Mesolithic and Neolithic material relies on a blade-based technology, although the Neolithic pieces tend to be larger. The assemblage is characterized by short, and often stubby, narrow parallel-sided blade form that have been modified into a variety of tools. The

concern for producing parallel-side blades is a characteristic common during both the later Mesolithic and early Neolithic (Pitts and Jacobi 1979) and this assemblage is in keeping with this wider trend, though their often stubby or occasionally irregular appearance reflects the nature of the limitations of the raw material. Bipolar working is reasonably common in the assemblage, again indicating the small size of the nodules available, with a number of pieces displaying the central ridge which results from detachments occurring at both the struck end and the countershock end (e.g. 46, 308, 530). There are a few hinge fractures evident in the assemblage suggesting some flawed nodules and/or novice flaking. There is clear evidence for the recycling of previously chipped pieces primarily in the Mesolithic assemblage and this not only provides proxy evidence for the presence of earlier Mesolithic and perhaps Palaeolithic activity but that careful husbanding and curation of flint took place during the Mesolithic. A good example is the recycled flint flake (2) which has been recycled and used as a core before finally being re-used as a scraper. Different phases of patina development can be observed on this piece.

#### Types

- 8.7 A wide range of tool types is present in the excavated lithic assemblage and these are summarised in Table 2 below.
- 8.8 The lithics that were able to be ascribed to a point in the core reduction sequence revealed a relatively limited proportion relating to the primary stage of the core reduction sequence (7.9%), whilst there was a high proportion relating to the tertiary stage of the reduction sequence as witnessed by them having been retouched or utilised (33.3%), with the rest belonging to the secondary stage (50.8%) and those that were indeterminate (7.9%). The high number of finished tools and utilised pieces (33.3%) indicates that tool use and maintenance was the dominant activity at this site, insofar as stone tool use was concerned, and that primary flaking was an activity largely carried out elsewhere, no doubt closer to the raw material source/s.
- 8.9 The presence of the processing tools, such as the various edge-trimmed, retouched and utilised blades, scrapers, microliths, a burin, and a possible awl and knife indicate a wide range of activities, which are usually taken as an indicator of settlement sites (Schofield 1991; 1994 and see Table 3 below). The presence of the scrapers suggests that hide working was an important activity while the presence of the notched blades is also notable, particularly as they both came from the same pit. Overall, the volume of diagnostic tool types is low, but this does not detract from the overall high proportion of modified and utilized pieces in the assemblage. Although many of the modified blades do not fit comfortably into traditional typological categories, their reflection of processing activities at and around the site cannot be escaped.

Type	Number
Core	10
Chip	11
Flakes	69
Blades	36
Edge-Trimmed Blades	12
Edge-Trimmed Flakes	10



Utilised Blade	5
Retouched Blades	4
Retouched Flakes	4
Scrapers	16
Notched Blades	2
Microliths	7
Burin	1
Awl?	1
Knife?	1
<b>Total</b>	<b>189</b>

Table 9. Summary of lithic types.

#### Discussion

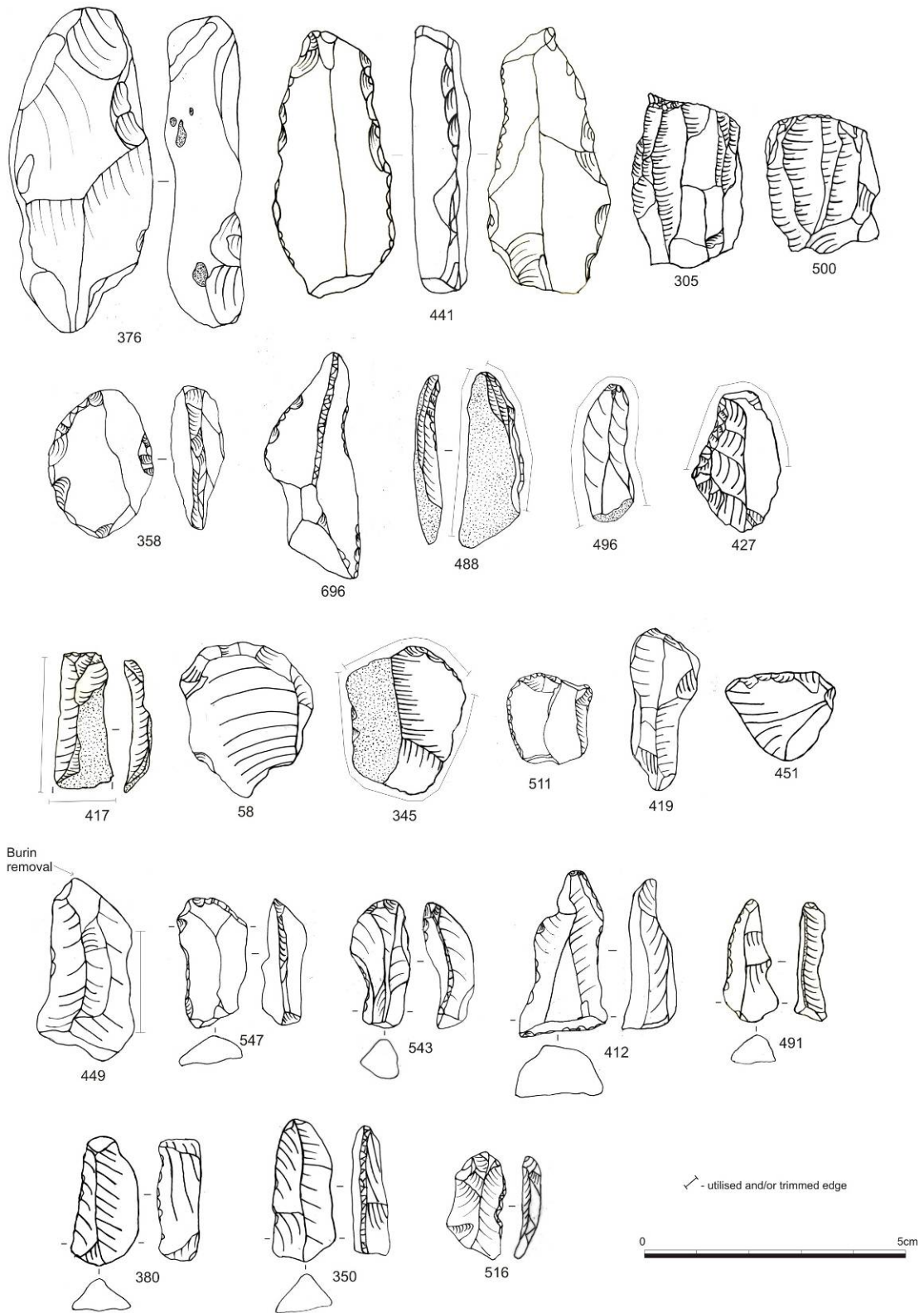
- 8.10 The site has evidently been visited over a long period of time by Stone Age people including possibly Late Upper Palaeolithic, but certainly Mesolithic and Neolithic groups. The continued interest in this locale, on river terraces elevated above the floodplain proper of the middle Trent valley, reflects the attractions of this location resulting from the access to freshwater, a rich riparian environment, flat and free-draining ground as well as river transport. The abundance of foodstuffs available in this general location must have been an important draw as animals will have been attracted to water at the river's edge, whilst fish, fowl and birdlife will have been easily taken. Furthermore, the plant foods and vegetation would provide important sources of food, building materials and possibly even clothing. Clearly this area of the Middle Trent formed a very important focus for Mesolithic hunter-gatherers but also the farming groups of the Neolithic who built settlements and constructed a wide range of ceremonial and burial monuments on the raised gravel terraces above the flood plain of the Trent.
- 8.11 During the Mesolithic the local acquisition and recycling of flint took place. This suggests Mesolithic groups were largely self-sufficient and obtained most of their raw materials from relatively local sources. Activity may have taken place throughout much of the Mesolithic period - a period that spans around 7000 years, however, patination development on struck flints still remains poorly understood and so the view that the presence/absence of patina development on the various Mesolithic pieces reflects differences in age can only remain provisional. The Mesolithic material tends to be made on stubby blades and most are of irregular form with few examples of textbook typefossils.
- 8.12 The Neolithic assemblage from Willington contains a high proportion of tools and this equates directly with other Neolithic settlement locales, such as that recently excavated at Dale View Quarry in the Peak District (Waddington 2008) and sites further afield such as that near Bolam Lake in Northumberland (Waddington and Davies 2002). The lithic material recovered during earlier excavations of Neolithic remains at the Willington Quarry site (Wheeler 1979) shares much in common with those from the Willington Marina site. There are numerous trimmed flakes and blades in both assemblages together with end scrapers and other modified blade tools such as knives. Some of the Neolithic pieces in the Willington Marina assemblage are made on imported nodular flint that must have traveled to the Trent Valley by way of long distance exchange networks. The relatively low density of material and absence of primary waste, together with the high tool counts suggests that this locale formed a settlement site (see Table 3 below for Schofield's

model of expected assemblage characteristics) for a Neolithic group/s and this activity is likely to be associated with the posthole and hearth-defined structures and their attendant midden pits. The presence of a range of Neolithic tool types implies that a wide range of activities took place on the site that no doubt included the preparation of food, animal skins, the building and maintenance of shelters as well as the production of clothing and so forth.

Activity	Density	Primary Waste	Tools	Cores
Settlement	Low	Low	High	High
Industrial	High	High	Low	Low

Table 10. Schofield's 'Expected assemblage characteristics for domestic and industrial areas assuming a policy of extra-home range production' (i.e. where flint is imported from a source area some distance from the main settlement area) (1991, 119).

- 8.13 Although the flint assemblage for the Neolithic is not huge this quantity of material from truncated pit and structural features is in keeping with the numbers recovered from similar sites such as the 635 flints from the Willington Quarry excavation site (Saville 1979) or from Cheviot Quarry in Northumberland where 93 flints were discovered associated with similar spreads of midden pits and postholes (Johnson and Waddington in press). The proportion of retouched and utilized tools was high at both these analogous sites, comprising 20.5% at the Willington Quarry site and 30.1% at Cheviot Quarry.
- 8.14 Overall the Willington Marina flint assemblage comprises a high proportion of implements but most forms are irregular and reflect the opportunistic use of locally available flint that occurs in small nodules, often with impurities and sometimes poor flaking properties. Much of the material is residual, particularly the LUP and Mesolithic material, as much of this was retrieved from Neolithic features. Another key feature of the assemblage is the frequency of heavy patina development on much of the pre-Neolithic material reflecting human use of this landscape extending back, probably, to the last Ice Age. A frequent observation is the re-use of this early chipped material in later periods, particularly in the later Mesolithic and Neolithic. Heavily patinated chipped flints can be found in the natural sand and gravel substratum across the site and these represent palaeoliths deposited as part of the sediment body at the end of the last Ice Age. These pieces will have traveled from further upstream and provide a proxy record of human activity in the catchment of the ice sheet feeding the Trent Valley. Some of the recycled material found in the Neolithic features at Willington comprises this material and indicates that flint was being collected from the gravel. Obvious places to obtain such material would have included exposures in stream sections and river cliffs as well as those caused by tree throw.



Two possible Late Upper Palaeolithic Blades 376, 441; Mesolithic Platform Cores 305, 500; Edge Trimmed Blades 358, 696, 488; Mesolithic Edge Trimmed Blade/Microlith 496; Retouched Blade 427; Mesolithic End Scraper 417; Mesolithic Scrapers 58, 345, 511, 419, 451; Burin 449; Microliths 547, 543, 412, 491, 380, 350, 516.

Fig. 29 Lithic artefacts

## 9 Ceramics Report Clive Waddington

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### Introduction

9.1 A substantial assemblage of prehistoric pottery was recovered from Areas 1 and 2 at Willington Marina. In Area 1 one pit F003 produced several late Bronze Age pot fragments belonging to the Deverel-Rimbury tradition and elsewhere some indeterminate first millennium BC pottery from F173. Area 2 produced the largest quantity of ceramic material consisting of Early Neolithic Carinated Bowl and Plain Ware pottery, a single pit F1193 with Impressed Ware pottery, together with Early Bronze Age pottery associated with the human cremations in ring ditches 1 and 2. The Early Neolithic material came from a series of midden pits that formed two main clusters (1 and 2). The presence of these pottery styles provides a sequence through the Neolithic from the beginning of the fourth millennium BC to the mid 3<sup>rd</sup> millennium BC. The Carinated Bowl and associated Early Neolithic Plain wares appear to have been used for domestic purposes whilst the Early Bronze Age pottery in Area 2 is associated with funerary activities. The Neolithic assemblage compares closely with that found on the adjacent and contiguous site known as Hill Farm, Willington (Woodward and Hancocks in Hughes and Jones 2001), and with the assemblage retrieved from the excavations at the Willington Quarry site 2km to the west (Manby in Wheeler 1979).

9.2 A total of 409 early prehistoric sherds representing at least 61 vessels and 94 later prehistoric sherds representing 6 vessels was recovered together with 18 sherds representing 9 indeterminate vessels as well as large quantities of crumbs. Several sherds were found to conjoin and for the purposes of the overall totals these are counted as a single sherd. In total a minimum of 76 vessels were able to be identified for the whole assemblage. The sherds are generally small and in most cases the complete profile of a pot was not able to be reconstructed. A wide range of ceramic styles are present and these are considered individually below.

### Method Statement

9.3 The pottery recovered during excavation was taken directly from the excavated deposits and placed in acid-free paper before being individually wrapped in bubble wrap and then bagged and labeled in polythene bags. On return to the laboratory the pottery was lightly cleaned under running water and then left to air dry before being lightly brushed with a soft sable shaving brush to remove excess soil. The sherds were laid out by context and then individually analysed and grouped into distinct pots on the basis of size, fabric and form. A x3 magnification hand-held magnifying glass was used to assist with the visual inspection. No further cleaning or washing was undertaken so as to allow for the future possibility of residue analysis. The sherds that could be conjoined were glued together using a waterproof solvent-based adhesive.

### Early Neolithic Ceramics

9.4 The sherds comprising the Early Neolithic ceramic assemblage display the typical attributes associated with Carinated Bowls and related pottery and typically dated to c.3900-3600 cal BC in the British Isles, including plain wares and cups. This group of ceramics forms the largest component of the assemblage and is characterised by a well-fired highly burnished fabric, everted rims, upright rims,

carinations, occasional upright shoulders, an absence of decoration and in many cases an open and shallow profile (Gibson and Woods 1997, 175-8; Gibson 2002a). Although earlier commentators have attempted to distinguish 'Grimston Ware' from other types of Early Neolithic carinated vessels, such as Heslerton Ware (Piggott 1954, 114) and Towthorpe Ware (Manby 1964; 1975), the most recent review of this pottery type sought to differentiate between Carinated Bowls, most similar to the Grimston Ware from the type site at Hanging Grimston, and Shouldered Bowls which have an upright shoulder and carination on the upper part of the vessel (Herne 1988). Some of the Early Neolithic ceramic material from Willington Marina fits into the Carinated Bowl class as defined by Herne (1988) and the original Grimston Ware class as defined by Piggott (1954, 114). There are some examples of what Herne has termed Shouldered Bowls as well as plain vessels that have no shoulder or carination but rather an upright body with plain rounded rim. None of the Willington material is decorated except for one sherd with a fingernail impression on pot 40 and another vessel (35) has a perforated lug. The Willington material most closely resembles the northern traditions of Early Neolithic styles as represented by Carinated Bowl and related style assemblages from Yorkshire and the North East (e.g. Nosterfield (Vyner 1998), Marton-le-Moor (Manby 1996; Taverner 1996), Cheviot Quarry (Johnson and Waddington in press), Thirlings (Miket 1976; 1987; in press), Bolam Lake (Waddington and Davies 2002)) rather than Southern Decorated Bowl traditions such as the Mildenhall, Windmill Hill and Hembury sub-styles. Although there is some evidence for East Anglian and southern connections within the region, as indicated by the presence of Mildenhall/Abingdon style pottery from Wigber Lowe a site situated in a northern tributary valley of the Trent and commanding a view to the Trent Valley itself (Collis 1983; Manby 1983), it is most common for other Early Neolithic Trent Valley and Peak District sites to produce ceramics related to the northern Grimston Ware series, such as those recovered from the adjacent Hill Farm site (Woodward and Hancock 2001), Willington Quarry (Manby 1979), Swarkeston (Greenfield 1960, 33), Attenborough (Alvey 1966) and Aston-on-Trent (Reaney 1968) and from the Green Low chambered tomb (Manby 1965) and Lismore Fields (Garton 1991) in the Peak District respectively. Evidence for the Southern Decorated Bowl styles such as Whitehawk, Mildenhall and Abingdon have yet to be found in any quantity in the Trent Valley.

#### *Fabric*

- 9.5 The early Neolithic fabrics are conspicuous by their dense fabric and laminated structure, and common use of crushed quartz inclusions with occasional use of grog, river rounded fine pebbles and occasional crushed sandstone and limestone. These inclusions have clearly been specially prepared for the purpose and can be fairly coarse being frequently 4mm across and sometimes up to 8mm across. The fabrics are, generally, evenly fired throughout making the pots strong and durable. Both thick and thin-walled vessels are evident with most of the material ranging between 4mm and 10mm in thickness. The coarse nature of the crushed stone inclusions means that quartz inclusions frequently erupt on both the internal and external surfaces of these pots giving them a speckled appearance. The consistent colouring on most pots indicates an even firing process which is likely to have taken place in a reducing atmosphere given the dark colour of many of the sherds. The pots are well-made and usually have a highly burnished finish on both the inner and outer surfaces, with grass-wiping common. A number of the sherds have fractured along coil lines revealing the method by which the pots were constructed.

### *Form*

- 9.6 The vessels are mostly of carinated bipartite form, sometimes with a slack shoulder forming a bag-shaped vessel or with a high and more abrupt shoulder (Herne's 'Shouldered Bowls'). A few vessels have a more upright form with plain upright rims whilst others still have an open shallow profile. All the bowls have curving profiles at their bases and are round-bottomed. They range in size from large storage vessels and cooking vessels, some of the latter still retaining burnt organic residues on their inner surfaces, to smaller bowls, open bowls and cups. The latter group of pots is likely to have been used for eating, drinking and serving food. The range of forms present suggests a full suite of domestic vessels associated with the storage, cooking and consumption of food. Decoration is absent from the Early Neolithic vessels in this assemblage although there are examples of decoration in the form of rows of vertical or diagonal strokes located on the top or just inside the rim and shallow U-shaped impressions on the shoulder of a Carinated Bowl on 10% of the early Neolithic vessels from the adjoining Hill Farm site (Woodward and Hancock 2001). There is a good example of a perforated lugged vessel (pot 35) from Pit F1127 associated with structure 3. Two early Neolithic vessels with perforated lugs were also found on the adjoining Hill Farm site (Woodward and Hancock 2001). The few rims that provide information on internal rim diameters range from 180mm to 210mm across although some vessels are clearly much smaller than this. The wall thickness of vessels accordingly with the thinnest measuring 4mm thick and the thickest up to 11mm thick, although the vessel wall tend to vary by up to 3mm on some pots with thickening of the wall typical around the carination and the curving base of the vessel.

### *Numbers*

- 9.7 A total of 49 Early Neolithic vessels could be identified. Thirty three of the pots (148 sherds) came from the fills of two pits; F9 and F31 in the northern area. No certain matches could be made between sherds or pots from different pits, although some sherds from the same pot were found distributed between the upper and lower fills of the same pit (e.g. Pots 1 and 3 in pit F9). Pit F9 contained 21 pots, pit F31 contained 11 pots.

### *Distribution*

- 9.8 The Carinated Bowl and related early Neolithic pottery shows a clear patterning in its distribution on the site. All the material occurs in Area 2 and it is usually within the fills of the midden in clusters 1 and 2, together with some in outlying pits such as F1021 and F1077. Occasionally early Neolithic material occurs as residual material such as its presence in the fill of ring ditch 2 (pot 21).

Pot No.	Small Find No.	Feature No. & Context	Description
5	100, 812 (conjoin) 102, 299, 300, 240, 241, 242, 243, 252, 253, 254, 255, 813, 814, 815.	Pit F1211 associated with Structure 3	Nine body sherds and several crumbs from a plain vessel. Breaks along the coil lines reveal the method of manufacture and the distinctive fabric contains coarse crushed quartz grits averaging 3mm across - although they can be larger. The vessel has a dark grey inner surface, with some organic residue surviving on the interior of the conjoined sherds (100 and 812) and a buff brown to dark grey exterior. The pot is well fired and highly burnished with grass-

			wiped outer and inner surfaces. The bowl has a curved profile and slight angles on sherds 252 and 102 suggest the presence of a carination. The wall of the vessel averages 12mm thick.
6	306	Pit F1211 associated with Structure 3	A single sherd from a thick-walled evenly fired plain vessel. The out-turned profile on this sherd suggests the presence of a narrowing neck or a carination. It is part of a large vessel whose wall averages 11mm thick with red brown inner and outer surfaces and core. It has coarse white quartz inclusions averaging 3mm across but sometimes they can be larger. It is highly burnished with grass wiping evident.
7	239, 258, 260, 261, 262, 263, 264, 700, 729, 816.	Pit F1285 associated with Structure 2	Ten body sherds from an undecorated plain bowl with curved profile with a pronounced everted rim (sherd 258). The vessel is highly burnished and grass-wiped and is evenly fired with coarse crushed white quartz grits typically 3mm across, with a brown outer and inner surface and brown or dark grey inner core. It is common for the crushed grits to erupt on the inner surface of the vessel sometimes producing a white speckled appearance. One sherd (816) may belong to a different vessel. The wall of the vessel averages 8mm thick.
8	473, 474	Posthole F1159 near structure 4	A tiny rim sherd 473 with plain upright rounded rim from a highly burnished grass-wiped vessel. Fabric contains crushed stone inclusions <3mm across and averages 6mm thick. Tiny sherd 474 could feasibly be from the same vessel.
9	459, 472	Posthole F1159 near structure 4	Two body sherds probably from the same coarse vessel. Sherd 472 has an out-turned profile that could be forming part of an out-turned rim or carination. The fabric has a brown external and internal surface with areas of dark grey core and is between 9 and 10mm thick. It contains white crushed quartz grits typically 3mm or less across. The quartz inclusions frequently erupt on both the inner and outer surfaces. The vessel is burnished.
10	461, 462, 463, 464, 465, 730, 731, 732.	Pit F1041 associated with Structure 3	Eight small body sherds from a plain and relatively thin walled vessel which appears to have been evenly fired with a dark brown outer and inner surface and core. However, sherds 465, 730, 731 and 732 have a blackened core. The surfaces are highly burnished and grass wiped. The fabric contains distinctive white crushed quartz grits usually <3mm across. The quartz inclusions occasionally erupt from the fabric surface. A thickened part of sherd 461 suggests the presence of a carination whilst other sherds indicate a curved profile. The wall of the vessel averages 7mm thick.
11	17, 19, 20, 21, 26, 27, 28, 29, 31, 34, 35, 38, 41,44.	Pit F1021	Eighteen small sherds and further crumbs belonging to a plain carinated vessel with everted rim. The fabric averages 9mm thick and is coarse and contains crushed white quartz grits <6mm across. It has highly burnished surfaces and has a blackened inner surface and buff brown outer surface. Due to the large size of the grits these frequently erupt on both surfaces. The surviving rim sherd (17) shows a slack globular vessel with an out-turned rim that is slightly rolled over. Internal rim diameter of approximately 190mm. This is a classic Carinated Bowl vessel.
12	23, 670, 671	Pit F1021	Three small body sherds from a plain thick walled vessel with curving profile. The fabric has coarse

			crushed quartz grits >5mm across and is burnished on its inner and outer surfaces. It has a blackened inner surface and a pale buff brown outer surface. The wall of the vessel average 11mm thick.
13	18, 673, 666, 667, 668, 669, 672, 674.	Pit F1021	Nine small sherds and additional crumbs of a plain vessel with globular profile and a carination as evidenced by sherd 669. The vessel is highly burnished on both its inner and outer surfaces and is grass-wiped. It has a dark grey to black inner surface and a deep red brown outer surface and core. It has frequent coarse crushed quartz inclusions <5mm across which frequently erupt on the inner and outer surfaces. The vessel wall averages 9mm thick.
14	22, 24, 25, 30, 32, 33, 36, 37, 39, 40, 42, 43, 45.	Pit F1021	Eleven sherds plus additional crumbs from a plain vessel with curved profile. It has a coarse fabric with crushed quartz inclusions <5mm across. It is burnished on its inner and outer surfaces, the inner surface being charred black and the outer surface being bright red brown. The vessel wall averages 9mm across.
16	257, 758, 757, 759, 760, 761, 762, 763, 764, 765, 766, 767.	Pit F1245 associated with Structures 1 and 2.	Seven sherds plus some additional crumbs from a plain highly burnished vessel with curved profile. It had a red brown outer surface and a blackened inner surface and core. The fabric contains crushed stone grits of quartz and what appears to be grog temper. The fabric averages 7mm thick.
17	256	Pit F 1245 associated with Structures 1 and 2.	Small rim sherd from vessel with curving profile. The rim is thickened and although having a slightly rolled over appearance has a relatively flat top and has been formed by pinching the pot to create a slightly thicker rim. It is burnished on all surfaces and is an even dark grey colour. It has a brown fabric with coarse quartz inclusions <4mm across. The fabric measures 9mm thick.
21	818, 819, 821, 820, 822, 823, 824.	F1259 Ring Ditch	Two small body sherds and several crumbs from a plain vessel with probable globular profile as indicated by sherd 823. It has a distinctive reddened fabric and surfaces. The vessel is burnished on the inner and outer surfaces. The fabric contains crushed stone grits <4mm across. The wall of the vessel averages 11mm thick.
22	322	Pit F1043 associated with Structure 3.	A single sherd from a plain vessel with red brown outer surface and blackened inner surface and a buff brown core. It is from a sinuous profiled vessel. The walls of the vessel measure 6mm thick and the fabric contains crushed quartz grits usually <6mm across. It is highly burnished on both surfaces.
23	129, 324, 326, 397.	Pit F1043 associated with Structure 3.	Four small sherds from a thin-walled round-based plain bowl. It has highly burnished inner and outer surfaces and averages 5mm thick. It has a dark grey inner surface and a dark grey to brown outer surface. There are frequent crushed quartz inclusions usually <5mm across, some of which erupt on the surface.
24	128	Pit F1043 associated with Structure 3.	A tiny rim sherd from a small thin-walled vessel possibly a cup. The rim is rolled over and a slight carination close to the rim of the pot can be felt. Although tiny this vessel belongs to the Carinated Bowl tradition. The wall of the vessel is 4mm thick and is a dark grey throughout. The fabric contained crushed quartz inclusions <5mm across and is highly



			burnished inside and out.
25	130, 320, 323.	Pit F1043 associated with Structure 3.	Three sherds including two rim sherds from a plain Carinated Bowl with slightly everted rim and distinct shoulder 40mm below the top of the rim. It is a well made pot with highly burnished surfaces inside and out. It has dark grey to brown surfaces the core had a slightly darker redder hue. The fabric contains crushed quartz grits <5mm across and averages 8mm thick.
26	131, 796.	Pit F1043 associated with Structure 3.	The two sherds conjoin to form a rim sherd from a thin-walled, rounded, highly burnished vessel. The vessel wall averages 5mm thick. The rim is plain and smoothed over and is not embellished in any way. It has crushed quartz inclusions usually 3mm across and has red brown inner and outer surfaces with a darker grey and brown core. The sherd belongs to a small open bowl presumably for eating or drinking purposes.
27	132, 133, 134, 135, 321, 325, 710, 711, 797, 798.	Pit F1043 associated with Structure 3	Five sherds and several crumbs from a globular highly burnished vessel that has been grass-wiped. It has dark grey inner and outer surfaces and a brown core. The fabric contains crushed quartz inclusions usually <3mm across and they rarely erupt from the surface. The wall of the vessel averages 6mm thick. The presence of a carination is noted on sherds 132 and 133.
30	740	Pit F1229	A single small body sherd from a plain well-made highly burnished vessel with curving profile. The fabric contains crushed quartz inclusions usually <5mm across. It has a dark grey inner surface and dark brown outer surface with buff brown core. The wall of the vessel averages 10mm thick.
32	329	Pit F1191 associated with Structure 4	A small body sherd from a rounded vessel heavily burnished on its inner and outer surfaces. The fabric contains crushed quartz inclusions <3mm across some of which erupt at the surface. The inner surface and core is dark grey and the outer surface a red brown. The wall of the vessel averages 7mm thick.
33	708	Upper fill of Tree Throw Pit F1063	A small sherd of highly burnished pottery from a rounded plain vessel with a break evident along its coil line showing its method of manufacture. It is a well constructed pot and the fabric contains fine crushed quartz inclusions <3mm across. It has dark grey to brown inner and outer surfaces and a brown core. The wall of the vessel averages 7mm thick.
34	288	Lower fill F1252 of the Tree Throw Pit F1063	A small body sherd from a highly burnished plain vessel. The fabric contains crushed quartz inclusions <5mm across, some of which erupt at the surface. It has a red brown outer surface and a dark grey inner surface and core. The wall of the pot averages 7mm thick.
35	214, 115, 213, 218, 219, 215, 136, 111, 110, 118, 143, 146, 172, 147, 173, 174, 145, 799, 114, 116, 217, 811, 142, 140	Pit F1127 associated with Structure 3	Thirteen sherds and additional crumbs from a well-made Carinated Bowl with slightly out-turned rim. It is highly burnished and grass-wiped with relatively even dark grey to brown inner and outer surfaces. Sherds 136 and 111 conjoin to create a curving profile body sherd with perforated lug attached. The vessel is relatively thin-walled averaging 6mm thick. The fabric contains crushed quartz inclusions <5mm across. The two small surviving rim sherds 215 and 217 are too small to provide an accurate estimation

			of the rim diameter.
36	139	Pit F1127 associated with Structure 3	A single body sherd from a well-made curving profiled vessel that is highly burnished on its inner and outer surfaces. The wall of the vessel averages 7.5mm thick and the fabric contains crushed quartz inclusions <4mm across. The vessel has a dark grey inner surface and medium brown outer surface and core.
37	117, 141, 216	Pit F1127 associated with Structure 3	Two small sherds and a crumb from a substantial vessel with distinctive red brown outer surface and dark grey inner surface and core. The sherds are from a curving profile vessel that is well-made and highly burnished on its inner and outer surfaces. The wall of the vessel averages 9mm thick although it can extend to 11mm thick. The fabric contains crushed quartz inclusions <3mm across.
38	137, 138	Pit F1127 associated with Structure 3	Two small rim sherds from a highly burnished vessel with slightly out-turned rim. The vessel has dark grey inner and outer surfaces and a brown core. The fabric contains crushed quartz inclusions <4mm across and the vessel wall averages 6mm thick.
39	144	Pit F1127 associated with Structure 3	A single small sherd from a curving profile vessel with highly burnished dark grey outer surface and core and a more lightly burnished brown inner surface. The fabric has crushed quartz inclusions <3mm across and the vessel wall averages 7mm thick.
40	113	Pit F1127 associated with Structure 3	A single small body sherd from a curving profile vessel that is highly burnished on its inner and outer surfaces and with a single fingernail impression on the outer surface. It has a dark grey inner surface and core and a buff brown outer surface. The fabric contains fine crushed quartz inclusions <3mm across and the wall of the vessel measures 5mm thick.
41	112	Pit F1127 associated with Structure 3	A single small plain sherd from a curving profile vessel with highly burnished inner and outer surfaces. It has a red brown outer surface and a darker brown inner surface and core. The fabric contains crushed quartz inclusions <4mm across and the wall of the vessel averages 6.5mm thick.
42	268, 271, 703, 705.	Spread of material 002 south of Pits F1245 and F1247 containing Carinated Bowl sherds.	Four sherds conjoin to create a plain rim section from a classic Carinated Bowl with high shoulder and everted and slightly rolled over rim. It is highly burnished on its inner and outer surfaces and is a well constructed vessel. In appearance it has a dark grey outer surface and core and a pale brown inner surface. The fabric contains crushed quartz inclusions <4mm across and which occasionally erupt on the surface. The wall of the sherd averages 6-7mm thick. The internal diameter of the vessel is in the region of 210mm making it a fairly substantial pot presumably for cooking or storage.
43	269, 270, 282.	Spread of material 002 south of Pits F1245 and F1247 containing Carinated Bowl sherds.	Three small body sherds from a thin-walled curving profile vessel with highly burnished inner and outer surfaces. It has a dark brown outer surface and a pale brown inner surface and core. The fabric contains crushed quartz inclusions <3mm across and the wall of the vessel averages 5mm thick.
Crumbs	265, 277, 284, 704,	Spread of	Seventeen small crumbs from this context that can

from Context 002	712, 713, 273, 274, 275, 276, 278, 279, 794, 285, 280, 281, 272.	material 002 south of Pits F1245 and F1247 containing Carinated Bowl sherds.	not accurately be attributed to any one vessel.
45	266, 267, 283, 286, 287.	Spread of material 002 south of Pits F1245 and F1247 containing Carinated Bowl sherds.	Five sherds, two of which conjoin, to form a plain curving profiled well made vessel that is burnished on its inner and outer surfaces. It has a dark grey inner surface and core and a grey brown outer surface. The fabric contains crushed quartz inclusions <4mm across which occasionally erupt at the surface. The wall of the vessel averages 7mm thick. Sherd 287 is slightly thicker due to this sherd forming part of the carinated section of the vessel.
49	186, 185, 188, 800, 801, 802, 803.	Pit F1077 associated with Ring Ditch F1259	Seven tiny sherds and crumbs from a thin-walled highly burnished vessel with dark grey inner surface, outer surface and core. The fabric contains crushed quartz inclusions <3mm across. Two of the tiny sherds suggest the pot may have a curving profile. If this is the case, and given the quartz inclusions and burnished surfaces, it suggests these are from an early Neolithic vessel. The wall of the vessel averages 7mm thick.
50	187	Pit F1077 associated with Ring Ditch F1259	A single tiny body sherd that forms part of the carinated section of a bowl which has a burnished inner and outer surface. The fabric contains crushed quartz inclusions <3mm across and has a dark grey outer surface and dark brown to grey inner surface and core. The wall of the vessel varies between 8 and 9mm thick
53	67, 151, 152, 153, 154, 158, 159, 161, 162, 165, 168, 169, 170, 177, 178, 182, 183, 184, 196, 197, 198, 199, 201, 202, 204, 205, 207, 224, 225, 226, 227, 229, 230, 231, 232, 234, 235, 236, 237, 239, 784, 782, 289, 238, 337, 338, 339, 389, 701, 714, 715, 817, 719, 739, 752, 768, 769, 770, 771, 772, 773, 774, 779, 780, 781, 785, 788.	Pit F1079 associated with structure 3	Sixty seven crumbs from various pots but none can be attributed with confidence.
54	126, 164, 179, 210, 251, 480, 790.	Pit F1079 associated with structure 3	Seven sherds from a classic Shouldered Bowl with high shoulder and everted rim (164). It is highly burnished on its inner and outer surfaces. It has a dark grey to brown inner and outer surface and core. The fabric contains crushed quartz inclusions <4mm across, some of which erupt at the surface. The wall thickness of the vessel varies from 6-9mm. The estimated internal diameter is approximately 180mm.
55	203, 209, 468, 753, 718, 181, 157.	Pit F1079 associated with structure 3	Seven sherds from a relatively thick-walled, slack, bagged-shaped vessel with a carination low in its profile. The vessel has a slightly everted and rolled over rim. Sherd 203 shows a sharp carination whilst

			rim sherd 209 and 468 indicate the classic rolled over rim. The vessel has a highly burnished inner and outer surface that is typically dark grey to brown with a dark brown core. The fabric contains crushed quartz inclusions <5mm across which occasionally erupt at the surface. The two rim sherds are too small to allow an accurate estimation of the vessel's diameter. The wall of the vessel averages 11mm thick.
56	148, 176, 220.	Pit F1079 associated with structure 3	Three tiny rim sherd fragments from a small highly burnished plain bowl possibly used for eating or drinking. It has dark grey inner and outer surfaces and core and contains crushed quartz inclusions <5mm across. The wall of the vessel has a maximum width of 6mm.
57	791, 789.	Pit F1079 associated with structure 3	Two tiny sherds from a highly burnished plain vessel with pale brown outer surface and slightly darker brown inner surface and dark grey core. The fabric contains crushed quartz inclusions <6mm across. The wall of the vessel averages 6mm thick.
58	156	Pit F1079 associated with structure 3	A single sherd from a distinctive buff brown vessel. This sherd comes from a curving profile pot that is relatively thick-walled being 9mm thick. It has a buff brown inner surface and core. The fabric contains crushed quartz inclusions <6mm across which occasionally erupt at the surface.
59	127, 167, 171, 222, 291, 332, 333, 395, 754, 833.	Pit F1079 associated with structure 3	Nine sherds, two of which conjoin (754 and 333), from a thick-walled heavy duty cooking vessel with distinctive blackened inner surface and brown grey outer surface and core. The wall of the vessel is typically 10mm thick and the fabric contains crushed quartz inclusions <6mm across. Although burnished inside and out it has a relatively rougher and pitted outer surface than most of the other Neolithic material. Occasional inclusions of small river rounded stones can also be found within the fabric as for example the red stone erupting at the surface of sherd 833. The vessel has a curved profile.
60	166, 208, 221, 228, 250, 334, 335, 336, 388, 481, 482, 483, 717, 722.	Pit F1079 associated with structure 3	Fourteen small sherds from a plain, well-constructed curving profiled and highly burnished vessel with dark grey inner surface and buff brown outer surface and core. The wall of the vessel is typically 7mm thick and the fabric contains crushed quartz inclusions <5mm across.
61	155, 160, 163, 175, 180, 200, 212, 223, 233, 249, 466, 469, 716, 720, 721, 725, 783, 786, 787.	Pit F1079 associated with structure 3	Nineteen sherds from a well made relatively thin-walled curving profiled bowl. It has a highly burnished dark brown to grey inner surface and core and a generally medium brown outer surface. Grass wiping is evident on several sherds. The wall of the vessel ranges from 6 to 8mm thick and the fabric contains crushed quartz inclusions <4mm across which only occasionally erupt at the surface.
67	400, 404, 405, 407, 409, 410, 726, 727, 795.	Pit F1045 one of the midden pits associated with structure 3	Nine sherds from a plain bowl with everted rim as indicated by sherd 400. It is a highly burnished vessel with dark grey to brown outer surface and a dark grey inner surface. It is a well constructed vessel and the fabric contains crushed quartz grits usually <5mm across, some of which erupt at the surface. The wall of the bowl averages 6mm thick.
68	398, 401, 406.	Pit F1045 one of the midden	Three small sherds including one rim sherd (398) from a thin-walled bowl with slightly everted and

		pits associated with structure 3	rolled over rim. It is a highly burnished vessel with a dark grey outer and inner surface and brown core. It contains fine crushed quartz inclusions <3mm across and the wall of the vessel averages 5mm thick.
69	411.	Pit F1045 one of the midden pits associated with structure 3	A single medium sized sherd from a thick-walled, curving profile bowl, probably used for storage purposes. It is well made and is burnished on its inner and outer surfaces. It has a distinctive buff brown outer surface and a dark grey inner surface and brown core. The fabric contains crushed quartz inclusions <5mm across although some occasionally erupt on the inner surface. The wall of the vessel averages 11mm thick.
70	402.	Pit F1045 one of the midden pits associated with structure 3	A tiny single sherd from a curving profiled plain vessel with orange brown outer and inner surface and dark grey core. The fabric contains crushed quartz inclusions <4mm across and the vessel wall averages 5mm thick.
71	460.	Pit F1045 one of the midden pits associated with structure 3	A single tiny sherd from a curving profiled plain vessel with dark grey outer surface and brown inner surface and core. The fabric contains crushed quartz inclusions <4mm across which occasionally erupt at the surface. The wall of the vessel is 6mm thick.

Table 11 Early Neolithic Ceramics

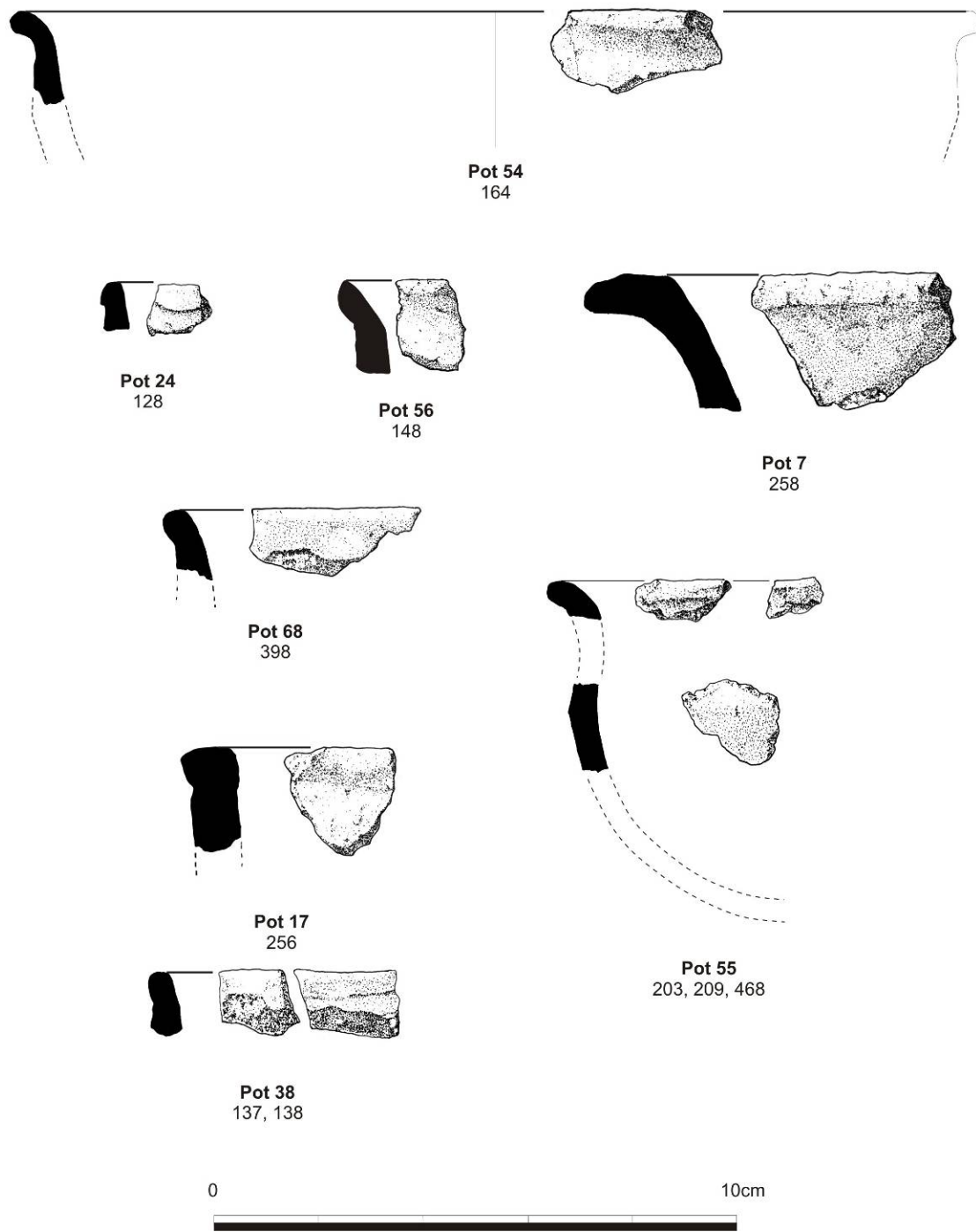
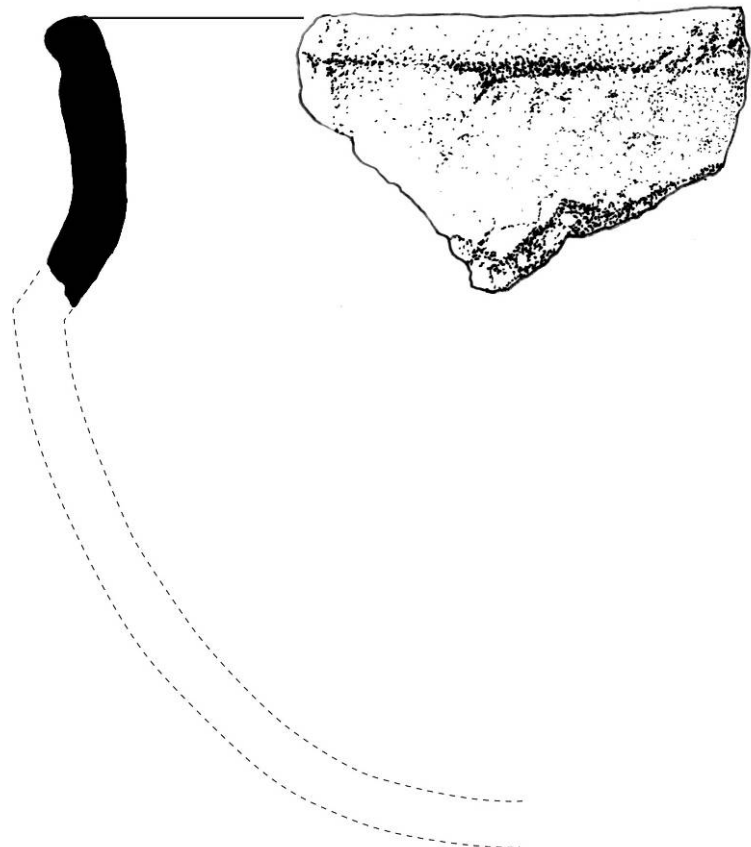
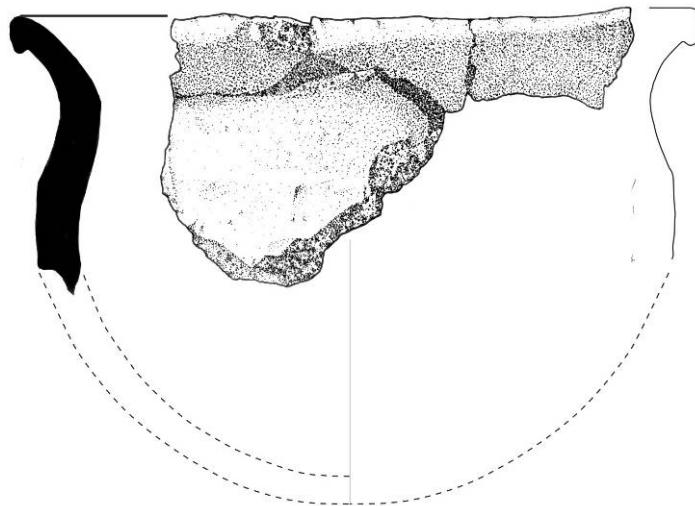


Fig. 30 Early Neolithic Ceramics



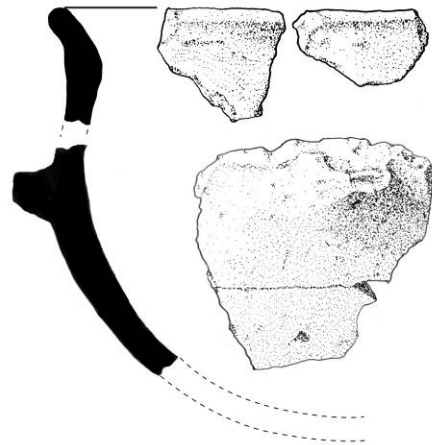
Pot 25  
130



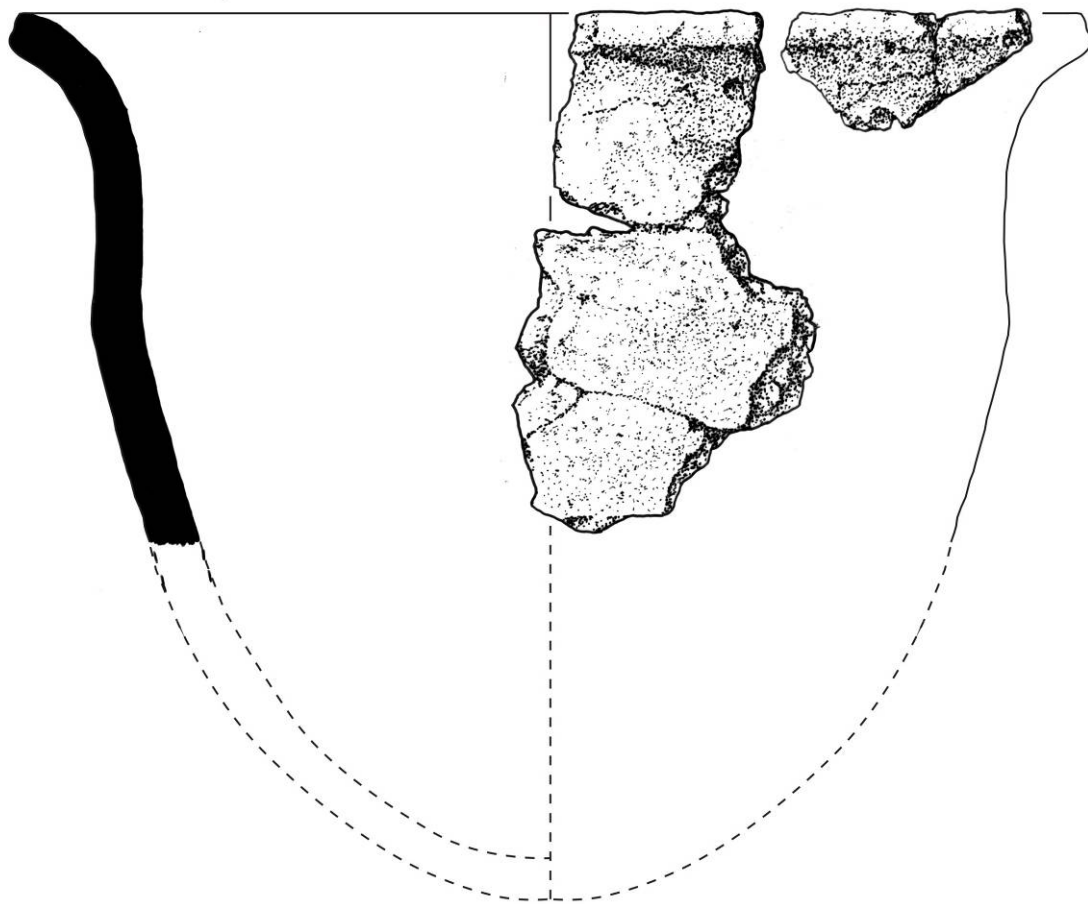
Pot 42  
268, 271, 703, 705



Fig. 31 Early Neolithic Ceramics



Pot 35  
215, 217,



Pot 17  
19, 20, 21



Fig. 32 Early Neolithic Ceramics



### Impressed Ware

- 9.9 A small assemblage of Peterborough Ware, or Impressed Ware to give it a more neutral stylistic title, was recovered from a single pit, F1193, situated between ring ditch 2 and midden pit cluster 2 in Area 2. Finds of Impressed Ware are relatively rare in the Trent Valley although recent finds of such material have been made at Melbourne where ceramics of the Ebbsfleet Ware sub-style was obtained (Courtney 1973), and at Willington Quarry where ceramics of the Fengate/Mortlake sub-style and Ebbsfleet sub-style were recovered (Beamish 2001), the latter with associated radiocarbon date ranges spanning c.3510-2510 cal BC. Further afield Impressed Ware of the Mortlake style has been recovered from the nearby site at Wigber Lowe in a northern tributary of the Trent as well as other sites in the Peak District at Fox Hole Cave (Bramwell 1971, 13-15) and Wormhill (Radley and Plant 1967, 152) whilst possible Ebbsfleet Ware has been found at Reynard's Cave (Kelly 1960) and Rain's Cave (Ward 1889).

### *Fabric*

- 9.10 The Impressed Ware ceramics have a distinctive fabric being hard, thick-walled pots of varying size, with some large and coarsely made and others small and more finely made. They have been made using the coil technique and contain prepared angular crushed stone inclusions of quartz and occasionally other stone. They can be evenly or unevenly fired and the stone inclusions can often be seen erupting on the surface.

### *Form*

- 9.11 As with Impressed Ware ceramics from elsewhere in the British Isles the material from this site indicates highly decorated vessels which utilise fingernail impressions, comb decoration. No base sherds were identified and so it is not possible to reconstruct a complete profile for any vessel. The rims from pots 62 and 63 indicate vessels with a "T" profile decorated with parallel lines of comb impressions along the top of the rim and their inner edge. The internal surface at the neck of the vessel is decorated with horizontal parallel rows of fingernail impressions whilst the outer surface at the neck of the vessel is plain. This range of Impressed Ware material is in keeping with other sherds of this ceramic tradition from the region including those from the Willington Quarry site (Wheeler 1979). The few rims that provide information on internal rim diameters show vessels with an internal diameter of up to 250mm although some vessels are smaller than this. The wall thickness of vessels varies from 5mm to 12mm, although the vessel walls can vary by up to several millimetres on individual pots with thickening of the wall typical around the shoulder of the vessel.

### *Numbers*

- 9.12 A total of 5 Impressed Ware pots can be identified from pit F1193.

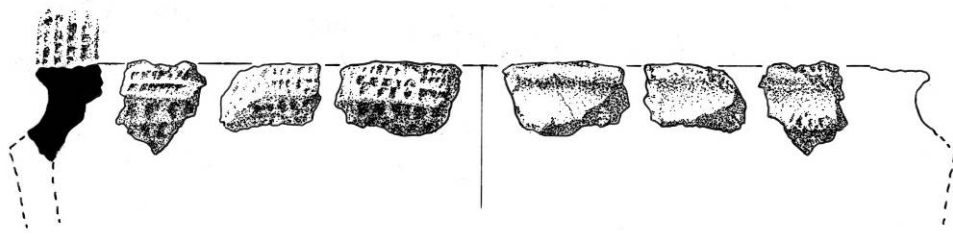
### *Distribution*

- 9.13 The pit containing the Impressed Ware, F1193, is situated on its own between the earlier Neolithic midden pits associated with Structure 3 and ring ditch 2.

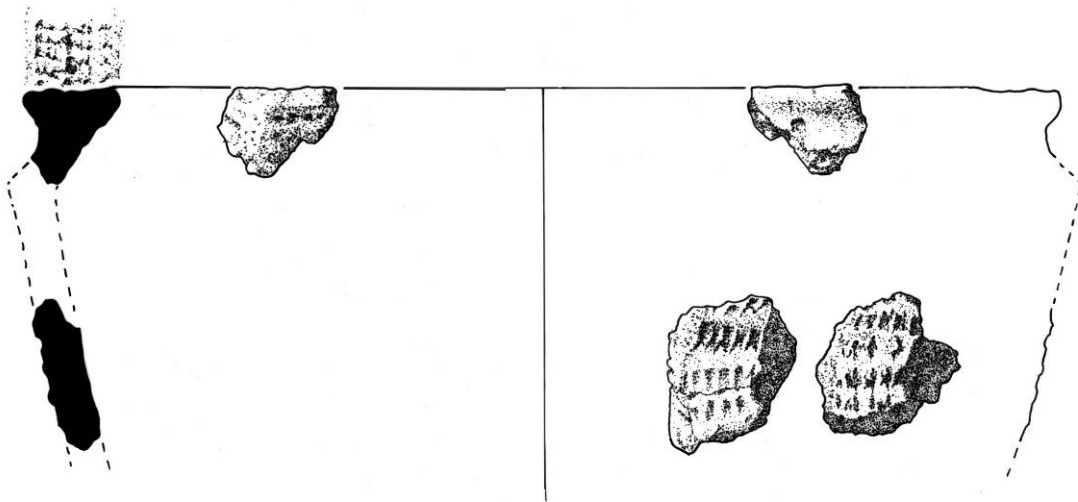
Pot No.	Small Find No.	Feature No. & Context	Description
62	316, 317, 390,	Pit F1193	Five sherds including 4 pieces of rim from an

	391, 792.	situated between ring ditch 2 and midden pits associated with structure 3	Impressed Ware vessel with a T-profile rim that has parallel lines of comb impressions along its inner edge. It has a shallow concave neck with a carination immediately below. The internal surface of the vessel is decorated with horizontal parallel rows of fingernail impressions whilst the outer surface at the neck of the vessel is plain. The vessel has a dark brown internal and external surface and a dark grey to black core. The fabric contains crushed quartz inclusions up to 8mm across. It is a finely constructed vessel but there is insufficient of the rim surviving to reliably estimate its diameter. The vessel wall averages 8mm thick.
63	125, 211, 392, 408, 471, 477, 478.	Pit F1193 situated between ring ditch 2 and midden pits associated with structure 3	Five sherds and two crumbs including one rim sherd from an Impressed Ware vessel with a T-profile rim that has parallel lines of comb impressions along its inner edge. It has a shallow concave neck with a carination immediately below. The internal surface of the vessel neck and the outer surface of the body are decorated with horizontal parallel rows of fingernail impressions whilst the outer surface of the concave neck of the vessel is plain. The vessel has a dark brown internal and external surface and a dark grey to black core. The fabric contains crushed quartz as well as other types of stone inclusions usually <8mm across. The crushed stone inclusions occasionally erupt at the surface. The estimated internal diameter of the vessel is around 250mm. The vessel wall averages 12mm thick.
64	124.	Pit F1193 situated between ring ditch 2 and midden pits associated with structure 3	A single tiny body sherd from a vessel with horizontal rows of fingernail impressions. It has a red brown inner and outer surface and a dark brown core. It contains very fine crushed quartz inclusions usually <2mm across. The wall of the vessel is between 5 and 6mm thick.
65	393.	Pit F1193 situated between ring ditch 2 and midden pits associated with structure 3	A single small body sherd from an Impressed Ware vessel with occasional fingernail impressions on its outer surface. It has a distinctive orange brown inner and outer surface and slightly darker brown core. The fabric contains crushed quartz inclusions usually <8mm across and which occasionally erupt at the surface. The wall of the vessel averages 10mm thick.
66	394, 479.	Pit F1193 situated between ring ditch 2 and midden pits associated with structure 3	Two small sherds from what appears to be an open bowl. One of the sherds has a plain, very slightly rolled over rim. It has a burnished outer surface but a rougher inner surface. The outer surface is dark grey and the inner surface a red brown with a darker brown core. The fabric contains crushed quartz inclusions <6mm across which sometimes erupt at the surface. The wall of the vessel averages 10mm thick but thins towards the rim. These sherds may belong to an earlier Neolithic open bowl and have become incorporated in this pit fill as residual material.
Crumbs	107, 108, 109, 123, 318, 354, 476, 1193.		Eight tiny crumbs that cannot be attributed to any particular vessel.

Table 12 Neolithic Impressed Ware



**Pot 62**  
317, 390, 391  
Indeterminate rim diameter.  
Interior shown to left, exterior to right.



**Pot 63**  
211, 392, 471  
Interior shown to left, exterior to right.



Fig. 33 Impressed Ware

Beaker period – Early Bronze Age ceramics

- 9.14 All the Grooved Ware-related ceramics recovered from the site came from Area 2 where the earlier Neolithic remains were located. Finds of Grooved Ware-related ceramics are relatively rare in the Trent Valley and its tributaries and its chronology and use remains poorly understood (see Gibson 2002b). The sherds from Willington Marina show clear evidence for some pots with grooved decoration on their outer surfaces, and in one case dimples suggesting applied clay pellets (pot 2), while fingernail impressions are present on pot 4.

*Fabric*

- 9.15 The Grooved Ware-related ceramics are from well-made pots of varying size. They have been made using the coil technique and are burnished on their inner and outer surfaces and contain stone inclusions more finely crushed than the earlier Neolithic ceramics on the site. The inclusions can be of quartz or river-rolled stones usually between 1mm and 3mm across although there is the occasional pot where some larger inclusions are noted (e.g. 31) that can be up to 7mm across. The firing of these pots is not always even, although this may have been deliberate in order to give the outer surfaces of these pots their distinctive red-brown colour, whilst the inner core can sometimes be black and the inner surfaces red-brown or brown.

*Form*

- 9.16 The base sherd from pot 1 indicates a flat-based urn-shaped vessel with applied perforated lugs, while the rim sherds thought to be from the same pot indicate a vertical rim implying a bipartite vessel. A bipartite urn-shaped form can also be identified for pot 4 while a flat-based flared vessel of probable bipartite form can be assigned to pot 78. Both of the latter two vessels contained cremated human bones and have clearly been used as funerary urns with pots 78 and 4 associated with ring ditches 1 and 2 respectively. The small size of the sherds makes exact classification difficult but the arc of dimples for clay pellets and perforated oval lugs on pot 1, together with their bipartite form, suggest these vessels are of typical Early Bronze Age form, however they do show traits that could be related them to the Durrington Walls sub-style of Grooved Ware. The undecorated tub and upright vessel forms identified in this assemblage (pots 3 and 31) have analogous forms found amongst Durrington Walls assemblages (e.g. Carnaby Top and North Carnaby Temple, East Yorkshire, Manby 1974). The grooved decoration and suggestion of lozenge motifs on the decoration of some sherds associated with pot 52 implies parallels with Smith's 'Clacton' style (Smith 1956) whilst the flat rim and horizontal line of fingernail impressions below the rim on pot 4 recall the Woodlands style. This range of Grooved Ware-related styles is in keeping with the styles known to be present in the Trent Valley including the material from Willington Quarry (Manby 1979), although the small size of the sherds from Willington Marina mean that the attribution of these vessels to the various styles of Grooved Ware, that are not universally recognised anyway, is not absolutely certain. In the Midlands the Durrington Walls, Clacton and occasional Woodlands style of Grooved Ware can be found with Durrington Walls the most common at the Willington Quarry site (Manby 1979) as well as at Green Low, Elton Moor, Whalley 2 and at Risby Warren, Salmonby and Barholm in Lincolnshire (Manby 1979). In the Peak District Grooved Ware of various types has been found at

Kenslow Knoll (Garton and Beswick 1983), Aleck Low Site 1 (Hart 1981, 45) and most recently at Great Hucklow Gliding Club (McGuire 2004) amongst other locations.

*Numbers*

9.17 A total of 7 Early Bronze Age pots can be identified comprising 54 sherds.

*Distribution*

9.18 Cremation pit F1113 had a primary fill containing fragments from pot 2. The principal cremation contained within pot 78 was a secondary insertion into this feature. Some time later the cremation pit was reopened and a third vessel (with cremated remains adhering to the interior) was inserted (pot 1). Although these pots can be classified as Early Bronze Age vessels on account of their form and the associated radiocarbon dates pots 1 and 2 reveal decorative affinities that could relate them to Late Neolithic Grooved Ware ceramic styles. The possible Clacton style Grooved Ware sherds from pot 52 were from the unstratified overburden. It is relatively unusual for Grooved Ware-related to be associated with human cremations but it has been noted before in Cheshire at Sandpit Field, Eddisbury, where a large urn associated with cremated bone was found in 1851 (Varley 1950), and subsequently identified as belonging to the Durrington Walls sub-style of Grooved Ware (Longley 1987, 52). A number of other urns were also found at the site, perhaps indicating a destroyed round barrow. This recalls the situation at both Willington Quarry and Willington Marina where ceramics with Grooved Ware-related decoration are associated with cremations and ring ditches that may be all that survive of barrows that may have once covered these burials.

Pot No.	Small Find Nos.	Feature No. & Context	Description
1	54, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 775, 776.	Cremation Pit F1113 Ring Ditch 1 (upper Secondary Fill 1165)	Thirty eight sherds and a number of crumbs were recovered from the upper fill of pit F1113 overlying the cremation in pot 78. This upper fill had been heavily truncated and disturbed by later ploughing. The vessel is a thick-walled pot, the fabric averaging 10mm thick with a red brown internal and external surface and typically a blackened core. The fabric contains fine crushed stone inclusions typically 1mm across. The vessel is well made using the coil method and has been burnished prior to decoration. A base sherd (69) indicates a flat base and probable urn-shaped bipartite vessel. Two rim sherds (79 and 72) may be from the same vessel but this is not certain on account of their thinner walls which measure 8mm across. These two rims are plain and upright and have an absence of decoration. The decoration on the body sherds consists of parallel incised grooves 2-3mm across complemented by further parallel grooves running at right angles (e.g. as can be seen on sherds 59 and 67). The vessel also has perforated lugs as can be seen on sherds 70 and 86. There are also numerous plain sherds and these are thought to belong to another part of the same vessel. This vessel is likely to be of Beaker period or Early Bronze Age date although its form and decoration suggest links with the Durrington Walls sub-style of Grooved Ware. Sherd 59 has human cremated

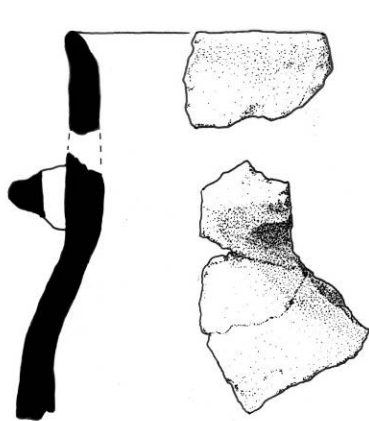
			remains adhering to its inner surface.
78		Cremation Pit F1113 Ring Ditch 1 (first Secondary Fill )	The basal portion of an in-tact flat-based vessel that contained cremated human remains. The vessel has a flat base c.167mm diameter and the walls survive up to 156mm in height with the fabric averaging mm thick. The vessel has a reduced black core and a red-brown outer surface and a buff-brown internal surface. The fabric contains crushed stone inclusions <3mm across. Fingerprint impressions are visible inside the base. The pot is undecorated and although probably not a food vessel neither does its form suggest it is a Grooved Ware-related vessel. It is probably from a bipartite vessel. It is analogous in form to Beaker period vessels from burial contexts but which are not Beakers – a useful analogy being the vessel recovered from a Bronze Age burial at Howick Quarry (Jobey and Newman 1975).
2	51, 52, 53, 55, 56, 57, 77.	Cremation Pit F1113 Ring Ditch 1 (Primary Fill 1113)	Seven body sherds and some crumbs from an evenly fired thick-walled pot with fabric averaging 10mm thick. The vessel has a blackened core and outer surface although the inner surface varies from blackened to a pale brown. Breaks are visible along coil lines and the coarse fabric contains crushed stone inclusions <3mm across though they are typically smaller. The vessel is undecorated although on sherd 56 at least three dimples are present in a horizontal line that may be where applied pellets have broken off. Decoration such as this can be found on Grooved Ware-related pottery, usually of the Durrington Walls sub-style as well as on later Early Bronze Age pottery.
3	755, 756, 319 (all conjoin) 396, 455, 456, 457, 458, 467, 470, 475, 724.	Pit F1027 associated with Ring Ditch 2	Ten sherds that are probably all from the same straight-sided and upright vessel with flat base (Sherd 396), and with a fabric averaging 8mm thick though it thickens towards the base. Although none of the sherds are decorated the shape of the vessel and its fabric suggests it belongs to a Grooved Ware-related tradition. The vessel has a dark grey inner surface and core and a red brown external surface. The fabric is generally coarse and includes crushed stone grits averaging 3mm across.
4	735, 736, 737, 738.	Secondary fill of cremation Pit F1109 associated with Ring Ditch 1	Sherds 735, 737 and 738 all conjoin to produce a bipartite vessel with upright neck and curving body to what was presumably a flat-based vessel. The coarse fabric of the vessel averages 10mm across with large grits <6mm across. The vessel has an orange brown surface with a narrow band of dark grey at its inner core where firing has been uneven. The vessel has a flattened plain rim with a single horizontal line of fingernail impressions situated 15mm below the rim. The vessel has an approximate internal rim diameter of 120mm.
15	103, 104	Pit F1219 situated west of the two ring ditches	Two sherds, one being a base sherd (103) from a flat-bottomed substantial vessel. It has a coarse fabric containing crushed stone inclusions <5mm across which occasionally erupt on the outer surface. It is burnished on both surfaces. The outer surface is a distinctive red brown colour and the inner surface and core is black. Organic residue survives on sherd 104. No decoration is visible on either of the two

			small sherds. The fabric averages 9mm thick extending to 24mm thick at the base.
31	278	Primary fill F1167 of cremation pit F1109 associated with Ring Ditch 1	A single body sherd from a coarse thick-walled pot burnished on its external surface but less so on its inner surface. It has a distinctive pale grey to brown outer surface and a red inner surface and buff brown core. The fabric contains crushed quartz grits as well as small rounded pebbles presumably obtained from the river bed or surrounding sands and gravels. The inclusions are <7mm across. The vessel is straight sided and upright probably bucket-shaped.
52	733, 734	Unstratified	Two small sherds apparently from the same vessel one of which (733) displays distinctive Grooved Ware decoration consisting of horizontal parallel grooves measuring 1mm thick and averaging 4mm apart with diagonal grooved hatching above to create a zone of lozenges. The vessel has a slightly curved profile and is of a distinctive red brown colour on its outer surface. It is highly burnished inside and out and has a red brown core and brown inner surface. The fabric contains fine crushed stone inclusions <3mm across and the wall of the vessel measuring 6mm thick.

Table 13 Late Neolithic-Early Bronze Age ceramics.

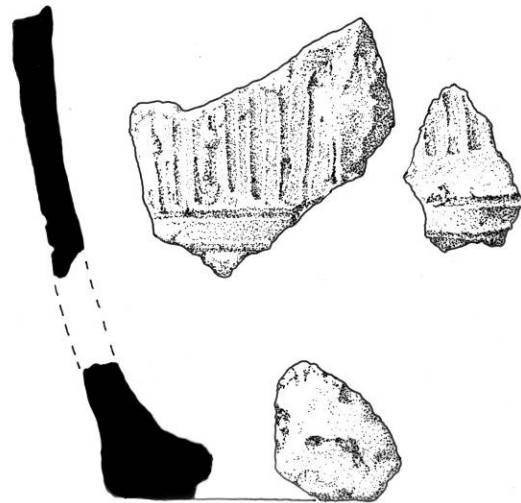


Fig. 34 Pot 1 Sherd 59 – Body sherd from pit F1113 with cremated human remains adhering to the inside. This sherd most likely dates to the Early Bronze Age due to a date on a charred wheat grain in the primary fill of the pit, yet form and decoration suggests links with the Grooved Ware ceramic tradition.



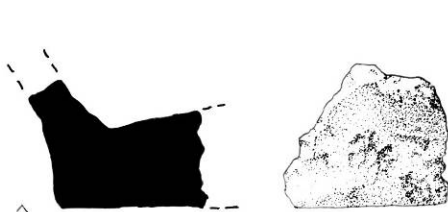
**Pot 1a**  
72, 86

It is not certain that the rim sherds and body/base sherds are definitely from the same vessel and so are not shown joined.

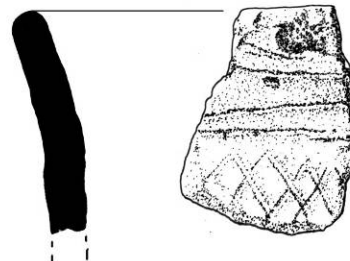


**Pot 1b**  
59, 67, 79

It is not certain that the rim sherds and body/base sherds are definitely from the same vessel and so are not shown joined.



**Pot 15**  
103

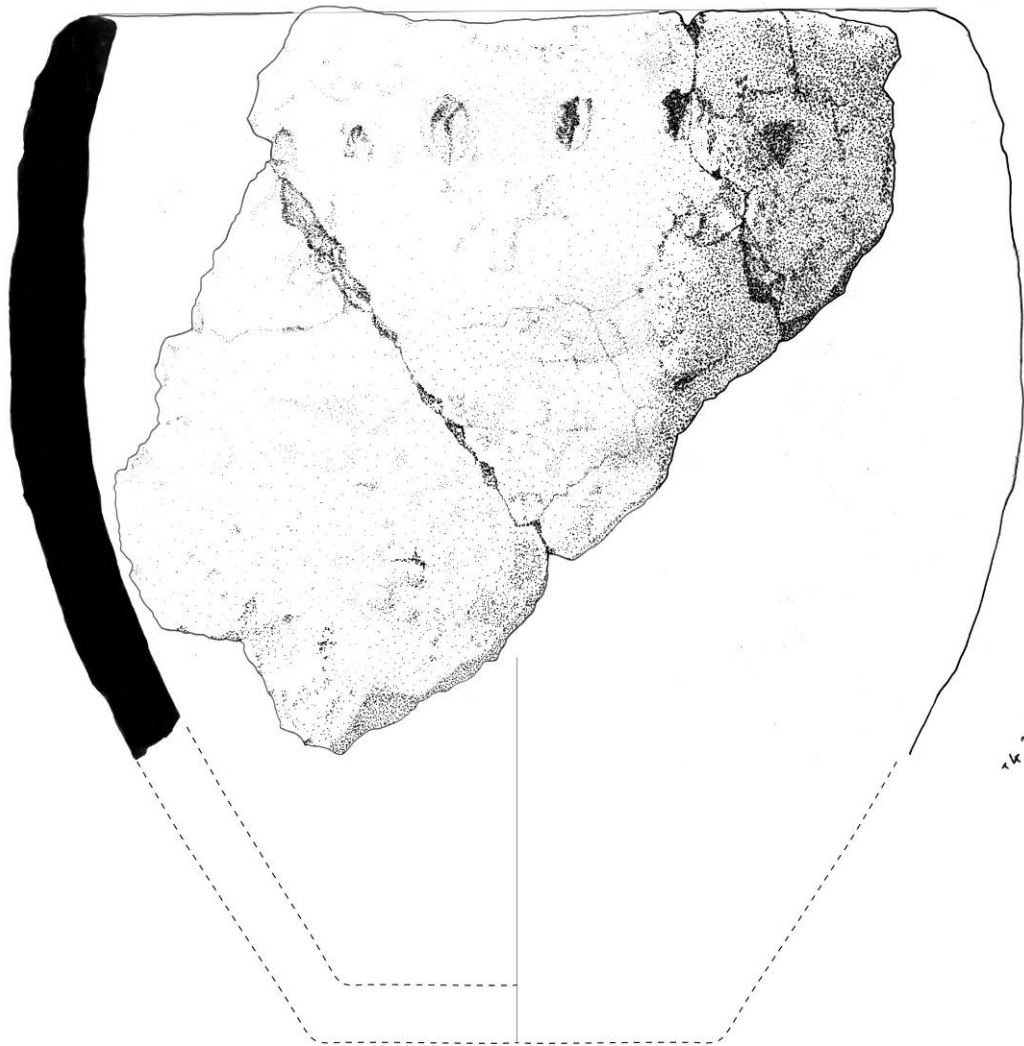


**Pot 52**  
733

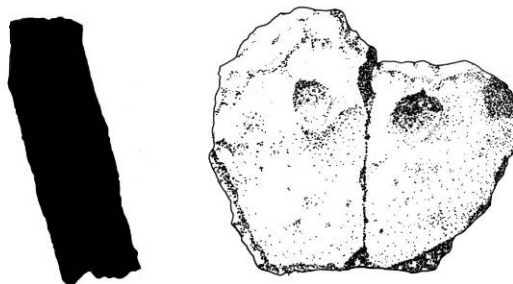


Fig. 35 Beaker period - Early Bronze Age ceramics.





**Pot 4**  
735, 737, 738



**Pot 2**  
56



Fig. 36 Beaker period – Early Bronze Age ceramics

### Indeterminate Ceramics

9.19 Area 2 produced sherds from an additional nine pots although the small size and condition of the sherds was such that they could not be ascribed to any particular pottery style. However, as most came from features associated with Neolithic activity it is thought likely that they belong to Neolithic period vessels but whether early or late remains indeterminate even when their fabric is taken into consideration. Consequently these vessels and their corresponding sherds and contextual associations are provided in the table below.

Pot No.	Small Find No.	Feature No. & Context	Description
18	189	Pit F1263	A tiny body sherd from a thin walled pot averaging 6.5mm thick. The fabric contains crushed quartz inclusions <5mm across some of which erupt on the inner and outer surface. It has dark brown surfaces and core.
19	190, 191	Pit F1263	A small rim sherd and a crumb from what appears to be a plain open bowl with burnished surfaces and a dark grey to black fabric containing crushed stone inclusions >5mm across. The vessel walls are 10mm thick. The rim is plain and is not embellished in any way.
20	192, 193, 194, 195, 244.	F1259 Upper Fill of Ring Ditch 2	Five fragment of burnt clay or daub red brown in colour and of various size and hues.
28	121, 122	F1257 Primary fill of Ring Ditch 2	Two small fragments of a pale red brown burnt clay.
29	453	Linear feature F1169a	Tiny crumb of abraded pottery with only inner surface surviving. It is burnished and the fabric contains crushed stone inclusions it is a red brown-dark grey colour.
46	248, 825.	F1282 Fill of pit F1281.	Two abraded crumbs from a vessel with dark grey inner surface and core. Some organic residue adheres to the inner surface. It appears to have had a red brown outer surface. The fabric contains crushed stone inclusions <3mm across
47	120	F1262	Single piece of burnt clay of a distinctive red colour. It is just possible this piece of clay may have formed applied decoration to a vessel.
48	101, 105	F1065 Pit associated with Structure 4	Two small body sherds from a coarse thick-walled upright vessel whose walls are greater than 15mm thick. The vessel fabric is consistent with occasional fine crushed stone grits <2mm across. It has a dark grey to brown outer surface and dark grey core.
51	246, 247, 699 (conjoin), 245.	F1069 posthole associated with Structure 3.	Two sherds and two crumbs from a distinctive pale orange brown coarse vessel with a lightly burnished inner surface. There is a possible lug pinched out on sherd 247. The core is a deeper red brown colour. The fabric contains crushed stone inclusions <5mm across. Sherds 246, 247 and 699 all conjoin.

Table 14 Indeterminate Pottery (Area 2)

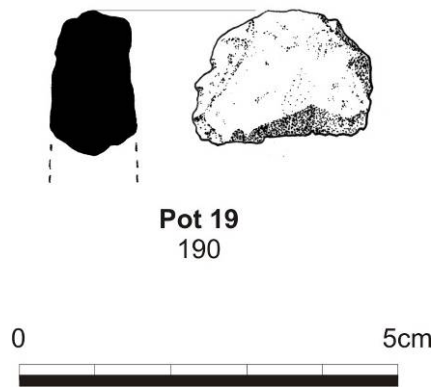


Fig. 37 Indeterminate rim sherd

#### Deverel-Rimbury Ware

- 9.20 Deverel-Rimbury Ware is the name given to a complex range of Late Bronze Age ceramics dating from c.1400-1000 BC (Gibson and Woods 1997) and that derive typologically from earlier Bronze Age urns (Barrett 1976; Barrett *et al.* 1978). Such vessels can be found on burial and settlement sites. Its distribution extends across southern England and the Midlands and has been the subject of an in-depth study in the East Midlands (Allen *et al.* 1987). Further north the ceramics of the later second millennium BC tend to have less decoration and, though of similar form, the equivalent but rather more crude style is usually referred to as Flat Rimmed Ware (Hedges 1975). It is characterised by situlate and bucket urns with finer, smaller globular urns. The decoration includes applied cordons positioned horizontally and vertically together with applied zig zags and fingernail and fingertip impressions (Gibson and Woods 1997). Thin-section study of the inclusions in Deverel-Rimbury Ware from the East Midlands has shown them to include grog as well as crushed quartz and shell. The material from Willington Marina conforms to these general characteristics with cordoned decoration and the use of grog and quartz filler.

#### *Fabric*

- 9.21 The coarse fabrics all contain crushed stone inclusions, usually being <4mm across, and occasional grog that is <6mm across and some organic inclusions are evident. These inclusions have clearly been specially prepared for the purpose and are made out of either sandstone or quartz. The fabrics are usually evenly fired throughout making the pots strong and durable. Both thick and thin-walled vessels are evident with most of the material ranging between 8mm and 13mm in thickness. Pitted surfaces are common where organics have burnt out during the firing process. The consistent colouring on most pots indicates an even firing process which is likely to have taken place in an oxidising atmosphere given the bright orange colour of many of the sherds. The surfaces are generally brown in colour and most are at least lightly burnished with some grass-wiping evident. Organic residues survive on all four rim sherds from pot 74 suggesting the contents of the vessel has bubbled up to the rim. The presence of the residue suggests a domestic function for this pot.

#### *Form*

9.22 The vessels are all hand built and are of bowl, situlate or bucket shape typically with upright flat rims or an internally beveled rim as in the case of pot 74. Pot 77 is undecorated whilst pot 75 has possible thumbnail impressions on its rim and pot 74 has occasional fingernail impressions around the neck of the vessel. Pot 76 however, is a heavy bucket-shaped vessel with applied cordon that is most probably horizontally placed around the upper part of the vessel. The body of the vessel also has two lines of cord, or possibly comb, impression. The rim of the vessel is flattened and plain although it protrudes slightly into the interior of the vessel to create a lip where it has been pinched in.

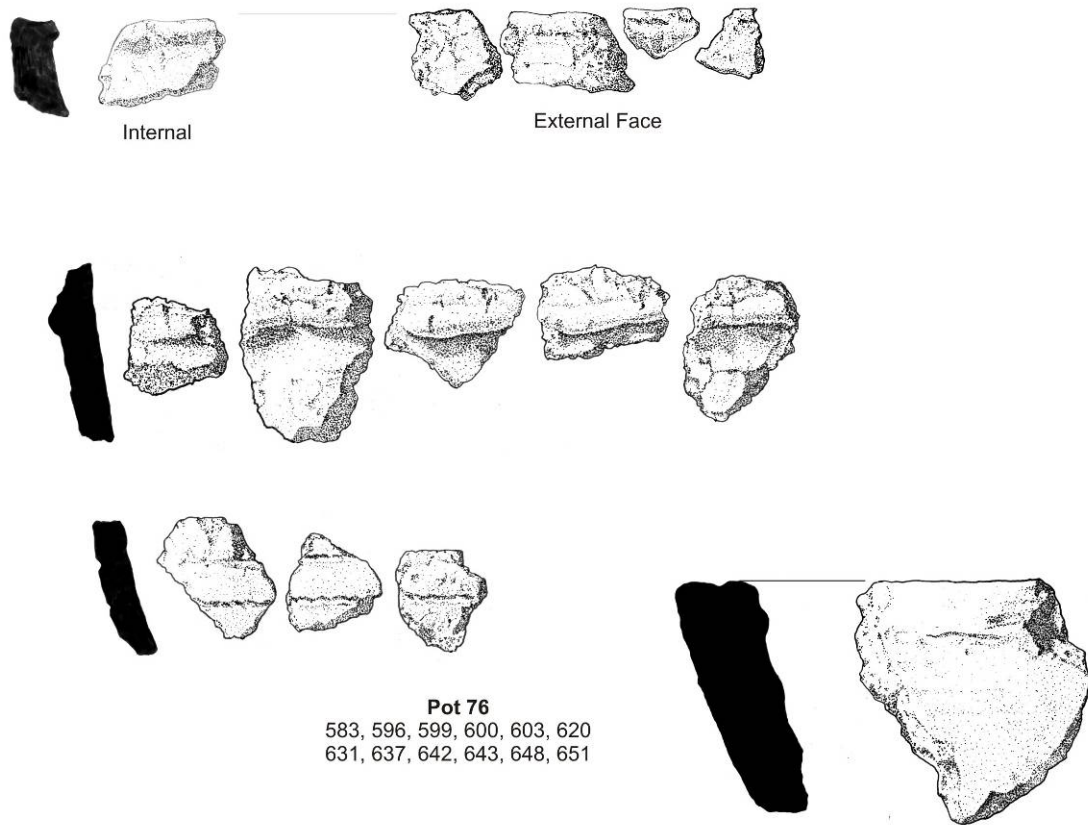
*Numbers and Distribution*

9.23 About 80 sherds plus crumbs of Deverel-Rimbury Ware pottery were found in an isolated pit F003 in Area 1 with at least four different vessels represented.

Pot No.	Small Find No.	Feature No. & Context	Description
74	559, 608, 614, 630, 632, 656.	Pit F003	Four medium sized rim sherds and a small basal sherd and another possible basal sherd from a slightly situlate pot with internal beveled rim. The rim is plain and undecorated, however, there are occasional fingernail impressions around the neck of the vessel. The fabric is burnished on its inner and outer surfaces and grass wiping is evident. The vessel has a brown to grey outer surface and a dark grey inner surface upon which organic residues survive on all four rim sherds suggesting the contents of the vessel has bubbled up to the rim. It is a fairly well made vessel and the fabric contains occasional crushed stone grits typically <2mm across. The wall thickness varies between 6 and 9mm. This vessel probably sits most comfortably in the family of Deverel-Rimbury late Bronze Age vessels. Sherd 559 appears to be a fragment of base belonging to this vessel indicating a flat bottom and suggesting a situlate form.
75	606.	Pit F003	A single rim sherd from an open bowl. It is a coarse pot with thick wall averaging 11mm thick and with a flattened but uneven plain rim, although two depressions on the top of the rim may be deliberate thumb impressions to decorate the rim. The fabric is consistent and contains fine crushed stone grits and possibly some grog. Both the inner and outer surfaces are burnished, the outer surface being a deep brown and the inner surface and core being a lighter brown. This vessel can be most readily attributed to the Deverel-Rimbury tradition.
76	Rims 600, 620, 642, 648; cordon 596, 599, 601, 603, 615, 623, 631, 637, 639, 652; cord impressed 579, 583, 643, 651. Sherds 556, 558, 560, 561, 562, 565, 568, 569, 570, 572,	Pit F003	Sixty six sherds that are probably from the same vessel suggesting a heavy bucket-shaped urn form with applied cordon that is most probably horizontally placed around the upper part of the vessel. The cordon can be seen clearly on sherds 596, 599, 603, 631, 637 and 639. The body of the vessel also has two lines of cord, or possibly comb, impression as seen on sherds 583, 643 and 651. The rim of the vessel is flattened and plain although it protrudes slightly into the interior of the vessel to create a lip where it has been pinched in. This coarse pot has been burnished on its inner and outer

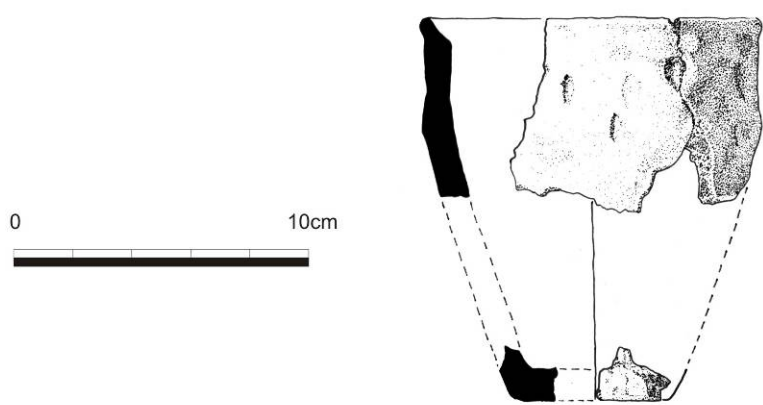
	575, 576, 580, 582, 584, 585, 586, 589, 591, 598, 604, 607, 609, 610, 612, 618, 621, 622, 624, 625, 626, 627, 628, 629, 633, 634, 635, 638, 640, 641, 646, 647, 649, 653, 654, 655, 657, 658.		surfaces. The vessel varies in thickness between 8 and 13mm though usually averages 10mm. The fabric includes crushed stone grits and what appears to be grog up to 6mm across. The vessel has a red brown outer surface although this can grade to a darker brown due to the uneven firing process. It has a red brown inner surface and a brown core. The vessel can be most closely attributed to the Deverel-Rimbury tradition.
77	553, 564, 566, 567, 571, 588, 594.	Pit F003	Seven small body sherds from a plain Coarseware vessel with red brown outer and inner surfaces and a distinctive grey core. It is burnished on both its inner and outer surfaces. The fabric contains grog and occasional charred organics and finely crushed stone as opening agents usually <4mm across. The wall of the vessel varies between 8 and 10mm thick.
Crumbs	552, 554, 555, 557, 563, 573, 574, 577, 578, 581, 587, 590, 592, 593, 595, 597, 602, 611, 613, 616, 617, 619, 636, 644, 645, 650.	Pit F003	Crumbs that could not be attributed with certainty to any of the vessels.

Table 15 Deverel-Rimbury Ware



**Pot 76**  
 583, 596, 599, 600, 603, 620  
 631, 637, 642, 643, 648, 651

**Pot 75**  
 606



**Pot 74**  
 559, 632, 635

Fig. 38 Deverel Rimbury Ware

First Millennium BC Ceramics

9.24 Two vessels could be ascribed to a 1<sup>st</sup> millennium BC date although the few surviving sherds allow little to be said about these unremarkable vessels. They are likely to date to the Iron Age on the basis of their coarse fabric and the barrel or bucket shape of pot 72, but other than this little can be said regarding any kind of stylistic attribution. They do however, compare with the Iron Age material recovered from Willington Quarry (Elsdon in Wheeler 1979). The fabric and form of pot 72 equates most closely with the fabric termed ‘A Ware’ by Elsdon whilst pot 73 does not appear to fit quite so well with the fabrics recognised by Elsdon, though the nearest analogy would Elsdon’s ‘E Ware’. Elsdon’s ‘A Ware’ is described as, “A very coarse fabric, usually soft, red to brown with dark grey core and often dark grey internally. It has large (6mm) white quartz filler which protrudes through the bumpy surface. ....rarely it has finger tip decoration, and the surface is normally very uneven” (Elsdon 1979, 162).

*Fabric*

9.25 Pot 72 has a crumbly coarse fabric and river rolled stone inclusions as well as crushed stone inclusions and possibly some grog, typically <7mm across. The centre of the core is sometimes a dark grey suggesting slightly uneven firing. Pot 73 is slightly more finely made being a thin-walled vessel that has experienced an even firing throughout. The wall of the vessel averages 5mm thick. The fabric contains fine crushed stone inclusions <3mm across.

*Form*

9.26 Both the vessels are all hand built and pot 72 is a large flat-based substantial vessel being of probable barrel or bucket shape. Pot 73 is a smaller thin-walled vessel that has a single line of twisted cord decoration visible on its inner surface but there is insufficient of the pot surviving to reconstruct its profile.

*Numbers and Distribution*

9.27 Seventeen sherds representing two late prehistoric vessels of probable 1<sup>st</sup> millennium BC date were found in pit F173, a truncated feature which was associated with the entrance into the rectilinear ditch-defined enclosure in Area 1.

Pot No.	Small Find No.	Feature No. & Context	Description
72	677, 678, 683, 684, 685, 686, 687. Crumbs: 09, 662, 664, 679, 682, 688, 690.	Pit F173 associated with the entrance into the enclosure defined by ditch F031	Seven sherds and additional crumbs belonging to a large coarse vessel with flat base. The vessel was probably barrel or bucket shaped as indicated by base sherds 685, 686 and 687. The vessel has a pale brown to red brown outer surface and a red brown inner surface and core. However, the centre of the core is sometimes a dark grey suggesting slightly uneven firing. No decoration is present. The fabric is coarse and contains river rolled stone inclusions as well as crushed stone inclusions and possibly some grog, typically <7mm across. The base of the vessel is 50mm thick and the wall of the vessel around 13mm thick. Bucket, barrel and situlate shaped vessels are common in an Iron Age context.
73	173, 659, 660, 661, 663, 665,	Pit F173 associated with	Nine tiny sherds and some crumbs from a thin walled vessel with a bright orange brown inner and outer

	675, 680, 681, 689.	the entrance into the enclosure defined by ditch F031	surface and core indicating an even firing process. The wall of the vessel averages 5mm thick. There is some decoration present in the form of a single line of twisted cord decoration on the inner surface of the vessel visible on sherds 663 and 675. The fabric contains fine crushed stone inclusions <3mm across.
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Table 16 First millennium BC ceramics



## 10 Plant Macrofossil Assessment

Helen Ranner Archaeological Services Durham University

### Summary

- 10.1 An excavation has been conducted by Archaeological Research Services Ltd, at Willington Marina, Findern Lane, Willington, Derbyshire. This report presents the results of plant macrofossil assessment of 23 flots derived from bulk samples taken at the site.
- 10.2 Small amounts of charcoal were present in all of the flots, but charred plant remains were limited, with only a few wheat grains and hazel nutshell fragments identified.
- 10.3 No further work is recommended on the plant macrofossils due to the low number of charred remains. Several contexts contain material suitable for radiocarbon dating, either in the form of a charred grain or nutshell, or charcoal from short-lived tree species. All of the charcoal fragments could be identified to species in order to establish the range of tree taxa present in the local woodland, however, there is insufficient material available to investigate woodland management practices.

### Project Background

- 10.4 An excavation has been conducted by Archaeological Research Services Ltd, at Willington Marina, Findern Lane, Willington, Derbyshire. The site has produced important evidence for Neolithic and Bronze Age activity. Features include the remains of a circular building and a possible house, two ring ditches, post and stakehole clusters, and linear features associated with some form of land allotment. This report presents the results of plant macrofossil assessment carried out on flots from bulk samples taken from the fills of a range of contexts: midden pits (contexts 003, 173, 1021, 1079, 1043, 1077, 1211, 1285, 1193 and 1159); a hearth (context 1057); a ring-ditch (contexts 1258 and 1263); cremation pits (contexts 1109 and 1113); post-holes associated with a circular structure (contexts 1068, 1180, 1182, 1184 and 1186); a midden pit containing pottery (context 1045); a fill within a tree-throw feature (context 1253); and a pit within a pit alignment (context 159).
- 10.5 The objective was to assess the plant macrofossil evidence within the samples, in order to establish their potential to provide information about the diet and agricultural practices of former inhabitants, the palaeoenvironment of the site, and the presence of material that is potentially suitable for radiocarbon dating.
- 10.6 Plant macrofossil assessment and report preparation were conducted by Dr Helen Ranner.

### Method

- 10.7 The flots were examined at  $\times 40$  magnification. Fourteen additional samples of material considered to represent deposits that have a significant relationship with the features, were also scanned. The soil from this site is of a free-draining nature, therefore only carbonised plant material will have been preserved; any uncharred plant remains would be later intrusive material and have not been included in this

assessment. Identification of the charred plant remains was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

#### Results

- 10.8 The flots were generally small in volume (<5 - 75 ml), and were dominated by charcoal with occasional clinker. Coal was present in the midden context (1077), and indeterminate fragments of calcined bone were recorded in the cremation pit, context (1109).
- 10.9 Charred plant remains were recorded in five contexts. Wheat grains were present in the midden contexts (003) and (1077), and the cremation pit context (1113). Hazel nutshells were recorded in the midden, context (1045) and the pit containing the inserted cremation, context (1113), and plant tubers were present in contexts (003) and (159). Modern plant material, consisting of roots and a few uncharred seeds, was present occasionally. The results are presented in Appendix 1, which also indicates the contexts that contain charcoal fragments suitable for radiocarbon dating.

#### Discussion

- 10.10 The flots were dominated by small quantities of charcoal with occasional clinker. Scanning of the charcoal indicated that most was derived from oak, however, charcoal from other woodland taxa was present, and suggests the proximity of a mixed woodland.
- 10.11 The charred plant macrofossil remains indicate that wheat was being used, but the absence of chaff prevents the determination of which species of wheat was present, and there cannot be any speculation regarding cereal processing activities. Hazel nuts were also being used; evidence for the exploitation of this wild resource has commonly been recorded at prehistoric sites. Plant tubers were recorded in contexts (003) and (159). These may be false oat-grass tubers which are commonly found on Neolithic and Bronze Age sites, particularly associated with cremation deposits (Robinson 1988). However, these tubers lacked the characteristic surface ribbing associated with this species, and therefore the identification is uncertain.
- 10.12 The cremation pit, context (1009), contained wheat and hazel nutshell fragments. This was the richest plant macrofossil sample and may indicate that these foods were used in association with a cremation ceremony, as votive offerings or burnt following ritual feasting.

#### Recommendations

- 10.13 No further work is recommended on the plant macrofossils due to the low number of charred remains. Several contexts contain material suitable for radiocarbon dating, either in the form of a charred grain or nutshell, or charcoal from short-lived tree species. All of the charcoal fragments could be identified to species in order to establish the range of tree taxa present in the local woodland, however, there is insufficient material available to investigate woodland management practices.

## 11 Pollen Assessment

Phillip Allen Archaeological Research Services Ltd

### Summary

- 11.1 The processed sediment contained variable levels of pollen and non-pollen palynomorphs. The range of pollen and non-pollen palynomorphs includes *Alnus glutinosa* (alder), *Quercus* (oak), Poaceae (grasses), Cyperaceae (sedges), *Plantago lanceolata* (ribwort plantain), *Taraxacum officinale* (dandelions) and *Sparganium erectum* (branched bur-weed). The preservation of the pollen was relatively poor, although some grains recorded minimal post depositional damage. The interpretation of the pollen describes an open grass dominated landscape that supported some mixed woodland stands with damp/wet rough pasture and marshy ground and some standing bodies of water located at and around the site.
- 11.2 The evidence for human activity is frequently suggested in the form of arable and pastoral farming activity. At the time of preparing this report there is no reliable chronology associated with material from the Willington Marina site. However, based on analogies of the pollen spectra, the assessed samples most likely date to the Bronze Age.

### Methods

- 11.3 Eleven samples were selected from the Willington Marina site for pollen assessment. Approximately 2g of sediment was used with the addition of one *Lycopodium* tablet (batch number 938934) was added prior to chemical preparation for the purposes of calculating pollen concentrations as described by Stockmarr (1971). The chemical preparation of the samples followed the acid digestion based on the procedure as described by Barber (1976) with an added density separation stage to concentrate the pollen, which followed the J.J. Lowe and N. Branch (unpublished) Royal Holloway and Bedford New College method. Further details of the laboratory procedure are contained in Appendix 4. All counts were undertaken using a Leica DME compound microscope at a magnification of x400. A standard assessment count of the area of one 22x22 mm cover slip or a count of 300 grains of pollen and non-pollen palynomorphs was employed. The count also included the exotic spore of *Lycopodium* to give an indication of the pollen concentration per level. Identification of pollen grains and spores was aided by the use of published identification keys, including Faegri & Iversen (1989), Moore et al. (1991), van Geel et al. (1998), Hans-Jürgen Beug (2004) and by comparison with pollen reference material (type slides) held by ARS Ltd.

### Results

- 11.4 The examination of the pollen from Willington Marina describes sediment with relatively low pollen and non-pollen palynomorphs preservation. The results of the pollen assessment are presented in Table 17.
- 11.5 Eleven levels from Findern Lane were assessed. Although the slides contained a large amount of degraded organic material this did not impede identification of pollen and non-pollen palynomorphs. However, five levels contained pollen and non-pollen palynomorphs in such low concentrations that less than ten pollen grains were identified. The range of arboreal pollen identified was limited and consisted of *Alnus glutinosa*, *Quercus*, *Betula*, *Ulmus* and *Pinus*. The most

frequently recorded arboreal type was *Alnus glutinosa*. *Corylus avellana*-type along with *Calluna vulgaris* represented the shrub communities. A suite of pollen types associated with human activity and disturbed ground was recorded and included *Plantago lanceolata*, Ranunculaceae, Chenopodiaceae, Avena-type and *Hordeum Sativum*. The number of other herbaceous types was relatively limited and included Poaceae, Caryophyllaceae, Asteraceae, Rosaceae, Galium, Lactuceae and *Taraxacum officinale*. Poaceae was the most frequently recorded pollen type throughout the assessment. Indicators of wet/damp ground conditions were represented by Cyperaceae, *Sparganium erectum* and *Myriophyllum verticillium*.

- 11.6 The non-pollen palynomorphs were represented by *Sphagnum Polypodium*, *Pteridium*, *Sordaria*, *Podospora* and the presence of Types 207 and 88.
- 11.7 Microscopic charcoal (both < and > 50 microns) was recorded in relatively high frequencies in every level assessed.

Willington	Context										
	1045	1263	1021	1043	1253	1285	1258	1077	1193	1211	1159
<b>Arboreal</b>											
<i>Alnus</i>	3	7			1		1		1		1
<i>Betula</i>					1						
<i>Pine</i>							1				
<i>Quercus</i>	4			2	1						
<i>Ulmus</i>	2										
<b>Shrubs dwarf shrubs</b>											
<i>Corylus avellana</i> -type	2	3			1			1	1		1
<i>Calluna vulgaris</i>	1				4		1				
<b>Disturbed ground human activity</b>											
<i>Avena</i> type					2						
<i>Hordeum sativum</i>	1						1				
<i>Plantago lanceolata</i>							3				
Chenopodiaceae	2	3	1		1			1			
Ranunculaceae	1				1		1				
<i>Linum</i> type		3	1				1				
<i>Artemisa</i>					1						
<b>Grass and herbs</b>											
Poaceae	10	13	7		38		27		4	1	3
Asteraceae		1	1		3		2		1		
Caryophyllaceae		1			2						1
Rosaceae					1						
<i>Galium</i>	1										
<b>Wet damp ground and aquatics</b>											
<i>M verticillium</i>							1				
Cyperaceae	4	11	1		3		1		1		
<i>Sparganium erectum</i>		1			13						
<b>Decay resistant</b>											
Lactuceae	1	16	4	1	12		14		1		
<i>Taraxacum</i>	6	15	9		17	3	13	4	3		2
<b>Total Pollen</b>											
All pollen	38	74	24	3	102	3	67	6	12	1	8
<b>Spores and NPP</b>											
<i>Polypodium</i>		1									
<i>Sphagnum</i>							1				
<i>Pteridium</i>	1			1	2						
<i>Sordaria spore</i>	2	8	6	2	7	1		3	1		2
<i>Podospora</i>					2				1		
T207	2	4	2		2	1		1			2
T88											
<b>Spike charcoal and preservation</b>											
<i>Lycopodium</i>	64	138	68	32	17	47	79	96	81	68	88
C G 50	24	8	12	5	10	32	2	8	9	7	18
C L 50	18	8	8	9	24	23	7	3	9	9	21
UN organics	2	4	8	6	1	3	7	5	8	8	5
U N S	16	15	11	3	15	5	3	3	4	4	6
<b>Preservation</b>											
WP	3	10	6		15	1	7	2			
C2	11	10	5	1	9		5	2	1		
C3	7	6	3	1	7		4	1	2		
C4	2	4		1	4		4		1		
D5	3	6		1	3		8		1		
D6	2	7	1		6		7	1	3		1
D7	0	0	1		1		3		1		4
BR 8	8	5	1		15		2				
BR 9	1	2			2		1				1
CR 10	24	27	4		38	2	16		2	1	3
Unidentified	11	10	6	2	6		3	2	2	1	1
<b>Pollen Concentration (per g)</b>	<b>11034</b>	<b>9965</b>	<b>6559</b>	<b>1742</b>	<b>111498</b>	<b>1186</b>	<b>*5760</b>	<b>1161</b>	<b>2753</b>	<b>273</b>	<b>1689</b>

Table 17 Total pollen and NPP count data for Findern Lane, Willington Derbyshire.

### Interpretation of the Pollen

11.8 The combined pollen data has not been placed into a zoned pollen diagram because the assessment level counts (the area of a 22x22mm cover slip) are too low for statistical significance and if plotted into a pollen diagram the graphed curves would be misleading.

- 11.9 The range and frequency of identified and recorded arboreal types was quite limited and consisted of low frequencies of *Alnus glutinosa* (alder) *Pinus* (pine), *Quercus* (oak), *Ulmus* (elm) and *Betula* (birch). Alder was the most frequently observed arboreal type followed by oak. Alder and oak most likely represent small areas of wetter mixed woodland or woodland stands that occur around the Willington Marina site. The dominant presence of alder throughout the assessment suggests wet or damp ground environments. As alder is native to stream sides, marshy ground, wet thickets, hedges, wet oak woods and river banks. The pine was a single grain recording that was not damaged and most likely represents deposition via pollen rain. Therefore the pine may not be related to the woodland composition of the site. The frequency of identified arboreal pollen for the Willington Marina site is comparatively limited and this may reflect an area where the presence of trees was less dense, possibly due to well-established agricultural practices of grazing and arable activity. Alternatively the sample site may have been frequently inundated with water which proved to be too damp for trees to successfully establish a more extensive presence. However increased wetness of an area can be achieved via other processes e.g. rise in water table or by direct precipitation input. Frequent wetting and drying can promote environmental conditions that increase erosion and degradation of the pollen spectra.
- 11.10 The record of the shrub and woody climber types was limited to *Corylus avellana*-type (hazel) and *Calluna vulgaris* (heather). Hazel is a versatile plant that can inhabit numerous environments and indicate a range of possible landscapes. The hazel from Willington Marina may represent the understory component of open woodland around the site. However, the presence of hazel from levels with relatively limited representations of arboreal types most likely indicates open or cleared environments within and around the Willington Marina site. Farming activity such as grazing and arable agriculture may be a likely cause of the open areas and hazel is a frequent component of managed hedge communities, although natural openings cannot be entirely dismissed for promoting the hazel. The presence of hazel could also represent scrub communities on stream terraces and overbank deposits around the area, as hazel is tolerant of damp ground conditions. The heather also indicates an open environment, although heather was only recorded in three levels and care must be used when interpreting its presence. The low frequency of the recorded shrub species may be in response to the local ground conditions as these types are common on all but very acidic, very dry or very waterlogged soils (Clapham et al. 1957; Stace 1997) and the possibility of periods of prolonged wetting and drying by fluvial activity cannot be ruled out.
- 11.11 The herbaceous pollen were the most widely represented types recorded during the assessment. Poaceae (grasses) were the dominant herb in frequency and recorded the highest counts. However Poaceae were absent in three levels (1043, 1285 and 1077). Other herbaceous pollen included Caryophyllaceae (pink or carnation family), Asteraceae (daisy and/or sunflower family), Rosaceae (rose family), *Linum*-type (flax family) and *Plantago lanceolata* (ribwort plantain). The environment indicated by the herbs is principally open and is dominated by grassland with ample evidence to suggest damp to wet marshy conditions with limited evidence for some standing water.
- 11.12 The assortment of aquatic types recorded indicates various wet environmental conditions were present at the Willington Marina site. Cyperaceae (sedges) indicate

damp open and/or wet marshy ground. Whilst the presence of *Sparganium erectum* (branched bur-reed) and *Myriophyllum verticillium* (whorled water-milfoil) indicates slow moving swampy ground, streams, and ditches or still open-pooled bodies of water.

11.13 Pollen types associated with human activity were recorded in low frequencies but were relatively diverse in variety. The pollen types such as *Plantago lanceolata* (ribwort plantain), Ranunculaceae (buttercup family) and Chenopodiaceae (goosefoot family) often indicate ground disturbance as a result of farming activities. The presence of these pollen types may suggest that the human impact was extensive across the area, possibly indicating a fairly intensive use of the landscape. *Plantago lanceolata* (ribwort plantain) can indicate pastoral activity, as this plant is trample tolerant. Further evidence of pastoral activity is indicated by the presence of Ranunculaceae (buttercup family). Arable activity was represented by the presence of Avena-type (oats) and *Hordeum sativum* (barley). The presence of oats and barley suggests that the farming preference close to the Findern Lane site was most likely a mixture of animal grazing and cereal crop production. However, the range of cereal pollen types recorded during the assessment was not extensive and Tritium-type (wheat) and *Secale cereale* (rye) were absent which may reflect the wetness of the Findern Lane site as these cereals are not wet tolerant. *Taraxacum officinale* (dandelion) was frequently recorded and dandelions are common components of pasture which could be related to human activity. However, *Taraxacum officinale* is decay resistant and the high quantities recorded during the assessment may be reflecting the longevity of preferential preservation rather than human activity. Due to the frequency and quantity of the dandelions combined with the limited range of pollen types recorded on the site it is likely that post-deposition erosion of the pollen has occurred. A number of *Linum*-type (flax) possibly *Linum catharticum* (fairy flax) grains were identified, which may be additional evidence for human activity on or close to the site. Fairy flax was often used for dyeing fabrics, although the possibility of the fairy flax being a natural component to the vegetation composition cannot be ruled out.

11.14 The non-pollen palynomorphs recorded throughout the assessment were comparatively well represented and support the interpretation produced from the pollen identifications. *Sphagnum* (peat moss) is common components of damp environments and was recorded in low frequency. *Polypodium* (fern family) could be associated with the understory component of woodland or stream banks. *Pteridium* (bracken) commonly found in woods, heaths and moors but most likely represents an open environment. Non-pollen palynomorphs Type 207 (spore associated with arboreal communities), 88 (unidentified mandibles), *Sordaria* and *Podospora* indicate a varied spore and fungi communities were present on and around the Willington Marina site. The identification of *Sordaria*, a microscopic fungus commonly found on the faeces of herbivores is further evidence for pastoral activities at the site. Additional evidence for pastoral agriculture and/or domesticated animals was provided by the presence of *Podospora* (van Geel, 1998 and 2006). The microscopic charcoal frequencies were relatively high throughout the assessment indicating fire may have had a consistent presence throughout the site. However, determining the extent of the fire or attributing a causal signal to the fire is very problematic. Although when combined with the suite of anthropogenic indicators recorded during the assessment, human induced burning cannot be entirely ruled out.

### Pollen Taphonomy

11.15 The range of pollen and non-pollen palynomorph taphonomy from the Findern Lane site was relatively diverse and suggests this is a complex site. The preservation condition of the pollen is listed as one of the key features for determining potential for full analysis of palaeobotanical remains as part of the assessment stage of MAP2 projects (English Heritage 1991). Examples of the different preservation conditions are shown in Figure 28; however this figure does not display all of the categories.

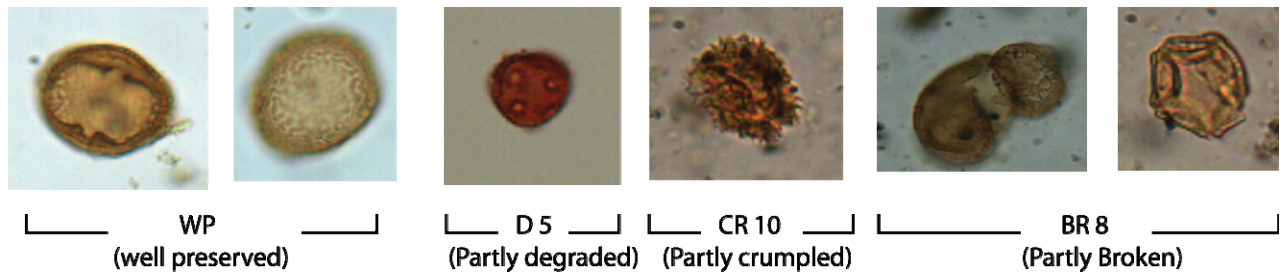


Figure 39. Examples of different pollen preservation conditions from the Willington Marina site.

11.16 The preservation condition of the pollen varied throughout the Willington Marina site as shown in Table 18. The degree of preservation is an important indicator value (Jones 2007) that most likely reflects the differential deposition and post-deposition conditions across the site. The frequent wetting, drying and ground disturbance on and around the site could promote bacterial activity that reduces the preservation potential of the pollen.

Findern	
Lane	Percentage
WP	11
C2	11
C3	8
C4	4
D5	6
D6	7
D7	3
BR 8	8
BR 9	2
CR10	30
Un-ID	11

Table 18 Preservation values of pollen from Willington Marina, Findern Lane, Willington Derbyshire. (classification based on Delcourt & Delcourt 1980)

11.17 Well preserved (WP), Corroded  $< \frac{1}{4}$  (C2) and unidentified (Un-ID) grains were recorded equally in comparatively high frequencies (11%). However, Partly crumpled (CR10) was the most frequently recorded preservation condition (30%) and this denotes that many grains had observable deterioration and indicates variable preservation throughout the site. The degradation may have been due to



compaction of the pollen within the sediment, particularly resulting from the progressive extrusion of water (Delcourt & Delcourt 1980). Furthermore corrosion (category C) of the pollen was frequently recorded and indicates biochemical oxidation related to fungal/bacterial activity and/or chemical oxidation within aerial and sub-aerial environments. It is worth considering that when the preservation condition is poor some pollen types may be completely absent from the preserved record and this could produce a biased vegetation reconstruction. It is very probable that the pollen spectra from the Findern Lane site are incomplete and an undeterminable number of pollen and non-pollen palynomorph types have not been preserved and are absent.

- 11.18 The repeated wetting and drying of the site area can promote bacterial activity that reduces the preservation potential of the pollen. Much of the pollen examined during the assessment did display damage commonly associated with bacterial and mechanical deterioration. This damage could relate to the process of deposition which can result in mechanical damage e.g. fluvial transport to the site and post-deposition inundation of water at the site.

#### Conclusions

- 11.19 The pollen evidence from the Findern Lane site indicates that open herbaceous grassland environments were dominant, although some mixed woodland stands were present but not extensive. There is ample evidence from the arboreal and herbaceous pollen that indicate damp and/or wet ground and quite possibly waterlogged and/or pooled or standing bodies of water occurred. Due to the limited range of identified pollen types it is difficult to confidently suggest a chronology. The majority of samples analysed were from contexts containing 4<sup>th</sup> millennium BC pottery, yet the majority of pollen came from the few samples from later deposits. Due to the lack of trees the pollen record appears to post-date the major periods of woodland and relate to the Bronze Age activity on site.
- 11.20 The open landscape was farmed via grazing and cereal production which appears to be established throughout the site. The preservation condition of the pollen is varied with many grains indicating varying degrees of post-deposition erosion. However, the pollen and non-pollen palynomorph concentrations from contexts 1263, 1253, 1258 and 1045 range from quite abundant to very abundant with relatively good preservation.

## 12 Timber Report

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### Examination

- 12.1 Around 60 fragments of wood were received, all deriving from context 1254, a middle fill of the suspected tree-throw pit F1209. The intention had been to examine these for evidence of working or conversion, and to sample a selection for species identification.
- 12.2 Unfortunately, the wood was completely desiccated and it was therefore impossible to observe any toolmarks or other evidence of conversion on their surfaces.
- 12.3 Most of the fragments were <200mm long. No evidence of working was found from an examination of the edges, and many pieces appear to be abraded as well as contorted by desiccation. No bark survives. Many pieces are irregularly shaped and elongated, suggesting the weathering of natural fragments - perhaps the residue of a fallen (or possibly felled) tree. The shape of the fragments does not suggest artefacts, or offcuts of these.

### Species Identification

- 12.4 Seven of the fragments were sampled for species identification. This was not entirely random, but concentrated on the less contorted pieces, which would give a better chance of identification. Sub-samples were removed using a Stanley knife, and the wood was partially re-hydrated, using a mixture of water, industrial methylated spirits and detergent (as wetting agents). The fragments were soaked for three days.
- 12.5 Following re-hydration, it was possible to cut some sections for species identification, though not usually all three of the sections required for a positive identification.
- 12.6 Six of the seven samples were identified as *Fagus* (Beech) with varying degrees of confidence. It was not clear whether the remaining sample was *Fagus* or *Quercus* (Oak), though the balance of probability suggests that it too is *Fagus*. The same species identification for all seven of the samples adds further supports to the notion that these are the natural, unworked remains of a tree.

### 13 Osteological Analysis of the Human Remains

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#### Introduction

- 13.1 The osteological remains found at Findern Lane, Willington came from nine separate contexts and predominantly consisted of cremated human remains. Seven fragments were identified as possibly animal, which represents a minute amount of the complete assemblage of bone from this site. Two fragments of human bone were unburnt but came from contexts which also contained burnt bone. It is therefore clear that the majority of the bone at Willington was human and had undergone the mortuary act of cremation. In order to analyse the assemblage, the guidelines produced by Brickley and McKinley (2004) were followed and Schwartz's 'Skeleton Keys' (1995) was drawn on to confirm skeletal element identification. The type of deposits, the level of disturbance to the site, the amount of bone fragmentation due to this disturbance, the demographic data, the pathological data, the colour of the cremated bone, the pyre goods and the pyre debris were all analysed for the Willington assemblage from all nine contexts.

#### Type of Deposits

- 13.2 A 'cremation' is often mistakenly recorded as the burnt remains recovered from a deposit. However, a cremation is more precisely the act of burning a body on a pyre and is thus the mortuary rite itself rather than the burnt remains (McKinley 1997, 1998, 2000a, 2000b, 2004). A 'cremation burial' is the cremated bone, pyre goods and pyre debris which have been deposited as a burial, or the cremated remains which are still *in-situ* on the pyre (McKinley 1997, 1998, 2000a, 2000b, 2004).
- 13.3 The type of deposit in which the cremated remains were recovered is demonstrative of the secondary part of the mortuary rite post-cremation of the body. There are various ways to deposit the burnt remains including leaving it *in-situ* on the pyre, burying it in an urn or similar container, depositing a small amount (<25g) of the remains as a memorial or centograph, or placing it in a cremation-related deposit (McKinley 2004: 10).
- 13.4 The act of cremation was extremely rare in the Early Neolithic throughout Britain, with a possible example known from Yeavinger, Northumberland (Hope-Taylor 1977; Ferrell 1990), and a handful sites in East Yorkshire (Manby 1988). The rite became more common in the Late Neolithic to Early Bronze Age and cemeteries with large numbers of cremations, often in urns, become known across the British Isles. At the nearby Willington Quarry site, excavations in 1970-2 yielded a volume of prehistoric pottery in relation to funerary monuments (Wheeler 1979). At the Willington Marina site, an urned burial, context (1165), was recovered which contained a large amount of cremated material (Table 19). Similarly, although to a much lesser extent, context (1109) revealed a smaller amount of cremated remains. For the rest of the contexts which were the fills of pits and a post hole (Table 20), <25g worth of bone was recovered, suggesting that these deposits were either centographs or simply redeposited cremated remains from the pyre.

Context	Weight of bone in grams per sieve aperture sizes				Max. fragment size (length x width x depth in mm)
	<1mm	1-5mm	>5mm	Total weight	
1031	0.00	0.00	6.83	6.83	22 x 19 x 2
1033	<0.01	0.00	0.00	<0.01	1 x 2 x 1
1045	<0.01	0.00	0.00	<0.01	1 x 1 x 1
1079	0.00	1.62	0.36	1.98	10 x 8 x 4
1107	0.00	0.59	2.75	3.34	16 x 10 x 4
1109	0.00	3.24	21.97	25.21	36 x 9 x 2
1165	11.08	105.68	461.94	552.02	32 x 25 x 2
1211	0.00	0.00	1.09	1.09	22 x 12 x 6
1254	0.00	0.81	0.00	0.81	16 x 15 x 50

Table 19 The weight in grams of all the bone (burnt and unburnt) recovered from Findern Road, Willington.

Context	Description of Context
1031	Fill of a disturbed pit
1033	Fill of a pit
1045	Fill of a pit
1079	Fill of a pit
1107	Fill of a post hole
1109	Fill of a cremation ?pit
1165	Fill of a cremation urn
1211	Fill of a pit
1254	Fill of a disturbed pit

Table 20 Context numbers of their descriptions

#### Disturbance

- 13.5 Any disturbance of the bone, whether pre- or post-deposition, affects the amount of bone which has been lost and increases bone fragmentation. The site at Willington was heavily truncated by modern ploughing and therefore the bone recovered was badly disturbed and possibly more fragmentary than from a site without post-depositional disturbance. Two contexts (1253) and (1254) were further disturbed through tree root action which dissected the cut of the pit containing the bone. Context (1031) was also disturbed by animal burrowing. This increased disturbance suggests that the recovered bone is probably more fragmentary than would normally be expected and some bone may have been lost due to this action.

#### Bone Fragmentation

- 13.6 The bone recovered from Willington was sieved through three sieves all with different sized apertures (<1mm, 1 to 5mm, >5mm). The total weight of the cremated bone for each of the contexts was also gathered, as was the size of the largest fragment of bone. There was very little recovered from the sieve with apertures measuring <1mm and most of the bone fragments were larger than 5mm in size, which is still relatively small. These results are mainly due to the difficulty in retrieving very small fragments of bone. However it also suggests that the bone

was fairly fragmentary prior to excavation, possibly as a consequence of the plough action on the site.

#### Demographic Data

- 13.7 It is not possible to identify all the fragments of bone from a cremation burial. Analysis of cremated bone can occasionally allow the bone to be placed in to one of four skeletal categories; the skull, the axial skeleton, the upper limb and the lower limb. Generally, in osteological analysis of cremated remains, the fragment of bone most often identified is part of the skull due to its easily discernible features. Upon examination of the Willington assemblage, all bone which could be identified was placed into one of the four categories (Table 21). This table also gives the percentage of the total weight of each of these four categories compared to the total weight of the identifiable bone per context.

Context	Weight of Identifiable Burnt Bone Fragments in grams								Total Weight of Identifiable Bone (grams)
	Skull	% of Total Weight	Axial Skeleton	% of Total Weight	Upper Limb	% of Total Weight	Lower Limb	% of Total Weight	
1031	<0.01	0	0.00	0	2.00	33	4.04	67	6.04
1033	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1045	0.00	0	0.00	0	0.00	0	0.00	0	0.00
1079	0.42	63	0.00	0	0.00	0	0.25	37	0.67
1107	<0.01	0	0.80	29	0.66	24	1.29	47	2.75
1109	4.14	23	0.00	0	7.33	39	7.10	38	18.57
1165	51.51	32	6.61	4	46.36	29	53.22	35	157.70
1211	0.00	0	0.00	0	0.00	0	1.09	100	1.09
1254	0.81	100	0.00	0	0.00	0	0.00	0	0.81

Table 21 The weight in grams of the identifiable fragments of burnt bone.

- 13.8 Table 21 shows that the bone from contexts (1033) and (1045) could not be identified as it was too small. However, at least some bone from all of the other contexts would be placed in one of the four categories.
- 13.9 Table 22 shows that fifteen fragments of bone could be identified precisely. There were no duplications of the same fully identified bone from any single context and therefore for each separate context, the minimum number of individuals was only one. This means that from each context at least one individual may have been buried there. However, this same individual may have been buried in many different contexts. Neither were there any bones which could be used to identify sexual dimorphism and therefore it is unknown whether the individual/s were male or female. The only artefact which could be used to give an age estimation was a second pre-molar identified from context (1165). It appeared to be marginally worn suggesting it came from a middle to older aged adult. A middle phalange from the hand was identified from this context and as it was fully formed and fused, it was therefore adult.
- 13.10 No typical features which can assist with ageing of a skeleton were observed and therefore it is not clear if the cremated individuals were adult/s or juvenile/s.

However at best guess it can be presumed from the length, fusion and thickness of the bone, that the assemblage was adult.

Context	Specifically identifiable burnt bone fragments	Side	Part of bone	Whole/part of section of bone
1107	?Scapula	x	x	Part
1109	Temporal bone of skull	Right	Internal acoustic meatus	Whole
1165	Middle phalange of hand	Left	All	Whole
	Middle phalange of hand	x	Proximal third	Part
	Capitate	x	Proximal quarter	Part
	Hamate	x	Proximal quarter	Part
	Thoracic vertebra	x	Lamina	Whole
	Thoracic vertebra (x2)	x	Facet	Whole
	Vertebra (x3)	x	Lamina	Whole
	Radius	Left	Radial tuberosity	Part
	First Molar or Pre-Molar 2	x	Root and half of crown	Part
1254	?Parietal bone of the skull	x	Cranial suture visible	Part

Table 22 Identifiable fragments of burnt bone.

#### Pathological Data

13.11 The fragmentary and incomplete nature of a cremated assemblage renders the normal recording procedures for pathological data inadequate or misleading, and yet, it is still important to describe any lesions observed upon the bone. Upon analysis of the Willington assemblage, no pathology was observed on the bones. It cannot be concluded that the individual/s deposited within the contexts were healthy or pathology free as the lack of observable lesions is non-conclusive evidence of this statement.

#### Colour

13.12 The colour of the cremated bone reflects the ‘degree of oxidisation of the organic component of the bone’ (McKinley 2004, 11) which in turn is related to the ‘temperature acting on the bone’ (McKinley 2004, 11). Therefore, the colour of the bone can be used to determine the approximate temperature of the pyre and its efficiency. Most of the bone from Willington was white in colour which indicates that it has been completely oxidised in a pyre over c.600°C. Some cremated bone from contexts (1031), (1107), (1165) and (1254) was slightly blue/grey in colour meaning the bone was not completely oxidised and had been in a section of the pyre which was burning at less than c.600°C. It may have also come from a different pyre which was less efficient and burned at a lower temperature.

#### Dehydration

13.13 Dehydration of the bone is characterised by abnormal warping of the cremation material. This was not observed during analysis of the Willington assemblage.

#### Pyre Goods

13.14 No pyre goods were found with the cremated remains from any of the contexts. However the inner surface of the skull fragment from context (1254) was partially red, whilst the outer surface was white. This may be due to iron leeching from the

surrounding soil, or it may have been positioned next to a piece of iron whilst on the pyre.

#### Pyre Debris

- 13.15 Charred burnt material were recovered from contexts (1079), (1109) and (1169) and four fragments of possible burnt clay pellets were also found from context (1079). This material almost certainly came from the pyre itself and indicates that wood was used to fuel the pyres and clay was sometimes burnt upon them.

#### Conclusion

- 13.16 In conclusion, the site at Willington has evidence for human cremated bone which has been deposited in an urn, in seven pits and one post hole. One context was observed to be a deliberate burial in a cremation urn. A second context with a relatively large amount of bone came from a cremation pit which also contained a 'cremation vessel', suggesting it may have been another cremation burial. The rest of the bone, which weighed <25g per context, was either a centograph or was simply deposited elsewhere than the pyre for an unknown purpose.
- 13.17 No fragments of bone which could be identified per context were in duplication and therefore the minimum number of individuals which were deposited in each separate context was one. No sexually dimorphic features were observed on the cremated remains and therefore the sex of the individual/s cannot be determined. Neither were there any pathological lesions observed, giving non-conclusive evidence of the health of the assemblage.
- 13.18 Only one artefact could be used to make an age estimation. A tooth from (1165), the fill of a cremation urn, was probably from a middle-aged adult. The rest of the contexts also appeared to contain adult bone.
- 13.19 The burial pyre/s were generally efficient and burned at c. >600°C. However certain areas must have burned at between c.300°C and c.600°C as some of the bone was not completely oxidised. No bone was charred and therefore no pyre burned at < c.300°C. The pyres were built of wood and clay may also have been burnt upon them. No pyre goods were recovered although one fragment of bone may have been positioned next to an iron artefact upon the pyre.

## 14 C14 Dating and Modelling

P D Marshall, C Prior and C Waddington

### Introduction

- 14.1 Eighteen single entity samples (Ashmore 1999) were submitted to the Rafter Radiocarbon Laboratory, New Zealand in 2008. The 17 charcoal and carbonised plant remains samples were processed using the acid/alkali/acid protocol of Mook and Waterbolk (1985) and the single sample of cremated bone according to Lanting *et al* (2001). All the samples were measured by Accelerator Mass Spectrometry (AMS) as described by Zondervan and Sparks (1997).
- 14.2 The laboratory maintains a continual programme of quality assurance procedures, in addition to participation in international inter-comparisons (Scott 2003) which indicate no laboratory offsets and demonstrate the validity of the precision quoted.

### Objectives and sampling strategy

- 14.3 The scientific dating programme was designed to achieve the following objectives:
- Define the date of the funerary activity (e.g. cremation(s) and ring ditch.
  - Define the sequence of prehistoric activity.
  - Provide a precise date for different ceramic traditions represented on the site.
- 14.4 The first stage in sample selection was to identify short-lived material, which was unlikely to be residual in the context from which it was recovered. The taphonomic relationship between a sample and its context is the most hazardous link in this process, since the mechanisms by which a sample came to be in its context are a matter of interpretative decision rather than certain knowledge. Where possible material was selected where there was evidence that a sample had been put fresh into its context. The main category of materials which met these taphonomic criteria was charred wood that is functionally related to its context (e.g. the hearth pit) and can reasonably be assumed to represent fuel. Other samples with a less certain taphonomic origin included material from the fill of post-holes; interpreted as relating to the use of structures rather than its construction, as suggested by experimental archaeology (Reynolds 1995). Duplicate samples from these contexts were submitted so as to reduce the likelihood of using dates from residual or intrusive material as having two dates provides a check.

### Results

- 14.5 The radiocarbon results are given in Table 23, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977).
- 14.6 The calibrations of the results, relating the radiocarbon measurements directly to calendar dates, are given in Table 23 and in Figure 40. All have been calculated using the calibration curve of Reimer *et al.* (2004) and the computer program OxCal v4.0.5 (Bronk Ramsey 1995; 1998, 2001, in press). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges in plain type in Table 23 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).



*Midden Pit (Cluster 1) - F1285*

- 14.7 The two measurements (4646±35 BP; NZA-30287 and 4768±35 BP; NZA-30288) on samples from the midden pit (cluster 1) [1285] are statistically consistent ( $T^*=0.2$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978) and could therefore be of the same actual age. The results provide a total possible date range of 3650-3370 cal. BC at 95% confidence.

*Hearth Pit (Cluster 2) – F1057*

- 14.8 The two measurements (3522±30 BP; NZA-30318 and 3535±25 BP; NZA-30336) on samples from the midden pit (cluster 2) [1057] are statistically consistent ( $T^*=0.1$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978) and could therefore be of the same actual age. The results provide a total possible date range of 1950-1740 cal. BC at 95% confidence.

*Structures 1*

- 14.9 The two measurements (3400±30 BP; NZA-30280 and 3273±30 BP; NZA-30284) on samples from [1283], a posthole forming part of structure 1, are statistically consistent ( $T^*=0.1$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978) and could therefore be of the same actual age. The results provide a total possible date range of 1760-1450 cal. BC at 95% confidence.

*Structure 2*

- 14.10 The two measurements (3307±30 BP; NZA-30300 and 1012±30 BP; NZA-30279) on samples from [1231], a posthole forming part of structure 2, are not statistically consistent ( $T^*=2829.8$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978). The posthole clearly contains material of vastly different ages. One of the samples returned a date within the range of 1690-1500 cal. BC at 95% confidence, which would place it in the same period as the other post-built structures on site.

*Structure 3*

- 14.11 The two measurements (3284±30 BP; NZA-30289 and 3316±30 BP; NZA-30302) on samples from [1141], a posthole forming part of structure 3, are statistically consistent ( $T^*=0.6$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978) and could therefore be of the same actual age. The results provide a total possible date range of 1690-1490 cal. BC at 95% confidence.

*Structure 4*

- 14.12 The two measurements (3343±25 BP; NZA-30344 and 3233±25 BP; NZA-30349) on samples from [1182], a posthole forming part of structure 4, are not statistically consistent ( $T^*=9.7$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978). The posthole therefore contains material of different ages. The results provide a total possible date range of 1730-1430 cal. BC at 95% confidence.

*Bronze Age Midden Pit (F003)*

- 14.13 The two measurements (3323±25 BP; NZA-30342 and 3378±95 BP; NZA-30533) on samples from [F003], a midden pit, are statistically consistent ( $T^*=0.3$ ;  $v=1$ ;  $T^*(5\%)=3.8$ ; Ward and Wilson 1978) and could therefore be of the same actual age. The results provide a total possible date range for the feature of 1930-1440 cal. BC at 95% confidence.

*Ring Ditch 2*

14.14 The two measurements (3059±25 BP; NZA-30346 and 3061±25 BP; NZA-30340) on samples from [1258], the middle fill, are statistically consistent ( $T^2=0.0$ ;  $v=1$ ;  $T^2(5\%)=3.8$ ; Ward and Wilson 1978). The samples were taken from the middle fill of the Ring Ditch and therefore date the later stages of usage of the monument or possibly provide dates for after the monument has fallen out of use. The results provide a total possible date range of 1420-1260 cal. BC at 95% confidence.

*Cremation Pit F1113*

14.15 The two measurements (3465±25 BP; NZA-30351 and 3235±30 BP; NZA-30238) on samples from [1113] are not statistically consistent ( $T^2=34.5$ ;  $v=1$ ;  $T^2(5\%)=3.8$ ; Ward and Wilson 1978). The earliest sample was a carbonised wheat grain from the primary fill of the pit and has a possible date range of 1890-1690 cal. BC at 95% confidence. The second sample dated was a fragment of the cremated bone which was stratigraphically later in the sequence than the primary fill. This is supported by the results which provided a date range of 1610-1430 cal. BC at 95% confidence.

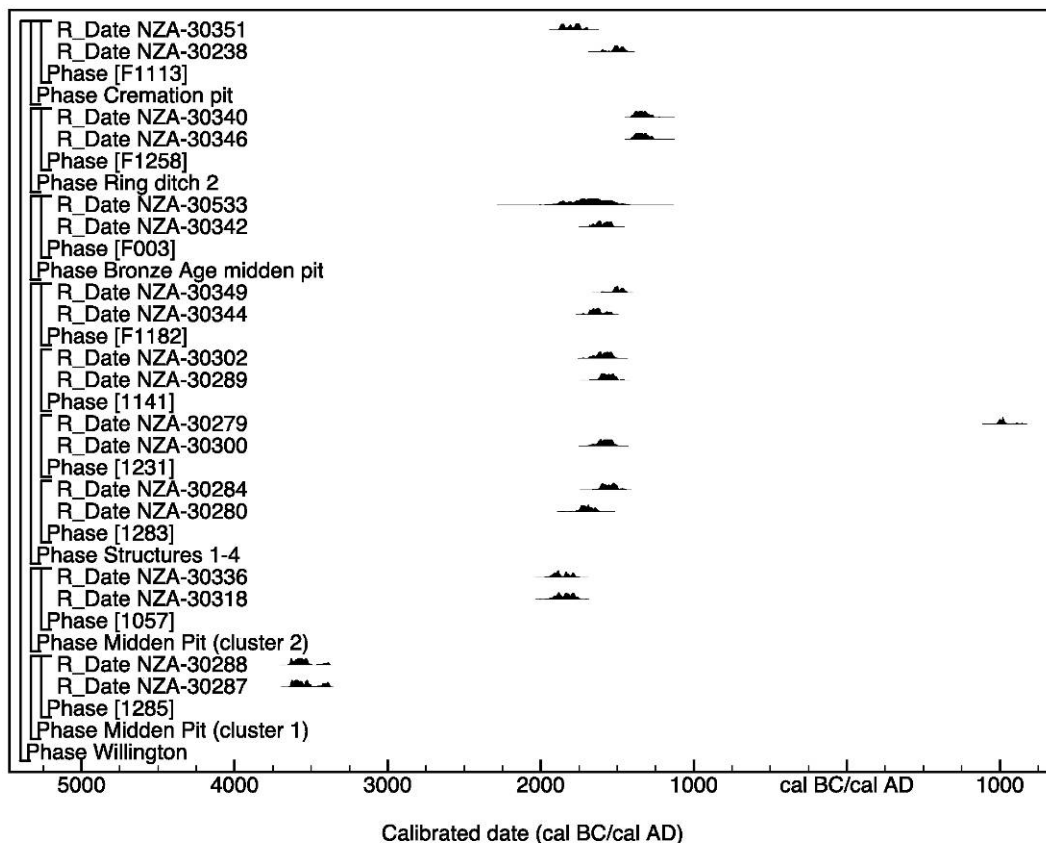


Figure 40. Calibrated date ranges of samples from Willington. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993).

Laboratory Code	Context	Material	Radiocarbon Age BP	$\delta^{13}\text{C}$ (‰)	Calibrated Date Range (95% confidence)
NZA-30280	F1283, posthole forming part of structure 1	Charcoal, <i>Corylus</i> sp.	3400±30	-25.3	1760-1620 cal BC
NZA-30284	F1283, posthole forming part of structure 1	Charcoal, <i>Corylus</i> sp.	3273±30	-27.4	1630-1450 cal BC
NZA-30300	F1231, posthole forming part of structure 2	Charcoal, <i>Corylus/Alnus</i> sp	3307±30	-26.6	1690-1500 cal BC
NZA-30279	F1231, posthole forming part of structure 2	Charcoal, Maloideae sp	1012±30	-28.2	cal AD 980-1120
NZA-30287	F1285, midden pit cluster 1	Charcoal, <i>Corylus</i> sp.	4746±35	-23.8	3640-3370 cal BC
NZA-30288	F1285, midden pit cluster 1	Charcoal, Maloideae sp	4768±35	-25.6	3650-3380 cal BC
NZA-30289	F1141, posthole forming part of structure 3	Charcoal, <i>Corylus</i> sp. roundwood	3284±30	-25.1	1640-1490 cal BC
NZA-30302	F1141, posthole forming part of structure 3	Carbonised naked barley grain	3316±30	-25.3	1690-1510 cal BC
NZA-30318	F1057, midden pit cluster 2	Charcoal, <i>Alnus</i> sp.	3522±30	-26.3	1940-1740 cal BC
NZA-30336	F1057, midden pit cluster 2	Charcoal, <i>Prunus</i> sp.	3535±25	-23.6	1950-1770 cal BC
NZA-30344	F1182, posthole forming part of structure 4	Charcoal, <i>Alnus</i> sp.	3343±25	-26.6	1730-1530 cal BC
NZA-30349	F1182, posthole forming part of structure 4	Charcoal, <i>Alnus</i> sp.	3233±25	-26.7	1610-1430 cal BC
NZA-30346	F1259, middle fill of Ring Ditch 2	Charcoal, <i>Corylus</i> sp.	3059±25	-25.5	1410-1260 cal BC
NZA-30340	F1259, middle fill of Ring Ditch 2	Charcoal, <i>Corylus/Alnus</i> sp	3061±25	-27.8	1420-1260 cal BC
NZA-30351	F1113, primary fill of cremation pit	Carbonised wheat grain	3465±25	-25.7	1890-1690 cal BC
NZA-30238	F1113, cremated remains	Cremated bone	3235±30	-23.8	1610-1430 cal BC
NZA-30342	F003, midden pit	Carbonised cereal grain	3323±25	-22.1	1690-1520 cal BC
NZA-30533	F003, midden pit	Carbonised cereal grain	3378±95	-23.2	1930-1440 cal BC

Table 23 Radiocarbon dates

## 15 Discussion

15.1 The Willington Marina site has yielded a palimpsest of prehistoric activity ranging from the Mesolithic, and perhaps even the Late Upper Palaeolithic, through to the first millennium BC. When viewed alongside the wealth of other remains from nearby sites (e.g. Hill Farm, Willington – Hughes and Jones 1995, 2001; Willington Quarry – Wheeler 1979, Beamish 2001; Catholme – Chapman 2009), and the potential for a regional synthesis now exists. The Trent Valley has clearly formed a focus of settlement from the very earliest post-glacial occupation through to the present and the remains of different types of activities through successive periods of occupation remain etched into the surface of the sand and gravel river terraces and alluvial valley floor. This excavation once again demonstrates the archaeological sensitivity and historical significance of the Trent Valley and its ability to provide important insights into the past. One of the key outcomes of this work is the discovery of examples of post-built structures of an Early Bronze Age date. The topsoil strip has revealed structures that were not visible as cropmarks and furthermore would have been unlikely to have been identified using conventional evaluation techniques. Prospecting for small pits and pit-defined features is notoriously difficult and the employment of strip, map, and sample conditions provides the most effective means currently at our disposal for discovering these types of remains (for example see Hey and Lacey 2001; Waddington 2008a). It is only when large areas are exposed that these often ephemeral, but important, features can be recognised.

15.2 On the Willington Marina site there were archaeological remains relating to a number of prehistoric periods. These are:

- Possible Late Upper Palaeolithic (LUP)
- Mesolithic
- Early Neolithic
- Late Neolithic
- Early Bronze Age
- Later Prehistory

### Late Upper Palaeolithic

15.3 The possible LUP lithics from the site derive from the sands and gravels and are therefore from a secondary context. Having been transported down the Trent through glacial action, the finds represent LUP activity further up the river catchment.

### Mesolithic

15.4 The Mesolithic activity on the site is represented predominantly by the lithic assemblage which was largely recovered as residual material from the fills of later features. The lithics show a preponderance for locally sourced raw materials and the recycling of earlier tools on largely stubby pieces, indicating self-reliance on the part of the Mesolithic groups living in this fertile river valley. The sole feature which may have a Mesolithic origin is the tree-throw pit F1063 in Area Two, which contained Mesolithic lithics in secondary fills. The occurrence of tree-throw pits as Mesolithic features is attested from other sites such as at Mount

Sandel in Northern Ireland (Woodman 1985, 125-6), where the excavator also discussed the wider occurrence of tree-throws as Mesolithic features.

#### The Neolithic

- 15.5 The key features relating to the Early Neolithic period are the two clusters of midden pits (clusters 1 and 2) containing Early Neolithic Carinated Bowl and plain pottery. A parallel can be drawn between the Willington site and the adjacent area of Hill Farm (Hughes and Jones 2001) as well as the nearby Willington Quarry site (Wheeler 1979; Beamish 2001) as well as those from further afield such as Cheviot Quarry (Johnson and Waddington in press) and Lanton Quarry (Stafford 2007) which are all located on sand and gravel river terraces. All these sites featured groups of midden pits containing distinctive Early Neolithic Carinated Bowl pottery, which seem to indicate a preference for free-draining, fertile riverine locations for settlement during this period, as has been observed for other areas of Britain at this time, such as for East Anglia (Garrow 2007) and central southern England (e.g. Gardiner 1984; Ford 1987; Thomas 1999).
- 15.6 The mid-late Neolithic activity on the site is most clearly attested by the single pit feature F1193, which contained the fragmentary remains of at least five Impressed Ware vessels. While this feature is chronologically isolated on this site, Impressed Ware formed a large part of the assemblage from two phases of work at the nearby Willington Quarry (Wheeler 1979; Beamish 2001) indicating a focus of settlement during the mid-late Neolithic in this area of the mid-Trent Valley. Impressed Ware typically dates to the late 4<sup>th</sup> and first quarter of the 3<sup>rd</sup> millennium BC (Gibson 2002a).
- 15.7 The finds assemblages attest the existence of long range exchange networks during the Neolithic, as illustrated on the Willington site by the use of high quality nodular flint in the lithic assemblage, representing contact with eastern Yorkshire or possibly East Anglia. Elsewhere in the middle Trent Valley Group VI stone axeheads have been recorded (Willington Quarry, Wheeler 1979; Beamish 2009) indicating exchange networks with the North West given the source of Group VI axes in the Langdales in the Lake District. Of perhaps more importance, however, is the possibility that the Trent Valley communities participated in the exchange of ideas. Geographically the Trent Valley, and especially the mid Trent Valley around Willington, is at the centre of the country and is easily accessible from all directions, due to the Valley itself, and also due to its position at the south end of the Pennine Uplands. The Trent Valley also sits on the topographic mid-point of Britain, looking north and west towards the uplands and south and east towards the rolling lowlands. The Neolithic archaeology of the Trent Valley shows connections with both the north and the south, the latter by the presence of cursus monuments (i.e. Potlock/Findern - Wheeler 1970, Guilbert 1996; Aston - Gibson and Loveday 1989, Elliott and Garton 1995; Catholme – Chapman 2009) and the recently discovered ‘woodhenge’ and ‘sunburst’ monuments at Catholme (Chapman 2009) together with occasional examples of Ebbsfleet Ware and other southern ceramic traditions, whilst the more commonly occurring ceramic forms recall the northern Grimston Ware tradition, and the northern tributary valleys of the Trent are home to panels of cup and ring marked rocks which is primarily a northern tradition.

The Early Bronze Age

- 15.8 The Later Neolithic/Early Bronze Age activity on the Willington site is represented by a combination of funerary monuments - the two ring ditches and the associated cremation burials – and possible settlement or further funerary activity represented by the post-built structures.
- 15.9 The principal cremation pit (F1113) is the most interesting of the funerary features as it clearly demonstrates the re-use of this pit for successive burials, and the importance of this place in the landscape over a period of time. There were three phases of activity evident within this cremation pit. The primary phase was the original cut for the pit and the deposition of a type of Beaker period ceramic vessel that has decoration which recalls the Durrington Walls Grooved Ware tradition even though the pot is likely to date from the Early Bronze Age on account of the dated wheat grain from the primary pit fill which provided a date range of 1890-1690 cal. BC at 95% confidence. The pit was then recut and a vessel (pot 78) containing a human cremation was inserted. This is the vessel with a surviving basal portion that was able to be lifted whole. Radiocarbon dating of the cremated bone places this burial in the years 1610-1430 cal. BC at 95% confidence (see above Table 23). A third phase of activity saw another vessel (pot 1) containing a cremation inserted into the upper part of the pit, although this vessel had been broken and spread due to plough action. The continued re-use of the same pit implies that it was marked in some way above ground, and also speaks of the importance of this landscape, and specifically this particular area for funerary use over what may have been several generations.
- 15.10 Structures 1 and 3 are two of the key features on the site, taking the form of triangular post-built structures, with structure 3 also including a large number of outlying stakeholes. This particular form of structure is directly comparable to a number of recently observed examples from Northumberland: Bolam Lake (Waddington and Davies 2002) dating to the Early Neolithic, Lanton Quarry (Stafford 2007) and Whitton Park, Milfield (Waddington 2006) dating to the Late Neolithic and Early Bronze Age. It has been argued that these structures represent the central load-bearing frame for larger structures (Waddington and Davies 2002). At Bolam Lake there was a small number of outlying stakeholes which could represent the lighter spars and stakes that formed part of the structure, and this argument could be supported by the volume of stakeholes surrounding Willington Structure 3. The radiocarbon dates obtained on postholes from Structures 1 and 3 at Willington, suggest that this form of structure has a long currency of use, potentially dating from the Neolithic as in the case of the Bolam Lake site, through to the Early Bronze Age, as in the case here at Willington.
- 15.11 The six postholes which form Structure 2 were truncated and it is impossible to ascribe a clear structural form or use. It is possible however to suggest a tentative parallel to ‘six-post’ structural remains observed at Lanton Quarry, Northumberland (Stafford 2007), which have been provisionally dated to the Early-Mid Bronze Age through diagnostic pottery sherds within their fills. Whilst the Lanton structures are larger overall and the constituent postholes are larger and more deeply-set, it should be noted that the landscape setting and associated archaeological features are similar, and the structures may have served a similar

purpose. In the case of the Lanton Quarry site, these six-post rectangular structures were spatially related to Bronze Age roundhouses and it remains possible that the structure at Willington is of a similar age and purpose.

- 15.12 Whilst it is possible that the post-built structures at Willington may be associated with the funerary practices for which the site was clearly being used – perhaps excarnation platforms, the presence of funerary monuments does not preclude the presence of contemporary domestic structures. It has been attested from other sites of the Early Bronze Age, across a variety of geologies, including the gritstone uplands of the Peak District (Barnatt 1996) that it is not uncommon to find contemporary settlement and funerary monuments close together. The pollen evidence collected from this site suggests a landscape during the Early Bronze Age in which both cereal cultivation and grazing of domestic animals took place. This would support the possibility that there was a single focus on this site for both domestic and funerary practice.
- 15.13 The Middle Bronze Age at Willington is represented by the midden pit (F003) in Area One which yielded Deverel-Rimbury pottery characteristic of this period. Other than noting the presence of Middle Bronze Age activity, little more can be inferred from this discovery, other than noting the presence of charred wheat grain within the fill of the pit.

#### Later Prehistory

- 15.14 The use of the Willington landscape in later prehistory is represented by the linear features dividing the site in Area Two, and the linear features, pit alignment and rectilinear ditch feature in Area One. While there was little artefactual material retrieved from these features, it is possible to view the later prehistoric landscape of this area as one divided up by clear boundaries, speaking of an enclosed landscape, perhaps with land ownership and an intensively exploited landscape largely absent or invisible in preceding periods. The clearest comparisons to this are the nearby Willington Quarry site (Wheeler 1979; Beamish 2001, 2009), Swarkestone Lowes a few kilometres east along the Trent Valley which had an Iron Age component to the site comprising a pit alignment and linear features (Knight 1992; Whimster 1989; Losco-Bradley 1993); and also the large later prehistoric site at Fisherwick some 15 miles south-west on the gravels of the River Tame (Smith 1979).
- 15.15 The archaeological remains on the Willington Marina site represent an archaeological sequence that provides detailed information and has the potential to contribute not only to the regional history of prehistoric settlement and land use in the Trent Valley and its environs, but also to our understanding of the way the Trent Valley groups interacted with other groups in distant areas. The discoveries at Willington Marina provide a body of information that can be used to underpin the wider story of the early history of the Trent Valley and the impetus for disseminating this story to the public.

## **16 Publicity, Confidentiality and Copyright**

- 16.1 Any publicity will be handled by the client.

- 16.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

## **17 Statement of Indemnity**

- 17.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

## **18. Archive arrangements**

- 18.1 The site archive for the site will be deposited with Derby Museum and Art Gallery upon completion of the project post-excavation work. The accession number will be DBYMU 2007-452. The archive will consist of: primary site records, prehistoric pottery collection, lithic assemblage, charred macrofossil samples, individually bagged dating samples, charred wood samples, charred bone from cremations, copies of all specialist reports pertaining to the post-excavation work and a copy of this report.

## **19. Acknowledgements**

- 19.1 Archaeological Research Services Ltd would like to thank all those who contributed to the outcome of this project. In particular Madecorn Leisure and all on site at the Mercia Marina development, and also Andy Myers, then of Derbyshire County Council.



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## Appendix One – Lithics Catalogue

Wellington Lithics													
SF No.	Trench	Context	Material	Colour	Provenance	Type: General	Specific	Core RS	Period	L (mm)	W	T	Notes
2	1	31	flint	medium grey		scraper		ter		29	25	15.5	flake core recycled from earlier chipped flake. Different phases of patina development visible. Finally appears to have been re-used as a scraper
4	1	31	flint			retouched flake	scraper?	ter	neo?				broken, burnt abruptly retouched flake or blade tool
5	1	31	flint	medium grey		blade		sec	neo?				broken segment of parallel-sided blade
6	1	31	flint	orange grey		blade		sec					broken blade segment
12	1	unstrat	flint	medium grey		edge-trimmed flake		ter		13	21	6	irregular flake with slight edge trimming visible on short side
13	1	unstrat	flint	light grey		core rejuvenation flake		sec		45	35	14	Rejuvenation of a previously

													chipped and patinated core
14	1	unstrat	flint	orange grey		flake		sec					broken
16	1	27	flint	white		blade		sec					broken blade segment from blade form
22	2	1252	flint	dark grey	nodular	knife		ter	neo?	44	22	11	
46	2	unstrat	flint	light grey		core rejuvenation flake		sec		41	29	17	
47	2	1021	flint	dark grey	nodular	end scraper		ter	neo	38	25	6	
48	2	1111	flint	medium grey		flake	debitage	sec		16	19	9	
58	2	1021	flint			scraper		ter	emes?	25.5	28	7.5	patinated white
90	2	1252	flint	light grey		flake	debitage	prim		27	20	8	
91	2	1252	flint	medium grey		blade							broken bladelet segment with patination development
92	2	1193	flint	cream		edge-trimmed flake		ter					broken
93	2	1253	flint	medium grey		blade	debitage	sec		16	13.5	2.5	
94	2	1191	flint			flake		sec		25	23	11.5	patinated white
95	2	1252	flint	light grey		blade	debitage	sec		23	10	3	
96	2	1193	flint	white		edge-trimmed blade		ter					broken, stubby edge-trimmed blade poss used as a scraper
97	2	1252	flint	medium grey		flake		sec					Broken flake
98	2	1252	flint	medium grey		chip		sec		18	21.5	3	Chipe from retouched piece indicating

														recycling
99	2	1191	flint	medium grey		blade	debitage	sec	mes?					broken made from recycling of previously chipped piece
303	2	1211	flint	dark grey		flake	core flake	sec	mes	21.5	22	1		flake bearing microlithic blade removal scars on dorsal surface from previous core detachments
305	2	1211	flint	medium grey	glacial	core	platform core	sec	mes	21	22			
308	2	1079	flint			flake		sec		16	21	7		patinated white, bi-polar flaking
309	2	1079	flint	light grey		flake	rejuvenation flake	sec	mes?	20	13	6		
310	2	1079	flint	medium grey	glacial	scraper	end scraper	ter	neo	22	20.5	8		
311	2	1079	flint	medium grey	glacial	scraper	end scraper	ter	mes/neo	22	20	3		edge-trimmed distal end of wide cortical blade
312	2	1223	chert	grey		scraper		ter	mes					broken or rechipped stubby end scraper
343	2	1079	flint			flake		sec						broken and burnt
345	2	1079	flint	light grey		scraper	end scraper	ter	mes	27	22	9		stubby end scraper made on a

													blade with light patina development
346	2	1219	flint	light grey		edge-trimmed blade		ter	LUP?				broken edge-trimmed blade segment comprising the butt end. Heavily patinated
347	2	1219	flint			flake				19	16	11	patinated flake
348	2	1219	flint	light grey	glacial	scraper		ter		38	33	15	stubby scraper made from a primary flake with cortex surviving over much of 2dorsal surface, small area broken off
349	2	1041	flint	light grey		flake		sec		13	23.5	5.5	
350	2	1041	flint			microlith	edge-trimmed bladelet	ter	mes	26	11.5	6.5	heavily patinated white stubby microlith made on a small parallel-sided blade with v-profile
351	2	1041	flint			blade			LUP?				broken heavily patinated white blade segment from a large

													blade
352	2	1041	flint			flake		sec		24	17	6	patinated
353	2	1193	flint	medium grey		flake	debitage	sec		21.5	13	2	
355	2	1057	flint	medium grey		flake	debitage	sec		17	26	3	
356	2	1057	flint	medium grey	glacial	core	multi-platform	sec	mes	26	23.5		
357	2	1057	flint			utilised blade		ter	LUP?				broken, heavily patinated edge-trimmed blade that must have been quite large
358		1057	flint			edge-trimmed blade		ter	emes?	28.5	20	8.5	White patinated edge-trimmed broad blade to make a crescentic tool with v-profile
359		1057	flint			blade	debitage	prim		17	10.5	3	
360		1227	flint			flake	debitage	sec		25	12.5	4	heavily patinated chip
362		1091a	flint	white		edge-trimmed blade		ter	neo?	44	14	8	
363		1091a	flint			edge-trimmed blade	scraper?	ter	mes	32.5	30	7	heavily patinated poss used as an end scraper
364		1087	flint	white		edge-trimmed flake		ter		15	17	8.5	
365		1087	flint	white		edge-trimmed blade		ter	mes?	29	18	5.5	

366		1259	flint	light grey		edge-trimmed flake		ter		36	19	13.5	edge-trimmed core rejuvenation flake
367		1259	flint			flake	rejuvenation flake	sec		17.5	11.5	6	patinated
368		1259	flint	light grey		flake	debitage	sec		21	11	6.5	
369		1259	flint			edge-trimmed flake		ter	LUP?	29	17	7	very heavily patinated and rolled
370		1259	flint			flake		sec		23	12	10	white patina
371		1259	flint			chip	debitage	sec		18	9.5	3	white patina
372		1164	flint	light grey		flake	debitage	sec					broken, patinated white
373		1164	flint			flake	debitage	sec		25	17.5	5.5	patinated
375		1164	flint	light grey		core	flake core	sec		23	19		
376		1164	flint			retouched blade		ter	LUP?	60	25.5	13	patinated large irregular blade - poss tool
377		1164	flint			blade		sec		23	16	9.5	patinated squat blade removal
378		1164	flint			flake	debitage	sec		26	20	11.5	patinated
379		1164	flint	brown		flake	debitage	sec		22	18.5	11	
380		1164	flint			microlith	utilised bladelet	ter	mes	24	11	7	patinated stubby utilised bladelet microlith with v-profile
381		1049	flint			blade		sec	mes	29	14.5	6	white patina
382		1049	flint			flake				22	18	11.5	white patina

383		1049	flint			core		sec	mes	37	20		white patina
384		1049	flint			retouched flake		ter	mes	18.5	18.5	10.5	white patina
385		1049	flint			microlith		ter	mes	21	9	4	white patinated narrow blade microlith
386		1049	flint			chip	debitage	sec		19	8.5	7.5	white patina
387		1049	flint			flake	debitage	prim		23	18	6.5	white patina
412		1127	flint			microlith	edge-trimmed blade	ter	emes	30.5	16.5	10	patinated white made on stubby v-profile blade
413		1127	flint	medium grey		flake	debitage	sec					broken, light patina development
414		1127	flint	light grey		flake	debitage	prim		26	15	8	
415		1281	flint	light grey		retouched blade		ter	neo	44	16	5	
416		1211	flint	light grey		blade		sec					broken blade
417		1211	flint	orange grey	glacial	utilised blade	scraper?	ter	mes	25	10.5	3	
418		1211	flint	orange grey		chip	debitage	prim		20	12	4	
419		1172	flint	white		scraper	end scraper	ter	mes	29	14	8.5	irregular end scraper made on stubby blade
420		1172	flint	light grey		flake		sec					broken
421		1172	flint	white		blade		sec		24	11	4	
422		1021	flint			flake		sec					broken, patinated white
423		1021	flint	light grey		blade	debitage	sec		29	17	10	
424		1021	flint	light grey		flake	debitage	sec					broken
425		1021	flint	light grey		flake	debitage	sec		20	16.5	4	
426		1021	flint	medium grey	glacial	flake	rejuvenation flake	sec	mes?	22	22	14	



427		1021	flint	medium grey		retouched flake		ter	mes?	16	26	6	unusual retouched flake to produce what is in effect a retouched blade
428		1258	flint	light grey		flake		sec		13	16.5	1	
429		1261	flint	white		edge-trimmed flake		ter		22	14.5	5.5	
430		1261	flint	white		flake		sec		19	23	7	
431		1261	flint	white		chip	debitage	prim		13.5	7	3	
432		1263	flint	light grey		flake	debitage	sec		15.5	21	4	
433		1263	flint	medium grey		flake	debitage	sec		12	16	7	
434		1263	flint	light grey		scraper	end scraper	ter	mes/neo	24	20	8	
435		1263	flint	light grey		flake	debitage	sec					broken
436		1263	flint	medium grey		chip	debitage						broken
437		1263	flint	light grey		flake	debitage	sec		14	13	4	
438		1263	flint	medium grey		flake	debitage	sec					broken
439		1263	flint	light grey		flake	debitage	sec		5	14	2	
440		1191	flint			flake		sec		23	17	8	patinated white
441		1262	flint	fawn		retouched blade		ter	LUP?	52	20	12	
442		1191	flint	light grey		flake	debitage	prim		23.5	21	13	
443		1191	flint			flake	debitage	sec		12	14	4	patinated
444		1191	flint			flake	debitage						broken, patinated white
445		1169a	flint	cream	glacial	flake		prim		46.5	43.5	20	
446		1169a	flint			flake		sec					broken heavily patinated flake
447		1169a	flint	white		blade		sec					broken blade segment

448		1169a	flint	cream		flake		sec		35	32	9.5	
449		1169a	flint	orange grey		burin		ter	mes	30.5	18	9.5	stubby burin with edge along both long edges and clear oblique truncation scars.
450		1169a	flint	cream		edge-trimmed blade	broad microlith	ter	mes	18	12	6	irregular edge-trimmed broad stubby blade of microlith proportions
451		1169a	flint	orange grey		scraper	thumbnail	ter	mes?	18	19.5	5	Irregular small scraper with abrupt retouch, typical of the Mesolithic
452		1169a	flint	cream		blade	debitage	sec		20.5	13	4.5	
484		1193	flint	medium grey		chip		sec		20	12	1	
485		1159	flint	orange grey		retouched flake		ter		19.5	28	4	irregular retouched flake
486		1252	flint	white		chip	debitage	sec					broken chip
487		1253	flint	medium grey		blade		sec		24	8.5	3.5	
488		1063	flint	dark grey	nodular	edge-trimmed blade	microlith?	ter	mes	33	11	3.5	
489		1253	flint	medium grey		flake	debitage	sec		19	16	3	
490		1253	flint	medium grey	glacial	blade							broken blade segment
491		1193	flint	cream		microlith	irregular	ter	mes	19	10.5	5	
492		1191	flint	dark grey	nodular	flake	debitage	prim					broken
493		1254	flint	medium grey	nodular	notched blade		ter	neo	38	12	4	
494		1254	flint	medium grey	glacial	scraper	end scraper	ter	mes	30	12	6	

495		1201	flint	translucent	glacial	edge-trimmed blade		ter	mes/eneo	27	19	5	
496		1063	flint	light grey		utilised blade	microlith?	ter	mes	26	10	2	
497		1045	flint	light grey	glacial	blade	debitage	sec		31	19	2	
498		1254	flint	medium grey		flake	debitage						broken chip
499		1063	flint	medium grey		flake	debitage	sec		12	17.5	2	
500		1252	flint	dark grey		core	platform core	sec	mes	18	22		platform core flake
501		unstrat	flint	light grey		core		sec	mes	17	18.5		tiny irregular platform core
502		1252	flint			flake				18	27	8.5	heavily patinated
503		1079	flint	medium grey		scraper		ter		18	21	4	
504		1203	flint	medium grey		flake	debitage	sec					broken
505		1254	flint	medium grey		flake	debitage	sec		23	18	6	
506		1079	flint	light grey		flake	debitage	sec		21	22.5	6	
507		1041	flint	medium grey		blade		sec		29	15	3	
508		1191	flint			flake				17	20	9.5	flake poss utilised as a small scraper
509		1253	flint	light grey		blade	debitage	sec		26	9	2	
510		1253	flint	medium grey		blade	debitage	sec					broken blade segment
511		1252	flint			scraper		ter	mes	24	23	8	patinated scraper
512		1254	flint	medium grey		blade		sec					broken narrow parallel-sided blade segment
513		1254	flint	dark grey	glacial	flake	debitage	prim		23	14	9	
514		1254	flint	light grey		notched blade		ter	neo	37	17	5	
515		1193	flint	cream		flake		sec					broken flake
516		1063	flint	light grey		edge-trimmed blade	microlith?	ter	mes				broken possible microlith

													made on narrow parallel-sided blade
517		1252	flint	dark grey	glacial	flake	core flake	sec		40	18	16	
518		31	flint	medium grey		scraper		ter	neo?	27	19	6.5	
519		1273	flint	purple		chip	debitage	sec		18	9	2	
520		1253	flint	dark grey		retouched blade		ter	mes/eneo	20	15	3	
521		1254	flint	medium grey		flake	debitage	sec		9	21	1.5	
523		1137	flint	fawn		flake		sec					broken flake showing it broke with a hinge fracture
524		1219	flint	light grey		edge-trimmed flake		ter					broken
525		1219	flint	light grey		flake	debitage			43	22	15	
526		1219	flint	light grey	glacial	flake	debitage	prim		51	38	15	
527		1219	flint	orange grey	glacial	scraper	end scraper	ter	neo	49	25	13	probable end scraper made on blade struck from a heavily patinated previously chipped piece
528		1219	flint	light grey		flake	debitage			28	20	14	
529		1219	flint	dark grey	nodular	flake	debitage	prim		18	31	11	
530		1219	flint			blade	debitage		mes?	26	12	6.5	patinated blade struck using bipolar method
531		1253	flint	light grey	glacial	blade	debitage	prim		35	19.5	5.5	recycled from previously chipped and

													patinated piece
532		1253	flint			blade		sec		27	14	5.5	patinated
533		1253	flint	medium grey		flake	debitage	sec		12	13	2	
534		1253	flint	medium grey		blade	debitage	sec		20	11.5	3	
535		1253	flint	light grey		blade		sec					broken blade segment
536		1253	flint	light grey		blade	debitage	sec					broken
537		1253	flint			blade	debitage	sec		21	12.5	8.5	patinated, bipolar flaking
538		1253	flint			utilised blade		ter		25	18	6	patinated
539		1253	flint	light grey	glacial	flake	debitage	prim					broken
540		3	flint			blade		sec					broken and patinated white, prob meso
541		3	flint			blade	debitage	sec	LUP/emes?49	49	37	14	patinated white largeish blade, most likely LUP with evidence for bipolar flaking
542		3	flint	light grey		core		sec	ba?	45	40		irregular fresh core from ba pit
543		3	flint			microlith		ter	emes	24	11	7	irregular edge-trimmed microlithic stubby bladelet with heavy patination

544		3	flint			blade		sec		18	12.5	6	patinated white
545		3	flint			blade		sec		29	15	7.5	patinated white
546		3	flint			edge-trimmed flake		ter	mes?	25	16	7	patinated white
547		3	flint			microlith	broad microlith	ter	emes	24.5	13	6	patinated, stubby microlith made on blade with v-shaped profile
548		3	chert	fawn		flake	debitage	prim					broken
549		3	flint			utilised blade		ter	mes	24	13.5	5	patinated white
550		3	flint			blade	debitage			22	14	7	patinated cream
551		3	flint	medium grey		edge-trimmed blade		ter					broken and lightly patinated edge-trimmed blade
691		1252	flint			edge-trimmed flake		ter	mes?	21	14	7	edge-trimmed flake with milky white patina
692		1252	flint	light grey		chip	debitage	sec		23	8	6	
693		1252	flint	purple		chip	debitage	sec					broken chip
694		unstrat	flint	white		blade		sec		29	14.5	8.5	
695		unstrat	flint	white		obliquely blunted blade	awl?	ter	mes	32	28	11	
696		unstrat	flint			edge-trimmed flake		ter	emes?				rejuvenation flake that has been edge-trimmed and then become

													heavily patinated.
697		unstrat	flint	fawn		edge-trimmed blade		ter	mes/eneo	29	14.5	6	
723		1021	flint	light grey		core	flake core	sec		33	36		irregular flake used as a core with bipolar flaking evident
777		1165	flint	cream		flake		sec		19.5	19.5	8	
804		1259	flint			flake				14	14	6	white patina

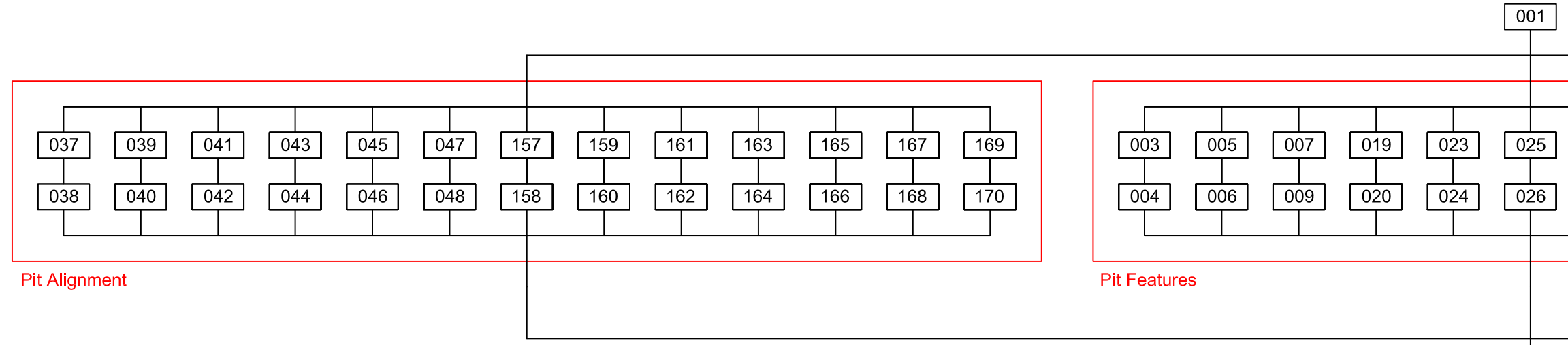
## Appendix Two – Site Matrix



Archaeological Research Services Ltd  
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Bakewell  
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DE45 1HB

Site Code: WILL07  
Drawing Ref: RepFig  
Date: Feb 2009  
Drawn: JB  
Scale: n/a

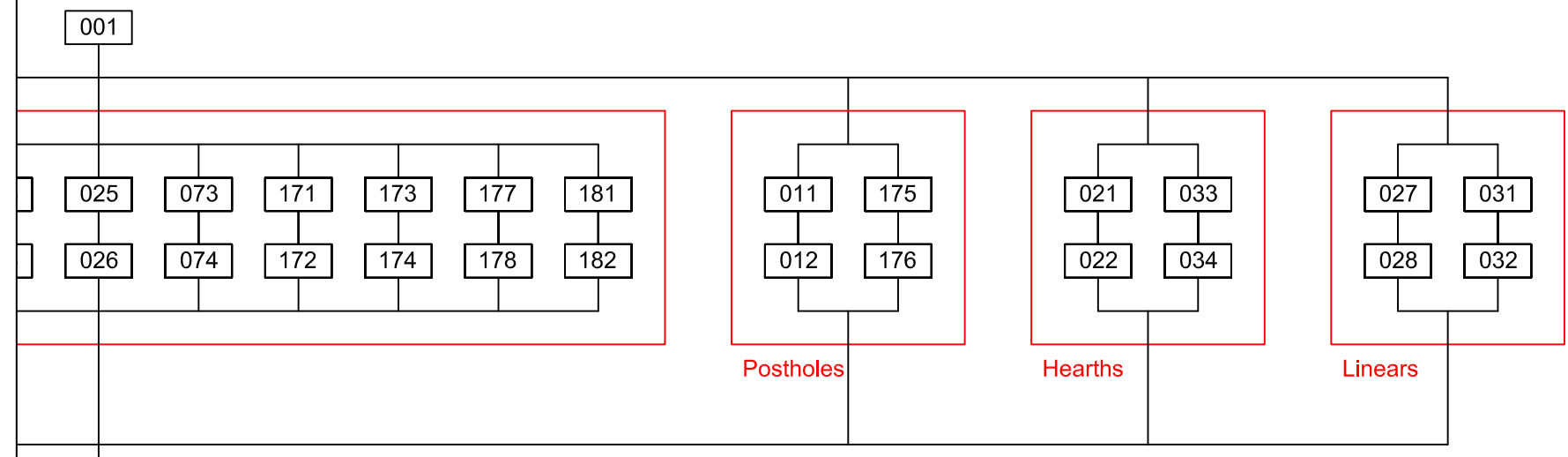
Harris Matrix for Areas 1 and 2 at  
Willington Marina



Pit Alignment

Pit Features

### Area One



Postholes

Hearths

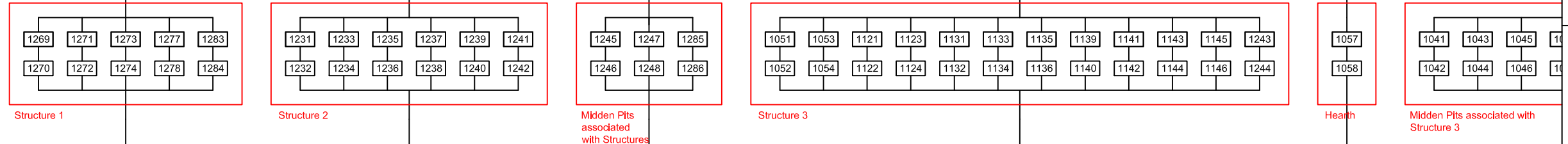
Linears

Notes:

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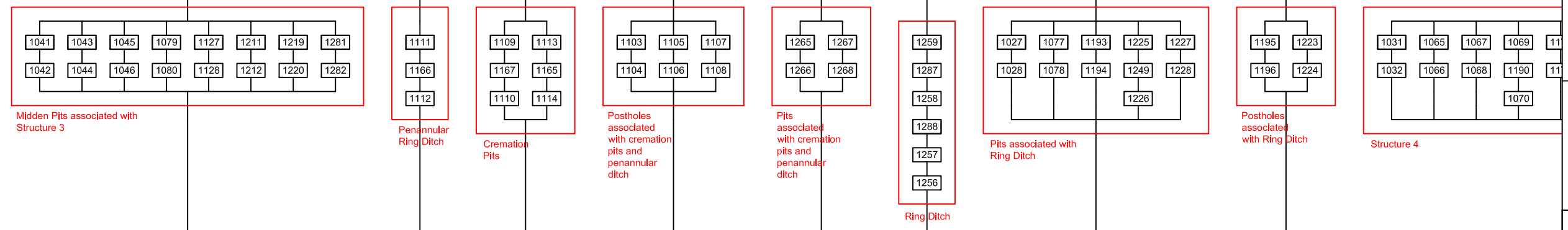
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Area Two

001



002



Notes:

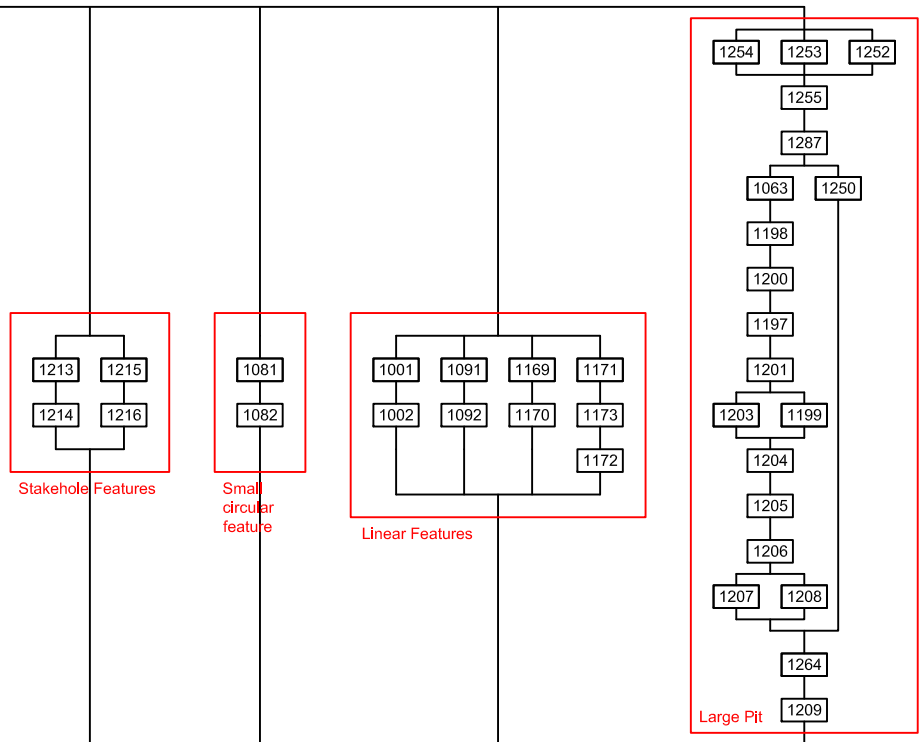
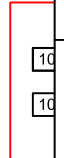
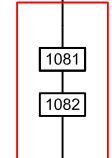
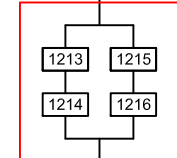
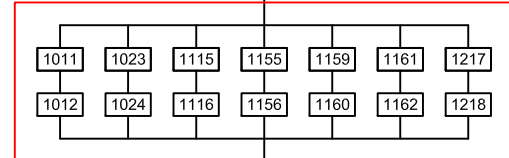
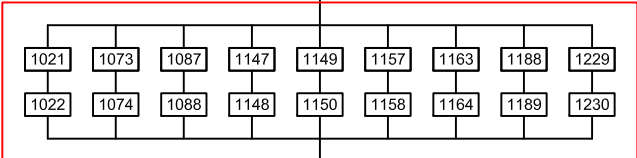
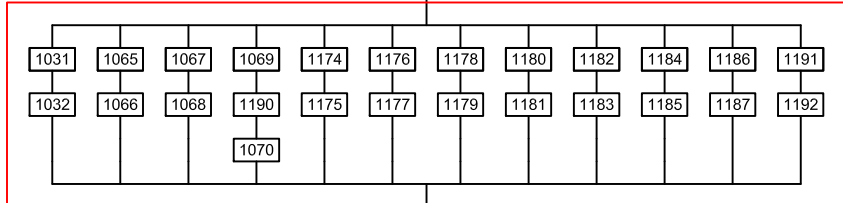
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Harris Matrix for Areas 1 and 2 at  
Willington Marina



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## Appendix Three – Tabulated data from plant macrofossil assessment

Appendix 1: Data from plant macrofossil assessment

Feature fill	midden	pit	midden	midden	midden	midden	hearth	post-hole	midden	midden	crem. pit	crem. pit	midden	post-hole	post-hole	post-hole	post-hole	midden	midden	tree-throw pit	ring-ditch	ring-ditch	midden										
Context	003	159	173	102 1	104 3	104 5	1057	106 5	107 7	107 9	110 9	111 3	1159	1180	1182	118 4	118 6	1193	121 1	125 3	1258	1263	1285										
Sample	1	13	20	44	6	70	14 - -	28	10	15	61	86	19 -	1 - -	21 - -	100	16	31 -	12	91	70 - -	72 -	94 - -										
Subsidiary samples	-	-	-	-	-	-	22 25	-	-	-	-	-	36	- 58 64	- 13 133 134	-	-	- 53	-	-	- 26 31	- 32	- 118 119										
Material available for C14 dating	✓	-	-	-	-	✓	✓	✓	✓	✓	-	✓	-	✓	✓	-	-	✓	✓	✓	✓	✓	✓	-									
Volume processed (l)	25	10	5	5	10	?	5 - -	10	5	5	5	20	5 -	5 - -	5 - -	5	?	10 -	10	1	10 - -	10 -	5 - -										
Volume of flot (ml)	20	<5	<5	<5	<5	<5	75 - -	10	<5	5	5	50	<5 -	5 - -	<5 - -	<5	<5	<5 -	<5	<5	10 - -	10 -	<5 - -										
Volume of flot assessed (ml)	20	<5	<5	<5	<5	<5	75 - -	10	<5	5	5	50	<5 -	5 - -	<5 - -	<5	<5	<5 -	<5	<5	10 - -	10 -	<5 - -										
Flot matrix (relative abundance)																																	
Bone (calcined) indet. frag.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Charcoal	1	1	1	1	1	1	2	1	2	1	2	2	2	2	1	2	-	1	1	1	-	1	1	1	1	2	1	-	2	2	2	-	1
Clinker	-	1	1	-	-	-	1	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Coal	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Roots (modern)	1	1	-	-	-	-	1	-	-	1	1	1	1	1	-	1	-	-	-	-	-	1	-	1	-	1	-	1	-	1	-	-	
Uncharred seeds	1	-	1	-	-	-	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	
Charred remains (total counts)																																	
(c) Triticum spp (wheat species) grain	2	-	-	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
(e) Cerealia indeterminate grain	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) Corylus avellana (Hazel) nutshell frag.	-	-	-	-	-	5	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeterminate tubers	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[c-cultivated plant; t-tree]. Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

## Appendix Four – Pollen Analysis Full Methodology

### Pollen Preparation

1. To each boiling tube weigh out 2gm of sample (weight may vary according to expected pollen)
2. Add a small amount of IMS (to stop frothing) and 1ml of conc HCl – wait for effervescence to subside. Can add more IMS if necessary. Repeat until no more effervescence on adding the acid. Give it a good shake.
3. Centrifuge at 2500 rpm for 10 minutes – discard the excess acid. Wash with distilled water to near top of tube and centrifuge at 2500 rpm for 10 minutes – discard the supernatant
4. Boil the centrifuge tubes in a water-bath at 100°C for 20 minutes, stirring regularly.

### Screening

1. Onto an appropriately numbered funnel a 10µm sieve (nylon cloth) is placed. Check for holes in the nylon cloth. Muslin must be wet. Above this is a 'cut away' funnel and then a 106 µm brass sieve
  2. Pour the contents of the beaker through this, collecting the liquor as waste in a bottle. Wash the 106 µm sieve with distilled water, collecting the <106 µm fraction on the 10µm sieve.
  3. When the 106-µm sieve has been thoroughly washed, then stir the liquor on the 10µm sieve and wash this with distilled water until the waste is clear.
  4. Wash the residue towards the lip of the sieve, and then using a wash bottle fitted with a jet, wash this entire residue into the 10 ml centrifuge tube.
  5. Centrifuge the tubes at 2500 rpm for 10 minutes. Discard the supernatant.
  6. Retain the 10 µm sieve as this is used again after the hydrofluoric acid stage. The macro on the 106 µm sieve is washed into a 100 ml bottle and retained for possible analysis.
- Use the sieve upside down over the sink.  
The brass sieves are then placed in an ultrasonic bath for thorough cleaning before being soaked overnight in peroxide.

### Acetolysis

The acetolysis mixture reacts VIOLENTLY with water and so great care must be exercised, again using a fume cupboard and full personal protection.

The Acetolysis Mixture is 9 parts Acetic Anhydride + 1 part conc. Sulphuric Acid

1. About 2 ml of Glacial Acetic Acid (red wash bottle) is added to the residue. The tube is then centrifuged at 2500 rpm for 10 minutes and the supernatant is discarded into a tub of water.
2. Stage 1 is then repeated to ensure that all water is removed
3. About 6 - 8 ml (half way up test tube) of the Acetolysis Mixture is carefully added to the residue
4. After stirring the tubes are heated at 100 °C for 5 - 10 minutes in a water bath. This is the absolute maximum or the sample will char.
5. The tubes are then centrifuged at 2500 rpm for 10 minutes
6. The supernatant is then cautiously discarded into a DRY beaker and disposed of .
7. If the organic content of the sample is high then repeat stages 3 - 6
8. Ca. 2 ml of glacial acetic acid (red wash bottle) are added to the residue. The tubes are centrifuged at 2500 rpm for 10 minutes and the supernatant discarded.
9. The residue is now washed with distilled water, (near to top of test tube) centrifuged and then the supernatant discarded.
10. Stage 9 is then repeated.

11. Dispose of excess acetolysis mixture into sink with water running.

Additional density separation stage.

1 Personal protective clothing was worn throughout the preparation; lab coat and gloves at all times and goggles when handling chemicals. All procedures involving chemicals were carried out in the fume cupboard and the various supernatants were decanted down the sink in the fume cupboard, using running water, both before and after disposal.

2 All laboratory equipment was washed with distilled water between samples, and capped centrifuge tubes were used following the sieving stage. Where necessary, any residues or supernatants were transferred and washed using distilled water, and unless otherwise stated centrifugation was carried out for five minutes at 3000 rpm. Residue pellets were suspended using the vortex, or in the most persistent samples they were mixed with a disposable wooden stick. The following treatments were carried out in sequence:

Sampling and addition of a known quantity of exotic spores

3 The soils were sampled using a plastic syringe to take 1ml of soil. Each sample was then placed in a marked test tube with a single Lycopodium tablet (Batch no. 938934 where the average number of spores per tablet is 10,679). 1ml each of distilled water and 10% hydrochloric acid (HCl) was added to dissolve the tablet.

Disaggregation and sieving of the sediment.

4 When the effervescence had stopped, 6ml of 10% sodium hydroxide (NaOH) was added and the test tubes were placed in a hot water bath for 15 minutes and stirred occasionally with a glass rod. The disaggregated samples were then sieved using 10µm mesh and 125µm sieve, tripod, funnels and distilled water, and the residue transferred to a marked centrifuge tube, centrifuged and decanted. The residue was then washed with distilled water.

Heavy liquid separation to remove the heavier mineral fraction

5 5ml of sodium polytungstate ( $\text{Na}_6(\text{H}_2\text{W}_{12}\text{O}_{40})\cdot\text{H}_2\text{O}$ ) (1.92 mg/ml) was added to each tube. The residues were then suspended using the vortex for 1 minute per sample, and centrifuged for 20 minutes. The supernatants containing the organic fraction were then decanted into fresh labelled tubes. These tubes were topped up with distilled water and the organic residue suspended using the vortex for 1 minute, before being centrifuged for 10 minutes. The residues were decanted and washed with distilled water.

Acetolysis to remove cellulose

6 10ml of glacial acetic acid ( $\text{CH}_3\text{COOH}$ ) was added to the residues in each tube which were suspended and then centrifuged and decanted.

[The acetylation mixture was made up fresh by mixing acetic anhydride ( $(\text{CH}_3\text{CO})_2\text{O}$ ) and concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ) in proportions 9:1 by volume. The required volume of acetic anhydride ( $(\text{CH}_3\text{CO})_2\text{O}$ ) was measured first, then the corresponding volume of concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ) was added (dropwise). This was done very carefully, stirring continuously to prevent heat building-up, and stirred again before use].

7ml of the acetylation mixture was added to each sample residue and stirred gently with a glass rod. The rods were then removed and the open tubes were then placed in a boiling water bath for 1-2 minutes (stirring is unnecessary at this stage and the glass rods were removed from the tubes to prevent steam from condensing and running



down into the mixture and reacting violently). One minute is usually adequate, as longer acetylation can make the pollen grains opaque. The tubes were removed from the water bath and topped up with glacial acetic acid in order to stop the acetylation process. The screw caps were then replaced and the tubes gently inverted to mix the contents before being centrifuged and decanted. The supernatants from this stage were decanted into a large (1000ml) beaker of water before being poured down the sink in the fume cupboard. 10ml of glacial acetic acid ( $\text{CH}_3\text{COOH}$ ) was then added to each residue, which was suspended, centrifuged and decanted. Each residue was then washed twice in distilled water.

#### Dehydration and suspension in silicone oil

7.5ml of industrial methylated spirits was added to each residue, which was suspended, centrifuged and decanted. Then 2ml of tertiary butyl alcohol ( $\text{C}_4\text{H}_9\text{OH}$ ) (TBA) was added to each tube. The samples were suspended, centrifuged and decanted. The residues were transferred to labelled vials using individual glass pipettes, and then an equal volume of silicone oil was added using a glass rod. The contents were mixed using wooden cocktail sticks and the vials were left in a warm oven ( $55^\circ\text{C}$ ) for 36 hours to promote the evaporation of the TBA.