AD349

Land at Durham Road, Middlestone Moor, Spennymoor, County Durham

Archaeological Strip and Record

Author	Jonathan McKelvey
Commissioned by	Gleeson Homes
Project Number	349
OASIS Number	adarchae1-415393
Date	March 2021

For further information please contact:

AD Archaeology Ltd

South Shields Business Works,
Henry Robson Way,
South Shields,
NE33 1RF
Tel: 0191 603 0377
Email: info@adarchaeology.co.uk

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF PLATES

Plate 14 Pit 1015 looking north-east
Plate 15 Pit 1015 looking south-west
Plate 16 Pit 1015 looking south-west
Plate 17 Posthole 1013 & Pit 1015 under excavation looking south
Plate 18 Pit 1015 looking west
Plate 19 Pit 1015 looking south-west
Plate 20 Posthole 1017 looking west
Plate 21 Postholes 1017, 1080 & 1092
Plate 22 Postholes 1080 & 1092
Plate 23 Entranceway looking south
Plate 24 Entranceway looking north
Plate 25 Entranceway looking south-west
Plate 26 Entranceway looking west
Plate 27 Pit 1011 half-sectioned looking south-west
Plate 28 Pit 1035 half-sectioned looking south-east
Plate 29 Pits 1002 &1040 looking north-east
Plate 30 Pits 1002 & 1040 looking north-east
Plate 31 Pits 1035, 1002 & 1040 looking north-east
Plate 32 Pits 1035, 1002 & 1040 looking south
Plate 33 Pits 1035, 1002 &1040 looking east
Plate 34 Pits 1040 &1002 looking south-east
Plate 35 Metalling on base of Pit 1003 looking south-east
Plate 36 Pit 1003 looking east
Plate 37 Slot 1100 & Pit 1003 looking north-west
Plate 38 Overall view looking south-east
Plate 39 Pits 1042, 1053, 1057 & 1059 looking south-east
Plate 40 Pits 1042 &1053 looking south-east
Plate 41 Features 1087 &1085 looking east
Plate 42 Features 1079, 1083, 1085 & 1087 looking north-west

EXECUTIVE SUMMARY

AD Archaeology was commissioned by Gleeson Homes to undertake a strip and record excavation in advance of a housing development on land at Durham Road, Spennymoor in County Durham.

A roundhouse of Middle Bronze Age date was located and fully excavated. Radiocarbon dates recovered from features belonging to the roundhouses ranged between the late 15th-late 12th Century BC. This represents an important discovery as very few settlement sites of this period have been investigated in the region. This is particularly true for sites in lowland settings where fewer sites of this period have been identified than in upland areas. Taken in conjunction with recent discoveries of unenclosed Bronze Age roundhouses at the Milfield Plain, Northumberland the present site is helping to address a gap in the region's prehistoric settlement pattern. It is becoming clear that the settlement pattern of unenclosed Bronze Age roundhouses is likely to have been present in lowland as well as upland settings. The roundhouse has a number of noteworthy parallels to other excavated examples of roundhouses both in North-East Region and South-East Scotland. It is uncertain whether it represented an isolated roundhouse or was an outlier to a settlement extending further to the north beyond the site. There was no evidence for an enclosing ditch or palisade, the roundhouse belonging to the category of unenclosed settlement.

1 INTRODUCTION

1.1 The Project

1.1.1 AD Archaeology Ltd was commissioned by Gleeson Homes to undertake strip and record mitigation in advance of a proposed housing development of land at Durham Road, Spennymoor in County Durham. The development area comprised a single field 13.75 ha in size centred on NGR NZ 2423 3278. The archaeological strip and record works were undertaken in May-June 2020. This strip and record follows a desk-top assessment (Brown 2014), a geophysical survey (Durkin 2014) and evaluation trenching (McKelvey 2018). The strip and record excavation area was 90m by 50m in size.

1.2 Location, Geology and Topography (fig. 1)

1.2.1 The development area was bounded to the south-east by Durham Road, to the south-west by Byers Green Lane, and to the north-east by Bishop's Close Road. The site is situated on a lowland valley terrace on the eastern edge of the Wear Lowlands, 2.5km to the south of the River Wear. The development site is slightly undulating with land falling gradually from south to north. The strip and record area located adjacent to the north-western boundary of the development site was relatively flat, with land falling away gradually to the north of the site.

1.2.2 The underlying solid geology of the site comprises mudstone, siltstone and sandstone of the Pennine Middle Coal Measures Formation. The solid geology is overlain by superficial glaciofluvial deposits of Devensian sand and gravel (BGS 2020).

2. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Prehistoric Period

2.1.1 There are a number of prehistoric features in the wider area of the site. A flint working site has been identified c 1.3km to the south-east at Middlestone (HER 2124). There are two possible Bronze Age barrows/cairns to the south of Byers Green, c1.5km to the west (HER 1433 and 546). Prehistoric settlements have been identified 1.5km to the west at Kirk Merrington (HER 395) and at Butcher's Race (HER 47718) in Spennymoor 2.1km to the north-west.

2.2 Romano British Period

2.2.1 The study area lies 2.5km east of Dere Street with Binchester Roman Fort 3km to the south-west of the site. Sherds of Roman samian ware pottery (HER 2123 and 2117) have been recovered 0.87km to the south-east of the site and at Byers Green 1km to the north-west.

2.3 Medieval Period

2.3.1 The first reference to Spennymoor is in an Episcopal Register of 1336. Spennymoor was an ancient waste which is thought to have extended from Auckland Park to Sunderland Bridge, bounded by the villages of Tudhoe and Whitworth at the north and Hett and Merrington to the south. The moor was held by the Prior of Durham by 1279 and is known to have contained two fishponds. A charter of 1279 confirms that the Prior's tenants had brought areas of Spennymoor into cultivation.

2.4 Post-Medieval

2.4.1 There are documentary references to a military training encampment on the moor in 1615 and disputes over sinking of coal pits in 1626. In 1667 Sir Robert Shafto agreed with other freeholders of Whitworth to divide the moor into allotments and 243 acres were enclosed as a result.

2.4.2 At the beginning of the 19th Century, Spennymoor became the focus for a number of coal mines and the first edition OS Map of 1856 shows a planned village laid out along the Byers Green branch of the West Hartlepool Railway. The area of the site remained as undeveloped land with a settlement beginning to develop to the south at Middlestone Moor by the time of the second edition OS Map of 1898.

2.5 Geophysical Survey

2.5.1 The desk-based assessment identified the extent of post-medieval agricultural practices and the layout of former field boundaries constructed at the time or since the enclosure of Spennymoor. The geophysical survey identified several of these boundaries presumably surviving as sub-surface features. The survey also revealed

evidence of agricultural ploughing regimes which relate to the former, rather than the modern, boundaries.

2.5.2 The geophysical survey also identified several anomalies of potentially greater archaeological interest. These included a curvilinear feature that related to the prehistoric roundhouse.

2.5.3 Subsequent to a desk-based assessment and a geophysical survey 32 trenches were excavated across the site (McKelvey 2018). The majority of the trenches proved to be devoid of significant archaeological features and no further work was appropriate in these areas of the site. Toward the northern limit of the site trenches 11 and 12 identified groupings of pits, postholes and cut features that corresponded with a curvilinear anomaly (Durkin 2014; geophysical feature 1) interpreted as being associated with a possible prehistoric roundhouse.

3 AIMS AND OBJECTIVES

3.1 The objective of the strip and record mitigation was to record archaeological features on the site.

4 METHODOLOGY

4.1 General Methodology

4.1.1 The strip and record was carried out in compliance with all the relevant codes of practice by suitably qualified and experienced staff.

4.2 Excavation and Recording

4.2.1 The strip and record strategy was agreed with the County Archaeology Officer and was undertaken in accordance with an approved trench plan and specification. The assessment exercises have established that significant archaeological remains survive in an area of the site. The loss of archaeological features has been mitigated by a programme of investigation and recording in advance of their destruction. This ensured their 'preservation by record' consistent with the objectives of paragraph 199 of the NPPF. An area 90m by 50m was identified for the strip and record.

4.2.2 Archaeological excavation and recording in advance of development ensured that important archaeological remains were not destroyed without first being recorded. The programme of 'strip and record' mitigation required that an area of development impact was stripped under archaeological supervision allowing the targeted excavation of a representative sample of archaeological features and deposits.

5 RESULTS OF THE STRIP AND RECORD (figs 2-9)

5.1 Introduction

5.1.1 A prehistoric roundhouse was located close to the north-western limit of the site. The roundhouse faced east by north (midway between ENE and east on the points of a compass) with a passageway projecting 2.70m from its entrance. A wall slot survived on its eastern side being traced either side of the entranceway, with a further short length surviving on its northern side. Although the wall slot did not survive on the southern and western side of the roundhouse, its position can be projected on the basis of a series of scoops or shallow pits which can be presumed to have lain immediately within the line of the exterior wall of the structure. On the basis of the projected wall line the roundhouse can be shown to have been oval in shape and approximately 13m by 11.5m in size. Within the roundhouse was an inner circuit of postholes, defining a central area 8.5m by 7.5m in size. A pit, postholes and a number of cut features were located within this central area. A series of elongated scoops or shallow pits, some of which conjoined, were situated beyond this central area lying just within the northern and western walls of the roundhouse. On the bases of the shallow pits were layers of metalling. The roundhouse was heavily truncated lying close to the present ground surface, being covered by only a shallow topsoil 0.30m in depth.

5.2 Wall slot and entranceway

5.2.1 On the eastern side of the roundhouse, wall slots survived to either side of a 1.10m wide entranceway which faced east by north. The wall slots (1023, 1029) survived in two lengths either side of the passageway (1025 and 1027) that extended 2.70m to the east of the entrance. Slot 1023 was traced for a distance of 4m from its southern end where it was cut by the northern side (1025) of the passageway. It was a U-shaped feature (1023) 0.28m in width, surviving to a depth of 0.09m-0.22m. At its north-western end was a post setting, 0.30m by 0.20m in size and 0.18m in depth, with steep concave sides and a flat base. Wall slot (1029) intersected with and ran to the south of the southern side of the entranceway (1027). This consisted of a U-shaped feature (1029), 0.21m in width and 0.18m in depth which was traced for a distance of 3m before being truncated by a north-west/south-east furrow. The slots (1023 and 1029) were filled with mixed deposits of grey silty clay and sandy silt (1022 and 1028) containing occasional small sandstone fragments, some of which were burnt. On the northern side of the roundhouse a 2.40m length of wall slot (1100) survived. The wall slot (1100) was 0.30m wide and 0.12m deep and was filled with grey-brown sandy silt mixed with ash and charcoal (1099). The slot (1100) intersected with pit 1003, with metalling from the latter extending onto its base and as such is unlikely to represent a primary phase of wall construction. The three slots (1029, 1023 and 1100) formed elements of the same external wall line. The wall slots were heavily truncated surviving only as shallow features and it is unsurprising therefore that they did not survive as a continuous feature around the perimeter of the roundhouse.

5.2.2 The entrance to the roundhouse was formed by two linear east-west slots (1025 and 1027) set 1.10m apart. The northernmost slot (1025) was a V-shaped feature, 0.30m in width and 0.55m in depth which had been truncated by a north-east/south-west field drain. The southernmost slot (1027) was predominantly a V-shaped feature 0.40m in width and 0.55m in depth. The slots were filled with deposits of grey sandy silt mixed with charcoal and occasional patches of burnt sandy clay (1024 and 1026). At a distance of 0.30m beyond the eastern end of each slot was a posthole which would have held a post defining either side of what may have been a passageway or a covered porch leading into the roundhouse. On the northern side of the passageway posthole 1071 was 0.60m by 0.51m in size and 0.13m in depth. On its southern side posthole 1073 was 0.58m by 0.29m in size and 0.16m in depth. The postholes (1071 and 1073) were filled with deposits of grey-brown sandy silt (1070 and 1072). The entrance to the roundhouse had been remodelled at some point as wall slot 1023 had been cut by the northern entranceway slot (1025). A radiocarbon date of 1373-1122 cal BC was produced from the fill (1024) of wall slot 1025 (table 2 and appendix 7).

5.2.3 A possible posthole (1031) was located just within the southern side of the entranceway. The posthole (1031) which was in line with the southern side of the entrance (1027), was 0.75m by 0.33m in size and was disturbed on its north-western side by a field drain. The posthole (1031) which was 0.17m in depth was filled with a grey-brown sandy silt (1030).

5.3 Inner circuit of postholes

5.3.1 A circuit of postholes (1013, 1069, 1006, 1008, 1047, 1051, 1065 and 1067) formed an inner area within the roundhouse 8.5m by 7.5m in size. The spacing of the postholes varied slightly, averaging 2.40m, but it was clear that in addition to being the main support of what would have been a large roof, they had been laid out defining an inner oval area. One of these postholes (1067) was partially disturbed by a field drain and it is likely that all trace of two further postholes 'missing' from the circuit has been completely removed by field drains. One of these postholes would have been located between postholes 1047 and 1008, the second would have been situated 2.20m north-east of posthole 1067 (fig. 8). On its eastern side there may have been a gap in the circuit corresponding to the entrance to the roundhouse. The dimensions of the postholes varied between 0.72m by 0.66m and 0.30m by 0.30m in size, averaging 0.42m by 0.40m in size and 0.38m in depth (table 1). Only one of the postholes (1013) contained packing stones, with two-vertically set sandstone fragments (1019) helping to form the side of a post-setting 0.25m in diameter. It is clear that the posts set within these postholes would have been of a substantial size and are likely to have ranged between 0.25m to 0.40m in diameter. They would have been load bearing timbers forming the main structural support for the roof of the building. Two radiocarbon dates were produced from samples from postholes forming the inner circuit (posthole 1006 (fill 1005) 1426-1277 cal BC; posthole 1008 (fill 1007) 1389-1129 cal BC - dates quoted are at 95.4% confidence hereafter unless

otherwise stated, table 2 and appendix 7 contain the detailed radiocarbon measurements).

Table 1 Postholes forming inner circuit

Feature	Dimensions	Description	Fill	Comments
Posthole 1013	0.72m x 0.66m and 0.33m in depth	Irregular shaped posthole-steep near vertical sides to the north with concave sides to the south and a rounded base. Two vertically set sandstone fragments define the side of a post-setting 0.25m in diameter.	Fill 1012 dark brown sandy silt	Post packing (1019) formed by two vertically set sandstone fragments which probably originally formed parts of one slab. Sandstone fragments were 0.40m x 0.30m x 0.13m and 0.32mx 0.23mx 0.11m
Posthole 1069	0.30m in diameter and 0.38m in depth	Circular posthole with straight near vertical sides and a flattish base	Fill 1068 Grey brown sandy silt	
Posthole 1006	0.47m x 0.45m and 0.37m in depth	Sub-Circular posthole with straight near vertical sides and a flattish base. On its south-eastern side had steep concave profile in the lower half of the feature	Fill 1005 dark brown sandy silt. Occasional small sandstone fragments	
Posthole 1008	0.35m in diameter and 0.35m in depth	Sub-Circular posthole with straight near vertical sides, becoming concave as met with flat base	Fill 1007 dark brown sandy silt	
Posthole 1047	0.30m in diameter and 0.39m in depth	Sub-Circular posthole with mainly straight near vertical sides and a flattish base. On its upper edge on its northern side it had a 45 degree profile	Fill 1046 grey sandy silt	
Posthole 1051	0.48m in diameter and 0.43m in depth	Sub-Circular posthole with steeply sloping sides and flat base. To the west on its upper edge it had a concave profile	Fill 1050 grey sandy silt	
Posthole 1065	0.40m in diameter and 0.38m in depth	Sub-Circular posthole with straight near vertical sides and a flattish base	Fill 1064 grey sandy silt	
Posthole 1067	0.32m x 0.28m and 0.40m in depth (disturbed by field drain)	Circular posthole with straight near vertical sides and a flattish base	Fill 1066 dark grey sandy silt	North-western side cut by field drain

5.4 Features within inner circuit of postholes

5.4.1 A number of features were located within the area defined by the inner circuit of postholes. Pit 1015 consisted of an elongated feature up to 3.25m by 1.30m in size located in the eastern sector of the inner circuit. In its southern half the pit was rectangular in plan, narrowing toward the centre and becoming irregular in shape to the north where it had been disturbed by a north-west/south east furrow. To the south the pit (1015) was 0.35m in depth and had variable sides coming down onto an uneven base. At its northern end the pit was a shallower feature, 0.14m in depth, with irregular sides. In the central area of the pit were three sandstone slabs that may represent the remnant of a stone lining to the pit. One slab with a worn upper surface (0.46m by 0.36m by 0.13m in size) was laid flat on the base of the pit. A second slab (0.39m by 0.29m by 0.09m in size) was set vertically against the side of the first slab. These two stones were probably in situ, a third slab (0.39m by 0.36m by 0.08m in size) adjacent to the western side of the first slab, probably also in situ, lay at angle of 45 degrees against the side of the cut. The pit (1015) was filled with brown sandy silt (1014) containing frequent sandstone fragments averaging 0.12m by 0.12m by 0.06m in size.

5.4.2 Two small postholes (1075 and 1090) were located at the northern end of pit 1015. Posthole 1075 consisted of a circular feature 0.16m in diameter with vertical sides and a rounded base and was filled with a grey-brown sandy silt (1074), 0.21m in depth. Posthole 1090 was 0.14m in diameter with steep sides and a concave base and was filled with a grey sandy silt (1089), 0.22m in depth.

5.4.3 A cluster of postholes (1017, 1021, 1080 and 1092) were located to the west of the southern end of pit 1015, toward the centre of the roundhouse. Posthole 1017 was 0.58m by 0.42m in size, and contained two post-settings, both 0.15m in diameter. The two post-settings were steep-sided features with rounded bases, the northernmost being 0.35m in depth the southern setting being 0.26m in depth. The two post-settings were consecutive features the northern one being the latest replacing the southern one. The posthole (1017) was filled with a dark brown sandy silt (1016) containing numerous sandstone fragments up to 0.20m by 0.15m by 0.08m in size. A radiocarbon date of 1418-1262 cal BC was produced from the fill (1016) of posthole 1017 (table 2 and appendix 7). Posthole 1021 consisted of a steep sided feature 0.25m in diameter with a rounded base. It was filled with a dark brown sandy silt (1020) with small sandstones and was 0.13m in depth.

5.4.4 Posthole 1080 was cut through a 0.80m by 0.40m area of burning visible on the surface of the natural subsoil, the burnt area probably representing the truncated remains of a central hearth. The posthole (1080), which was 0.29m in diameter was a vertically sided feature with a concave base, filled with a brown sandy silt (1081) and 0.32m in depth. A smaller post setting (1092), 0.13m in diameter and 0.22m in depth, filled with brown sandy silt (1091) was also cut through this area of burning.

5.4.5 Three small postholes (1094, 1096 and 1098) forming a rough north-east/south-west alignment were located immediately south of pit 1015. These postholes (1094, 1096 and 1098) were 0.20m in diameter, 0.10m deep and filled with deposits of grey sandy silt (1093, 1095 and 1097).

5.4.6 Two cut features (1045 and 1055) were located close to the south-western perimeter of the circuit of postholes. Feature 1045, possibly representing a former posthole was oval in shape and 0.62m by 0.32m in size with concave sides and base. It was 0.14m in depth and filled with grey sandy silt (1044) containing occasional small sandstone fragments, some of which showed evidence of having been burnt. Feature 1055 was an irregular linear feature 2.10m in length and varying between 0.27m and 0.65m in width and up to 0.10m in depth. It had irregular sides with a flattish base, narrowing at either end and was filled with a dark brown sandy silt mixed with charcoal and ash (1054) and as such was presumably related to occupation rather than representing a structural feature.

5.5 Pits around the interior of the wall

5.5.1 A series of shallow features were located around the inside of the roundhouse in the space between the inner circuit of postholes and the external wall. These shallow pits or scoops (1003, 1102, 1040, 1002 and 1035), averaging 0.18m in depth, were positioned around the inside of the northern, western and south-western wall of the roundhouse.

5.5.2 Pit 1003 survived in two lengths, with a 4.20m western portion disturbed by a field drain and a shallower 2.20m length of the feature to the east. The western portion was 0.80m in width and up to 0.20m in depth, the eastern portion surviving to a depth of 0.05m. Partially covering the base of both lengths of the pit was a compacted metalled surface of sandstone fragments and pebbles (1018) overlain by deposits of grey sandy silt mixed with charcoal and ash containing lenses of pale-yellow ash (1004). On its northern side the pit (1003) intersected with a surviving length of wall slot (1100). A radiocarbon date of 1395-1132 cal BC was produced from the fill (1004) of pit 1003 (table 2 and appendix 7).

5.5.3 Pit 1102 survived as a shallow feature 0.12m in depth and was 1.50m by 1.25m in size. It intersected with pit 1003 to the north-east and was filled with a grey sandy silt mixed with charcoal and ash (1101).

5.5.4 Pit 1040 was a steep concave sided feature, 2.90m by 0.90m in size, with a flat base. A layer of small sandstone fragments and pebbles (1088) had been compacted into areas of its base. This metalling was overlain by a 0.16m deep deposit of grey sandy silt mixed with charcoal and ash with lenses of pale-yellow ash (1039).

5.5.5 Pit 1002 which intersected with the southern end of pit 1040 was 2.70m by

1.30m in size and 0.18m in depth with steep concave sides and a flattish base. Compacted into the base was a layer of metalling (1037), overlain by a thin layer of charcoal mixed with ash (1001) and a 0.15m deposit of grey sandy silt mixed with charcoal and ash containing lenses of pale-yellow ash (1000). Pit 1002 was cut by a north-east/south-west field drain.

5.5.6 Pit 1035 which was 2.00m by 1.05m had steep concave sides and a flattish base with frequent sandstone fragments and pebbles compacted into its base to form a metalled surface (1036). It was filled with a 0.24m deep deposit of grey sandy silt mixed with ash and lenses of pale-yellow ash (1034). Immediately to the south-east of pit 1035 was a small posthole (1049). Posthole 1049 was 0.32m by 0.26m in size and 0.18m in depth and filled with a grey-brown sandy silt (1048).

5.5.7 Close to the projected line of the southern wall was pit 1011, which was different in character and nature to the sequence of shallow pits and scoops described above. Pit 1011 was 1.97m by 0.86m in size and had a vertical side to the north with a steep concave side with a step on its southern side and a concave base. It was deeper than the pits to the west and north at 0.34m in depth and was filled with a brown and yellow sandy silt (1010) with occasional small sandstones (some heat fractured), overlain by brown clayey sand (1009) mixed with charcoal and burnt daub.

5.6 Features in close proximity to the roundhouse

5.6.1 To the west of the roundhouse were three pits (1042, 1053 and 1057) and a cut feature (1059) which lay on a rough north-west/south-east alignment. Pit 1042 was a circular feature with concave sides and a flat base. It was 0.65m in diameter and 0.14m in depth and filled with grey sandy silt (1041) containing frequent sandstone fragments up to 0.20m by 0.18m by 0.12m in size, some of which were burnt. Pit 1053 was 0.92m in diameter and 0.22m in depth with steep concave sides and a slightly sloping base. It was filled with grey sandy silt (1052) containing frequent sandstone fragments up to 0.16m by 0.18m by 0.15m in size, some of which showed evidence of having been burnt. Pit 1057 was an irregular shaped feature, 0.80m by 0.60m in size and 0.22m in depth, with variable sides and an uneven base. It was filled with mixed deposits of yellow brown sandy clay and yellow sand (1056) and occasional sandstone fragments. Cut feature 1059 which may represent a posthole was a vertically sided feature with a slight step on its southern side and a flat base. It was 0.28m by 0.24m in size and 0.24m in depth and was filled with a grey sandy silt (1058).

5.6.2 Two small postholes (1061 and 1063) were located just to north of the roundhouse. Posthole 1063 was 0.38m by 0.32m in size with steep concave sides and a flat base. It was 0.13m in depth and filled with a grey sandy silt (1062) and contained two vertically set sandstone fragments set to form a post setting 0.12m in diameter. Posthole 1061 was 0.32m by 0.30m in size with steep concave sides and a flat base. It was 0.14m deep and filled with a grey sandy silt (1060).

5.7 Outlying features (fig.3)

5.7.1 A cluster of features (1077, 1079, 1083, 1085 and 1087) were located to the north of the roundhouse. Two shallow linear features (1085 and 1087) on a ENE-WSW alignment were identified 8m to the north of the roundhouse. Feature 1085 was 3m in length by 0.72m in width and consisted of a concave profiled feature filled with a brown sandy silt (1084). Feature 1087 was 3.80m in length and 0.75m wide consisting of concave sided feature with a flattish base. It was 0.18m in depth and filled with a brown sandy silt (1086) containing occasional sandstone fragments. To the north of these features (1085 and 1087) was an oval-shaped feature (1077), 0.40m by 0.12m in size, with two small deeper cuts in its base. The feature (1077) was 0.10m in depth and filled with a brown sandy silt (1076).

5.7.2 Located just to the south of linear features 1085 and 1087 were two small cut features (1083 and 1079). Feature 1083 was an oval cut feature 0.45m by 0.26m in size with variable sides and uneven base. It was filled with a 0.15m deep brown sandy silt (1082) with occasional small pebbles. Feature 1079 was a small oval pit 0.70m by 0.58m in size with a gentle concave profile. It was 0.14m deep and filled with a brown sandy clay (1078) containing occasional small pebbles and sandstone fragments.

5.7.3 At a distance of 15m to the west of the roundhouse were two outlying features (1108 and 1110) first identified during the evaluation trenching. Feature 1108 was a shallow concave shaped cut feature, 0.20m in diameter, filled with a 0.08m deep brown sandy clay (1107). Pit 1110 was 1.25m by 0.40m in size and had irregular sides and base. The pit (1110) was 0.14m in depth and was filled with a brown sandy clay (1109).

5.7.4 At a distance of 50m south-west of the roundhouse was a 1m by 0.91m area of burning (1043) on the surface of the natural subsoil (fig. 7). The area of burning is of uncertain date but was cut by a furrow and may be related to prehistoric settlement activity at the site.

5.8 Medieval and post-medieval

5.8.1 The roundhouse and associated features were sealed by a layer of ploughsoil averaging 0.30m in depth. Two systems of ridge and furrow were identified with wavelengths of 5-7m, one oriented north-east/south-west, the second running north-west/south-east.

6 DISCUSSION

The Site in its Context

6.1.1 In recent years the onset of developer funded archaeology, the development of geophysical techniques, aerial photography and latterly LIDAR analysis have led to a significant increase in the number of known prehistoric sites across the North-East region. This recent work has shown not only a greater density of prehistoric settlement than once thought but also considerable variation in settlement type and form.

6.1.2 The present excavation contributes to the growing number of known and investigated prehistoric sites in lowland Durham. Bronze Age activity in the area is well attested in the general sense; there are two possible Bronze Age barrows/cairns to the south of Byers Green, 1.5km to the west of the site, a Middle Bronze Age cremation burial at Stonebridge 8km to the north and a background scatter of finds including Bronze Age swords and axes. A multi-ditched Middle Bronze Age enclosure site at Mountjoy, 8km to the north-east is thought to represent a non-domestic site (Brogan and Hodgson 2011). However, there is striking contrast between the relatively few known sites in lowland Durham comparative to upland areas where more sites of this period have been identified, often surviving as upstanding remains. However there is little doubt that this apparent distribution relates more to the difficulty of identifying sites in areas disturbed by intensive mining, industrialisation and the rapid spread of urban conurbations than to an accurate representation of prehistoric settlement patterns. The discovery of this site and similar sites (such as recently discovered Bronze Age roundhouse sites in the Milfield Plain see 6.1.3) is beginning to redress the balance and enable a fuller understanding of the Bronze Age settlement pattern in the North-East region.

6.1.3 The apparent absence of Bronze Age settlement sites in lowland areas of Northumberland in contrast to the pattern of known sites in upland area was noted by Burgess in 1984 (Burgess 1984). However recent discoveries of unenclosed Bronze Age roundhouses in lowland settings are helping to fill this apparent void in the region's prehistoric settlement pattern (Waddington and Passmore 2016). Recent work on the Milfield Plain has led to the identification of a Bronze Age roundhouse at Lookout Plantation (Monaghan 1994), two roundhouses at Cheviot Quarry North (Johnson & Waddington 2008) and a further three at Lanton Quarry (Waddington 2009). The emerging Bronze Age settlement pattern consists of a distribution of unenclosed roundhouses set in their own field systems. This settlement pattern is likely to have been in existence contemporaneously, both in lowland and upland areas of the region and would appear to develop from perhaps as early as the second quarter of the Second Millennium BC.

6.1.4 It is unclear whether the roundhouse from the present site represents an isolated roundhouse or whether it forms an outlying structure from an unenclosed settlement focused on the area immediately to the north of the development.

Isolated roundhouses, in particular, and smaller unenclosed settlements more generally, are under-represented in the archaeological record, probably more as a consequence of their lower visibility to archaeological techniques rather than their rarity. Bronze Age roundhouses can be found either as isolated dwellings or as a larger groups, the latter often arranged in a linear pattern.

6.1.5 It is notable that the roundhouse was identified through geophysical survey with a curvilinear anomaly corresponding to the arrangement of shallow pits or scoops (1003, 1102, 1040, 1002 and 1035) positioned around the inside of the northern, western and south-western wall of the roundhouse. The pits contained magnetically enhanced fills derived from occupation of the roundhouse, without which the roundhouse would not have been identified in the geophysical survey. This highlights the value and efficacy of a strategy of 100% geophysical survey of greenfield sites.

The Site

6.2.1 On the basis of the projected wall line the roundhouse can be shown to have been oval in shape, measuring approximately 13m by 11.5m in size. This would place the roundhouse toward the larger end of the scale of size of roundhouses typically found on prehistoric sites. This is slightly larger than other Bronze Age roundhouses in the North-East region which typically range from 5.8m (Cheviot Quarry House 4) to 10m across (Green Knowe Houses 2 and 3) (Waddington And Passmore 2016, 180).

6.2.2 The roundhouse was constructed with an outer wall trench and an inner ring of postholes, with a 2m gap between these two structural elements. On the eastern side of the roundhouse, wall slots were traced to either side of an entranceway that faced east by north, with a further short length surviving to the north. The wall slots were heavily truncated surviving only as shallow features and it is therefore unsurprising that they did not survive as a continuous feature. A circuit of postholes (1013, 1069, 1006, 1008, 1047, 1051, 1065 and 1067, with two further postholes having been removed by field drains) formed an inner oval area 8.5m by 7.5m in size, within the roundhouse set 2m inside the line of the external wall. On its eastern side there may have been a gap in the circuit corresponding to the east by north facing entrance to the roundhouse. The posts which were set at an average intervals of 2.40m (ranging between 2.25m-2.50m) would have held substantial posts, 0.25m to 0.40m in diameter that would have acted as roof supports, bearing the main weight of the roof. The roundhouse has parallels to other excavated examples such as an unenclosed Late Second/Early First Millennium BC roundhouse at Hall Hill, East Woodburn, Northumberland (Gates 2009). At Hall Hill a ring-bank roundhouse c.11.5m in diameter had an inner ring of nine postholes, forming an inner central area 7.2m in diameter. The postholes from this inner ring ranged between 0.20m to 0.38m in diameter being set at a fairly regular spacing of 2.30m-2.80m. As a further parallel to the Middlestone Moor roundhouse a series of shallow pits or scoops were also located in the space between the inner ring of posts and the outer ring-bank

wall.

6.2.3 The entrance to the roundhouse faced east by north, (76 degrees which is midway between ENE and east on the points of a compass) which falls just outside the most common range of orientation (east to south-east) of roundhouses. In a study of roundhouses in the Tees Valley 71% of roundhouse entrances faced between east to south-east, which is comparable to the wider study undertaken by Pope in 2003 (Sherlock 2012, 43). It has been argued that cosmological reasons could be a factor with doorways facing east to coincide with position of sunrise on spring and autumn equinoxes. Rather, the predominant eastward orientation of doorways may relate more to the practical consideration of maximising natural light into the roundhouse during the morning period.

6.2.4 The entrance to the roundhouse was formed by two linear east-west slots (1025 and 1027) set 1.10m apart. At a distance of 0.30m beyond the eastern end of each slot was a posthole (1071 and 1073) which would have held a post defining either side of a passageway or a covered porch leading into the roundhouse. Pope's study shows that porches whilst not a common structural feature occur on 15% of Late Iron Age or Romano-British roundhouses (Sherlock 2012, 43). Porchways or "entrance passageways" are a feature of post-built Bronze-Age roundhouses at Cheviot Quarry North, Lanton Quarry and Lookout Plantation (Waddington and Passmore 2016, 180). Roundhouses with porches are generally interpreted as being more likely to represent dwellings and it has been suggested that porches may indicate roundhouses of a higher status (Harding 2009). At the present site the entrance had been remodelled at some point during the life of the roundhouse as the exterior wall slot (1023) had been cut by the northern entranceway slot (1025).

6.2.5 A number of cut features and postholes were located within the central area of the roundhouse. Although much disturbed, pit 1015 appeared to have had a stone lining and may perhaps have had or included a storage function. A row of three posts (1094, 1096 and 1098) forming a rough north-east/south-west alignment were located immediately south of pit 1015 and may have helped to define its south-eastern side. The fill (1014) of pit 1015 was relatively sterile compared to other features within the roundhouse which had higher concentrations of charcoal and ash. A possible alternative interpretation is that the pit (1015) relates to a different phase of activity at the site to that represented by the roundhouse. Two postholes (1080 and 1092) close to the centre of the roundhouse were cut through an 0.80m by 0.40m area of burning visible on the upper surface of the natural subsoil, which is likely to indicate the former position of a central hearth, a common feature amongst Bronze Age roundhouses on the Milfield Plain (Waddington and Passmore 2016, 180).

6.2.6 A series of shallow features were located around the inside of the roundhouse in the space between the inner circuit of postholes and the external wall. These shallow pits or scoops (1003, 1102, 1040, 1002 and 1035) were ranged around the inside of the northern, western and south-western wall of the

roundhouse. The majority of these features had a compacted metalling on their base and had subsequently been filled with deposits of grey sandy silt mixed with charcoal and ash containing lenses of pale-yellow ash, which is likely to represent material accumulating within the internal floor space of the roundhouse.

6.2.7 Parallels occur at a number of prehistoric sites where scoops and hollows have been found around the inner perimeter of roundhouses (refer 6.2.8). At a roundhouse at Halls Hills, East Woodburn referred to above (6.2.2), a series of discontinuous shallow scoops or hollows, with gently shelving profiles, up to 4m in length and 0.10m in depth, were located just within the perimeter of the external wall. The strict concentricity of this series of scoops with both the external ring-bank wall and the inner circuit of postholes indicated that the features were contemporary with the roundhouse. Gates argued that the scoops reflected concentric zoning in the use of floor space within the building, with the peripheral space between the wall and the ring of internal roof supports being functionally distinct from the central communal area round the hearth (Gates 2009, 59). The causeways that divided the features may reflect the placing of radial partitions around the periphery of the house, sub-dividing the area into discrete sections. In this model the peripheral region of the roundhouse would have been sub-divided into zones, some for personal accommodation, other sections perhaps for the storage of animals or supplies. Gates argues that the formation of the scoops at this roundhouse relates to differential wear to the floor of the house caused by the passage of feet or repeated sweeping out of domestic rubbish or animal bedding (Gates 2009, 60).

6.2.8 Gates noted that the scoops at Hall Hill bear a close resemblance to a number of “ring-ditches” belonging to prehistoric roundhouses (Gates 2009, 58). Some early commentators interpreted ring- ditches as external features used for drainage (Stevenson 1949). However at the example at High Knowes, Alnham, Northumberland, Jobey showed the ring-ditch to be internal and such features have subsequently typically been interpreted as relating to the action of stalled cattle within the roundhouse (Jobey & Tait 1966). Other interpretations of such features have been that they were designed to provide storage space for crops or to increase available headroom inside the building. At Dryburn Bridge, East Lothian a number of ring-ditches were interpreted as initially functioning as a sunken floorspace, but were subsequently filled, levelled and partially paved (Dunwell 2007, 47). If these ring-ditches had originally been designed as sunken floor areas in the roundhouse then this function had altered during the life of the building. As Dunwell points out the term ring-ditch may embrace a variety of functions. They may not all have been created in the same way and that the functions of ring-ditches may vary between structures, settlements or regions, or there may have been multiple functions.

6.2.9 On balance it seems most probable that the shallow pits or scoops from the roundhouse at the present site relate to the stalling of animals inside the house, with metalling on their base laid to facilitate the mucking- out of bedding and waste materials. Pope noted that Middle Bronze Age ring-ditches tend to be restricted to

one half of the house, often to the right of the entrance, which she argues may suggest the stalling of just a few milk producing animals (Pope 2015, 174). The shallow pits at the Middlestone Moor roundhouse do indeed run around approximately half of the roundhouse, so perhaps the other half of this peripheral area was for human accommodation. Stalling animals within the house would also be beneficial in terms of increasing house temperature and it is possible that this would have been a practice utilised in particular during the winter period.

6.2.10 A range of external features including hearths, rubbish pits and working hollows are sometimes found immediately outside roundhouses. A cluster of features were located to the north of the roundhouse and a line of small pits running to the north-west beyond the excavation area. Whilst there were no indicators of specific usages for these features, it is clear that they relate to a range of activities contemporary with the occupation of the roundhouse.

6.3 Dating Evidence (Table 2 & Appendix 7; SUERC)

6.3.1 Radiocarbon dating suggests that the roundhouse dates to a period between the late 15th-late 12th Century BC. Radiocarbon dates of 1426-1277 cal BC and 1389-1129cal BC were recovered from two postholes (1006 and 1008) forming part of the inner circuit of postholes. Charred cereal grain from posthole 1017 toward the centre of the roundhouse produced a date of 1418-1262 cal BC. A radiocarbon date of 1373-1122 cal BC was recovered from a slot (1025; fill 1024) forming the northern passageway at the entrance to the roundhouse. A radiocarbon date of 1395-1132 cal BC was recovered from the fill (1004) of pit 1003. Bayesian analysis of the radiocarbon samples will be undertaken and may provide further information on the chronology of the site.

Laboratory code	Context	Sample	Feature No.	Material used for C14 dating	$\delta^{13}C$ ‰	Radiocarbon Age BP	Calibrated date 68.3% probability	Calibrated date 95.4% probability
SUERC-96516 GU56926	1004	2	F1003	Alder charcoal Stemwood, 1 wide growth ring	-25.3	3025 ± 29	1375 (14.1%) 1351 cal BC 1301 (54.1%) 1222 cal BC	1395 (25.3%) 1333 cal BC 1325 (68.1%) 1197 cal BC 1172 (0.8%) 1164 cal BC 1142 (1.1%) 1132 cal BC
SUERC-95867 GU56280	1005	4	F1006	Naked barley grain	-23.3	3093 ± 28	1413 (30.2%) 1378 cal BC 1348 (38.0%) 1304 cal BC	1426 (95.4%) 1277 cal BC
SUERC-95868 GU56281	1007	5	F1008	Hazel charcoal Complete roundwood, pith to bark, 5 even growth rings, 8mm diameter	-26.8	3017 ± 28	1371 (8.6%) 1356 cal BC 1296 (59.6%) 1218 cal BC	1389 (19.3%) 1337 cal BC 1320 (71.6%) 1193 cal BC 1176 (2.1%) 1161 cal BC 1144 (2.4%) 1129 cal BC
SUERC-95869 GU56282	1016	6	F1017	Charred wheat grain (cf. emmer)	-22.7	3074 ± 28	1398 (21.0%) 1370 cal BC 1357 (47.3%) 1294 cal BC	1418 (95.4%) 1262 cal BC
SUERC-96381 GU56283R	1024	8	F1025	Hazel charcoal Small roundwood, 4 growth rings	-28.5	2988 ± 27	1266 (53.9%) 1196 cal BC 1174 (6.5%) 1162 cal BC 1143 (7.8%) 1130 cal BC	1373 (3.1%) 1354 cal BC 1297 (92.4%) 1122 cal BC

Table 2 Radiocarbon dating results

[The calibrated age ranges are determined using OxCal4.4.2 (Bronk Ramsey 2020); IntCal20 curve (Reimer *et al.* 2020)]

6.4 Palaeo-environmental evidence (see appendices 5-6)

6.4.1 Two palaeo-environmental reports (ASDU report 5339 and 5452) were prepared by Archaeological Services Durham University (see appendices 5-6 for full reports). Palaeo-environmental analysis shows the occupants of the roundhouse at Middlestone Moor exploited a range of habitats encompassing the higher areas of Magnesian limestone south of the site, to the low-lying riparian woodland and wetland habitats towards the River Wear. The samples principally comprised domestic hearth waste, although there was some evidence for structural remains and sweepings of burnt fodder/animal dung. The early use of spelt wheat was indicated, in addition to cereals more typical of Bronze Age cultivation in northern England including emmer wheat and naked barley. The probable use of fibre plants was shown, with flax seeds either deriving from the cultivated or wild perennial species. Charred crop remains, wild-gathered foods and weed seeds occured in low numbers across the site, only being absent from pit 1011.

Plant macrofossils

6.4.2 Cereal remains of barley and wheat were present in low numbers. Asymmetrically shaped grains suggest 6-row barley (*Hordeum vulgare*) was in use, with both hulled and naked varieties represented. The wheat crop comprised emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*). A few flax seeds were present in entrance posthole 1071 (fill 1070) and linear feature 1055 (fill 1054]. This may be cultivated flax (*Linum usitatissimum*), although the seeds are rather small (3mm x 1.4mm), and could derive from perennial flax (*Linum perenne*), an open grassland herb with similar, but smaller, beaked seeds.

6.4.3 A few hazel nutshell fragments occured in most of the samples, with a larger number present in posthole 1080 (fill 1081]. Other wild-gathered foods include a sloe fruitstone in posthole 1080 (fill 1081] and an elderberry fruitstone in slot 1025 (fill 1024]. The weed flora includes indicators of open heathy grassland and damp meadows/pasture such as heath-grass, ribwort plantain, common yellow sedge, pignut and buttercups. Goosefoots, bedstraws, hemp-nettles, pale persicaria and redshank occur in a wide range of open disturbed habitats including arable and waste ground (Preston *et al.* 2002).

Charcoal

6.4.4 Charcoal was common in many of the fills, and generally comprised a mixed assemblage of species with both stemwood and roundwood recorded. Oak, hazel, alder and birch occurred most frequently, with a minor presence of holly, hawthorn and willow. Growth ring widths generally show short to moderate growth, with alder occasionally having wide rings. Charcoal was common in the pits (1002 and 1003) around the inner perimeter of the roundhouse, but differed in nature between the fills. In pit 1002, hazel small roundwood was the main component of fill 1001, while overlying silt layer 1000 was dominated by oak stemwood, with rare alder branchwood. In pit 1003, alder stemwood charcoal was predominant, with oak and hazel also recorded. Alder in this fill included relatively large fragments (up to

3cm), with a cut mark noted on one. Charred plant macrofossils was present in low numbers in both pits, and included hazel nutshell and weed remains of redshank, heath-grass, small-seeded bedstraws and pale persicaria. Pit 1003 comprised a few cereals (barley and wheat grains). Fill 1009 of pit 1011 differed from the pits and scoops around the inner perimeter of the roundhouse. It comprised a significant quantity of daub and charcoal, with an absence of other charred plant remains. The charcoal assemblage was made up entirely of oak stemwood, with high levels of vitrification and radial cracks providing evidence for a high temperature fire, although burnt greenwood can also produce these features. The nature and character of pit 1011 was quite distinct from the shallow pits and scoops ranged around the northern and western sides of the roundhouse. In contrast to the shallow features (1003, 1102, 1040, 1002 and 1035) with metalled bases averaging 0.18m in depth, pit 1011 was a steep-sided feature 0.34m in depth, that clearly served a different purpose.

Crop Plants

6.4.5 The cereals included emmer wheat, spelt wheat and six-row barley (hulled and naked), although it was not possible to determine the relative importance of these crops due to their low numbers and poor preservation. While emmer wheat and naked barley are principal crops of early British prehistory, the occurrence of spelt represents a relatively early record of a crop more commonly found on late prehistoric sites in this region (Hall & Huntley 2007). The introduction of spelt in northern England is believed to have taken place sometime during the Late Bronze Age, although there appears to have been regional differences with spelt superseding emmer at an earlier stage in the south of the region (Hall & Huntley 2007).

6.4.6 Prehistoric finds of flax are rare in northern England, although not without precedent. A few charred seeds identified from a late Bronze Age unenclosed roundhouse at East Woodburn, Northumberland (Van der Veen 2009) point to the use of this crop for oil or fibre production. While the small flax seeds at Middlestone Moor may represent perennial flax, this does not rule out the deliberate collection of this wild species which produces a good fibre from the stems, albeit inferior to cultivated flax. In the Durham region, perennial flax is today locally abundant in Magnesian Limestone grassland (Graham 1988). A large colony at Thrislington reflects remnants of what was probably formerly a much more extensive habitat type on the limestone escarpment south-east of the site. Considering the proximity of this habitat, it is also possible that the small assemblage of open grassland weeds (potentially including perennial flax) reflects the burnt remains of hay or dung from grazing livestock.

Woodland resources and firewood selection

6.4.7 Most of the contexts represent a similar mix of charcoal species probably representing sweepings of hearth waste. The fuel debris comprised an ideal firewood combination of oak stemwood which provides a high heat, quick-burning logs of alder and birch to enliven the fire, and branches/stems of hazel for kindling (Bishop

et al. 2015). Pit 1011, by contrast, had by far the largest quantity of charcoal and was entirely composed of oak stemwood (timber-sized wood) and probably reflects structural material. Oak has provided one of the main structural timbers throughout prehistory due to its cleavability and durable heartwood (Gale & Cutler 2000). Insect tunnels are infrequently noted in alder and hazel, and rarely in oak. Considering the overall good condition of these fragments, the insect damage probably reflects long term storage rather than the collection of deadwood. However, the prevalence of insect degradation in Bronze Age charcoal records throughout Britain and Ireland may be caused by climatic factors.

Woodland composition

6.4.8 Alder and willow are moisture and light-demanding trees, naturally found in damp low-lying areas (Claessens *et al.* 2010; Preston *et al.* 2002). The 1860 OS map of the area shows a small stream flowing north away from the site towards the River Wear, which joins with Hagg Beck in a damp wooded area called Hawly Bogs (now Nancy's Wood). Linear stands of alder and willow probably expanded along these streams and formed carr woodland in the valley bottom. Birch may also have been present in these damp habitats, particularly if represented by downy birch (*Betula pubescens*) which prefers wetter conditions. The site is located on a lowland valley terrace of the Southern Wear Valley Character Area (Durham County Council 2021). Oak and hazel, the most frequently recorded species on the site, would have formed areas of mixed deciduous woodland on the valley slopes or in riparian woodland alongside the River Wear. Common oak (*Quercus robur*), which is tolerant of waterlogged conditions (Preston *et al.* 2002), is the most likely species in the latter instance. Sporadic occurrences of holly and hawthorn, suggest these shrubs/small trees were growing at the woodland margins, in scrub, or as an understorey layer, particularly if the woodland was open.

The extent of local landscape exploited

6.4.9 Palaeo-environmental analysis has shown that the occupants of the roundhouse at Middlestone Moor exploited a range of habitats encompassing the higher areas of Magnesian limestone south of the site, to the low lying riparian woodland and wetland habitats towards the River Wear.

Regional context

6.4.10 The importance of the site at Middlestone Moor is highlighted by the scarcity of palaeo-environmental studies from Bronze Age settlements in the region, with charcoal evidence from this site type being particularly limited (Huntley 2010). The few contemporary sites providing similar palaeo-environmental evidence include Bradley, Leadgate and Great Lumley (Archaeological Services 2019; 2018). Bradley is a burnt mound site located adjacent to several springs and streams flowing into Pont Burn, with two radiocarbon dates reflecting middle-late Bronze Age activity (1400-1120 cal BC). Combined evidence from charcoal and charred palaeo-environmental remains suggested the pit features at Bradley were located in a damp clearing, surrounded by a local riparian woodland. Alder and willow occurred on the flushed wetter areas, while the drier slopes comprised an oak-birch woodland, with an

understorey of hazel, holly and rowan.

6.4.11 A group of pits were excavated at Great Lumley, three of which provided dates between 1640-1420 cal BC. As at Middlestone Moor, the main fuelwoods were oak, alder and hazel, supplemented by apple or hawthorn and willow family. Results from all three sites point to areas of open woodland and grassland, which is consistent with regional pollen evidence for increased opening of the woodland canopy during the Bronze Age (Donaldson & Turner 1977; Bartley *et al.* 1976). The predominance of alder at these three sites reflects increased exploitation of wet woodland, and perhaps highlights the wetter climatic conditions attributed to this period (Mansell *et al*. 2014; Macklin *et al*. 2010).

6.5 Artefactual evidence (Appendix 4)

Dr Rob Young

6.5.1 A total of 10 sherds of later prehistoric pottery was recorded during excavations at Middlestone Moor in 2020 (see Appendix 4 for full report). The sherds are difficult to date on typological grounds and probably derive from pottery of local Later Bronze Age/ Iron Age tradition. The assemblage shows varying levels of abrasion and differential preservation (see below).As is generally the case with prehistoric pottery groups it is difficult to make an accurate assessment of the total number of vessels present though, in this case the number is probably 6

6.5.2 Given that most of the material under discussion comes from the walls of vessels, little can be said about vessel form, though the internally bevelled rim form of Vessel 4 might suggest that it was part of a fairly straight side jar of rim diameter, c. 26cms. In terms of chronology, again, little can be said, given the nature of the material, other than it would not be out of place in any of the region's later prehistoric (Late Bronze Age/Iron Age) ceramic assemblages.

6.5.3 The rim of Vessel 4, with its internal bevel is a common occurrence (e.g. Thorpe Thewles (Swain, 1987), Faverdale (Gerrard, 2012), Hetha Burn (Burges, 1970). One possible point of note may be the occurrence of fragments of Vessels 2, 3, 4 and 5 in contexts relating to the entrance way of the round house. The possibility that they may represent either foundation or closure deposits in relation to the structure's history might be worthy of consideration.

6.5.4 Overall, this small assemblage of material is of regional importance in that it increases our general knowledge about the localised distribution of later prehistoric pottery.

7 The significance of the site

7.1 The Middle Bronze Age roundhouse represents an important discovery as very few settlement sites of this period have been investigated in the region. This is particularly true for sites in lowland settings where fewer sites of this period have been identified than in upland areas. Taken in conjunction with recent discoveries of unenclosed Bronze Age roundhouses at the Milfield Plain, Northumberland the present site is helping to address a gap in the region's prehistoric settlement pattern. It is becoming clear that the settlement pattern of unenclosed Bronze Age roundhouses is likely to have been present in lowland as well as upland settings. The roundhouse has a number of noteworthy parallels to other excavated examples of roundhouses both in North-East Region and South-East Scotland. It is uncertain whether it represented an isolated roundhouse or was an outlier to a settlement extending further to the north beyond the site. There was no evidence for an enclosing ditch or palisade, the roundhouse belonging to the category of unenclosed settlement.

7.2 It is notable that the roundhouse was identified through geophysical survey with a curvilinear anomaly corresponding to the arrangement of shallow pits or scoops positioned around the inside of the northern, western and south-western wall of the roundhouse. This highlights the value and efficacy of a strategy of 100% geophysical survey of greenfield sites.

8 BIBLIOGRAPHY

Brown, A. 2014 An Historic Environment Desk-Based Assessment of Land off Durham Road, Spennymoor, Co. Durham, ARS Ltd Report

Brogan, G. and Hodgson, N. 2011 A Bronze Age site at Mountjoy, Durham City; archaeological evaluation in 2003-7, Archaeologia Aeliana Fifth Series, Volume 40, Society of Antiquaries of Newcastle upon Tyne

Burgess, C. 1970 Excavations at the scooped settlement Hetha Burn 1, Hethpool, Northumberland 1969, Transactions of the Architectural and Archaeological Society of Durham and Northumberland, II, 1 26

Burgess, C.1984 The Prehistoric Settlement of Northumberland: a speculative survey, in Miket, R. & Burgess, C. (eds.) Between and Beyond the Walls, Edinburgh, John Donald

BGS 2020 British Geological Survey, Geology of Britain viewer

Dunwell, A. 2007 Cist Burials and an Iron Age settlement at Dryburn Bridge, Innerwick, East Lothian, Scottish Archaeological Internet Report 24

Durkin, R. 2014 Geophysical Survey of Land off Durham Road, Spennymoor, Co. Durham, ARS Ltd Report

Gates, T. 2009 Excavation of a Late Second/Early First Millenium BC Unenclosed Roundhouse at Halls Hill, near East Woodburn, Archaeologia Aeliana Fifth Series Volume 38, Society of Antiquaries of Newcastle upon Tyne

Gerrard, J. 2012 Native and Roman Pottery, In Proctor, J. 2012 Faverdale, Darlington: Excavations at a major settlement in the northern frontier zone of Roman Britain. Pre-construct Archaeology Monograph, 15, London. 77-89.

Harding, D. 2009 The Iron Age Roundhouse Later Prehistoric Building in Britain and Beyond, Oxford University Press

Jobey, G. and Tait, J. 1966 Excavation on palisaded settlement and cairnfields at Alnham, Northumberland Archaeologia Aeliana Fourth Series Volume 44, Society of Antiquaries of Newcastle upon Tyne

Johnson, B. & Waddington, C. 2008 Excavation of prehistoric and Dark Age settlement remains from Cheviot Quarry, Milfield Basin, Northumberland, Archaeological Journal 165, 107-264

McKelvey, J. 2018 Archaeological Evaluation of land at Durham Road, Middlestone Moor, Spennymoor, County Durham, AD Archaeology report

Miket, R., Edwards, B. & O'Brien, C. 2008 Thirlings: A Neolithic Site in Northumberland', Archaeological Journal, 165:1, 1-106

Monaghan, J. 1994 An Unenclosed Bronze Age house site at Lookout Plantation, Northumberland, Archaeologia Aeliana Fifth series Volume 22, 29-41

North-East Regional Research Framework II forthcoming - The Late Bronze Age- Iron Age draft document

Peacock, D.P.S. 1977 Ceramics in Roman and Medieval archaeology, in D.P.S. Peacock, D.P.S 1977 (ed.) Pottery and Early Commerce, Academic Press, London, 21-33.

PCRG: Prehistoric Ceramics Research Group 1995 The Study of Later Prehistoric Pottery: General Policies and Guidelines for Analysis and Publication, The Prehistoric Ceramics Research Group Occasional Papers 1 and 2

Pope, R. 2003 Prehistoric dwelling; circular structures in north and central Britain 2500BC-500AD, Unpublished PHD thesis University of Durham

Pope, R. 2015 Bronze Age architectural traditions: dates and landscapes in Hunter, F. and Ralston, I. (eds) 2015 Scotland in Later Prehistoric Europe, 159-184, Edinburgh, Society of Antiquaries of Scotland.

Sherlock S. 2012 Late Prehistoric Settlement in the Tees Valley and North-East England

Sørensen M.L.S.1996 Chapter 4 Pottery evidence for formation process in the Late Bronze Age deposits Needham, S. and Spence, T. (eds.) 1996, Runnymede Bridge Research Excavations, Volume 2, London, British Museum Press.

Stevenson, R. 1949 Braidwood Fort, Midlothian; the exploration of two huts, Proceedings of the Society of Antiquaries of Scotland 83 (1948-9)

Swain, H.P. 1987 The Iron Age pottery, in Heslop, D.H.The Excavation of the Iron Age Settlement at Thorpe Thewles, Cleveland, 1980-82, CBA Research Report 65, London, 57-71.

Waddington, C.2009 A note on Neolithic, Bronze Age and Anglo-Saxon remains at Lanton Quarry near Milfield, Archaeologia Aeliana Fifth series Volume 38, 23-39

Waddington, C. and Passmore, D. 2016 Bronze Age Settlement: Some Considerations in the Light of Recent Results, in Crellin, R., Fowler, C. and Tipping, R. (eds.) 2016 Prehistory without Borders The Prehistoric Archaeology of the Tyne-Forth Region Oxford, Oxbow Books

APPENDIX 1: LIST OF CONTEXTS

Context	Description	Depth	Location
1000	Fill of pit 1002	0.03m	Roundhouse
1001	Fill of pit 1002	0.15m	Roundhouse
1002	Cut of pit	0.18m	Roundhouse
1003	Cut of pit	0.20m	Roundhouse
1004	Fill of pit 1003	0.20m	Roundhouse
1005	Fill of posthole 1006	0.37m	Roundhouse
1006	Cut of posthole	0.37m	Roundhouse
1007	Fill of posthole 1008	0.35m	Roundhouse
1008	Cut of posthole	0.35m	Roundhouse
1009	Fill of pit 1011	0.08m	Roundhouse
1010	Fill of pit 1011	0.34m	Roundhouse
1011	Cut of pit	0.34m	Roundhouse
1012	Fill of posthole 1013	0.33m	Roundhouse
1013	Cut of posthole	0.33m	Roundhouse
1014	Fill of pit 1015	0.35m	Roundhouse
1015	Cut of pit	0.35m	Roundhouse
1016	Fill of posthole 1017	0.35m	Roundhouse
1017	Cut of posthole	0.35m	Roundhouse
1018	Metalling on base of pit 1003	0.03m	Roundhouse
1019	Packing of posthole 1013		Roundhouse
1020	Fill of posthole 1021	0.13m	Roundhouse
1021	Cut of posthole	0.13m	Roundhouse
1022	Fill of wall slot 1023	0.22m	Roundhouse
1023	Cut of wall slot	0.22m	Roundhouse
1024	Fill of slot 1025	0.55m	Roundhouse entranceway
1025	Cut of slot	0.55m	Roundhouse entranceway
1026	Fill of slot 1027	0.55m	Roundhouse entranceway
1027	Cut of slot	0.55m	Roundhouse entranceway
1028	Fill of wall slot 1029	0.18m	Roundhouse
1029	Cut of wall slot	0.18m	Roundhouse
1030	Fill of cut feature 1031	0.17m	Roundhouse
1031	Cut feature	0.17m	Roundhouse
1034	Fill of pit 1035	0.24m	Roundhouse
1035	Cut of pit	0.24m	Roundhouse
1036	Metalling on base of pit 1035	0.03m	Roundhouse
1037	Metalling on base of pit 1002	0.03m	Roundhouse
1039	Fill of pit 1040	0.16m	Roundhouse
1040	Cut of pit	0.16m	Roundhouse
1041	Fill of pit 1042	0.14m	North-west of roundhouse
1042	Cut of pit	0.14m	North-west of roundhouse
1043	Area of burning		Western sector of site

1044	Fill of cut feature 1045	0.14m	Roundhouse
1045	Cut feature	0.14m	Roundhouse
1046	Fill of posthole 1047	0.39m	Roundhouse
1047	Cut of posthole	0.39m	Roundhouse
1048	Fill of posthole 1049	0.18m	Roundhouse
1049	Cut of posthole	0.18m	Roundhouse
1050	Fill of posthole 1051	0.43m	Roundhouse
1051	Cut of posthole	0.43m	Roundhouse
1052	Fill of pit 1053	0.22m	North-west of roundhouse
1053	Cut of pit	0.22m	North-west of roundhouse
1054	Fill of feature 1055	0.10m	Roundhouse
1055	Curvilinear feature	0.10m	Roundhouse
1056	Fill of pit 1057	0.22m	North-west of roundhouse
1057	Cut of pit	0.22m	North-west of roundhouse
1058	Fill of cut feature 1059	0.24m	North-west of roundhouse
1059	Cut feature	0.24m	North-west of roundhouse
1060	Fill of posthole 1061	0.14m	North of roundhouse
1061	Cut of posthole	0.14m	North of roundhouse
1062	Fill of posthole 1063	0.13m	North of roundhouse
1063	Cut of posthole	0.13m	North of roundhouse
1064	Fill of posthole 1065	0.38m	Roundhouse
1065	Cut of posthole	0.38m	Roundhouse
1066	Fill of posthole 1067	0.40m	Roundhouse
1067	Cut of posthole	0.40m	Roundhouse
1068	Fill of posthole 1069	0.38m	Roundhouse
1069	Cut of posthole	0.38m	Roundhouse
1070	Fill of posthole 1071	0.13m	Roundhouse entranceway
1071	Cut of posthole	0.13m	Roundhouse entranceway
1072	Fill of posthole 1073	0.16m	Roundhouse entranceway
1073	Cut of posthole	0.16m	Roundhouse entranceway
1074	Fill of posthole 1075	0.21m	Roundhouse
1075	Cut of posthole	0.21m	Roundhouse
1076	Fill of cut feature 1077	0.10m	North of roundhouse
1077	Cut feature	0.10m	North of roundhouse
1078	Fill of cut feature 1079	0.14m	North of roundhouse
1079	Cut feature	0.14m	North of roundhouse
1080	Cut of posthole	0.32m	Roundhouse
1081	Fill of posthole 1080	0.32m	Roundhouse
1082	Fill of cut feature 1083	0.15m	North of roundhouse
1083	Cut feature	0.15m	North of roundhouse
1084	Fill of linear cut feature 1085	0.10m	North of roundhouse
1085	Cut feature	0.10m	North of roundhouse
1086	Fill of linear cut feature 1087	0.18m	North of roundhouse
1087	Cut feature	0.18m	North of roundhouse
1088	Metalling on base of pit 1040	0.02m	Roundhouse

1089	Fill of posthole 1090	0.22m	Roundhouse
1090	Cut of posthole	0.22m	Roundhouse
1091	Fill of posthole 1092	0.22m	Roundhouse
1092	Cut of posthole	0.22m	Roundhouse
1093	Fill of posthole 1094	0.10m	Roundhouse
1094	Cut of posthole	0.10m	Roundhouse
1095	Fill of posthole 1096	0.10m	Roundhouse
1096	Cut of posthole	0.10m	Roundhouse
1097	Fill of posthole 1098	0.10m	Roundhouse
1098	Cut of posthole	0.10m	Roundhouse
1099	Fill of slot 1100	0.12m	Roundhouse
1100	Cut of wall slot	0.12m	Roundhouse
1101	Fill of pit 1101	0.12m	Roundhouse
1102	Cut of pit	0.12m	Roundhouse
1107	Fill of cut feature 1108	0.08m	West of roundhouse
1108	Cut feature	0.08m	West of roundhouse
1109	Fill of cut feature 1110	0.14m	West of roundhouse
1110	Cut feature	0.14m	West of roundhouse

APPENDIX 2 – FINDS LIST

SF 1 Pottery – 1 sherd context 1024

SF 2 Pottery – 1 sherd context 1024

SF 3 Pottery – 1 sherd context 1024

SF 4 Pottery – 1 sherd context 1022

SF 5 Pottery – 1 sherd context 1022

SF 6 Pottery – 1 sherd context 1054

SF 7 Pottery – 1 sherd context 1054

SF 8 Pottery – 1 sherd context 1054

SF 9 Pottery – 1 sherd context 1054

SF 10 Pottery – 1 sherd context 1016

APPPPENDIX 3 WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL MITIGATION (STRIP, MAP & RECORD EXCAVATION) OF LAND OFF DURHAM ROAD, SPENNYMOOR, DURHAM

1 Introduction

1.1 This Written Scheme of Investigation (WSI) represents a methods statement for archaeological mitigation for a residential development. The mitigation will consist of a strip, map and record excavation. The development area comprises a single field of 13.75 ha which is centred on NGR NZ 24236, 32784. The site is bounded to the south-east by Durham Road, to the south-west by Byers Green Lane, and to the north-east by Bishop's Close Road.

1.2 A Desk-Top Assessment (ARS 2014) a Geophysical Survey (ARS 2014) and Evaluation Trenching (AD Archaeology 2018) have been undertaken in advance of the proposed development.

1.3 Policy relating to the assessment and mitigation of impacts to the heritage resource within the planning system is set out in the National Planning Policy Framework. The Framework identifies that the planning system should perform an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment (NPPF 2018, para 8, page 5).

1.4 The Framework further clarifies that, in circumstances where heritage assets will be damaged or lost as a result of development. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible (NPPF 2018, para 199, page 56).

1.5 Having assessed the potential impact of the development on the archaeological resource, Durham County Council Archaeology Team has advised that a condition should be attached to the permission requiring a programme of archaeological mitigation, comprising a strip, map and record excavation.

2 Archaeological and Historical Background

2.1 Prehistoric Period

2.1.1 There are a number of prehistoric features in the wider area of the site. A flint working site has been identified c 1.3km to the south-east at Middlestone (HER 2124). There are two possible Bronze Age barrows/cairns to the south of Byers Green, c1.5km to the west (HER 1433 and 546). Prehistoric settlements have been

identified 1.5km to the west at Kirk Merrington (HER 395) and at Butcher's Race (HER 47718) in Spennymoor 2.1km to the north-west.

2.2 Romano British Period

2.2.1 The study area lies 2.5km east of Dere Street with Binchester Roman Fort 3km to the south-west of the site. Sherds of Roman samian ware (HER 2123 and 2117) have been recovered 0.87km to the south-east and at Byers Green 1km to the north-west

2.3 Medieval Period

2.3.1 The first reference to Spennymoor is in an Episcopal Register of 1336. Spennymoor was an ancient waste which is thought to have extended from Auckland Park to Sunderland Bridge, bounded by the villages of Tudhoe and Whitworth at the north and Hett and Merrington to the south. The moor was held by the Prior of Durham by 1279 and is known to have contained two fishponds. A charter of 1279 confirms that the Prior's tenants had brought areas of Spennymoor into cultivation.

2.4 Post-Medieval

2.4.1 There are documentary references to a military training encampment on the moor in 1615 and disputes over sinking of coal pits in 1626. In 1667 Sir Robert Shafto agreed with other freeholders of Whitworth to divide the moor into allotments and 243 acres were enclosed as a result. One of the fields within the development area is referred to as "Deadman's Field" possibly referring to the former site of a mass grave after a battle.

2.4.2 At the beginning of the 19th Century, Spennymoor became the focus for a number of coal mines and the First edition OS Map of 1856 shows a planned village laid out along the Byers Green branch of the West Hartlepool railway. The area of the site remained as undeveloped land with a settlement beginning to develop to the south at Middlestone Moor by the time of the second edition OS of 1898.

2.5 Geophysical Survey

2.5.1 The DBA identified the extent of post-medieval agricultural practices and the sites of former field boundaries constructed at the time or since the enclosure of Spennymoor and the geophysical survey results have confirmed that below ground remains of several of these boundaries survive at the site. The results have also revealed evidence of agricultural ploughing regimes which relate to the former, rather than the modern, boundaries.

2.5.2 Subsequent to a desk-based assessment and a geophysical survey 32 trenches were excavated across the site. The majority of the trenches proved to be devoid of significant archaeological features and no further work would be appropriate in these areas of the site. The trenching confirmed the absence of a

putative mass grave that had been postulated on the basis of documentary evidence (Brown 2014). Sub-surface remains of ridge and furrow agricultural regimes were identified in a number of the trenches with the predominant orientation of furrows being north-west/south-east. A linear north-east/south-west geophysical anomaly (Durkin 2014; geophysical feature 2) proved to represent a post-medieval field boundary being associated with a north-east/south-west ploughing regime. Toward the northern limit of the site the geophysical survey identified a curvilinear anomaly (Durkin 2014; geophysical feature 1) which had been interpreted as a possible domestic structure. The trenching in this area (Trenches 11 and 12) located groupings of pits, postholes and cut features. A number of these features contained burnt daub and the likelihood is that some of these do indeed relate to structural activity in this area. Although no dating evidence was recovered it was clear that a number of these features were cut by furrows and therefore are pre-modern in date. The morphology and nature of these features suggest that it is most likely that they relate to prehistoric settlement activity focused on the higher ground at the northern limit of the site. The absence of features in nearby trenches (Trenches 10, 13, 14, 25 and 32) suggests that the features in Trenches 11 and 12 represents a localised concentration of archaeological features near the northern limit of the site

2.5.3 In recent years development control- led archaeological investigation in the area has contributed significantly to our knowledge of the density of settlement and activity in this area during the prehistoric period (North East Regional Research Framework, Petts & Gerrard, 2006).

> Recent excavations have begun to challenge established models of prehistoric settlement morphology. It is therefore important for any evidence of prehistoric settlement to be studied in order to establish more firm chronologies. Also needed is the study of site function and the social role of settlements in the landscape.
> (NERRF Research Priority Iii)

3 Mitigation Response

3.1 The assessment exercises have identified that significant archaeological remains survive in a localised area near the northern limit of the site in the areas of Trenches 11 and 12. The loss of archaeological features should be mitigated by a programme of investigation and recording in advance of their destruction. This will ensure their ‘preservation by record’ consistent with the objectives of paragraph 199 of the NPPF. An area of 90m by 50m has been identified for the strip and record (see attached figure). If discrete features are located which extend beyond the limits of this area then it will be extended to expose their full extents to allow their excavation.

3.2 Archaeological excavation and recording in advance of development impact will ensure important archaeological remains are not destroyed without first being
adequately recorded.

3.3 Durham County Council Archaeology Team has therefore advised that the archaeological mitigation in the southern area of the site should take the form of a programme of 'strip and record' mitigation. This requires that an area of development impact is stripped under archaeological supervision allowing the targeted excavation of a representative sample of archaeological features and deposits.

3.4 Unless otherwise agreed, all archaeological fieldwork should be completed prior to the commencement of groundworks required for the proposed development.

3.5 Should the strip and record area include areas of modern disturbance which exceed the depth of known natural deposits, Durham County Council Archaeology Team will be contacted in order to establish whether the programme of archaeological work need continue in these specific areas.

4 General Standards

4.1 All work will be undertaken in line with the Durham County Council Archaeological Team standards for all archaeological work in County Durham and Darlington (March 2017). All work will be carried out in compliance with the codes of conduct of the Chartered Institute for Archaeologists (CIfA), will follow the CIfA Standard and Guidance for Archaeological Excavation and will be in line with the Regional Statement of Good Practice. The archaeological contractor will supply details of appropriate and current insurance to undertake excavations. All staff will be professional archaeologists who are suitably qualified and experienced for their project roles. Curriculum vitaes will be supplied to the Durham County Council Archaeology Team for approval on request. All staff will familiarise themselves with the archaeological background of the site, and the results of any previous work in the area, prior to the start of work on site. All staff will be aware of the work required under the specification, and must understand the project aims and methodologies.

5. Site briefing / 'Toolbox talk'

5.1.1 Provision will be made for the archaeological contractor to host a short project briefing or 'toolbox talk' prior to the any development work on site commencing. The briefing will include a summary of the requirements of the brief and the objectives of the mitigation exercise. Where appropriate reference will be made to the types of archaeological feature / deposits / finds potentially present on site.

5.1.2 The objective of the briefing is to ensure that all site operatives understand the scope and purpose of the archaeological mitigation work and the obligations it conveys on the developer and subcontractors. Provision should be made to brief new subcontractors before they commence work on site (or as soon as reasonably possible after they start) and to provide summary updates on the progress of the archaeological work to all site staff at appropriate intervals or following significant discoveries on site.

5.2 Soil stripping

5.2.1 Topsoil and unstratified modern material will be removed mechanically by machine using a back-acting **wide toothless ditching bucket**, under continuous archaeological supervision.

5.2.2 The topsoil or recent overburden will be removed down to the first significant archaeological horizon in successive level spits.

5.2.3 The full nature and extent of archaeological features and deposits will be exposed.

5.2.4 No machinery will track over areas that have previously been stripped.

5.2.5 Areas containing archaeological features and deposits will be recorded on a pre-excavation plan.

5.3 Recording and Excavation

5.3.1 All features exposed will be fully mapped and a site plan prepared before decisions are made regarding the appropriate level of excavation. The level of excavation and recording required will be agreed with the Durham County Council Archaeology Team following the initial topsoil strip. The aim of the mitigation is to record all and any archaeological features present on the site and to undertake sufficient intrusive excavation to enable the date, character, form and stratigraphic relationships of archaeological features to be understood. This process will typically require, as a maximum, the following level of sampling:

- Discrete features, such as post-holes and pits, will be half sectioned as a minimum whilst smaller features may be fully excavated.
- Linear features will have sample sections put through them at intervals so that approximately 20% of the exposed feature is excavated.
- All linear feature terminals will be excavated.
- All Intersections between features will be excavated.
- All archaeological features and deposits must be excavated by hand
- Additional targeted excavation may also be required in certain locations in the event that stratigraphic relationships or artefactual dating evidence

cannot be recovered from archaeological features via the initial sampling process.

i) This work will involve the systematic examination and accurate recording of all archaeological features, horizons and artefacts identified.

ii) In the event of human burials being discovered the coroners' office will be informed. Any removal of burials will comply with relevant Ministry of Justice regulations. Any human remains encountered will be accurately recorded. The advice of a palaeo-pathologist should be sought as soon as it is clear that one or more burials have been encountered and they should be given the opportunity to examine the remains in situ before excavation of the remains has commenced. The remains cannot be excavated and lifted until a Section 25 licence has been obtained from the Ministry of Justice. Both the client and DCCAS must be informed if human remains are found so that an agreement can be reached on the best possible way forward.

iii) Appropriate procedures under the relevant legislation will be followed in the event of the discovery of artefacts covered by the provisions of the Treasure Act 1996.

iv) During and after the excavation, all recovered artefacts and environmental samples will be stored in the appropriate materials and storage conditions to ensure minimal deterioration and loss of information (this should include controlled storage, correct packaging, regular monitoring of conditions, immediate selection for conservation of vulnerable material).

v) The area will be accurately tied into the National Grid and located on a 1:2500 or 1:1250 map of the area.

vi) A full and proper record (written, graphic and photographic as appropriate) will be made for all work, using pro-forma record sheets and text descriptions appropriate to the work. Accurate scale plans and section drawings will be drawn at 1:50, 1:20 and 1:10 scales as appropriate.

vii) All archaeological deposits and features will be recorded with an above Ordnance Datum (AOD).

viii) A digital photographic record of all contexts will be taken in digital format. All photographs will include a clearly visible, graduated metric scale. A register of all photographs will be kept. Photographs will be taken with a digital camera (a camera of minimum of 10 megapixels) and be of archival quality; either as black & white as born-digital images,

archived accordingly. The photographic record will be sent to ADS York in an approved format to be stored as part of their electronic archive.

ix) Where stratified deposits are encountered, a 'Harris' matrix will be compiled.

5.3.2 Deposits will be assessed for their potential for providing environmental or dating evidence. Sampling will be in line with the strategy agreed with Historic England Science Advisor and Durham County Council Archaeology Team (Section 6). Any variation from this scheme must be approved by the Historic England Science Advisor, Durham County Council Archaeology Team and representatives of the developer.

6 Environmental Sampling

6.1 A broad environmental archaeology sampling strategy will be agreed with the Historic EnglandNorth East Science Advisor, Don O'Meara. After the topsoil stripping and production of a site plan a detailed sampling strategy will then be discussed with the Durham County Council Archaeology Team and the HE Scientific Advisor.

6.2 The objective of the sampling strategy will be to collect a representative amount of plant, animal and inorganic material which may be preserved in the sediments on the site (English Heritage 2011, 5-7). This material will be collected where it is shown that its study is pertinent to undertanding the natural and human environment around the site. Suitable methodologies for sampling and processing will be adopted depending on whether the deposts come from waterlogged or non-waterlogged contexts.

6.3 Soil samples will be taken from the complete range of contexts representative of the archaeological remains uncovered during excavation. Sampling of features will be question lead, and will include a range of contexts (including those which do and do not contain diagnostic artefacts). Sample volumes will be determined by the nature of the contexts excavated, and the questions being asked, but for dry/non-waterlogged deposits this will typically be 40 litres, or 100% of the context if the total volume is less than this. The outcome of any analysis will address the report format outlined by Historic England Guidelines (English Heritage 2011, 7-8), but will typically invovle the analysis of charred and uncharred plant material, and the identification of material suitable for scientific dating.

6.4 The presence of deposits containing animal bone will be treated in accordance with recent guidelines on the excavation and recovery of animal bone from archaeological sites (English Heritage 2014). This will include consideration of various appropriate recovery methods where this is appropriate and proportionate

based on the nature and significance of the remains.

6.5 If evidence of industrial activity is uncovered during the stripping of the site, or during subsequent excavation or post-excavation work, a discussion between the contractor and DCC will determine the best way of approaching this material. Depending on the nature of the remains this may include the inclusion of a specialist in this field.

6.6 Bulk sample residues will be checked for the presence of industrial waste (e.g. slags, hammerscale, glass working waste) and small faunal remains (e.g. fishbones, small mammal/avian bones) as well as for plant material.

6.7 Scientific dating techniques will include, but not be limited to radiocarbon dating. Depending on the nature of the deposits recovered other techniques considered should include luminescence dating (OSL and TL), and archaeomagnetic dating. It is strongly encouraged that a dating specialist be consulted before the project commences, and that at the post-excavation stage any dating considered is conducted within a Bayesian modelling framework.

6.8 Any subsampling of soil sample for assessment will first be agreed with DCC, while any remaining samples should be kept until the completion of the project in case they prove to be useful in answering questions that may arise during the post-excavation process.

6.9 Should human remains be uncovered during any work on the site Durham County Council will be informed. The excavation and post-excavation treatment of these remains will consider the legal (Ministry of Justice; Mays 2017), moral (Mays 2017), and scientific (English Heritage 2013) issues which are outlined in agreed best practice documents.

7 Post excavation work, archive and report preparation

Finds

7.1 All finds processing, conservation work and storage of finds will be carried out in compliance with the CIFA Guidelines for Finds Work and those set by UKIC and set out in - English Heritage (1995) “A strategy for the Care and Investigation of Finds”; Watkinson and Neal (2001) “First Aid for Finds”; UKIC (1983) “Packaging and Storage of Freshly Excavated Artefacts from Archaeological Sites”. All recovered artefacts will be stored in the appropriate materials and storage conditions to ensure minimal deterioration and loss of information (this should include controlled storage, correct packaging, regular monitoring of conditions, immediate selection for conservation of vulnerable material).

7. 2 The deposition and disposal of artefacts will be agreed with the legal owner and recipient museum prior to the work taking place. Where the landowner decides to retain artefacts adequate provision must be made for recording them.

Details of land ownership will be provided by the developer.

7.3 All retained artefacts will be cleaned and packaged in accordance with the requirements of the recipient museum.

7.4 All finds and environmental samples will be processed and subsequently analysed by appropriate specialists as part of the post-excavation assessment. Specialist identification and analysis will include as a minimum and where appropriate:

- Pottery and ceramic building material (Rob Young; Alex Croom; Paul Bidwell; Andy Sage)
- Bone (Louisa Gidney)
- Flint (Rob Young)
- Metal work (David Dungworth)
- Industrial debris (David Dungworth)
- Environmental micro and macro fossils (Charlotte O'Brien ASDU)
- Residue analysis (ASDU)
- Radio carbon dating (ASDU/SUERRC)
- Any other analysis identified as necessary during the fieldwork or post excavation work

7.5 Site Archive

7.5.1 Archiving work will be carried out in compliance with the CIfA Guidelines for Archiving. Paragraph 199 of the National Planning policy Framework clarifies that Local Planning Authorities should make evidence gathered as part of archaeological mitigation exercises, including any archive, publically accessible. Copies of the post excavation assessment and final reports should be deposited with the Historic Environment Record. The full archive, including all reports and relevant documentation, will be archived with an agreed local museum.

7.5.2 The final location for this site archive will be at the County Durham Archaeological Archives (CoDAA) within 6 months of completion of fieldwork. This will be confirmed in writing to DCCAS. If this is not possible, extensions to timescales must be agreed in writing with DCCAS.

7.5.3 Before the commencement of fieldwork, contact will be made with the landowners and with the recipient museum to make the relevant arrangements

7.5.4 The Durham County Council Team will require confirmation that the archive had been submitted in a satisfactory form to the relevant museum before recommending to the local planning authority that the condition should be fully discharged.

7.6 Report

7.6.1. A post-excavation assessment report will be prepared to the following standards:

i) One bound paper copy of the report will be submitted:

- For deposition in the County HER to the Durham County Council Team

ii) Three digital copies (pdf/A of the report on CD) will be submitted:

- one copy to the commissioning client
- one for the planning authority (Durham County Council Archaeology Team) which must be formally submitted by the developer with the appropriate fee
- one for deposition in the County HER to theDurham county Council Team

iii) The report will have each page and paragraph numbered and illustrations cross referenced within the text. All drawn work should be to publication standard.

The report will include as a minimum the following:

- OASIS reference number and an 8 figure grid reference.
- An executive summary
- A location plan of the site at an appropriate scale of at least 1:10 000
- A location plan of the extent of the works within the site. This will be at a suitable scale, and located with reference to the national grid, to allow the results to be accurately plotted on the Sites and Monuments Record
- Plans and sections of archaeology located
- A site narrative – interpretative, structural and stratigraphic history of the site
- A table summarising the deposits, features, classes and numbers of artefacts encountered and spot dating of significant finds
- Photographs of the site, showing the location of groundworks in context and any archaeological features that are revealed.
- Contractor's details, including dates the work was carried out, the nature and extent of the work.
- Description of the site location and geology
- Artefact reports – full text, descriptions and illustrations of finds
- Laboratory reports and summaries of dating and environmental data, with collection methodology
- A consideration of the results of the field work within the wider research context (ref. NERRF)
- Recommendations for analysis of finds or environmental samples
- Copy of this Project Design
- Any variation to the above requirements will be approved by the planning authority prior to work being submitted

7.6.2 If the Post-Excavation Assessment report identifies that further analysis is needed, an updated Project design will be produced detailing this, and will be agreed with DCCAS and the developer. Once agreed, this will need to be implemented and a final report produced. In some case, where no further work is needed, the post excavation assessment will be de facto the final report. The final report will need to be approved within 3 months of agreement of the Updated Project Design. If this is not possible, extensions to timescale must be agreed in writing with DCCAS.

8 Publication

8.1 Should a significant archaeological site be located a post-excavation assessment report will include all the information necessary to make decisions about the future direction of the project in line with Historic England's Guidelines on the Management of Research Projects in the Historic Environment (Historic England 2015). The report will be submitted to the Durham County Archaeologist for comment and approval prior to any further analysis or publication work commencing.

8.2 If the post excavation assessment report suggests that the site is worthy of publication, this will need to be agreed with DCCAS and the developer. Any publication deemed necessary will need to be agreed in writing within one year of the completion of the final report. The results do not have to be published within that year, as this is subject to the constraints of relevant journals etc, however, a provisional publication date must be set and agreed, in writing. A summary will also be prepared for "Archaeology in Durham".

8.3 Durham County Council Archaeology Team will require confirmation that the publication report has been submitted in a satisfactory form to an appropriate journal before recommending to the local planning authority that the condition should be fully discharged.

9 OASIS

9.1 Durham County Council Archaeology Team supports the Online Access to Index of Archaeological Investigations (OASIS) Project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large scale developer funded fieldwork.

9.2 The contractor will therefore complete the online OASIS form at http://ads.ahds.ac.uk/project/oasis/. A pdf copy of the final report will be uploaded within 3 months of its approval. If this is not possible, extensions to timescale must be agreed in writing with DCCAS.

10 Monitoring

10.1 Durham County Council Archaeology Team will be informed on the start

date and timetable for the watching brief in advance of work commencing. Reasonable access to the site for the purposes of monitoring the archaeological scheme will be afforded to the Durham County Council Archaeology Team or his/her nominee at all times. Regular communication between the contractor, the Durham County Council Archaeology Team and other interested parties will be maintained to ensure the project aims and objectives are achieved.

11 Bibliography

AD Archaeology 2018 Land off Durham Road, Spennymoor, County Durham Archaeological Trenching (unpublished client report)

Brown, A. 2014. An Historic Environment Desk-Based Assessment of Land off Durham Road, Spennymoor, Co. Durham. ARS Ltd Report No. 2013/71.

Chartered Institute for Field Archaeologists, 2014a, *Code of Conduct*

Chartered Institute for Field Archaeologists, 2014b, *Standards and Guidance for Archaeological Field Evaluation*

Chartered Institute for Field Archaeologists, 2014c *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials*

Chartered Institute for Field Archaeologists, 2014d *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*

Durkin, R. 2014 Geophysical Survey of Land off Durham Road, Spennymoor, Co. Durham. ARS Ltd Report 2014/115 October 2014

English Heritage, 1995 *A strategy for the Care and Investigation of Finds*

English Heritage. 2011. Environmental Archaeology. English Heritage, Swindon. 2nd Edition.

English Heritage. 2014. Animal Bones and Archaeology: Guidelines for Best Practice. English Heritage, Swindon.

Mays, S. 2017. Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England. Advisory Panel on the Archaeology of Burials in England. 2nd Edition.

Historic England, 2015. *Management of Research Projects in the Historic Environment*

National Planning Policy Framework 2018

Petts D., Gerrard C., 2006 *SHARED VISIONS: the North-East Regional Research Framework for the Historic Environment*

UKIC ,1993 *Packaging and Storage of Freshly Excavated Artefacts from Archaeological Sites*

Wilkinson, D. & Neal, V. 2001 *First Aid for Finds*

Yorkshire, The Humber and the North-East*: A Regional Statement of Good Practice for Archaeology in the Development Process* (25 November 2009)

APPENDIX 4 – PREHISTORIC POTTERY

Dr Rob Young

A total of 10 sherds of later prehistoric pottery was recorded during excavations at Middlestone Moor in 2020. This total can be tabulated as follows:

Context	No. of Sherds	% of Total Assemblage	Weight
1016	1	10	8gms
1022	2	20	18gms
1024	3	30	57gms
1054	4	40	49gms
TOTAL	**10**	**100**	**132gms**

The sherds are difficult to date on typological grounds and probably derive from pottery of local Later Bronze Age/ Iron Age tradition. The assemblage shows varying levels of abrasion and differential preservation (see below).

As is generally the case with prehistoric pottery groups it is difficult to make an accurate assessment of the total number of vessels present though, in this case the number is probably 6

Fabric and Technology

All of the recovered sherds were examined and characterized following the principles established by David Peacock (Peacock, 1977) and which are now standard practice. These were supplemented by the guidelines for prehistoric pottery reporting suggested by the Prehistoric Ceramics Research Group (PCRG, 1995). All sherds were examined under a X10 hand lens in natural daylight. Two basic fabric types have been identified:

Fabric 1: Variably oxidised. The fabric has a rough feel where inclusions erupt through the matrix surface. The clay matrix contains fairly common, small, black ? igneous grits, with rounded quartz sand particles and rare soft quartz/sandstone fragments. Well sorted (Vessels 1, 2).

Fabric 2: Variably oxidised. The fabric has a rough feel where inclusions erupt through the matrix surface. The clay matrix contains many small/medium, angular and rounded, soft quartz/sandstone fragments, very rare small, angular, hard, grey/white? doleritic fragments and small, fine quartz sand particles. Variably sorted (Vessels 3,4,5,6).

All vessels appear to be hand-built (c.f. construction ridges visible on Vessel 1) and bonfire fired.

Surface Treatment

None of the vessels exhibits any evidence for formal 'decoration', though Vessels 1-5 show evidence for wiping /smoothing on both interior and exterior surfaces.

Abrasion and Fragmentation

Abrasion is one of the few measurable indicators of the use of pottery between the breakage of a pot, and the deposition of the sherds. As Miket *et al*. (2008, 31) have argued, it relates to the interval between the original use of a pot and its archaeological recovery. The methodology developed by Sørensen (1996) to assess ceramic abrasion has been applied here to examine the Middlestone Moor pottery. Sorensen identified four levels of abrasion: **1. None or very little abrasion** — very fresh breaks, un-patinated core colour, sharp edges, very rough texture, and extruding grains of temper. **2. Low abrasion** — edges maintain sharpness but markedly extruding edges and temper are worn, core colour generally still fresh but texture is slightly smoother. **3. Medium abrasion** — points and edges are now worn blunt, temper no longer extrudes, texture of core noticeably smooth, core colour is dull or patinated. **4. High abrasion** — sherd is heavily rolled: surfaces have receded from core and core worn smooth, presenting a rounded effect.

As the catalogue of finds below indicates the Middlestone Moor pottery exhibits varying levels of abrasion from Low/Medium to Heavy abrasion. This would suggest that the pottery had been moving around in the soil for some time before its incorporation into the excavated features. The small size range of the fragments might also indicate that the material had been in circulation for quite a while before its final burial.

Form, Function and Chronology.

Given that most of the material under discussion comes from the walls of vessels, little can be said about vessel form, though the internally bevelled rim form of Vessel 4 might suggest that it was part of a fairly straight side jar of rim diameter, c. 26cms. In terms of chronology, again, little can be said, given the nature of the material, other than it would not be out of place in any of the region's later prehistoric (Late Bronze Age/Iron Age) ceramic assemblages.

General Discussion

While the use of soft quartz/sandstone in such profusion as an opening agent in the assemblage is hard to parallel elsewhere in the region, there is nothing in the finds from Middlestone Moor to suggest that they were of anything other than local manufacture.

The rim of Vessel 4, with its internal bevel is a common occurrence (e.g. Thorpe Thewles (Swain, 1987), Faverdale (Gerrard, 2012), Hetha Burn (Burges, 1970).

One possible point of note may be the occurrence of fragments of Vessels 2, 3, 4 and 5 in contexts relating to the entrance way of the round house. The possibility that

they may represent either foundation or closure deposits in relation to the structure's history might be worthy of consideration.
Overall, this small assemblage of material is of regional importance in that it increases our general knowledge about the localised distribution of later prehistoric pottery.

CATALOGUE

1) **SF10, Context 1016.**

Vessel 1. Body sherd. Buff outer and inner surfaces and grey/black core. Smoothed, ridge interior and exterior surfaces? from coil building. ? Wiped internal and external surfaces. Fabric 1. Medium abrasion. Sherd size: 35mm x 24mm x 9mm. Weight: 8 gms.

2) **SF4, Context 1022.**

Vessel 2. Brown outer and inner surfaces, black core. Wiped internally and externally. Grits erupt from both surfaces. Fabric 1. Medium/heavy abrasion. Sherd size: 58mm x 41mm x 11mm. Weight: 29gms.

3) **SF5, Context 1022**.

Vessel 2. Brown outer surface, dark brown inner surface and core. Wiped internally and externally. Fabric 1. Medium/heavy abrasion. Sherd size: 33mm x 27mm x 9mm. Weight: 7gms.

4) **SF 1, Context 1024.**

Vessel 3. Body sherd. Orange outer surface and core, buff/grey inner surface. Gritty feel to both surfaces. Wiped internally and externally. Fabric 2. Medium/heavy abrasion. Sherd size: 58mm x 33mm x 10mm. Weight: 20gms.

5) **SF2, Context 1024.**

Vessel 4. Rim sherd from ? straight side jar form. Rounded outer rim edge, internal bevel. Dark grey/ black outer surface, brown/grey inner surface and black core. Hackly fracture. Wiped internally and externally. Fabric 2. Low/medium abrasion. Rim Diam: c. 26cms. Sherd size: 65mm x 28mm x 12mm. Weight: 26gms.

6) **SF 3, Context 1024**.

Vessel 5. Two conjoining body sherds. Brown outer surface, dark/grey/black inner surfaces and core. Wiped internally and externally. Fabric 2. Heavily abraded. Sherd size: 49mm x 33mm x 9mm. Weight: 11gms.

7) **SF6, Context 1054**

Vessel 6. Orange/brown outer surface. Black core and inner surface. Fabric 2.

Medium/heavy abrasion. Sherd size: 32mm x 31mm x 12mm. Weight: 12gms.

8) **SF7, Context 1054**

Vessel 6. Orange/brown outer surface. Black core and inner surface. Fabric 2.
Medium/heavy abrasion. Sherd size: 38mm x 26mm x 11mm. Weight: 11gms.

9) **SF8, Context 1054**

Vessel 6. Orange/brown outer surface. Black core and inner surface. Fabric 2.
Medium/heavy abrasion. Sherd size: 34mm x 31mm x 11mm. Weight: 14gms

10) **SF 9 Context 1054**.

Vessel 6. Orange/brown outer surface. Black core and inner surface. Fabric 2.
Medium/heavy abrasion. Sherd size: 40mm x 35mm x 10mm. Weight: 12gms.

APPENDIX 5- PALAEO-ENVIRONMENTAL REPORT

ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
AD Archaeology Ltd

Middlestone Moor
Spennymoor
County Durham

palaeoenvironmental assessment

report 5339
September 2020

Durham University

Contents

South Road · Durham · DH1 3LE · tel 0191 334 1121 · fax 0191 334 1126
archaeological.services@durham.ac.uk · www.dur.ac.uk/archaeological.services

1. Summary

The project

1.1 This report presents the results of palaeoenvironmental assessment of 13 bulk samples taken during archaeological works at Middlestone Moor, County Durham.

1.2 The works were commissioned by AD Archaeology Ltd, and conducted by Archaeological Services Durham University.

Results

1.3 The samples provide evidence for cultivation of cereals (and probably also flax), and exploitation of local woodland for fuel, building materials and wild-gathered foods. Crops typical of both earlier and later prehistoric farming regimes are recorded, which may reflect more than one phase of activity or the early introduction of certain crops at this site.

Recommendations

1.4 Earlier prehistoric deposits remain a high priority for palaeoenvironmental study as evidence is sparse, both spatially and with regard to site type (Hall & Huntley 2007; Huntley 2010). If an earlier prehistoric date is established, further examination and discussion of the plant macrofossil and charcoal assemblages could be undertaken to provide further palaeoenvironmental evidence and to place the site in its regional context.

1.5 The flots should be retained as part of the physical archive of the site. The residues were discarded following examination.

2. Project background

Location and background

2.1 Archaeological works were conducted by AD Archaeology Ltd at Middlestone Moor, County Durham. This report presents the results of palaeoenvironmental assessment of 13 bulk samples comprising pit, posthole and linear feature fills of probable prehistoric origin.

Objective

2.2 The objective of the scheme of works was to assess the palaeoenvironmental potential of the samples, establish the presence of suitable radiocarbon dating material, and provide the client with appropriate recommendations.

Dates

2.3 The samples were received by Archaeological Services on 1st July 2020. Assessment and report preparation was conducted between 13th July and 10th September 2020.

Personnel

2.4 Assessment and report preparation was conducted by Dr Charlotte O'Brien. Sample processing was by Dr Ed Treasure.

Archive

2.5 The site code is **MMR20**, for **M**iddlestone **M**oo**r** 20**20**. The flots and finds are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection. The charred plant remains will be retained at Archaeological Services Durham University.

3. Methods

3.1 The bulk samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston *et al.* (2002).

3.2 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating. The transverse, radial and tangential sections were examined at up to x500 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990), Gale & Cutler (2000) and Hather (2000), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University.

3.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010).

4. Results

4.1 Charred crop remains, wild-gathered foods and weed seeds occur in low numbers across the site, only being absent from pit fill F1011. Charcoal is present in all of the samples in varying quantities. Finds from the sample residues include pottery, flint, heat-cracked stones, daub and trace amounts of calcined bone. Detailed palaeoenvironmental results for each context are presented in Appendix 1, with radiocarbon material listed in Appendix 2. Material for radiocarbon dating is available for all of the samples, although potentially long-lived oak stemwood is the only entity in [1009].

Pits

4.2 Charcoal is common in external perimeter pits F1002 and F1003, but differs in nature between the fills. In F1002, hazel small roundwood is the main component of fill [1001], while overlying silt layer [1000] is dominated by oak stemwood, with rare alder branchwood. In F1003, alder stemwood charcoal is predominant, with oak and hazel also recorded. Alder in this fill includes relatively large fragments (up to 3cm), with a cut mark noted on one. Charred plant macrofossils are present in low numbers in both pits, and include hazel nutshell and weed remains of redshank, heath-grass, small-seeded bedstraws and pale persicaria. F1003 comprises a few cereals (barley and wheat grains).

4.3 Fill [1009] of pit F1011 differs from other features examined. It comprises a significant quantity of daub and charcoal, with an absence of other charred plant remains. The charcoal assemblage is made up entirely of oak stemwood, with high levels of vitrification and radial cracks providing evidence for a high temperature fire, although burnt greenwood can also produce these features.

4.4 Charred remains are rare in pit F1015. They comprise small quantities of charcoal (oak stemwood and hazel small roundwood), a sedge nutlet and a small fragment of hazel nutshell.

Postholes

4.5 Posthole fills [1005] and [1007] comprise mixed charcoal assemblages, with both stemwood and roundwood recorded. Identified species include oak, alder, hazel, holly and Maloideae (Hawthorn, apple, whitebeams). Charcoal is common in postholes F1017 and F1013, with alder stemwood predominant in fill [1016], while [1012] mainly comprises oak stemwood. Smaller charcoal assemblages in postholes F1072 and F1080 contain stemwood of alder [1071] and birch [1081].

4.6 A few charred hazel nutshells, crop plant remains and weeds of open and disturbed ground are a common feature of the posthole fills. A fruitstone from posthole fill [1081] suggests that sloes were also collected. There is evidence for the use of barley and glume wheats (emmer or spelt), although the low number and poor condition of the remains has hindered identification. One of the wheat grains in both of fills [1007] and [1016] has a high-backed, asymmetric shape characteristic of emmer (*Triticum diococcum*), while the surface patterning of one of the barley grains in [1005], suggests use of the naked barley variety (*Hordeum* sp var *nudum*). A flax seed was identified amongst the few charred remains from entrance posthole fill [1071]. This may be cultivated flax (*Linum usitatissimum*), although perennial flax (*Linum perenne*), an open grassland herb, cannot be excluded as it has similar beaked seeds.

Other features

4.7 Charcoal from slot F1025 comprises oak stemwood and hazel roundwood and stemwood. The few charred macrofossils include a pignut tuber, an elderberry fruitstone, an indeterminate cereal grain, a redshank nutlet and a seed of the goosefoot family.

4.8 A few flax seeds are recorded in linear F1055, in addition to hazel nutshell fragments, a redshank nutlet, a barley grain and a spelt wheat glume base.

5. Discussion

5.1 Evidence from the site is largely domestic/agricultural in origin, with arable farming, the exploitation of wild-gathered foods and the probable utilisation of flax for oil or fibre recorded. The cereals include emmer wheat, spelt wheat and barley (probably including both the hulled and naked varieties). While emmer wheat and naked barley are principal crops of early British prehistory, spelt wheat occurs more commonly on late prehistoric sites in this region (Hall & Huntley 2007). Prehistoric finds of flax are also rare in northern England, however this combination of crop plants has been identified from a late Bronze Age unenclosed roundhouse at East Woodburn, Northumberland (Van der Veen 2009).

5.2 A range of habitats are reflected in the charcoal assemblages, weed flora and wild food remains, which have the potential to provide further information about the local palaeoenvironment and patterns of land use.

6. Recommendations

6.1 Earlier prehistoric deposits remain a high priority for palaeoenvironmental study as evidence is sparse, both spatially and with regard to site type (Hall & Huntley 2007; Huntley 2010). If an earlier prehistoric date is established, further examination and discussion of the plant macrofossil and charcoal assemblages could be undertaken to provide further palaeoenvironmental evidence and to place the site in its regional context.

6.2 The flots should be retained as part of the physical archive of the site. The residues were discarded following examination.

7. Sources

Gale, R, & Cutler, D, 2000 *Plants in archaeology; identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*. Otley

Hall, A R, & Huntley, J P, 2007 *A review of the evidence for macrofossil plant remains from archaeological deposits in northern England*. Research Department Report Series no. **87**. London

Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London

Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London

Petts, D, & Gerrard, C, 2006 *Shared Visions: The North-East Regional Research Framework for the Historic environment*. Durham

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

Schweingruber, F H, 1990 *Microscopic wood anatomy*. Birmensdorf

Stace, C, 2010 *New Flora of the British Isles*. Cambridge

Van der Veen, M, 2009 The carbonised plant remains, in Gates, T, Excavation of a late second/early first millennium B.C. unenclosed roundhouse at Halls Hill, near East Woodburn, Northumberland. *Archaeol Aeliana* (5) **38**, 66-73

Appendix 1: Data from palaeoenvironmental assessment

Sample	Context	Feature	Volume processed (l)	Flot volume (ml)	C14 available	Rank	Notes
1	1000	Pit F1002	31	150	Y	**	Charcoal common (oak stemwood mainly, rare alder). Charred macrofossil remains comprise hazel nutshell, redshank and heath-grass. Fired clay, a possible fragment of pot, trace of calcined bone and a few burnt, cracked stones in the residue.
2	1004	Pit F1003	29	250	Y	***	Charcoal common (alder stemwood including large fragment up to 3cm long with cut mark; oak moderate ring curvature; hazel small roundwood). Charred macrofossils are two barley grains, one wheat grain, a hazel nutshell fragment, two heath-grass caryopses and a cereal culm node. Trace of calcined bone, heat-cracked stones and magnetic fuel waste in the residue.
3	1001	Pit F1002	13	175	Y	**	Charcoal common (hazel small roundwood). A few charred weed seeds of heath-grass, small-seeded bedstraws, redshank and pale persicaria.
4	1005	Posthole F1006	24	200	Y	***	Charcoal common (Oak moderate ring curvature and smaller roundwood; hazel stemwood and small roundwood; Maloideae stemwood). A few charred cereal remains (barley grains including a possible naked grain, and a wheat glume base), hazel nutshell fragments and weed seeds (hemp-nettle, small-seeded bedstraws, redshank, pale persicaria). Pottery, a few heat-cracked stones and a quantity of possible fired clay/daub in the residue (may need to be tested to establish origin).
5	1007	Posthole F1008	14	100	Y	***	Charcoal common (mixed assemblage – stemwood of oak and holly, small roundwood of hazel, oak and alder). The few charred cereal remains are barley and wheat grains (one cf. emmer) and glume wheat chaff. Weeds seeds of redshank, ribwort plantain, and pale persicaria. Pottery in the residue.
6	1016	Posthole F1017	20	200	Y	***	Charcoal common (predominantly alder stemwood with some oak stemwood). A few charred cereal remains (barley and wheat grains – one cf. emmer grain), hazel nutshell fragments and weed seeds (buttercup and redshank). Flint in the residue.
7	1012	Posthole F1013	21	125	Y	**	Charcoal common (oak stemwood mainly, with some alder stemwood). A few charred cereal remains (barley and wheat grains), hazel nutshell fragments and weed seeds (hemp-nettle, small-seeded bedstraws, redshank, pale persicaria, goosefoots). Pottery in the residue.
8	1024	Slot F1025	19	100	Y	**	Occasional charcoal (oak stemwood; hazel roundwood and stemwood). Charred macrofossils include a pignut tuber, indet. cereal grain, redshank nutlet, elderberry fruitstone and goosefoot seed. Pottery, flint and trace burnt stones in the residue.
9	1009	Pit F1011	32	250	?	**	Charcoal common (oak stemwood 'slivers', highly vitrified with tyloses and radial cracks). No charred plant macrofossils. Daub common in the residue.
11	1071	Posthole F1072	7	40	Y	**	Occasional charcoal (alder stemwood). Charred macrofossils comprise two tiny fragments of hazel nutshell, a few small-seeded bedstraws and a flax seed. Pottery in the residue.
13	1014	Pit F1015	17	40	Y	*	Rare charcoal (hazel roundwood and oak stemwood). Charred sedge nutlet and a very small charred hazel nutshell fragment.
14	1054	Linear F1055	18	125	Y	**	Charcoal common (oak stemwood and hazel roundwood). A few charred cereal remains (barley grain and spelt wheat glume base), hazel nutshell fragments, flax seeds and a redshank nutlet. Pottery and flint in residue.
15	1081	Posthole F1080	15	150	Y	**	Occasional charcoal (birch stemwood reaction wood). Numerous charred hazel nutshell fragments, a sloe fruitstone and a wheat glume base in poor condition. Small quantity of daub present. Burnt soil – in situ burning?

[Rank: *: low; **: medium; ***: high; ****: very high potential to provide further palaeoenvironmental information. ? - material may be unsuitable for AMS dating due to small size or long-lived species]

Appendix 2: Material available for radiocarbon dating

Sample	Context	Single Entity recommended 1st choice	Weight	Notes	Single Entity recommended 2nd choice	Weight	Notes
1	1000	Charred hazel nutshell fragment	54mg	Good condition	Alder charcoal	78mg	Moderate ring curvature, 2 rings
2	1004	Charred hazel nutshell fragment	63mg	Good condition	Alder charcoal	100mg	Stemwood, 1 wide ring
3	1001	Hazel charcoal	24mg	Small roundwood, 3 rings, good condition	Hazel charcoal	33mg	Small roundwood, 8 rings
4	1005	Charred barley grain	7mg	Wrinkled surface suggests it is naked barley	Charred hazel nutshell fragment	32mg	Good condition
5	1007	Hazel charcoal	317mg	Complete roundwood, pith to bark, 5 even rings, good condition, 8mm diameter	Holly charcoal	61mg	Moderate ring curvature, 2 wide rings
6	1016	Charred wheat grain (cf. emmer)	10mg	Moderate condition	Charred barley grain	12mg	Moderate condition
7	1012	Charred barley grain (cf. naked)	8mg	Good condition	Charred hazel nutshell fragment	32mg	Good condition
8	1024	Hazel charcoal	65mg	Small roundwood, 4 rings, good condition	Hazel charcoal	83mg	Moderate ring curvature, 5 rings, good condition
9	1009	Oak charcoal	257mg	Stemwood, vitrified with radial cracks and tyloses, 6 rings, possible age offset due to old-wood effect	-	-	Only oak stemwood available to date
11	1071	Alder charcoal	83mg	Moderate ring curvature, 3 rings, reasonable condition	Alder charcoal	112mg	Moderate ring curvature, 6 rings, reasonable condition
13	1014	Hazel charcoal	15mg	Small roundwood, 2 rings	-	-	-
14	1054	Charred hazel nutshell fragment	10mg	Reasonable condition	Hazel charcoal	160mg	Complete roundwood, 5 rings, good condition, diameter 11mm
15	1081	Charred hazel nutshell fragment	54mg	Reasonable condition	Birch charcoal	182mg	Moderate ring curvature, reaction wood, good condition

APPENDIX 6- PALAEO-ENVIRONMENTAL REPORT

ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
AD Archaeology Ltd

Middlestone Moor
Spennymoor
County Durham

palaeoenvironmental analysis

report 5452
March 2021

Durham University

Contents

South Road · Durham · DH1 3LE · tel 0191 334 1121
archaeological.services@durham.ac.uk · www.dur.ac.uk/archaeological.services

1. Summary

The project

1.1 This report presents plant macrofossil and charcoal analysis data from 13 bulk samples taken during archaeological works at Middlestone Moor, County Durham. Radiocarbon dates from the site are also presented.

1.2 The works were commissioned by AD Archaeology Ltd, and conducted by Archaeological Services Durham University.

Results

1.3 Palaeoenvironmental analysis shows the occupants of the roundhouse at Middlestone Moor exploited a range of habitats encompassing the higher areas of Magnesian limestone south of the site, to the low-lying riparian woodland and wetland habitats towards the River Wear. The samples principally comprise domestic hearth waste, although there is some evidence for structural remains and sweepings of burnt fodder/animal dung. The early use of spelt wheat is indicated, in addition to cereals more typical of Bronze Age cultivation in northern England including emmer wheat and naked barley. The probable use of fibre plants is shown, with flax seeds either deriving from the cultivated or wild perennial species.

2. Project background

Location and background

2.1 Archaeological works were conducted by AD Archaeology Ltd at Middlestone Moor, County Durham. This report presents the palaeoenvironmental analysis results of 13 bulk samples comprising pit, posthole and linear feature fills associated with a Bronze Age roundhouse. Radiocarbon dates from the site are also presented.

Objective

2.2 The objective of the scheme of works was to analyse the plant macrofossil and charcoal data in order to investigate patterns of land use, fuelwood selection and exploitation of natural resources, establish the nature of the local landscape and place the site within a regional context.

Dates

2.3 Analysis and report preparation was conducted between December 2020 and March 2021.

Personnel

2.4 Analysis and report preparation was conducted by Dr Charlotte O'Brien and Lorne Elliott.

Archive

2.5 The site code is **MMR20**, for **M**iddlestone **M**oor 20**20**. The flots and finds are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection. The charred plant remains will be retained at Archaeological Services Durham University.

3. Methods

3.1 The bulk samples were manually floated and sieved through a 500μm mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston *et al.* (2002).

3.2 The charcoal study involved two parts. The first was a detailed analysis of all of the contexts with radiocarbon dating evidence. This follows Marguerie & Hunot (2007), which in addition to species identification, included examining and recording the roundwood diameter, tree ring curvature, tree ring growth, the number of tree rings, and noting the presence of pith, bark, tyloses, insect degradation, radial cracking, reaction wood and alteration by vitrification.

3.3 The second part of the investigation involved a rapid scan of the remaining samples. Where available, a few fragments were selected for identification with the aim of providing additional presence and frequency data. Selection was based on texture and fragment morphology, as during charring, the anatomical structure of each

species/genus produces distinctive surface patterns and can cause characteristic fracturing along the ring/ray boundaries.

3.4 The flots were dry-sieved through stacked 10mm, 4mm and 2mm sieves. Where possible, charcoal was separated from material such as coal and cinder, and each fraction was weighed separately. The study concentrated on fragments from the >4mm fraction, as smaller fractions may contain too many unidentifiable remains. A limited number (<5) of fragments from the 2mm fraction were examined, in order to detect small shrubs or twiggy material (Asouti & Hather 2001; Asouti & Austin 2005). Twigs are defined as <10mm in diameter including pith and bark (Huntley 2010). Samples were 100% analysed. Weights and fragment counts were recorded at species, genus or family group, based on the level of identification that was feasible.

3.5 For species identification, the transverse, radial and tangential sections were examined at up to x500 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Gale & Cutler (2000), Hather (2000) and Schweingruber (1990), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010).

3.6 Where comparable anatomical properties prevent secure identification, charcoal remains are recorded to genus level or assigned to family groups. Apple, hawthorns, pear and whitebeams are represented by the subfamily Maloideae. Anatomical evidence suggests the Maloideae fragments are probably hawthorn. This includes a diffuse porous vessel arrangement with mainly solitary vessels. Triseriate rays are relatively common, and spiral thickening is fine and localised. Willows and poplars are grouped as Salicaceae (willow family). These fragments are likely to be willow based on their heterogeneous rays.

3.7 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010).

4. Results

General comments

4.1 Charred crop remains, wild-gathered foods and weed seeds occur in low numbers across the site, only being absent from pit F1011. Charcoal is present in all of the samples in varying quantities. Finds from the sample residues include pottery, flint, heat-cracked stones, daub and trace amounts of calcined bone. Detailed palaeoenvironmental results for each context are presented in Appendix 1. Charcoal data are presented in Appendices 2-3, with a summary of the radiocarbon dates given in Appendix 4.

Plant macrofossils

4.2 Cereal remains of barley and wheat are present in low numbers. Asymmetrically shaped grains suggest 6-row barley (*Hordeum vulgare*) was in use, with both hulled and naked varieties represented. The wheat crop comprises emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*). A few flax seeds are present in entrance posthole fill [1070] and linear fill [1054]. This may be cultivated flax (*Linum usitatissimum*), although the seeds are rather small (3mm x 1.4mm), and could

derive from perennial flax (*Linum perenne*), an open grassland herb with similar, but smaller, beaked seeds.

4.3 A few hazel nutshell fragments occur in most of the samples, with a larger number present in posthole fill [1081]. Other wild-gathered foods include a sloe fruitstone in [1081] and an elderberry fruitstone in slot fill [1024]. The weed flora includes indicators of open heathy grassland and damp meadows/pasture such as heath-grass, ribwort plantain, common yellow sedge, pignut and buttercups. Goosefoots, bedstraws, hemp-nettles, pale persicaria and redshank occur in a wide range of open disturbed habitats including arable and waste ground (Preston *et al.* 2002).

Charcoal

4.4 Charcoal is common in many of the fills, and generally comprises a mixed assemblage of species with both stemwood and roundwood recorded. Oak, hazel, alder and birch occur most frequently, with a minor presence of holly, hawthorn and willow. Growth ring widths generally show short to moderate growth, with alder occasionally having wide rings.

4.5 Fill [1009] of pit F1011 differs from other features examined. It comprises a significant quantity of daub and charcoal, with an absence of other charred plant remains. The charcoal is made up entirely of oak stemwood, with high levels of vitrification and radial cracks. Fragments are frequently noted to have wide growth rings, which is characteristic of heavier, harder and stronger wood, and is consistent with structural remains.

5. Discussion

Crop plants

5.1 The cereals include emmer wheat, spelt wheat and six-row barley (hulled and naked), although it is not possible to determine the relative importance of these crops due to their low numbers and poor preservation. While emmer wheat and naked barley are principal crops of early British prehistory, the occurrence of spelt represents a relatively early record of a crop more commonly found on late prehistoric sites in this region (Hall & Huntley 2007). The introduction of spelt in northern England is believed to have taken place sometime during the late Bronze Age, although there appears to have been regional differences with spelt superseding emmer at an earlier stage in the south of the region (Hall & Huntley 2007).

5.2 Prehistoric finds of flax are rare in northern England, although not without precedent. A few charred seeds identified from a late Bronze Age unenclosed roundhouse at East Woodburn, Northumberland (Van der Veen 2009) point to the use of this crop for oil or fibre production. While the small flax seeds at Middlestone Moor may represent perennial flax, this does not rule out the deliberate collection of this wild species which produces a good fibre from the stems, albeit inferior to cultivated flax. In the Durham region, perennial flax is today locally abundant in Magnesian Limestone grassland (Graham 1988). A large colony at Thrislington reflects remnants of what was probably formerly a much more extensive habitat type on the limestone escarpment south east of the site. Considering the proximity of this habitat, it is also possible that the small assemblage of open grassland weeds

(potentially including perennial flax) reflects the burnt remains of hay or dung from grazing livestock.

Woodland resources and firewood selection

5.3 Most of the contexts represent a similar mix of charcoal species probably representing sweepings of hearth waste. The fuel debris comprises an ideal firewood combination of oak stemwood which provides a high heat, quick-burning logs of alder and birch to enliven the fire, and branches/stems of hazel for kindling (Bishop *et al.* 2015).

5.4 Pit [F1011], by contrast, has by far the largest quantity of charcoal and is entirely composed of oak stemwood (timber-sized wood) and probably reflects structural material. Oak has provided one of the main structural timbers throughout prehistory due to its cleavability and durable heartwood (Gale & Cutler 2000).

5.5 Insect tunnels are infrequently noted in alder and hazel, and rarely in oak. Considering the overall good condition of these fragments, the insect damage probably reflects long term storage rather than the collection of deadwood. However, the prevalence of insect degradation in Bronze Age charcoal records throughout Britain and Ireland may be caused by climatic factors.

Woodland composition

5.6 Alder and willow are moisture and light-demanding trees, naturally found in damp low-lying areas (Claessens *et al.* 2010; Preston *et al.* 2002). The 1860 OS map of the area shows a small stream flowing north away from the site towards the River Wear, which joins with Hagg Beck in a damp wooded area called Hawly Bogs (now Nancy's Wood). Linear stands of alder and willow probably expanded along these streams and formed carr woodland in the valley bottom. Birch may also have been present in these damp habitats, particularly if represented by downy birch (*Betula pubescens*) which prefers wetter conditions.

5.7 The site is located on a lowland valley terrace of the Southern Wear Valley Character Area (Durham County Council 2021). Oak and hazel, the most frequently recorded species on the site, would have formed areas of mixed deciduous woodland on the valley slopes or in riparian woodland alongside the River Wear. Common oak (*Quercus robur*), which is tolerant of waterlogged conditions (Preston *et al.* 2002), is the most likely species in the latter instance. Sporadic occurrences of holly and hawthorn, suggest these shrubs/small trees were growing at the woodland margins, in scrub, or as an understorey layer, particularly if the woodland was open.

The extent of local landscape exploited

5.8 Palaeoenvironmental analysis has shown that the occupants of the roundhouse at Middlestone Moor exploited a range of habitats encompassing the higher areas of Magnesian limestone south of the site, to the low lying riparian woodland and wetland habitats towards the River Wear.

Regional context

5.9 The importance of the site at Middlestone Moor is highlighted by the scarcity of palaeoenvironmental studies from Bronze Age settlements in the region, with charcoal evidence from this site type being particularly limited (Huntley 2010). The few contemporary sites providing similar palaeoenvironmental evidence include

Bradley, Leadgate and Great Lumley (Archaeological Services 2019; 2018). Bradley is a burnt mound site located adjacent to several springs and streams flowing into Pont Burn, with two radiocarbon dates reflecting middle-late Bronze Age activity (1400-1120 cal BC). Combined evidence from charcoal and charred palaeoenvironmental remains suggested the pit features were located in a damp clearing, surrounded by a local riparian woodland. Alder and willow occurred on the flushed wetter areas, while the drier slopes comprised an oak-birch woodland, with an understorey of hazel, holly and rowan.

5.10 A group of pits were excavated at Great Lumley, three of which provided dates between 1640-1420 cal BC. As at Middlestone Moor, the main fuelwoods were oak, alder and hazel, supplemented by apple or hawthorn and willow family. Results from all three sites point to areas of open woodland and grassland, which is consistent with regional pollen evidence for increased opening of the woodland canopy during the Bronze Age (Donaldson & Turner 1977; Bartley *et al.* 1976). The predominance of alder at these three sites reflects increased exploitation of wet woodland, and perhaps highlights the wetter climatic conditions attributed to this period (Mansell *et al*. 2014; Macklin *et al*. 2010).

6. Sources

Archaeological Services 2018 *Land at Scorer's Lane, Great Lumley, County Durham: palaeoenvironmental analysis*. Unpublished report **4895**, Archaeological Services Durham University

Archaeological Services 2019 *Bradley Surface Mining Scheme, Leadgate, County Durham: post-excavation full analysis*. Unpublished report **5024**, Archaeological Services Durham University

Asouti, E, & Austin, P, 2005 Reconstructing woodland vegetation and its exploitation by past societies, based on the analysis and interpretation of archaeological wood charcoal macro-remains. *Env Archaeol* **10**, 1-18

Asouti, E, & Hather, J, 2001 Charcoal analysis and the reconstruction of ancient woodland vegetation in the Konya Basin, south-central Anatolia, Turkey: result from the Neolithic site of Çatalhöyük East. *Veget Hist Archaeobot* **10**, 23-32

Bartley, D D, Chambers, C, & Hart-Jones, B, 1976 The vegetational history of parts of south and east Durham. *New Phytol* **77**, 437-468

Bishop, R R, Church, M J, & Rowley-Conwy, P A, 2015 Firewood, food and human niche construction: the potential role of Mesolithic hunter-gatherers in actively structuring Scotland's woodlands. *Quat Sci Rev* **108**, 51-75

Bronk Ramsey, C, 2020 OxCal 4.4.2 Manual. https://c14.arch.ox.ac.uk/oxcal.html

Claessens, H, Oosterbaan, A, Savill,P, & Rondeux, J, 2010 A review of the characteristics of black alder (*Alnus glutinosa* (L.) Gaertn.) and their implications for silvicultural practices. *Forestry* **83** No.2 163-175

Donaldson, A M, & Turner, J, 1977 A pollen diagram from Hallowell Moss, near Durham City, UK. *J Biogeog* **4**, 25-33

Durham County Council (2021) County Durham Landscape Character - Durham Landscape, accessed 11/03/2021

Gale, R, & Cutler, D, 2000 *Plants in archaeology; identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*. Otley

Graham, G G, 1988 *The flora and vegetation of County Durham*. Durham

Hall, A R, & Huntley, J P, 2007 *A review of the evidence for macrofossil plant remains from archaeological deposits in northern England*. Research Department Report Series no. **87**. London

Hather, J G, 2000 *The identification of the Northern European Woods: a guide for archaeologists and conservators*. London

Huntley, J P, 2010 *A review of wood and charcoal recovered from archaeological excavations in Northern England*. Research Department Report Series no. **68**. London

Macklin, M G, Jones, A F, & Lewin, J, 2010 River response to rapid Holocene environmental change: evidence and explanation in British catchments. *Quat Sci Rev* **29**, 1555-1576

Mansell, L J, Whitehouse, N J, Gearey, B R, Barratt, P, & Roe, H M, 2014 Holocene floodplain palaeoecology of the Humberhead Levels; implications for regional wetland development *Quat Int* **341**, 91-109

Marguerie, D, & Hunot, J-Y, 2007 Charcoal analysis and dendrology: data from archaeological sites in north-western France. *J Archaeol Sci* **34**, 1417-1433

Petts, D, & Gerrard, C, 2006 *Shared Visions: The North-East Regional Research Framework for the Historic environment*. Durham

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

Reimer, P, Austin, W, Bard, E, Bayliss, A, Blackwell, P, Bronk Ramsey, C, . . . Talamo, S, 2020 The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP). *Radiocarbon* **62(4),** 725-757

Schweingruber, F H, 1990 *Microscopic wood anatomy*. Birmensdorf

Stace, C, 2010 *New Flora of the British Isles*. Cambridge

Van der Veen, M, 2009 The carbonised plant remains, in Gates, T, Excavation of a late second/early first millennium B.C. unenclosed roundhouse at Halls Hill, near East Woodburn, Northumberland. *Archaeol Aeliana* (5) **38**, 66-73

Appendix 1: Data from palaeoenvironmental analysis

Sample		**1**	**2**	**3**	**4**	**5**	**6**	**7**
Context		**1000**	**1004**	**1001**	**1005**	**1007**	**1016**	**1012**
Feature number		**1002**	**1003**	**1002**	**1006**	**1008**	**1017**	**1013**
Feature		**P**	**P**	**P**	**PH**	**PH**	**PH**	**PH**
Material available for radiocarbon dating		✓	✓	✓	✓	✓	✓	✓
Volume processed (l)		31	29	13	24	14	20	21
Volume of flot (ml)		150	250	175	200	100	200	125
Residue contents								
Bone (calcined)	indet. frags	(+)	(+)	-	-	-	-	-
Daub / fired clay	magnetic	++	-	-	+++	-	-	-
Fire-cracked stones		+	+	-	+	-	-	-
Flint (number of fragments)		-	-	-	-	-	1	-
Pot (number of fragments)		1	-	-	4	1	-	2
Flot matrix								
Charcoal		+++	+++	+++	+++	+++	+++	+++
Cinder	frags. <4mm	+	+	(+)	-	(+)	(+)	-
Coal	frags. <4mm	(+)	+	(+)	+	(+)	(+)	(+)
Rhizomes / tubers (charred)		-	-	-	(+)	-	-	-
Roots / straw (modern)		+	+	-	-	-	-	-
Uncharred seeds		+	+	(+)	+	(+)	-	-
Charred remains (total count)								
(c) Cerealia indeterminate	grain	-	1	-	-	-	10	-
(c) *Hordeum* sp (Barley species)	grain	-	2	-	4	2	6	5
(c) *Hordeum* sp var. *nudum* (Naked Barley)	grain	-	-	-	1	-	-	2
(c) *Hordeum vulgare* (6-row Barley)	twisted grain	-	-	-	1	-	-	-
(c) *Linum usitatissimum/perenne* (Cultivated / Perennial Flax)	seed	-	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	1	1	-
(c) *Triticum spelta* (Spelt Wheat)	glume base	-	-	-	-	-	-	-
(c) *Triticum* sp (Wheat species)	glume base	-	-	-	1	-	-	-
(c) *Triticum* sp (Wheat species)	grain	-	1	-	-	4	1	1
(c) *Triticum* sp (Wheat species)	spikelet fork	-	-	-	-	1	-	-
(h) *Danthonia decumbens* (Heath-grass)	caryopsis	2	2	3	1	-	-	-
(r) *Galeopsis* sp (Hemp-nettles)	nutlet	-	-	-	1	-	-	1
(r) *Persicaria lapathifolia* (Pale Persicaria)	nutlet	-	-	1	1	1	-	2
(r) *Persicaria maculosa* (Redshank)	nutlet	4	-	2	3	1	1	1
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	-	-	-	1	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	1	1	-	7	-	5	3
(t) *Prunus spinosa* (Sloe)	fruitstone	-	-	-	-	-	-	-
(t) *Sambucus nigra* (Elder)	fruitstone	-	-	-	-	-	-	-
(w) *Carex* cf. *demissa* (Common Yellow sedge)	trigonous nutlet	-	-	-	-	-	-	-
(x) *Chenopodium* sp (Goosefoots)	seed	-	-	-	-	-	-	1
(x) *Conopodium majus* (Pignut)	tuber	-	-	-	-	-	-	-
(x) *Galium* sp (Bedstraws)	small seed	-	-	2	4	-	-	4
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	-	-	-	-	-	1	-
Identified charcoal (✓presence)								
Alnus glutinosa (Alder)		✓	✓	-	✓	✓	✓	✓
Betula sp (Birches)		-	✓	-	✓	✓	-	✓
Corylus avellana (Hazel)		✓	✓	✓	✓	✓	✓	✓
Ilex aquifolium (Holly)		-	✓	-	-	✓	-	-
Maloideae (Hawthorn, apple)		-	✓	-	✓	-	-	-
Quercus sp (Oaks)		✓	✓	✓	✓	✓	✓	✓
Salicaceae (Willow, poplar)		-	-	-	✓	✓	✓	-

[c-cultivated; h-heathland; r-ruderal; t-tree/woodland; w-wet/damp ground; x-wide niche. L-linear; P-pit; PH-posthole; S-slot.
(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Sample		**8**	**9**	**11**	**13**	**14**	**15**
Context		**1024**	**1009**	**1070**	**1014**	**1054**	**1081**
Feature number		**1025**	**1011**	**1071**	**1015**	**1055**	**1080**
Feature		**S**	**P**	**PH**	**P**	**L**	**PH**
Material available for radiocarbon dating		✓	(✓)	✓	✓	✓	✓
Volume processed (l)		19	32	7	17	18	15
Volume of flot (ml)		100	250	40	40	125	150
Residue contents							
Bone (calcined)	indet. frags	-	-	-	-	-	(+)
Daub / fired clay	magnetic	-	++++	-	-	-	+++
Fire-cracked stones		+	-	-	-	-	-
Flint (number of fragments)		1	-	-	-	5	-
Pot (number of fragments)		2	-	1	-	2	-
Flot matrix							
Charcoal		++	+++	++	+	+++	++
Cinder	frags. <4mm	+	+	-	++	++	(+)
Coal	frags. <4mm	++	+	-	++	++	(+)
Rhizomes / tubers (charred)		-	-	(+)	-	-	-
Roots / straw (modern)		-	-	-	+	-	-
Uncharred seeds		(+)	+	(+)	-	-	(+)
Charred remains (total count)							
(c) Cerealia indeterminate	grain	1	-	-	-	-	-
(c) *Hordeum* sp (Barley species)	grain	-	-	-	-	2	-
(c) *Hordeum* sp var. *nudum* (Naked Barley)	grain	-	-	-	-	-	-
(c) *Hordeum vulgare* (6-row Barley)	twisted grain	-	-	-	-	-	-
(c) *Linum usitatissimum/perenne* (Cultivated / Perennial Flax)	seed	-	-	1	-	2	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer Wheat)	grain	-	-	-	-	-	-
(c) *Triticum spelta* (Spelt Wheat)	glume base	-	-	-	-	1	-
(c) *Triticum* sp (Wheat species)	glume base	-	-	-	-	-	1
(c) *Triticum* sp (Wheat species)	grain	-	-	-	-	-	-
(c) *Triticum* sp (Wheat species)	spikelet fork	-	-	-	-	-	-
(h) *Danthonia decumbens* (Heath-grass)	caryopsis	-	-	-	1	-	-
(r) *Galeopsis* sp (Hemp-nettles)	nutlet	-	-	-	-	-	-
(r) *Persicaria lapathifolia* (Pale Persicaria)	nutlet	-	-	-	-	-	-
(r) *Persicaria maculosa* (Redshank)	nutlet	1	-	-	-	1	-
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	-	-	2	4	6	47
(t) *Prunus spinosa* (Sloe)	fruitstone	-	-	-	-	-	1
(t) *Sambucus nigra* (Elder)	fruitstone	1	-	-	-	-	-
(w) *Carex* cf. *demissa* (Common Yellow sedge)	trigonous nutlet	-	-	-	1	-	-
(x) *Chenopodium* sp (Goosefoots)	seed	1	-	-	-	-	-
(x) *Conopodium majus* (Pignut)	tuber	1	-	-	-	-	-
(x) *Galium* sp (Bedstraws)	small seed	-	-	2	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	-	-	-	-	-	-
Identified charcoal (✓presence)							
Alnus glutinosa (Alder)		✓	-	✓	-	-	-
Betula sp (Birches)		✓	-	-	✓	✓	✓
Corylus avellana (Hazel)		✓	-	✓	✓	✓	✓
Ilex aquifolium (Holly)		-	-	-	-	-	-
Maloideae (Hawthorn, apple)		-	-	-	-	-	-
Quercus sp (Oaks)		✓	✓	✓	✓	✓	✓
Salicaceae (Willow, poplar)		-	-	-	-	-	-

[c-cultivated; h-heathland; r-ruderal; t-tree/woodland; w-wet/damp ground; x-wide niche. L-linear; P-pit; PH-posthole; S-slot.
(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant]

Appendix 2: Detailed results from charcoal analysis

Sample	**2**	**4**	**5**	**6**	**8**	**9**	**11**
Context	**1004**	**1005**	**1007**	**1016**	**1024**	**1009**	**1070**
Feature number	**208**	**211**	**217**	**225**	**270**	**281**	**F1071**
Feature	**Pit**	**Posthole**	**Posthole**	**Posthole**	**Slot**	**Pit**	**Posthole**
Radiocarbon date (95.4%) rounded outwards to 10yrs	1400-1130 cal BC	1430-1270 cal BC	1390-1120 cal BC	1420-1260 cal BC	1380-1120 cal BC	-	-
Charcoal (g / number of fragments)							
Alnus glutinosa (Alder)	3.471 (22F)	0.521 (18F)	0.376 (12F)	4.133 (93F)	0.041 (2F)	-	0.478 (8F)
Betula sp (Birches)	0.030 (1F)	0.081 (3F)	0.015 (1F)	-	0.034 (1F)	-	-
Corylus avellana (Hazel)	1.150 (42F)	1.266 (38F)	1.623 (43F)	1.189 (16F)	0.353 (11F)	-	0.212 (5F)
Ilex aquifolium (Holly)	0.061 (2F)	-	0.061 (1F)	-	-	-	-
Maloideae (cf. hawthorn)	0.025 (1F)	0.172 (3F)	-	-	-	-	-
Quercus sp (Oaks)	2.893 (59F)	3.166 (58F)	1.685 (41F)	2.048 (49F)	0.944 (24F)	23.090 (290F)	0.191 (4F)
Salicaceae (Willow / poplar)	-	0.047 (1F)	0.075 (1F)	0.018 (1F)	-	-	-
Bark	0.379 (16F)	0.241 (9F)	0.073 (3F)	0.022 (1F)	0.836 (9F)	-	-
Weight of fragments in the >10mm fraction (g)	2.8	0.6	-	0.2	0.2	8.8	-
Weight of fragments in the >4mm fraction (g)	5.8	5.2	3.9	7.9	2.1	14.5	0.9
Weight of fragments in the >2mm fraction (g)	15.1	15.9	8.5	15.3	-	25.6	-
Weight of fragments analysed (g)	8.009	5.494	3.908	7.410	2.208	23.090	0.881
% of fragments > 4mm analysed	100	100	100	100	100	100	100
Number of fragments analysed	143	130	102	160	47	290	17
Largest fragment (mm)	30	12	8	11	20	30	7

[F = number of charcoal fragments]

Appendix 3: Growth ring data from the charcoal record

		Growth ring curvatures (%)				
Context	**Sample**	**Strong (s)**	**Moderate (m)**	**Weak (w)**	**Indet. (i)**	**Species (ring curvatures)**
1004	2	32	58	2	8	Alder (m), Birch (m), Hazel (s/m/w/i), Holly (m), Maloideae (s), Oak (s/m/w/i)
1005	4	23	49	12	16	Alder (m/w), Birch (m), Hazel (s/m), Maloideae (s/m), Oak (s/m/w/i), Salicaceae (m)
1007	5	30	40	5	25	Alder (m/w), Birch (m), Hazel (s/m/w/i), Holly (m), Oak (s/m/w/i), Salicaceae (m)
1016	6	2	74	13	11	Alder (s/m/w/i), Hazel (s/m), Oak (m/w/i), Salicaceae (m)
1024	8	11	61	8	20	Alder (m), Birch (m), Hazel (s/m), Oak (s/m/w/i)
1009	9	0	97	3	0	Oak (m/w)
1070	11	6	88	6	0	Alder (m), Hazel (s/m), Oak (m/w)

[Indeterminate curvature was often due to small fragment size or radial fracturing producing narrow 'slivers'.
Ring curvature is based on Marguerie & Hunot 2007]

Appendix 4: Summary of radiocarbon dating

Laboratory code	Context	Sample	Feature No.	Material used for C14 dating	$\delta^{13}C$ ‰	Radiocarbon Age BP	Calibrated date 68.3% probability	Calibrated date 95.4% probability
SUERC-96516 GU56926	1004	2	F1003	Alder charcoal Stemwood, 1 wide growth ring	-25.3	3025 ± 29	1375 (14.1%) 1351 cal BC 1301 (54.1%) 1222 cal BC	1395 (25.3%) 1333 cal BC 1325 (68.1%) 1197 cal BC 1172 (0.8%) 1164 cal BC 1142 (1.1%) 1132 cal BC
SUERC-95867 GU56280	1005	4	F1006	Naked barley grain	-23.3	3093 ± 28	1413 (30.2%) 1378 cal BC 1348 (38.0%) 1304 cal BC	1426 (95.4%) 1277 cal BC
SUERC-95868 GU56281	1007	5	F1008	Hazel charcoal Complete roundwood, pith to bark, 5 even growth rings, 8mm diameter	-26.8	3017 ± 28	1371 (8.6%) 1356 cal BC 1296 (59.6%) 1218 cal BC	1389 (19.3%) 1337 cal BC 1320 (71.6%) 1193 cal BC 1176 (2.1%) 1161 cal BC 1144 (2.4%) 1129 cal BC
SUERC-95869 GU56282	1016	6	F1017	Charred wheat grain (cf. emmer)	-22.7	3074 ± 28	1398 (21.0%) 1370 cal BC 1357 (47.3%) 1294 cal BC	1418 (95.4%) 1262 cal BC
SUERC-96381 GU56283R	1024	8	F1025	Hazel charcoal Small roundwood, 4 growth rings	-28.5	2988 ± 27	1266 (53.9%) 1196 cal BC 1174 (6.5%) 1162 cal BC 1143 (7.8%) 1130 cal BC	1373 (3.1%) 1354 cal BC 1297 (92.4%) 1122 cal BC

[The calibrated age ranges are determined using OxCal4.4.2 (Bronk Ramsey 2020); IntCal20 curve (Reimer *et al.* 2020)]

APPENDIX 7- RADIOCARBON ANALYSIS

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

09 December 2020

Laboratory Code	GU56279
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Middlestone Moor, County Durham (MMR20)
Context Reference	1004
Sample Reference	2
Material	Charred cereal grain : Triticum sp
Result	Failed due to insufficient carbon.

N.B. Any questions directed to the laboratory should quote the GU coding given above.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Checked and signed off by : P. Naysmith

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

09 December 2020

Laboratory Code	SUERC-95867 (GU56280)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Middlestone Moor, County Durham (MMR20)
Context Reference	1005
Sample Reference	4
Material	Charred cereal grain : Hordeum sp var. nudum
$\delta^{13}C$ relative to VPDB	-23.3 ‰
Radiocarbon Age BP	3093 ± 28

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

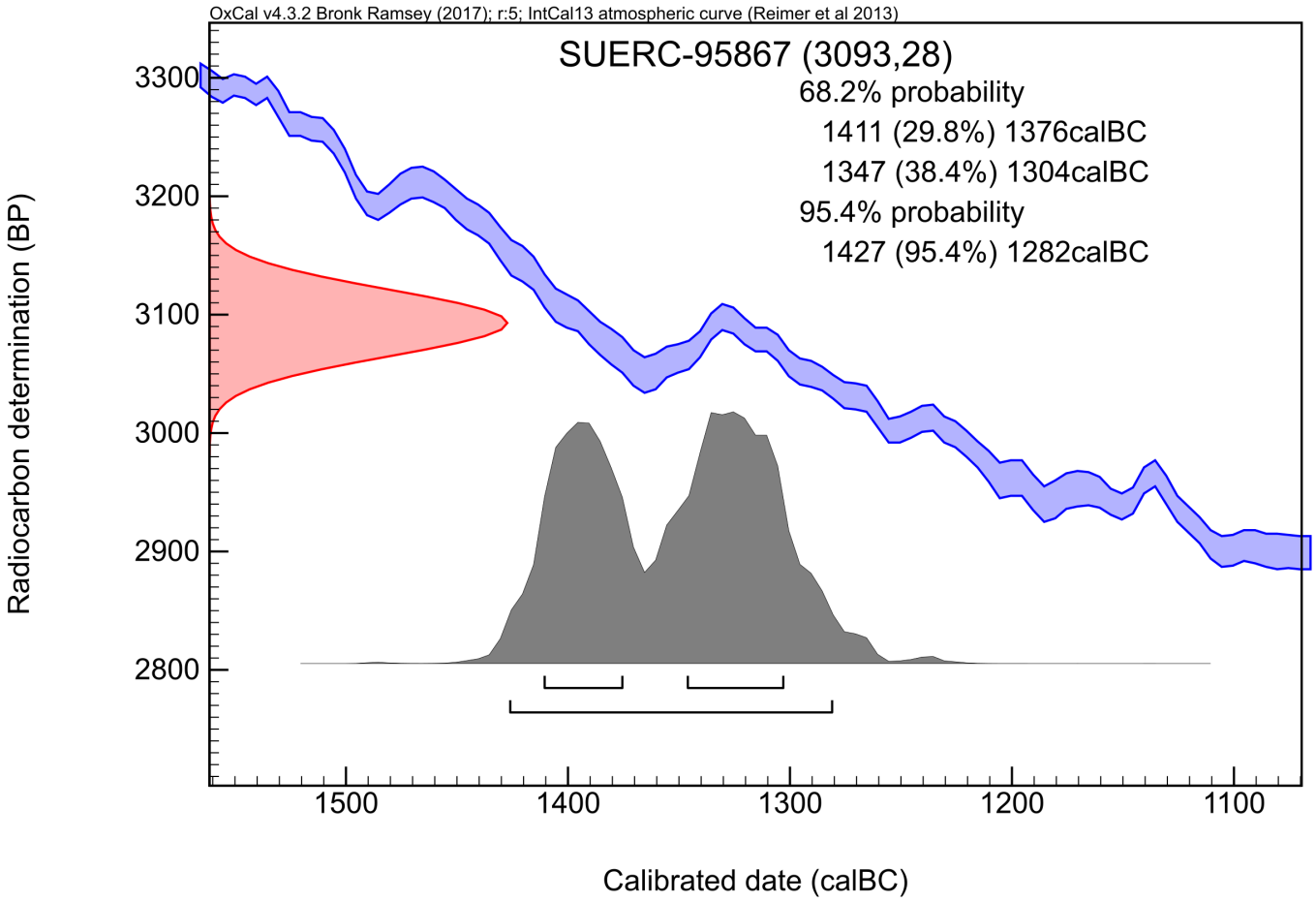
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

09 December 2020

Laboratory Code	SUERC-95868 (GU56281)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Middlestone Moor, County Durham (MMR20)
Context Reference	1007
Sample Reference	5
Material	Charcoal : Corylus avellana
$\delta^{13}C$ relative to VPDB	-26.8 ‰
Radiocarbon Age BP	3017 ± 28

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

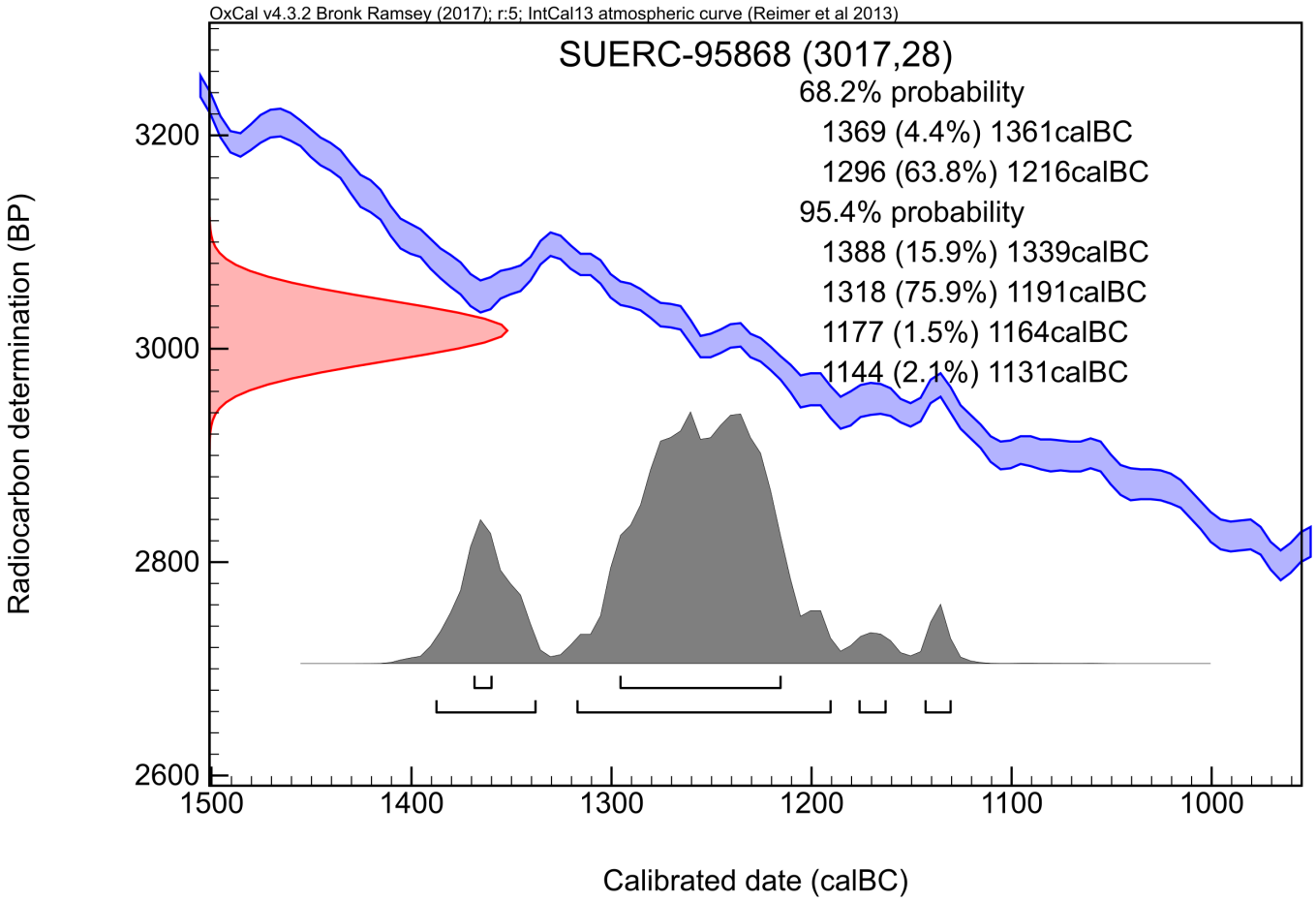
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

09 December 2020

Laboratory Code	SUERC-95869 (GU56282)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Middlestone Moor, County Durham (MMR20)
Context Reference	1016
Sample Reference	6
Material	Charred cereal grain : Triticum cf. dicoccum
$\delta^{13}C$ relative to VPDB	-22.7 ‰
Radiocarbon Age BP	3074 ± 28

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

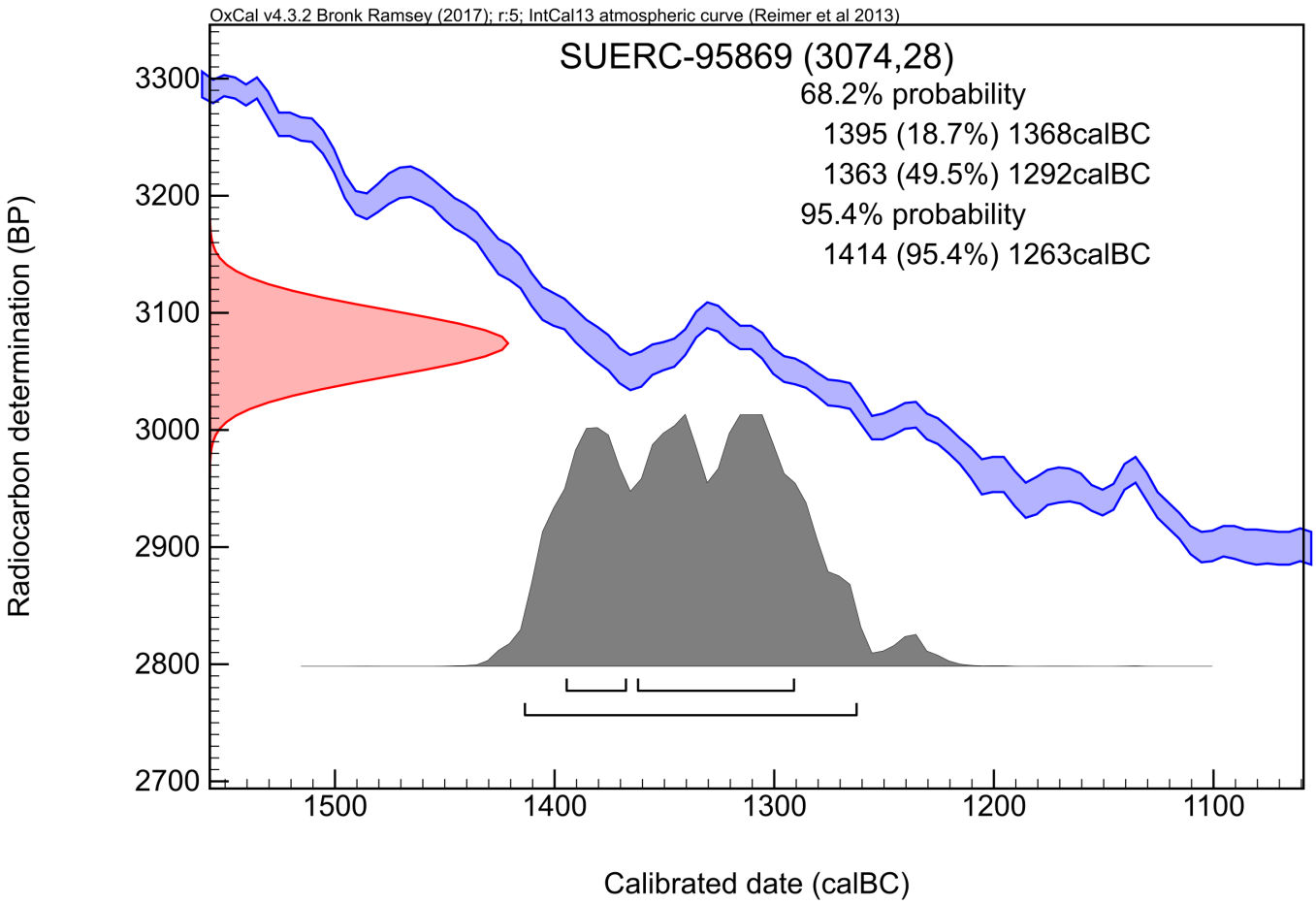
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by : E. Dunbar

Checked and signed off by : P. Nayont



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*

Scottish Universities Environmental Research Centre
Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride, Glasgow G75 0QF, Scotland, UK
Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

RADIOCARBON DATING CERTIFICATE

11 February 2021

Laboratory Code	SUERC-96516 (GU56926)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Middlestone Moor, County Durham (MMR20)
Context Reference	1004
Sample Reference	2
Material	Charcoal : Alder
$\delta^{13}C$ relative to VPDB	-25.3 ‰
Radiocarbon Age BP	3025 ± 29

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

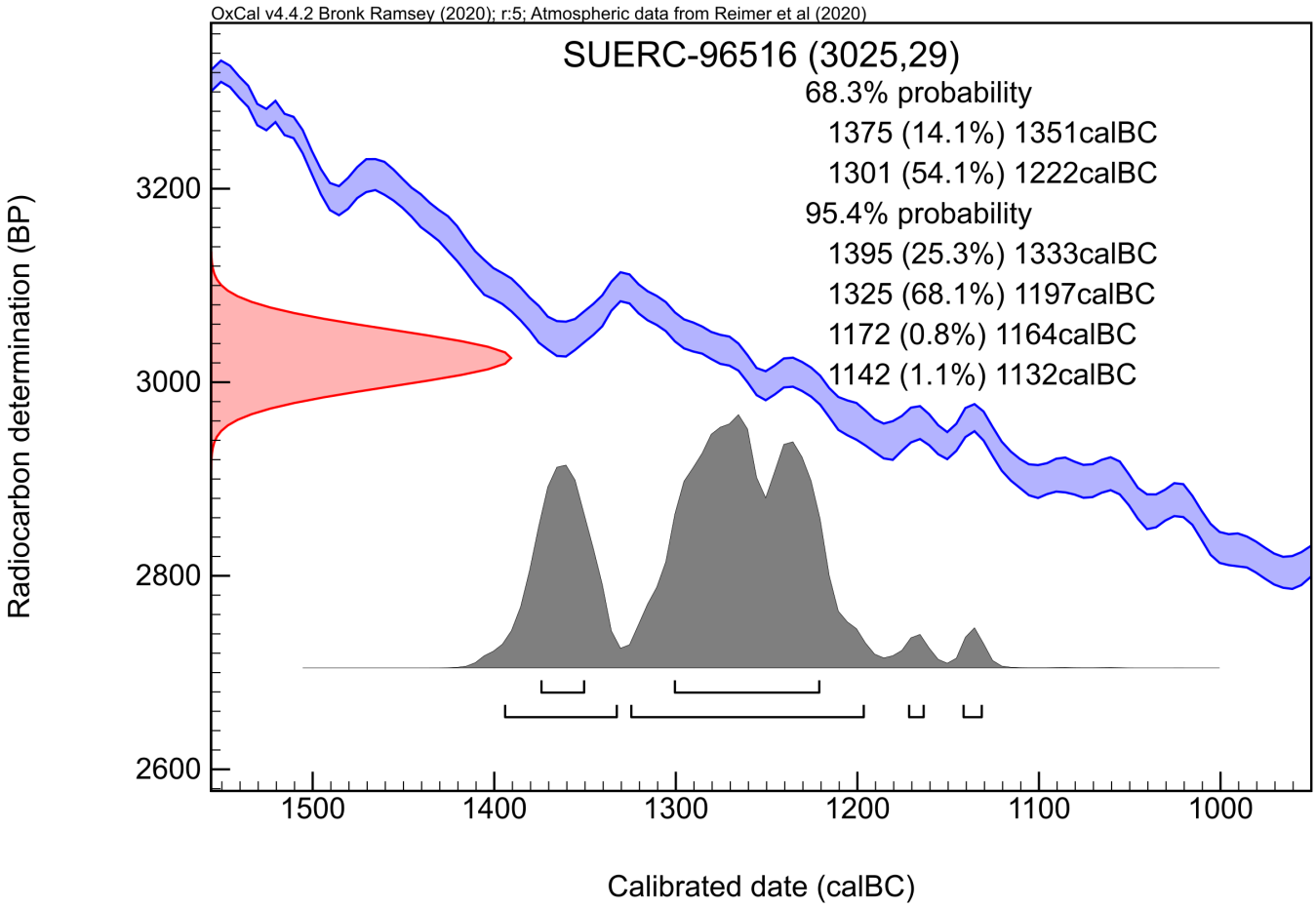
Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23.*

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

Checked and signed off by :



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal20 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60*

† Reimer et al. (2020) *Radiocarbon 62(4) pp.725-57*

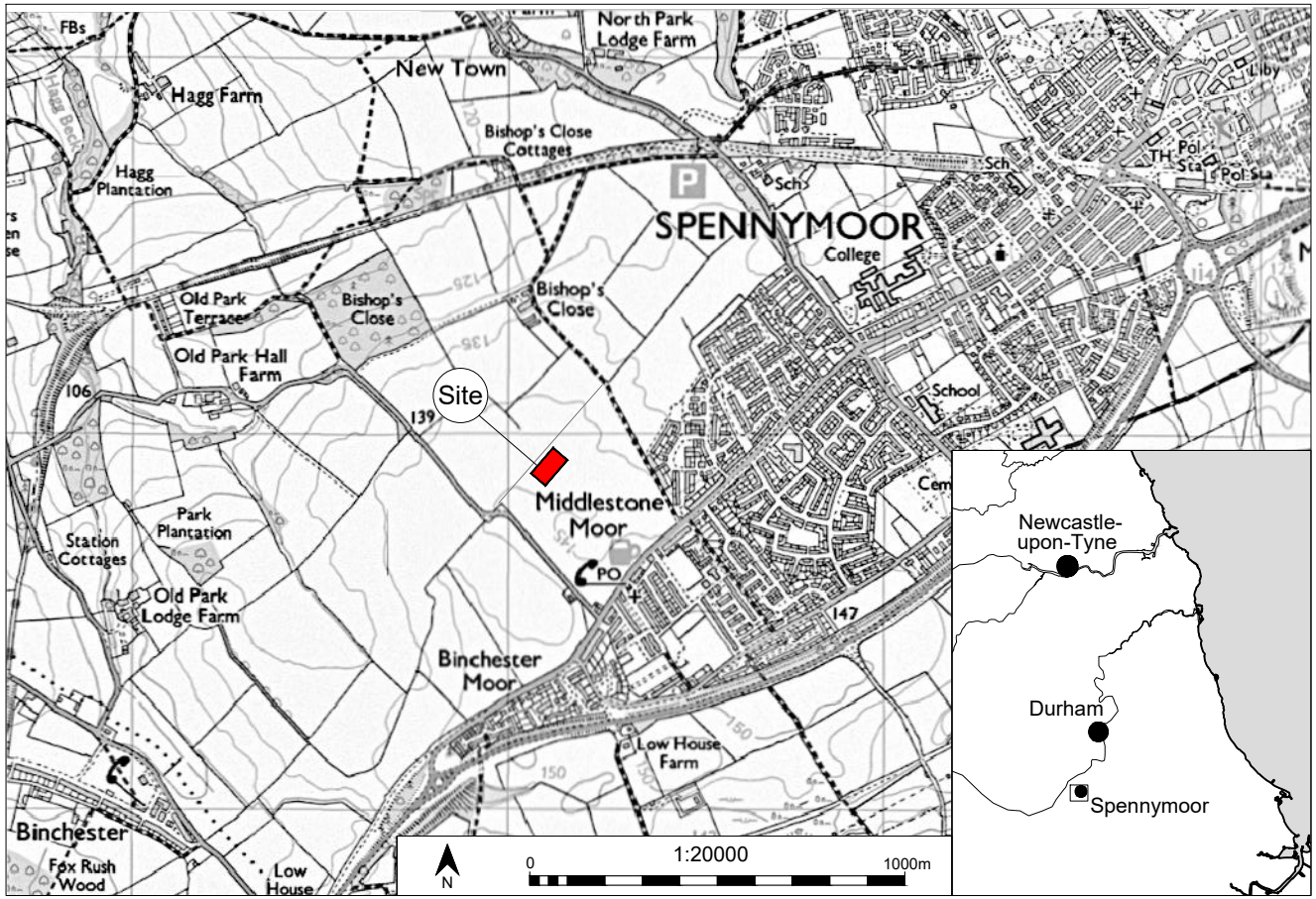
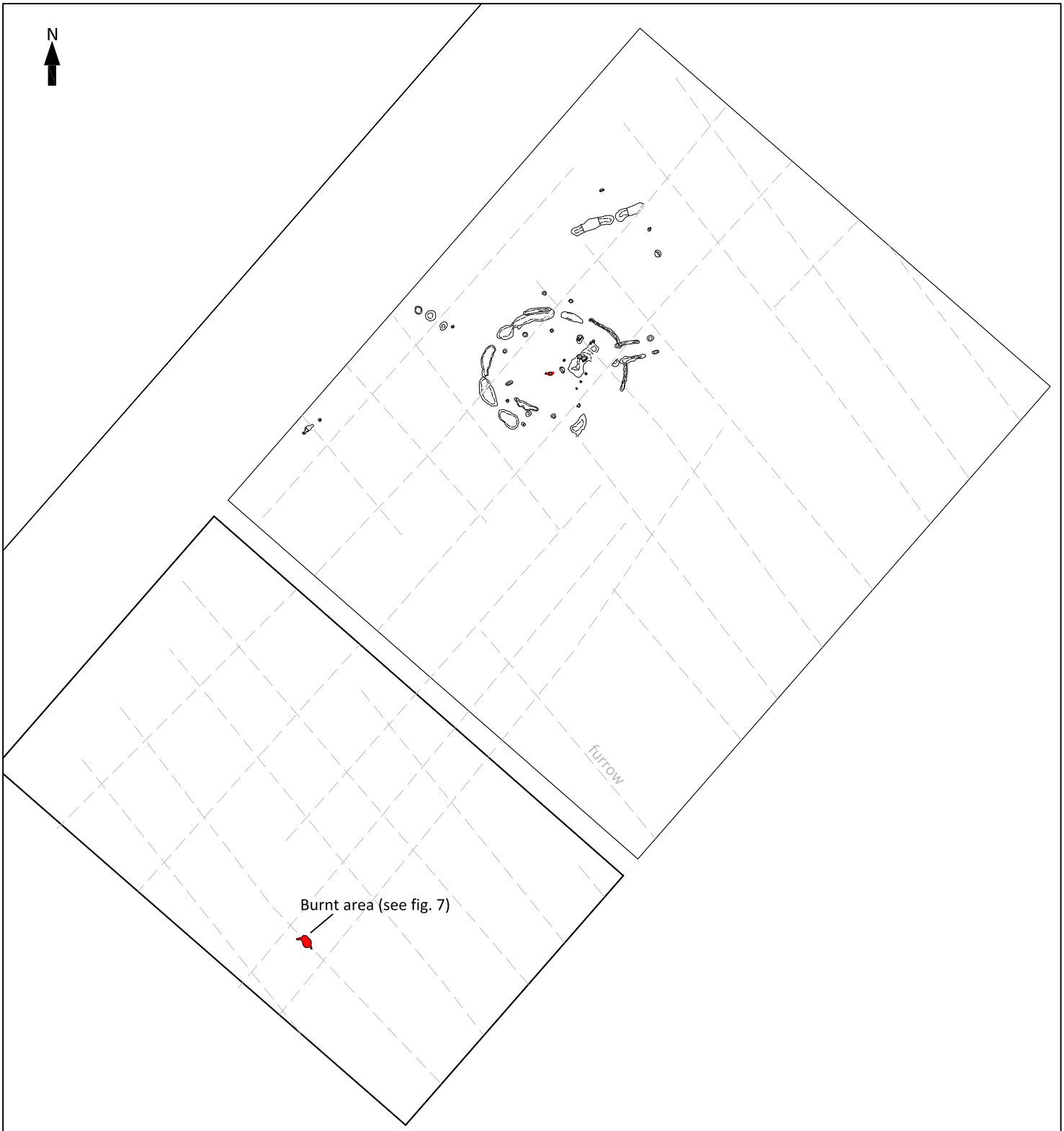


Figure 1: Location of site



AD Archaeology Ltd
on behalf of
Gleeson Homes

Figure 2: Overall multiphase plan of Middlestone Moor strip and record

scale 1:500 at A4 plot
0 25m

Middlestone Moor Strip and Record
Project number 349

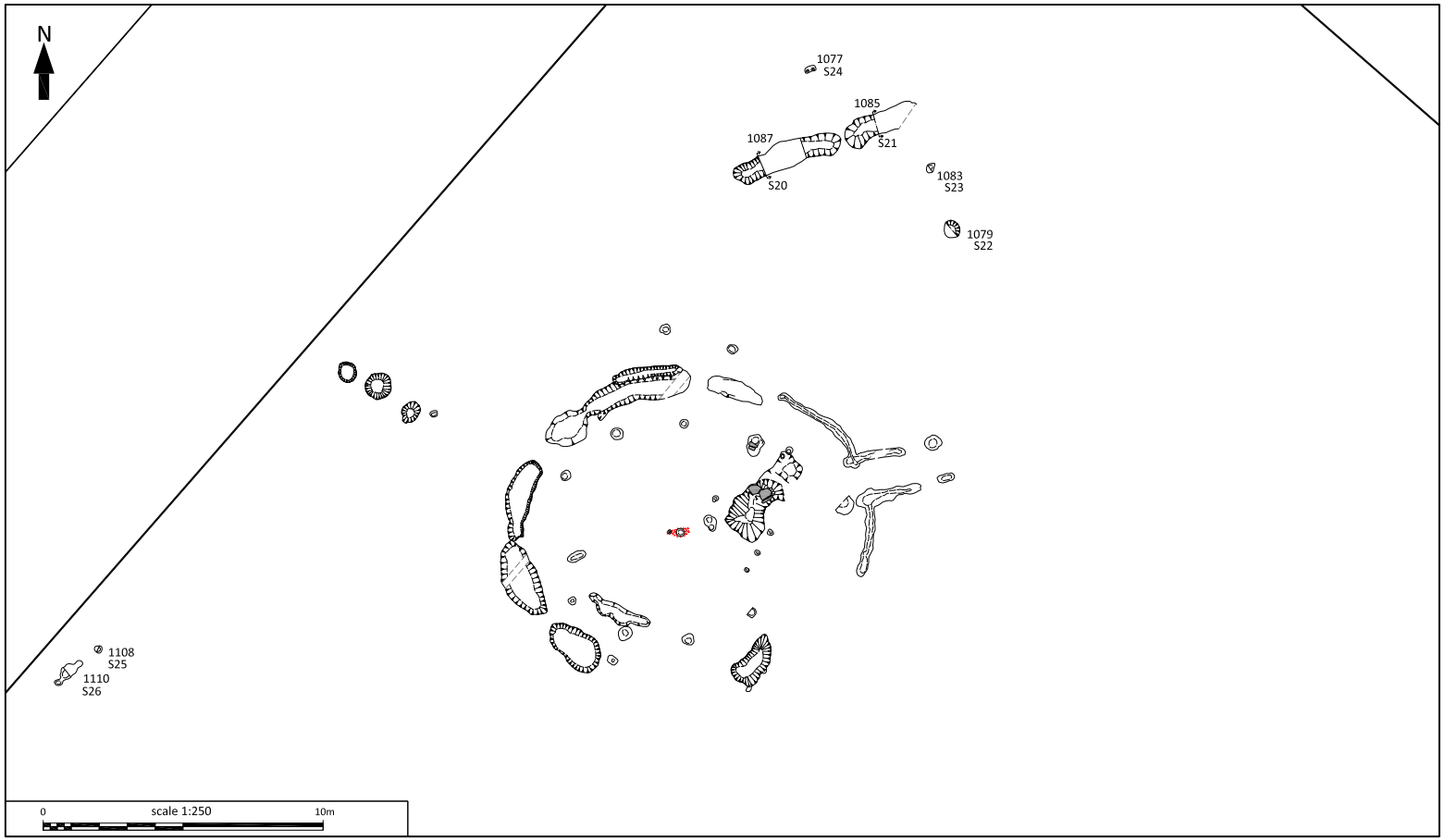


Figure 3: Detailed plan of Middlestone Moor strip and record

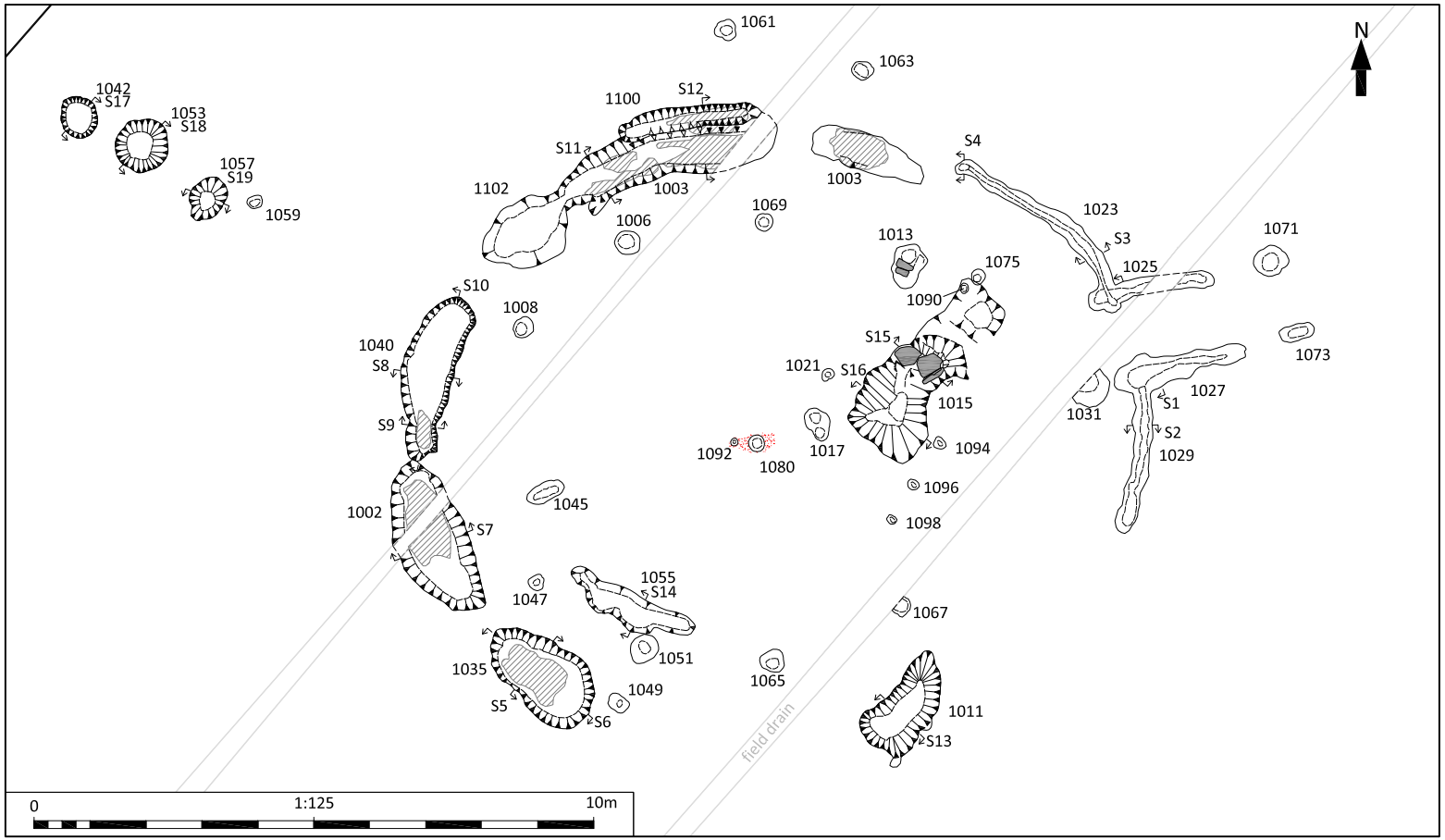


Figure 4: Detailed plan of Middlestone Moor strip and record

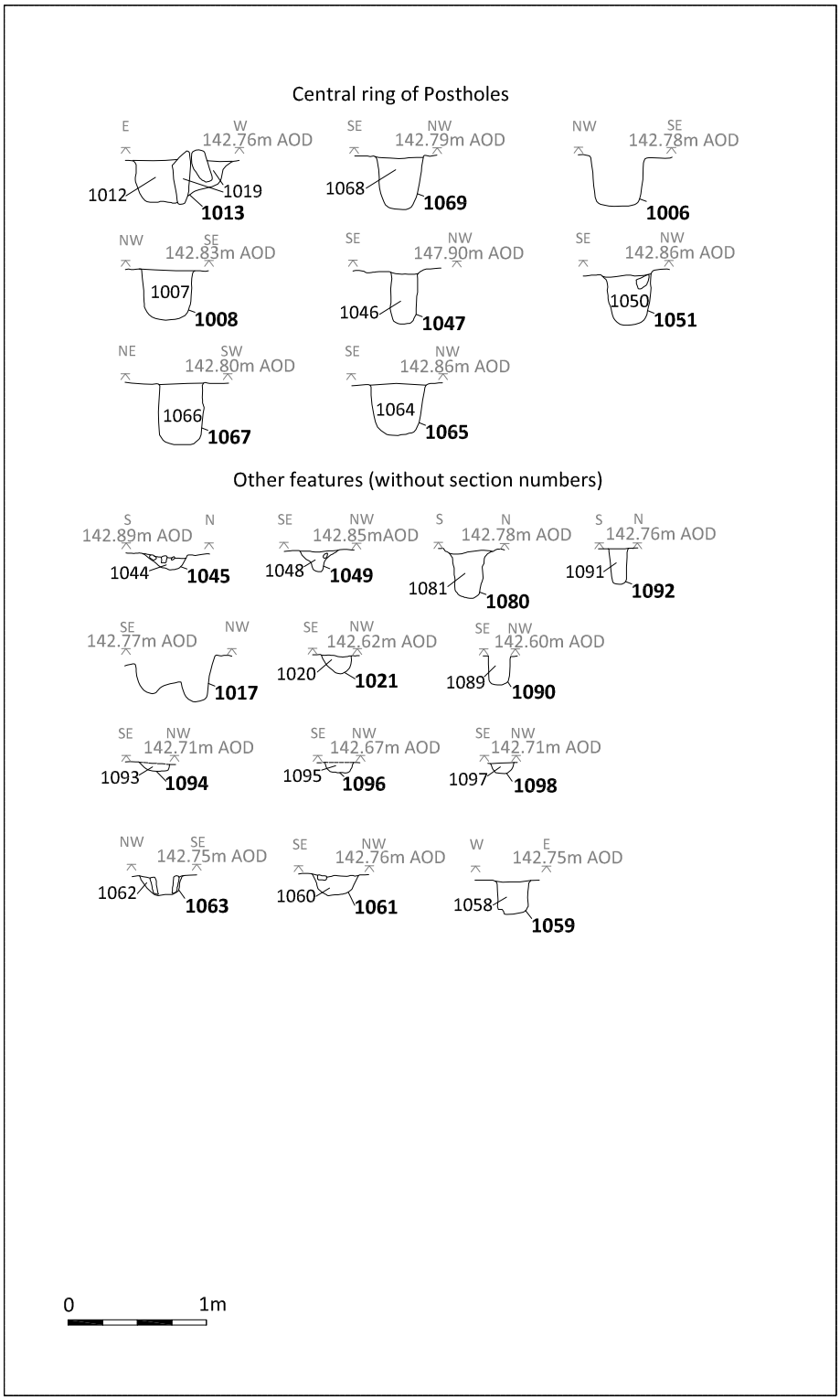


Figure 5: Sections

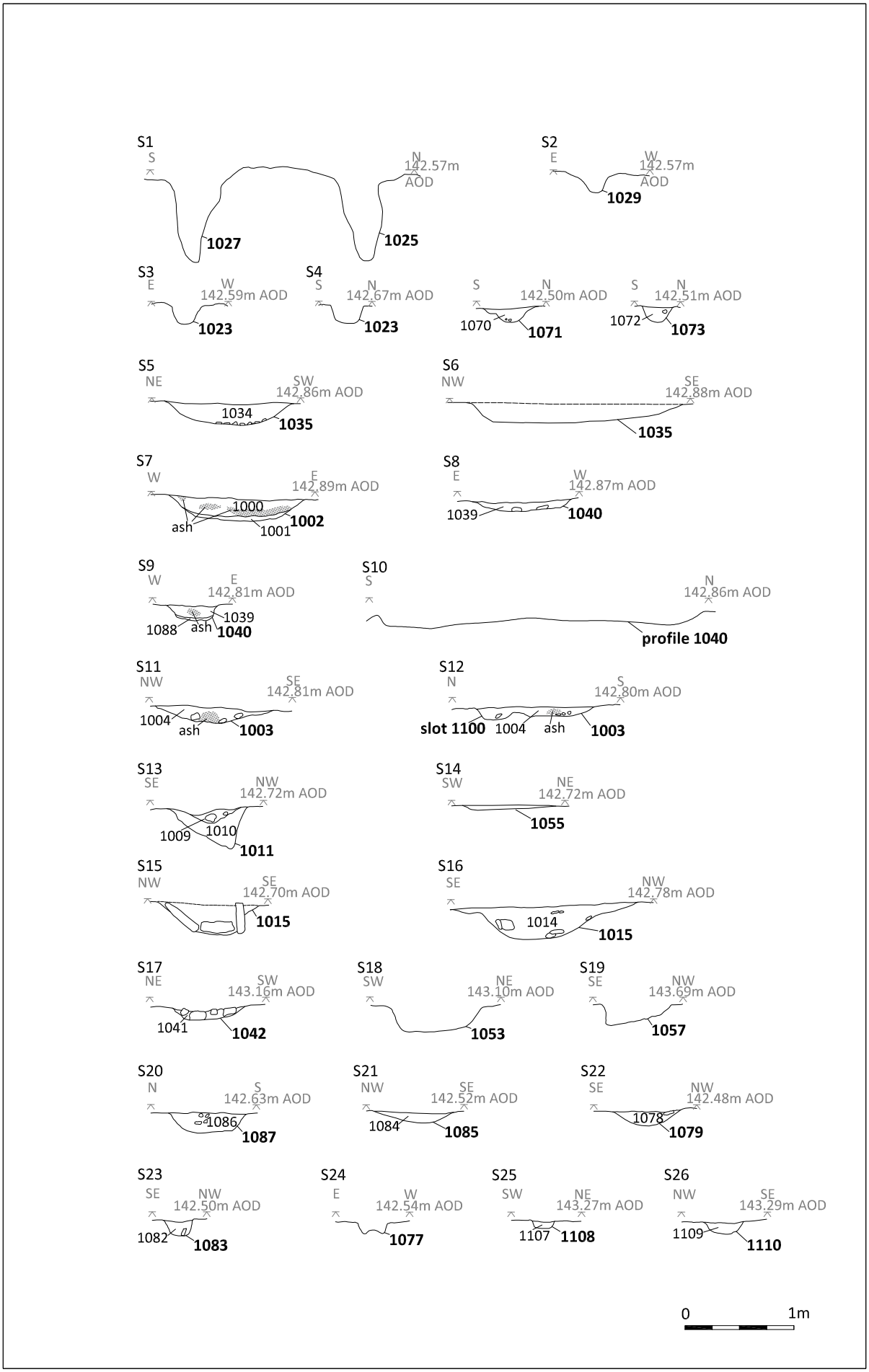


Figure 6: Sections

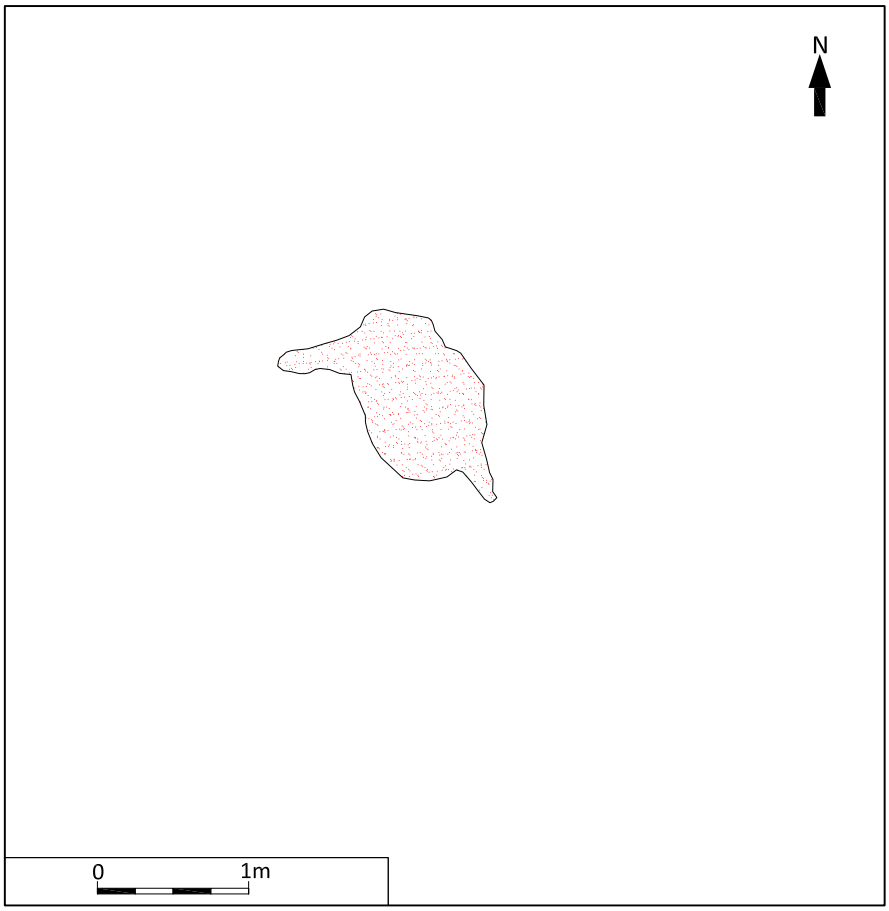


Figure 7: Plan of burnt area (1043) in southwestern portion of the site

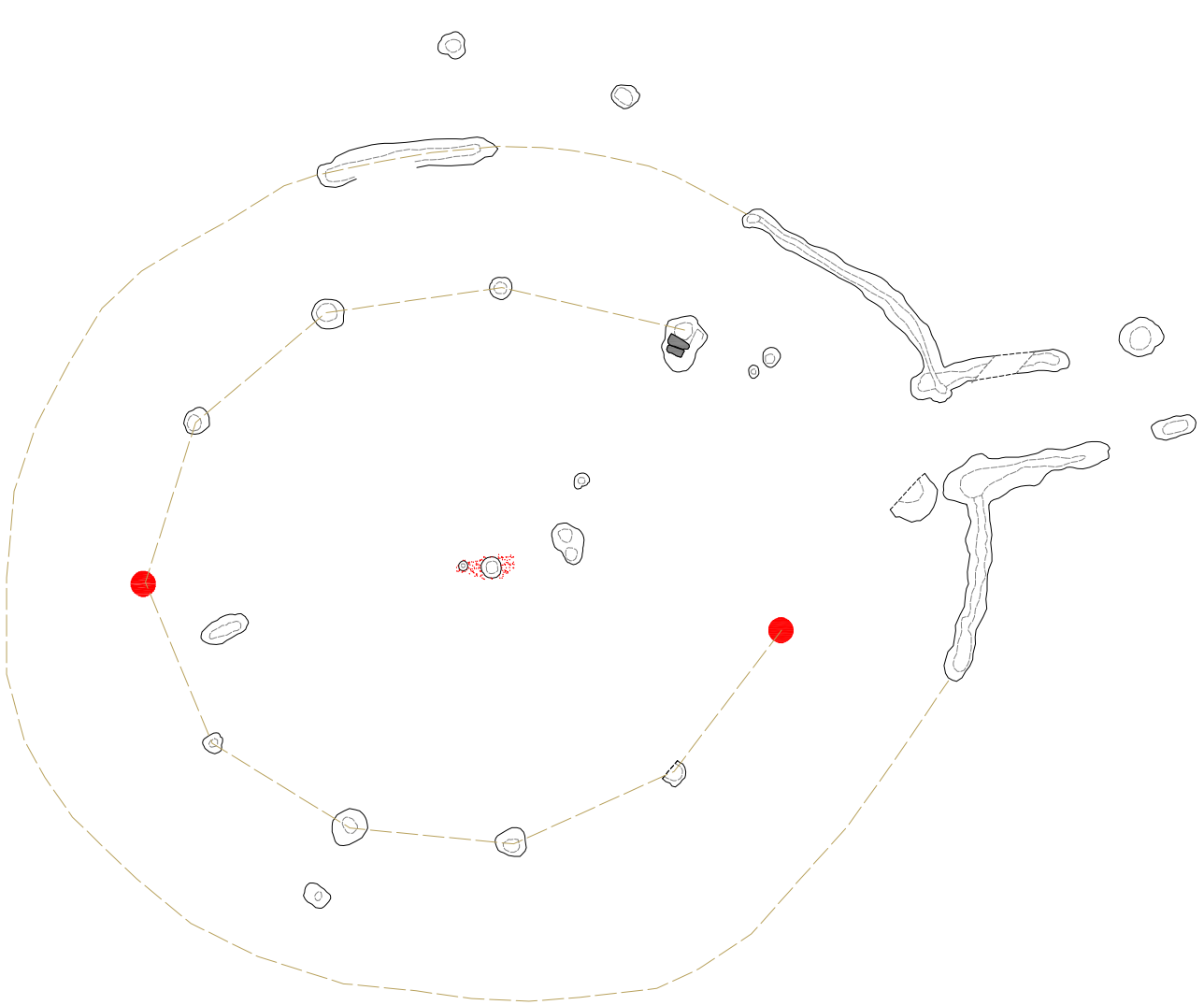


Figure 8: Plan showing structural elements of roundhouse and the projected positon of the external wall

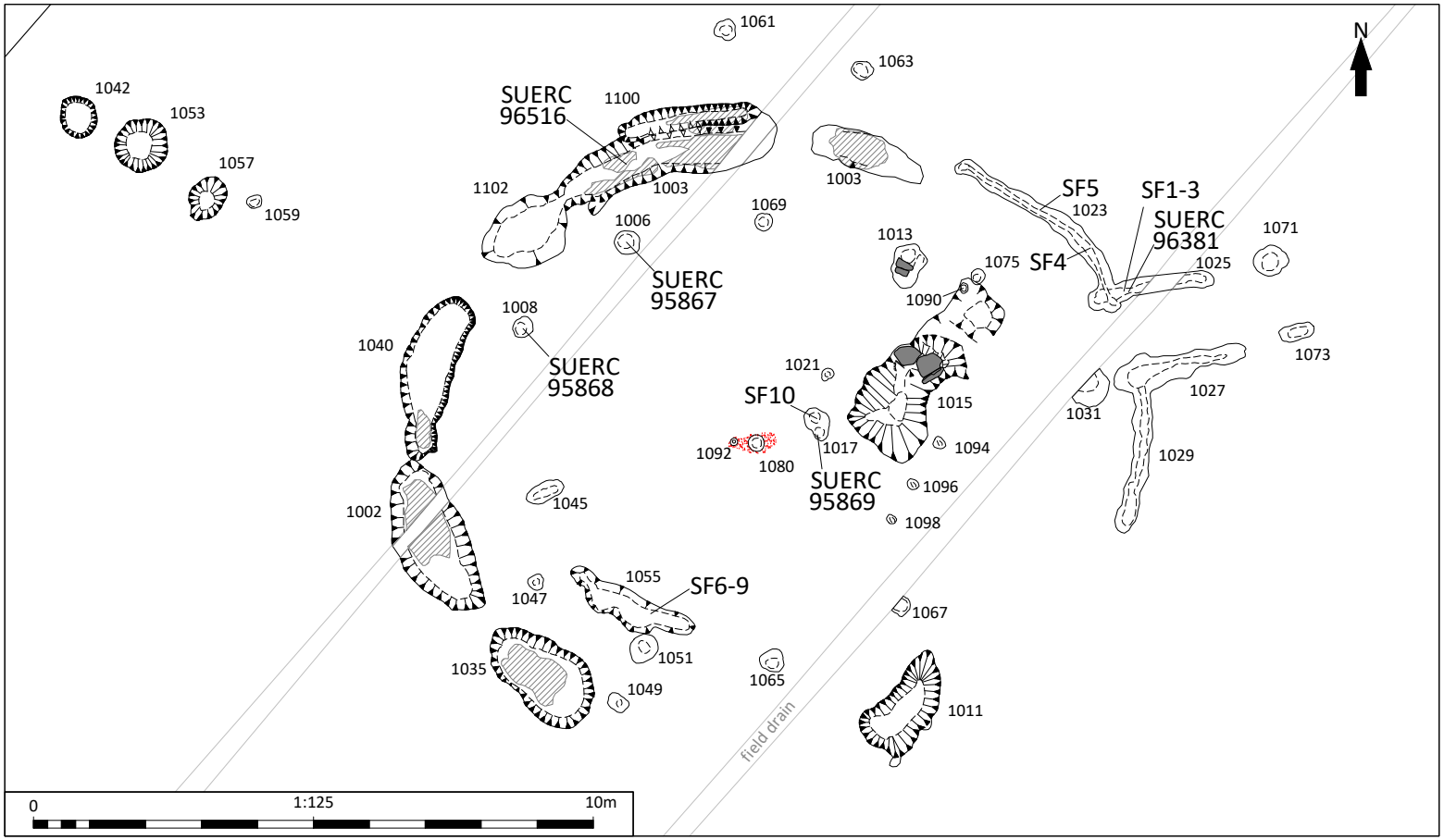


Figure 9: Plan showing location of finds and radiocarbon samples

Plate 1: Overall view looking north

Plate 2: Overall view looking south

Plate 3 Overall view looking south-east

Plate 4 Overall view looking north-east

Plate 5 Overall view looking north

Plate 6 Overall view looking north-west

Plate 7 Posthole 1051 half-sectioned looking south-west

Plate 8 Posthole 1006 looking north-west

Plate 9 Posthole 1008 looking north-west

Plate 10 Posthole 1047 looking west

Plate 11 Posthole 1069 looking south-west

Plate 12 Postholes 1075 & 1090 looking south-west

Plate 13 Posthole 1013 and Pit 1015 under excavation looking south

Plate 14 Pit 1015 looking north-east

Plate 15 Pit 1015 looking south-west

Plate 16 Pit 1015 looking south-west

Plate 17 Posthole 1013 and Pit 1015 under excavation looking south

Plate 18 Pit 1015 looking west

Plate 19 Pit 1015 looking south-west

Plate 20 Posthole 1017 looking west

Plate 21 Postholes 1017, 1080 & 1092

Plate 22 Postholes 1080 & 1092

Plate 23 Entranceway looking south

Plate 24 Entranceway looking north

Plate 25 Entranceway looking south-west

Plate 26 Entranceway looking west

Plate 27 Pit 1011 half sectioned looking south-west

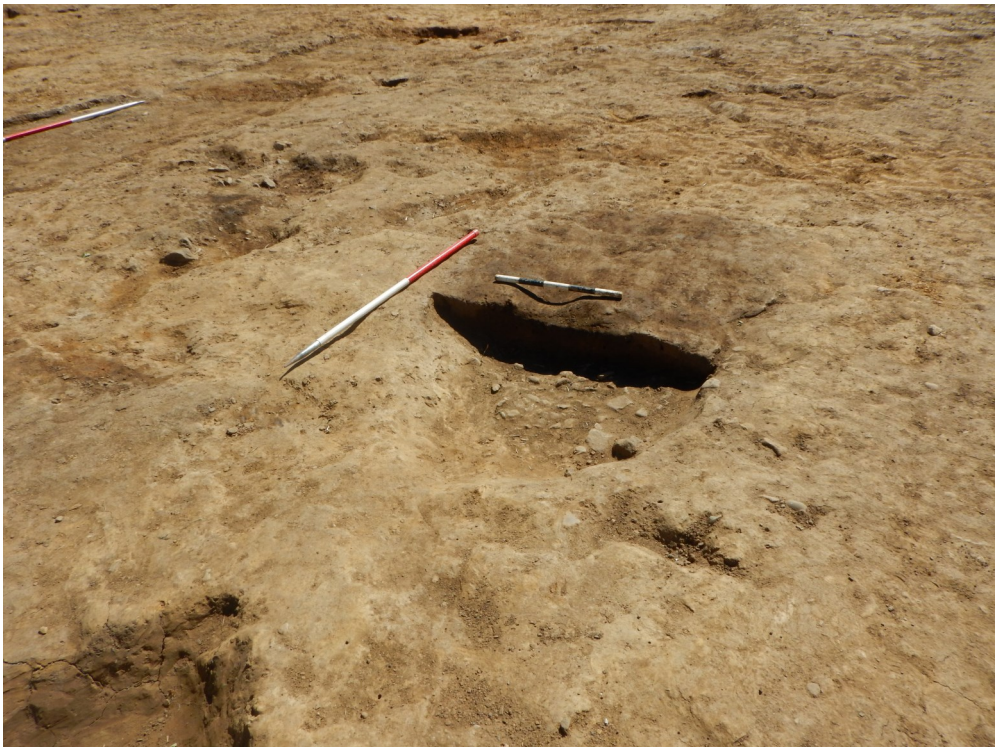


Plate 28 Pit 1035 half sectioned looking south-east

Plate 29 Pits 1002 & 1040 looking north

Plate 30 Pits 1002 & 1040 looking north-east

Plate 31 Pits 1035, 1002 & 1040 looking north-east

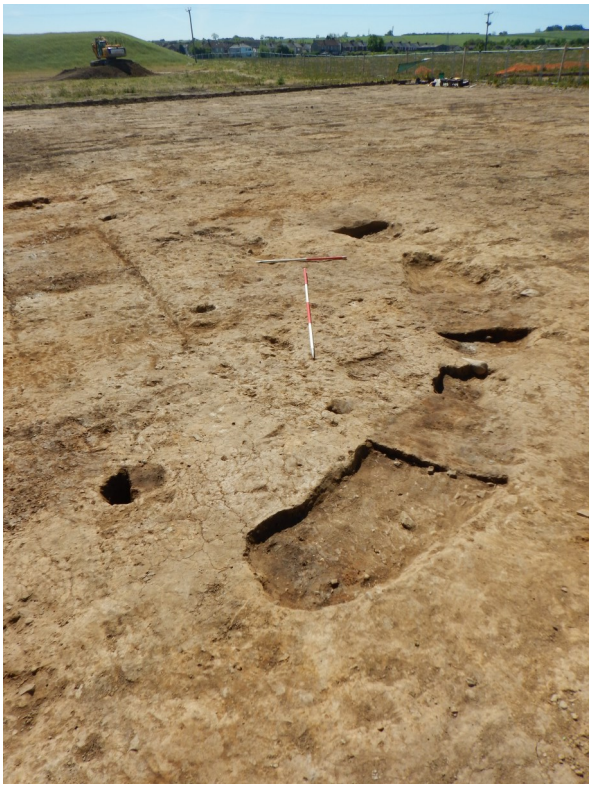


Plate 32 Pits 1040, 1002 & 1035 looking south

Plate 33 Pits 1035, 1002 & 1040 looking east

Plate 34 Pits 1040 & 1002 looking south-east

Plate 35 Metalling on base of pit 1003 looking south-east

Plate 36 Pit 1003 looking east

Plate 37 slot 1100 & Pit 1003 looking north-west

Plate 38 Overall view looking south-east

Plate 39 Pits 1042, 1053, 1057 and 1059 looking south-east

Plate 40 Pits 1042 & 1053 looking south-east

Plate 41 Feature 1087 & 1085 looking east

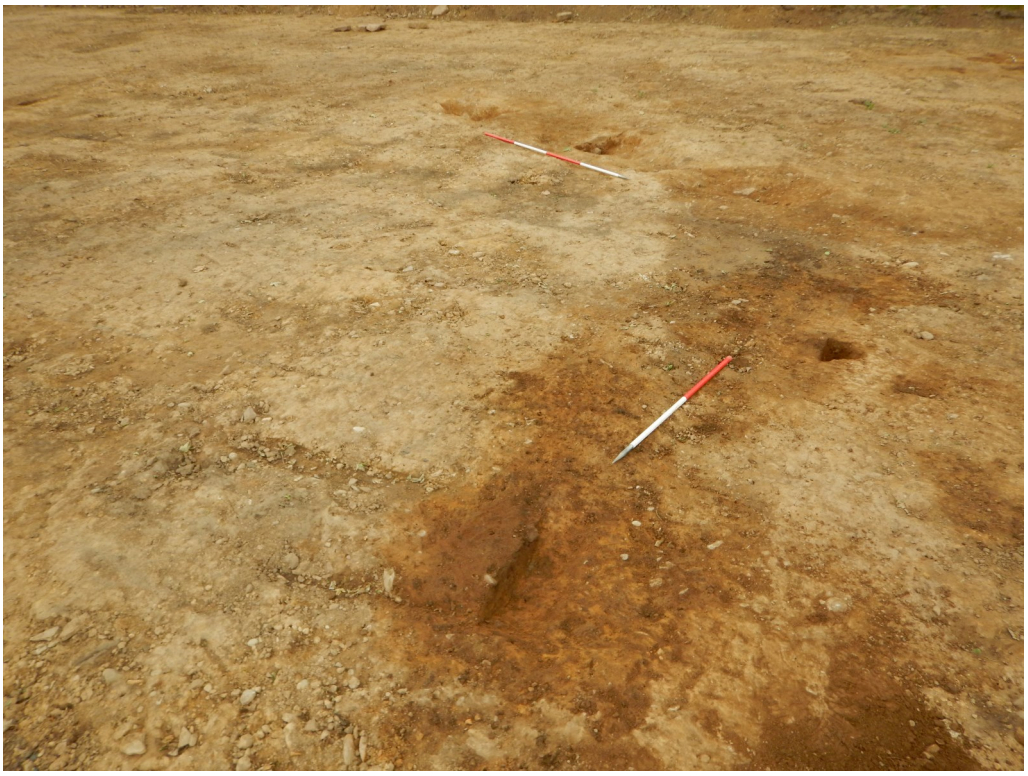


Plate 42 Features 1079, 1083, 1085 and 1087 looking north-west