

on behalf of
Northumbrian Water Ltd

Deepdale
Loftus
Redcar and Cleveland
archaeological monitoring

report 3294
March 2014

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1. Summary

The project

- 1.1 This report presents the results of an archaeological watching brief conducted during a development at Deepdale, Loftus, Redcar and Cleveland. The works comprised the monitoring of the removal of topsoil to provide an easement for a water main.
- 1.2 The works were commissioned by Northumberland Water and conducted by Archaeological Services Durham University.

Results

- 1.3 Features relating to three probable separate phases of prehistoric roundhouse construction were recorded. Flints probably dating to the Neolithic and Mesolithic periods were recovered from these features along with fragments of prehistoric pottery and plant tubers possibly dating to the Iron Age.
- 1.4 Radiocarbon dating confirmed that the features were Iron Age, returning a date of between 321-206 BC for two of the roundhouse gullies. A third feature returned a Neolithic date though this is likely to be residual, reworked into the fill of the gullies along with a possible Neolithic flint. However this does suggest there was activity in the area from an early date.
- 1.5 A rectangular sandstone building was recorded at the west end of the monitored area which corresponds to a building shown on historic Ordnance Survey maps. This building is shown as lying to the south of the main buildings of Deepdale Farm.

2. Project background

Location (Figure 1)

- 2.1 The site is located west of Hummersea Lane, Deepdale, Loftus, Redcar and Cleveland (NGR centre: NZ 7189 1889). It covers an area of approximately 1300m². To the south are allotment gardens, to the north, east and west is open farmland.

Development

- 2.2 The development was a new water main.

Objective

- 2.3 The objective of the monitoring programme was to identify and record any archaeological features or artefacts uncovered during groundworks.

Specification

- 2.4 The works have been undertaken in accordance with a brief provided North East Archaeological Research Ltd and a Written Scheme of Investigation provided by Archaeological Services Durham University (reference DS12.592) and approved by the planning authority.

Dates

- 2.5 Fieldwork was undertaken between 14th and 17th October 2013. This report was prepared for February 2014.

Personnel

- 2.6 Fieldwork was conducted by Natalie Swann (supervisor) and Richie Villis. This report was prepared by Natalie Swann, and edited by Peter Carne with graphics by David Graham. Specialist reporting was conducted by Helen Drinkall (Flint), Jennifer Jones (conservation and other artefacts) and Dr Carrie Drew (palaeoenvironmental). The Project Manager was Daniel Still.

Archive/OASIS

- 2.7 The site code is **DLR13**, for Deepdale, Loftus, Redcar 2013. The archive is currently held by Archaeological Services Durham University and will be transferred to Kirkleatham Museum in due course. Archaeological Services Durham University is registered with the Online Access to the Index of archaeological investigations project (**OASIS**). The OASIS ID number for this project is **archaeol3-165075**.
- 2.8 The charred plant remains will be retained at Archaeological Services Durham University. The flots and residues have been scanned in their entirety with all material of palaeoenvironmental or dating value removed, and have therefore been discarded.

3. Landuse, topography and geology

- 3.1 At the time of the monitoring, the development area comprised a single field of pasture.
- 3.2 The area was predominantly level with a mean elevation of approximately 100m OD.

- 3.3 The underlying solid geology of the area comprises sandstone, siltstone and mudstone of the Saltwick formation and Cloughton Formation overlain by a drift geology of Devensian Till.

4. Archaeological and historical background

Previous archaeological works

- 4.1 An archaeological desk-based assessment was conducted for the site (NEAR 2012), the results of which is summarised below.
- 4.2 No previous archaeological work has been undertaken within the development area.

The prehistoric period (up to AD 70)

- 4.3 There is no known prehistoric settlement within the development area although there are a number of known sites in the wider landscape. The most well-known of these is Street House Farm which lies approximately 1.5km north-east of the development area and consists of a multiphase site with occupation and funerary remains dating from the Neolithic, Iron Age and Bronze Age.
- 4.4 Bronze Age Barrows have also been excavated at Fieldings Farm, 2km north-east of the development area.

The Roman period (AD 70 to 5th century)

- 4.5 There is no known Roman occupation within the development area, however evidence for Roman activity was recorded at Street House Farm, 1.5km from the development area.

The medieval period (5th century to 1540)

- 4.6 Loftus comprises two settlements, Loftus and South Loftus, within the same parish or township as mentioned in the Domesday Book in the 11th century. Both settlements were founded in the 11th century after the destruction of the previous Anglo-Scandinavian or earlier settlement. The historic core of the settlement is approximately 400m to the south-east of the pipeline route.
- 4.7 Ridge and furrow cultivation has been identified on aerial photographs of the site which could reflect medieval ploughing.

The post-medieval period (1541 to 1899)

- 4.8 A farmstead known as Deepdale is shown on the 1st edition Ordnance Survey (OS) map of 1856 on the pipeline route.

The modern period (1900 to present)

- 4.9 The 1920 OS map shows that Deepdale Farm is still extant on the pipeline route, however by the 1938-52 OS map the farm had shrunk in size and a new Deepdale Farm has been constructed several hundred metres to the north-east.

5. The archaeological monitoring

- 5.1 Archaeological monitoring was conducted on a 130m long stretch of a 1.3km long pipeline. A 10m wide easement was excavated which involved the removal of topsoil down to the glacial clay, and a pipe trench was then excavated from this depth.
- 5.2 Natural subsoil, an orange brown boulder clay [2], was identified at a depth of between 0.3m and 0.5m. Cut into this was a curvilinear gully [F14: 6m by 0.75m, 0.3m deep] filled with a dark grey-brown silt clay [13] containing a Neolithic flint scraper.
- 5.3 West of this a second curvilinear gully was recorded [F8: 3.45m, 0.8m, 0.25m deep] filled with a dark grey-brown silt clay [7] which contained a worked flint flake. These features appear to form a circular enclosure approximately 10m in diameter which is likely to reflect the remains of a roundhouse. The fill of this gully is noticeably darker than the fill of the other features.
- 5.4 Within this enclosure two concentric gullies were recorded. The northern gully [F12] measures approximately 8m by 0.6m and 0.2m deep and was filled by a grey-brown clay silt [11] which contained a worked flint flake.
- 5.5 The south gully [F10] measured 6m by 0.45m and 0.1m deep and was filled by a grey-brown clay silt [9]. Both gullies were flat-based and steep-sided and may reflect different phases of drip gully around a roundhouse or a construction trench and drip gully; no evidence for postholes or stakeholes was recorded in either gully.
- 5.6 These narrow gullies are likely to be a different phase of construction from gullies F14 and F8; no relationship between the features could be identified due to truncation by later ploughing, but the extrapolated curves of the gullies would intersect.
- 5.7 South of gully F10 a post hole was recorded [F16: 0.5m diameter 0.xm deep] filled by a grey brown silt clay [15]. This post hole appeared to cut a narrow gully [F18=F24=F22: 6m by 0.2m, 0.1m deep] which was filled by a grey clay silt [17]. The gully is also cut by wider gully F8 and by later plough furrows.
- 5.8 On the south edge of the trench a further curvilinear gully was recorded [F6: 6.5m by 0.6m, 0.15m deep] filled by a grey-brown clay silt [5] from which a flint re-sharpening flake was recovered. This feature appears in plan to be the continuation of gully F18; if this is the case they would form a circular enclosure approximately 8.5m in diameter.
- 5.9 A u-shaped steep-sided posthole was recorded on the north side of gully F6 [F4: 0.35m diameter, 0.2m deep] which was filled by a grey-brown clay silt [3].
- 5.10 South of gully F6 a small section of curvilinear gully [F20: 2.2m by 0.8m, 0.3m deep] was recorded which may reflect the remains of another ring ditch truncated by later ploughing.
- 5.11 Three plough furrows were recorded aligned east-west which truncate the earlier features [F35, F37 and F39: over 25m long, 1.2m wide, 0.05m deep].

- 5.12 The furrows and earlier features were overlain by a black-brown clay silt topsoil [1: 0.4m deep]
- 5.13 Towards the west end of the monitored area, along the north edge of the trench, a sandstone wall and section of paving were recorded. The wall [F33: 5.6m long, 0.6m wide] consisted of a single course of unworked and roughly hewn sandstone blocks faced on the south edge. The wall butted against the remains of a paving surface [F32: 4.3m by 1.7m] which was made up of roughly worked and unworked sandstone blocks, rounded pebbles and bricks. The wall and paving were overlain by the topsoil [1].
- 5.14 At the west end of the monitored area the remains of a rectangular sandstone building were recorded. The structure measured 6.2m by 4.7m. The outer walls [26, 27, 29, 30, 31] consisted of a single line of roughly hewn rectangular sandstone blocks, in most places only the foundation course of the walls remained, cut [F25] into the glacial clay, but in the north-east corner of the building two courses survived up to a height of 0.2m above the level of the glacial clay. One inner wall was present [28] dividing the building into two rooms.
- 5.15 The building was overlain by a layer of black-brown clay silt containing brick and sandstone fragments [23: 0.1m deep] which was overlain by the topsoil [1].
- 5.16 This building appears to correspond to a small structure shown on the 1st edition OS map to lie south of the main buildings of Deepdale Farm and may reflect an animal pen or storage building.

6. The artefacts

Pottery assessment

Results

- 6.1 Four pieces of pottery (147g weight) were recovered from three contexts. Context [23] had pieces of 19th-century whiteware and glazed earthenware. Context [23] had the base from a late medieval hollow ware vessel with foot ring. It has interior and patchy exterior olive green glaze, and the hard sandy fabric has a reduced core and oxidised margins.
- 6.2 Sample <1> from posthole fill context [15] produced a small, slightly abraded body sherd in a reduced micaceous fabric with hard, gritty rock inclusions up to 10mm. This is prehistoric.

Recommendation

- 6.3 No further work is recommended, but the information should be included with any data from further investigations at the site.

Building materials assessment

Results

- 6.4 Two fragments of post-medieval earthenware roof tile came from context [23], one with a sanded face. Both have sooted exteriors.

- 6.5 Minute, undateable fragments of fired clay (<2g weight total) were found in environmental samples <8> from context [5], sample <9> from [3] and <10> from [25].

Recommendation

- 6.6 No further work is recommended.

Iron objects assessment

Results

- 6.7 The heavily corroded shank of a spike or large nail came from context [23]. This is circular to sub-rectangular in section, 174mm long and up to 15mm diameter. The point and head have been lost. It cannot be dated.

Recommendation

- 6.8 No further work is recommended.

Copper alloy objects assessment

Results

- 6.9 A small, corroded and apparently complete copper alloy and iron artefact 115mm long was found in context [23]. One end is hooked with decorative shaping, and there is a small circular white glazed ceramic pulley (15mm diam) held by an iron fixing inside the hook. An adjustable copper alloy slider bar (40mm long x 15mm wide) is fastened to the other end. The purpose of the object is unknown, but it was probably intended as a piece of domestic ironmongery, whose dimensions could be adjusted to suit a particular situation. Decoration on the hooked end suggests that part of the object was intended to be seen. It is of post-medieval date.

Recommendation

- 6.10 No further work is recommended.

Flint assessment

Summary

- 6.11 The assemblage comprises ten artefacts made up of four sharpening flakes from contexts [5], [11] and [7], a flake from [11], two flake fragments from [5], a scraper from [13] <2>, a bladelet also from [21] <3>, and an arrowhead from context [7].

Results

- 6.12 The first artefact is a re-sharpening flake from context [5] sample <8> made on light grey, good quality flint. The distal end is broken and there are two removals on the dorsal from the distal and proximal. The butt is soft hammer and a section of thin cortex (<25%) is displayed on the dorsal surface (L = 6.13mm, W = 9.83mm, Th = 1.41mm). Also from the same context are two flake fragments. One is manufactured on reddish brown flint, and demonstrates a thin whitish cortex (<25%). It exhibits breaks on the distal end, left ventral and proximal. There are two removals on the dorsal surface, both originating from the proximal end of the flake. The piece is very finely made and on good quality flint. (L = 11.26mm, W = 11.12mm, Th = 1.46mm). The other is a broken flake manufactured on grey patinated flint of a coarser grain than many in this assemblage. There is a break on the proximal end with a hinge termination. Two removals are evident on the dorsal and both originate from the proximal end (L = 12.59mm, W = 19.85mm, Th = 3.40mm).

- 6.13 An additional two re-sharpening chips/ flakes come from context [11] sample <4>. The first is a flint sliver on light grey, good quality material. There is a break on the right dorsal side (L = 6.74mm, W = 4.43mm, Th = 0.50mm). The other is on light brown, good quality flint. There is a break on the right dorsal edge and the piece exhibits a hinge termination (L = 5.58mm, W = 10.26mm, Th = 1.09mm).
- 6.14 A scraper from [13] sample <2>, manufactured on reddish flint, is also present. The outer dorsal surface appears to be more patinated, suggesting it pre-dates the scraper retouch; however the surface appears natural so the piece is likely manufactured on a river cobble or similar secondary source material. This is also corroborated by the presence of a natural pitted butt, again suggesting a secondary context for the origin of the material. Sub-parallel retouch is present all around the circumference, although it varies in intensity, being non-invasive on the tip and semi-invasive on the edges. The morphology and manufacture tentatively suggests an early Neolithic date (L = 30.40mm, W = 26.04mm, Th = 9.01mm).
- 6.15 A long bladelet [21] <3> is manufactured on similar reddish brown flint. The piece is very fine and thin, with two removals from the proximal on the dorsal surface. The tip and distal end both demonstrate breaks. There is also damage and striations on the left dorsal which might be use-wear, especially as there are no similar markings evident on the right side. The size and shaping of the blade are indicative of a Mesolithic origin for the piece (L = 17.41mm, W = 4.41mm, Th = 1.96mm).
- 6.16 A flake also comes from the same context as the sharpening flakes above [11]. It displays <25% white cortical surface with a feather termination. There are three removals on the dorsal, one from the right and two from the distal end. The piece is manufactured on brown/ green flint which displays a glossier sheen to the outer surface than the rest of the assemblage (L = 33.52mm, W = 22.27mm, Th = 8.29mm).
- 6.17 A crudely made arrowhead on grey flint comes from context [7]. The main dorsal surface is stained brown although the break on the left dorsal is of a later date, marked by lighter colouring. The piece has a feather termination and four removals on the dorsal surface, two from the distal and two from the proximal. The piece is triangular in form and minimally worked with slight modification to the edges and a thin tang for hafting. The form is unusual but displays some parallels with Neolithic leaf shaped arrowheads, although the form suggests expedient, ad-hoc manufacture and use (L = 42.00mm, W = 24.54mm, Th = 4.96mm).
- 6.18 In addition there is a tiny flake spall [7] <6> present, manufactured on light brown flint with lighter blotches of patination. The piece exhibits a soft hammer butt, two removals both from the proximal and a break at the distal end (L = 8.11mm, W = 3.24mm, Th = 0.54mm).

Discussion

- 6.19 The minimally worked expedient form of the arrowhead from [7] bears some resemblance to Neolithic leaf-shaped arrowheads, so is likely Neolithic in date, which ties in with the suggested date for the scraper from [13] <2>. In contrast, the blade from context [21] appears to be Mesolithic, suggesting the assemblage is mixed and originates from a number of secondary contexts. This is further indicated by the staining on the arrowhead from context [7] and the glossy surface of one of the flakes from [11].

- 6.20 Alternatively, as the artefacts represent either final stage manufacture (sharpening flakes) or finished tools (arrowhead, scraper), they could conceivably have accumulated through a variety of separate events in the course of human activity in the area.

Recommendation

- 6.21 No further work is recommended in relation to this assemblage.

7. The palaeoenvironmental evidence

- 7.1 A palaeoenvironmental assessment was carried out on ten bulk samples taken from gully and posthole fills of possible prehistoric origin. The 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 using a Leica MZ6 stereomicroscope for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (1997). Habitat classifications follow Preston *et al.* (2002).
- 7.2 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 x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990) and Hather (2000), and modern reference material held in the Environmental Laboratory at Archaeological Services Durham University.
- 7.3 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).

Results

- 7.4 The samples comprised a pot fragment from posthole fill [15] and worked flint fragments in several of the contexts. Low quantities of coal/coal shale and clinker/cinder were also noted. The presence of coal may reflect the local geology rather than its use as a form of fuel. Charcoal was present in all ten samples and most commonly occurred in gully fill [11]. Identified wood species included small fragments of hazel, oak and ash. The charcoal was in poor condition with increased density due to the accumulation of mineral inclusions and precipitates. This typically occurs in heavy clayey soils.
- 7.5 Charred botanical remains were present in nine of the ten samples although in relatively sparse quantities. Only context [21] contained no charred plant macrofossils. The remains predominantly comprised of low numbers of cereal grains, including wheat grains in contexts [7] and [13] and a barley grain in context [15]. Spelt wheat glume bases were noted in five contexts. Charred weed seeds of several species including grasses, docks and vetches were also present. From gully fills [13] and [19], false oat-grass tubers were also identified. Low numbers of uncharred weed seeds were also present in all of the samples, however the well-drained nature of the site and the occurrence of modern roots in the samples

indicates that these are recent intrusions. Material is available for radiocarbon dating from all of the contexts, although some of the material may not be suitable due to insufficient weight of carbon or the presence of long-lived species (oak). The results are presented in Table 1.2.

Discussion

- 7.6 The presence of pottery and fired clay fragments, low quantities of charcoal, clinker/cinder and a few charred plant macrofossils suggests the remains of domestic waste. The presence of spelt wheat may indicate an Iron Age or Romano-British date as this crop is commonly associated with these periods (Greig 1991). Similar charred plant assemblages have been identified at a number of other Iron Age sites in the North-East, such as Great Chilton (Archaeological Services 2012a) and Newcastle Great Park (Archaeological Services 2013). The presence of identified oak, ash and hazel charcoal within the samples suggests that the most efficient fuelwoods were a readily available resource. The small fragment size of the charcoal and the low numbers of charred plant remains prevent any further conclusions.
- 7.7 Charred tubers of false oat grass were present in low quantities in two contexts [13 and 19]. These tubers are often recorded on prehistoric sites, and such tubers have been identified recently at several sites of Iron Age origin in the North-East, such as Hilltop Farm Pittington (Archaeological Services 2012b) and Haswell (Archaeological Services 2012c). Their presence may reflect the burning of some form of turf structure or building material (Hall 2003), or the use of turves as a source of fuel. This interpretation is supported by the presence of low numbers of other indeterminate tuber/rhizomes in context [15] and grasses such as heath-grass which may also have derived from turves. The presence of grass seeds such as heath-grass could also suggest some of the charred material represents the remains of gathered hay for fodder or bedding.

Recommendations

- 7.8 The assessment has offered the opportunity to address some of the research objectives cited in the regional archaeological research frameworks, concerning the nature of subsistence economies and exploitation of resources during later prehistoric periods. No further analysis is required for the plant macrofossils due to their relatively low numbers and poor preservation.

8. Radiocarbon dating

- 8.1 AMS radiocarbon dating and calibration were carried out by the Scottish Universities Environmental Research Centre (SUERC), East Kilbride, Scotland. The charred plant macrofossil material selected for three individual features provided adequate carbon for accurate measurement in each case, and analyses proceeded normally. Sample information and results are summarised in Table 1.3.
- 8.2 The radiocarbon dates were obtained from context 5 and context 11, the results date these features to between 321-206 BC and 309-209 BC (95.4% probability) placing these features in the Iron Age and suggesting that the features were both in use around the same time. A third date was obtained from context 7 however this date came out at 3776-3656 BC, indicating Neolithic activity.

- 8.3 As the palaeoenvironmental evidence suggests that gully F8 is Iron Age it is likely that the charcoal that provided the Neolithic date is residual, reworked into the fill of the gully with the possible Neolithic flint that was also recovered from this context.

9. The archaeological resource

- 9.1 Archaeological deposits were identified during the monitoring of the topsoil strip. Furrows, the remains of medieval or post-medieval ploughing, were recorded in the eastern part of the monitored area, which truncated earlier features.
- 9.2 In the western part of the monitored area the remains of a sandstone building were identified which corresponds to a building on the historic OS maps.
- 9.3 In the eastern part of the monitored area gullies and postholes relating to prehistoric roundhouses were recorded. Radiocarbon dates from the Iron Age were returned for two of the gullies.
- 9.4 Palaeoenvironmental analysis of samples from the features indicates that they contain materials relating to domestic occupation. A small assemblage of flint tools was recovered from the archaeological features potentially dating to the Neolithic and Mesolithic periods.
- 9.5 The regional research framework (Petts & Gerrard 2006) contains an agenda for archaeological research in the region, which is incorporated into regional planning policy implementation with respect to archaeology. In this instance, the archaeological resource addresses a number of agenda items, specifically Agenda Item Mv. Mesolithic Flints in the northeast and Lii. Late Bronze Age and Iron Age settlement.

10. Recommendations

- 10.1 No further works on the archaeological resource identified is recommended.

11. Sources

- Archaeological Services 2012a *Great Chilton, Ferryhill: archaeological excavation*. Unpublished report 3078, Archaeological Services Durham University
- Archaeological Services 2012b *Hilltop Farm, Pitlington Lane, Durham: palaeoenvironmental assessment*. Unpublished report 2915, Archaeological Services Durham University
- Archaeological Services 2012c *Haswell Wind Farm, Haswell, County Durham: post-excavation full analysis*. Unpublished report 2819, Archaeological Services Durham University
- Archaeological Services 2013 *Newcastle Great Park: palaeoenvironmental assessment*. Unpublished report 3196, Archaeological Services Durham University
- Greig, J R A, 1991 *The British Isles*, in W Van Zeist, K Wasylkova & K-E Behre (eds) *Progress in Old World Palaeoethnobotany*. Rotterdam

- Hall, A, 2003 Recognition and characterisation of turves in archaeological occupation deposits by means of macrofossil plant remains. Centre for Archaeology Report **16/2003**. English Heritage
- 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
- NEAR 2012 *Water Main at Loftus; archaeological Desk Based Assessment*. North east Archaeological Research Ltd
- 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, 1997 *New Flora of the British Isles*. Cambridge

Appendix 1: Data tables

Table 1.1: Context data

The * symbols in the columns at the right indicate the presence of artefacts of the following types: P pottery, M metals, F flint, C ceramic building material.

No	Description	P	M	F	C
1	Topsoil				
2	Glacial Clay				*
3	Fill of posthole				
F4	Cut of posthole				
5	Fill of ring ditch			*	*
F6	Cut of ring ditch				
7	Fill of ring ditch			*	
F8	Cut of ring ditch				
9	Fill of gully				
F10	Cut of gully				
11	Fill of gully			*	
F12	Cut of gully				
13	Fill of ring ditch			*	
F14	Cut of ring ditch				
15	Fill of post hole	*			
F16	Cut of post hole				
17	Fill of gully				
F18	Cut of gully				
19	Fill of ring ditch				
F20	Cut of ring ditch				
21	Fill of gully			*	
F22	Cut of gully				
23	Soil over building	*	*		*
24	Fill of construction cut				
F25	Construction cut				*
26	East-west wall south side of building				
27	East-west wall, north side of building				
28	North-south dividing wall				
29	North-south east wall				
30	North-south west wall				
F31	Overall feature number for building				
32	Paving along north edge of trench				
33	Wall along north edge of trench				
34	Fill of furrow				
F35	Cut of furrow				
36	Fill of furrow				
F37	Cut of furrow				
38	Fill of furrow				
F39	Cut of furrow				

Table 1.2: Macrofossil results

[a-arable; c-cultivated; h-heathland; r-ruderal; w-wet/damp ground; x-wide niche. (+): trace; +: rare; ++: occasional; +++: common; ++++: abundant. (✓) may be unsuitable for dating due to size or species]

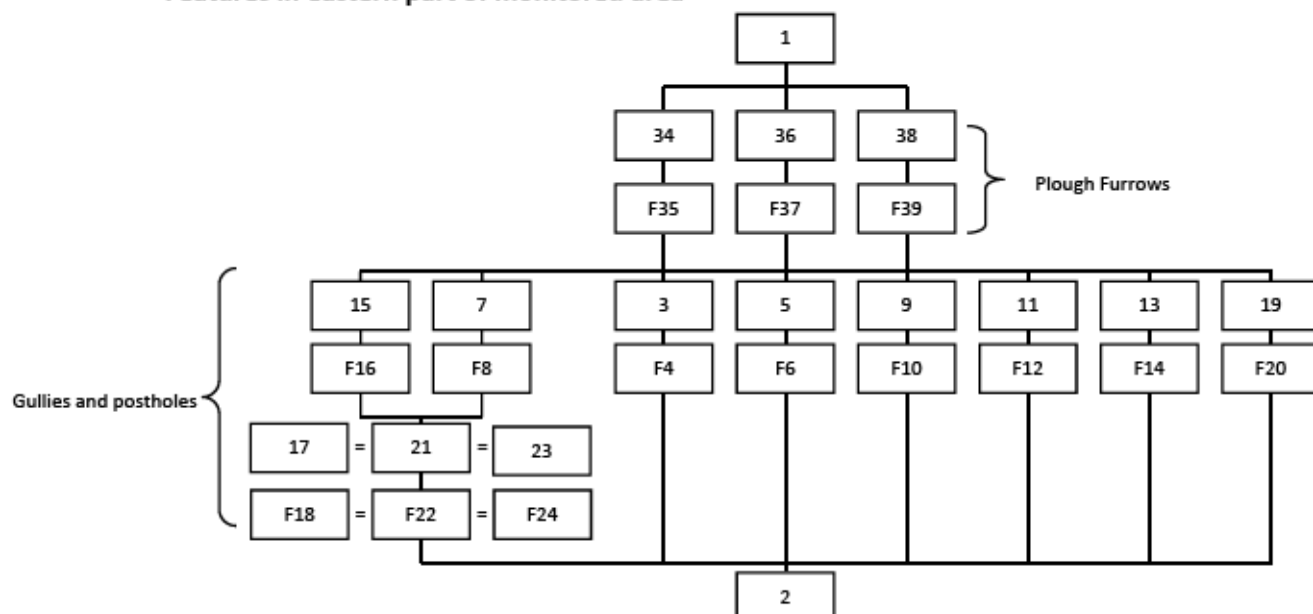
Sample	1	2	3	4	5	6	7	8	9	10
Context	15	13	21	11	13	7	19	5	3	25
Feature	posthole	gully	gully	gully	gully	gully	gully	gully	posthole	gully
Material available for radiocarbon dating	✓	✓	(✓)	✓	(✓)	(✓)	✓	(✓)	(✓)	(✓)
Volume processed (l)	9.5	11	11	10	10.5	10	11	9	7.5	10
Volume of flot (ml)	20	30	20	45	20	40	15	40	25	20
Residue contents										
Charcoal	-	-	-	-	+	-	-	-	(+)	(+)
Fired clay	-	-	-	-	-	-	-	(+)	+	(+)
Flint (number of fragments)	-	1	1	2	-	1	-	1	-	-
Pot (number of fragments)	1	-	-	-	-	-	-	-	-	-
Flot matrix										
Charcoal	+	++	+	+++	++	+	++	+	+	-
Clinker / cinder	-	-	(+)	-	+	+	+	+	+	+
Coal / coal shale	(+)	-	(+)	-	(+)	+	+	+	-	+
Earthworm egg case	-	-	(+)	-	(+)	-	-	+	-	-
Insect / beetle	(+)	(+)	-	(+)	+	+	+	-	-	(+)
Heather twigs (charred)	-	-	-	-	-	-	(+)	-	-	-
Roots (modern)	(+)	+	+	(+)	+	+	++	++	(+)	+
Tuber / rhizome (charred)	(+)	+	-	-	-	-	(+)	-	-	-
Uncharred seeds	(+)	+	(+)	(+)	+	+	(+)	+	(+)	(+)
Vegetative material (uncharred)	-	-	-	-	-	-	-	++	-	-
Charred remains (total count)										
(a) <i>Bromus</i> sp (Bromes)	-	-	-	-	-	-	1	-	-	-
(c) <i>Cerealia</i> indeterminate	2	-	-	-	1	1	-	1	-	-
(c) <i>Cerealia</i> indeterminate	5	4	-	2	3	-	4	1	-	1
(c) <i>Hordeum</i> sp (Barley species)	1	-	-	-	-	-	-	-	-	-
(c) <i>Triticum spelta</i> (Spelt Wheat)	2	1	-	-	-	3	-	1	1	-
(c) <i>Triticum</i> sp (Wheat species)	1	-	-	-	2	-	-	-	-	-
(c) <i>Triticum</i> sp (Wheat species)	-	3	-	-	1	1	-	-	-	-
(g) <i>Arrhenatherum elatius</i> ssp <i>bulbosum</i> (False Oat-grass)	-	2	-	-	-	-	1	-	-	-
(h) <i>Danthonia decumbens</i> (Heath-grass)	1	2	-	-	-	-	2	-	4	-
(r) <i>Plantago lanceolata</i> (Ribwort Plantain)	-	-	-	-	-	-	-	-	3	-
(r) <i>Polygonum aviculare</i> (Knotgrass)	-	1	-	-	-	-	-	-	-	-
(w) <i>Carex</i> sp (Sedges)	-	-	-	-	-	1	1	-	-	-
(x) <i>Chenopodium</i> sp (Goosefoots)	-	-	-	-	-	-	-	1	-	-
(x) Poaceae undifferentiated (Grass family)	1	-	-	-	2	1	-	2	1	-
(x) Poaceae undifferentiated (Grass family)	-	-	-	1	-	2	-	-	-	1
(x) <i>Ranunculus</i> subgenus <i>Ranunculus</i> (Buttercup)	1	-	-	-	-	-	-	-	-	-
(x) <i>Rumex</i> sp (Docks)	-	-	-	-	-	1	-	-	-	-
(x) <i>Vicia</i> sp (Vetches)	3	1	-	1	-	-	1	2	4	-
(x) Indeterminate seed cf. <i>Urtica urens</i> (cf. Small Nettle)	1	-	-	-	-	-	-	-	-	-

Table 1.3 Summary of Radiocarbon dating information

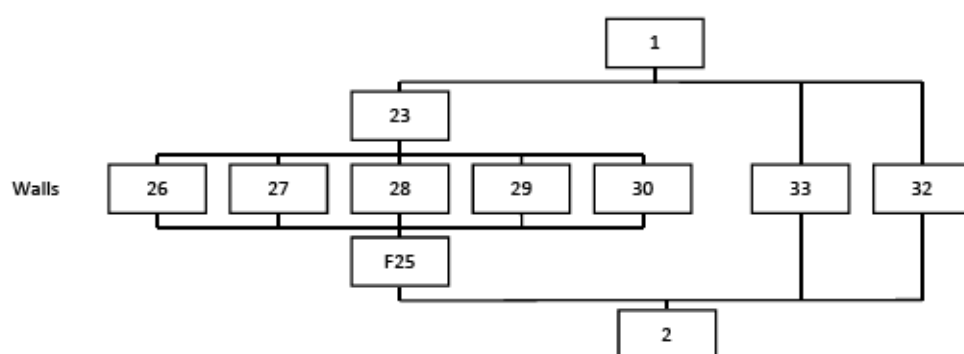
Contexts	Sample	Material	Description	Radiocarbon age BP	Calibrated date 95% probability
5	8	Charred cereal grain	Round house gully	2252 \pm 26	309-209
7	6	Charcoal: <i>Corylus avellana</i>	Round house gully	4943 \pm 28	3776-3656
11	4	Charcoal: <i>Corylus avellana</i>	Round house gully	2239 \pm 26	321-206

Appendix 2: Stratigraphic matrices

Features in eastern part of monitored area



Features in western part of monitored area



Appendix 3: Radiocarbon dating results



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RADIOCARBON DATING CERTIFICATE

18 February 2014

Laboratory Code	SUERC-50711 (GU32785)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Deepdale, Loftus, Redcar & Cleveland
Context Reference	11
Sample Reference	4
Material	Charcoal : Corylus avellana
$\delta^{13}\text{C}$ relative to VPDB	-25.3 ‰
Radiocarbon Age BP	2239 \pm 26

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is 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.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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

Date :- 18/02/2014

Checked and signed off by :- *B. Tunney*

Date :- 18/02/2014

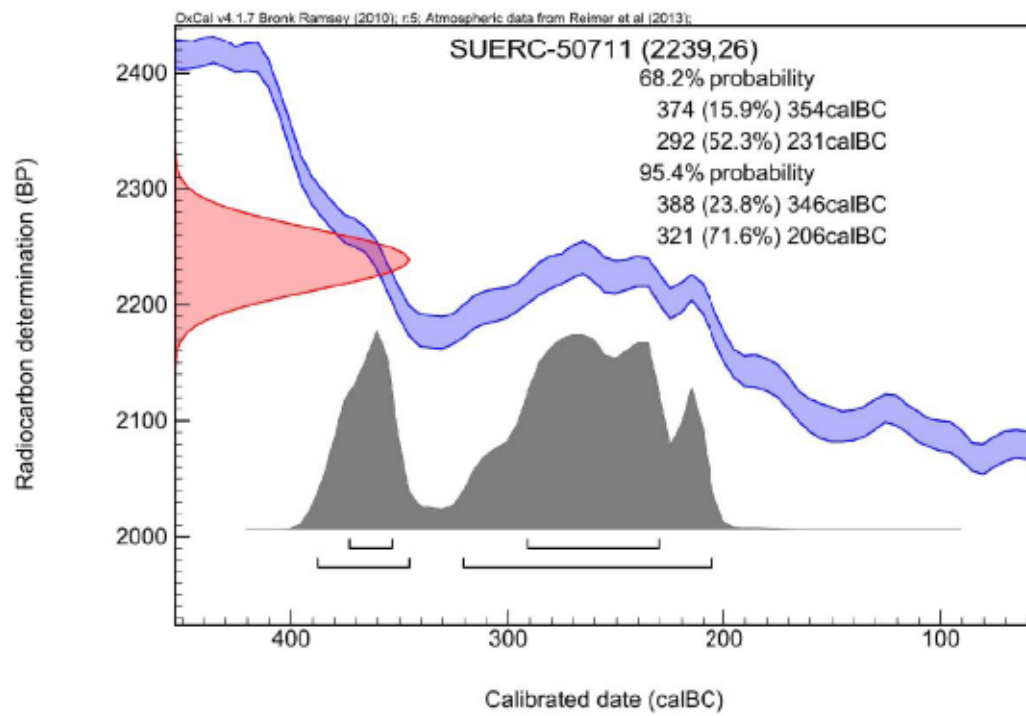


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Calibration Plot





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RADIOCARBON DATING CERTIFICATE

18 February 2014

Laboratory Code	SUERC-50712 (GU32786)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Deepdale, Loftus, Redcar & Cleveland
Context Reference	7
Sample Reference	6
Material	Charcoal : Corylus avellana
$\delta^{13}\text{C}$ relative to VPDB	-25.0 ‰
Radiocarbon Age BP	4943 \pm 28

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is 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.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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

Date :- 18/02/2014

Checked and signed off by :- B. T. [Signature]

Date :- 18/02/2014

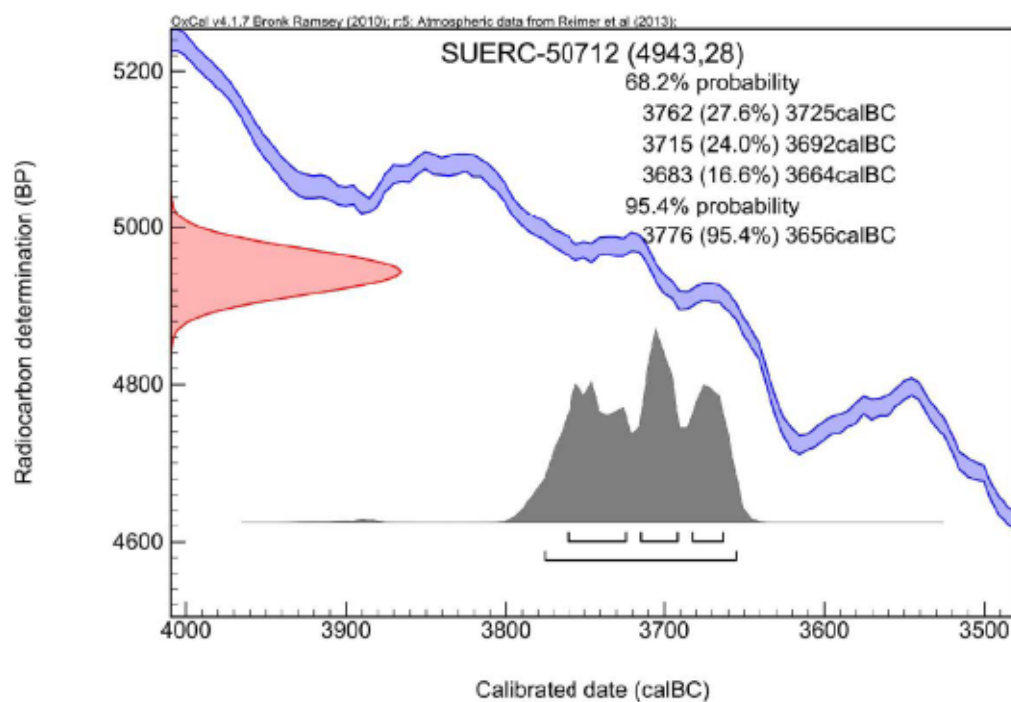


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RADIOCARBON DATING CERTIFICATE

18 February 2014

Laboratory Code	SUERC-50713 (GU32787)
Submitter	Charlotte O'Brien Archaeological Services Durham University South Road Durham DH1 3LE
Site Reference	Deepdale, Loftus, Redcar & Cleveland
Context Reference	5
Sample Reference	8
Material	Charred cereal grain : Indeterminate
$\delta^{13}\text{C}$ relative to VPDB	-21.7 ‰
Radiocarbon Age BP	2252 \pm 26

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is 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.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

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

Date :- 18/02/2014

Checked and signed off by :- B. Tuganov

Date :- 18/02/2014

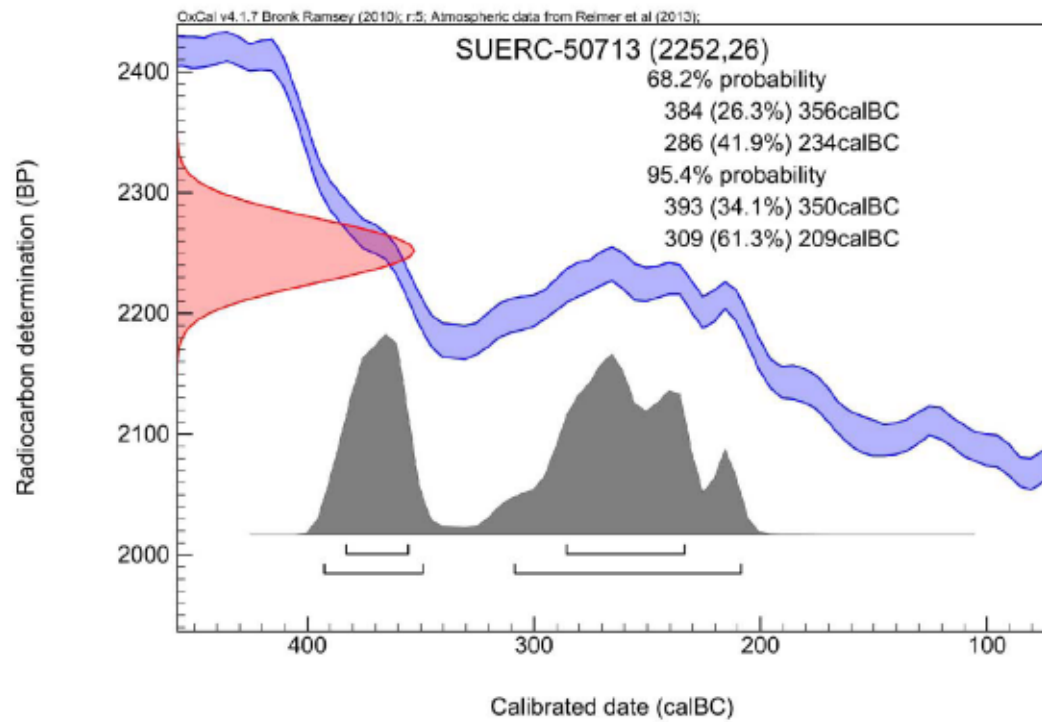


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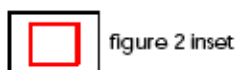
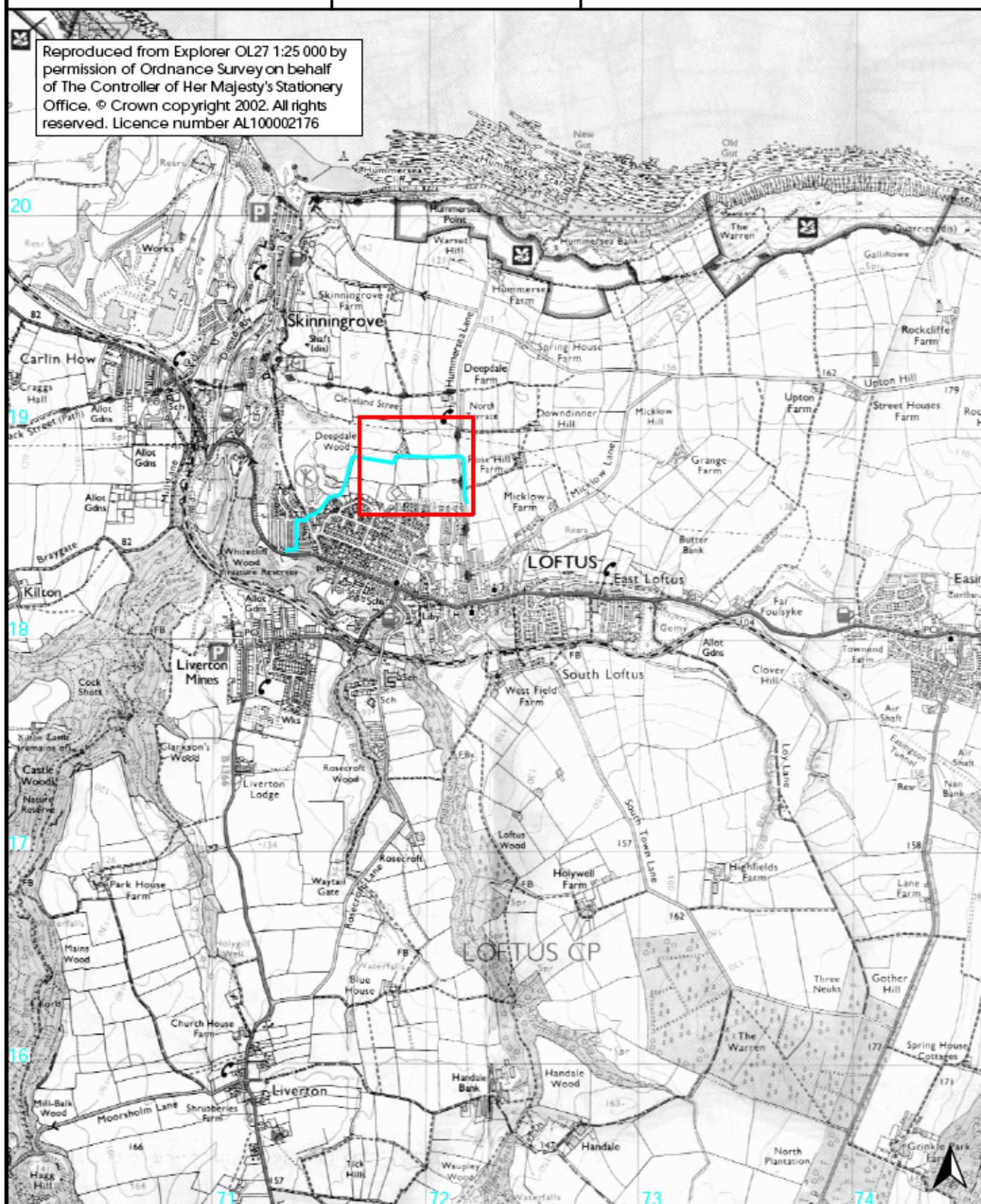


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Calibration Plot



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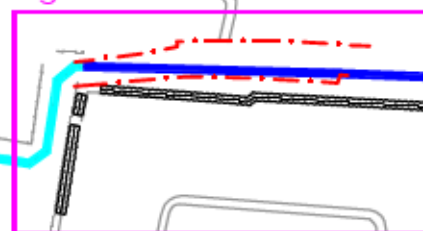


0 1km
scale 1:25 000 for A4 plot

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Figure 3



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

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Deepdale
Loftus
Redcar and Cleveland

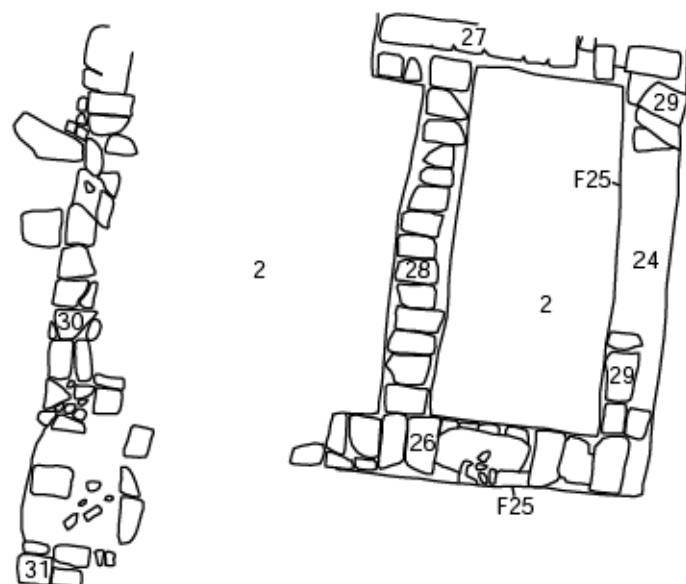
archaeological monitoring
report 3294

Figure 2: Location of
archaeological monitoring

0 300m
scale 1:6000 for A4 plot

-  pipeline
-  proposed archaeological monitoring
-  area of archaeological monitoring

3A



189

3A

3B

Figure 4

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719

3B



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Loftus
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Figure 3: Plans of walls

 extent of
excavation

0 4m
scale 1:80 for A4 plot

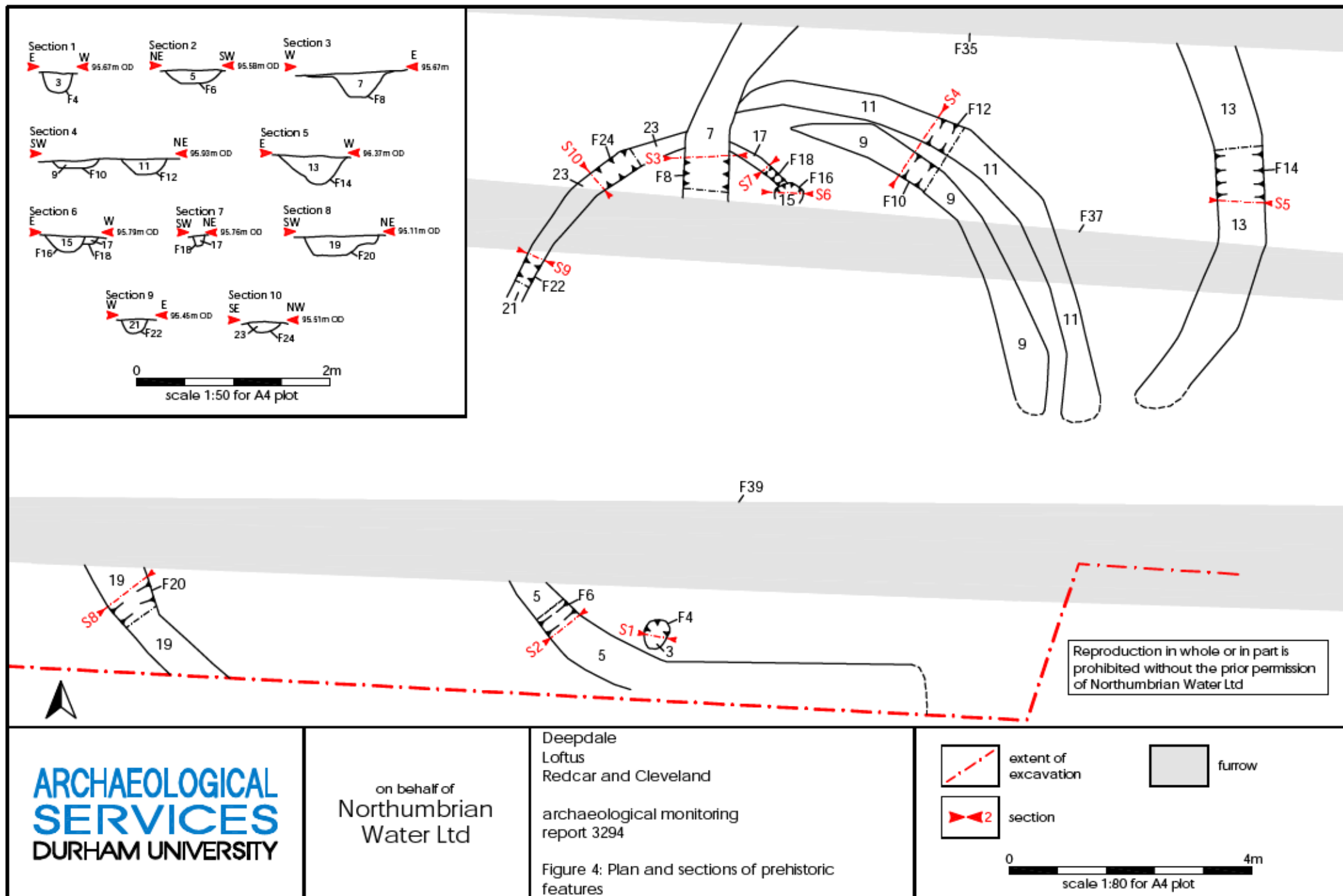




Figure 5: The round house gullies, looking south-west



Figure 6: The round house gullies, looking south-east



Figure 7: Wall F33 and paving F32, looking west



Figure 8: Building F25, looking north-west