

Low Hauxley, Northumberland: a review of archaeological interventions and site condition



An exposed peat bed eroding from the shoreline on the south side of the Mesolithic and Beaker/Bronze Age site at Low Hauxley.

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1. INTRODUCTION AND BACKGROUND

The Low Hauxley coastline has been identified as a high risk area for archaeological and palaeoenvironmental remains impacted upon by coastal erosion. As a result of earlier work and the North East Rapid Coastal Zone Assessment (NERCZA) funded by English Heritage, Druridge Bay and its northern end around Low Hauxley in particular, have been highlighted for an urgent archaeological response. Low Hauxley is situated at the north end of Druridge Bay in mid-Northumberland 2.5km south-east of Amble (Fig. 1). The Low Hauxley area has been severely affected by ‘coastal squeeze’ as open cast coal mining has taken place over very extensive areas on the landward side of the coastal strip with on-going coastal erosion taking place on its seaward side. Various interventions have taken place at Low Hauxley to record and evaluate an eroding Mesolithic land surface and occupation site, comprising a lithic scatter and marine shell and animal bone, together with a Beaker/Bronze Age cemetery (HER ID 5604) since the early 1980s. Further Bronze Age cremation burials, already partly destroyed, have been recorded during the NERCZA project in 2009. This site occupies a localised natural high point, or hillock, and is flanked to the north and south by separate organic sediment units, usually described as ‘peats’, that appear to have started to form as wetlands during the Neolithic in the 4th millennium cal BC. The peat to the south of the hillock has not yet been dated though. The strip of surviving dune system in this area varies between 15m and 50m wide and is cloaked in marram grass. Due to the urgency of the current situation this review of the earlier archaeological interventions and a condition report has been commissioned by English Heritage to underpin future management of the Low Hauxley site.

The land comprising the Low Hauxley cemetery site is leased to Northumberland County Council by the Crown Estate whilst the land comprising the Nature Reserve up to the beginning of the dune system are owned by Northumberland Wildlife Trust. The area of the cemetery and as far south as the Bondicarr Burn outflow (see Figs. 3 and 4) lies within the parish of Hauxley whilst the land to the south of the Bondicarr Burn outflow lies within the parish of Togston, and this latter area includes the newly discovered human and animal footprints in an inter-tidal peat. The cliffs and foreshore at Low Hauxley are designated as a Site of Special Scientific Interest (SSSI) on account of their importance to Quaternary studies represented by the exposure of bedrock, glacial till, peat and dune within the eroding cliff (see Figs. 3 and 4 for extent of SSSI). The archaeological remains are not themselves designated in any way. However, any impacts on the archaeological remains will also cause an impact on the SSSI. The main archaeological site consists of a Beaker period-Early Bronze Age cairn cemetery and underlying Mesolithic site (HER number 5604), although other archaeological features are known to the immediate north and south of this site (see below and Figure 4 for graphic summary). This area of coastline lies outside the current extent of the Northumberland Coast Area of Outstanding Natural Beauty which terminates at the Coquet estuary at Amble to the north. The Northumberland coast falls within Cell 1a of the Shoreline Management Plan (SMP2) produced for DEFRA by Royal Haskoning (Guthrie *et al.* 2009). The coastal strip at Low Hauxley, where the eroding archaeological remains have come from, lies in Policy Unit 17.3 ‘Druridge Bay North’ (formerly 32 under SMP1) of DEFRA’s Shoreline Management Plan 2 (SMP2). The preferred Policy Recommendation for this policy unit is “Managed Realignment” up to the years 2025, 2055 and 2105. The term ‘Managed Realignment’ is defined in SMP2 as “Allowing the shoreline to realign, landwards or

seawards, sometimes with management to initiate and control change” (Guthrie *et al.* 2009, ii). Given that the land to the rear of the existing dune system has been removed by opencast coal mining there is limited scope for dune roll back to take place in this section of the coastline, and such roll back would itself give rise to the destruction of the archaeological and palaeoenvironmental deposits.

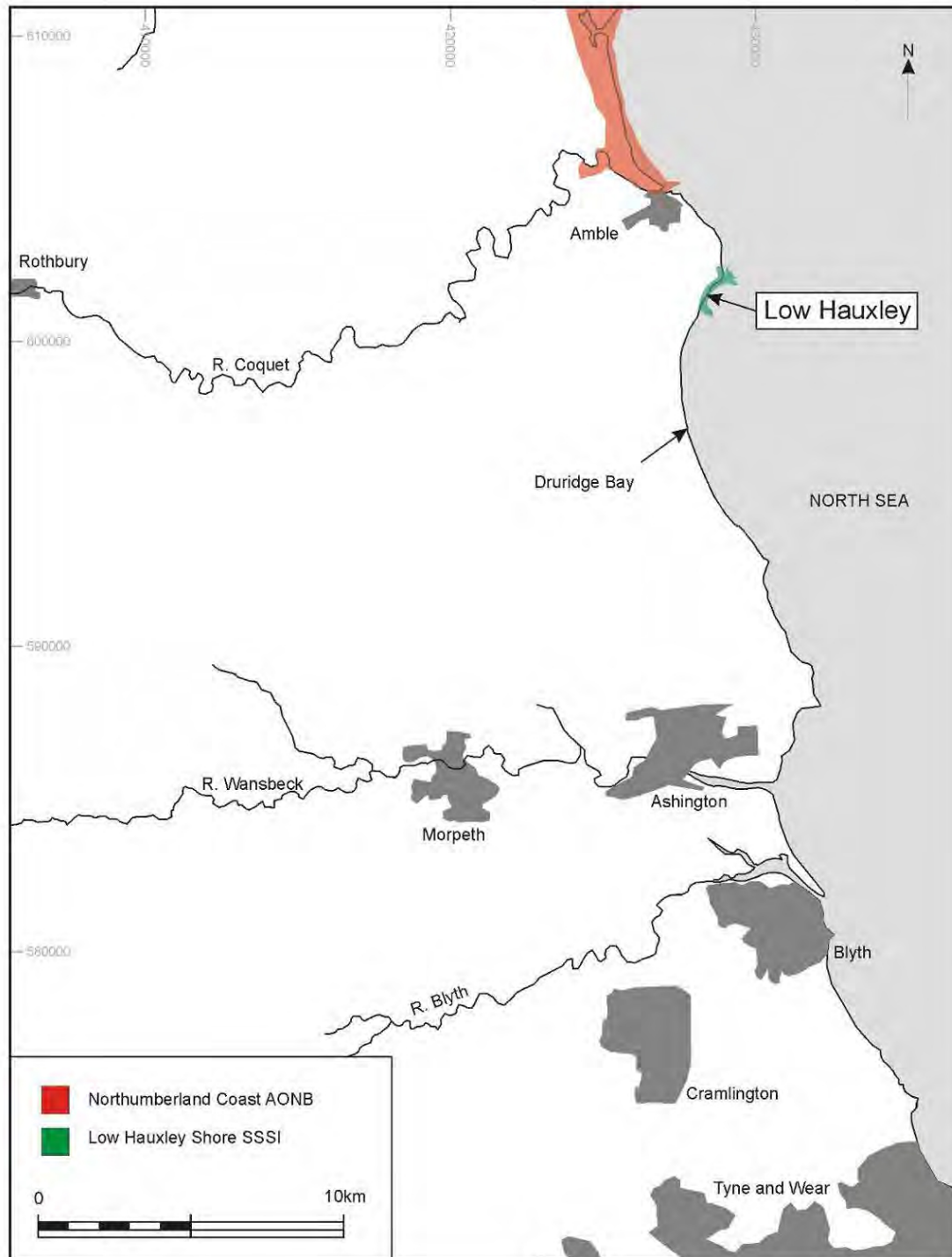


Fig. 1. Map showing the location of the Low Hauxley SSSI which is coincident with the main area of eroding archaeological and palaeoenvironmental remains and the extent of the Northumberland Coast AONB.

The geology of the Low Hauxley site consists of interbedded Carboniferous deposits of sandstone and coal measures overlain by glacial till. Immediately overlying the till is a sealed ancient land surface that dates to the Mesolithic period and upon which a Mesolithic occupation site survives in more or less archaeologically pristine conditions. This ground surface appears to have accumulated in depth over time so that by the Beaker period burial pits were cut down through the land surface into the till below and cists constructed and cairns raised above them to form a cemetery. Subsequent to the on-set of dune formation in the Bronze Age the burial cairns and land surface were covered by 3-4m of wind blown sand. This accumulation, however, did not take place as a single event as organic lenses can be noted at various heights in the sand dune cliff sections and these represent episodes of stability when a vegetation cover developed before further dune accumulation took place. Currently the dune system is stable and overlain by a thin soil with marram grass cover.

The cemetery area and underlying Mesolithic site are located on a localised high point. On the lower lying ground to either side of this high point peat formation took place from at least as early as the Neolithic period in what appear to have been areas of lagoon. Dating samples from the top and base of each of these peat beds have been recovered for scientific dating as part of the Phase 2 NERCZA project. The peats contain an important palaeobotanical resource that includes a variety of plant remains, invertebrates and pollen evidence together with flint tools and potentially other archaeological material. Several hewn timbers have been reported from the peat beds further north (Low Hauxley A) where axe or adze marks have been noted (e.g. Jim Nesbitt pers com.). Other areas of discrete peat beds have been noted at Low Hauxley and the north end of Druridge Bay, including the new exposure noted at a lower elevation to the south of the cemetery site in the inter-tidal zone that hosts the human and animal footprints (see below).

The various archaeological interventions are summarised in the following time list and Fig. 4:

1. 1983 Excavation of an eroding cist and single inhumation by Steve Speak of Tyne and Wear Museums Service. One page text summary produced.
2. 1983 Excavation at the cliff face by Clive Bonsall (Edinburgh University) of Bronze Age burials and Mesolithic flint scatter, bone and shell material. The burials came from below the same cairn as the burial excavated by Speak. Nothing published apart from a very short notice in Proceedings of the Prehistoric Society (Bonsall 1984).
3. 1993 Excavation of two stone burial cists found eroding from the cliff face also from beneath Bonsall's 'Cairn 1'. One cist contained a cremation and one an inhumation and each was accompanied by a very fine and well-preserved Beaker. Undertaken by Tyne and Wear Museums Service (TWMS). Stratigraphy report was produced.
4. 1994 Evaluation excavation behind and off-set from the eroding face of the Bronze Age cemetery by Lancaster University Archaeological Unit. Detailed Archive Report and Appendix produced. Little archaeology was recorded

apart from a flint assemblage and more modern material. An assessment of the peats was also undertaken together with radiocarbon dating of the skeletal material from the Bonsall excavation.

5. 2007 Photographic recording of an eroding stone-built structure sealed by the dune sand *c.*35m to the north of the cemetery site and of rectangular rock-cut pits on the foreshore in front of the cemetery site by Jim Nesbitt. Photographs held by Northumberland HER and by Archaeological Research Services Ltd.
6. 2009 Excavation of a small badly eroded stone cist holding a few fragmentary remains of a cremation in a newly eroded section of cliff face 2m north of the TWMS cist excavations, and therefore presumably from below part of 'Cairn 1' and excavation of a second and separate badly eroded cremation in a pit burial in a newly eroded section of cliff face 5m south of the TWMS cist excavations by Archaeological Research Services Ltd. Archive report produced. Radiocarbon date obtained on cremation 2 with one for cremation 1 awaited.
7. 2010 Photographic and rapid survey of the Druridge Bay coastline which has identified many previously unrecorded WWII sites together with an area of human and animal footprints brought to ARS Ltd's attention by Jim Nesbitt. The footprints were found within a newly exposed peat bed 25m to the south of the Bondicarr Burn outflow. Information integrated into the NERCZA project archive report will be available on line. Precision survey of the extent of each peat exposure, sampling of the top and base of each for radiocarbon dating also took place and radiocarbon dates are awaited. A rapid photographic survey along the length of the Low Hauxley cliff line has also been undertaken.

In the past 27 years the archaeological work has been of a reactive nature, with the exception of the LUAU evaluation work. So far none of this work has been formally published yet significant archaeological and environmental remains have been recorded dating to the Mesolithic, Neolithic, Beaker period and Bronze Age. More detailed summaries of the above-mentioned interventions are set out below.

The HER records for the section of coastline immediately north and south of the cemetery include additional remains to those mentioned above including:

HER ID 13786	Concrete and railway sleepers eroding out of sand dunes appearing to run towards the sea and could be a waggonway or railway associated with Radcliffe Colliery.
HER ID 19852	Circular pillbox.
HER ID 20013	Large square pillbox
HER ID 20014	Circular pillbox

HER ID 20016	Circular pillbox
HER ID 20017	Zig zag trench
HER ID 22017	Post-medieval farmstead known as 'Bondicarr' marked on 1 st edition OS map(c.1866) and also on earlier maps including Armstrong's 1769 map.
HER ID 23951	Arc of dry stone walling sitting above the peat but sealed by the sand dunes eroding out of cliff c.35m north of the cemetery site. It has now been totally destroyed and removed by coastal erosion. Given that dune formation is known to have started after the early Bronze Age it is possible that this structure was coeval with the cemetery, perhaps the remains of an early Bronze Age roundhouse.
HER ID 5612	Sediment deposits including the peats and dunes which contain archaeological and palaeoenvironmental remains from the Mesolithic to modern.
HER ID 5618	Rock-cut pits on the foreshore in front of the area of the cemetery and only exposed at low tide when the sand is scoured off the rock steel. Use and period unknown and these have not yet been recorded.

The locations of these remains have been inspected and surveyed on the ground where visible as part of the Phase 2 NERCZA project and the results of this detailed survey will be contained within the forthcoming project report. Further discoveries of WWII features have been recorded by aerial photographic transcription and rapid field survey by the ARS Ltd team and all new records have been input into a GIS coverage which has been integrated into the Northumberland HER and the NMR.

In addition to archaeological investigations a series of separate palaeoenvironmental studies have been undertaken along the coastline of Druridge Bay.

Palaeoenvironmental Studies

A series of palaeoenvironmental studies have been undertaken on the various organic deposits visible in the Low Hauxley cliff sections on the soils and sediments. These include the published work of Frank (1982), Innes and Frank (1988) and Farrimond and Flanagan (1996) and the unpublished work undertaken as part of the Bronze Age cemetery investigations (Huntley 1995; Issitt *et al.* 1995; Payton and Usai 1995; Tipping 1994). At Amble Bay and Cresswell Ponds, both in Druridge Bay, Shennan *et al.* (2000) have cored for dating samples to provide past sea level index points whilst Wilson *et al.* (2001) have made a study of Late-Holocene dune development along the Northumberland coast including the dune system at Druridge Bay.

The northerly peat, Low Hauxley A, examined by Innes and Frank (1988) contained significant amounts of woody material and plant macrofossils and can be accurately

described as a peat whilst the exposure to the south but still to the north of the cemetery site, Low Hauxley B, has been shown not to be peats but lacustrine detrital muds that contain no recognisable plant macrofossils. Furthermore, the lake muds at Low Hauxley B are underlain by a poorly organic silty clay band whilst at Low Hauxley A peat growth developed directly on till.

The core from Low Hauxley B was taken through an organic peat deposit exposed in the cliff face *c.*70m to the north of the Bronze Age cemetery site and Low Hauxley A was a further 270m to the north of this site. One of the key discoveries to result from Tipping's and Payton's work at Low Hauxley B was that the 'peat', or more properly lacustrine muds, graded southwards into a strongly gleyed palaeosol representing the wettest part of the soil that directly underlay the excavated Bronze Age cairns. These muds had a steadily increasing sand content in the upper 0.2m which presaged the appearance of the 4m thick sand dune sequence. However, as the radiocarbon dates from the lacustrine mud sequence indicate it is only the basal 10cm of this deposit that could be contemporary with the cemetery given the dates so far recovered from each site. The palaeoenvironmental deposits are discussed in more detail below.

Radiocarbon dates for the various palaeoenvironmental studies to date are given in Table 1 and all dates have been recalibrated against the latest calibration curve.

Intervention	Sample	laboratory code	$\delta^{13}\text{C}$ (‰)	Radiocarbon age (BP)	Calibrated date range (95% confidence)
Low Hauxley B	LHB-1 0-2cm	HAR-8973	-30.3	2330 ±60	710-210 cal BC
Low Hauxley B	LHB-2 37-39cm	HAR-8974	-29.4	3280 ±60	1740-1420 cal BC
Low Hauxley B	LHB-3 48-50cm	HAR-8975	-29.4	3360 ±70	1880-1490 cal BC
Low Hauxley B	LHB-4 54-56cm	HAR-8976	-29.5	4700 ±70	3650-3350 cal BC
Low Hauxley B	LHB-5 58-60cm	HAR-8977	-30.6	4280 ±100	3320-2580 cal BC
Low Hauxley A	Upper boundary 0-10cm	SRR-1420		2810 ±40	1060-840 cal BC
Low Hauxley A	Lower boundary 100-110cm	SRR-1421		4720 ±40	3640-3370 cal BC
Dune Core, Druridge Bay (Wilson <i>et al.</i> 2001)	DR2 soil organics	AA-23504	-27.9	540 ±40	cal AD 1300-1450
Dune Core, Druridge Bay (Wilson <i>et al.</i> 2001)	DR4 Peat	AA-23505	-29.0	2420 ±60	780-380 cal BC
Dune Core, Druridge Bay (Wilson <i>et al.</i> 2001)	DR5 Peat	AA-26346	-28.6	785 ±60	cal AD 1150-1300
Dune Core, Druridge Bay (Wilson <i>et al.</i> 2001)	DR5 Peat	AA-26347	-28.8	1045 ±60	cal AD 880-1160
Dune Core,	DR5 Peat	AA-26353	-28.4	1485 ±60	cal AD 420-660

Druridge Bay (Wilson <i>et al.</i> 2001)					
Amble Bay (Shennan <i>et al.</i> 2000)	AB96/2	AA-23892	-28.3	6870 ±60	5890-5640 cal BC
Cresswell Ponds (Shennan <i>et al.</i> 2000)	CP95/11	UB-3906	-29.5	3405 ±43	1880-1610 cal BC
Cresswell Ponds (Shennan <i>et al.</i> 2000)	CP95/6	UB-3905	-28.3	2656 ±56	920-770 cal BC
Cresswell Ponds (Shennan <i>et al.</i> 2000)	CP95/7	UB-3904	-28.4	3359 ±40	1750-1520 cal BC
Cresswell Ponds (Shennan <i>et al.</i> 2000)	CP95/8	AA-24217	-29.6	6525 ±55	5620-5370 cal BC
Cresswell Ponds (Shennan <i>et al.</i> 2000)	CP95/R1	AA-22663	-29.6	3280 ±45	1690-1440 cal BC

Table 1. Radiocarbon dates from the Low Hauxley B organic sediment exposure c70m north of the cemetery site (Tipping 1994) and the Low Hauxley A organic sediment exposure 270m north of site B. Additional dates provided from Shennan *et al.*'s (2000) sea level study points and Wilson *et al.*'s (2001) dune coring sites.

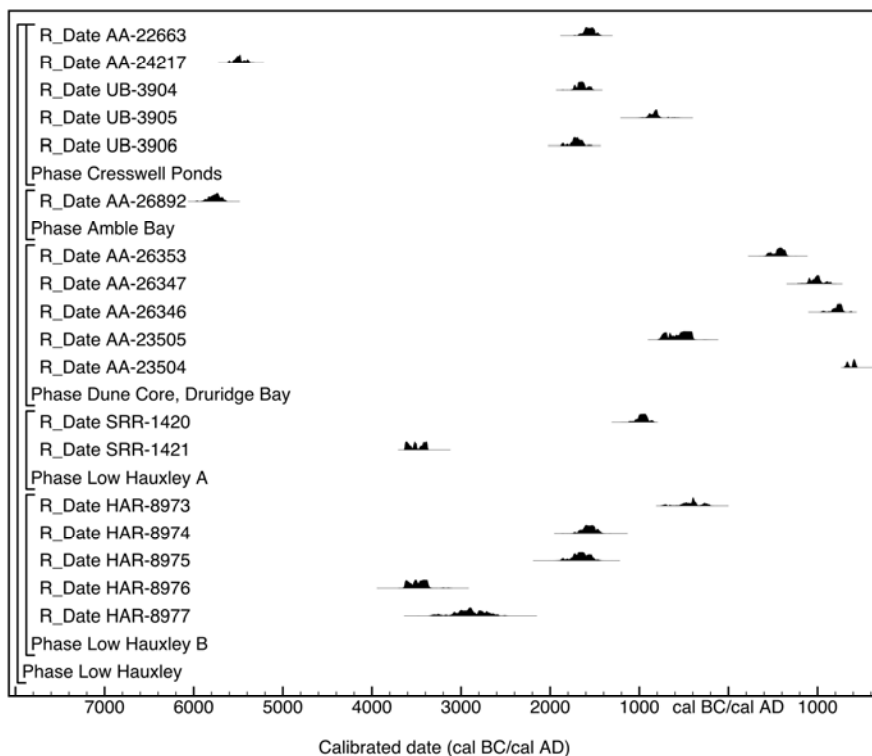


Fig. 2. Probability distributions of dates from Low Hauxley. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993). The calibrations of the results, which relate the radiocarbon measurements directly to the calendrical time scale, are given in Table 1 and in Figure 2. All have been calculated using the datasets published by Reimer *et al* (2009) and the computer program OxCal v4.1 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited are quoted in the form recommended by Mook (1986), with the end points rounded outward to 10 years. The ranges in Table 1 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986); the probability distributions shown in Figure 1 are derived from the probability method (Stuiver and Reimer 1993).

A reconstruction of the soil conditions in relation to the archaeological features at the cemetery site have been put forward by Payton based on his analysis of the soils in the evaluation trench by LUAU. Payton suggests that the ground surface at the time of the construction of Cairn 1 was within the peaty topsoil and not at the organic mineral-soil interface. This means that peat has started to accumulate in the depression before cairn construction. There was also evidence for additions of wind blown sand during the time interval between the construction of Bonsall's Cairn 1 and Cairn 2. The cairns had been constructed on leached brown earth soils occupying a localised hillock with peat-filled depressions to both north and south. The soils had experienced leaching and acidification prior to burial. The degree of soil waterlogging increases downslope from the hillock. The soils change first into cambic stagnogley soils and then into more permanently waterlogged humic gley soils and progressively thickening peaty topsoils once the former wetland is reached. Trees tolerant of waterlogged conditions were growing on the margins of the peat-filled depression.

Based on the limited coring undertaken at Druridge Bay by Wilson *et al.* (2001) this study suggested that Aeolian sands began to accumulate in their south Northumberland area, which includes Druridge Bay, between 700 cal BC and AD 700 although at Low Hauxley A the on-set of dune formation has been dated to 1062-862 cal BC and at Low Hauxley B to around 753-250 cal BC.

In summary the Low Hauxley cemetery is situated upon a natural high point with a series of wetlands, different in composition and overlapping in date, around it. The soil type changes from the top of the high point as it grades down towards the wetlands where it becomes more gleyed due to waterlogging. Observation of the cliff face and foreshore show that there are more organic sediment units ('peats') than have previously been thought as most are self-contained units and not part of a single continuous band. The date ranges of these various units are currently being established by the NERCZA project.

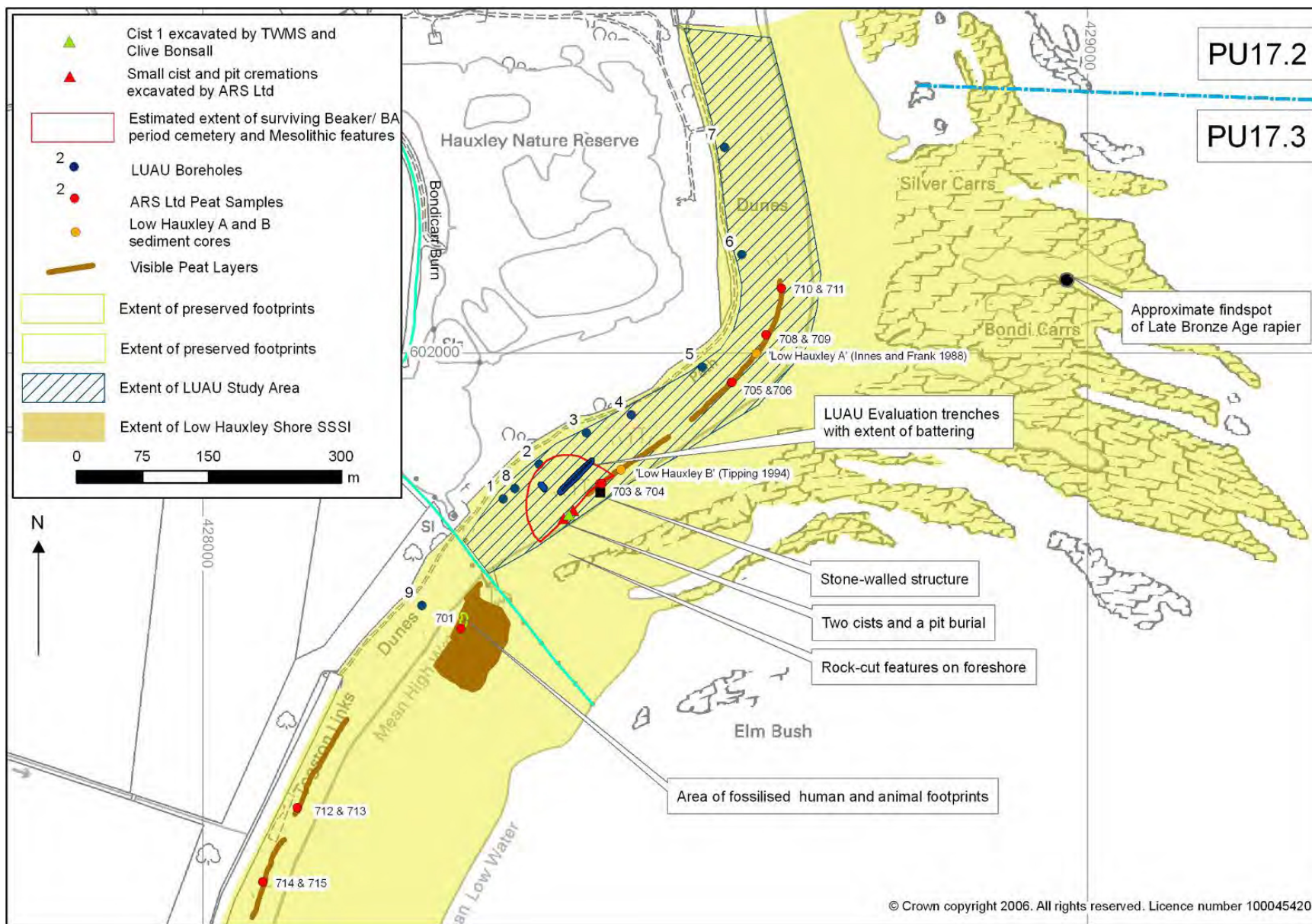


Fig. 3. The Low Hauxley area showing the various known historic environment assets in the Low Hauxley area in relation to the SSSI and SMP2 Policy Unit areas.

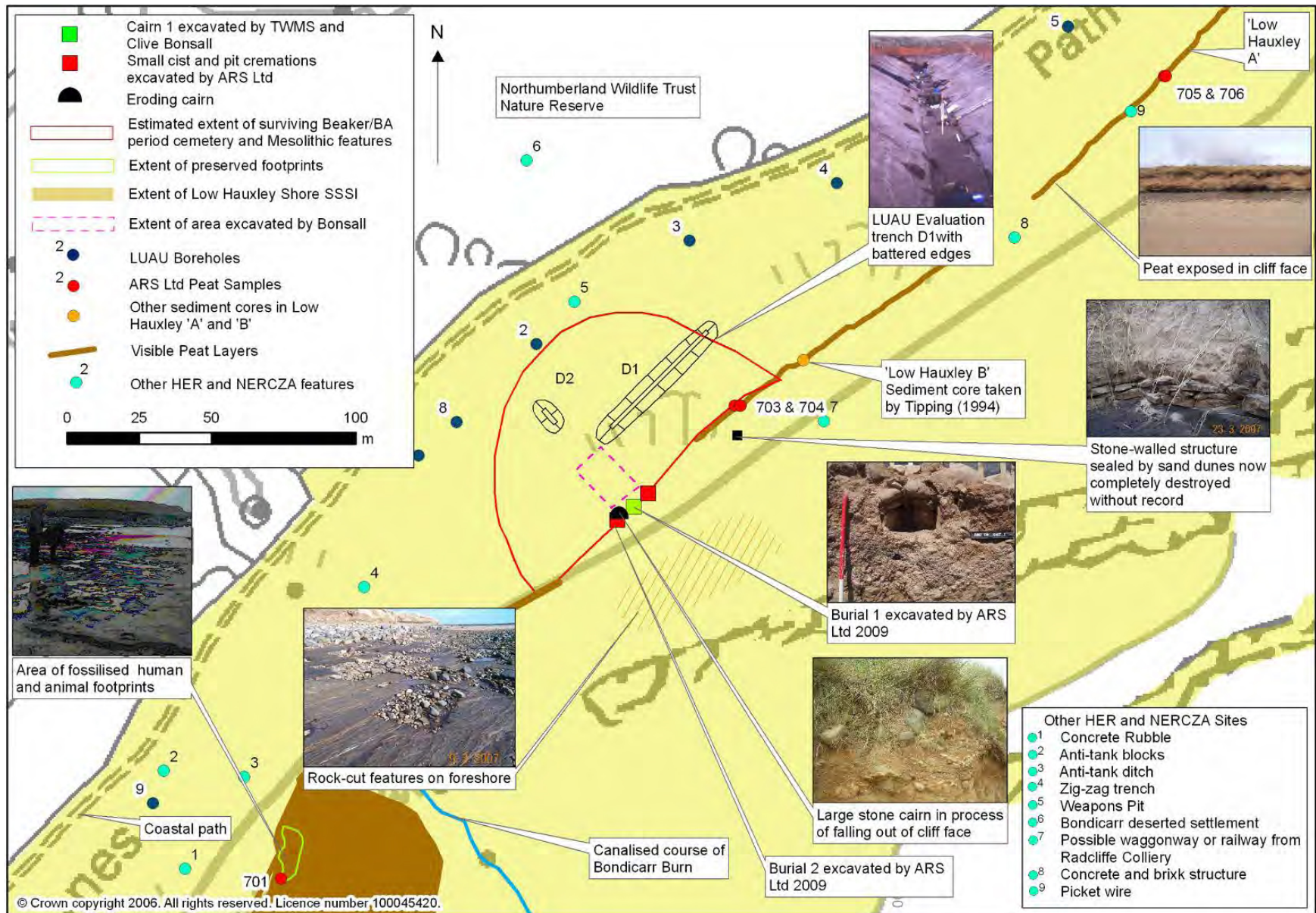


Fig. 4. Detailed plan showing the location of archaeological and palaeoenvironmental features and the various interventions that have taken place at Low Hauxley.

2. SHORELINE MANAGEMENT PLAN 2 SUMMARY

The SMP2 report (Guthrie *et al.* 2009) contains estimates of baseline erosion rates at various points. These are based on existing data and may be expected to increase with sea level rise. Accordingly, the figures presented in Table 1 below should be taken as a minimum. The erosion over the last year alone at Low Hauxley as recorded by the NERCZA survey is considered to vary between 0.5m-1.5m as the erosion has been particularly acute over the last 18 months and there is no sign that this rate is decreasing. The eroding cemetery area is situated in the Bondi Carrs section according to the table below.

Location	NGR (approximate)	Rate per year	Over 100 years
Low Hauxley	NU287028	0.4m	85m
Bondi Carrs	NU286020	0.5m	80m
Hadston Carrs	NU280010	0.5m	70m
Druridge Bay	NZ277960	0.1m	15m

Table 2. Rates of coastal erosion taken from SMP2 report (Guthrie *et al.* 2009, 190).

The rates of erosion produced for this table are based on assumed sea level rise rates of 0.05m to year 2025, 0.26m to year 2055, 0.8m to year 2105. However, the latest minimum sea level rise estimates forecast by in the official UK Climate Projections published by DEFRA are for a rise of 0.5m – 2m by 2050 for Northumberland. If this new estimate is accurate, and it is widely acknowledged as a minimum, then the annual erosion rates need to be revised upwards by at least double. On such a basis the cemetery site and peat exposures can be expected to erode at a rate of around 1m per year and this is in keeping with the observations made during the course of the NERCZA project during 2008-2010.

The text extract on the management discussion for Low Hauxley from the SMP2 report (Guthrie *et al.* 2009, 195-6) is quoted in full below:

Low Hauxley Headland (this lies to the immediate north of the area of archaeological remains)

“The intent within this area, in line with the overall objectives, is to sustain the village of Low Hauxley, maintain and enhance the ecological opportunity and minimise reliance on defence into the future. The main issues relate to a general erosion of the frontage. To the south, potentially influenced at present by mining subsidence, the erosion affects the soft cliffs, cutting back the shore line quite severely with little opportunity to create a dune type transition between the foreshore and the clay cliff. This erosion is held over the central section in front of the main village by the hard defences. As the coast to the south retreats, there will tend to be a squeeze of the foreshore width against these defences. To the north of the main village, and between there and the underlying rock headland of Beacon Hill, there is the potential for a bay to develop; assuming the defences to the village are maintained. This bay would, however, develop inland and would affect the road sometime over the 50 to 100 year period, without reaching a stable alignment. Neither NAI nor WPM properly addresses the intent of management in the long term. Holding merely the main village

frontage would, in the long term, create this as a promontory which because of the squeeze of the foreshore area in front of the defences, caused by erosion to either side, would be considered unsustainable. To maintain the main village in a manner compatible with the important nature conservation objectives requires adapting what is fundamentally a linear defence to a situation of continuing coastal retreat to either side; without merely introducing coastal squeeze over a progressively longer length of shoreline. This is discussed below.

The defence could be taken further south, increasing protection to the Nature Reserve and Caravan Park. This would merely extend the problem resulting in longer and longer lengths of defence. This would increase squeeze and is considered to impact too greatly on the management of the coast in this area. Reshaping the defence to the southern end would be the alternative, limiting the length of defence but creating a clear bastion or local headland. This would provide opportunity to manage the erosion to the south, creating opportunity for a more stable transition between foreshore and the clay cliffs. The nature and extent of works to the south would need to be considered in detail. This approach is considered to be viable economically in defence of the village, reducing encroachment on the natural development of the shoreline to the south and providing opportunity in retaining sediment over the main defence length.

The recommendation within the SMP for the section to the north would be that it is considered a transitional zone for shoreline management, creating the opportunity for a sustainable approach to management of the main village frontage. Hence the policy is termed Managed Realignment. The intent would not specifically be for protection of assets, such as the road or the chalets, situated within this frontage, although there remains a need for further examination of this problem and erosion risks to ensure that concerns relating to the potential impact on designated natural environment interest are addressed in scheme proposals.

The recent feasibility study for the local area considered solutions that avoided extending the revetment further north in a piecemeal manner. These included reshaping the northern end of the revetment to provide more strategic control in a planned manner and also a less intrusive approach involving managing the realignment of the developing bay to the north in alternative ways. The preferred approach to implementing the SMP policy requires further local area consideration.

Druridge Bay (It is within this area that the archaeological and palaeoenvironmental remains are located)

The overall intent is to allow natural development of the cliffs and dunes over the whole frontage. At the northern end, interaction with the Country Park needs to be managed, although in this area management may merely be the management or drainage to Ladyburn Lake. The Country Park is currently managed by Northumberland County Council. The current outfall is considered to be unsustainable, imposing a need for continual increase in length of defences; and with, still, the likely need to address breach through to the existing drainage channel behind. Similarly, defence of the access and car park areas would require extensive intervention.

Over the main frontage, the dunes would be allowed to roll back. Significant opportunity does exist in terms of opening drainage to areas of flooding behind; creating opportunity for diverse habitat gain. The dune system is considered to be adequately robust that increased flows through the dunes would not damage their integrity. Any change of this nature would need to be discussed with local land owners. There may be areas where the current sluice management was more appropriate in maintaining flood defence to properties within the hinterland. This managed realignment of the dunes system would create designated habitat for the Northumberland Shore and Hadston Links SSSI. Any changes to this area should be done in consideration with the Northumberland Wildlife Trust Druridge Bay Project.”

The SMP policy plan for the area of the archaeological and palaeoenvironmental remains from SMP2 is summarised in Table 3.

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
17.2	Low Hauxley (area of village)	HTL	HTL	HTL	With the probable need to realign the southern end.
17.3	Druridge Bay North (area of archaeological and palaeoenvironmental remains)	MR	MR	MR	Develop drainage plan and access management.

HTL = Hold The Line

MR = Managed Realignment

Table 3. Current SMP2 Policy plans for Policy Units 17.2 and 17.3 where the Low Hauxley archaeological and palaeoenvironmental remains are located.

3. SOURCES AND CONSULTATION

During the course of this review the following consultations took place and sources explored:

Tyne and Wear Museums Service:

Phone conversations with Dr Nick Hodgson of TWMS who has searched to see if any archive survives but none have so far been found.

Durham University:

Phone conversation with Jenny Jones established that the two Beakers from the TWMS 1993 excavations had been consolidated by the Conservation lab at Durham University. ARS Ltd collected them from Durham University and have reunited them with other elements of the physical archive that belong to Northumberland County Council, as landowners, who will deposit them with the regional collections museum (Great North Museum) in Newcastle upon Tyne.

Oxford North (formerly Lancaster University Archaeology Unit)

Initial phone conversation followed by email exchange with Christine Howard Davis, the original finds conservation officer for Lancaster University Archaeological Unit who worked on the Low Hauxley material, established that modern animal bone and other material from the evaluation trench was still held by them but that this could be collected by ARS Ltd for reuniting with the rest of the Low Hauxley archives. ARS Ltd collected the material from Lancaster and have reunited them with other elements of the physical archive.

Newcastle University

Phone conversation with Lyndsay Allason-Jones, formerly of the Museum of Antiquities of Newcastle upon Tyne, to establish whether any of the Low Hauxley archives were held by the museum. No recollection of any material from Low Hauxley other than the Late Bronze Age rapier from the inter-tidal zone could be recollected. LAJ thought that the archive was still with Northumberland County Council.

Great North Museum

Andrew Parkin, now the collections officer for what was the Museum of Antiquities at the Great North Museum, was consulted by telephone and by email to establish whether any material was held by the museum. No archives could be located although it was confirmed that the rapier had been deposited with them.

Northumberland County Council

Discussion by CW with Liz Williams and Sara Rushton identified copies of several specialist archive reports mostly associated with the LUAU investigations together with reports by Steve Speak of TWMS. Some of the physical archive was also located

from the LUAU work including the assemblage of over 400 flints. The fragmentary basal section of a Beaker that had held the cremation found by TWMS during their 1993 excavation was also found but not the cremation.

Edinburgh University

Personal discussion between Clive Waddington and Clive Bonsall at two Scottish Archaeological Research Framework meetings in Edinburgh on 13th May 2009 and 30th September 2009 took place. Clive Bonsall indicated that the excavation was to be imminently published by himself and a mature student who had been working on it. No publication has appeared. Subsequent and repeated emails from Clive Waddington requesting summary information have met with no response from Clive Bonsall. Status of archive = unknown.

4. PHYSICAL ARCHIVE SUMMARY

The following table summarises the known material recovered from the various interventions at Low Hauxley and their whereabouts where they have been able to be tracked down. In short the site has so far produced:

- 4 x human inhumations
- 5 x cremations
 - At least 5 of the burials were in cists
- 4 x Beaker Pots
- Ochre from one burial
- Small quantity of marine shell from cairn material above ARS Ltd Burial 1
- Residual Mesolithic flints from the Bronze Age burials
- 400+ Mesolithic flints, plus marine shell and small quantity of animal bone from Mesolithic ground surface

Intervention	Material	Whereabouts
Bonsall 1983	Mesolithic bone, shell etc	University of Edinburgh
	Mesolithic flints	“
	Cairn 1: 1 x inhumation	“
	Cairn 1: 2 x cremations	
	Cairn 2: 1 x inhumation	“
TWMS 1983 & 1993	Inhumation 1 (1983)	Unknown - possibly Lifelong Learning at Newcastle University (operated by Sunderland University)
	Inhumation 2 (1993)	NCC
	Cremation (1993)	Unknown
	2 x complete Beakers	ARS Ltd
	1 x fragmentary Beaker	ARS Ltd/NCC
LUAU	Lithics	ARS Ltd/NCC
	Paper & digital archive	ARS Ltd/NCC/Oxford North?
	Specialist reports	NCC
	Animal bone	ARS Ltd
ARS Ltd	Burial 1 (cremation)	ARS Ltd
	Burial 2 (cremation)	ARS Ltd
	1 x fragmentary Beaker from Burial 2	ARS Ltd
	Ochre	ARS Ltd
	Lithics	ARS Ltd
	Paper & digital archive	ARS Ltd

Table 4. Summary of archaeological archive from Low Hauxley.

5. VISITS MADE AND ARCHIVE COLLECTION

The following table summarises the various visits carried out as part of this review and the retrieval of archives from various sources to reunite as much of the material as possible.

Place of visit	Material	Current Whereabouts
University of Durham Feb 2010	2 complete Beakers	ARS Ltd
Oxford Archaeology North in Lancaster (formerly the LUAU) Feb 2010	Animal bone	ARS Ltd
	Modern material from within sand dune and unstratified	ARS Ltd
Low Hauxley site visits by Clive Waddington (x2), David Passmore (x1), Andrew Burn (x3) and Jim Nesbitt (x1) Jan-March 2010	Retrieved dating samples for inter-tidal peat into which were the human and animal footprints	ARS Ltd
Northumberland County Council March 2010	Lithics from LUAU investigation	ARS Ltd
	Fragmentary Beaker from TWMS 1993 excavation	ARS Ltd
	Inhumation from TWMS 1983 excavation	NCC

Table 5. Summary of visits and archive material retrieved as part of this review.

6. PREVIOUS ARCHAEOLOGICAL INTERVENTIONS AND DISCOVERIES

1982 The eroding Bronze Age cemetery site was first reported to NCC by an amateur archaeologist.

1983 A cist was exposed in the cliff section containing a flexed inhumation and a rescue excavation took place by Steve Speak.

The excavation note deposited with the Northumberland HER is reproduced in full here.

“Hauxley 1983 (it should read 1993)

Notes on excavation 4th February 1983 (should be 1993) by S.C. Speak. Accompanied in the main by DCI Stevenson (Northumbria Police) and a police photographer. Skeleton removed by Mr Speak, presently stored at Department of Adult Education, University of Newcastle upon Tyne.

The skeleton lay within a rectangular cist c1.0m wide and c1.75m long, with a single massive capstone cover. Each end-slab was formed of a single slab, whilst each side was identical: two slabs opposite each other c0.30m x 0.40m, and then a further two slabs c0.40m x 1.20m. The skeleton was flexed and lay on the right hand side, its face thus looking seawards, with the head in the southern quadrant. The condition of the skeleton was excellent, and all but the foot bones were recovered: however because of the difficulty of the circumstances of excavation, many smaller bones may have been missed. The fill of the cist consisted of brown boulder clays and silts to a depth of 0.15m, the rest being a void. This fill covered ¼ of the skeleton. At least one tide or heavy spray entered the cist, leaving tidemarks on the rear stone and depositing a small quantity of straw or twigs on the skeleton. Prior to excavation it was ascertained that it was virtually certain that no vessel had been present. There was no floor to the cist, merely beaten clay, and none of the stones, of coarse sandstone, were marked other than natural erosion. Excavation was possible by removing one of the smaller side-slabs, after which it was possible to get my head, shoulder and one arm into the cist – adequate to complete the excavation.

The police photographer took pictures when requested, including views of the cairn section, which showed that the cist lay within a pit with loose cairn material piled on top. In some of the photographs it seems as though the underside of the capstone has cupmarks but this is merely the effect of a flash camera exaggerating natural hollows.

Recovered during this excavation was a flint scraper, and on a subsequent visit to the site on 6th March 1983 a plano-convex knife was also recovered, as well as pot sherds from immediately above the cist. It is possible that a subsequent burial, a cremation + pot¹ lay within a pit dug down to the level of the capstone.

¹Note added 6th July 1993.

I recall that there were no signs of a cremation, this statement being more supposition on my part. Of the finds, the flints and potsherds were forwarded to Clive Bonsall at Edinburgh University.

The cist itself has been reconstructed by the Northumberland Wildlife Trust and is currently on display, with a noticeboard, in their Hauxley reserve.”

1982-8 Excavation and Palaeoenvironmental Work by Clive Bonsall

No archive report or substantive publication of this excavation work has ever appeared although repeated requests have been made by Northumberland County Council and Clive Waddington. It is thought that this work was funded by the Department of the Environment (now English Heritage) and the University of Edinburgh at the request of Northumberland County Council. Clive Bonsall appears to have contracted in the services of Richard Tipping for the palynological study as part of this project. The only text records available are the English Heritage dating certificate, a report by Richard Tipping dated 1994 and the summary in the LUAU report based on a presentation given by Clive Bonsall in 1994 and the above mentioned sources together with the short note published in Proceedings of the Prehistoric Society (Bonsall 1983, 398) which is reproduced in full below. The excavation included formal excavation to the rear of the cliff, the area of which is marked on Fig. 4 based on the plan provided in the LUAU archive report. This work revealed a large cairn in the eroding cliff section, ‘Cairn 1’, and a smaller satellite one, ‘Cairn 2’. Cairn 1 produced a flexed inhumation in a stone cist and two cremations, one inserted above the cist. Cairn 2 produced a single flexed inhumation. Both of these inhumations have been radiocarbon dated with that from Cairn 1 being earlier and dating to the Beaker period and that from Cairn 2 being later and dating to the Early Bronze Age. Since Bonsall’s excavations further rescue excavations by TWMS in 1993 recovered two further cists containing an inhumation (see below) and a cremation also from beneath Cairn 1.

“Low Hauxley, Northumberland. NU 284018

Mesolithic/Bronze Age coastal site.

This multiperiod site owes its remarkable preservation to the fact that it was buried beneath sand dunes which began to form along the Northumberland coast more than 3000 years ago. Today the coastline is rapidly eroding, exposing and gradually destroying the prehistoric sites that are associated with the pre-dune land surface.

Field reconnaissance followed by a rescue excavation of the site in March-April 1982 revealed two Bronze Age cairns: Cairn 1 (which had already been partially destroyed by the sea) contained at least two burials – a flexed inhumation in a large stone cist placed centrally beneath the cairn; and a cremation inserted above the cist. Cairn 2 produced a single flexed inhumation.

The buried soil beneath Cairn 1 also contained a much earlier midden deposit, composed of shells, fish remains, mammal bones and carbonised plant material, together with typical late Mesolithic flint artefacts. A single radiocarbon determination on a sample of shells from the midden suggests an age of about 5000bc for this phase in the use of the site.”

It is not certain that the Mesolithic organic material was necessarily a 'midden' deposit although this does remain possible. Given the recent discoveries further up the coast at Howick and East Barns it is possible this material could be associated with an as yet unidentified Mesolithic structure.

In addition to the excavation works a palynological study was also undertaken by Richard Tipping who produced a detailed report with associated radiocarbon dates and pollen diagram. This was submitted to Clive Bonsall and Northumberland County Council and a copy of this report remains within the archive held by Northumberland County Council. Tipping called his pollen core site Low Hauxley B to differentiate it from the previous core taken by Innes and Frank (1988) which can be termed Low Hauxley A.

1993 Excavation by Tyne and Wear Museums Service

In 1993 rescue excavation of a two cists eroding from the cliff face below a remaining area of Cairn 1 which had previously produced two cist burials (Speak 1983; Bonsall 1983) took place. The first cist contained a human cremation and a complete Beaker (Beaker 1) and a range of animal bones. The second cist, which lay 0.7m to the west of the first cist, contained a crouched human inhumation of a teenage male accompanied by a complete Beaker vessel (Beaker 2). A human cremation was found in a surviving fragment of a third Beaker that was discovered in the body of the cairn overlying the east end of Cist 2. The inhumation has been examined by Kate Brayne and a specialist report is contained in the archive. Brayne concluded that the corpse was that of a young man, probably 12-15 years of age, who had a tooth abscess which would have caused him severe pain and could possibly have led to his death if septicaemia had developed. A text summary of the excavation was produced by TWMS and is held by Northumberland County Council. The two Beakers were conserved by Jenni Jones at the University of Durham and a text report is held by Northumberland County Council. The two complete Beakers and the third fragmentary Beaker are currently with ARS Ltd but will be reunited with the rest of the archive at Northumberland County Council. The cremation is yet to be located.

The first cist has been reconstructed and is located next to the Northumberland Wildlife Trust car park at the Wildlife Trust's nature reserve. At the time of its discovery a significant amount of public and media interest took place and as a consequence many people know precisely where the burial remains are located. Consequently, robbing of material as it becomes exposed is considered a real and on-going problem at the site. When ARS Ltd recorded the small stone cist as part of the 2009 intervention it appeared that someone had cleared the cist out, possibly to take an inverted ceramic vessel, as much of the cremation could be seen at the foot of the cliff section immediately below the cist box. The cist had not been reached by the sea.



Fig. 6. Cist 1 exposed in the cliff face after a storm event prior to excavation by TWMS.



Fig. 7. View inside Cist 1 with cremated bone on the floor of the cist and a complete Beaker vessel on its side.



Fig. 8. The general public visiting the exposed stone cist during the TWMS rescue excavation.



Fig. 9. Recording of Cist 1 with the site director Steve Speak in the middle ground wearing the white and red hat and Bill Griffiths stood next to him watching the planning.



Fig. 10. Beaker 1 recovered from the 1993 TWMS cist 1 (scale = 30cm) which accompanied a single human cremation. It has twisted cord decoration arranged in parallel rows and chevron patterns around the upper two thirds of the vessel. Black carbonised residue is finely splattered on the inside and outside of the vessel.



Fig. 11. Beaker 2 recovered from the 1993 TWMS cist 2 (scale = 30cm) that accompanied a single crouched human inhumation. It has parallel bands of decoration over most of the pot surface. Lines of impressed cord encircle the pot, and short lengths of impressed cord are arranged in diagonal lines and chevrons/crosses. Black carbonised residue is finely splattered on the outside of the vessel only.

1994 Lancaster University Archaeological Unit

The LUAU investigation, funded by English Heritage, included survey, evaluation excavation and palaeoenvironmental sampling. The excavation comprised two evaluation trenches, D1 and D2, set back behind the cliff and off-set from Cairn 1 so as to examine the relationship between where the cairn started and the Low Hauxley B 'peat' deposit to the north. D1 was positioned parallel with the coastline 22m in from the cliff edge. D1 measured 57.1m by 8.5m overall but as the sides of the trenches were battered back to prevent dune collapse the actual area of the archaeological horizon exposed at the base of the trench was much smaller measuring around 50m by 1.2m. D2 was located perpendicular to D1 on the line of Cairn 1 and measured 13m by 7.1m overall but as with D1 the actual area exposed for evaluation was approximately 8m by 1.2m. Together these evaluation trenches examined a total area of 69.6 square metres which is a very small fraction of the hillock area which extends over an area of around 5150 square metres (c.0.5 ha) (see Figure 4). The sealed ground surface in D1 produced a thin but consistent scatter of Mesolithic flints with occasional pieces of possibly later material. In places the flint was covered by a white wind blown sand up to 0.09m deep which incorporated tiny fragments of shell and insects. One anthropogenic feature was identified in D1 comprising a gully that had been cut into the ground surface along the edge of the wetland basin which measured 0.8-1m wide and 0.51m deep. This feature could be significant to the cemetery, perhaps demarcating the edge of the cemetery area? A total of 408 chipped flints were recovered from the lithic scatter area. Animal bone was recovered from higher up in the dune sequence and most of this is considered to be modern material. Some marine shell was identified in the old ground surface indicating that preservation of organic remains within the archaeological horizons is very favourable. This conforms with the reputed recovery of a fish otolith, fragments of animal bone and marine mollusc shells during Bonsall's work on Cairn 1.



Fig. 12. The evaluation trench D1 looking south excavated by LUAU behind the cliff line.

Five 1m square test pits were hand excavated along the length of Trench D1 to examine the soil profiles and obtain samples for soil analysis. This work was undertaken by Rob Payton who was able to demonstrate how the soil on the top of the hillock grade down to the north to the organic unit referred to as peat. This detailed and insightful report included a tentative model of how the land surface had developed and has been redrawn below (Fig. 13).

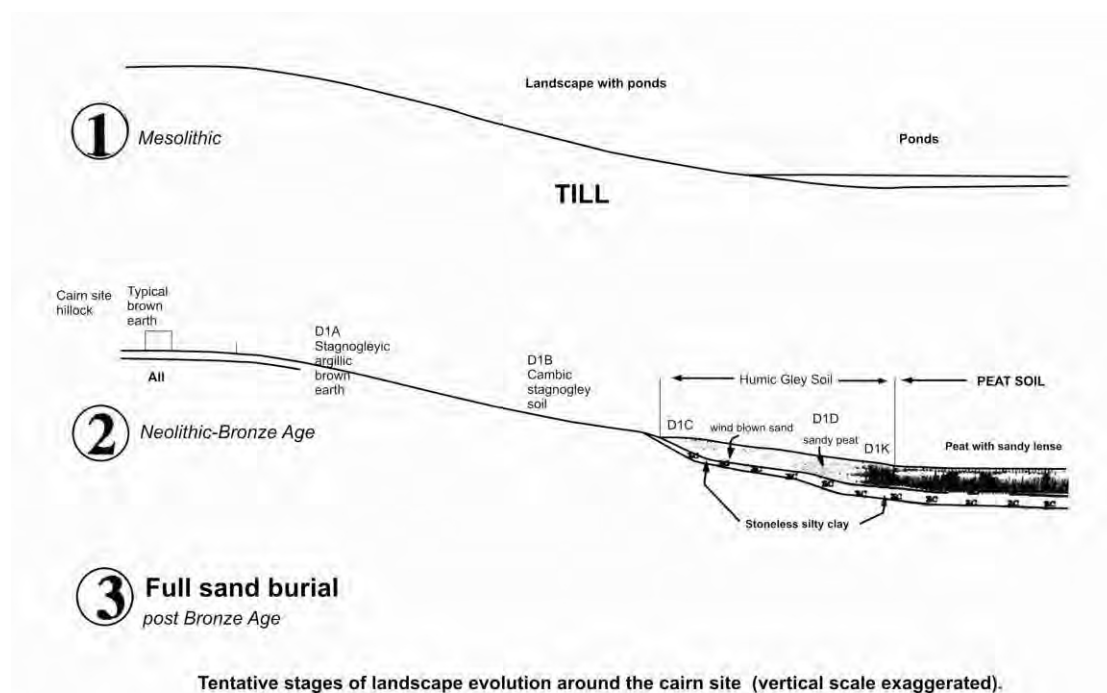


Fig. 13. Schematic model of soil development at Low Hauxley redrawn from Payton (1995).

2009 Archaeological Research Services Ltd

This small-scale excavation recorded two graves. Burial 1 was a small stone-built grave box, or tiny cist, made from small sandstone slabs wedged into a pit that had been cut into the glacial till and this had been covered with a low stone cairn. A depth of 3.5m of sand dune accumulation has since built up above the cairn. Inside the grave box, or small 'cist', had been a cremation, traces of which still survived in the stone-lined cavity. This material was collected for analysis and dating. At the foot of the cliff immediately below the grave box was a small pile of cremated human bone and it is reasonable to assume that this is material that has fallen out from the grave box. However, this had been intermingled with the beach sand as successive tides had washed up to the cliff face. This material was not collected as its true provenance could not be ascertained. However, because the grave box was starkly visible in the cliff face the position of this cremation debris below the grave box is also consistent with an inverted ceramic vessel having been removed from the grave box by a light-fingered passer-by and the cremation material falling to the floor on removal. Although this is not known with certainty, the fact that a stone had been recently

wedged across the cist to hide it from view led the excavators to believe this to be a likely scenario.



Fig. 14. The small cist containing a human cremation that also lay under Cairn 1.

Burial 2 was a grave comprising a pit burial that had partly eroded from the cliff face. This pit was not located underneath any observable cairn although there is a cairn to the immediate north of this burial which is probably Bonsall's 'satellite cairn' or Cairn 2. A pit had been cut into the glacial till and a plain Beaker had been placed inside containing a human cremation, together with a dump of the pyre debris that had been scraped up. This pyre debris was very black and contained much charred debris and grey ash that was probably still hot when it was deposited as the heat has turned part of the Beaker pot a pale grey colour. A few Mesolithic flints had been scraped up with the pyre debris and deposited in the pit with this material which implies that the funeral pyre was situated on the ground and the gathering up of the remains included the scraping up of material from the underlying Mesolithic ground surface. Single entity long bone fragment radiocarbon dating samples were submitted for each burial. Cremation burial 2 has returned an Early Bronze Age date of 1890-1690 cal BC at 95% confidence (see Table 6). A date for the cremation from burial 1 is still awaited.

Intervention	Sample	laboratory code	$\delta^{13}\text{C}$ (‰)	Radiocarbon age (BP)	Weighted Mean	calibrated date range (95% confidence)
Bonsall 1983	Burial 1	OxA-5553	-20.6	3615 ±45	3621 ±34	2140-1890 cal BC
Bonsall 1983	Burial 1	OxA-5553	-20.8	3630 ±55		
Bonsall 1983	Burial 2	OxA-5553	-20.5	3410 ±55	3420 ±38	1880-1640 cal BC
Bonsall 1983	Burial 2	OxA-5553	-20.6	3430 ±55		
ARS Ltd 2009	Burial 2 [011] - cremation	SUERC-27330	24.7	3470 ±30	-	1890-1690 cal BC

Table 6. Summary of radiocarbon dates from the various archaeological interventions at Low Hauxley.

On the foreshore in front of the Low Hauxley cemetery is a series of rectangular rock-cut hollows. The purpose of these archaeological features remains unknown and under-researched. These features are sometimes covered by beach sand or can be fully exposed depending on the behaviour of the tides.



Fig. 15. The cobble-filled rectangular rock-cut features located on the foreshore immediately in front of the Bornze Age cemetery site.

Feb 2010 Field Survey

As part of the NERCZA ARS Ltd undertook a rapid field survey using survey-grade GPS to ground-truth and enhance the digital plotting of archaeological data from aerial photographs undertaken by ARS Ltd during the first phase of this project. This has included accurately locating and surveying the position of various archaeological features including WWII defences.

During this survey amateur archaeologist Jim Nesbitt drew our attention to a freshly exposed inter-tidal peat lying immediately south of the Bondicarr Burn outflow. In a very proscribed area of this peat an abundance of human and animal footprints could be observed pressed quite deeply into the peat surface. This peat lies at a lower level than the peats that flank the cemetery site and so could potentially be earlier. Samples from the top and base of this thin peat horizon have been taken and radiocarbon dates are awaited. ARS Ltd surveyed the extent of the footprint area during a rising tide that was depositing sand back over the peat. The sand has accumulated to a depth of *c.*0.5m and the peat is currently invisible on the surface except for the occasional tree stump that protrudes through the sand. Accurate recording of these footprints remains an urgent priority.



Fig. 16. Human footprints filled with sand and pebbles deeply impressed within the peat that survives as a thin layer within the intertidal zone.



Fig. 17. Examples of some of the animal footprints that can be seen amongst the human footprints.

7. ESTABLISHING THE IMPORTANCE OF THE RESOURCE

As part of the NERCA Phase 1 survey, sites on the North East coast of England were assessed based on the professional judgement of the project team with reference to the criteria set out in Annexe 4 of PPG16. The different levels of special interest were defined as *High*, *Medium* and *Low*.

Mesolithic activity is documented along the North East coast but the evidence consists mostly of surface flint scatter sites, although an internationally significant residential site has been excavated at Howick for example (see Waddington 2007). No Mesolithic ground surface hosting a lithic scatter, animal bone and marine shell has been found anywhere else apart from at Low Hauxley in Northumberland and such sites are rare nationally. The survival of *in situ* archaeological deposits of this period make Low Hauxley nationally important on account of the Mesolithic archaeology alone. It is possible that Mesolithic structural remains may also survive; such as hearth pits or evidence for a structure, as at Howick for example. At Howick, however, the land has been intensively cultivated over many centuries and so although the scoop of the settlement structure survived as a buried feature there was no accompanying contemporary ground surface as this had been removed by the plough. Having been sealed by the Beaker period and Bronze Age burial cairns and subsequently the dune sand deposits, the Mesolithic archaeology remains relatively undisturbed and *in situ*. Furthermore, at Howick the settlement had been located on glacial sand with an acidic bias and unburnt organic material did not survive well if at all. At Low Hauxley the Mesolithic deposits are covered by calcareous dune sand which has an alkaline bias and which the various interventions have already demonstrated allows for the good preservation of organic material, including fish bone, whether burnt or not. Thus the site can be ascribed national importance on the grounds of period, rarity, preservation, condition, vulnerability as well as the diversity of the site given that it also contains a pristine Beaker/Early Bronze Age cemetery and stratigraphically associated organic sediments to either side. This is a view shared by Su Stallibrass who, in her assessment of the potential of the Low Hauxley Mesolithic site (Stallibrass 1995), made the following assessment:

“The Mesolithic material from the site is of national importance.”

The Beaker/Bronze Age cemetery comprises a group of stone cairns of unknown number overlying cist and pit burials that have already exhibited a range of mortuary practices including crouched inhumation and cremation. Burial monuments of this period are relatively common in the archaeological record of the region, although they are usually heavily robbed and many have been disturbed or robbed by antiquarian and illicit diggings. The cemetery at Low Hauxley is of special importance because the entire cemetery survives as an intact group on what appears to have been a small island or headland raised up above a surrounding wetland/marsh. Moreover, as the cairns have been completely sealed by wind blown sand of up to 4m depth the entire cemetery is preserved in pristine condition as not only are all the structural features intact but the calcareous nature of the sand has meant that survival of bone and other organic material is excellent. The Beaker pots also show a remarkable condition of preservation. To find such a complete, well-preserved and sealed Bronze Age cemetery is undoubtedly a discovery of national importance. Gaining an understanding of the entire cemetery will add to the value of this site as it will be able

to be determined how the site developed over time, what different mortuary rites and religious practices were employed, how the landscape was and how this relates to the setting of the site, as well as interpret the site in ideological and ritual terms including its 'liminal' location in an area of marsh that would have graded towards the shore. There is also considerable potential to understand much about the people given the good state of preservation of the various inhumations recovered to date. The one skeleton that has been reported on has shed an interesting light on the individual and pathologies the young man had experienced. With modern techniques such as stable isotope and DNA analysis it would be possible to establish whether the Beaker-associated individuals and the slightly later Early Bronze Age individuals were locals or incomers to the area and whether the occupants of the cemetery were related to each other. Such work would provide groundbreaking insights into Beaker and Bronze Age mortuary practice and wider questions of Beaker contact that would contribute to national, and indeed international, studies of the Beaker question. Thus the site can be ascribed national importance on the grounds of preservation, condition, vulnerability and potential as well as the diversity of the site given that it also contains a Mesolithic site and is stratigraphically associated with contemporary organic sediments to either side. This is a view largely shared by Su Stallibrass who, in her assessment of the potential of the Low Hauxley cemetery site (Stallibrass 1995), made the following assessment:

“The Beaker/Bronze Age material is possibly also of national importance. At least it is of high regional significance.”

The extent to which further archaeological remains survive on the site is not known with absolute certainty. However, a cairn which could be Bonsall's 'Cairn 2' is currently eroding from the cliff face and further burials can be expected under this feature. Further burials can be expected behind Burials 1 and 2 recorded by ARS Ltd, particularly as Burial 1 came out from an area which is probably covered by the extent of Cairn 1 which has not yet been fully excavated. More cairns could survive behind these two known cairns on the highest point of the hillock. The red line on Figure 4 is an estimate provided by ARS Ltd of the probable extent of the dry hillock surface and therefore the maximum extent of the cemetery. This estimate was based on the following assessment.

When viewing the cliff section from its seaward side the prehistoric ground surface morphology is reflected in the modern ground surface formed by the dunes. Therefore, the high points on the dunes, at least in some cases, reflect high points on the pre-existing ground surface. This can be expected as the high points will have formed sediment traps for dune accumulation to commence. Taking into account where the dry ground gave way to marsh deposits in the evaluation trench D1 and the LUAU boreholes, the contouring of the hillock itself, which has been recorded as part of the NERCZA survey, and the surface dune morphology it is possible to estimate the probable extent of the dry ground and the maximum extent of the cemetery. The Mesolithic remains could potentially extend beyond the dry area given that the marsh areas do not appear to have started to form until during the Neolithic period. Therefore, it is possible that Mesolithic material may also survive in earlier ground surfaces sealed by the peat deposits.

Prior to the discovery of the two cremations recorded by ARS Ltd at Low Hauxley the NERCZA Phase 1 project had already made an assessment of the Low Hauxley archaeological remains and this is reproduced below in Table 7.

Policy Unit	Policy	HER No.	Site type	Special interest	Risk
17.3	MR	5604	Mesolithic lithic scatter	High	High
17.3	MR	5604	Bronze Age Barrows	High	High

Table 7. Extract from the 2008 NERCZA assessment of interest and risk for the archaeological remains at Low Hauxley.

Fieldwork carried out by the Glasgow University Archaeology Research Division for Northumberland County Council (Hardie 1993) examined 112km (70 miles) of coastline and assessed the potential threat to archaeological remains in the twenty-six 1:10,000 OS Map sheets in which the coastline falls. Thirteen of these maps sheets cover the section of coast examined in this chapter. For each sheet *SCAN* provides an assessment of the archaeological potential and the level of risk from erosion. These data are summarised in the following table.

1:10,000 OS Map sheet	Potential	Erosion
NU 20 SE	High	High
NZ 29 NE	Medium	High
NZ 29 SE	High	High

Table 8. Archaeological potential and risk from erosion (Hardie 1993)

The document draws particular attention to the threats posed at Druridge Bay (NU 20 SE, NZ 29 NE and NZ 29 SE) where the Low Hauxley remains are situated in map sheet NU 20 SE, and this informed the Strategy for Coastal Archaeology in Northumberland (Northumberland County Council 1993). At Low Hauxley peat deposits are being exposed along with the Mesolithic and Bronze Age site. The importance of this situation cannot be overstressed. For a zone of about 8km the dunes at the head of Druridge Bay seal a land surface that was the focus of human activity from at least the 6th to early 2nd millennia cal BC, but it is a resource subject to constant erosion from the sea.

As far back as 1995 the Lancaster University Archaeological Unit made the following point in the opening paragraphs of their Recommendations section,

“The point should be forcibly made that the constant and escalating threat to this site, namely coastal erosion, will not lessen without human influence, and that the site will be destroyed in the near future.”

This statement is even more prescient now than it was in 1995.

In Stallibrass’ 1995 report the following specific recommendations were made:

- “Whether or not any further material is removed from the site, it is important that the material recovered by Bonsall in 1982/3 is fully reported and published, and that the material recovered by Speak in 1993 is properly treated, assessed, analysed and published.”
- “Since the site is currently being destroyed by marine erosion, it is recommended that it should be excavated under controlled conditions as soon as is feasible, in order to maximise the amounts of stratified deposits available for investigation. The precise choice of timing for excavation should be made regarding safety aspects and seasonal weather conditions.”

The author of this report (CW), now armed with more data available to him than when Stallibrass commented, remains in full agreement with this assessment.

8. CURRENT THREATS

The threats to the site can be characterised as:

- Direct erosion by wave action of the exposed peats and Mesolithic/cemetery site
- Indirect erosion by wave action caused by undercutting of the dunes and then slumping from above. This is how the earlier cists were exposed and all deposits are at risk from this form of erosion.
- Many people know the exact location of the cemetery site and both the author and amateur archaeologist Jim Nesbitt, the latter of whom monitors the site regularly, are convinced that some remains have been robbed from the site. This was suggested by the circumstances of discovery of ARS Ltd's Burial 1 where a cist stone that had fallen to the ground had been clearly wedged back in to cover the void where the cremation had been and hide it from view. A deposit of cremated material immediately below the cist in the cliff section appears to have been dragged out or to have fallen out of an inverted pot that was extracted from the cist.

None of these threats face any real prospect of being able to be controlled and so area excavation and/or further monitoring remain the most viable options. However, the weakness of the monitoring approach is that it leaves costs and commitments open-ended, creates a highly fragmented and limited archaeological record, misses material removed by erosion and robbing of the site.

9. MANAGEMENT OPTIONS

None of the threats described above face any real prospect of being able to be controlled through management of the site and the erosion is set to get worse as a consequence of rising sea levels.

Three basic options are available for the site:

1. Let nature take its course and allow the archaeology and palaeoenvironmental remains be destroyed with no further recording
2. Monitor the erosion on a regular basis with small-scale rescue works undertaken on a piecemeal basis with a view to final analysis and publication
3. Undertake an area excavation, on similar lines to the Howick project which examined a similar sized area, to record in full the hillock which forms the Mesolithic and cemetery site whilst continuing to monitor the rest of the cliff face for evidence of other eroding material.

Given the importance of the archaeological and palaeoenvironmental remains option 1 should be discounted. As stated in the Lancaster University report in 1995 (LUAU 1995, 47), “To simply allow the site henceforth to decay and wash away piecemeal does disservice to archaeology and palaeoenvironmental studies alike.” Furthermore, this site can be highlighted as one of the most important high risk archaeological sites on the entire North East coast of England and it would be lamentable if a site such as Low Hauxley, that the NERCZA was specifically carried out to identify and protect, should then be abandoned. Given the public knowledge of this area and the continued erosion of more and more archaeological remains, considerable embarrassment is likely to occur if the historic environment sector cannot take the necessary action to record such a high value resource. Not only will the sector be ultimately held to account by the public but other partners in the natural environment sector will lose confidence if the historic environment sector does not value its archaeology as much as the natural environment sector does. Having discussed the site on several occasions with Natural England and other partners it is clear that they place a high value on the archaeological remains at Low Hauxley and they are keen to engage in a scheme to record the remains before more is destroyed.

Option 2 is the management option that has been followed for the past 27 years. This has met with mixed success. Some useful work has been done but we have only a partial understanding of the site and it clearly contains many more remains to recover. There is virtually no understanding of the site in plan form and this inhibits accurate recording and interpretation because monitoring only allows the recording to take place in vertical slices at the cliff face. Another problem with the monitoring approach is that it is in essence reactive and this means that it is only after erosion has taken place and archaeological and palaeoenvironmental remains have been removed or damaged that there is chance to record what is left of them. Over the long term this approach is expensive and it leads to a highly fragmented record of work undertaken at the site – hence the current document. None of the work from the past 27 years has yet been published signalling another drawback in this approach. It is likely that the overall cost of continuing this approach will be same or more than undertaking a formal area excavation (Option 3) as it commits to legacy costs and the higher costs

of making sense and publishing a highly fragmented suite of archaeological and palaeoenvironmental records.

Controlled area excavation of the hillock down to the wetland fringe provides the most comprehensive and accurate way of recording these nationally important remains before they are destroyed by coastal erosion. Although expensive as a single intervention, it would solve the management challenge posed by the site within a known one-off cost, whilst also producing a single archive and therefore cost savings during the processing, analysis and publication of the site. In the long term, therefore, this is a cheaper option than Option 2. It would also ensure the most effective way of extracting the maximum information gain from the site that would allow its full potential as a pristine Mesolithic and Beaker/Bronze Age site to be realised, and so contribute to national and international discourse and debate and providing the information to enhance the visitor experience and amenity value of this coastline. Breaking through the dunes in this area would also assist in the Northumberland Wildlife Trust's stated management aim of breaching the dunes to allow for saltwater lagoon formation behind the current dune system. This would also have the effect of taking some of the force out the waves and slowing down erosion in the future. Given that the site is also a SSSI, on account of the peats and sediment sequence, there is potentially buy-in for this approach by a number of agencies including:

- Northumberland County Council as landowner
- Northumberland Wildlife trust as adjoining landowner and conservation interests
- Natural England on account of the SSSI status of the site
- English Heritage as the national agency responsible for protecting the historic environment and funder of previous interventions at the site and the NERCZA
- Heritage Lottery Fund through its commitment to national heritage, its interpretation and involvement of local communities and young people
- Northumberland Coast Area of Outstanding Natural Beauty on account of its proximity and possible future extension southwards
- Archaeological Research Services Ltd through its delivery of NERCZA and the Howick project, its specialist knowledge of the area and the region's archaeology and the skills and resources to access multi-agency grant funding and to undertake the required work in a beach setting and develop interpretive/public engagement outputs
- Newcastle University School of Geography through its research interests, expertise, potential for value-added scientific analysis and desire to engage with regional communities

10. COSTS AND FUNDING STREAMS

Whatever management option is considered for the site various funding streams are available. If monitoring followed by rescue excavations on a piecemeal basis (Option 2) is followed then the order of costs is unknown and open ended. If area excavation was followed then a multi-agency funded project could be devised. The estimated cost of area excavation based on the experience of excavating at Howick, excluding VAT, is £250,000 with a further £250,000 budgeted for post-excavation analysis, archiving and publication. This gives a total of £500,000, which excludes organisational overheads and VAT, to undertake the necessary mitigation works. With VAT the gross total would be in the region of £587,500. If an organisation charged a percentage of the project cost as an overhead this would also be in addition.

This funding total could be obtained by the production of a project design for submission to the following range of potential funders:

Cash Contributions

- English Heritage
- Heritage Lottery Fund
- Leader
- Natural England
- Environment Agency

Newcastle University in conjunction with ARS Ltd has offered to be the lead applicant to access the various funding streams. This was a model that worked for the Howick project and has a proven track record of successful delivery.

In-Kind Contributions

- Newcastle University
- Archaeological Research Services Ltd
- Local community volunteers

11. PROPOSED ACTION PLAN

Immediate

Seek funding from Leader and EH regional Capacity Building Grant for pilot project to:

1. Publish the Low Hauxley interventions to date.
2. Assemble and box, label and produce metadata for the Low Hauxley archive to date ready for deposition with the regional collections museum.
3. Undertake a pilot recording project for involving the local community in order to support the full “Coal and Coast” project bid by the Northumberland Wildlife Trust. This will include a small-scale fieldwork project to devise an appropriate methodology for involving the local community and to start development of a local community network of volunteers. This will include working out how best to record and excavate the hundreds of metres of exposed organic sediments as well as developing appropriate systems for monitoring eroding archaeology and palaeoenvironmental deposits.
4. Record the human and animal footprints as the opportunity presents itself.
5. Undertake the project planning to produce the justification, scope and methods for the Historic Environment component of the Northumberland Wildlife Trust’s (NWT) “Coal and Coast” Heritage Lottery Fund bid.
6. Allow for rapid response to further erosion so that as more remains fall out over the next 12 months or so there is the capacity available to record the remains.

Medium term

Twin track approach:

1. Secure funding through NWT Coal and Coast project to build local capacity to undertake long term coastal monitoring along the length of Druridge Bay, together with small-scale recording projects, village atlas studies and provision of a suite of public engagement (including interpretation, outreach and educational) outputs.
2. Secure multi-agency funding for area excavation of the Low Hauxley site at the soonest opportunity. This should be linked to the planned breach of the dunes to allow for saltwater lagoon development behind the existing dune system and which will also assist in reducing the erosive power of the sea in this stretch of coast. This work would need to be undertaken prior to the Coal and Coast project so the area can be targeted for breaching the dunes and the

creation of a saltwater lagoon. Full analysis and complete publication in academic and popular formats.

Long term

1. Continue monitoring based on the capacity and skills built up with the local communities via the Coal and Coast project.
2. Find case by case solutions for newly discovered eroding archaeological sites based on an assessment of their importance and risk.
3. Use the experience and lessons learnt from the Howick and Low Hauxley projects for feeding in to future management of the coastal zone both in Northumberland and elsewhere around Britain.

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