

7. MANAGING THE RESOURCE

7.1 Introduction

This chapter deals with coastal heritage management issues, in the light of the results of the NWRCZA Phase 1 and Phase 2 projects, and the significance of the sites identified. The assessment of site significance and prioritisation is inevitably partly subjective and is based on the professional judgement of ARS Ltd staff in consultation with other stakeholders, although it is based on the results of consistent and objective survey. The prioritisation of sites for archaeological intervention and recording, as outlined below, and the discussion related to each of them, are intended to provide a starting point for discussion and consideration of how best to manage sites and target resources. Given that the coastline is such a dynamic environment the condition of sites will change, as will knowledge of certain types of sites, and as a consequence the list of prioritised sites should also be revised in the light of such changes. Consequently, the priority list, and this chapter generally, should be considered a 'live' document that will change subject to further discussion across the curatorial sector and in the light of physical changes on the coastline. It is, therefore, not intended as a definitive statement but rather an aid to discussion and subsequent decision making and actions.

A prioritised list of archaeological sites has been produced and is displayed in Table 7.1, and the top quartile of most significant sites under threat (a total of 10) are discussed in further detail in Section 7.2 which includes a series of management options for each. A prioritised list of palaeoenvironmental sites has also been produced and is displayed in Table 7.3, and the top quartile of most significant sites under threat (a total of 5) are discussed in further detail in Section 7.4 which management options discussed in Section 7.5.

The assessment of each of the prioritised sites was based on five criteria. These criteria are: threat from erosion, condition, significance, potential for further investigation and rarity. These terms are discussed in more detail below. The threat from erosion has been scored out of 20 to ensure that it carries necessary weight in the assessment, whilst each of the remaining criteria has been scored out of ten. This provides a balanced view where 30 points out of the total 60 are available for threat and condition and a further 30 points are available for significance, potential and rarity. The assessment used principals set out in DCMS guidance for Scheduled Monuments (formerly Annexe 4 of PPG 16) <http://www.culture.gov.uk/images/publications/ScheduledMonuments.pdf> and reflects the professional opinion of the ARS Ltd project team. The scoring is based upon data collected during the NWRCZA project including that from the desk-based assessment, aerial photograph transcription, field survey and consideration of current and future sea level models and predictions of coastal erosion. In the majority of cases the archaeological features recorded have been assessed individually, however, where appropriate, features have been assessed as a group. For example, the remains of medieval saltworking sites in Skinburness Marsh have been assessed as a group, but were considered separately to the remains of post-medieval saltworking sites at the same location.

The potential for some of the recorded sites to be proposed for consideration for designation has also been reviewed. This is not scored but stated as Yes/No/Already designated/Investigation required within the table. The attribution given for these sites

remains the opinion of the NWRCZA project team and not the current position of English Heritage.

The scoring of the various criteria gives a total out of 60. The table lists sites in their rank order with the site considered to be at most threat and greatest significance ranked number 1. All sites listed in the table are of significance and face some risk from erosion, and a low ranking does not mean that the site is of low significance. The Phase 2 survey was targeted on sites of significance and potentially at risk of erosion, and many hundreds of known features, assessed during NWRCZA Phase 1, were excluded from the Phase 2 survey as they were not considered to be at risk in the short or medium term. Therefore, all sites included within the listing have some form of future threat potential and are considered to have notable significance.

The criteria for assessing each site are detailed below.

7.1.1 Threat

This comprises the perceived level of threat to the site from coastal erosion or other ongoing erosion. It includes consideration of land use and the potential for the site to be removed artificially. A highly threatened site undergoing erosion would score 18-20 while a site located in a stable location with little threat from erosion over the next 100 years would score 2-4. This assessment made use of Halcrow's predictions of future shoreline evolution contained within the SMP2 (Halcrow 2011), as well as the National Coastal Erosion Risk Mapping predictions of coastal erosion under current management (NCERM 2012). NCERM mapping was used in conjunction with the project GIS to assess the possible long term threat to each site. If the archaeological site was to be significantly damaged within 20 years using these predictions the site would score highly in the threat category, whereas if the shoreline projection indicated that it could survive for a further 100 years the score in the threat category would be lower.

7.1.2 Condition

This score is based on the current condition of the site in question; a site which is an exceptional example of its type which survives mostly intact would score highly, while a site that survives in fragmentary form, or is mostly destroyed, will have a low score. The context of a site was also considered in this assessment. An archaeological site removed from its original context by later development would score lower than a site which has survived in its original context. This means that a well-preserved military site surviving *in situ* would score higher than a ploughed out Second World War crop mark site.

7.1.3 Significance

Assessment of significance has been based on the professional judgement of the project team with reference to the known information value, status, or historical significance of a site. This has been guided with reference to the criteria set out in the DCMS guidance for Scheduled Monuments (formerly Annexe 4 of PPG 16)

<http://www.culture.gov.uk/images/publications/ScheduledMonuments.pdf>. A highly significant site will have rare archaeological features with considerable information potential and may contain components from multiple periods. A less significant site will typically comprise a single, more common archaeological feature.

The assessment of significance was made more difficult in some cases as further work is necessary in order for the full potential of the site to be determined. In these cases, the

assessment has erred on the side of caution perhaps resulting in higher significance being applied to some lesser understood sites.

7.1.4 Potential

This is the potential for the site to yield further knowledge or evidence which will make a significant contribution to our understanding. A site which survives intact, and is rare, may contribute more than a site that is already well known and has been extensively excavated. The score is an overall assessment of how beneficial further archaeological work would be to furthering understanding and contributing to place-making and public enjoyment/wellbeing.

7.1.5 Rarity

This is the assessment of how common the site type is, whilst also considering its degree of preservation and integrity. Here a standard pillbox which survives intact will score slightly lower as there are numerous examples surviving along the North West coast, however a Roman fort or a prehistoric monument, such as the footprint sites at Formby and Crosby, will score more highly as there are fewer examples.

7.1.6 Potential for Designation

Sites in highly threatened locations may be less likely to be considered, however significant they are. Very significant sites in stable locations are more likely to be put forward for consideration. Sites that are already designated are also highlighted. This assessment is not a direct proposal for designation but an indicator of what sites could usefully be considered for putting forward for designation, based on the opinion of the NWRCZA project team. It is important to note that even sites in extremely threatened positions may still be considered for proposal for future designation and this has been taken into consideration when putting forward the opinion of the project team.

7.1.7 Priority Table

Table 7.1 sets out the key heritage assets of significance within the study area displayed in ranked order of priority as evaluated by the project team. The sites have been divided into a hierarchy of colour-coded quartiles with red being those sites considered under 'imminent risk', orange being those considered to be under 'high risk', yellow being those considered at 'intermediate risk' and green being those sites at 'low risk'. Sites at 'imminent risk' are discussed individually in more detail within Section 7.2 with specific reference to the threats faced.

Sites considered to be at 'imminent risk' are those scoring 50 or higher in the assessment. Those sites that scored between 40 and 50 are considered to be at 'high risk'. Those scored between 30 and 40 are considered to be at 'intermediate risk' and those lower than 30 are considered to be at 'low risk'. Imminent risk is considered to be where there is an immediate or on-going threat to the surviving remains recorded on site and where there is also a clear need for further work. High risk is where the archaeological resource is threatened but the threat may not be as immediate, the site only being imminently threatened within the 20 years under SMP2 and NCERM coastline predictions. Intermediate risk sites are threatened in the long term and will only be directly threatened within the 20 – 50 year SMP2 and NCERM coastline predictions. Low risk sites are those which will become threatened in the long term, the 50 – 100 year SMP2 and NCERM coastline predictions, or possibly not at all using current data. Within these quartiles, however, weight has been given to the significance of the site at risk, meaning that a site

of very low significance at a high risk of erosion may actually be placed within the low risk quartile. For example the unidentified, poorly preserved, post-medieval shipwreck at Skinburness is undergoing active erosion, but is assessed as being of low significance and is therefore located in the 'low risk' quartile.

Comparing the SMP2 and NCERM predictions of erosion against the coastline as recorded by the NWRCZA project team highlights some of the limitations of the erosion risk modelling. Using Ravenglass Roman Fort as an example, NCERM predict low level erosion of between 3.4 and 6.6m in the next 100 years at this location. However local knowledge states there has been a loss of $\approx 10\text{m}$ of the fort in the past 30 years (Clifford Jones *pers. comm.*), and during the Phase 2 project period of only one year there has been observed erosion and recovery of a significant quantity of archaeological artefacts from the cliff section. This testifies to ongoing significant erosion at the site at a rate that must be higher than the predicted values. Similarly the NCERM predictions state a uniform rate of 0m of erosion within areas that are under a 'Hold the Line' policy for the next 100 years (NCERM 2012). This relies on shoreline defences being 100% effective and efficient over a 100 year period and this is considered unrealistic by the project team. In some cases the loss of even 1m of archaeologically sensitive ground would be a significant loss of information and potential. The current predictions of shoreline evolution can only be used as a rough guide as to what will happen in the future.

Position	Site Name	Site Type	NWRCA UID	Policy Unit	Policy	Threat	Condition	Significance	Potential	Rarity	Potential to Designate	Total
											Yes/No/Already Designated	/60
1	Crosby and Formby	Prehistoric footprints	149-150, 239	11a8.1 11a 9.1	HTL & MR	20	9	10	9	10	No	58
2	Beckfoot	Roman cemetery	100, 241	11e5.1	MR	20	9	9	8	9	Yes	56
3	Walney Island	Possible prehistoric faunal remains & palaeosol	-	11c14.3	NAI	20	9	8	9	10	No	56
4	Ravenglass	Roman fort	75	11d3.1	NAI	20	9	10	8	9	Already designated	56
5	Aldingham	Medieval motte and bailey	41	11c13.1	NAI	20	8	9	9	9	Already designated	55
6	Beckfoot	Roman Milefortlet 15	99, 103, 125	11e5.1	MR	20	7	9	9	8	Already designated, Investigation required	53
7	Jenny Brown's Point	Post-medieval copper smelting site, jetty and buildings	22, 158	11c7.5	NAI	20	6	8	8	9	Already designated / expand designation to include newly identified features?	51
8	Walney Island	Prehistoric flint scatters & poss. settlements	204, 60	11c14.8	NAI	20	6	8	9	8	Investigation required	51
9	Drigg	Possible Prehistoric burnt mounds	211, 213	11d4.1	NAI	20	7	8	8	7	No	50
10	Nethertown and St Bees	Medieval fish traps	138, 139	11d5.5 11d5.7	NAI & HTL	18	8	9	7	8	Yes	50
11	Duddon Estuary	Prehistoric occupation site	71	11c16.1	NAI	14	7	9	8	10	No	48

12	Hesketh Out Marsh	Prehistoric hoofprints	25	11b1.5	MR 0-20 years HTL 20-100 year	14	9	8	8	8	No	47
13	Barrowmouth	Post-medieval alabaster and gypsum mine	132-136	11e1.1	NAI	14	8	8	8	9	Already designated	47
14	Swarthy Hill	Iron Age hillfort	107	11e4.3	MR	15	5	9	8	10	Already designated	47
15	Stanlow	Stanlow medieval abbey	-	11a7.3	HTL	14	4	10	8	10	Already designated	46
16	Crosscanonby	Post-medieval saltworks	86	11e4.3	MR	16	8	8	7	7	Already designated	46
17	Cockersand	Cockersand medieval abbey	18	11c2.4	HTL 0-20 years HTL or MR 20-100 years	16	6	9	6	9	Already designated	46
18	Allonby	Post-medieval saltworks	142	11e4.3	MR	20	5	7	7	6	No	45
19	Skinburness	Medieval port and village	98	11e6.3	NAI	10	9	9	8	8	No	44
20	Mawbray	Medieval fish trap	120	11e5.1	MR	16	8	6	6	8	No	44
21	Sunderland Point	Post-medieval Sambo's grave	29	11c4.3	NAI	12	8	10	4	10	Yes	44
22	Glasson	Undated trackway	240	11e8.3	MR	20	4	6	7	6	Investigation required	43
23	Burgh Marsh	Possible Hadrian's Wall vallum	217	11e8.4	MR	6	9	10	9	8	Investigation required	42
24	Crosscanonby	Roman Road Maryport to Crosscanonby	-	11e4.3	MR	12	5	10	8	7	No	42

25	St Bees	Possible medieval fish trap	137	11d5.6	NAI	14	4	9	7	8	No	42
26	Morecambe	Post-medieval fish traps	160-163	11c6.2	HTL	16	5	7	9	5	No	42
27	Beckermet	Medieval St Bridget's Churches and cross shafts	233	11d5.5	NAI	6	7	10	9	10	Already designated	42
28	Maryport	Roman Milefortlet 23	188	11e4.2	HTL 0-20 years NAI 20-100 years	6	8	10	9	8	Already designated	41
29	Birkrigg	Bronze Age stone circle	215	11c13.1	NAI	6	8	10	7	10	Already designated	41
30	Piel Island	Medieval Piel Castle	72	11c13.5	NAI	8	6	10	7	10	Already designated	41
31	Knockcross	Roman temporary camp	111	11e8.3	MR	8	5	10	9	9	Already designated	41
32	Drigg	Prehistoric flint scatters	210	11d4.1	NAI	12	6	8	8	7	No	41
33	Crosscanonby	Post-medieval saltworks	89, 143	11e4.3	MR	20	2	7	6	6	No	41
34	Warton Crag	Iron Age hillfort	164	11c7.4	NAI	6	7	9	9	9	Already designated	40
35	Saltom Bay	Post-medieval Saltom pit colliery	187	11e1.2	HTL 0-50 years NAI 50-100 years	10	8	9	6	7	Already designated	40
36	Walney Island	WW2 Hilpsford battery	65	11c14.3	NAI	18	7	5	5	5	No	40

37	Walney Island	WW2 H5 battery and camp	67-68	11c14.3	NAI	20	5	5	5	5	No	40
38	Knockcross	Possible Roman road	141	11e8.3	MR	8	6	9	9	7	Investigation required	39
39	Heysham	Medieval St. Patrick's Chapel	21	11c6.1	NAI	8	7	10	4	10	Already designated	39
40	Bromborough	Medieval moated site	218	11a7.1	HTL	10	7	8	7	7	Already designated	39
41	Ravenglass	Possible cist	228	11d3.1	NAI	18	4	7	4	6	No	39
42	Ravenglass	Roman bath house	73	11d3.1	NAI	2	10	10	6	10	Already designated	38
43	Drigg	WW2 quadrant towers	79, 81	11d4.1	NAI	14	8	4	7	5	No	38
44	Port Carlisle	Post-medieval quayside	114	11e8.3	MR	18	6	5	6	3	No	38
45	Skinburness	Post medieval jetty / fish trap	92	11e6.2	HTL	20	3	3	8	4	No	38
46	Skinburness	Roman Milefortlet 9	96	11e6.3	NAI	6	6	9	9	8	Already designated	38
47	Beckfoot	Possible Roman road	104	11e5.1	MR	6	6	9	8	8	Investigation required	37
48	Newtown Arlosh	Post-medieval saltworks	168-173	11e7.4	MR	6	8	7	8	7	No	36
49	Anthorn Marsh	Stone alignment	176	11e7.5	MR	6	9	4	9	8	No	36
50	Dungeon Lane	Post-medieval saltworks	198	11a7.8	NAI	10	6	7	6	7	No	36

51	Cockersand	Post-medieval fish trap	166	11c2.4	HTL 0-20 years HTL or MR 20-100 years	14	3	5	9	5	No	36
52	Heysham	Post-medieval fish trap	221	11c6.1	NAI	14	3	5	9	5	No	36
53	Maryport	Roman road	186	11e4.2	HTL 0-20 years NAI 20-100 years	2	8	10	8	7	Already designated	35
54	Burgh Marsh	Possible medieval boundary bank	183	11e8.4	MR	6	9	7	6	7	Investigation required	35
55	Ravenglass	Post-medieval fish trap	78	11d3.1	NAI	18	5	4	5	3	No	35
56	Formby	Post-medieval shipwrecks	151-152	11a9.1	MR	20	6	3	3	3	No	35
57	Walney Island	Prehistoric hearth	203	11c14.8	NAI	2	7	7	10	8	No	34
58	Skinburness Marsh	Medieval saltworks	129, 184	11e7.2	HTL 0-20 years MR 20-50 years HTL 50-100 year	6	7	7	7	7	No	34
59	Anthorn Marsh	Medieval saltworks	174-175	11e7.5	MR	6	7	7	7	7	No	34
60	Skinburness Marsh	Post-medieval saltworks	130	11e7.2	HTL 0-20 years MR 20-50 years HTL 50-100 year	6	7	7	7	7	No	34
61	Border	Post-medieval saltworks	128	11e7.3	MR	6	7	7	7	7	No	34
62	Salt Coates	Post-medieval saltworks	167	11e7.4	MR	6	7	7	7	7	No	34

63	Heysham	Anglo-Saxon cross-shaft base and grave slabs	192	11c6.2	HTL	8	5	8	3	9	Already designated	33
64	Hest Bank	Post-medieval wharf	189	11c7.1	HTL 0-20 years HTL or MR 20-50 years HTL 50-100 year	16	5	4	5	3	No	33
65	Bardsea	Post-medieval jetties and breakwater	42-44	11c11.6	NAI	16	6	4	5	2	No	33
66	Braystones	Medieval motte	234	11d5.5	NAI	6	5	5	10	6	No	32
67	Swarthy Hill	Roman Milefortlet 21	87	11e4.3	MR	6	8	9	1	8	Already designated	32
68	Drigg	WW2 pillbox	83	11d4.1	NAI	14	8	3	6	1	No	32
69	Beckfoot	Roman Tower 15A	105	11e5.1	MR	6	5	9	4	7	Already designated	31
70	Formby	Lifeboat station	199	11a9.1	MR	20	1	5	1	4	No	31
71	Ribble Estuary	Medieval moated site	2	11b1.13	NAI	2	7	6	8	7	No	30
72	Bowness	Roman road	118	11e8.2	MR	2	5	9	7	7	Already designated	30
73	Grune Point	WW2 air gunners range	109	11e6.3	NAI	6	8	4	7	5	No	30
74	Dungeon Lane	Post-medieval Hale Cliff Wharf	148	11a7.8	NAI	14	6	4	4	2	No	30
75	Aldingham	Post-medieval Sea Wood copper mine	214	11c13.1	NAI	14	5	4	4	3	No	30
76	Waberthwaite	Medieval St. John's Church	77	11d3.1	NAI	2	4	7	9	7	Already designated	29

77	Waberthwaite	Anglo-Saxon cross-shaft	230	11d3.1	NAI	2	4	8	7	8	Already designated	29
78	Brighthouse	Possible prehistoric enclosure	223	11d3.1	NAI	2	3	6	10	8	Investigation required	29
79	Saltcoats	Possible Roman fortlet	232	11d3.3	NAI	2	2	5	10	10	Investigation required	29
80	Saltom Bay	Post-medieval Haig colliery	140	11e1.3	NAI	2	9	8	5	5	Already designated	29
81	Cleveleys	Abana post-medieval shipwreck	16	11b2.4	HTL	12	4	6	4	3	No	29
82	Drigg	20th century shipwreck	80	11d4.1	NAI	18	6	2	2	1	No	29
83	Brighthouse	Possible Roman harbour	225	11d3.1	NAI	2	2	6	10	8	Investigation required	28
84	Ribble Estuary	Post-medieval shipwrecks	7, 8	11b1.13	HTL 0-50 years MR 50-100 year	8	7	4	4	5	No	28
85	Burgh Marsh	Post-medieval saltworks	185	11e8.4	MR	6	5	6	5	6	No	28
86	Skinburness	Post-medieval shipwreck	106	11e6.2	HTL	20	3	1	2	2	No	28
87	Arnside	Medieval enclosure	33	11c8.1	NAI	4	4	6	7	6	No	27
88	Walney Island	WW2 firing range	52	11c14.8	NAI	4	8	3	6	6	No	27
89	Port Carlisle	Post-medieval canal	110	11e8.3	MR	6	7	5	6	3	No	27
90	Port Carlisle	Post-medieval saltworks	113	11e8.3	MR	6	4	6	6	5	No	27

91	Hilbre Island	Post-medieval lifeboat station	145	11a5.11	HTL	8	8	3	4	4	No	27
92	Ulverston	Post-medieval quayside	37	11c11.6	NAI	14	3	4	4	2	No	27
93	Walney Island	WW1 trenches	54-59	11c14.8	NAI	4	5	4	6	7	No	26
94	Hilbre Island	Prehistoric lithic sites and midden	-	11a5.11	HTL	6	2	6	6	6	No	26
95	Port Carlisle	Post-medieval railway platform	126	11e8.3	MR	6	6	5	6	3	No	26
96	Sunderland Point	WW2 pillboxes	26, 27	11c4.3	NAI	16	7	1	1	1	No	26
97	Drigg	Post-medieval enclosure	227	11d4.1	NAI	2	9	5	6	3	No	25
98	Burgh Marsh	WW2 anti-aircraft obstructions	179, 181	11e8.4	MR	6	7	3	2	7	No	25
99	Jenny Brown's Point	Post-medieval jetty / bridge	24	11c7.5	NAI	18	2	2	2	1	No	25
100	Millom	Medieval saltworks	85	11c16.9	HTL	2	6	5	7	4	No	24
101	Brownrigg	Roman tower 21B	90	11e4.3	MR	2	3	9	2	8	Already designated	24
102	Arnside	Medieval lynchets	32	11c8.1	NAI	4	7	5	4	4	No	24
103	Silverdale	Jack Scout post-medieval limekiln	30	11c7.5	NAI	2	9	5	4	3	No	23
104	Eskmeals	Prehistoric occupation site	216	11d2.2	MR	2	3	6	6	6	No	23

105	Beckfoot	WW2 bombing range markers	115-117	11e5.1	MR	6	8	5	2	2	No	23
106	Jenny Brown's Point	20th century slipway	23	11c7.5	NAI	18	2	1	1	1	No	23
107	Crosscanonby	Post-medieval bank	91	11e4.3	MR	18	2	1	1	1	No	23
108	Cockersand	WW2 observation post	17	11c2.4	HTL 0-20 years HTL or MR 20-100 years	8	8	2	2	2	No	22
109	Arnside	Post-medieval jetty	40	11c8.4	HTL	14	2	3	1	2	No	22
110	Brighthouse	Possible medieval pit	231	11d3.1	NAI	14	2	3	1	2	No	22
111	Drigg	WW2 gun emplacement	84	11d4.1	NAI	18	1	1	1	1	No	22
112	Walney Island	WW2 air gunners range	49-51	11c14.8	NAI	6	3	2	5	5	No	21
113	Grune Point	WW2 trenches and slit trenches	94, 121-124	11e6.3	NAI	6	6	3	3	3	No	21
114	Burgh Marsh	Medieval ridge and furrow	182	11e8.5	MR	6	6	3	3	3	No	21
115	Burgh Marsh	WW2 bombing range marker	180	11e8.4	MR	6	6	3	2	4	No	21
116	Wyre Estuary	Post-medieval shipwrecks	196	11c1.4 11c1.8	HTL & NAI	8	4	4	2	3	No	21
117	Walney Island	WW2 wire fence	70	11c14.5	NAI 0-20 years MR 20-100 years	16	1	1	1	2	No	21
118	Arnside	Post-medieval limekiln	34	11c8.1	NAI	6	5	3	4	2	No	20

119	Heysham	Post-medieval wall	190	11c6.1	NAI	8	2	3	4	3	No	20
120	Grune Point	WW2 pillbox	93	11e6.3	NAI	8	7	2	2	1	No	20
121	Baycliff	Post-medieval quayside	39	11c13.1	NAI	14	1	2	1	2	No	20
122	Duddon Estuary	Post-medieval jetty	205	11c16.1	NAI	14	2	2	1	1	No	20
123	Ulverston	Post-medieval iron fragment	38	11c11.6	NAI	16	1	1	1	1	No	20
124	Pilling	Post-medieval peat cutting	196	11c2.3	HTL 0-20 years HTL or MR 20-50 years HTL 50-100 year	4	5	3	4	3	No	19
125	Arnside	Post-medieval structural fragment	35	11c8.1	NAI	14	2	1	1	1	No	19
126	Duddon Estuary	Post-medieval shipwreck	207	11c16.1	NAI	14	2	1	1	1	No	19
127	Drigg	WW2 minefield	209	11d4.1	NAI	14	2	1	1	1	No	19
128	Drigg	WW2 trench	208	11d4.1	NAI	14	2	1	1	1	No	19
129	Pilling	Medieval saltworks	14	11c2.3	HTL 0-20 years HTL or MR 20-50 years HTL 50-100 year	2	2	5	4	5	No	18
130	Walney Island	WW1/WW2 underground chambers	63	11c14.1	NAI	2	5	3	5	3	No	18
131	Drigg	WW2 military camps	82, 226	11d4.1	NAI	2	7	3	4	2	No	18

132	Dungeon Lane	WW2 anti-tank blocks	197	11a7.8	NAI	12	3	1	1	1	No	18
133	Aldingham	WW2 ruined building	235	11c13.1	NAI	14	1	1	1	1	No	18
134	Knockcross	Post-medieval saltworks	178	11e8.3	MR	2	3	5	2	5	No	17
135	Heysham	WW2 anti-tank block	157	11c6.1	NAI	6	8	1	1	1	No	17
136	Hilbre Island	Medieval St. Hildeburgh's Chapel	146	11a5.11	HTL	2	1	4	4	5	No	16
137	Ribble Estuary	Victorian firing range	11	11b1.15	HTL	2	4	4	2	4	No	16
138	Ribble Estuary	WW2 airfield	9	11b1.14	NAI	2	6	3	3	2	No	16
139	Brighthouse	Post-medieval copper working	224	11d3.1	NAI	2	2	3	6	3	No	16
140	Waberthwaite	Prehistoric occupation site	222	11d3.1	NAI	2	1	4	1	7	No	15
141	Grune Point	WW2 weapons pit	95	11e6.3	NAI	6	6	1	1	1	No	15
142	Burton Marsh	WW2 bombing decoy control	155	11c5.5	NAI	2	7	3	1	1	No	14
143	Walney Island	Post-medieval saltworks	64	11c14.1	NAI	2	2	3	3	4	No	14
144	Walney Island	WW2 decoy control building	202	11c14.1	NAI	2	5	2	2	3	No	14
145	Neston	Post-medieval quayside	154	11c5.5	NAI	4	6	1	2	1	No	14
146	Hilbre Island	WW2 air raid shelter	147	11a5.11	HTL	2	8	1	1	1	No	13

147		WW2 bombing decoy site	201	11c5.5	NAI	2	5	3	1	2	No	13
148		WW2 bunker	69	11c14.1	NAI	2	5	2	2	2	No	13
149		WW2 air-raid shelter	62	11c14.1	NAI	2	5	2	2	2	No	13
150		WW2 trenches	19, 20, 191	11c6.1	NAI	6	3	1	2	1	No	13
151		WW2 pillboxes	219	11a7.1	HTL	2	7	1	1	1	No	12
152		WW2 sewage works	4	11b1.15	HTL	2	4	2	1	3	No	12
153		Post-medieval railway platform	36	11c12.2	HTL	2	4	3	2	1	No	12
154		Post-medieval Airbank Quarry	131	11e1.1	NAI	2	3	3	2	2	No	12
155		Post-medieval peat cutting	177	11e7.7	MR	2	4	2	2	2	No	12
156		Post-medieval ridge and furrow	12	11b1.15	HTL	2	6	1	1	1	No	11
157		WW2 demolition debris	97	11e6.3	NAI	6	1	1	1	1	No	10
158		Post-medieval sluice gate	159	11c7.5	NAI	2	4	1	1	1	No	9
159		Post-medieval wall	3	11b1.14	NAI	2	3	1	1	1	No	8
160		WW2 military camp	10	11b1.15	HTL	2	2	2	1	1	No	8
161		20th century quarry	193	11c6.1	NAI	2	3	1	1	1	No	8

162	Walney Island	WW2 weapons pits	46-47	11c14.8	NAI	2	2	1	1	2	No	8
163	Walney Island	WW2 airfield platform	53	11c14.8	NAI	2	2	1	1	1	No	7
164	Walney Island	WW2 trench	48	11c14.8	NAI	2	1	1	1	2	No	7
165	Ribble Estuary	WW2 structures	5, 13	11b1.15	HTL	2	1	1	1	1	No	6
166	Ribble Estuary	WW2 gun emplacement	1	11b1.14	NAI	2	1	1	1	1	No	6
167	Ribble Estuary	WW2 pillbox	6	11b1.14	NAI	2	1	1	1	1	No	6
168	Walney Island	WW2 gun emplacement	45	11c14.8	NAI	2	1	1	1	1	No	6

Table 7.1 Prioritised list of sites recorded during NWRCZA Phase 2.

Crosby		Imminent Risk
Crosby		High Risk
Crosby		Intermediate Risk
Crosby		Low Risk

Table 7.2 Key to Table 7.1: prioritised list of sites recorded during NWRCZA Phase 2.

7.2 Priority sites of significance at ‘imminent risk’

The following is a site by site discussion of the sites identified as being at ‘imminent risk’ in the ranked assessment shown in Table 7.1. The reasons for the scoring of each site are discussed and possible management options for the threatened archaeological remains are identified and discussed and placed in order of preference.

7.2.1 Crosby and Formby Prehistoric Human and Animal Footprints

Crosby Prehistoric Human Footprints (SJ 3019 9938)

Crosby, Merseyside

Policy Unit 11a 8.1

Hold the Line

Formby Prehistoric Human and Animal Footprints (SD 2664 0678)

Formby Point, Merseyside

Policy Unit 11a 9.1

Managed Realignment

The archaeological assets comprising the preserved prehistoric human and animal footprints on Formby Beach, together with the newly recorded preserved human footprints at Crosby Beach, are especially significant. There are few archaeological remains that can provide such tangible links with past human life and behaviour as the actual footprints of prehistoric people. The Formby footprints show the movements of men, women and children, together with roe deer, red deer, wild boar, dogs/wolves, unshod ponies, aurochs, wading birds and unshod horses (Roberts 2009, 41). These are preserved within laminated silts and muds dated through Optically Stimulated Luminescence to the Late Mesolithic to Early/Mid Neolithic period and they represent a fascinating record of past environments and human activity (Roberts 2009, 40-41). Analysis has so far shown instances of playful children, apparently dancing around in circles, together with evidence of women and children on a slow-paced meander, possibly associated with gathering, and male footprints generally of a quicker pace and sometimes directly associated with animal movements (Roberts 2009, 43). In addition to these, a higher, dune-edge peat stratum dated to the Iron Age also contains the hoofprints of domesticated oxen, providing evidence of multi-period activity at the site and suggesting the existence of settlement beneath the dunes (Roberts 2009, 39). This deposit also has the potential to also contain important palaeoenvironmental information.

The human footprint site at Crosby was recorded for the first time in December 2011, although reported sightings have been made over the past 30 years (Mark Adams *pers. comm.*). This site has the potential to offer similar levels of preservation and knowledge gain as nearby Formby and is included here for this reason. There are only three other examples of preserved prehistoric footprints in coastal locations in Britain, at Low Hauxley Northumberland (Burn 2010, 305), the Severn estuary (Allen 2004) and Hartlepool Bay (Vaughan 2005). These sites therefore scored very highly due to their high rarity and undeniable significance.

The potential for further investigation and the potential for that to further our understanding of prehistoric life, lifestyles, and human and animal interactions is high at these sites, since new exposures of footprints happen regularly, as the evidence from Crosby shows, and since the full extent of the remains and whether they are associated

with any settlement is currently unknown. On this evidence the site scores very highly on potential and, as sealed deposits, their condition upon initial exposure is very good also giving them a very high score for their condition.

Once exposed, however, these remains are at immediate risk from further erosion and destruction (Roberts *et al.* 1996, 651) and as inter-tidal features they are offered no protection from damage caused by the actions of waves and blown sands, regardless of the SMP2 policy in place. Current estimates of shoreline retreat at Formby are as high as between 140m and 260m (NCERM 2012) and 231m and 681m (Halcrow 2011) within the next 100 years, which places the footprint sites at imminent risk, as well as any unknown sites within the extensive dune system that backs onto the beachfront. The threat to the remains at Crosby is not as severe in terms of scale, but the footprints are still inter-tidal and unprotected, placing them at imminent risk of coastal erosion. For these reasons both sites are given the maximum score for their level of threat.

A further observed threat to the Formby footprint sites is the use of 4-wheeled drive vehicles on the beach which were seen to cross, and damage, an area of exposed ungulate hoofprints in July 2011 (Figure 7.1).



Figure 7.1 Exposed laminated silt deposits bearing ungulate hoofprints damaged by vehicular action at Formby Beach, looking southeast (scale = 1m).

The nature of these footprint sites and the level of threat to the remains have led Roberts to state that '*in situ* preservation is impossible' (Roberts 2009, 39) and these sites are therefore not considered to be suitable candidates for designation as a Scheduled Monument, since designation will not ensure their survival. The Formby footprint exposures are included in the Sefton Coast proposed site for designation as a Marine Conservation Zone (MCZ 13 Sefton Coast). MCZs include archaeological as well as ecological conservation features. The site is due for designation in summer 2013 following a consultation period (Hopwood-Lewis *pers. comm.*).

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Request a consultation with heritage bodies on the proposed MCZ designation.
- The development of a formal monitoring strategy as the erosion of the dune system continues and the establishment of a local ‘shorewatch’-type initiative and formal reporting protocol to provide the means for local people to easily report newly exposed areas with preserved footprints, as well as any other exposed archaeological features in the area using pro forma record sheets. This should be combined with full recording of the footprints each time new exposures are revealed, utilising an accurate GPS plot of the full extent of the exposed deposit, together with a full, hand drawn plan of the deposit at a scale of 1:50 marking the location and direction of footprints and providing detailed drawings, measurements and photographs for each footprint at a scale of 1:20. As well as this recording strategy, casts of some of the best-preserved footprints could be taken and a full photographic survey of their visible extent made. Training could be provided for local volunteers in photogrammetric recording along the same lines as the rock art project. This would use a low cost digital camera and provided that the footprint was dry, this photographic survey could be used to produce a scaled 3D photogrammetric model of the footprint and footprint trails, possibly allowing exposures recorded at different times to be stitched together into one full landscape-scale model. As we have seen above, these recordings allow for the analysis of the direction and speed of travel, the sex, age and number of individuals, as well as the species of animals and their approximate numbers. The 3D model would also provide an attractive, interactive display tool that could be used for site reconstructions, as well as interpretive materials.
- Use of a ‘shorewatch’-type initiative, together with professional involvement, to provide ongoing monitoring of the visible extent of the footprints and basic recording to assess their condition and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The proposed MCZ designation would provide with the site some statutory protection, however it is unclear how this will translate into physical protection of the remains against erosion. The favoured option of the project team is the highest possible level of recording as this would provide the most information and contribute significantly to our understanding of the Late Mesolithic period both at a regional scale, and nationally/internationally, whilst also preserving the resource through record before it is lost as a result of natural processes. Working in partnership with local groups will also ensure a prompt response that will allow for the recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of exposures is recorded. **This is a relatively low-cost option and it is sustainable and gives local people ownership of the heritage in their area. It should only require professional support in the setting up and training phase.** If time and funding does not allow for full recording, then the next best approach is to utilise and encourage motivated local amateur/volunteer archaeologists to continually monitor the exposures and conditions on site. This approach has been attempted over the past two-three years since Gordon Roberts, who was responsible for the majority of recording and analysis at Formby, has moved away from the area (Roberts *pers. comm.*). A community-based recording project was initiated under the Sefton Coast Partnership by Liverpool Museums, and recorded significant new information, most notably the presence of the

Crosby footprints, but this is due to end this year without a suitable forward plan in place (Mark Adams *pers. comm.*). The least favourable option is to do nothing as the exposures and the dune system will eventually be completely exposed and removed through natural process, losing a nationally valuable archaeological resource.

7.2.2 Beckfoot Roman Cemetery and Milefortlet 15

Beckfoot Roman Cemetery and Milefortlet 15 (SJ 3019 9938)

Beckfoot, Cumbria

Policy Unit 11e9.1

Managed Realignment

This section deals with two sites recorded at Beckfoot; the Roman cemetery and the Roman Milefortlet 15 which were ranked second and sixth in this assessment respectively. The sites are linked geographically making it convenient to provide dual management options.

The remains of the cemetery and possible remains of the milefortlet are significant survivals of the extension of Hadrian's Wall along the North West Coast of England in the form of forts, milefortlets and towers. Mike Collins of English Heritage has stated that the cemetery site is of 'enormous significance for the archaeology of the Roman frontier-particularly as we know very little about the cemeteries associated with it' (Pitts, 2009, 7). Excavations of 12 trenches within the cemetery recorded the remains of eight cremation burials, four of which were excavated, and dated to the 3rd century (Healey 2007, 1-17). This provides evidence of a high density of features within the area of the cemetery which also uncovered the remains of a boundary ditch, possibly Iron Age in date (Healey 2007, 17). The survival of archaeological features is remarkable with complete jars containing human remains having been collected from the eroding dune face (Pitts 2009, 7). On the basis of this evidence, the site scored very highly in the significance, rarity and condition categories. The potential of the site to provide further knowledge gain is also scored highly, since the excavation covered only a fraction of the suspected area of the cemetery, and its aims were to assess the extent of the cemetery and characterise its remains, rather than to provide a full research analysis. The evidence of Pre-Roman occupation also requires further investigation, as these remains are also at risk of erosion and are not yet fully understood.

Milefortlet 15 is a Scheduled Monument and lies within the UNESCO World Heritage Site 'Frontiers of the Roman Empire (Hadrian's Wall)'. It had been thought to have been entirely lost to erosion (Bellhouse 1989, 47-8; Martin 2005, 5; Healey 2007, 17), however the Phase 2 survey recorded earthwork remains that were interpreted as the potential remains of this monument, as well as two possible cut features in the eroding dune face within its area. These features were just outside areas subject to excavation in 2006 and warrant further investigation. If the remains are those of the milefortlet, the evidence from the nearby cemetery site shows that the survival of archaeological features would be very good. The site has therefore scored reasonably highly in the condition category, and very highly in the significance and rarity categories. The site has the potential to provide knowledge gain in the form of ascertaining once and for all whether the milefortlet has been lost to erosion, as well as determining its exact location and mode of construction. For this reason it scored very highly in the potential category.

The milefortlet and cemetery sit side by side along the eroding coastal dunes in the south of Beckfoot. These are currently not provided with any shoreline protection, although a

planning application has been submitted to construct gabion walling in front of the remains of the cemetery in order to protect the coastal road behind it. NCERM predicts a loss of between 20m and 40m of shoreline in the next 100 years, under current management, which will see the complete destruction of both sites within this period (NCERM 2012). The remains are at immediate and ongoing risk of erosion. An added threat to both sites is the use of metal detectors in the area that was witnessed during the course of the Phase 2 survey. The cemetery currently has no statutory protection, although the milefortlet area is scheduled. The remains of both sites are also at risk during and after the works to construct the gabion walling to protect the coast road. Preliminary works have so far been conducted without archaeological monitoring and significant slumping of the remains of areas of known archaeological potential was noted during the course of the survey (Figure 7.2). This is a great cause for concern. For all of these reasons combined, both sites have received the maximum score in the threat category.



Figure 7.2 View of the area of Beckfoot cemetery in April 2012 showing machine scouring and subsequent slumping of material from above (netting is in place to deter nesting birds).

In view of the significance of the cemetery site, it is thought that these remains are a suitable candidate for designation. However the difficulties associated with attempting to preserve a site that is at such risk of erosion, may act against its designation, as there are limited options available to ensure the survival of these remains in situ.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Full-scale, open area excavation and recording of the site prior to its destruction.
- The development of a formal, professional monitoring strategy as the erosion of the dune system continues and the establishment of a local ‘shorewatch’-type initiative to provide the means for local people to easily report exposed archaeological features in

the area. This should be combined with full analysis and recording of find spots each time new artefacts or features are exposed, utilising an accurate GPS plot of the current line of erosion along the dune face, together with a full, hand drawn section of the area of interest with its location accurately recorded on the GPS plot. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the dunes continues. This will eventually provide the most comprehensive plan of the cemetery and milefortlet as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.

- Use of a 'shorewatch'-type initiative, together with professional involvement, to provide ongoing monitoring of the exposed dune face and basic recording and recovery of artefacts. This will assess the condition of the dune system and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option is the highest possible level of recording, consisting of full-scale open area excavation of the site. This would provide the most information and contribute significantly to our understanding of the Hadrianic period, whilst also preserving the resource through record before it is lost as a result of natural processes. However, this option would require the consent of both English Heritage and Natural England as the site lies within the Upper Solway Flats and Marshes SSSI. This makes large-scale open area excavation of the site unlikely. If consent cannot be granted, or if time and funding does not allow for open area excavation, then the next best approach is to formulate a professional monitoring strategy that will regularly assess the eroding dune face and work with, and encourage, motivated local amateur archaeologists to continually monitor the conditions on site. Working in partnership with local groups will ensure a prompt response that will allow for recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of features and find spots are recorded. The next most favourable option is to rely on local amateur archaeologists to monitor the dune system and provide a basic record of exposed features, with only limited professional support. This option will undoubtedly provide a patchy record of the site, most likely with different recording techniques used in different places and unreliable location information. Nevertheless, it is more favourable than the final option which is to do nothing, since this will see the unmitigated destruction of a nationally significant archaeological resource. The management option currently in place appears to be somewhere in-between the final two options and there is limited scope for further work or involvement at the site, unless funding is available.

7.2.3 South Walney Faunal Remains and Hoofprints

Faunal remains and ungulate hoofprints in eroding organic deposits (SD 20984 61005)
Walney Island, Cumbria

Policy Unit 11e14.3

No Active Intervention

The faunal remains and ungulate hoofprints in eroding inter-tidal deposits, recorded by local amateur archaeologist David Coward at South Walney, are potentially significant remains of prehistoric fauna in this area. Samples of a cow skull and antler have been submitted for radiocarbon dating as part of this project, the results of which will allow for a more accurate assessment of the significance of these remains. The preserved faunal remains lie within silts and muds that may also contain important palaeoenvironmental

information and also represent the remains of a past land surface that may host archaeological features associated with the animal remains. The remains have therefore been scored highly in the potential and significance category, on the assumption that they are prehistoric in origin. If the remains are indeed prehistoric, their condition is remarkable and they have been scored highly in the condition and rarity categories for this reason.

The faunal remains are currently under active erosion in the inter-tidal zone and this erosion is set to continue under current predictions of future shoreline evolution (Figure 7.3). Beach levels at the south end of Walney Island have been artificially raised by a system of groynes, however these are now redundant and a lowering of beach levels is predicted as sediment is transported to the sand and shingle spit on the southeastern corner of the island. It is most likely that this process is responsible for the exposure of these faunal remains, and there is clearly the potential for further remains to exist at this location that will be revealed by the process of beach lowering as erosion continues. Predicted shoreline retreat at the south end of the island is as high as 97m in the next 100 years (NCERM 2012), clearly putting these remains and other unknown remains at ongoing, high risk of coastal erosion. For this reason, the remains have received the maximum score in the threat category.



Figure 7.3 Exposed eroding silt and muds containing ungulate hoofprints and faunal remains at South Walney (scale = 1m) (© David Coward).

Similar to the human and animal footprints at Formby and Crosby, discussed in Section 7.2.1, the nature of these remains and the level of threat to the remains means that they cannot feasibly be preserved *in situ*. The site is therefore not considered to be a suitable candidate for designation as a Scheduled Monument, since designation will not ensure its survival. Also any human connection to these faunal remains has yet to be identified, limiting their archaeological significance. The site is located within the South Walney and Piel Channel Flats SSSI and therefore afforded some statutory environmental protection.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Radiocarbon dating of the faunal remains and palaeoenvironmental analysis of the silt and mud deposits to establish the sediment sequence and assess the viability of, and carry out, palynological analysis and radiocarbon dating on the deposits. Once this investigation has been completed, the significance of the deposits will be better understood, potentially leading to the development of a formal, professional monitoring strategy as the erosion of beach levels continues. This could include the establishment of a local 'shorewatch'-type initiative to provide the means for local people to easily report newly exposed areas with preserved faunal remains and hoofprints, as well as any exposed archaeological features. This should be combined with full recording and recovery of the remains each time new exposures are revealed, utilising an accurate GPS plot of the full extent of the exposed deposit, together with a full, hand drawn plan of the deposit at a scale of 1:50 marking the location and direction of hoofprints and providing detailed drawings, measurements and photographs for any faunal remains and archaeological features at a scale of 1:20.
- Use of a 'shorewatch'-type initiative, together with professional involvement, to provide ongoing monitoring of the visible extent of the exposed areas containing faunal remains and hoofprints, together with recovery of remains and the basic recording of the exposures to assess their condition and any increase/change in the nature of the threat faced in this location.
- Encourage the local HER to add the site to the Selected Heritage Inventory for National England (SHINE) which will highlight this area as one of potential archaeological significance and allow Natural England to manage impacts on the site during routine management of the SSSI.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the highest possible level of recording as this would provide the most information to assess the significance of the site, whilst also preserving the resource through record, before it is lost as a result of natural processes. Samples of the faunal remains have been submitted for radiocarbon analysis as part of this project and this will provide a firm basis for further work on the remains, and this will be in line with a more informed view of their significance as provided by the dating analysis. Working in partnership with local groups to record the remains will also ensure a prompt response that will allow for the recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of exposures is recorded. If time and funding does not allow for full recording, then the next best approach is to utilise and encourage motivated local amateur archaeologists to continually monitor the exposures and conditions on site. This will allow for the ad hoc recovery of faunal remains and the identification of new features, possibly archaeological, if these become exposed by future erosion. The remains on South Walney were recorded by a local amateur archaeologist, David Coward, who regularly visits Walney Island and reports new archaeological features and the risk of erosion on a regular basis. The current management of this site therefore sits somewhere near to this management option, although more formal professional involvement would be desirable. The least favourable option is to do nothing as the deposits will eventually be completely exposed and removed through natural processes, losing a potentially very significant palaeoenvironmental and archaeological resource, before it has been formally investigated and its significance fully appreciated.

7.2.4 Ravenglass Roman Fort

Ravenglass Roman Fort (SD 08758 95802)

Ravenglass, Cumbria

Policy Unit 11d3.1

No Active Intervention

The remains of the Roman Fort of *Gannaventa*, at Ravenglass, are a significant survival of the network of Roman forts that were established in Britain during the Romano-British period. The fort is a Scheduled Monument (139569) and lies within the 'Frontiers of the Roman Empire (Hadrian's Wall)' UNESCO World Heritage Site. Excavations of the southern portion of the site, between the railway and the shore, revealed that in its first phase, the fort was a small fortlet similar to the milefortlets built along Hadrian's Wall and down the North West Coast of England as far as Maryport. This earlier phase adds to the site's significance, as it may form evidence that the network of Hadrianic milefortlets and towers actually extended further south than Maryport, as far as Ravenglass, if not further. The excavations also revealed a high level of preservation and a continuous occupation and remodelling of the site from the 2nd to the 5th century (Potter 1979, 48-50). The fort is therefore considered to be of high significance and rarity and has a high potential to yield further information as only a small portion of the site has been excavated. It therefore scored highly in the significance, rarity and potential categories.

The fort has been damaged by the construction of the Carlisle to Barrow-in-Furness railway that bisects the site, leaving a small southern portion, subject to coastal erosion and a larger northern portion that was covered in dense vegetation until recently. The site has therefore scored lower in the condition category than in other categories, but the excavations do attest to a high level of preservation of remains.



Figure 7.4 View of the eroding western section of Ravenglass Roman Fort in March 2012, the remains of a wall in the foreground is allegedly a retaining wall for the fort that was in use c.30 years ago (scale = 1m).

As discussed previously, the NWRCZA project team believe that the NCERM predictions of future coastal erosion at the site are too conservative. NCERM predict low level erosion of between 3.4 and 6.6m in the next 100 years (NCERM 2012), however local knowledge states there has been a loss of *c.*10m of the fort in the past 30 years (Clifford Jones *pers. comm.*), and during the Phase 2 project period of only one year there has been observed erosion and the recovery of a significant quantity of archaeological artefacts eroded out of the cliff section (Figure 7.4). This testifies to ongoing significant erosion at the site at a rate that must be higher than the predicted values. For these reasons the site received the maximum score in the threat category.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Protection of the site in the form of limestone rock armouring along the eroding western extent.
- Full-scale, open area excavation and recording of unexcavated areas prior to the destruction of the western portion between the railway and the shoreline.
- The development of a formal, professional monitoring strategy as the erosion of the fort continues and the establishment of a local ‘shorewatch’-type initiative to provide the means for local people to easily report exposed archaeological features in the area. This should be combined with full analysis and recording of find spots each time new artefacts or features are exposed, utilising an accurate GPS plot of the current line of erosion along the dune face, together with a full, hand drawn section of the area of interest with its location accurately recorded on the GPS plot. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the fort continues. This will eventually provide the most comprehensive plan of the unexcavated areas as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.
- Use of a ‘shorewatch’-type initiative, together with professional involvement, to provide ongoing monitoring of the exposed dune face and basic recording and recovery of artefacts. This will assess the condition of the dune system and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the pro-active protection of the site with rock armouring, such as that seen to the south of the fort, or other suitable means. At present the small section of the fort in front of the railway line is providing the railway with protection against erosion. However, if the fort is left to erode, this will place the railway infrastructure at risk of coastal erosion and collapse and it is likely that coastal defence works will be installed at this point. The ideal solution to both problems, however, would be to proactively protect both the fort and the railway. This may necessitate an agreement between interested parties, but it would ultimately share the financial burden of construction and maintenance across all key stakeholders, making it a viable option for the preservation of part of a World Heritage Site. Rock armouring has been considered by the Lake District National Park Authority in the past, however this option was not carried forward as there were no guarantees that it would work at Ravenglass and it is a costly option that would require ongoing maintenance (John Hodgson *pers. comm.*).

If the site cannot be protected, then the next most favourable option is the full-scale open area excavation of the previously unexcavated parts of the western portion of the site, that are currently eroding out of the cliff face. This would preserve the resource through record before it is lost as a result of natural processes and would allow for any future excavation on the eastern portion of the site to be accurately tied-in with the stratigraphic sequence and structural remains on the eroding western side. If time and funding does not allow for open area excavation, then the next best approach is to formulate a professional monitoring strategy that will regularly assess the eroding dune face and work with, and encourage, motivated local amateur archaeologists to continually monitor the conditions on site. This may be achieved as part of an HLF funded project currently in development for investigations at the potential *vicus* site inland. This proposal includes the development of a local reporting system through the Portable Antiquities Scheme whereby local people can report artefacts that have been eroded from the cliff face and provide information on the current state of the monument (John Hodgson *pers. comm.*). Working in partnership with local groups will ensure a prompt response that will allow for recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of features and find spots are recorded. The next most favourable option is to rely on local amateur archaeologists to monitor the fort site and provide a basic record of exposed features, with only limited professional support. This option will undoubtedly provide a patchy record of the site, most likely with different recording techniques used in different places and unreliable location information. Nevertheless, is more favourable than the final option which is to do nothing, since this will see the unmitigated destruction of a nationally significant archaeological resource. The management option currently in place appears to be somewhere in-between the final two options and there is limited scope for further work or involvement at the site, unless a funding stream is available.

7.2.5 Aldingham Motte and Bailey

Aldingham Motte and Bailey (SD 27824 69772)

Aldingham, Cumbria

Policy Unit 11c13.1

No Active Intervention

Aldingham Motte and Bailey is a significant site associated with the early years of the Norman occupation of Cumbria. It is a Scheduled Monument (27682), usually attributed to either Roger de Poitevin or Michael le Flemming who held the site in the late 11th and early 12th century. Excavations of the eroding face of the motte and its moat revealed that the site was constructed originally as a ringwork castle, before being developed into a motte and bailey at later stage, prior to its abandonment in the 13th century. The motte is significant as it showed evidence of a timber revetment in its third phase of remodelling which would have given the motte the appearance of a timber drum rather than an earthen mound and is similar to only a small selection of excavated site across England (Davidson 1969, 24). The excavations revealed a high level of preservation of pottery remains (Mark Brennand *pers. comm.*) and the presence of waterlogged areas also suggests favourable conditions for the survival of organic deposits. For these reasons the site scored very highly in the significance and rarity and condition categories. The potential of the site to provide further knowledge gain is high since the original excavations were very limited in area and did not explore the interior of the bailey, nor the relationship between the motte and bailey and the nearby moated site. The phases of construction of the site are currently dated on the pottery remains, but tighter dating using modern techniques may allow us determine who was responsible for the site's

construction, and as an extension of this, to establish whether it functioned as a castle of conquest or a castle of consolidation. For these reasons, the site scored very highly in the potential category.

The eroding cliff face, on which the motte and bailey sits, is not currently provided with any shoreline protection. NCERM predicts a loss of between 10m and 50m of shoreline in the next 100 years, under current management, which will see the complete destruction of the motte and the almost complete destruction of the bailey within this period (NCERM 2012). The remains have undergone significant previous erosion that led to the rescue excavation conducted in the 1960s, but the remains have continued to erode since this period and are under immediate and ongoing high risk of erosion. This takes the form of direct erosion through wave action, erosion through land slippage, and erosion caused by water collected in the moat that discharged over the cliff face, exacerbating existing erosion at these points (Figure 7.5). There is limited scope to protect the remains through the construction of seaward defences as the height of the cliff face would make this uneconomical to construct and maintain. For these reasons the site received the maximum score in the threat category.

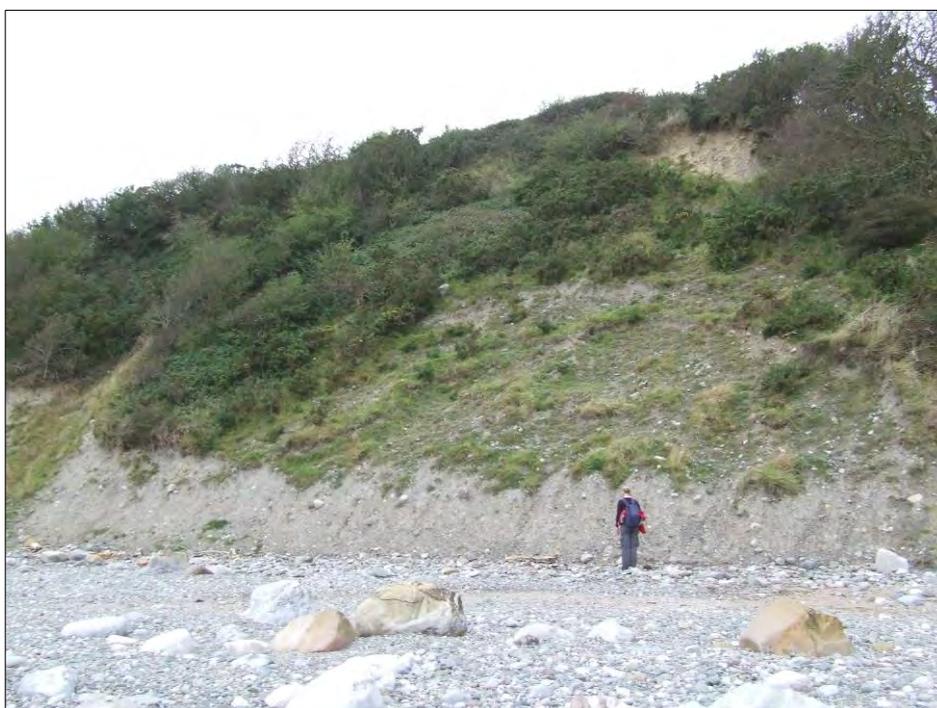


Figure 7.5 View of the eroding cliff face at Aldingham Motte and Bailey, the motte is directly above the person shown.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- The production of a detailed analytical earthwork and geophysical survey of the site with targeted sediment sampling.
- Targeted excavation and sampling prior to its destruction based on the results of the analytical, geophysical and sediment surveys.
- The production of a detailed analytical earthwork survey of the site and the development of a formal, professional monitoring strategy as the erosion of the castle continues. This should be combined with full analysis and recording of find spots

each time new artefacts or features are exposed, utilising an accurate GPS plot of the current line of erosion along the cliff edge, together with a full, hand drawn section of the area of interest with its location accurately recorded on the GPS plot. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the castle continues. This will eventually provide the most comprehensive plan of the site as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.

- Use of a 'shorewatch'-type initiative, together with professional involvement, to provide ongoing monitoring of the exposed dune face and basic recording and recovery of artefacts. This will assess the condition of the cliff face and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the highest level of recording which will provide a detailed plan of the earthwork remains prior to their excavation and will add significantly to our knowledge of this site, as well as other early Norman earthwork castles across England, where large-scale excavations are rare (Creighton 2008, 164). This option would preserve the resource through detailed record, before it is lost as a result of natural processes. The excavation of the site would require Scheduled Monument Consent and the consent of the landowner as the site is privately owned.

If time and funding does not allow for open area excavation, then the next best approach is to conduct geophysical survey at the site in order to target areas of high archaeological potential across the site for excavation. The costs for this approach would be significantly lower than open area excavation and it would also be less intrusive to the remains. Again this option would require Scheduled Monument Consent and the consent of the landowner. If consent for excavation cannot be granted, or if time and funding does not allow for excavation, the next best option is to formulate a professional monitoring strategy that will regularly assess the eroding sections of the motte and bailey and accurately recorded any archaeological features or finds. Under this option, the site is probably not suited to amateur involvement owing to the height of the cliff face and land ownership constraints. Amateur involvement could be utilised under the next most favourable option, although the level of knowledge gain from this option would be very low, limited to marking find spots on the beach in front of the cliff face and monitoring the site for signs of erosion.

The least favourable option is to do nothing to investigate the remains, since only a small-scale excavation of the site has been conducted and there is very high potential for further significant knowledge gain at this nationally important site.

7.2.6 Jenny Brown's Point Copper Smelting Site

Jenny Brown's Point Copper Smelting Site and Chimney (SD 46249 73417)

Jenny Brown's Point, Lancashire

Policy Unit 11c7.5

No Active Intervention

Jenny Brown's Point is a significant type-site for the metal working industry in Silverdale and Arnsdale that grew during the Industrial Revolution. The chimney that forms part of the site is a well-maintained Grade II Listed Building (181949), and an associated jetty

and remains of buildings have been revealed through erosion of the marshland around the chimney since 1996. The location of the site within the Arnside and Silverdale AONB and the frequency with which it is visited by walkers and tourists make it a significant site, where the story of the past industrialisation of this now tranquil area could be presented. The site is thought to have been operational between 1780 and 1820, but it has been under-researched and as such it is currently ill-understood, particularly in terms of the processes of manufacture that took place. The potential for further work to shed light on this site is therefore very high and the eroding remains of buildings may add significantly to our knowledge of how the site operated and the purpose of the standing chimney and why it survived when the rest of the site was either demolished or decayed. The site has therefore scored reasonably highly in the significance, rarity and potential categories, but it has scored lower for its condition since all of its buildings, save for the chimney, survive as foundations only.

The remains of the jetty and building foundations adjacent to the chimney are being exposed by coastal erosion and no defences are in place at this site. They are therefore subject to damage by erosion once exposed, and there does not appear to be any bonding material between the stones of the jetty, making it a very unstable structure. NCERM predicts a loss of between 3.4m and 6.6m of shoreline in the next 100 years, under current management, which seems quite a low level of erosion, but one that will see the complete destruction of the jetty, buildings and chimney within this period (NCERM 2012). For these reasons the site received the maximum score in the threat category.



Figure 7.6 View of the eroding saltmarsh around the standing chimney at Jenny Brown's Point.

As stated above, the chimney is currently designated as a Grade II Listed Building and the project team consider that the associated remains of the jetty and building foundations adjacent to chimney, are also suitable candidates for designation in relation to the chimney. These remains form a group that gives the chimney context and will add to the interpretation and understanding of the site.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Add the site to the Industrial Heritage at Risk Register and the next 5 Year Management Plan for the Arnsdale and Silverdale AONB. Scope funding options for shoreline defences and construct defences in front of the jetty.
- Excavation of remaining areas of marshland around the chimney to trace and record building plans and investigate the relationship between the buildings and the chimney. This should be combined with documentary and map-based research on the site, which may give an indication of its former use and technological developments within its operational period. Scope funding to protect the chimney or have it relocated to an appropriate museum.
- The development of a formal, professional monitoring strategy as the erosion of the marshland continues. This should be combined with full analysis and recording of the exposed building foundations hand-drawn at a scale of 1:50 with photographs each time new features are exposed. Accurate location data should be recorded using GPS technology and a plot of the current line of erosion of the marshland. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the site continues. This will eventually provide the most comprehensive plan of the site as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.
- Use of a 'shorewatch'-type initiative, to provide ongoing monitoring of the exposed buildings and basic recording and recovery of the newly exposed area. This will assess the condition of the site and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is to bring the site to the attention of relevant bodies who may be able to source funding for the construction of shoreline defences in front of the remains of the copper smelting site. It is envisaged that this would be similar to the defences put in place at Crosscanonby saltworks in Cumbria in 1996 (Figure 7.7), which are proving effective in delaying/preventing erosion at that site. The low levels of predicted erosion suggest that any defences erected at Jenny Brown's Point should also be effective.

If shoreline defences are not an acceptable management option for the site, the most acceptable solution is to fully excavate and record the remains of building foundations and conduct historical research into the site. This will improve the understanding of the site and its significance, as well as establishing the relationship between the buildings and the standing chimney. This option would preserve the resource through detailed record, before it is lost as a result of natural processes.

If time and funding does not allow for open area excavation, the next best option is to formulate a professional monitoring strategy that will regularly assess the eroding remains of buildings and accurately record any newly exposed areas or artefacts. This could be achieved working in partnership with motivated local amateur archaeologists and would allow for the remains to be monitored and recorded at the lowest possible cost. The least favourable option is to do nothing to investigate the remains, since they are currently ill-understood and may be lost to erosion before their significance is fully appreciated.



Figure 7.7 Localised defences at Crossscanonby saltworks, erected to protect these industrial remains in 1996 and currently working effectively against erosion.

7.2.7 North Walney Lithic Scatters

North Walney lithic scatters and possible settlement sites (SD 17718 73482)
Walney Island, Cumbria

Policy Unit 11e14.8

No Active Intervention

The flint scatters representing possible prehistoric settlement sites on North Walney, recorded by local amateur archaeologist David Coward, are significant remains of prehistoric occupation in this area. Previous small-scale interventions on the north of the island have discovered hearth sites and large quantities of flint artefacts (Mark Brennand *pers. comm.*), suggesting that the level of preservation of remains is very good and making Walney Island significant in terms of our understanding of the prehistoric exploitation of the North West coastal zone. The raised beach deposit also overlies an eroding organic deposit of silts and muds and further study of this deposit may reveal valuable palaeoenvironmental information in association with the remains. For these reasons the site has scored very highly in the significance, condition, potential and rarity categories.

The flint scatter most at risk in North Walney consists of various worked flint pieces, shell and small animal bones eroding out of a raised beach deposit on the North End of the Island where there is also evidence of burnt stones, possibly forming a prehistoric hearth (David Coward *pers. comm.*). These are currently under active erosion and there are several other scatter sites a short distance inland that are also at risk of erosion and dune blow-outs (Figure 7.8). Halcrow suggest that blow-outs within the dune system may enlarge under present management, but that this is dependent upon the configuration of the Scarth Channel (Halcrow 2002). Otherwise they predict that shoreline will remain stable with limited loss as a result of sea-level rise and its effect on the resistant scars along the coastline (Halcrow 2011). This assessment does not appear valid in light of the

observed erosion at this site over the winter of 2011, where one storm event could apparently remove as much as 1m from localised areas of eroding dune face (David Coward *pers. comm.*). NCERM predict a loss of between 3.4m and 6.6m in the next 100 years (NCERM 2012), and although this is a low level of predicted loss, it will see the further destruction of these already eroding remains. On this evidence the flint scatters on North Walney received the maximum score in the threat category.



Figure 7.8 Eroding dune face at North Walney containing lithic scatters and possible hearth site, together with eroding silt deposit on the shoreline (scale = 1m) (© David Coward).

The nature of these remains and the level of threat to the remains means that they cannot feasibly be preserved *in situ*. The site is therefore not considered to be a suitable candidate for designation, since designation will not ensure its survival.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Targeted excavation and recording of the currently eroding site and palaeoenvironmental analysis of the silt and mud deposits to establish the sediment sequence and assess the viability of, and carry out, palynological analysis and radiocarbon dating on the deposits. Test pitting along the eroding dune system to establish the nature and extent of any further prehistoric remains along the most at risk coastal sections. Once this investigation has been completed, the extent and significance of the deposits will be better understood and appropriate management strategies can be produced.
- Depending on the results of test pitting there may be a valid argument for full scale open area excavation of the at risk remains along the eroding dune system.
- The development of a formal, professional monitoring strategy as the erosion of dunes continues. This could include the establishment of a local 'shorewatch'-type

initiative to provide the means for local people to easily report newly exposed archaeological features. This should be combined with full excavation, recording and recovery of remains each time new features are exposed, utilising an accurate GPS plot of the current line of erosion of the dune face, together with a full, hand drawn section of the area of interest with its location accurately recorded on the GPS plot. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the dunes continues. This will eventually provide the most comprehensive plan of the prehistoric occupation of the dunes as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.

- Use of a 'shorewatch'-type initiative, together with professional involvement, to provide ongoing monitoring of the dune face and recovery and recording of eroded artefacts. This will assess their condition and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the highest possible level of recording as this would provide the most information to assess the significance of the site, whilst also preserving the resource through record, before it is lost as a result of natural processes. This would involve the excavation of the known site together with a palaeoenvironmental assessment of the area and an assessment of whether there are further sites at risk along the eroding dune face. This assessment would form a firm basis for further work on the remains that will be in line with a more informed view of their extent and significance. This may lead to a desire for targeted or full-scale open area excavation, although this would require consent from Natural England as the site lies within the Duddon Estuary SSSI. Alternatively it may be the case that a 'shorewatch'-type initiative is deemed to be the most appropriate level of response to the threat at this location. Funding for this assessment could be sought through the Heritage Lottery Fund, or the test-pitting assessment could be carried as part of research for an Msc thesis if a suitable candidate could be identified.

Once the initial assessment has been completed, working in partnership with local groups to record the remains will also ensure a prompt response that will allow for the recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of exposures is recorded. If time and funding does not allow for full recording, then the next best approach is to utilise and encourage motivated local amateur archaeologists to continually monitor the exposures and conditions on site. This will allow for the ad hoc recovery of eroded artefacts and the identification of new features, if these become exposed by future erosion. As with the faunal remains on South Walney, this site was recorded by a local amateur archaeologist, David Coward, who regularly visits Walney Island and reports new archaeological features and the risk of erosion on a regular basis. The current management of this site therefore sits somewhere near to this management option, although more formal professional involvement would be desirable.

The least favourable option is to do nothing as the prehistoric remains will continue to erode out of the dune face losing all contextual information and will eventually be completely removed through natural process, losing a potentially very significant palaeoenvironmental and archaeological resource, before its significance has been fully appreciated.

7.2.8 Drigg Possible Burnt Mounds

Drigg possible prehistoric burnt mounds and lithic scatter sites (SD 04583 97627)

Drigg, Cumbria

Policy Unit 11d4.1

No Active Intervention

The possible burnt mounds at Drigg are potentially significant remains of prehistoric occupation in this area, however some question exists as to their interpretation since partial excavations of the site conducted in 2000 argued that the recorded features could have been formed through natural processes (Croft 2002, 17). The debate regarding the interpretation of these remains continues and the results of a second excavation by Oxford Archaeology North have yet to be reported (Mark Brennand *pers. comm.*). The burnt mound in question has a high level of preservation with a timber 'structure' and a 'bark mat' recorded during the partial excavations of the site. The mound is found in association with a peat deposit that has been sampled for radiocarbon dating and palynological analysis as part of this project. The palynological analysis states that the deposit is most likely of mid-Holocene, pre-Neolithic age, due to the range of taxa present and specifically the presence of elm (see Section 6.17) and this is corroborated by the radiocarbon dating programme which placed the initial formation of the peat at c. 5230–5040 cal BC (see Section 6.17.2). The assessment of the significance of these remains and a further possible burnt mound identified by David Coward that has not been excavated, has been made on the assumption that they are in fact the remains of a burnt mound, rather than a natural feature, and for this reason they have scored reasonably highly in the significance and condition categories and slightly lower in the rarity category.



Figure 7.9 Eroding dune face at Drigg containing the partially excavated remains of a possible burnt mound and an extensive peat deposit.

The potential of the remains to reveal further information is also scored highly since only further work can ascertain whether these remains are actually archaeological and as an

extension of that, whether they require a more pro-active management strategy than is currently in place. The potential burnt mound site identified by David Coward has not been subject to excavation and if the levels of preservation are similar to those at the partially excavated site, then the potential of this site to host valuable information is very high.

The burnt mounds at Drigg were revealed by the process of coastal erosion, although the site identified by David Coward has now stabilised and vegetative growth has been established in that area. The sites are at risk of ongoing erosion with estimates of shoreline retreat being between 53m and 97m in the next 100 years under current management (NCERM 2012). This will see the complete destruction of the burnt mound sites and significant damage or complete destruction of the peat band within the dune system. This level of erosion also places any further, as yet unrecorded, sites within the dune system at significant risk of destruction by coastal erosion and for all of these reasons the site has received the maximum score in the threat category.

The nature of these remains and the level of threat to the remains means that they cannot feasibly be preserved *in situ*. The site is therefore not considered to be a suitable candidate for designation, since designation will not ensure its survival.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Further excavation and recording of the currently eroding site and that identified by David Coward, together with test pitting along the eroding dune system to establish the nature and extent of any further prehistoric remains along the cliff edge at most at risk coastal sections. Once this investigation has been completed, the extent and significance of the deposits will be better understood and appropriate management strategies can be produced.
- Depending on the results of test pitting there may be a valid argument for targeted excavation of the at risk remains along the eroding dune system.
- The development of a formal, professional monitoring strategy as the erosion of dunes continues. This could include the establishment of a local 'shorewatch'-type initiative to provide the means for local people to easily report newly exposed archaeological features. This should be combined with full excavation, recording and recovery of remains each time new features are exposed, utilising an accurate GPS plot of the current line of erosion of the dune face, together with a full, hand drawn section of the area of interest with its location accurately recorded on the GPS plot. This will provide detailed drawings, measurements and photographs for each exposed feature or artefact, that can be reliably related to other exposed features as the erosion of the dunes continues. This will eventually provide the most comprehensive plan of the prehistoric occupation of the dunes as can be achieved without full-scale excavation, however details such as the stratigraphic relationships between recorded features may be lost using this technique.
- Use of a 'shorewatch'-type initiative, together with professional involvement, to provide ongoing monitoring of the dune face and recovery and recording of eroded artefacts. This will assess their condition and any increase/change in the nature of the threat faced in this location.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the first two options as this would provide the most information to assess the significance of the sites, whilst also preserving the resource through record, before it is lost as a result of natural processes. This would involve the excavation of the known site together with an assessment of whether there are further sites at risk along the eroding dune face. Excavation would require consent from Natural England as the site lies within the Drigg Coast SSSI. This assessment would form a firm basis for further work on the remains that will be in line with a more informed view of their extent and significance. This may lead to a desire for targeted excavation, or it may be the case that a 'shorewatch'-type initiative is deemed to be the most appropriate level of response to the threat at this location. Funding for this assessment could be sought through the Heritage Lottery Fund, or the test-pitting assessment could be carried as part of research for a Msc or PhD thesis if a suitable candidate could be identified.

Once the initial assessment has been completed, working in partnership with local groups to record the remains will also ensure a prompt response that will allow for the recording to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of exposures is recorded. If time and funding does not allow for full recording, then the next best approach is to utilise and encourage motivated local amateur archaeologists to continually monitor the exposures and conditions on site. This will allow for the ad hoc recovery of eroded artefacts and the identification of new features, if these become exposed by future erosion.

The least favourable option is to do nothing as the prehistoric remains will continue to erode out of the dune face losing all contextual information and will eventually be completely removed through natural process, losing a potentially very significant palaeoenvironmental and archaeological resource, before its significance has been fully appreciated.

7.2.9 Nethertown and St. Bees Medieval Fish Traps

Nethertown medieval fish trap (NX 98906 07021)

Nethertown, Cumbria

Policy Unit 11d5.5

No Active Intervention

St Bees medieval fish trap (NX 96787 10456)

St Bees, Cumbria

Policy Unit 11d5.7

Hold the Line

The stone-built fish traps at Nethertown and St. Bees are significant survivals of the medieval exploitation of the sea as a fishing resource. Owing to their location these fish traps may also have an association with the nearby St Bees Priory as fishing rights in this area were most likely controlled by this religious establishment. The traps are also significant due to their construction material since Jecock states that fish weirs constructed entirely of rubble walls seem to be confined to the South West Coast of England and Wales (Jecock 2011, 3). If these traps were originally built entirely of rubble walling, therefore, these are significant and rare site type in this region. For these reason the sites have received very high scores in their significance, condition and rarity categories.

The potential of these sites to provide further knowledge gain is also relatively high, since if there are any surviving timber elements, these may be suitable for dendrochronology or radiocarbon dating. This would allow for a better understanding of these traps, and their significance in terms of surviving coastal fish weirs both locally and nationally. There is also scope to conduct documentary research relating to the ecclesiastical exploitation of sea resources in this area that may provide a link between these sites and the nearby priory. For these reasons the sites also scored highly in the potential category.

Both sites are undergoing active erosion and as inter-tidal features these sites will not be provided with any protection under the SMP2 regardless of the policy in place. The fish trap at Nethertown is at a slightly higher risk than that at St Bees as it lies on a less sheltered frontage, however both sites are considered to be at high risk of erosion and damage. They have therefore scored very highly in the threat category.



Figure 7.10. Inter-tidal stone-built fish trap at Nethertown.

Although these remains are inter-tidal and are therefore undergoing erosion, they are robust structures that testify to the level of effort placed in exploiting fishing resources in the medieval period. If the fish traps can be associated with the nearby St Bees priory, then they would become suitable candidates for designation. The site lies within the St Bees SSI and is therefore afforded some statutory environmental protection.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Further investigation of the fish traps to identify any surviving timbers suitable for dating and to identify any other previously unrecorded fish traps in this locality. One such possible trap (137) was identified at St Bees during the Phase 2 survey and there is a high possibility that further traps remain to be discovered. This work should be combined with documentary research to assess the level of exploitation of sea

resources at St Bees Priory and the production of a full 1:50 scale drawn record of the fish traps, together with a photographic record.

- Use of a 'shorewatch'-type initiative, to provide ongoing monitoring of the fish traps and report any newly discovered traps or archaeological features that become exposed. This will assess the condition of the site and any increase/change in the nature of the threat faced in these locations.
- Encourage the local HER to add the site to the Selected Heritage Inventory for National England (SHINE) which will highlight this area as one of archaeological significance and allow Natural England to manage impacts on the site during routine management of the SSSI.
- Do nothing and allow the resource to be lost.

The favoured option of the project team is the first option as this would provide the most information to assess the significance of the sites, whilst also preserving the resource through record, before they are further damaged as a result of natural processes. Funding could be sourced from the Heritage Lottery Fund for this investigative work and the St Bees fish trap lies within or near the St Bees Head Heritage Coast, and funding may be made available for built heritage work within this area. The second most favoured option is the development of a 'shorewatch'-type initiative to monitor the sites and report on any previously unrecorded archaeological features or fish traps identified as well as providing an assessment of the condition of the site and the level of threat to the identified remains.

The least favourable option is to do nothing as this does not provide a mechanism through which future damage or changes in threat to the remains can be identified and reported. This may lead to the loss of these remains before their full significance has been appreciated.

7.3 Priority sites of significance at 'high risk'

Section 7.2 outlined management options for the most significant and most at risk sites in the prioritised assessment. The following section provides a short overview of sites in the 'high risk' category, where a number of very significant sites are located that warrant discussion.

Swarthy Hill hillfort (107) is the only coastal hillfort in Cumbria. Excavations demonstrated that the remains of the hillfort's ditches and evidence of past ramparts survive well, despite the lack of surface expression at this site. They also showed that the site has been damaged by erosion along its western side (Scheduled Monument Description). At the time of survey a notable section of land slip was noted at the site which has the potential to damage the scheduled remains of the hillfort. Although this site is under very low risk of coastal erosion (depending on the maintenance of the coast road and defences at Crosscanonby saltworks), landslips are a significant problem and will cause the loss of archaeologically sensitive ground on the top of the hill. It is advised that a monitoring strategy be introduced at this site and it should be considered for inclusion in the Heritage at Risk Register. The site is currently within a Higher Level Stewardship Agreement (HLS) and this may provide funding for consolidation works on the cliff edge to prevent or minimise further land slips.

Cockersand Abbey (18) is undergoing active localised erosion above the seawall. The future potential for erosion/damage could see the loss of the possible medieval slipway, which is a rare survival in a monastic context, alongside the loss of parts of the cloister and outer precinct. The setting of the remains is proposed to be returned to marshland, which would mirror the surrounding landscape of the monastery when it was originally built. This is a potential positive outcome of the 'Managed Realignment' scenario. Priorities for the future should include the production of a formalised coastal erosion risk management plan that outlines the system that will be put in place to mitigate the loss of parts of this nationally significant site. The potential 'Managed Realignment' scheme should be modelled prior to introduction and its effects upon the scheduled remains should be noted and given weight in the decision-making process. The site is within an Entry Level Stewardship Agreement (ELS) and this should provide some protection for the archaeological remains.

The remains of the medieval port and village at Skinburness (98) are significant both in terms of their level of preservation and their association with Edward's I expeditions into Scotland. As yet, the only formal investigation of these remains has been the present Phase 2 survey and there is clearly scope for further work to increase our knowledge of this site, as well as the public enjoyment of it. There is currently no interpretation of the remains which lie directly adjacent to a coastal footpath frequented by local people, birdwatchers and tourists alike. The risk to the site is difficult to understand, since there is a high level of discrepancy between modelled predictions of future shoreline change (see Section 5.16.8) and this will require monitoring going forward as one prediction would involve the entire destruction of the site within the next 100 years. It is also recommended at the site is added to the Selected Heritage Inventory for National England (SHINE) which will highlight this area as one of archaeological significance and allow Natural England to manage impacts on the site during routine management of the SSSI and may also encourage the establishment of a stewardship agreement at the site.

Sambo's Grave at Sunderland Point (29) is considered to be of high significance as a popular memorial to the Lancaster slave trade. It has no statutory protection and will be lost to coastal erosion according to current predictions of landward retreat under the preferred SMP2 policy (NCERM 2012). This predicted level of coastal retreat seems very high considering the conditions observed on site during Phase 2 and for this reason the level of threat to the site was lowered in the prioritisation table. Future management should look first to the possibility of providing coastal defence works that would protect the site from erosion, whilst also not endangering sites elsewhere along the coast. This would require the identification of a suitable funding stream for site works and the establishment of a suitable body to take responsibility for ongoing maintenance. This area is within a Higher Level Stewardship Agreement which may provide an avenue for protection of these remains. It is also recommended at the site is added to the Selected Heritage Inventory for National England (SHINE) which will highlight this area as one of archaeological significance. If defence works are not an option, mitigation could include excavation of the site and reburial of the remains, though this comes with its own set of complications and may be seen as further mistreatment of this individual who has come to symbolise the injustices suffered at the hands of slave traders. A further point to consider is that the identification of the location of Sambo's Grave was made 60 years after his burial. The memorialised grave site may not be the actual location of his remains, in fact this is unlikely since the location of his grave was not recorded with any degree of accuracy at the time of his burial. If the memorialised site was excavated and seen to contain no remains, this would raise questions as to the purpose of relocating the

memorial, though it may also serve to reinforce the very sentiments that have made this site a popular memorial to these 'lost' lives. It is clearly an emotive issue for many people and its future survival should be managed with an appropriate degree of sensitivity.

The significance of the undated trackway at Glasson (240) was difficult to assess as so little is known about the site. It was recorded for the first time during the Phase 2 survey. Future work to ascertain the date of the site should be an immediate priority, as it has the potential to be a very significant feature, for example if it is Roman or earlier. The site is undergoing active erosion and requires a prompt response, if it is to be saved or recorded prior to its destruction through natural processes.

Finally the fish traps around Morecambe Bay which have been assessed during Phase 2 as post-medieval (160-163, 166, 190 and 221) may date to the medieval period and are important cultural indicators of past and present exploitation of marine resources. They form a group alongside the various ship wrecks (7, 8, 16 and 196), wharfs and jetties (23, 24 and 189) recorded that lie partially buried in its ever shifting sands. These sites are locally significant to Morecambe Bay and the North West more generally. Priorities for the future should be in investigating the date and significance of these remains, particularly the fish traps, which may have associations with the local ecclesiastical orders. This would inform appropriate future management and erosion and mitigation for these sites.

Position	Site Name	Site Type	NWRCZA UID	Policy Unit	Threat	Condition	Significance	Potential	Rarity	Potential to Designate		Total /60
										Yes/No/Already Designated		
1	Cleveleys	Inter-tidal peat	244	11b 2.5	20	9	10	9	10	No		58
2	Walney Island	Inter-tidal peat	245	11c 14.5	18	8	10	10	10	No		56
3	Annas Mouth	Inter-tidal peat	248	11d 2.1	20	7	9	10	9	No		55
4	St Bees	Inter-tidal peat	246	11d 7.1	20	7	10	7	10	SSSI		54
5	Drigg	Peat in dune face	212	11d 4.1	16	7	10	10	8	SSSI		51
6	Beckfoot	Inter-tidal peat	242	11e 5.1	20	5	9	6	9	SSSI		49
7	Heysham	Inter-tidal peat	243	11c 6.2	20	2	8	4	6	SSSI		40
8	Eskmeals /Bootle	Inter-tidal peat	-	11d 2.2	6	8	8	9	8	No		39

Table 7.3 Prioritised list of peat sites sampled and dated during NWRCZA Phase 2.

7.4 Priority peat sites of significance at ‘imminent risk’

The following is a site by site discussion of the sites identified as being at ‘imminent risk’ in the ranked assessment shown in Table 7.3. Each site is discussed in turn and the reasons for the scoring of each site are discussed. This is followed by a discussion of possible management options for these threatened sites.

7.4.1 Cleveleys, Lancashire

Cleveleys inter-tidal peat bed (SD 3111 4344)

Cleveleys, Lancashire

Policy Unit 11b 2.5

Hold the Line

The exposed inter-tidal peat at Cleveleys, Lancashire was identified and brought to the attention of the project team by Peter Iles. It lies in a coast parallel tidal channel between a large sand berm and the present sea wall. At least five separate discrete exposures of organic material were recorded, comprising one upper peat with preserved *in situ* tree boles, and a lower organic-rich silt.

Pollen samples were taken from this peat bed and revealed that the preserved pollen concentrations are low. Radiocarbon dating samples were also taken and indicated that the peat bed began to accumulate in the Windermere Interstadial at a date of *c* 13110–12150 cal BC, and that inundation by the sea here occurred by 7040–6680 cal BC (see also Chapter 6).

This is the only known exposed inter-tidal peat of this age on the North West coast and is a very rare survival on the British coast more generally. It has received the maximum score for significance and rarity for this reason. Whilst the recorded pollen concentrations were low, there are clearly other avenues of research that will allow this resource to be used to recreate the environment in which this peat formed. This would provide a record of the environment and human habitat from before the end of the last Ice Age and throughout a large portion of the Mesolithic period. For this reason the site has scored very highly in the potential category. The condition of the peat bed is also very good, especially considering its age (Figure 7.11). There is a depth of at least 0.21m of peat exposed with surviving organic silts of significant depth beneath.

This site is not currently under any form of designation or legal protection. It lies exposed in the inter-tidal zone and throughout the course of the NWRCZA Phase 2 project it was visited on three occasions. On each occasion the peat bed was visible and the number of discrete exposures increased over the course of the project. Whilst this may be representative of the normal sediment transport cycle in this area, as the project did not run for a sufficient length of time to properly assess these parameters. It may also be an indication that the circumstances that have led to the initial exposure of this peat bed are worsening, meaning that over time more and more of the peat will become exposed and eroded by the tides. The SMP2 policy of Hold the Line will do nothing to protect this peat as it lies in the inter-tidal zone. The currently exposed areas of peat will be damaged by every tide and there was also evidence of animal intrusion into the surface of the peat in the form of crustaceans and wading birds. The site has therefore been given a maximum score in the threat category.

Although this highly significant peat is currently in very good condition, this will not be maintained for long in the present circumstances.



Figure 7.11 Exposed peat bed at Cleveleys, looking north (scale = 1m).

7.4.2 Walney Island, Cumbria

Walney inter-tidal peat bed (SD 1887 6521)

Western Coast of Walney Island, Cumbria

Policy Unit 11c 14.5

No Active Intervention 0-20 years

Managed Realignment 20-100 years

The exposed inter-tidal peat on the west coast of Walney Island, Cumbria was identified and brought to the attention of the project team by David Coward. It lies in an inter-tidal sand flat with a high proportion of cobbles backed by a relatively steep, storm-derived sand-pebble bank. The peat is generally exposed in small patches of $c.5-10m^2$ with *in situ* tree boles also visible on its upper surface.

Pollen samples were taken from this peat bed and revealed that pollen concentrations and preservation were generally very good throughout the sequence. A relatively low range of taxa were recorded, with *Betula*, *Corylus* and Poaceae the main components. Radiocarbon dating samples were also taken and indicated that the peat bed began to accumulate in the early Holocene at $c.9230-8830$ cal BC and that inundation by the sea here occurred by 6250–6090 cal BC. This peat therefore spans the majority of the Mesolithic period.

Like Cleveleys this is a significantly earlier date for an exposed inter-tidal peat than was previously known on the North West coast and is a rare survival on the British coast more generally. It has received the maximum score for significance and rarity for this

reason. The recorded pollen concentrations also add to the significance of the site as these indicate that there is good potential to undertake further pollen analysis to recreate the environment in which this peat formed. This could also be teamed with other analytical techniques and has high potential to provide a record of the environment and human habitat from the mid-Holocene and throughout the later Mesolithic period. For this reason the site has scored the maximum in the potential category. The condition of the peat bed is also very good, as coring and lateral tracing identified a depth of $\approx 0.5\text{m}$ of peat, overlying diamicton.

This site is not currently under any form of designation or legal protection. It lies partially exposed in the inter-tidal zone and throughout the course of the NWRCZA Phase 2 project it was visited on two occasions. On each occasion the peat bed was visible although on the second visit portions of the peat that had been exposed were covered in a thin layer of sand and cobbles (Figure 7.12). This may be representative of the normal sediment transport cycle in this area, as the project did not run for a sufficient length of time to properly assess these parameters. This pattern of exposure followed by partial protection is beneficial to the survival of this peat in comparison to one that is permanently exposed; however the presence of cobbles and larger stones in the sediment will damage the peat more so than if it consisted only of sand. The SMP2 policy of No Active Intervention followed by Managed Realignment will do nothing to protect this peat and there may be adverse effects from managed realignment scheme. The currently exposed areas of peat will be damaged by every tide and there is only a thin layer of sand and cobbles protecting the unexposed areas. It has been awarded a very high score in the threat category for these reasons.



Figure 7.12 Peat bed with thin covering of sand and cobbles on the western shore of Walney Island, looking northwest (scale = 1m).

7.4.3 Annas Mouth, Cumbria

Annas Mouth inter-tidal peat bed (SD 0768 8841)

Mouth of the River Annas, Cumbria

Policy Unit 11d 2.1

No Active Intervention

The exposed inter-tidal peat at Annas Mouth, Cumbria was previously recorded as a site of interest in the English Heritage Coastal and Inter-tidal Peat Database (No: 527). It lies in an inter-tidal sand flat with a high proportion of cobbles backed by a predominantly cobble-sized storm beach. At least two separate organic-rich units are exposed on the lower foreshore, and their surface geometries suggest a relatively steep 2-3° seaward dip. Substantial tree boles survive on the upper surface (Figure 7.13).

Pollen samples were taken from this peat bed and revealed that pollen concentrations and preservation were generally very good throughout the sequence, but were excellent in the upper levels. There was an indication; however, that the sampled peats were detrital peat layers intercalated with silts and clays. The sample was dominated by trees and shrubs largely consisting of *Corylus avellana*-type (hazel) and *Alnus glutinosa* (alder) but with *Quercus*, *Betula* and *Pinus sylvestris* also recorded. Percentages of herbaceous taxa were low. Radiocarbon dating samples were also taken and indicated that the sampled peat bed began to accumulate in the Mesolithic Period at c.7590–7480 cal BC and that inundation by the sea here occurred soon after 7180–6810 cal BC.

Like Cleveleys and Walney this is a significantly earlier date for an exposed inter-tidal peat than was previously known on the North West coast. It has received a very high score for significance and rarity for this reason. The recorded pollen concentrations also add to the significance of the site as these indicate that there is good potential to undertake further pollen analysis to recreate the environment in which this peat formed. This could also be teamed with other environmental analyses and has high potential to provide a record of the environment and human habitat during the Mesolithic period and prior to Britain being entirely cut off from mainland Europe. For this reason the site has scored the maximum in the potential category. The condition of the peat bed is good, although the area sampled for pollen assessment was identified as detrital. This may have been a localised area of disturbed peat; however, and further analysis will likely locate more reliable *in-situ* remnants. For this reason the peat bed scored fairly highly in the condition category.

This site is not currently under any form of designation or legal protection. It lies exposed in the inter-tidal zone and throughout the course of the NWRCZA Phase 2 project it was visited on two occasions around one month apart. On both occasions the peat bed was exposed and appeared to be in a similar condition. Despite this the peat bed is exposed to the damaging effects of every tide and the SMP2 policy of No Active Intervention will not afford it any protection. The site has therefore been given a maximum score in the threat category.



Figure 7.13 Peat bed with thin covering of sand and cobbles at Annas Mouth, looking west (scale = 1m).

7.4.4 St. Bees Cumbria

St. Bees inter-tidal peat bed (NX 9617 1153)

St. Bees, Cumbria

Policy Unit 11d 7.1

No Active Intervention

The exposed inter-tidal peat at St. Bees, Cumbria was previously recorded as a site of interest in the English Heritage Coastal and Inter-tidal Peat Database (Nos: 218, 219). It lies in an inter-tidal sand flat with small boulders backed by gravel and cobble-sized material that is managed by a series of groynes. The exposure of organic-rich peat with surviving tree boles is exposed in a coast parallel tidal channel, between the upper beach and a berm of medium-sized sand (Figure 7.14).

Pollen samples were taken from this peat bed and revealed that the preserved pollen concentrations are low. Radiocarbon dating samples were also taken and Bayesian modelling indicated that the sampled peat accumulated rapidly in the Mesolithic Period, beginning to accumulate in *c.* 8610-8300 cal BC and terminating in *c.* 8430-8230 cal BC. It therefore provides a very precise snapshot of the mid-late 9th millennium cal BC.

Like Cleveleys and Walney this is an earlier date for an exposed inter-tidal peat than was previously known on the North West coast. It has received a very high score for significance and rarity for this reason. Whilst the recorded pollen concentrations were low, there are clearly other avenues of research that will allow this resource to be used to recreate the environment in which this peat formed. This would provide a very precise record of environmental conditions and human habitat in the mid-9th millennium cal BC. For this reason the site has scored reasonably highly in the potential category. The

condition of the peat bed is also very good with a depth of at least 44cm of peat exposed with surviving clay and silts of significant depth beneath with occasional organic flecks.

St. Bees Head is a designated SSSI, however the peat in the inter-tidal zone does not currently form a SSSI unit within that designation, and as such its condition will not be monitored as part of the routine management of the SSSI. It lies exposed in the inter-tidal zone and throughout the course of the NWRCZA Phase 2 project it was visited on two occasions around one month apart. On both occasions the peat bed was exposed and appeared to be in a similar condition. Despite this the peat bed is exposed to the damaging effects of every tide and the presence of small boulders within the sediment transport here adds to the level of risk. The SMP2 policy of No Active Intervention will not afford the peat bed any protection and the site has therefore been given a maximum score in the threat category.



Figure 7.14 Peat bed with thin covering of cobbles and boulders at St Bees, Cumbria, looking northeast (scale = 1m).

7.4.5 Drigg, Cumbria

Drigg coastal peat bed (SD 0469 9856)

Drigg, Cumbria

Policy Unit 11d 4.1

No Active Intervention

The peat bed at Drigg, Cumbria is exposed in the eroding dune face and has been the subject of some previous investigation (Pennington 1965, 83), however this did not include radiocarbon dating. The sequence shows distinctive lateral variability in thickness and sedimentology and almost certainly relates to marine flooding of an uneven late-glacial sequence, and subsequent infill of what was probably a kettle-hole or similar depositional feature, resulting in a significant thickness of peat (Figure 7.15).

Pollen samples were taken from this peat bed and revealed that pollen concentrations and preservation were generally very good throughout the sequence. A marked decline in *Alnus* from c.60% at the base to c.10% at the top of the sequence was apparent and this was paralleled by a rise in *Salix* and *Cyperaceae* to 35% and 20% respectively. Other trees and shrubs including *Corylus*, *Betula*, *Ulmus* and *Quercus* are also recorded but showed little variation. Radiocarbon dating samples were also taken and indicated that the sampled peat bed began to accumulate in the late Mesolithic Period at c. 5230–5040 cal BC and extends into the early Neolithic period with a date of c. 3630–3360 cal BC for the upper levels of the peat.

The date of this peat is significantly younger than those so far described, but it spans an important period in human history, namely the Mesolithic – Neolithic transition. It is also found in close association with a possible Bronze Age burnt mound which testifies to later prehistoric human occupation of this area. It is rare to find palaeoenvironmental information of this quality in close association with archaeological remains and further work on this peat bed and its associated archaeology has the potential to provide significant results. For these reasons the peat bed has received the maximum score for significance and a high score for rarity. The recorded pollen concentrations also add to the significance of the site as these indicate that there is good potential to undertake further pollen analysis to recreate the environment in which this peat formed. This could also be teamed with other avenues of research and has high potential to provide a record of the environment and human habitat during the Mesolithic – Neolithic transition. For this reason the site has scored the maximum in the potential category. The condition of the peat bed is good, although it is exposed to both tidal condition and surface water run off from the dune system behind. For this reason the peat bed scored fairly highly in the condition category. The peat bed probably extends landward into the dune system where its condition is likely to be much better than at the exposed dune edge.

The Drigg Coast is a designated SSSI, however the peat in the dune does not currently form a SSSI unit within that designation, and as such its condition will not be monitored as part of the routine management of the SSSI. The seaward extent of the peat lies exposed in the dune face and throughout the course of the NWRCZA Phase 2 project it was visited on five occasions. On each occasion the peat was exposed and appeared to be in a similar condition. There is some protective vegetative growth, but large sections of the peat are clearly exposed to every tide and surface water / ground water run off from the dune system behind. The SMP2 policy of No Active Intervention will not afford it any protection and the site has therefore been given a high score in the threat category.



Figure 7.15 Peat bed in the dune face at Drigg, Cumbria, looking east (scale = 1m).

7.5 Management Options for Coastal and Inter-tidal Peat Sites at ‘imminent risk’

Although each site discussed above has its own particular circumstances of survival, in terms of management, their location in inter-tidal areas means that they can be treated in largely the same way. The lack of viable solutions for the physical protection of these sites means that the management options provided are concerned with investigation of the resource, rather than its protection, before they are lost to the sea.

Management options

The management options for the site are listed in order of preference, with the first being the most preferable strategy.

- Alert relevant Natural England and English Heritage advisors to the presence of these significant palaeoenvironmental remains in order that those peat beds that already lie within SSSIs can be included in their routine management and in order that they can consider the designation of the remaining peat beds as SSSIs. This would be particularly useful at Cleveleys, Lancashire which is clearly a site of national importance in terms of its scientific interest and potential to provide new information.
- Instigate a full programme of high-quality, scientific analysis of the peat beds before they are lost to coastal erosion. The analysis could include, but not be limited to:
 - Taking multiple samples for long-term storage
 - High resolution pollen analysis (at sites with good pollen concentrations)
 - More detailed dating programme including the use of OSL where appropriate
 - Botanical macrofossil sampling
 - Timber sampling
 - Analysis of indicator species/organisms including invertebrates, diatoms, chironomids as appropriate
 - Pedological study and micromorphology

- Use of a ‘shorewatch’-type initiative, together with professional involvement, to provide ongoing monitoring of the visible extent of the peat exposures and basic recording to assess their condition and any increase/change in the nature of the threat faced.
- Do nothing and allow the resource to be lost.

The SSSI designation would provide the sites some statutory protection, and although this will not translate into physical protection of the remains against erosion, it will provide regular monitoring of the remains and an assessment of their condition. It would also help justify funding from either statutory agencies or with bids to potential funders such as the Heritage Lottery Fund. The favoured option of the project team is the highest possible level of scientific investigation as this would provide the most information and contribute significantly to our understanding of the past environment of the North West coastal zone before these valuable sediments are lost. This information will be of importance nationally and possibly internationally. The scientific analysis can provide a recreation of the environments in which the peat beds formed and developed as well as proxies for human activity and wider understanding of sea level change and other environmental phenomena such as tsunami incursions for example that seal the peat beds. With the date range of the available material, this would provide a record of human habitat history in the North West coastal zone from before the end of the Late Upper Palaeolithic, through the Mesolithic and into the Neolithic period. This information could also be used, as appropriate, as Sea Level Index Points to chart the pattern and temporality of sea-level change through time. The fieldwork element of this programme of work would lend itself well to a local community-based project, whilst the scientific analysis could be conducted as part of one or several university-based projects, alongside professional involvement.

If time and funding does not allow for full scientific investigation, then the next best approach is to utilise and encourage motivated local amateurs /volunteers to continually monitor the peat exposures and conditions on site. Employing a ‘shorewatch’ type initiative would encourage local groups to highlight when these and other peat beds become exposed. This will ensure a prompt response that will allow for sampling to take place prior to the damaging effects of further erosion and will also ensure that the maximum number of peat exposures get recorded and updated on the English Heritage Coastal and Inter-tidal Peat Database. This is a relatively low-cost option and it is sustainable and gives local people ownership of their area. It should only require professional support in the setting up and training phase and the sampling and storage of samples. The least favourable option is to do nothing as the exposures and the dune system will eventually be completely exposed and removed through natural process, losing a nationally valuable archaeological resource.

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