

# **Bexhill to Hastings Link Road**

## **Archaeological Project Research Design and Written Scheme of Investigation**

### **Advance Works**

**Oxford Archaeology**  
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# Bexhill to Hastings Link Road, East Sussex

## Archaeological Project Research Design and Written Scheme of Investigation

### 1 INTRODUCTION

#### 1.1 Introduction to the Scheme

- 1.1.1 Oxford Archaeology (OA) has been commissioned by Vinci Construction and their archaeological consultants Jacobs Consulting on behalf of East Sussex County Council (ESCC) to prepare a Written Scheme of Investigation (WSI) for archaeological works along the proposed Bexhill to Hastings Link Road (BHLR), East Sussex. This WSI has been produced in response to a brief (Project Design) supplied by Casper Johnson, County Archaeologist for ESCC (ESCC 2009). This work will include evaluation trial trenching, test pitting, borehole survey, metal detecting survey and fieldwalking and is termed Advance Works (referred to as Stage 2 Evaluation in previous documentation). It may also lead to further mitigation works (to be detailed in an updated WSI) comprising a combination of preservation *in-situ* if possible, strip, map and sample excavation, watching briefs leading to full analysis, reporting and dissemination. A range of recording including standing building and historic landscape feature survey that also forms part of the mitigation for the Scheme will be included in the Advance Works.
- 1.1.2 The proposed Scheme is for a single carriageway road and associated landscape remodelling, along a 5.6km long route, from its junction with the A259 in Bexhill to its junction with Queensway in Hastings (Figure 1). The Scheme will link the outskirts of Bexhill and Hastings, easing congestion and improving air quality on the A259 at Glyne Gap. The Scheme crosses an area with a diverse range of heritage and landscape assets that will need to be investigated, recorded and if necessary mitigated. The impacts will range from direct impacts from the excavations of balancing ponds, areas of ground reduction, landscaping and topsoil stripping to indirect effects including de-watering, compaction and tree planting.
- 1.1.3 This WSI details how OA plan to undertake these archaeological works. The first part is Scheme specific while the appendices detail general OA standards and procedures. It also presents a Scheme wide research framework that is designed to reduce the archaeological risk to the project and ensure that all archaeological works are carried out with a specific archaeological research focus. To this end, an archaeological model of landscape evolution will be produced and updated throughout the works in order to provide a more comprehensive understanding of the archaeological potential of the Scheme.

- 1.1.4 The WSI also contains an outline of possible mitigation scenarios and strategies. The types of archaeological sites that may be encountered are noted along with potential mitigation approaches.

## 1.2 Location, topography and geology

- 1.2.1 The Scheme location is shown on Figure 1. It runs along the lower slopes of the Battle-Hastings ridge that forms an intricate pattern of minor valleys and ridges and is centred on NGR TQ 756107. The Scheme crosses the river valleys of the Combe Haven Stream, Watermill Stream, Powdermill Stream and Decoy Pond Stream; skirting around the main Combe Haven Basin. It consists of a series of broad low ridges that separate four deeply incised river valleys, which in turn gradually extend down into the low-lying area of the Combe Haven.
- 1.2.2 The Combe Haven basin itself is a low-lying, poorly drained, flat wetland, where much of the land lies just above sea level. The land is a former coastal inlet that was reclaimed in the late medieval period following the silting-up of the basin. The Combe Haven River runs through the main valley, towards Bulverhythe, from where it flows into the sea. The majority of the land is unimproved pasture with small farmsteads located on the higher ridges of the valleys. To the west and east are the major coastal urban areas of Bexhill and Hastings.
- 1.2.3 The British Geological Survey of Great Britain (BGS sheets 320/321 scale 1:50,000) maps the underlying geology of the area as predominantly floodplain deposits of clays, silts and peats, surrounded by ridges of predominately Wadhurst Clay overlying Ashdown Sands. These are part of the Hastings Beds formation, that were former Cretaceous sea bed deposits, uplifted through tectonic movement into what now forms parts of south east England.

## 2 PROPOSED SCHEME

### 2.1 Proposed Scheme

- 2.1.1 The proposed Scheme will be 5.6 km long from its junction with the A259 in Bexhill to its junction with the B2092 Queensway in Hastings (refer to Figure 2). The first 1.4km section of the road (the Bexhill Connection) will be located along the bed of an abandoned railway line cutting to pass through the built up area of Bexhill and will be constructed to a standard single two lane carriageway standard. The remainder of the road will be constructed as a wide two lane single carriageway. The BHLR is also seen as part of a “green” access corridor between Bexhill and Hastings and will be accompanied by a Greenway to accommodate recreational activities such as cycling, walking and horse riding. This has been designed as a fenced and gated corridor with a metalled cycleway/footpath and a soft horse track plus safety margins running along the south side of the Main Scheme.
- 2.1.2 The Scheme will also include significant landscaping of the surrounding area including the excavation of a number of balancing and wildlife ponds.

## 2.2 Potential Impacts

2.2.1 The groundworks associated with the construction of the proposed road could potentially damage or destroy a range of archaeological remains. The groundworks will include:

- the stripping of topsoil, subsoil and other superficial deposits within the footprint of the road, the road embankment and the cuttings. Areas may also be stripped for landscaping works etc;
- the excavation of trenches for drainage, soakaways and petrol interceptor tanks;
- the sinking of footings (e.g. piles, columns etc.) to support the road embankments;
- the treatments of wet zones (e.g. surcharge and band drains etc.);
- the deposition of material in the wet zones to create bunding;
- the excavation of ponds and other landscape compensatory works and ecological habitat creation including the excavation of new newt ponds;
- the construction of access roads and pathways.

2.2.2 Additional impacts could arise from any planting proposals other than those that are located on the road embankments. The creation of temporary site compounds, storage areas and haulage routes will also create impacts where any ground disturbance takes place.

## 3 ARCHAEOLOGICAL AND GEOARCHAEOLOGICAL BACKGROUND

### 3.1 Summary of previous archaeological work

3.1.1 Previous archaeological work in connection with the Scheme has consisted of the following:

- Archaeological Desk Based Assessment (Blandford Associates, 2004)
- Archaeological Watching Brief of Geotechnical Test Pitting (Archaeological South East, 2006)
- Geophysical Survey of the Proposed Route (OA 2006b)
- Cultural Heritage Walkover Survey (OA 2006c)
- Updated Archaeological Desk Based Assessment (OA 2006a)
- Geoarchaeological Assessment (OA 2007a)
- LiDAR Survey Analysis (OA 2007b)
- Surface Collection Survey (Fieldwalking) (OA 2007c)
- Geoarchaeological Field Assessment (OA 2007; Rev 2008b)
- Geoarchaeological Geophysical Survey (OA 2008a)
- Geoarchaeological Watching Brief on Ground Investigations (OA 2010).

### 3.2 Geoarchaeological background

3.2.1 In order to understand the character and distribution of archaeological activity in the East Sussex Levels and the reasons behind major changes in settlement patterns in the past, it is necessary to understand the changing nature of the South Coast. Fluctuations in relative sea-level (RSL) and tectonic land adjustment throughout the Holocene (post-glacial period, 10,000BP to present) have created an exceptionally full and

complex sequence of valley sediments and coastal geomorphology. The present-day topography of the area has undergone significant modification and bears little resemblance to the landscape of the prehistoric past. Within such a rapidly vertically accreting environment, archaeological deposits can be sealed at multiple horizons within the valley sequences. Evidence of early prehistoric surfaces and sites can therefore be deeply buried below later accumulations of alluvium, colluvium and made-ground deposits, beyond the reaches of modern archaeological surface survey techniques.

- 3.2.2 A note on dating: When discussing archaeology or archaeological periods calendar years (BC / AD) will generally be used. However, when discussing geoarchaeological data and to allow correlation with existing studies these dates will normally be quoted as Before Present (BP) with a supplementary calendar date explanation if appropriate to allow correlation with the archaeology.
- 3.2.3 The deposits of the lower Combe Haven have been subject to extensive previous investigation and study (Jenning and Smyth 1987; Smyth and Jennings 1988). Three main Holocene sedimentary units were previously recognised. The deepest, silty clay deposits (from above *c.* -19m aOD) accumulated in a marine/brackish environment. Overlying this is a peat sequence, divided into two by a thin wedge of silty clay alluvium. The lower thin (<0.8m) peat layer (-6.5m to -6m aOD) formed between *c.* 6800 and 6600 cal. yr BP and the upper layer (-5m aOD) formed after *c.* 6000 cal. yr BP. The latter thickens (maximum *c.* 5m) upstream. This is then overlain by silty clay alluvium (<1m thick) or, adjacent to the coast, gravel. Dates from the transition between the peat and the upper silty clay (+0.5m OD) range from *c.* 3100 to *c.* 2200 cal. yr BP
- 3.2.4 Smyth and Jennings (1988; 1990) report further investigations of the peat/upper silt transition, noting the coincidence between changes in pollen stratigraphy (declines in tree pollen, particularly elm, and rises in herbaceous pollen) and the switch to minerogenic sedimentation. At the upstream locations this shift was attributed to forest clearance *c.* 3100 cal. yr BP, with the later (*c.* 2200 cal. yr BP) inundation at downstream sites seen as a consequence of this activity (Jennings and Smyth 1987; Smyth and Jennings 1988; 1990).
- 3.2.5 The model of Jennings and Smyth (1990) emphasises the importance of local factors like the formation of coastal barrier formation and variations in the quantity and nature of the sediment supply as the key controlling factors on the nature of valley sedimentation. A broadly similar three-phase model of barrier development was applied by Long and Innes (1995) to Romney Marsh/Dungeness, although the chronology differed significantly in terms of the timing of major sedimentation changes to that of Jennings and Smyth (1990). Lastly, Long *et al.* (2000) proposed a three-phase model of estuary development from their work in Southampton Water, which by emphasising regional changes in RSL, may be applicable to southern England, including the Sussex and Kent coasts (Long 2001).
- 3.2.6 The peats which are consistently recorded in the coastal deposits of East Sussex began to accumulate *c.* 7200 cal. yr BP, though interruptions during the early stages of peat growth appear common with marine conditions returning to Combe Haven and the

western side of the Romney Marsh (Waller and Long 2010). Neither the onset of peat formation nor the age of the intercalated clays appears consistent along the coast, due to the issue of compaction, deflation and field sampling errors. Comparisons between the valleys and levels (e.g. Jennings and Smyth 1987) are difficult to justify since where data is available the continuity of sequences and the influence of localised factors is often unclear. Recent comparative studies by Waller and Long (2010) would suggest that where thick peat accumulations are identified in the East Sussex Levels, this is in contrast to West Sussex, where no significant depths of peat deposits have been recorded. The absence of thick peat deposits from West Sussex are attributed to more exposed conditions in this area and potential absence of coastal barrier protection in the past (Waller and Long 2010).

### 3.3 Previous geoarchaeological investigations on the current Scheme

- 3.3.1 An initial geoarchaeology desk-based assessment was undertaken for the Scheme (OA 2007a) and highlighted significant archaeological potential associated with the valley bottom and wetland margins. The assessment identified that deep Holocene sedimentation up to 10m in depth now fills the valleys and may potentially bury early archaeological deposits or horizons. Thick peat deposits (c 1.00m to 5.60m in depth; between -5m to +3m aOD) were identified within the previous geotechnical boreholes in three of the four valleys, which could have significant palaeoenvironmental and archaeological potential. This evidence could include deposits relating to the early prehistoric exploitation of the wetland environment and the use of the valleys for transport (eg wooden platforms, boats and trackways), as well as palaeoenvironmental material dating from the Mesolithic period onwards.
- 3.3.2 The valley edges and wetland interface zones were identified as providing an attractive location for early hunter-gather activity, associated with the exploitation of the lower valley wetland environment, and therefore as having significant archaeological potential. The assessment noted that without suitable mitigation, the valley sequences and any associated archaeological or palaeoenvironmental deposits could be particularly vulnerable to impacts of the proposed Scheme.
- 3.3.3 A geoarchaeological field assessment (OA 2008b) by boreholes and test pits was therefore undertaken in order to provide more detailed information about the archaeological and palaeoenvironmental potential of the valley sequences and in particular the peat deposits. The work identified a typical tripartite system of sedimentation, consistent with the model proposed by Long (2001) and Jennings and Symth (1988; 1990). Two main phases of rising sea-level (marine transgression) and one phase of falling sea-level (regression) were identified associated with the accumulation of the main upper Combe Haven peat sequence. This sequence could be broadly divided into three main organic units within the Watermill Stream where more detailed further study was undertaken. A basal peat unit between -1m aOD and 0m aOD, comprised a compacted blackish brown wood peat with occasional clay lens. A top peat unit, between +1m aOD and +2m aOD, consists of wood peat and clayey peats. A third deposit, of humic silty clays and peaty clays, separates the two. This sequence represents the main phase of marine regression, which is characterised by phases of peat accumulation and humic silty clays.

- 3.3.4 Towards the edges of the valleys the peat is less easily divided into particular units and tends to be represented by a thick mass of peat. These peats thin-out towards the edges of the valley as they overlie the rising bedrock and colluvial deposits. This is due to the fact that during periods of river flooding, peat would have continued to form within backwater environments at the valley edges whilst silty clay alluvium started to be deposited within the valley bottoms from later Prehistory. Prehistoric features and scatters have been identified on buried land surfaces that are sealed underneath these thin peats at the edges of the Watermill Stream.
- 3.3.5 Comparison of the dates and peat elevations discussed above with Jennings and Smyth's studies (1987 and 1988) from the main Combe Haven basin, where a deeper marine sequence of deposits is preserved, are complicated by factors like varying rates of soil compaction, deflation, and later fluvial erosion.
- 3.3.6 Valley sequences are much more prone to the influence of local factors like geomorphology of the valley, human impacts and freshwater inputs and they represent a more complicated sedimentary sequence to interpret. The nature of deposition is not always horizontally consistent, where peat may be accumulating in one area, silty clay could be accumulating in another. Correlation of the present sequences with the regional models therefore have to be made with some caution until more detailed dating and palaeoenvironmental studies have been undertaken.
- 3.3.7 Previous studies have noted that early prehistoric utilisation of the Levels was dependent on episodes of marine regression. The main period of regression was characterised by the accumulation of peats and organic deposits that represent a mosaic of different wetland environments. The formation of these deposits was radiocarbon dated to between  $5530 \pm 35$  cal. yr BP (Late Mesolithic) to  $3460 \pm 35$  cal. yr BP (early Bronze Age).
- 3.3.8 The first signs of direct human impact within the assessed sequence were identified at -3.12 m depth (-0.80 m OD) associated with the upper peat sequence. The pollen assessment provides evidence of small clearings within the valley bottoms radiocarbon dated to c  $4620 \pm 35$  cal. yr BP (Early-Mid Neolithic). Such clearings can occur naturally through fires or animal activity. However, in this sequence it coincided with an increase in charcoal and other anthropogenic indicators.
- 3.3.9 A small number of test pits were positioned at the edges of the valley sequences to assess the nature of transitional zones and to look for signs of human activity. Two of these test pits produced archaeological material. A Late Neolithic / Early Bronze Age flint scatter, burnt flint and charcoal, were recovered from a buried land surface sealed beneath peat within a test pit at the edge of the Watermill Stream Valley, which had also produced the environmental evidence noted above. A second test pit on the edge of the Combe Haven Stream Valley identified an archaeological deposit buried beneath the topsoil, which produced a quantity of fired clay. The assessment concluded that the Combe Haven peat sequence and valley edges have high potential to produce significant evidence of early prehistoric exploitation and occupation associated with buried land surfaces preserved underneath peat and alluvial deposits at the valley edges.

- 3.3.10 As part of the recommendations of this work, further mapping of the different sedimentary zones was undertaken. An electric conductivity survey (OA 2008a) was carried out in order to map the different sedimentary and interface zones present across the valley bottoms. The survey aimed to identify areas of high ground or submerged islands that may have enhanced archaeological potential. The survey identified a complex sequence of buried topographic features that included floodplain islands, palaeochannels, bedrock promontories, and areas of thick peat deposits. The mapping was used to help inform the strategy and location of the boreholes, trenches and test pits proposed within this WSI.
- 3.3.11 The most recent work undertaken was a geoarchaeological watching brief maintained on ground investigations of the proposed Scheme (OA 2010). The monitoring identified a total of four potential archaeological features. Two ditches and two pits were identified during the watching brief along the valley edges of Watermill Stream and Decoy Pond Stream. A sequence of colluvial deposits was also noted near to the base of the valley edges.

### **3.4 Archaeological background**

- 3.4.1 The archaeological and historic background to the Scheme has been extensively covered previously (Chris Blandford Associates 2004, OA 2006a, OA 2007d) and only a brief summary is presented here to help place the Scheme within a wider archaeological context. The background has also been updated and expanded with the results of the more recent archaeological investigations undertaken as part of the Scheme.
- 3.4.2 Previously it has been assumed that the heavy soils of the Weald were less favoured for early prehistoric activity and settlement, compared to areas like the South Downs with its lighter soils (Armstrong, 1974). The lack of archaeological sites discovered within the area has tended to reinforce this view, with only isolated find spots hinting at low-levels of archaeological activity in the area. This is, however, in contrast to palaeoenvironmental studies (Jennings, 1987a, 1987b, 1990; OA 2008a) that have identified potentially early prehistoric impacts on the vegetation history of the Combe Haven Valley. The absence of significant evidence is very likely therefore to reflect a lack of investigation rather than a true absence of activity and settlement in the area.

#### **Prehistoric period**

- 3.4.3 With the retreat of the glacier and the onset of warming, soils would have started to form within the natural basin of the Combe Haven and its surrounding valleys. A remnant of this earlier Holocene land surface was previously identified at the base of Powdermill Stream (OA 2010; borehole BH144). The valley bottoms would have supported a dry forest bed of pine and birch woodland dissected by small freshwater streams. The sea would have been further south than present and the Combe Haven would have been a predominantly wooded environment, rich in food resources and supporting abundant animal populations. This would have provided an attractive environment for early Mesolithic hunter gather communities to exploit.

- 3.4.4 The early Mesolithic land surface was inundated by the rising sea-level during the early/mid Holocene. The accumulation of clayey sands between -7m aOD and -3m aOD represents the inundation of the valley bottoms through tidal incursions. Areas of former forest bed would have given way to salt-marshes as the marine influence extended further up the valleys. Previous analysis of fossil remains and diatoms confirm that these deposits were laid down under estuarine conditions, radiocarbon dated to between 8000 and 5000 cal. yr BP (Jennings et al, 2003). Mesolithic communities would have needed to adapt to changes in the environment and its effects on hunting and foraging resources. Prehistoric activity may have been pushed further up the valleys.
- 3.4.5 The recovery of Mesolithic blades and evidence of blade manufacture flint cultures from the geoarchaeological watching brief (OA 2010) and during the previous fieldwalking (OA 2007c) indicate activity on the higher valley ridges especially to the south west of the Scheme. These ridges would have constituted a significant landscape feature, overlooking the Combe Haven basin that was experiencing marine flooding during this time. Areas of former forest would have been gradually replaced by salt-marsh taxa, creating a shift in the environment from one that would have favoured hunting game to one favouring fishing and other foraging. Higher elevations may have been favoured at this time to provide good vantage points to monitor the movement of animals.
- 3.4.6 The onset of peat formation occurred in the Late Mesolithic, at a depth of 5.51m (-3m aOD). This represented a major slowdown in sea-level rise and the rate of sedimentation. This organic deposition reflects the period when estuarine conditions were confined to the present valley mouth and alder and willow carr appear to have become established on the valley bottoms. There is a brief return to estuarine conditions at 4.81m in depth (-2.4m aOD) with the replacement of carr deposits with salt marsh and mudflats. However, peat was re-established at a depth of 3.3m (-0.8m aOD), representing a major withdrawal of the sea from the valleys and a period when the shoreline extended out much further than the present day. Areas that were previously salt-marsh were replaced by reed swamp initially and then carr deposits.
- 3.4.7 This period represented a major regression and saw the main accumulation phase of the Combe Haven Peat Sequence. The upper peat accumulated from 1.8m (0m aOD) to 0.7m in depth (+1.2m aOD) and has previously been dated to the Early Bronze Age. This deposit consists of a wood peat that represents a return to alder carr woodland within the valley bottoms. The first signs of direct human impact within the assessed sequence were identified at -3.12 m depth (-0.80 m OD) associated with the peat sequence. The pollen assessment provides evidence of small clearings within the valley bottoms radiocarbon dated to c 3520BC (95.4%) 3340 BC (Early-Mid Neolithic). Such clearings can occur naturally through fires or animal activity. However, in this sequence it coincided with an increase in charcoal and other anthropogenic indicators.
- 3.4.8 Evidence of early prehistoric activity in the form of worked flints, pits and ditches was also identified during the watching brief at the edges of the Combe Haven, Watermill Stream and Decoy Pond valley sequences. These phases of activity are likely to be associated with the accumulation of the main Combe Haven Peat Sequence and could

be associated with the lower peat horizon that produced the environmental evidence of small clearings within the valley floor. No significant dating material was recovered from these features, although charcoal and small quantities of burnt flint were noted in their fills. The sterile nature of these fills and absence of finds may indicate a prehistoric rather than later date. In addition worked flint of predominantly Mesolithic date was recovered from several test pits. This material included a scraper and evidence of blade manufacture. Numerous pieces of worked flint were also recovered from the topsoil in and around a number of test pits indicating general activity on the higher valley ridges within the area.

- 3.4.9 At Upper Wilting Farm several possible hearths and pottery finds dated to the Bronze Age (and possibly the Early Iron Age) have been located on the valley edges and at the interface with the wetland zone. This suggests that there may have been a Bronze Age farming settlement located on the higher ground overlooking the Combe Haven river, possibly on land between Monkland Wood and Upper Wilting Farm (to the south of the Scheme).
- 3.4.10 Floodplain islands or promontories at the edges of the wetlands would have been very attractive locations for Neolithic and Bronze Age communities to exploit the rich wetland and river resources present. Early prehistoric activity within the area is likely to have been focused around the valley edges and wetlands, utilising areas of higher ground to exploit the wetland environment of the low-lying valleys. The sequence of valley ridges and wetlands would also have constituted a barrier to mobility within this landscape and therefore we can assume that prehistoric communities may have developed ways to facilitate movement. Wooden trackways, bridges and platforms may have been constructed to enable activities at the edge of wetlands and provide access between valleys.
- 3.4.11 Islands or promontories overlooking wetland areas have previously produced evidence of extensive Neolithic-Bronze Age activity within the Sussex Levels. A peaty layer at Peacock Farm, in Eastbourne, produced significant quantities of Bronze Age pottery. Nationally important remains were also excavated at Shinewater, in Eastbourne, including a large wooden platform and trackway running east-west towards Willingdon (Greatorix 2000). The platform, estimated to cover an area of c 2000 sqm, was associated with the upper peat surface and was overlain by marine silty clays. On the platform surface a 0.2m thick accumulation of cultural material was identified dating to the Late Bronze Age. Finds included several bronze axe heads and a sickle reaping hook with its wooden handle intact. Human remains were also recorded, deliberately placed on the platform (Jennings et al, 2003). Further evidence of trackways has been found at Ditton, to the northwest of Shinewater (Jennings et al 2003).
- 3.4.12 The potential features identified within the Combe Haven, Watermill and Decoy Pond Valleys were found in association with colluvial deposits that may have resulted from episodes of localised clearances. The upper peat has been dated to the early Middle Bronze Age which is characterised at many sites across England as a period of extensive woodland clearance principally to make way for enclosed agricultural fields. No such evidence for extensive woodland clearance has been currently identified within the previous palaeoenvironmental assessments undertaken as part of the

Scheme (Druce in OA 2010). It would appear that this area was not extensively cleared for agriculture until the later prehistoric period. It is possible that this area was subject to more transitory (perhaps seasonal) activity associated with the exploitation of the coastal and marsh environments rather than for large-scale settlement or agricultural activity.

- 3.4.13 The accumulation of the upper silts within the sequence marks a shift away from the deposition of organic sediments to minerogenic silty clays, representing a second phase of marine incursion. These deposits consist of soft light-grey/greyish-brown, sandy clays and silty clays, occasionally with an organic peat lens near to the base. They range in thickness from 0.17m to 2.5m, and accumulated between 0m aOD to +4m aOD. Previous studies of pollen and diatoms indicate the establishment of salt marsh conditions on what had been previously alder carr woodland, including the seaward forest bed. Similar major incursions by the sea at this time are recorded in the Lower Thames Valley and a number of other locations around the south coast of England. It is widely believed that large-scale deforestation played a significant role in increased flooding and rising water-levels of floodplain environments during this period.
- 3.4.14 By the Iron Age, these environments were being inundated by estuarine conditions, creating natural inlets to act as harbours. This would have helped to facilitate development of transport and trade routes in the area. Evidence of wooden water-side structures like wharfs or boats may be identified at the margins of the wetland zones.

### **Late Iron Age and Roman Period**

- 3.4.15 The Combe Haven Valley was inundated in the early Iron Age, with salt-marsh and reed swamp environments replacing areas of former alder and willow woodland in the valley bottoms. Increased human activity has been noted in the uppermost levels, represented by possible cereal cultivation and a very slight decline in woodland pollen taxa (OA 2008b). However, no evidence of Roman or Iron Age activity has currently been identified along the Scheme, and no pottery was recovered during the watching brief. The wider area is known to have developed in the Iron Age and Roman period due to the development of an iron industry. In fact, the return of marine conditions to the valley is thought to have contributed to the development of this industry within the area. During the late prehistoric and early medieval periods, the river valleys could have provided important trade and transport links.
- 3.4.16 The remains of Iron Age economic activity have been identified in the Combe Haven Valley based on the establishment of an early iron smelting industry. Several iron working sites have been identified, including Pepperingeye, Byne's Farm, Forewood and Crowhurst Park, the latter being a major centre for pre-Roman and Roman iron working. The Iron Age iron industry was relatively small scale but it is likely that these sites had associated settlement, as is suggested at Upper Wilting Farm where a small scatter of slag suggests iron working in the area. A possible causeway investigated by the Hastings Area Archaeological Research Group in c.2003 may date to the Iron Age, It is located at the southern limits of the ridge that Upper Wilting Farm stands on and if correct would reinforce the argument that there was focused activity in this area during the Iron Age.

3.4.17 The area contains the essential raw materials that are required for iron smelting, including a plentiful supply of fuel wood. The resulting forest clearance may have resulted in the deposition of colluvium, possibly including that recorded south-west of Upper Wilting Farm. During the Roman period, the iron extraction industry continued to be the main focus of economic activity in the area, and was likely to have expanded. Evidence in the Combe Haven is currently sparse and the proposed archaeological works have the potential to illuminate to what extent this activity extended into this area.

### **Medieval Period**

3.4.18 It is believed that by the 11th century the river inlets started to slowly silt-up naturally, with the last maritime connections being recorded at Bulverhythe in the 17th century. Pollen analysis from the upper deposits in the Combe Haven Valley has shown a decline in salt-marsh plants and their replacement with grasses, sedges and cereals, consistent with the growth of agricultural activity. Secondary woodland regeneration has also been recorded in recent times, this is most likely due to the decline of the iron industry in the region.

3.4.19 Historical records also provide valuable information regarding periods of high storm magnitude/frequency, such as during the 13th century AD when storms ravaged much of the south coast of England and the North Sea Low Countries (Lamb 1991; 1995). Many of the valley sequences potentially started to silt-up as a result of the flooding. This was followed by several attempts to improve the sea defences and drainage system and this may have helped to facilitate the process of managed reclamation.

3.4.20 In the early medieval period the lower-lying parts of the Combe Haven Valley were largely reclaimed from the sea, with only certain parts of the valley retaining any maritime links. There is a paucity of archaeological and historical evidence for this period.

### **Post-Medieval / Modern Period**

3.4.21 The Combe Haven Valley appears to have remained relatively stable since the late medieval period, although some minor variations in sea-level have been recorded. The area is likely to have remained agricultural with cultivation of the slopes and rough pasture in the valley bottoms. Still prone to flooding, this landscape has continued in this form up to the present-day. The proposed works will record a significant number of historic landscape features many of which will date to this period. When these are combined with further analysis of historic maps and integrated into the GIS model for the project there is potential for our understanding of the historic development of the area to be considerably enhanced.

## **4 RESEARCH FRAMEWORK**

### **4.1 Research Strategy**

- 4.1.1 The research strategy is based on a landscape approach to the project to ensure that the heritage and landscape assets identified are interpreted in terms of their wider landscape context. The approach will be to develop a detailed model of vegetation and landscape change over time in order to examine archaeological sites and finds within their original topographical and environmental settings and investigate the relationships between them. Archaeological and heritage resources identified in the works across the Scheme will be added to the model to attempt to better understand and define any trends or patterns in activity.
- 4.1.2 The aim of the research strategy will be to build an archaeological model for the Scheme. A key part of this will be to also reconstruct the physical evolution of the former intertidal (between low and high tides) and supratidal zone (above high tides) within the development area in the light of sea-level change along the South Coast. This will provide a model of the changing landscapes and environments, which would have directly affected human populations in the valley sequences. This landscape model will form part of the overall archaeological model. With the archaeological resource data added the model will be a valuable tool for predicting and interpreting landscapes and understanding the relationships between archaeological sites and between the sites and the evolving landscape through time. It will also be a useful tool for providing publicly accessible information. I

## 4.2 Research Methodology

- 4.2.1 A GIS based archaeological model (ESCC 2009) will be developed for the project. It will be compatible with that used by the ESCC Historic Environment Record (ArcGIS 9.1) and will incorporate the results of the different strands of archaeological and geoarchaeological field investigations. The model will integrate the previous works of desk based assessment, the LiDAR survey, fieldwalking, geoarchaeological boreholes and test pits, geotechnical test pits, and archaeological findspots and deposits. The model will be updated as each task or phase of work is completed to allow it to inform ongoing investigations and following completion of the main construction mitigation works phase all additional recorded archaeological information and geoarchaeological results will be incorporated into the model to allow full and detailed interrogation and interpretation of the data sets in the final post excavation analysis phase of the project.
- 4.2.2 Information on the archaeological resource will be derived from the various field investigations and the landscape component of the model will be achieved by:
- Characterising key stratigraphic units and establishing the vertical sequence of buried land surfaces and other Holocene deposits throughout the site.
  - Completing the modelling of the geophysical and borehole survey data and finalising the integration of all existing borehole data currently input into the modelling software Rockworks 2011 (Rockware Software) to allow ‘ground-truthing’ of the conductivity results. This study will involve detailed analysis of the electrical imaging survey data, focussing on an examination of variation within the alluvium in order to identify buried topographic features such as former watercourses and islands. This will be coupled with a review of the lithology of all boreholes held in the site archive. Additional horizons and features will be identified and modelled from this data.

- Adding further chronological resolution into the model by obtaining AMS radiocarbon dates on organic material preserved within selected key sequences across the site.
  - Undertaking a targeted set of palaeoenvironmental analyses largely from the borehole cores recovered to help develop and refine a model of landscape, hydrological and environmental change.
- 4.2.3 The preservation of key palaeoenvironmental indicators (pollen, waterlogged plant remains, insects, diatoms, ostracods and forams) will be established in order to provide a baseline against which any deterioration as a result of constructional impacts (especially drainage and compaction) can be monitored.
- 4.2.4 Creating the model will involve characterising key stratigraphic units and establishing the vertical sequence of buried land surfaces and other Holocene deposits across the Scheme. This will be enhanced through the investigations proposed in the Advance Works with the aim to identify any major archaeological horizons and map major sedimentary units across both the wetland and dryland areas of the Scheme and test and refine the existing basic model.
- 4.2.5 The model will be developed with reference to the wider HER ‘model’ with the aim of being able to understand data in a wider regional context where applicable.

### 4.3 Aims

- 4.3.1 Following completion of the Advance Works the aims and research objectives of the archaeological programme of works will be fully reviewed and revised in the light of the results and information gained. The mitigation works phase will be conducted with the updated research questions in mind. The general aims of the Advance Works stage and provisional research objectives are outlined below.
- 4.3.2 General:
1. Identify any archaeological remains (if present) or significant deposits that may be removed or impacted during the construction of the Scheme.
  2. Test and investigate the nature of the anomalies highlighted in the geophysical survey of the route.
  3. Record the extent, condition, nature, character, quality and date of any archaeological and palaeoenvironmental remains encountered as dictated by current best archaeological practice.
  4. Identify significant variations in the sedimentary sequence indicative of localised features such as topographic features or palaeochannels.
  5. Clarify the relationships between alluvial/fluviol/dryland/colluvial sediment sequences and other deposit types, including periods of ‘soil’ development, peat growth and archaeological deposits.

6. Define the significance of any archaeological features or deposits in order to inform and re-define approaches to mitigation in order that the measures implemented are proportionate.

#### 4.3.3 Scheme specific aims:

7. Help develop a further understanding of past human activity and changing environments and landscapes within the Combe Haven Valley from the Pleistocene to the present day.
8. Contribute to our knowledge of the chronology of the Combe Haven peat sequence.
9. Assess the influence of sea-level change both directly and indirectly on the sedimentation and vegetation history of the valley and provide an updated model of sea-level change within the valley.
10. To understand the source and nature of the fine sandy sediment, interpreted as colluvium in the geoarchaeological assessment, which appears to be accumulating in the valley edges during the early prehistoric period.
11. Undertake palaeo-topographic reconstruction along the route of the road and adjacent areas.
12. To test and investigate the impact on the valley sequences of creating ponds and any other landscape enhancement or habitat creation works.
13. Investigate the role of human agency with regard to the possible evidence for extensive tree clearance within the pollen record, and determine the nature of any woodland management during the Neolithic.
14. Investigate and characterise a representative sample of the archaeology and valley sequences within the area to be affected by road construction with particular priority being given to remains of early prehistoric date in the valley bottoms.
15. Investigate the potential of prehistoric activity on the higher ground overlooking the valleys and valley margins as indicated by the flint assemblage collected during fieldwalking and the evidence from the geoarchaeological test pitting.
16. Look for evidence of significant timber platforms, trackways, structures and boats within the deep valley sequences.
17. To investigate and understand the nature and date of earthwork and landscape features, including trackways.
18. Look for evidence of the expansion of Iron Age and Romano British activity (such as iron smelting) into the Combe Haven including the possible presence of waterside structures or a wharf.
19. To investigate and understand the nature and date of features identified during the assessment stage within the Scheme area to the north of Upper Wilting Farm, in particular within Chapel Field.

## 4.4 Risk Management

- 4.4.1 A significant degree of archaeological survey has already been completed with regard to the potential of the Scheme area to contain archaeological deposits and this has been reported in the EIA (OA 2007d) and subsequent ES Addendum. However, the limited below ground investigations to examine potential undertaken to date require a programme of targeted evaluation by trial trenching as outlined in this WSI in order to define the archaeological resource in more detail.
- 4.4.2 The overall approach will be to develop a risk management strategy for the proposed Scheme by developing a detailed GIS-based archaeological model as detailed in the Project Design for the works (ESCC 2009). This will initially be based on the previous archaeological works and updated with data from the Advance Works Phase. At this stage this will then define the archaeological potential of the Scheme land-take. Prior to any construction a Risk Management Strategy will be developed to ensure that the phased mitigation works are fully accommodated and resourced within the main development programme. This has a dual purpose, to help avoid costly delays to the construction works and to ensure that the archaeology is dealt with as effectively and efficiently as possible.
- 4.4.3 The Risk Management Strategy will identify those areas which are critically timed to the overall development of the Scheme, the need to manage the handling of soil; those areas where archaeological investigation is likely to be particularly complex and time consuming; and measures to accommodate unforeseeable major discoveries. The Strategy will also attempt to identify areas of low risk where community activities related to the archaeology could be undertaken.
- 4.4.4 Probably the largest potential financial risk to the project in terms of the archaeology is represented by the possibility of discovering a waterlogged site similar to the prehistoric site of Shinewater, within the valley bottoms. The waterlogged conditions present at the site provided excellent conditions for the preservation for wooden artefacts and ecofactual remains. Excavations of waterlogged sites therefore tend to be some of the most expensive undertaken due to the exceptional preservation and wealth of organic remains recovered that require extensive recording and expensive conservation. Early identification of sites like this is essential in order to reduce the archaeological risk to the Scheme by options like preservation *in-situ* through redesigns or the excavation of the site in sufficient time so as not to impact the construction programme.
- 4.4.5 The possible mitigation responses to such discoveries are outlined briefly in section 10 with a general indication of the methodology that could be adopted. The programme of mitigation works and methodologies to be used will be detailed in a further WSI to be agreed prior to the commencement of the main construction phase.

## 5 METHODOLOGY OF ADVANCE ARCHAEOLOGICAL WORKS

### 5.1 General Approach

- 5.1.1 The first phase of the advanced archaeological works will comprise a programme of further evaluation (Stage 2). This will comprise initially a programme of boreholes, followed by trial trenching and test pitting in the valley bottoms as specified in the brief for the project (ESCC 2009). Where possible, phases of work will be programmed so that the results can inform subsequent work allowing slight adjustments to the locations and strategies where appropriate. The results will also inform the risk management strategy referred to above. Figures 6a-d have been produced to show all the intrusive works to be undertaken with additional background information to allow an overview to be gained of the works.
- 5.1.2 All work will be carried out in accordance with this WSI, OA Standards for Archaeological Fieldwork, ESCC Standards and Guidance (ESCC 2008) and the brief for the project (ESCC 2009).
- 5.1.3 Prior to any development, a review of the results of the archaeological evaluation will be carried out to identify areas where engineering measures may be put in place to enable buried archaeological remains to be ideally preserved in-situ (This mainly relates to the wetland areas). Where this is not possible, to understand and quantify the scope of archaeological work likely to be required within the areas currently designated for Strip, Map and Sample excavations or watching briefs during the construction phase.
- 5.1.4 The aim of the advanced works is to refine the present archaeological model developed through the work carried out by OA. This will identify and highlight areas of archaeology in advance of construction so that they can be adequately dealt with without causing any unnecessary delays to the construction programme. A revised WSI will be produced to cover the construction mitigation phase in detail.
- 5.1.5 A flexible approach will be maintained during the Advance Works as regards dealing with archaeological finds or sites that may be revealed. Consideration will be given as to whether adding or extending trenches or opening areas for excavation could be efficiently and cost effectively accommodated during these works so reducing risks to the subsequent construction programme. It may also be necessary to extend some trenching works to fully quantify and understand deposits encountered and a contingency will be set aside for this. Any variations or additions will be discussed and agreed between ESCC County Archaeologist, Vinci Construction, Jacobs Consultants and OA.
- 5.1.6 The works on the Scheme will be subject to various ecological constraints related to issues such as badger setts, Great Crested Newts (GCN) etc. The Client, via the ecologists for the scheme will advise the archaeologists regarding any applicable constraints or restrictions to the work and any ecological method statements produced will be available to the archaeologists. Where archaeological works methodologies need to be revised to accommodate ecological constraints this will be agreed with the Client, Archaeological Consultant and County Archaeologist. At present trenching works have been designed to avoid badger setts and this has not affected the integrity of the works. Works are planned inside areas which have suspected GCN presence and archaeological methods will be adapted to comply with ecological directives when these are issued. A provisional indication of GCN 'buffer zones' (250m radius of

inhabited ponds) and badger setts is illustrated on the figures which accompany this WSI.

## 5.2 Borehole Survey

- 5.2.1 A program of 58 boreholes will be drilled using a Dando Terrier/ Commachio MC300 rig depending on site conditions and access issues. The drilling rig will be operated by a specialist sub-contractor who will be suitably qualified in operating this type of equipment. Each borehole will be drilled to the Pleistocene gravel or bedrock, or until a maximum depth of 15 metres is reached. A continuous sequence of core samples (0.125 m in diameter and 1.0 metres in length) will be retrieved from each location suitable for further detailed sediment description and palaeoenvironmental assessment.
- 5.2.2 The boreholes will be monitored and recorded on site by one of OA's in-house geoarchaeologists. The deposit sequence observed at each location will be recorded and logged using standard sediment terminology and sedimentary pro-formas. These descriptions will be used to confirm correlation of stratigraphic units between the previous geotechnical investigations and the new dataset. This information will also be used to refine and update the Scheme wide deposit model.
- 5.2.3 The boreholes will be located across all four of the valley sequences (Figure 3a-c) targeted on the specific deposits and buried topographic features (i.e. the thickest peat deposits or floodplain islands). These are as listed below:

Borehole No	Valley sequences	Notes
OABH12-23	Coombe Haven	Colluvium and evidence metal working
OABH24-43	Watermill Stream	Flints and possible early prehistoric features
OABH44-63	Powdermill Stream	
OABH64-69	Decoy Pond Valley	

Table: Proposed borehole sample locations

- 5.2.4 The previous geoarchaeological borehole survey (OABH1-11; OA 2008b) assessed the archaeological potential of the main road corridor, which previously identified thick peat deposits with evidence of past human impacts. This second phase of boreholes will concentrate on examining the sequences that will be affected by the proposed balancing ponds where the largest direct impacts are likely to occur within the valley peat sequences with the aim of characterising these deposits and also identifying any archaeological remains which may be present in these locations.
- 5.2.5 The boreholes will be logged on site in order to inform and enable review of the locations of the proposed test pits and trenches within the wetland zones. At least three

borehole sequences will be retained from each valley sequence for more detailed sedimentary analysis and palaeoenvironmental assessment.

- 5.2.6 The investigation will focus on the potential of the valley sequences and will aim to provide sufficient detail to feedback into the locating of the test pitting and trenches both within and at the edges of the wetland zones. Following the completion of the borehole survey the GIS model will be updated and a single report will be produced in order to determine the distribution and depth of the sub-surface stratigraphy and identify any archaeological sites or deposits buried within the alluvium. This report will be based on the information provided by the monitoring and recording of boreholes referenced back to the previous archaeological and geo-technical investigations. This report will be used to inform the WSI and updated Project Design for subsequent mitigation works and scientific analysis of specific elements and in particular dating evidence will be undertaken at this stage where it has the potential to inform the mitigation phase of works.
- 5.2.7 The cores selected in the field for further study will be transported to Oxford. Any cores that contain archaeological deposits or features will also be retained and an appropriate specialist will assess any worked wood. Consideration will also be given to the possibility of OSL dating of the sandy silts at the base of the deep valley sequences and if appropriate selected cores will be retained and kept dark to enable this. The remainder of the cores will be stored in a secure facility on site until the completion of the project and confirmation that they will not be required for further analysis.
- 5.2.8 Subsequent outputs will be a contribution to the project post-excavation assessment which will be produced at the completion of all fieldwork followed by final analysis and publication. It is anticipated that this will constitute full reporting on the geophysical survey and integrated borehole data; borehole profiles will be illustrated with key horizons annotated. The horizons will be modelled to produce a 3-dimensional map of the sub-surface topography, particularly to map the surface of the Pleistocene gravels/bedrock. This will provide a snapshot of the early Holocene land surface and palaeotopography of the Scheme. The maps generated will include interpretations of the conductivity data, indicating areas thought to be river channels or other buried topographic features. This will allow definition of zones within the floodplain with different levels of archaeological potential. The model itself will be available for interrogation in ArcGIS (ESRI).

### **5.3 Evaluation trenches: strategy**

- 5.3.1 The evaluation will consist of a total of 193 trial trenches. Of these 111 will be standard trenches located to provide good coverage of the Scheme impact areas. They include 36 which are also specifically targeted on geophysical anomalies or locations of archaeological interest. A further 82 trenches will investigate deeper deposits at the wetland margins. Twenty-six test pits will also be undertaken to evaluate the deep valley bottom sequences.
- 5.3.2 The proposed trench layout of the Scheme is shown in Figures 4a-d with the results of the LiDAR survey and proposed ponds. The ecological constraints are also shown for reference along the proposed route. Trenches have been located to avoid buffer zones

around badger sets while it is anticipated that work in areas of 'newts' will be carried out in conjunction with an ecological method statement which will mitigate the impacts.

- 5.3.3 The margins surrounding the valleys have been identified by mapping the underlying deposits using geophysics. The marsh areas themselves have limited potential for archaeological sites of a more traditional settlement type, however, trackways and platforms giving access to the wetland zones in prehistory may exist and would constitute a very significant archaeological resource. The deep trenches at the margins of the valleys will therefore evaluate the possibilities of trackways leading into the wetlands. In areas where insufficient information can be gained from the geophysical results about the nature of the deposits, these have been deep trenched as a precaution. In addition a number of test pits are proposed in the location of the major impacts such as the balancing ponds in order to test these locations for the presence of large wooden structures such as platforms within the upper peat sequence.
- 5.3.4 Following the results of the initial trenching the need for extending trenches or undertaking further trenching to qualify the extent of features will be reviewed and agreed with the County Archaeologist. A contingency of up to 10% will be allowed for this purpose.

#### **5.4 Standard evaluation trenches**

- 5.4.1 A program of up to 75 trenches (depending on site conditions and access) are to be excavated within the Scheme boundaries, as indicated on Figure 4a-d, each of which will be 2m x 30m. The evaluation trench locations will be varied where necessary to avoid obstructions, ecological constraints and any significant changes agreed with the County Archaeologist.
- 5.4.2 All trenches will be excavated under the supervision of the Archaeological Contractor, using a mechanical excavator with a toothless bucket to remove topsoil and non-archaeological overburden. Mechanical excavation will proceed to the top of any significant archaeological horizon or to the natural, whichever is encountered first.
- 5.4.3 During machine excavation, the topsoil will be sampled by close examination of the soil and subsoil for artefacts and these upper layers will be taken down in spits of not more than 100mm. The aim of this approach is to ensure that a thorough understanding of the upper horizons to contain artefacts is evaluated as well as looking for evidence of undisturbed deposits and features at greater depth.
- 5.4.4 The excavated spoil will be stockpiled using the excavator. At least a 1m wide area will be left clear of spoil heaps on each side of the trench. Topsoil, made ground deposits and the natural alluvium and colluvium will be excavated, transported and stored separately, like-with-like, in order that it can be correctly replaced and to prevent cross-contamination. Potentially contaminated material will be placed in separate stockpiles.

- 5.4.5 Where practicable, all archaeological features will be sampled by hand. In practice, no trenches will be entered by OA staff if they are at a depth assessed as constituting a health and safety hazard without further safety provisions. General site procedures are as defined in OA's Standard Appendices which are supplied with this document.
- 5.4.6 All features and deposits will be issued with unique context numbers, and context recording will be in accordance with established best practice and the OA Field Manual. Small finds and samples will be allocated unique numbers. Bulk finds will be collected by context.
- 5.4.7 Bulk and incremental samples will be taken for plant macrofossils, insects, ostracods, forams, molluscs, small and large mammals from a range of features and deposits during the evaluation. Consideration will be given to sample processing on site if this will provide efficiency or time savings.
- 5.4.8 Environmental sampling procedures shall be in accordance with the OA Environmental Sampling Guidelines and Instruction Manual (OA, first edition, July 2002), which is based on guidelines presented by English Heritage (2011).
- 5.4.9 Where necessary specialist samples will be taken by the archaeologists/geoarchaeological specialist for pollen, diatom, geochemical and sedimentological analysis where appropriate. Samples for radiocarbon dating and dendrochronology will be taken as appropriate and processed as agreed with the County Archaeologist and EH Science Advisor, Jane Corcoran.
- 5.4.10 Digital photos and colour and black-and-white negative photographs will be taken of any archaeological features and deposits and of the trenches and evaluation work in general.
- 5.4.11 Plans will be drawn at an appropriate scale (normally 1:50 or 1:100) with larger scale plans of features as necessary. Section drawings of features will be drawn at a scale of 1:20 and 1 m wide sample sections of stratigraphy will be drawn at a scale of 1:10. All section drawings will be located on the appropriate plan/s. The absolute height (m. OD) of all principal strata and features, and the section datum lines shall be calculated and indicated on the drawings.
- 5.4.12 In the event that human remains (inhumation or cremation) are encountered they shall initially be left in-situ. If removal is deemed to be necessary these shall be removed under an appropriate Ministry of Justice licence and in accordance with local environmental health regulations.
- 5.4.13 Any finds of gold, silver and of intrinsic national archaeological importance will be removed to a safe place and the requirements of the Treasure Act complied with. Where removal can not be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.

## 5.5 Targeted evaluation trenches

- 5.5.1 A total of 36 targeted trenches which will be 2m x 30m are proposed on historical landscape and sub-surface features identified during the field walking, LiDAR survey and geophysical survey. The trenches have been orientated in order to best investigate and interpret the features.
- 5.5.2 The targeted evaluation trenches will be undertaken using the same methodology as the standard trenching. The aim of these trenches will be to establish the nature of the feature and assess its archaeological potential. If necessary a qualified geoarchaeologist may also be in attendance in order to help interpret the nature of the deposits.

## 5.6 Stepped evaluation trenches

- 5.6.1 A total of 82 'stepped' trenches are targeted on the margins of the wetland zone along the edges of the four valley sequences. These trenches are located at the wetland interface zone and potential islands identified within the Scheme by the geoarchaeological geophysical mapping (OA 2008a). The field investigation identified the significance of these areas to early communities and that there was therefore high potential for archaeological remains to be located there. These zones are also most likely to be affected first by any localised changes in the hydrology caused by the construction of the Scheme. It is therefore important to evaluate all the interface zones within the Scheme and to trace any archaeology and its continuation out into the wetland zone.
- 5.6.2 The position of the trenches may be altered as a result of any archaeology identified within the borehole sequences. Any changes will first be agreed with the County Archaeologist and Archaeological Consultant.
- 5.6.3 These trenches will be excavated using a tracked mechanical excavator. The key difference of these trenches over the standard trenches is that they will probably need to go to a greater depth as they are excavated out into the wetland zone.
- 5.6.4 As there are few space restrictions, these evaluation trenches will generally be carried out using stepped (or battered) sides rather than being shored to provide safe access. These may require fencing off if they need to be left over night. In terms of the type of archaeology that is likely to be recovered within the sediment zone the geoarchaeological field assessment has already identified one potential early prehistoric flint scatter and one feature was identified during the geotechnical watching brief (OA 2010). Evidence of further activity in the forms of burnt mounds, prehistoric wooden trackways, and settlement platforms that may have been associated with the exploitation of the wetland zone may be encountered. If archaeology is identified it may be necessary to expand or dig additional contingency trenches in order to more fully characterise and define the limits of the activity.
- 5.6.5 In the event of the discovery of waterlogged timbers forming trackways or other structures, the structure will be exposed and cleaned to allow it to be identified and characterised. Samples of waterlogged timbers, and bulk soil samples from associated deposits, will be recovered for possible radiocarbon and dendrochronological dating.

Excavation will aim to establish the extent, depth, orientation, context and preservation of the structure, in line with the aims of the evaluation. If appropriate an ancient woodworking specialist will be asked to visit and advise on recording and treatment of worked wooden structures. A conservation specialist will also advise as necessary and measures such as spraying with water, covering or wrapping will be implemented to avoid deposits and samples drying out in hot or dry conditions.

- 5.6.6 If flooding or health and safety issues become a concern within the wetland zone then trenches or parts of trenches without archaeology may be backfilled immediately following recording with the consent of the County Archaeologist. Pumps will be used where appropriate. All trenches, or areas of trenches, with archaeology present will be left open and if necessary fenced off awaiting a site visit unless otherwise agreed.

## 5.7 Test pitting

- 5.7.1 Twenty-six machine excavated test pits will also be excavated in the wetland zones impacted by the proposed balancing ponds. These will be dug to a maximum depth of 5m below ground level (dimensions in plan specified as 4 m x 4 m). The test pitting is designed to evaluate the possibility of major archaeological deposits or features such as a timber platform being identified within the upper peat. Test pit locations may be adjusted in response to results obtained from the borehole survey and trenches located on the valley margins.

- 5.7.2 The test pitting will be undertaken with a JCB or other suitable mechanical excavator. The locations of the test pits are shown in the four valley sequences with the proposed ponds in Figures 4a-d. The test pits are listed below:

Test pit No.	Valley sequences	Notes
OATP 1-6	Coombe Haven Stream	Colluvium and evidence metal working
OATP 7-14	Watermill Stream	Flints and possible early prehistoric features
OATP 15-22	Powdermill Stream	
OATP 23-25	Decoy Pond Valley	
OATP 26	Combe Haven	

Table: List of test pits

- 5.7.3 The excavation of all test pits will be monitored and recorded by a suitably qualified OA geoarchaeologist. Recording of the test pits will follow standard OA procedures as already outlined.

- 5.7.4 If any worked wood is identified within the test pits then they will be shored or stepped if necessary to allow access. Pumps will be used as appropriate. The test pits will be backfilled the same day as recording or fenced off or partially backfilled if they needed to be left overnight.
- 5.7.5 Where practicable, all archaeological features will be hand sampled. In practice, no test pits will be entered by OA staff if they are at a depth greater than 1.2 m or shallower depending on the stability of ground conditions. General site procedures are as defined in the OA Appendices. All features and deposits will be issued with unique context numbers, and context recording will be in accordance with the previously established administration system for fieldwork recording and archiving for the project. All contexts, and any small finds and samples from them will be allocated unique numbers. Bulk finds will be collected by context. In the event that significant archaeology is identified within any of the test pits these may be supported to allow manual access to a maximum depth of 5 m below ground level. Further mechanical excavation may be carried out to a maximum depth of 5m (with no manual access). Sufficient investigation will be carried out at this stage to inform any further mitigation.

## 5.8 Fieldwalking survey

- 5.8.1 A field collection survey has been undertaken on ploughed land in a significant part of the site area (OA 2007c). Further consideration will be given to conducting further fieldwalking in areas where ploughing and ground conditions present the opportunity to collect additional information (areas which previously yielded few finds may produce different results given different ground conditions) with the aim of mitigating the impacts related to the loss of topsoil which will occur during construction of the Scheme.
- 5.8.2 The brief for the project sets out a basic methodology; the scope and detailed methodology, intensity and type of collection method to be applied will be discussed and agreed with all parties and will be consistent with the methodology employed for the previous survey.

## 5.9 Metal detecting survey

- 5.9.1 Prior to topsoil stripping, a metal detector survey will be carried out on all areas of the scheme where topsoil / plough soil is present.
- 5.9.2 The Archaeological Consultant/Contractor will agree a methodology with the County Archaeologist for the survey which will be consistently applied throughout the scheme land take. The agreed methodology will include details concerning the method of collection, size of survey transects, means of recording site conditions, means of reporting and presenting results of the survey.
- 5.9.3 Survey transects spaced at approximately 10m intervals will be considered appropriate for the metal detector survey. Metal detectors will be set to recover ferrous as well as non-

ferrous metals and all material will be retained to be discarded if necessary following on site assessment by a member of the archaeological team.

- 5.9.4 Artefacts will be individually bagged and their positions surveyed accurately to the Ordnance Survey by GPS prior to removal from site.
- 5.9.5 Arrangements will be made for any immediate artefact conservation measures that may be necessary.
- 5.9.6 The Metal Detector Survey is considered an appropriate activity in which to involve volunteers from local metal detector clubs. Liaison with East Sussex Archaeological Metal Detecting Support Unit and the Sussex Finds Liaison Officer will be undertaken to ensure that appropriate volunteers participate. All involved will be fully briefed on the methodology for the survey and provided with appropriate supervision and survey support. Documentation regarding ownership of the finds and the Treasure Act will be put in place. Draft agreements will be provided to the County Archaeologist in advance of the survey
- 5.9.7 A report on the results of the survey will be produced and the finds data incorporated into the archaeological model for the project.

## 5.10 Building recording

- 5.10.1 The Environmental Impact Assessment (OA 2007d) has identified several buildings as being of historic interest. These will require recording prior to their demolition or alteration in the construction of the proposed road.
- 5.10.2 The building recording will cover the following structures:

Recording level	Details of building	OA Number (refer to fig. 5a-d)
Level 2	Five terraced houses off London Road	OA612
Level 3	Adam's Farm Barn	OA425 (Part of OA404: Adam's Farm complex)
	Cowshed south of Adam's Farmhouse	OA424 (Part of OA404: Adam's Farm complex)
	Timber-framed woodshed at Adam's Farm	OA613 (Part of OA404: Adam's Farm complex)
	Brick archway access tunnel	OA300
	<del>(Brick road bridge to west of Glover's Farm - Removed from scheme impact)</del>	<del>OA301</del>

	Ninfield Road Overbridge	OA302
	Pumping Station complex	OA307-310
	Railway shed	OA304
	Viking Fish Bar	OA611

5.10.3 The OA numbers used above (eg OA425) relate to the numbering in the previous Environmental Impact Assessment and the locations are shown in Figures 5a-d.

### **Aims and objectives**

5.10.4 The overall aims of the work would be to preserve for posterity a record of the buildings or structures of some historic interest which will be demolished or impacted by the construction of the proposed Scheme.

### **Historical background**

5.10.5 The recording will cover nine distinct structures. The following information on seven of these is summarised from OA's Cultural Heritage Walkover Survey (OA 2006c) while the information on the Viking Fish Bar and the terraced houses off London Road has been provided by Casper Johnson County Archaeologist at East Sussex County Council.

#### *Adams Farm Barn*

5.10.6 Adam's Farm is located on the northern edge of the Combe Haven and is intersected by the proposed route of the link road. The main timber-framed 16th-century farmhouse is listed at Grade II and will not be directly impacted by the construction of the proposed road but a barn (OA425) which remains in agricultural use will be impacted. The barn is of 19th century date and has a slate covered roof together with large openings on the east and west elevations.

#### *Cowshed south of Adam's Farmhouse*

5.10.7 At Adam's Farm there are a number of small, dispersed brick outbuildings of uncertain date and one of these is a former cow house (OA424) which will be impacted by the proposed link road.

#### *Timber-framed woodshed at Adam's Farm*

5.10.8 One of the outbuildings at Adam's Farm is a timber-framed woodshed

#### *Brick archway access tunnel*

- 5.10.9 To the east of Adam's Farm, c.50 m south of the proposed route, is a brick archway access tunnel within dense woodland beneath a railway embankment (OA300).

*Brick road bridge to west of Glover's Farm (Removed from scope)*

- 5.10.10 Glover's Farm is approached by a road carried over a large three arched brick railway bridge (OA301). This carries the farm entrance lane across a deep railway cutting. Although poorly maintained the bridge appears to be in essentially good condition. NB: Current plans have removed the impacts on this structure and therefore the building recording is no longer required.

*Ninfield Road Overbridge (Arched brick road)*

- 5.10.11 This is a large three-arched brick road bridge (OA302) which carries the A2036/Ninfield Road across a deep railway cutting.

*Crowhurst Water Pumping Station Complex*

- 5.10.12 The remains of the Crowhurst water pumping station lie to the south-west of Adam's Farm, to the south of the proposed route of the Bexhill to Hastings Link Road. The complex consists of concrete footings on the site of the pumping station and an adjacent metal object (OA 307) and a tramway to the east. The pumping station (OA307) was intact until at least c.1950 (pers comm Mr West Hillcroft Farm). The station was supplied with coal along a narrow gauge tramway which ran from Adam's Farm to the station. The northern section of the tramway survives only as an earthwork embankment across the water-meadows and is intersected by the proposed route of the road. The extant, southern section of the tramway comprises two iron bridges (OA308 and OA309) carrying the tramway railbed (OA310) over two drains on the water-meadows.

*Bexhill Railway Shed*

- 5.10.13 An abandoned 19th century railway shed stands on the western side of the railway line to the south of the A269 within the built environment of Bexhill (OA304). The shed has two loading bays with timber canopies these lead to a long covered platform and single length of line. There are the remains of heavy timber doors at each end of the shed blocking access from the railway. The shed is brick built with a slate roof supported on timber trusses, there are large arched windows with iron frames. Despite being obviously in very poor condition the building retains a wealth of original features relating to its former use.

*Five terraced houses off London Road*

- 5.10.14 This terrace of buildings on London Road was constructed in the later 19th century, before the construction of the railway, and they originally formed the west side of North Street.

### *Viking Fish Bar*

5.10.15 The building which incorporates the Viking Fish Bar on its ground floor has the appearance of a later 19th or early 20th-century structure with timber cladding at first floor and a modern commercial front at ground floor. However, in the early to mid 19th century there are known to have been a pair of detached cottages (Bellehill Cottages) on this site with gardens running north and it may be that the current building incorporates elements of these buildings.

### **Methodology**

5.10.16 The level of recording of each of the buildings/structures has been previously determined and requested by East Sussex County Council. The levels of recording are based on English Heritage guidelines (*Understanding Historic Buildings: A Guide to Good Recording Practice*, EH, 2006).

5.10.17 The five terraced houses off London Road (OA612) will be recorded at EH Level 2, all other recording will be at EH Level 3 unless otherwise agreed.

5.10.18 The English Heritage guidance document states that:

- *Level 2 is a descriptive record, made in circumstances similar to those of Level 1 but when more information is needed. It may be made of a building which is judged not to require any fuller record or it may serve to gather data for a wider project. Both the exterior and interior will be viewed, described and photographed. A plan and sometimes other drawings may be made but the drawn record will normally not be comprehensive.*
- *Level 3 is an analytical record, and will comprise an introductory description followed by a systematic account of the buildings origins development and use.... It will also include all drawn and photographic records that may be required to illustrate the building's appearance and structure and to support an historical analysis'. A level 3 record would include a plan of the building and other drawings such as elevations, sections, detail drawings, 3-dimensional projections when they would be of use in interpreting the building.*

### *Site recording*

5.10.19 The site recording would consist of three main elements: a drawn record, a descriptive, written record and a photographic record (detailed further below). Particular attention would be paid to evidence of the former uses of the buildings and their operations. Any evidence relating to the primary or historic use would be recorded and interpreted to inform the overall understanding of the site.

### *Photographic Record*

5.10.20 The photographic record is intended to act as a general record of the historic buildings in their final state, prior to the development. It will generally include both general

shots (exterior and interior) of accessible areas as well as detail shots of items/features of archaeological detail.

- It will consist of 35mm monochrome (black and white) film to produce an archive-stable photographic record and digital photography with an 8 megapixel camera. Digital images will be stored on CD and in an appropriate format to conform to the requirements of the archiving authority.

• Indication of levels of photographic coverage	
• Level 2	<p>General views of all accessible external areas</p> <p>General views of particularly significant internal areas</p> <p>Close-up images of particularly significant and easily accessible features or details which demonstrate important elements of the building's history, structure or use.</p>
• Level 3	<p>General views of the exterior of the building;</p> <p>The overall appearance of the principal rooms / areas;</p> <p>Detailed coverage of the building's external appearance</p> <p>Any detail, structural or decorative, which is relevant to the building's design, development and use and which does not show adequately on general photographs These may include blocked doors/windows, changes in construction, evidence of machinery, hoists, trap doors etc.</p> <p>Views showing the building's relationship to it's setting, to other buildings or to a significant viewpoint.</p>

5.10.21 All photographic records will be accompanied by a photographic register. Each film will have a unique film number, related to an agreed site code (agreed with Bexhill Museum).

5.10.22 A photographic scale will be used in images of features or artefacts. It is anticipated that a flash will be required for most of the internal photographs.

#### *Drawn Record*

5.10.23 The drawn record will comprise the preparation of an appropriate number of scaled drawings to explain, describe and interpret each structure. The number and type of drawings produced will depend on the level of recording specified for each building (Levels 2 or 3), their intrinsic significance and what type of drawing is most appropriate for detailing that significance.

5.10.24 Any existing metric survey drawings of the structures will be utilised as a basis in the proposed recording. However, it is believed that there are no such drawings of most (possibly all) the buildings and therefore, as the English Heritage guidelines require accurate measured drawings it will be necessary to undertake new survey work as the first stage of the site work. It is likely that this survey work will be undertaken with a

combination of laser scanning, digital metric survey (REDM, rectified photography, GPS etc) and traditional hand-drawn survey techniques as appropriate.

- 5.10.25 The *laser scanning* will form the first phase of the site work and it will concentrate on those buildings or structures which are particularly suited to this technique. It is likely to be particularly effective on larger structures such as the railway shed which can be surveyed rapidly and the barn where there are elements (eg roof timbers) which are difficult to access.
- 5.10.26 It is anticipated that it will be more appropriate to record some of the structures through traditional hand-measured techniques. This may be if the structures are small or if vegetation cover would prevent the laser scanner from functioning effectively. A final decision on which buildings will be laser scanned will be taken at the start of the site works.
- 5.10.27 The laser scan would produce a 'point cloud' covering all the accessible external and internal surfaces of the buildings with a vast number of survey points at a resolution which can highlight features such as skirting boards, door panelling, architraves, window panes etc. Line drawings would then be produced in AutoCAD from the point cloud. These CAD drawings would include plans and external or internal elevations where appropriate.
- 5.10.28 The point-cloud may also provide data that can be used at some time in the future for a different purpose.
- 5.10.29 These drawings will be taken to site to allow descriptive and interpretative annotation to be added. This annotation will help to explain and record the buildings in terms of their construction, development, history and use. Phasing and archaeological detail (eg location of blocked doors / windows, changes in construction, evidence of former walls etc) will be added to the drawings.
- 5.10.30 Other significant details in Buildings to be recorded at Level 3 would be drawn at appropriate scales (1:1-1:10) and these would be annotated to show materials (particularly cast-iron, wrought-iron, steel) and maker's plates (if present). Features of historic joinery such as glazing bars and doors would also be recorded at appropriate scales (eg 1:1- 1:20) prior to removal.
- 5.10.31 The drawn record will also include an overall site plan with all the buildings covered by the current recording shown and numbered.
- 5.10.32 The exact type of drawings produced for each building will depend on the level of recording required and the particular significance of each structure. For example in one building there may be an elevation which is of particular importance and where detailed recording would be of value while in another building the elevations may be entirely featureless and where detailed recording would not be of value.
- 5.10.33 Although it will be necessary to be flexible regarding the final list of drawings to be produced, in order to allow discoveries and assessments of significance made during

the site work to guide the recording, it is possible to provide a good indication of the drawings required at each level (detailed in table below).

• <b>Indication of requirements of different levels of drawn record</b>	
• Level 2	• Ground floor plan showing internal layout •
• Level 3	• Full floor plans • Significant elevations (internal and/or external) • Other significant details (eg possibly roof truss)

### *Written Record*

5.10.34 The written record is intended to supplement and support the other two elements of the recording and to provide additional descriptive analysis of the buildings, in terms of their architecture, setting construction, development and use.

5.10.35 It will provide a detailed description of the buildings in terms of their function, history, phasing, and relationship with other parts of the complex, evolution, significance, structure, construction and condition.

• <b>Indication of requirements of different levels of written record</b>	
• Level 2	Detailed description of exterior Detailed description of all accessible internal rooms/areas Description of important features/plant/fixtures within building Outline analysis of function of building, growth of building
• Level 3	Site details Detailed description of interior and exterior in terms of function, history, phasing, relationship with other parts of the complex, evolution, significance, structure and construction An account of the buildings' development (with evidence) An account of the buildings' past uses, and the uses of its parts, with evidence. An account of any fixtures, fittings plant or machinery associated with the building or its parts evidence for demolished structures or plant copies of other records of the building or a note of their existence and location

### *Historical research and consultation*

5.10.36 The project would be supported by a programme of historical research to add to the overall understanding of the history and development of each site. This research would be partly based on the historical data on the site which OA has gathered in previous

investigations but it may also include analysis of documentation on particular sites held at ES local record office or other archives such as Bexhill Museum.

### **Reporting**

5.10.37 After completion of the site recording an A4 bound report will be produced for each building or group of buildings.

5.10.38 The report will contain:

- Introduction and background to the project;
- Aims and objectives, Methodology; date of recording;
- An historical background;
- An internal and external description of the buildings/structures in accordance with the different levels of recording and placing them in their wider context;
- An analysis of the historical form, development, significance and use of the structures;
- Conclusions.

#### *Illustrations:*

- Copies of significant historical maps or plans;
- A site location plan;
- A plan of each site showing its context;
- Copies of the site drawings produced;
- A selection of photographs;

5.10.39 Reports will be submitted to East Sussex County Council. Copies will also be sent to the National Monuments Record in Swindon and the East Sussex Historic Environment Record (HER). The results will be considered for publication in the final project reporting as appropriate.

## 5.11 Landscape and earthwork survey

5.11.1 A number of historic landscape and earthwork features have been identified as being of historic interest and require recording prior to works commencing on the Scheme. Features have been noted in the Cultural Heritage Walkover Survey (OA 2006c) which formed part of the Environmental Impact Assessment and many are also evident on the LiDAR Survey (OA 2007b). None of the features covered by the recording are scheduled.

5.11.2 The recording will comprise 12 features classed as historic landscape features and 20 classed as earthwork features. Details of these can be found in Appendix A and their locations are shown on Figures 5a-d. For continuity identifying 'OA' numbers given refer to those used in the Cultural Heritage Walkover Survey.

### Aims and objectives

5.11.3 The overall aims of the project would be to preserve for posterity a record of the historic landscape and earthwork features prior to works commencing on the Scheme.

### Methodology

5.11.4 The level of recording is based on English Heritage guideline Level 3 as set-out in the English Heritage Guidance document Understanding the Archaeology of Landscapes – a guide to good recording practice (EH 2007). However, the LiDAR survey undertaken for the project has produced results of a high standard which in some cases will provide an adequate record for the survey element. An assessment of each feature and its current LiDAR record will be undertaken on site to determine the amount of additional survey (if any) required. It is anticipated that in some cases the LiDAR survey combined with a photographic and written record will be sufficient while in others supplementary or full topographic survey may need to be undertaken.

#### *Site recording*

5.11.5 The site recording will consist of three main elements: a written record, a Survey record and a photographic record as specified in the English Heritage guidelines (but see above regarding use of LiDAR survey).

#### *The Written Record*

5.11.6 A holistic approach will be taken to ensure features are considered in relation to each other and to features not included in the recording programme rather than each as an individual entity.

- 5.11.7 A core monument record and other details will be provided as detailed in the English Heritage specification.
- 5.11.8 The aim of the record will be to provide a picture of the whole landscape and the place of each feature as well as providing a detailed description of each one.

#### *The Survey Record*

- 5.11.9 The survey record will consist of a location map at 1:10,000 or 1:2500 as appropriate and a site plan at 1:2500. Other attributes of the features will be captured as appropriate for each individual feature and as specified in the English Heritage Specification. Features will be recorded as fully as vegetation cover and access allow. If vegetation is too restrictive it may be necessary to conduct some of the metric survey later in the year. It is anticipated that it may be possible to extract some of the information directly from the LiDAR survey after ground truthing. Any Metric Survey work will be carried out in accordance with OA's standard operating procedures.

#### *Photographic Record*

- 5.11.10 The photographic record is intended to act as a general record of the features in their final state, prior to the development. It will generally include both general shots of accessible areas as well as detail shots of items of significant interest.
- It will consist of 35mm monochrome (black and white) film to produce an archive-stable photographic record and digital photography with a camera of at least 8 megapixels. Digital images will be stored on CD and in an appropriate format to conform to the requirements of the archiving authority.
- 5.11.11 All photographic records will be accompanied by a photographic register. Each film will have a unique film number, related to an agreed site code (agreed with the County Museums Service).
- 5.11.12 A photographic scale will be used in images of features or artefacts.

### **Reporting**

- 5.11.13 After completion of the site recording an A4 bound report would be produced detailing the project and including the records on all the features recorded.
- 5.11.14 The report will contain:
- Introduction and background to the project;
  - Aims and objectives, methodology; date of recording;
  - Any historical background;
  - A description of the features in accordance with the assumed specified level of recording and placing them in their wider context;
  - An analysis of the historical form, development, significance and use of the features;
  - Conclusions.

*Illustrations:*

- Copies of significant historical maps or plans;
- A site location plan;
- A produced survey plan or LiDAR illustration;
- A selection of photographs.

5.11.15 The results will also be incorporated into the GIS model for the project for interpreting landscape history.

## 5.12 Watching Brief

5.12.1 Although it is generally anticipated that watching briefs will be undertaken on appropriate activities during the construction phase as part of the project mitigation it is also possible that there may be development related activities which may be instigated during the period of the Advance Works which will also require watching brief.

5.12.2 Any development activity taking place in this early phase will be assessed to determine an appropriate level of response and an approach agreed with the Client, Archaeological Consultant and County Archaeologist.

5.12.3 At present the only known activity which may take place is the excavation of a number of new ponds to allow the relocation of Great Crested Newts from existing habitats which will be impacted by the construction works. Due to its nature this work needs to be undertaken early in the programme to allow the relocation to be successfully completed. Three new ponds which may be excavated are shown in the south western corner of Figure 4b.

5.12.4 Watching brief work will be undertaken by an experienced archaeologist who will monitor the work at an agreed level.

5.12.5 In all circumstances, where watching briefs identify any significant archaeological remains, the County Archaeologist will be informed and provision made to investigate and record the archaeology present.

5.12.6 OA will assess the risk of delay resulting from discoveries during a watching brief and structure their team appropriately to mitigate such risk. Wherever possible archaeology identified in a watching brief will be mitigated with the resources available for the watching brief with minimal delay to development works. Where the watching brief identifies remains that require additional resources and time, the area will be fenced off from the main development ground works and a Characterisation Report and Further Archaeological Works Design provided and implemented.

5.12.7 A Further Archaeological Works Report will be prepared for each area of watching brief on completion of monitoring.

5.12.8 Watching Brief archaeologists will keep a day to day record of their monitoring, noting site conditions, working methodology, deposit sequence and areas of modern disturbance. OA will include the progress of watching brief works in their weekly reports. This will include a comment on the reliability of the methodology in place.

5.12.9 Recording and investigation methodologies for watching briefs will be consistent with those set out for other archaeological works on the Scheme

## 6 REPORTING

### 6.1 Reporting

- 6.1.1 Client reports will be completed within 4 weeks following the end of on-site work (although if specialist input is required this may be forwarded at a later date as an addendum). These reports will be compiled to ESCC standards and OA standards as outlined in OA's Standard Appendices.
- 6.1.2 The results of the advance works investigations will inform a programme of further work (mitigation) which will be presented in an updated WSI and research design. A draft of this document will be produced for consultation and discussion by early November to facilitate submission and agreement in December 2012 before any construction work begins. It will outline areas of potential archaeology and provide a detailed outline of the proposed mitigation strategies and their locations throughout the Scheme.
- 6.1.3 A team of qualified and experienced specialists will undertake the finds and environmental analysis required for the reporting. The table below gives details of the specialists OA intend to use on the project. OA specialists will reference local type series and consult with authorities on the local material culture as appropriate, particularly with reference to elements such as prehistoric pottery and lithics.

Specialist	Subject
Francis Wenban-Smith (Southampton University)	Palaeolithic Specialist
Carl Champness	Geoarchaeologist
Martin Bates (St.David's University College, Lampeter)	
Richard McPhail (UCL)	Soil micromorphologist
Kath Hunter (OA)	Plant remains analysis
Damien Goodburn (freelance)	Waterlogged wood
Liz Stafford (OA)	Molluscs
Elizabeth Huckerby (OAN)	Pollen analysis
Denise Druce (OAN)	
Louise Loe (OA)	Osteoarchaeological manager
Lena Strid (OA)	Animal bone analysis
Paul Miles (OA)	Computer manager
Matt Bradley (OA)	Surveyor and GIS
Leigh Allen (OA)	Finds manager
Rebecca Nicholson (OA)	Environmental manager
Vanessa Fell (Oxford Institute of Archaeology)	Conservator
Mike Donnelly (OA)	Lithic analysis
Lisa Brown (OA)	Prehistoric pottery
Paul Booth (OA)/ Edward Biddulph (OA)	Roman pottery
Phil Jones	Pottery
Jane Timby (OA)	Pottery
John Cotter (OA)	Saxon/medieval/post-medieval pottery
Chris Salter (Oxford University)	Slag
Rachel Tyson (OA)	Glass
Leigh Allen (OA)	Metalwork
Belfast Laboratory	C14 dating

Specialist	Subject
Sarah Hall (Oxford Archaeological Research Laboratory)	Thermoluminescence dating
John Whittaker (Natural History Museum)	Ostracods and Forams
David Smith (Birmingham University)	Insects
Nigel Cameron (Natural History Museum)	Diatoms

Table 5: List of project Specialists

## 6.2 Archive

- 6.2.1 It is currently anticipated that following completion of the project the site archive will be deposited with Bexhill Museum. Bexhill Museum will be contacted by OA prior to the start of works on site to discuss requirements. A microfilm copy of the site archive and narrative will be issued to RCHME standards and submitted to the Sites and Monuments Record and the National Monuments Record. An OASIS form will also be submitted to the Archaeology Data Service.
- 6.2.1 The archive will be compiled in accordance with the standards contained in MAP2 (English Heritage) and with the receiving museums guidance (Bexhill Museum). It will include all records collected and produced during the works (photographs, negatives, notes, drawings, report). All archive storage material will comply with the requirements of the UKIC. The archive will be indexed and internally consistent.
- 6.2.2 A digital data archive of primary field data will be produced. This will adhere to ADS guidelines, and the Employers Information Management standards and procedures. It will be submitted, virus free, on correctly labelled CD-R or DVD.

## 7 COMMUNITY ARCHAEOLOGY, OUTREACH AND PUBLICITY

- 7.1.1 East Sussex is rich in archaeological remains and the area in which the new Bexhill Hastings Link Road is no exception. The local communities have a keen interest in their heritage and have highlighted archaeology in their communications with the County Council.
- 7.1.2 The archaeological programme will involve undertaking considerable areas of excavation in advance of development work. The programme provides an unprecedented opportunity to involve the community in archaeological works and provide access to their heritage. This would also provide active engagement with the process of constructing the road. By identifying a specific community archaeological role the project can provide a proactive interface with the local community and leave a legacy of an increased appreciation and understanding of their heritage. A requirement of the project will be to integrate a programme of community archaeology directly into the archaeological programme (ESCC 2009).
- 7.1.3 During the Advance Works opportunities for community involvement and dissemination will be identified and a Community Archaeology and Outreach Strategy as defined in the ESCC brief will be developed for implementation during the main phase of works next year. It may include elements such as;
- participation of local volunteers in archaeological fieldwork and environmental and finds processing;
  - identification of areas where local archaeological groups can contribute to the aims of the archaeological programme through wider off-site investigation, survey and studies;

- an exhibition / display including information and artefacts to be presented while the scheme is in progress
- interpretation boards that can be moved between local libraries, community centres, museums and schools throughout the course of the investigation;
- open days, guided tours and school visits to archaeological works
- talks to local societies and interest groups and visits to schools (including the opportunity to see and handle finds;
- liaison with the media and supply of publicity material such as leaflets and contributions to newsletters and websites, to be undertaken in conjunction with the clients requirements.

7.1.4 The strategy will be developed in agreement with the client and County Archaeologist as well as interest groups such as Bexhill Museum and will be presented in the updated WSI which will be produced following the Advance Works phase.

## **8 RESOURCES AND PROGRAMME**

### **8.1 Programme of advance works**

- 8.1.1 The following programme provides an outline indication of fieldwork and reporting times.
- 8.1.2 There are a number of factors that may affect the timing of the works including access, the depth of deposits, archaeology encountered, weather and ground conditions. In order to allow as much time as possible to complete the reporting phase the general principal will be to progress fieldwork elements at the earliest opportunity.
- 8.1.3 In order that information from the borehole investigation can be used to inform and refine the location of trenches and test pits it is important that this survey is completed by the earliest date possible. Logistic as well as programme considerations also make it important that it is conducted as far as possible in one operation on site. However, some of the fields on the proposed route are currently sown with crops and the trial trenches and test pits in these areas may be excavated following harvesting.
- 8.1.4 At present the earliest that access will be available is understood to be 16th July and an indicative programme is outlined below. The programme will conclude with the production of a further WSI for the mitigation of the construction phase of works. On the basis that fieldwork commences in July a draft updated WSI will be produced by the end of October but this is subject to completion of the forgoing fieldwork and analysis.

	July			August				September				October			
	16	23	30	6 <sup>t</sup>	13	20	27	3	10	17	24	8	15	22	27
Advance works															
Borehole survey															
Standard and targeted trenching															
Stepped trenching and test pitting															
Fieldwalking survey															
Metal detecting survey															
Landscape surveys															
Historic building recording															
Updated WSI															

Table: Outline programme of archaeological works (fieldwork and reporting)

8.1.5 It is intended that the historic building recording and landscape surveys will be undertaken during the Advance Works phase as access allows. In principal surveys will be undertaken at the earliest time available. If necessary some of them could be done at a later date but they must be completed before any construction works take place.

## 8.2 Resources

8.2.1 The fieldwork will be undertaken by a team comprising Dan Sykes and Mike Donnelly (Project Officers), Carl Champness and Liz Stafford (Geoarchaeologists), Jon Gill (Building recording) and Matt Bradley (Survey and GIS), supplemented by additional archaeologists as required, working under a Project Manager (David Score). All OA's fieldwork is carried out under the general direction of Dan Poore (Head of Fieldwork). The field team will be supported by the relevant environmental and finds specialists.

8.2.2 The works will be undertaken by a team of between 2 and 15 members of OA staff depending on the activities taking place.

## 9 MONITORING ARRANGEMENTS

- 9.1.1 The County Archaeologist will be kept informed as to the progress of the fieldwork; site visits for monitoring purposes will be arranged as appropriate and are likely to be on a weekly or twice weekly basis depending on site activity.
- 9.1.2 A report on progress including images or plans as appropriate will be submitted to the County Archaeologist on a weekly basis.
- 9.1.3 If a significant archaeological find is made which cannot adequately be dealt with under the terms of this WSI OA will immediately inform the Client, the Archaeological Consultant and the County Archaeologist so that an appropriate course of action can be agreed.

## **10 MITIGATION RESPONSES**

### **10.1 General approach**

- 10.1.1 A second WSI will be produced following the completion of the Advance Works which will outline in detail the mitigation measures that are required for the scheme so that these can be accommodated within the construction programme. The approach to mitigation works is detailed in the brief (ESCC 2009) and a short summary of some of the main techniques is presented below. Detailed methodologies will be presented in the revised WSI to be submitted prior to the construction works phase. The mitigation works will be designed to investigate and record specific archaeological resources or potential identified during the Advance Works but will also include a programme of strip, map and sample excavations and watching briefs which will help to set archaeological sites in a broader landscape context, an important overarching aim of the project.
- 10.1.2 In critical areas of the Scheme where archaeology is identified some of the mitigation works may follow straight on from the evaluations in order to avoid any delays to the construction works. This will be undertaken only in consultation with the County Archaeologist, client, Archaeological Consultant and other interested parties such as landowners.

### **10.2 Preservation in-situ**

- 10.2.1 In line with the guidance presented in PPS5 preserving archaeological features and deposits in-situ is the preferred option where feasible. This could be accomplished by design changes in the Scheme or by changes in construction methodology depending on the nature of the impact. Major design changes may be difficult to achieve, particularly where the main road Scheme is concerned, but redesign / relocation of landscape features or ponds may offer greater scope. This mitigation option would clearly be preferable should a significant waterlogged site be discovered in the valley areas.
- 10.2.2 However, proposals for in-situ preservation will take account of how meaningful and sustainable the preservation of the remains will be. The County Archaeologist is unlikely to accept proposals that promote the preservation of fragments of

archaeological features, a patchwork of archaeological preservation that prevents proper understanding of the archaeological resources being elsewhere investigated, or the preservation of archaeological remains which have been exposed, unless and as an exception specific protection measures are put in place.

- 10.2.3 Any preservation in-situ strategy must ensure the long-term survival of the deposits and measures such as monitoring of subsequent water-levels and the effects of changes in hydrology must be considered and a programme of post-development monitoring agreed before development commences..

### **10.3 Strip, Map and Sample Excavation**

- 10.3.1 The Project Design (ESCC 2009) outlines the general principles of a Strip, Map and Sample Excavation approach which will be implemented during the mitigation phase, the key stages and its facilitation and this is set out below. Specific methodologies will be detailed in the revised WSI to be submitted prior to the construction phase.

- 10.3.2 During the development phase, most of the road scheme where development impacts will occur will be subject to an extensive and systematic programme of archaeological investigation, involving 'Strip, Map and Sample' excavation, in advance of the construction of the new road. This will involve the whole of the scheme where topsoil and/or subsoil have to be stripped and previous destruction of archaeological levels has not taken place. Areas of the scheme where sufficient depths of subsoil can remain in place above archaeological levels may be excluded from the strip, map and sample excavation and the archaeology preserved in-situ (see 10.2 above). The archaeological programme will include the road route itself, associated works, Consultant/Contractor's compounds and temporary works where appropriate. Early entry will be sought to the land affected to ensure that sufficient time is allowed for the completion of the necessary archaeological works.

- 10.3.3 A key objective of field archaeology is to see how sites and features relate to each other spatially and chronologically - the dynamics of landscape evolution. At one level it is about sites and features and their immediate surroundings but it can be about the wider use of the landscape. Accordingly in undertaking archaeological investigations of more extensive sites it is important to relate site-specific work to a broader context. Strip, Map and Sample archaeological excavation is a key tool in helping to achieve this.

- 10.3.4 In Strip, Map and Sample a major focus of the investigation will be on removing the overburden and establishing a phased plan of the archaeology which has been revealed, with further work then being based on an appreciation of this complete plan rather than on those more limited insights revealed from trial trenching and limited area excavation. The overall phased plan is paramount and subsequent sampling will be targeted to answering questions about the chronology and function of the component elements of the site and how they relate to each other. Relatively blank areas may also be significant.

- 10.3.5 Key stages in Strip, Map and Sample are:

- 10.3.6 The careful stripping of the site to the appropriate level, in order to reveal the site plan. Note that in some areas there may be more than one archaeological level and the whole strip, map and sample process may need to be repeated until the base level is reached.
- 10.3.7 Immediate planning (mapping) of the site while the uncovered surface is fresh. The site should be regularly checked subsequently to see if weathering reveals further features and the plan updated.
- 10.3.8 Following planning, initial characterisation of the archaeology through sampling will proceed. The aim will be to provide an initial assessment of the complexity, preservation, extent and depth, character and chronology of the features present. This will involve a limited number of sample excavations targeted at feature intersections and across the range of feature types present. The sampling will take account of the spatial arrangement of features on the site.
- 10.3.9 Informed by the characterisation stage a further stage of more detailed sampling and excavation ('Further Archaeological Works') will be agreed. Key areas and nodes will be investigated in sufficient detail to understand them both in respect of themselves and also in relation to their surroundings. Additional work will be focused on adding to the spatial, chronological, functional and environmental context of the investigated area.
- 10.3.10 Excavation will be an iterative process relating to an agreed strategy which will be refined as new information emerges. At all stages of the investigation it is essential that an overall phase plan is maintained, incorporating what is being revealed through excavation.
- 10.3.11 A key requirement of the Strip, Map and Sample approach to the mitigation of the Bexhill Hastings Link Road scheme will be the need to continuously inform the investigation through the assessment of finds and environmental remains. These will be processed and assessed during the course of the fieldwork, preferably within facilities on the scheme, or in its vicinity. Results will be fed back in time to inform key decisions on site. Mapping and GIS capabilities will also be maintained on the Scheme and regular reports and outputs produced to inform key decisions on site.

#### 10.4 Watching brief

- 10.4.1 After field evaluation and any subsequent mitigation of highlighted archaeological deposits there is clearly still the possibility that construction work may uncover previously unknown archaeological remains.
- 10.4.2 The scope of archaeological monitoring during construction is dependent on the design, construction methodology, and the results of the evaluation.
- 10.4.3 The archaeological watching brief may be a **Targeted Watching Brief** whereby OA supervises the carrying out of the development groundwork excavations and ensures that archaeology is properly identified and recorded before being impacted by the excavation. A Targeted Watching Brief will normally be carried out in an area where

significant archaeological potential has been identified or is likely and access for advance work is impossible to achieve before development works take place.

- 10.4.4 Other watching briefs may be carried out in areas where archaeological potential is considered to be low, or the impact of development is relatively minor.
- 10.4.5 Generally, any intrusive works in areas which have the potential to contain archaeological remains should be subject to archaeological monitoring. This can be constant or intermittent depending on the circumstances. Such works will include topsoil stripping, service installations and the excavation of ponds.
- 10.4.6 The County Archaeologist, Client and Archaeological Consultant will be informed immediately if significant archaeology is encountered and a strategy and resources agreed to deal with the deposits. This could include immediate excavation and recording at an agreed level or possibly a change in design to reduce or remove the impact.

## **11 HEALTH AND SAFETY**

- 11.1.1 OA will comply with all relevant health and safety legislation.

### **11.2 Roles and responsibilities**

- 11.2.1 The Senior Project Manager, David Score, has responsibility for ensuring that safe systems of work are adhered to on site. He delegates elements of this responsibility to the Project Officer/Supervisor who implements these on a day to day basis.
- 11.2.2 The Director with responsibility for Health and Safety at OA is Robert Williams (Chief Operations Officer); he is advised by the OA Group Health and Safety Coordinator, Dan Poore (NEBOSH Level 3).

### **11.3 Method statement and risk assessment**

- 11.3.1 A summary of OA's general approach to health and safety can be found in Standard Appendix I. A risk assessment will also been undertaken and approved and will be kept on site, along with OA's standard health and safety file, which will contain all relevant health and safety documentation. The H and S file will be available to view at any time.

## **12 STANDARDS AND CONDITIONS**

- 12.1.1 Arrangements for conducting fieldwork, monitoring, reporting, professional and safety standards are dealt with in OA's Standard Appendices which are supplied with this WSI and will apply unless superseded by text within the WSI. ESCC Standards and Guidance for Conducting Archaeological Work (2008) will also be adhered to.

### 13 BIBLIOGRAPHY AND REFERENCES

Archaeology South East. 2006. An archaeological watching brief during the excavation of geological test pits along the proposed route of the Bexhill to Hastings Link Road, East Sussex.

Armstrong, J. 1974. A History of Sussex (Darwen County History Series)

Bates, M.R., & Bates, C.R. 2000. Multidisciplinary approaches to the geoarchaeological evaluation of deeply stratified sedimentary sequences: Examples from Pleistocene and Holocene deposits in southern England, United Kingdom. *Journal of Archaeological Science*, 27, 845-858.

Chris Blandford Associates. 2004. Hasting to Bexhill Link Road: archaeological desk-based assessment

ESCC. April 2008. East Sussex Standards and Guidance for Undertaking Archaeological Work.

ESCC. 2009. Bexhill Hastings Link Road. Archaeology Project Design. ESCC brief produced by Casper Johnson.

English Heritage. 2002. Environmental archaeology: A guide to the theory and practice of methods from sampling and recovery to post-excavation.

English Heritage. 2006. Understanding Historic Buildings, a guide to good recording practice

English Heritage. 2007a. Geoarchaeology: Using an earth sciences approach to understand the archaeological record.

English Heritage 2007b. Understanding the Archaeology of Landscapes – a guide to good recording practice

English Heritage. 2011. Environmental Archaeology: A guide to theory and practice for methods. From sampling to the recovery to post excavation.

Greatorex, C. 2000. Living on the Margins? The Late Bronze Age Landscape of the Willingdon Levels.

Jennings, S. 2005. The Combe Haven - A landscape history

Jennings, S., Greatorex, C., Smyth, C. & Spurr G. 2003. The environmental archaeology of the Late Bronze Age occupation platform at Shinewater, Near Eastbourne, UK. In *Alluvial Archaeology in Europe* (eds) Howard, Macklin and Passmore. Swets & Zeitlinger, Lisse ISBN 90 58095614.

Jennings, S & Smyth. 1990. Late Bronze Age-Iron Age Valley sedimentation in East Sussex, Southern England. In J. Boardman, I.D.L. Foster and J.A. Dearing (eds) *Soil Erosion on Agricultural Land*, 273–84. Wiley, Chichester.

Jennings, S & Smyth. 1988. Mid to Late Holocene Forest Composition and the Effects of Clearance in the Combe Haven Valley, East Sussex. In East Sussex archaeological collections 126, 1-20

Jennings, S & Smyth. 1987a. Coastal erosion and planning at Eastbourne, East Sussex.

Jennings, S & Smyth. 1987b. Coastal sedimentation in East Sussex during the Holocene. *Progr Oceanogr* 18. 205-41.

Lamb, H.H. 1995. *Climate, History and the Modern World*. 2nd edition. Routledge, London.

Lamb, H.H. 1991. *Historic Storms of the North Sea, British Isles and Northwest Europe*. Cambridge University Press, Cambridge.

Long, A.J. 2001. The mid and late Holocene evolution of Romney Marsh and the Thames Estuary. *Archaeology in the Severn Estuary* 11, 55–68.

Long, A.J., Scaife, R.G. and Edwards, R.J. 2000. Stratigraphic architecture, relative sea level, and models of estuary development in southern England: new data from Southampton Water. In K. Pye and J.R.L. Allen (eds) *Coastal and Estuarine Environments: Sedimentology, Geomorphology and Geoarchaeology* (Geological Society Special Publication 175), 253–79. Geological Society Publishing House. Bath.

Long, A.J. and Innes, J.B. 1995. The back-barrier and barrier depositional history of Romney Marsh, Walland Marsh and Dungeness, Kent, England. *Journal of Quaternary Science* 10, 267–83.

Leslie and Short. 1999. A Historical Atlas of Sussex

OA. 2010. Geoarchaeological Watching Brief on Ground Investigation

OA. 2008a. Geoarchaeological Geophysical Survey Report

OA. 2008b. Geoarchaeological Field Assessment. Issue 2

OA. 2007a. Geoarchaeological Assessment Report. Bexhill to Hastings Link Road

OA. 2007b. LIDAR Survey Analysis Report: Bexhill to Hastings Link Road

OA. 2007c. Field Collection Survey Report. Bexhill to Hastings Link Road

OA. 2007d. Chapter 14: Cultural Heritage. Bexhill to Hastings Link Road Environmental Impact Assessment.

OA. 2006a. Updated Archaeological Desk Based Assessment

OA. 2006b. Archaeological Survey Report (geophysics). Bexhill to Hastings Link Road.

OA. 2006c. Cultural Heritage Walkover Survey Report. Bexhill to Hastings Link Road

Stevens, L. 1997. Shinewater: Eastbourne's Bronze Age Gem, Eastbourne Natural History Society

Van Geel, B., Buurman J. & Waterbolk, H.T. 1996. Archaeological and palaeoecological indications of an abrupt climate change in the Netherlands, and evidence for climatological teleconnections around 2650 BP. *Journal of Quaternary Science* 11: 451-460.

Waller, M. and Long, A. 2010. The Holocene Coastal Deposits of Sussex: a Re-evaluation.

## Appendix A: Historic landscape features and earthwork surveys

OA No	Feature Type	Description
OA 207	Historic Landscape Feature	Woodland boundary on north and part of west side of woodland. Consists of external ditch and bank; bank has mature trees and grown-out coppice stools. Northern part of woodland shown as woodland on OS first edition map, and also recorded as woodland on B
OA 223	Earthwork	Curvilinear terrace or lynchet, probably indicating former cultivation and possibly a field boundary. Hedgerow on earthwork.
OA 224	Historic Landscape Feature	Access trackway to OA 305, embanked to north, forms holloway to south.
OA 225	Earthwork	Curvilinear terrace or lynchet, probably indicating former cultivation and possibly a field boundary.
OA 232	Historic Landscape Feature	Holloway running south to water-meadows. Formed part of historic route between Bynes and Acton's Farms, and then west to join lane running north from Sidley Green to Buckholt Farm.
OA 233	Earthwork	Raised bank across part of water-meadows. Very straight and regular. Possibly modern services.
OA 234	Earthwork	Curvilinear terrace or lynchet, probably indicating former cultivation and possibly a field boundary. Joins current field boundaries at either end.
OA 235	Earthwork	Curvilinear terrace or lynchet, probably indicating former cultivation and possibly a field boundary.
OA 236	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow. Adjacent to RB iron-working site OA 109.
OA 237	Earthwork	Curvilinear terrace or lynchet, probably indicating former cultivation and possibly a field boundary.
OA 238	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 239	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary. Hedgerow along southern part.
OA 240	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 241	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 244	Earthwork	Possible site of silted up duck decoy pond in pasture field. Tithe map and award of 1843/7 record field name 'Old Decoy Pond Brook'. Consists of shallow hollow with possible bank to southern side and channel to east.
OA 245	Earthwork	Possible site of duck decoy pond in pasture field. Tithe map and award of 1843/7 record field name 'Old Decoy Pond Brook'. Extant pond has been machine dug.
OA 246	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 247	Earthwork	Platform formed in pasture field by substantial, angular and curvilinear bank, which continues south of current field boundary and appears to be cut by a drain on the water-meadow.

OA 248	Historic Landscape Feature	Woodland boundary along part of north-west edge of wood.
OA 249	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 252	Earthworks	Consists of curvilinear terrace or lynchet (possible former field boundary) and a possible holloway running to the SW. Holloway may be a modern feature created by tractor access down steep slope.
OA 256	Historic Landscape Feature	Woodland boundary along south-west edge of Chapel Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.
OA 257	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow on the southern edge of Chapel Wood.
OA 266	Historic Landscape Feature	Woodland boundary along part of west edge of Park Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.
OA 267	Historic Landscape Feature	Woodland boundary along part of south-east edge of Park Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.
OA 268	Historic Landscape Feature	Woodland boundary along boundary to east of Park Wood. Consists of bank with mature trees. May represent former woodland edge or a hedgerow boundary that has grown out.
OA 269	Earthwork	Bank across top of hill. Very likely to be a modern feature associated with driver training on the site.
OA 270	Historic Landscape Feature	Holloway to south of Mayfield Farm. Part of former lane between Crowhurst and Hollington, mainly removed in late 20th century.
OA 274	Earthwork	Substantial curvilinear terrace or lynchet forming a field boundary with a hedgerow.
OA 278	Historic Landscape Feature	Woodland boundary along north edge of Decoy Pond Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.
OA 279	Historic Landscape Feature	Woodland boundary along west edge of Decoy Pond Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.
OA 280	Historic Landscape Feature	Woodland boundary along south edge of Decoy Pond Wood. Consists of bank and external ditch with mature trees and grown-out coppice stools.