

11 MARINE ARCHAEOLOGY

This section considers the effects of the proposed placement operation on marine archaeology.

11.1 Existing Environment

The Thames Estuary has great archaeological potential and significance from both its maritime history and the evidence of early human activity from periods when much of the present seabed was dry land. Appendix H provides a detailed discussion of the archaeological evolution and potential of the Thames Estuary and this is summarised below.

11.1.1 Prehistoric Activity

The Thames Estuary area was dry land above sea level at several times during the history of human occupation of Britain. Wenban-Smith has recently noted that with sea level being at least 50m below that of today, for 40% of the Lower Palaeolithic “humans would probably have been occupying the offshore landscape for the majority of the time during its regular exposure by lower sea levels” (Wenban-Smith 2001: 11). It has also been demonstrated that the last inundation of the placement area occurred between the Later Mesolithic and Neolithic period (6-4,000BC) (Wessex Archaeology, 2004).

Any archaeological artefacts dating from the Lower and Middle Palaeolithic are likely to survive as derived objects within the sand and gravel associated with the palaeo-channels of the Thames-Medway Rivers and their tributaries. For later periods, from the Upper Palaeolithic to the Neolithic, there is potential for survival of both artefacts and sites within the sediment filled palaeo-channels of the Thames and the peat deposits identified in the Estuary (Wessex Archaeology, 2004).

There are currently just three known submerged archaeological sites of Mesolithic date in the UK, and none of Palaeolithic date. As such, on the basis of their age and rarity, any such site would be of high, possibility national archaeological importance (Wessex Archaeology, 2004).

11.1.2 Maritime Activity

The long history of shipping within the study area is demonstrated by Mesolithic or Neolithic logboats, possible Bronze Age and Roman wrecks. These known sites, in addition to what is known about communities within the study area, demonstrates that there is potential for wrecks, dating back as far as the Mesolithic, to exist within the Thames Estuary. Any such finds would probably be of national importance, based on their rarity (Wessex Archaeology, 2004).

There are 160 known maritime sites with the area selected as the Marine Study Area comprising both documented wrecks and seabed features. Of these, and of particular interest is a wreck of mid 14th century date and two of 17th century date (see Appendix H for figures). Wrecks of medieval date are very rare in Britain, and should a site of this date be discovered, it would almost certainly be of national importance (Wessex Archaeology, 2004).

The two casualties of 17th century date would also be of archaeological interest, although fourteen wrecks of this date are protected under the Protection of Wrecks Act 1973 (Wessex Archaeology, 2004).

It should be noted that the obstructions on the edge of the placement area (2150, 2142, 2151) may have the greatest archaeological potential from the limited reports that are available of their character and extent (Wessex Archaeological, 2004).

More research into named craft may reveal particular technological innovations that would raise their individual importance. At present, their main interest lies in them being characteristic of a particular point in naval history. For example, the wreck Hawksdale (2072) dates from a period of major change in ship building technology, from which there are few known surviving examples. The Hawksdale is one of two wrecks that are known to lie within the proposed placement area, with a third less than 50m outside the proposed placement area.

11.2 Change in Sedimentation and Erosion Patterns

Buried archaeological sites may be exposed or subject to erosion while exposed sites may be buried if the sedimentation and erosion patterns changed. Section 4 details the predicted change to sedimentation and erosion patterns which is considered to be localised around each individual mound of sand. No significant change is predicted to tidal currents or wave action outside of the North Edinburgh Placement site and changes within the site will gradually return to normal as the placed sediment is mobilised and the seabed levels. The archaeological sites within the placement site will be subject to a temporary change in sedimentation but the effect is considered to be within the envelope of natural change that occurs in the North Edinburgh channel. All three of these sites will have been subject to depth changes of up to and in some cases greater than 10m over the previous 10 years due to the eastward migration of the channel. It is considered that the effect of the short-term and localised change in sedimentation and erosion patterns will be of **minor adverse significance**.

11.2.1 Mitigation

It is not possible to directly mitigate the effect. The PLA is compiling an Archaeological Strategy to provide information and direction for the management of the archaeological resources within the Port of London. These sites will be included within this strategy.

11.2.2 Residual Impact

The residual impact of the temporary change in sedimentation and erosion patterns is **minor adverse** significance

11.3 Increase in Burial Depth

The sand deposition process will increase the burial depth over any archaeological features within the placement area. This will have the effect of providing protection from erosive forces and increasing the depth of the anaerobic conditions that contribute to the preservation of archaeological material. The sand is the same material as the existing seabed, therefore, no changes in seabed chemistry or the resulting biological communities are predicted. Archaeological features outside the placement site will not be subject to an increase in burial depth. The effect of increasing burial depth is considered to be of **minor beneficial** significance.

11.3.1 Mitigation

No mitigation is considered necessary.

11.3.2 Residual Impact

The residual impact of increasing burial depth is **minor beneficial significance**.

11.4 Direct damage to Archaeological Site

One known archaeological site lies within the placement area as defined by the 12m contour. This wreck, the Hawksdale, may be damaged should sand be deposited from directly above the wreck. The Hawksdale is considered to be of archaeological importance as once of the few remaining examples of this type of ship. Notwithstanding that the Hawksdale will be subject to large movements of sand during extreme storm events, deposition of sand directly onto the Hawksdale is considered to be of **moderate adverse significance**.

11.4.1 Mitigation Measures

An exclusion zone of 100m will be placed around the Hawksdale. No sand will be deposited within this 100m zone.

11.4.2 Residual Impact

The residual impact of damage to the Hawksdale is **minor adverse significance**.

11.5 Summary of Predicted Impacts

Table 14 summarises the predicted potential impacts, any mitigation measures and the residual impact.

Table 14 Summary of Potential Impacts on Marine Archaeology

IMPACT TITLE	SIGNIFICANCE LEVEL	MITIGATION	RESIDUAL IMPACT	COMMENTS
Change in sedimentation and erosion patterns	Minor Adverse	PLA Archaeological Strategy	Minor Adverse	Temporary.
Increase in Burial Depth	Minor Beneficial	None	Minor Beneficial	
Direct Damage to Archaeological site	Moderate Adverse	100m Exclusion Zone	Minor Adverse	Refers to Hawksdale.

Given that the residual impacts of all impacts are considered to be minor adverse, no significant cumulative effects from the individual impacts are predicted.

11.6 Monitoring

The weekly bathymetric monitoring undertaken as part of the Sand Placement Management Plan will also inform of any effects on the Hawksdale. Further, on completion of the placement operations, a sidescan sonar or multibeam survey will be run over the wreck site.