

# SILVERTOWN TUNNEL

## 6.1.8 Environmental Statement Chapter 8 – Cultural Heritage and Archaeology

### TR010021

APFP Regulation 5(2)(a)

Revision **10**

Planning Act 2008

Infrastructure Planning (Applications: Prescribed  
Forms and Procedure) Regulations 2009

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## Silvertown Tunnel

# ES Chapter 8 – Cultural Heritage and Archaeology

## 6.1.8

Planning Act 2008

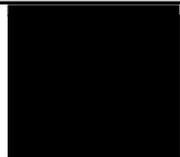
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0	29/04/2016	David Rowe (TfL Lead Sponsor)		For DCO Application
1.1	15/11/2016	David Rowe (TfL Lead Sponsor)		Updated for Deadline 1 to include: <ul style="list-style-type: none"> <li>Reference to Newham</li> </ul>

				<p>APA revised to Royal Docks APA as discussed in meeting with Historic England 29/9/2016</p> <ul style="list-style-type: none"><li>• Addition of Coldharbour Conservation Area and the East Greenwich Conservation Area as heritage assets, as raised in Historic England's Relevant Representation letter dated 31st August 2016</li><li>• Further information regarding archaeological evaluation and the impact on unknown archaeology, added to address Historic England's concerns raised in section 42 letter dated 12th November 2015 and Relevant Representation letter dated 31st August 2016</li></ul>
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## List of Abbreviations

AOD	Above Ordnance Datum
CoCP	Code of Construction Practice
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
GLA	Greater London Authority
GLAAS	Greater London Archaeological Advisory Service
HE	Highways England (Formerly Highways Agency)
HER	Historical Environment Record
HMP	Heritage Management Plan
NN NPS	National Networks National Policy Statement
NPPF	National Planning Policy Framework

NPPG	National Planning Practice Guidance
NPS	National Policy Statement
PEIR	Preliminary Environmental Information Report
TBM	Tunnel Boring Machine
TfL	Transport for London
WID	Water Injection Dredging
WSI	Written Scheme of Investigation

## Glossary of Terms

Term	Explanation
Blackwall Tunnel	An existing road tunnel underneath the River Thames in east London, linking the London Borough of Tower Hamlets with the Royal Borough of Greenwich, comprising two bores each with two lanes of traffic.
Bronze Age Periods	2,500 BC to 700 BC
Code of Construction Practice	The Code of Construction Practice contains a series of measures and standards of work to be applied to the construction of a project ensuring a consistent approach to the management of construction activities.
Cut-and-Cover	A form of construction usually involving in situ reinforced concrete, where a tunnel is built within an excavation which is undertaken from the ground surface.
Design Manual for Roads and Bridges (DMRB)	A series of 15 volumes that provide official standards, advice notes and other documents relating to the design, assessment and operation of trunk roads, including motorways in the United Kingdom.
Desk-based Assessment	A data collection exercise using existing sources of data. The purpose is to identify relevant known resources.
Development Consent Order (DCO)	<p>This is a statutory order which provides consent for the project and means that a range of other consents, such as planning permission and listed building consent, will not be required. A DCO can also include provisions authorising the compulsory acquisition of land or of interests in or rights over land which is the subject of an application.</p> <p><a href="http://infrastructure.planninginspectorate.gov.uk/help/glossary-of-terms/">http://infrastructure.planninginspectorate.gov.uk/help/glossary-of-terms/</a></p>

Environmental Impact Assessment	Environmental Impact Assessment is a key aspect of many large scale planning applications which identifies the potential environmental effects of a development project.
Environmental Statement	An Environmental Statement is the written material submitted to the local planning authority (the Planning Inspectorate in the case) in fulfilment of the EIA regulations.
Heritage Asset	A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).
Iron Age	800 BC to AD 43
Listed Buildings	Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest.
Made Ground	An area of land that has been man-made, generally through the reclamation of marshes, lakes, or shorelines. An artificial fill is used, consisting of materials, refuse, etc.
Medieval Period	AD 1066 to AD 1540
Mesolithic Period	10,000 BC to 3,500 BC
Modern Period	AD 1900 to present.
Neolithic Period	4,000 BC to 2,200 BC

Neolithic Period	4,000 BC to 2,200 BC
Palaeoenvironmental	The determination of the prehistoric environment of an archaeological site. Palaeoenvironmental reconstruction refers to the investigations which are undertaken to reconstruct the climate and vegetation of a specific time and place.
Post-medieval Period	AD 1540 to 1914
Prehistoric Period	Pre 30,000BC to AD43
Preliminary Environmental Information Report	Information referred to in Part 1 of Schedule 4 (information for inclusion in environmental statements) which: a) has been compiled by the applicant; and b) is reasonably required to assess the environmental effects of the development (and of any associated development). The focus of the PEIR is to enable the local community to understand the environmental effects of the proposed development so as to inform their responses regarding the proposed development. Provision of PEIR may assist in the identification of potential issues, enabling these to be addressed at an earlier stage in the pre-application consultation.
Roman Period	AD 43 to AD 410
Silt	The generic term for particles with a grain size of 4-63mm, i.e. between clay and sand.

Transport for London (TfL)	<p>A London government body responsible for most aspects of the transport system in Greater London. Its role is to implement transport strategy and to manage transport services across London.</p> <p>These services include: buses, the Underground network, Docklands Light Railway, Overground and Trams. TfL also runs Santander Cycles, London River Services, Victoria Coach Station and the Emirates Air Line.</p> <p>As well as controlling a 580km network of main roads and the city's 6,000 traffic lights, TfL regulates London's private hire vehicles and the Congestion Charge scheme.</p>
Watching Brief	<p>The watching of a situation by a suitably qualified person to ensure that works (e.g. an excavation) are being done correctly.</p>
World Heritage Site	<p>Places of 'outstanding universal value' selected by the United Nations Educational, Scientific and Cultural Organisation. Sites can be selected because they contain important cultural or natural features.</p>



## 8. CULTURAL HERITAGE AND ARCHAEOLOGY

### 8.1 Introduction

- 8.1.1 This chapter considers the potential impacts of the Silvertown Tunnel scheme (the Scheme) on the cultural heritage resource (the heritage assets) within defined study areas incorporating the Order (DCO) Limits (see Drawing 8.1 – *Heritage Asset Location Plan* (Document Reference 6.2)). A heritage asset is defined within paragraphs 5.122 to 5.125 of the National Policy Statement for National Networks (NN NPS) as a building, monument, site, place, area, or landscape, including archaeological remains (both known and potential), positively identified as having a degree of significance meriting consideration in the planning process.
- 8.1.2 Heritage assets are divided into two classes: designated heritage assets and non-designated heritage assets, as defined in paragraphs 5.123 to 5.125 of the NN NPS. Designated heritage assets are those that have some form of statutory or other protection within the planning system and includes World Heritage Sites, scheduled monuments, protected wrecks, listed buildings, conservation areas, registered parks and gardens and registered battlefields. Non-designated heritage assets are those that have been identified as having a degree of significance meriting consideration in planning decisions but which are not formally designated. This includes buildings and other structures that a local authority has identified as 'locally listed'. It should be noted that paragraph 5.124 of the NN NPS requires that non-designated heritage assets of archaeological interest that are of equivalent significance to scheduled monuments should be considered with regard to the policies for designated assets.
- 8.1.3 This cultural heritage and archaeology assessment of the Scheme comprises a brief summary of the baseline conditions relating to heritage within the defined area, addresses the archaeological potential of the Order Limits and identifies built heritage assets within, and in close proximity to the area. The assessment then determines the likely significant effects of the Scheme during construction and operation upon the identified designated and non-designated heritage assets including the potential sub-surface archaeological resource; and, where necessary identifies appropriate mitigation measures.

8.1.4 All drawings referenced within this chapter are presented in Volume 2 of the Environmental Statement (ES) and all appendices referenced in this chapter are presented in Volume 3 (Document Reference 6.2 and 6.3).

## **8.2 Regulatory and policy framework**

8.2.1 This cultural heritage and archaeological impact assessment has been undertaken in accordance with current national legislation and guidance, and national, regional and local plans and policies relating to the historic environment affected by the Scheme. A summary of the relevant legislation, guidance and policies, the requirements of these policies and the Scheme response has been provided in Table 8-1 below.

**Table 8-1 Cultural heritage regulatory and policy framework**

Policy/legislation	Summary of requirements	Scheme response
<p>Planning (Listed Buildings and Conservation Areas) Act 1990</p>	<p>This Act gives special protection to listed buildings and conservation areas that are considered to be of special architectural and / or historic interest.</p>	<p>The assessment has identified the relevant designated heritage assets including listed buildings and conservation areas affected by the Scheme and, assessed potential impacts and identified appropriate levels of mitigation where necessary.</p>
<p>Ancient Monuments and Archaeological Areas Act 1979</p>	<p>This Act gives statutory protection to any structure, building or area of archaeological remains that is considered to be of particular historic and / or archaeological interest.</p>	<p>The assessment has confirmed that there are no scheduled monuments or archaeological remains as defined by the Act within the study area or the immediate surrounding area.</p>
<p>National Planning Policy Statement for National Networks ('NN NPS') 2014 (Ref 8-1)</p>	<p>The NN NPS, paragraphs 5.126 and 5.127, contain guidance on the assessment of impacts of national road and rail projects on the historic environment.</p> <p>Paragraph 5.124 of the NN NPS requires that non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments should be considered subject to the policies for designated heritage assets.</p> <p>Paragraph 5.129 of the NN NPS requires that in considering the impact of a proposed development on any heritage asset, the Secretary of State should take into account the significance of the heritage asset.</p>	<p>The assessment of the potential impacts of the Scheme on the cultural heritage resource has been undertaken in accordance with the requirements of the NN NPS.</p> <p>This assessment has not identified any such non-designated assets (Section 8.4).</p> <p>This assessment enables an informed judgement to be reached as to the likely impact, if any, on the</p>

Policy/legislation	Summary of requirements	Scheme response
	<p>Paragraph 5.131 of the NN NPS states that substantial harm to or loss of Grade II listed buildings and Grade II registered parks and gardens should be exceptional and that substantial harm to, or loss of, scheduled monuments, Grade I and II* listed buildings and Grade I and II* registered parks and gardens should be wholly exceptional.</p> <p>Paragraph 5.132 states that any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss.</p> <p>Paragraph 5.141 provides that the Secretary of State may add requirements to the DCO to ensure that any archaeological mitigation that has been identified in relation to the Scheme is undertaken in accordance within an agreed timetable and to appropriate standards.</p>	<p>significance of the heritage asset as all the identified heritage assets of interest are given a relative value by reference to objective criteria (Table 8-3).</p> <p>This assessment demonstrates that none of these classes of heritage asset will experience substantial harm or loss as a result of the Scheme (Section 8.6).</p> <p>This assessment demonstrates the proposed mitigation will reduce the predicted significance of effect on the Grade II listed Blackwall Tunnel entrance building to Neutral, there will be no harmful impact on the significance of this designated asset (Paragraph 8.6.9).</p> <p>This assessment has identified archaeological mitigation that is required and which will be secured through the DCO. The mitigation will be undertaken in accordance with a WSI produced in consultation with</p>

Policy/legislation	Summary of requirements	Scheme response
		GLAAS during the detailed design stage and updated as works progress (Paragraphs 8.5.2 to 8.5.7).
National Planning Policy Framework ('NPPF') 2012 (Ref 8-2)	<p>Section 12 of the NPPF 'Conserving the Historic Environment', contains policies relating to the treatment of the historic environment in the planning process. Annex 2 of the NPPF defines the significance of a heritage assets as <i>'the value of a heritage asset to this and future generations because of its historic interest. That interest may be archaeological, architectural or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting'</i>. The policy consideration of the historic environment within the NPPF is essentially the same as that set out in the NN NPS with tests for applicants to meet, as described above.</p> <p>The accompanying Planning Practice Guidance document 'Conserving and enhancing the historic environment' describes how the policies set out in the NPPF are to be applied.</p>	The assessment of potential impacts of the Scheme on the historic environment has been undertaken in accordance with the requirements of the NPPF.
London Plan 2015 (Ref 8-3)	Policy 7.8 of the London Plan seeks to conserve and enhance the heritage assets and their settings. The policy requires applicants for planning permission /	The assessment of the potential impacts of the Scheme on the significance of heritage assets and their settings has been undertaken in accordance with

Policy/legislation	Summary of requirements	Scheme response
	listed building consent to undertake a qualitative assessment of the likely harm or loss to the significance of an asset or its setting.	Policy 7.8 of the London Plan.
Royal Greenwich Local Plan 2014 (Ref 8-4)	The Royal Greenwich Local Plan contains a number of policies regarding the treatment of the historic environment within the planning process: DH3 Heritage Assets; DH4 Maritime Greenwich World Heritage Site; DH(h) Conservation Areas; DH(i) Statutory Listed Buildings; DH(j) Locally Listed Buildings; DH(m) Archaeology	The assessment of potential impacts of the Scheme on the historic environment has been undertaken with regard to the relevant policies contain with the Royal Greenwich Local Plan.
Newham Local Plan 2012 (Ref 8-5)	Policy SP5 of the Newham Local Plan states that: 'The value of heritage and other assets (natural, cultural, architectural, and infrastructural) which contribute to local character and successful places will be recognised by protection, conservation and enhancement of the assets and their setting.'	The assessment of potential impacts of the Scheme on the historic environment has been undertaken with regard to this policy.
Tower Hamlets Local Development Framework 2010 (Ref 8-6)	Tower Hamlets Local Development Framework Policy SP10, Creating distinct and durable places, contains provisions for the protection, conservation and enhancement of the historic environment within the planning process.	The assessment of potential impacts of the Scheme on the historic environment has been undertaken with regard to this policy.

## 8.3 Methodology

### General approach

8.3.1 This assessment follows the guidelines set out in Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 2 – Cultural Heritage (Ref 8-7). The following standards and guidance have also been taken into account: Standard and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists, Ref 8-8), Conservation Principles (English Heritage, Ref 8-9) and The Setting of Heritage Assets (Historic England, Ref 8-10). The appropriateness of this approach has been acknowledged in the scoping opinion for the Scheme received from the Secretary of State for Transport in June 2014. As described in Chapter 5 – Methodology of the ES (Document Reference 6.1.5), in view of the long life of the Scheme (120 years), and the fact that the Scheme is not planned to be decommissioned, it is not considered appropriate for decommissioning of the Scheme itself to form part of each environmental topic assessment.

8.3.2 Professional judgement, based on examination of previous archaeological investigations within the study area, has been applied to assess the potential for currently unknown sub-surface heritage assets (archaeological remains) to be present.

8.3.3 The following timescales are used in this assessment:

- Palaeolithic: Pre 30,000 BC to 10,000 BC;
- Mesolithic: 10,000 BC to 3,500 BC;
- Neolithic: 4,000 BC to 2,200 BC;
- Bronze Age: 2,500 BC to 700 BC;
- Iron Age: 800 BC to AD 43;
- Roman: AD 43 to AD 410;
- Early medieval: AD 410 to AD 1066;
- Medieval: AD 1066 to AD 1540;
- Post-medieval: AD 1540 to AD 1901; and
- Modern: AD 1901 to present.

## Consultation

- 8.3.4 Initial consultation on the scope of this assessment with the Greater London Archaeological Advisory Service (GLAAS) was undertaken in June 2014. Recommendations were made for TfL to produce a geoarchaeological deposit model of the Scheme environs and to consider the potential impacts to archaeological remains in the river channel and Silvertown foreshore from scour associated with the construction of a jetty within the river channel.
- 8.3.5 A subsequent meeting was held with GLAAS and English Heritage (now Historic England) Inspector of Ancient Monuments in January 2015 to define the scope of those recommendations. It was confirmed during the meeting that the geoarchaeological model could be produced using the pre-existing borehole data and that the Thames Discovery Programme should be contacted with regard to information that they may hold on the archaeological potential and sensitivity of the river foreshore. The Thames Discovery Partnership is a partnership between Museum of London Archaeology, the Museum of London, Historic England and the UCL Institute with specialist knowledge of the history and archaeology of the River Thames.
- 8.3.6 Historic England and GLAAS were consulted on the Preliminary Environmental Impact Report PEIR in October 2015 and responded by letter on the 12<sup>th</sup> November 2015. The response stated that they are content with the approach outlined in the PEIR in respect of likely impacts on identified heritage assets and currently unknown archaeological remains. A summary of the section 42 Planning Act 2008 responses is presented in Table 8-2 below.

**Table 8-2 Summary of reponses**

<b>Comment</b>	<b>Response</b>
Historic England note the potential impact from settlement on the Grade II listed Blackwall Tunnel entrance and the intention to develop an engineering solution if necessary.	Detailed settlement modelling will be undertaken at the detailed design stage and appropriate mitigation formulated as required.

Comment	Response
<p>Historic England confirm that, although field evaluation works will almost certainly be necessary in advance of any consented development programme, they are content that the approach outlined in the PEIR addresses this requirement satisfactorily</p>	<p>An outline archaeological mitigation strategy will be secured through the DCO process. Detailed mitigation plans will be developed in consultation with GLAAS at the detailed design stage.</p>
<p>Historic England note the usefulness of the geoarchaeological modelling undertaken so far and look forward to the model being refined as the project develops, especially in targeting investigations for prehistoric cultural activity on both side of the river.</p>	<p>The geoarchaeological model will be refined during the detailed design stage in order to develop appropriate mitigation.</p>

### The study areas

8.3.7 Two study areas have been chosen for this assessment, the choice being informed by a combination of professional judgement and industry good practice. The first extends 500m from the Order Limits and incorporates both designated and non-designated heritage assets including the locations of archaeological remains, the findspots (the location where something is found) of archaeological artefacts recorded in the GLAAS Historic Environment Record (HER) and locally listed buildings. This study area is used to inform the assessment of direct physical impacts of the construction of the Scheme on these heritage assets and their significance and to enable a judgement to be made regarding the potential presence of currently unknown archaeological remains, if any, affected within the application boundary.

8.3.8 The second study area extends 1000m from the Order Limits and incorporates designated heritage assets including World Heritage Sites,

scheduled monuments, [conservation areas](#) and listed buildings. This study area is used to inform the assessment of direct impacts on the settings of these heritage assets caused by the presence of the Scheme, which can occur some distance from the Order Limits. In addition to those in the 1000m study area, relevant likely effects of the Scheme on heritage assets of particularly high value further afield have also been taken into consideration. The two study areas are shown on Drawing 8.1 – *Heritage Asset Location Plan* (Document Reference 6.2).

### **Methodology for establishing heritage baseline conditions**

#### Establishing the existing heritage baseline

8.3.9 The following sources have been consulted in order to provide the baseline information on known heritage assets within each of the relevant study areas:

- National Heritage List for England;
- [Greater London Archaeology Advisory Service Historic Environment Record](#);
- [London Borough of Tower Hamlets](#);
- [Royal Borough of Greenwich](#);
- London Archaeological Archive Research Centre; and
- British Library.

8.3.10 The identified heritage assets are listed in the gazetteer in Appendix 8-A (Document Reference 6.3.8.1) and their locations are shown on Drawing 8.1 – *Heritage Asset Location Plan* (Document Reference 6.2). Where discussed in the text in this chapter, the ID numbers for the heritage assets are shown in bold type in brackets.

8.3.11 In addition to the data sources listed above, a geoarchaeological deposit model was commissioned from Quaternary Scientific (QUEST), Reading University, in order to better understand the potential for archaeologically significant remains to be located at depth within the application boundary. The deposit model (Appendix 8-B (Document Reference 6.3.8.2)) was compiled using existing borehole and other geoarchaeological information in order to create a three-dimensional model of the sub-surface deposits within the Order Limits. This model allows predictions to be made regarding

the location and depth of deposits that may contain archaeological remains which are at risk of impacts as a result of the Scheme.

#### Forecasting the future baseline ('without Scheme' scenario)

- 8.3.12 The forecast of the future baseline without the Scheme enables an assessment to be made as to how continuing development within the study areas is likely, if at all, to affect the setting of existing heritage assets. It also takes account of the likelihood of new heritage assets being identified over time, and existing heritage assets being removed by ongoing development within the study areas. The judgement has been reached, however, that the baseline heritage resource in the study areas is not likely to alter significantly in the future without the Scheme.

#### Defining the importance/sensitivity of resource

- 8.3.13 The importance (value) of identified heritage assets has been determined using criteria derived from DMRB (Ref 8-5). In accordance with paragraph 5.127 of the NN NPS, the level of detail given is proportionate to the assets significance and no more than is sufficient to understand the potential impacts of the Scheme. Table 8-3 summarises the value ascribed to the various categories of heritage asset.

**Table 8-3 Determining the importance / sensitivity of resource**

<b>Importance/ sensitivity of resource or receptor</b>	<b>Criteria</b>
<b>Very High</b>	<ul style="list-style-type: none"> <li>• World Heritage Sites (including nominated sites)</li> <li>• Heritage assets of acknowledged international importance</li> <li>• Other buildings of recognised international importance</li> <li>• Historic landscapes or townscapes of international importance</li> </ul>
<b>High</b>	<ul style="list-style-type: none"> <li>• Scheduled monuments</li> <li>• Heritage assets of acknowledged national importance</li> <li>• Grade I and Grade II* listed buildings</li> <li>• Other listed buildings of acknowledged national importance</li> <li>• Conservation areas containing buildings of acknowledged national importance</li> </ul>

<b>Importance/ sensitivity of resource or receptor</b>	<b>Criteria</b>
	<ul style="list-style-type: none"> <li>• Historic landscapes or townscales of national importance</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Grade II listed buildings</li> <li>• Conservation areas</li> <li>• Heritage assets of acknowledged regional importance</li> <li>• Other buildings of acknowledged regional importance</li> <li>• Historic landscapes or townscales of regional importance</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Locally listed buildings</li> <li>• Other buildings of acknowledged local importance</li> <li>• Heritage assets of limited importance, but with potential to contribute to local research objectives.</li> <li>• Historic landscapes or townscales of local importance</li> </ul>
<b>Negligible</b>	<ul style="list-style-type: none"> <li>• Historic buildings of no architectural or historical note</li> <li>• Heritage assets with very little or no surviving interest</li> </ul>

### **Methodology for assessing impacts**

- 8.3.14 The magnitude of each impact is assessed using the criteria provided in Table 8-4, derived from the criteria in DMRB. Two types of impacts are considered in this assessment, for both the construction and operational phases.
- 8.3.15 The first type of impacts are direct physical impacts on heritage assets resulting from works associated with the construction of the Scheme. These direct impacts take the form of disturbance to, or removal of, part or all of known or potential sub-surface heritage assets (archaeological remains) within the application boundary. They may also take the form of changes to the fabric or composition of above ground heritage assets within the application boundary, including adverse impacts caused to designated heritage assets such as scheduled monuments, listed buildings, conservation areas and registered parks and gardens. It is not anticipated that any such direct physical impacts will occur outside the application boundary.

- 8.3.16 The second type of impacts are direct impacts to the setting of a heritage asset, caused by the physical presence of the Scheme. Impacts to the setting of heritage assets usually take the form of changes to the views to and from the assets, but may take the form of changes in the way the asset is experienced, such as those due to increases in noise or night-time light levels. Heritage assets assessed with regard to likely impacts to their settings in this chapter include, but are not limited to, World Heritage Sites and listed buildings.
- 8.3.17 There is not considered to be any potential for indirect impacts as defined in DMRB, as a result of the Scheme.

**Table 8-4 Assessing magnitude of impact**

<b>Magnitude of impact*</b>	<b>Criteria</b>
<b>Major</b>	<ul style="list-style-type: none"> <li>• Change to most or all of the heritage asset, such that it is totally altered</li> <li>• Comprehensive changes to the setting of an asset</li> </ul>
<b>Moderate</b>	<ul style="list-style-type: none"> <li>• Changes to a large part of the heritage asset, such that it is clearly modified</li> <li>• Changes that affect the setting of an asset that affect its character</li> </ul>
<b>Minor</b>	<ul style="list-style-type: none"> <li>• Changes to a heritage asset, such that it is slightly altered</li> <li>• Slight changes to the setting of a heritage asset</li> </ul>
<b>Negligible</b>	<ul style="list-style-type: none"> <li>• Very minor changes to a heritage asset or its setting</li> </ul>
<b>No Change</b>	<ul style="list-style-type: none"> <li>• No change to the heritage asset or its setting</li> </ul>

\*Magnitude of impacts can be positive or negative.

- 8.3.18 The assessment of the likely significance of effects of the Scheme on heritage assets has been undertaken in accordance with DMRB. Table 8-5 summarises how information regarding the value of the asset and the magnitude of impact is combined to arrive at an assessment of the significance of effect. The matrix is not intended to 'mechanise' judgements of the significance of effects but to act as a check to ensure that such judgements are reasonable and balanced. In order to enable professional judgement to be brought to bear in the exercise, in some cases the matrix allows for a choice of significance of effect when a

magnitude of impact and a value are combined. Those effects shaded bold are considered to be significant effects.

**Table 8-5 Assessing significance of impact**

Importance/ sensitivity of resource or receptor	Magnitude of Impact				
	No Change	Negligible	Minor	Moderate	Major
<b>Very High</b>	Neutral	Slight	<b>Moderate or Large</b>	<b>Large or Very Large</b>	<b>Very Large</b>
<b>High</b>	Neutral	Slight	<b>Moderate or Slight</b>	<b>Moderate or Large</b>	<b>Large or Very Large</b>
<b>Medium</b>	Neutral	Neutral or Slight	Slight	<b>Moderate</b>	<b>Moderate or Large</b>
<b>Low</b>	Neutral	Neutral or Slight	Neutral or Slight	Slight	<b>Moderate or Slight</b>
<b>Negligible</b>	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

**Limitations and assumptions**

- 8.3.19 This assessment has been compiled using heritage asset data obtained from third party sources and the prediction of likely significant effects is based on the accuracy of that data. Whilst the data from these sources is generally valid, there can be instances where asset data is mislabelled, placed in the wrong geographical location or omitted altogether.
- 8.3.20 The data sources utilised for this chapter have been continuously updated as new heritage assets have been identified or data on existing assets refined. Whilst there is always the potential for additional heritage assets to be identified, it is unlikely that the overall prediction of the effects of the Scheme on the heritage resource will change.

## 8.4 Description of the baseline conditions

### Existing baseline

- 8.4.1 The identified existing heritage assets are listed in the gazetteer in Appendix 8.A (Document Reference 6.3.8.1) and their locations are shown on Drawing 8.1 – *Heritage Asset Location Plan* (Document Reference 6.2). Where discussed in the chapter text below, the ID numbers for these heritage assets are shown in bold type in brackets.
- 8.4.2 No World Heritage Sites or scheduled monuments have been identified within the Order Limits or the 1000m study area. However the northern edge of the Maritime Greenwich World Heritage Site, a designated heritage asset of very high value, is located approximately 1.5km to the south-west (see Volume 2 of the ES, Drawing 8.1). [No conservation areas have been identified within the Order Limits. However, the Cold Harbour Conservation Area and a portion of the East Greenwich Conservation Area both lie within the 1000m study area.](#) One listed building has been identified within the Order Limits, the Grade II listed Blackwall Tunnel entrance building. A further 22 Grade II listed buildings lie within the 1000m study area. On the north side of the River Thames, the Order Limits and the majority of the study areas lie within the [Royal DocksNewham](#) Archaeological Priority Area as designated by London Borough of Newham. On the south side of the river, the Order Limits and the study areas lie within the Greenwich Peninsula and Foreshore Area of High Archaeological Potential as designated by Royal Borough of Greenwich.

### Prehistoric and Roman Periods

- 8.4.3 The earliest evidence for human occupation within the study area lies within the sub-surface deposits that relate to the evolution of the River Thames and its tributary the River Lea. Geoarchaeological analysis of borehole samples taken in advance of the construction of the Emirates Air Line cable car, adjacent to the application site, identified the presence of peat and alluvial clay sequences spanning the Mesolithic, Neolithic and Bronze Age periods. Whilst no direct evidence of human activity was found within these samples, prehistoric artefacts dating from the Palaeolithic onwards have been found with the general area.
- 8.4.4 The geoarchaeological deposit model (Appendix 8.B) has identified the potential for peat and former land surface containing prehistoric period archaeological and palaeoenvironmental remains to be present at the

locations of the tunnel portals and cut-and-cover sections of the tunnels. Archaeological remains associated with these peat deposits and former land surfaces would constitute non-designated heritage assets and are considered to be of medium value due to their potential to provide information relating to the evolution of the River Thames and human activity within the area during the prehistoric periods.

- 8.4.5 A Neolithic worked flint was recovered from a deposit of peat within a test pit during geoarchaeological investigations on the Greenwich Peninsula, adjacent to the application site (28). The peat, which was located circa 4m below ground level, was found to be overlain by a deposit of alluvium that had accumulated from the Iron Age onwards (29). Peat dating to the prehistoric period has also been identified at other locations on the Greenwich Peninsula (34) and at Silvertown (37). These non-designated heritage assets are considered to be of medium value due to their potential to provide information relating to the evolution of the River Thames and human activity within the area during the prehistoric periods.
- 8.4.6 The peat is thought to have formed over former grassy open Mesolithic land surfaces that sloped down towards the River Thames with potential for evidence of activity during that period. Rising river levels during the Neolithic and Bronze Age periods led to the accumulation of deposits of peat over these land surfaces, which were in turn overlain by alluvium during subsequent rises in river level during the Iron Age and Roman periods.
- 8.4.7 Based on the available evidence, including the results of the QUEST geoarchaeological modelling, it is likely that extensive deposits of peat dating to the Mesolithic to Bronze Age periods extend beneath the application site on both sides of the River Thames, overlain by alluvium and made ground. The peat deposits have potential to provide information on the past environment of the area as well as more direct evidence of early human activity. As the peat provides an environment conducive to the survival of organic remains, a wide range of artefacts and ecofacts may be preserved, such as the Bronze Age timber trackway recorded at Atlas Wharf, located to the west of the study area on the Isle of Dogs. Interspersed with these deposits, there may be remnants of land surfaces located on gravel ridges that remained elevated above floodwater during periods of inundation that contain evidence of utilisation during the prehistoric periods, such as those recorded at Bellot Street, located to the south of the study area in Greenwich. Archaeological remains associated with these deposits would constitute non-designated heritage assets and

are considered to be of medium value due to their potential to provide information relating to the evolution of the River Thames and human activity within the area during the prehistoric periods.

- 8.4.8 There are no recorded heritage assets dating to the Roman period within the Order Limits or study areas. Geoarchaeological investigations suggest that the application site and study areas would have consisted of mudflats and saltmarsh during the Iron Age and marshy meadowlands during the Roman period. Both the River Thames and the Lea would have been fished and used for transport during these periods, as evidenced at other locations along both rivers. As such, there may be some potential for Iron Age and Roman period archaeological remains to be present within the application site and study areas. Archaeological remains dating to these periods would constitute non-designated heritage assets and are considered to be of medium value due to their potential to provide information relating to human activity within the area during the Iron Age and Roman periods.

#### Early Medieval and Medieval Periods

- 8.4.9 Archaeological evidence for the early medieval period is rare for the London area as a whole and none has been identified within the Order Limits or study areas. The evidence that does survive across Greater London suggests a continuity of settlement from the Roman period and as such there may be some potential for early medieval period archaeological remains to be present within the application site and study areas. Any archaeological remains dating to the early medieval period would constitute non-designated heritage assets and are considered to be of medium to high value based on their rarity and potential to provide information on human activity within the area during that period.
- 8.4.10 The medieval manor of Covelees **(25)**, first recorded in AD 1248 is known to have been located circa 500m to the north-west of the application site. Flood defences **(26)** are known to have been located in that area since the 12th century and it is possible that the putative causeway **(27)** also dates to this period, although it is equally possible that it may be of later date. The available evidence suggests that there is some potential for further medieval period archaeological remains to be present within the application site and study areas. Any archaeological remains dating to the medial period would constitute non-designated heritage assets and are considered to be of low to medium value based on their rarity and

potential to provide information on human activity within the area during that period.

#### Post-Medieval Period

- 8.4.11 Mapping of the Greater London area began during the post-medieval period. The earliest map to show the Order Limits and study area in any detail is Rocque's map of 1762, which shows the application site and study areas either side of the River Thames as agricultural fields.
- 8.4.12 One heritage asset dating to the 18th century was identified within the 500m study area, the location of an incomplete whale skeleton (**32**) identified during an archaeological watching brief on dredging operations approximately ~~250~~500m west of the application site. The orientation of the whale suggested that it had been dragged onto the foreshore rather than becoming beached. This non-designated asset is considered to be of low value. Other examples of whale skeletons from the River Thames are known and it is thought that they were caught in the Thames Estuary before being hauled upriver.
- 8.4.13 Although later in date, one other heritage asset relating to whaling has been identified within the 1000m study area. The Grade II listed Enderby House (**8**), was constructed during the early to mid-19th century for the whaling firm of Samuel Enderby, whose flagship, also named Samuel Enderby, Hermann Melville describes in his book 'Moby Dick'. Enderby House is located approximately ~~407~~50m to the south of the application site. As a Grade II listed building, Enderby House constitutes a designated heritage asset and as such is of medium heritage value. [A portion of the East Greenwich Conservation Area \(39\), a designated heritage asset of medium heritage value, is located approximately 750m to the south of the application site.](#)
- 8.4.14 A number of the other listed buildings and structures identified within the 1000m study area in this assessment date to the early 19th century, the period which saw the beginning of the development of the area from agricultural fields to London's urban periphery. The Grade II listed row of eight cottages at 70-84 Riverway (**11**), located approximately ~~27~~50m south-east of the application site, was constructed in 1801 for workers at the adjacent tidal mill and chemical works, neither of which survive. The cottages were listed as they represent the earliest surviving residential development on the Greenwich Peninsula and represent a rare example of Georgian artisanal housing. As a Grade II listed building, 70-84

Riverway constitutes a designated heritage asset and as such is of medium heritage value.

- 8.4.15 The Grade II listed houses at 1-7 Coldharbour were constructed in the early 19th century approximately 1km west of the application site and consist of a group of three listed structures (**1**, **2** and **3**). Adjacent to this group are a further three Grade II listed buildings: 15 Coldharbour (**4**), constructed in 1843-44 as a workshop with living accommodation above; Blackwall River Police Station (**5**), constructed in 1894 to designs by John Butler and thought to be the earliest purpose built River Police Station; and the 19th century public house, The Gun (**6**). To the south of this group, approximately 750m to the south-west of the application site is the Grade II listed Millwall Wharf range of riverfront warehouses, constructed around 1879. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value. [These listed buildings lie within the Cold Harbour Conservation Area \(\*\*38\*\*\), a designated heritage asset of medium heritage value.](#)
- 8.4.16 As can be seen from historic Ordnance Survey mapping dating to between 1893 and 1896, the southern side of the study areas remained largely open toward the end of the 19th century, with some industrial development, whilst the northern side was occupied by open ground, industrial development, docks and rail infrastructure. Residential development was increasing at the southern and northern margins of the 1000m study area. Two places of worship constructed to serve the increasing population during the later 19th century were identified. The Grade II listed Church of St Luke (**13**) was constructed in 1873-75 to designs by Giles and Gane, approximately 600m north of the application site, whilst the Grade II listed Rothbury House (**9**), was constructed as a Congregational chapel in 1893-94 to design by TW Holland, approximately ~~500~~4km south of the application site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.
- 8.4.17 The development of the docks and associated infrastructure within the study areas began in the 19th century and a number of heritage assets associated with this development were identified within the 1km study area. The earliest is the Grade II listed Blackwall pier and entrance lock to the East India Dock Basin (**13**), constructed around 1803 and located approximately ~~8500~~850m to the north-west of the application site. To the east of Blackwall pier are the Grade II listed Trinity House Buoy Wharf and Orchard Dry Dock (**14**) and Trinity House Chain Locker and Lighthouse

Block **(15)**, both of which were constructed around 1860. The wharf and dry dock were constructed to serve Trinity House lightships and the block constructed as a chain locker and workshop. Both are located approximately [25600m](#) to the north of the assessment site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.

- 8.4.18 The Royal Victoria Dock, the western end of which is located approximately 100m to the east of the application site, opened in 1855. It was considered to be the largest dock in the world at the time and was specifically designed to accommodate large steam ships. Two mid-19th century Grade II listed buildings are associated with the docks, Warehouse W **(19)** and Warehouse K **(20)**, both of which are located approximately 750m north-east of the application site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.

#### Modern Period

- 8.4.19 Also associated with the Royal Victoria Dock but dating to the modern period, are the group of 14 Grade II listed Stothert and Pitt cranes **(18)** constructed between the 1920s and 1960s and the Grade II listed Silo D **(21)**, a grain silo constructed in 1920. The cranes are located approximately [3400m](#) to [7800m](#) to the east and north-east of the application site, whilst the silo is located approximately [7504m](#) to the east of the application site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.
- 8.4.20 Lying immediately to the west of the application site is the Grade II listed entrance to the Blackwall Tunnel **(10)**, constructed during the mid-1890s, a few years prior to the tunnel opening in 1897, to designs by T Blashill. Also associated with the tunnel is the Grade II listed ventilation shaft **(12)** constructed in 1964-67 to designs by Terry Farrell and located approximately [3500m](#) north-west of the application site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.
- 8.4.21 In addition to the cranes, grain silo and ventilation shaft, three further modern period heritage assets were identified during this assessment. Tunnel Avenue (Morden Wharf) grain silos **(31)** were constructed for the Tunnel Glucose Company's works between the 1930s and 1970s,

approximately 2500m south of the application site. These structures constitute non-designated heritage assets and are of low value. The Grade II listed Chapel of St George and St Helena (17) was constructed as a chapel to a former mission settlement in 1929-30 by Geoffrey Raymond, approximately 8004m north of the application site and the Grade II listed Silvertown War memorial (22) was constructed around 1920, approximately 8004m to the east of the assessment site. Due to their Grade II listed status, these structures constitute designated heritage assets and as such are of medium heritage value.

#### Walk-Over Survey and Foreshore Surveys

- 8.4.22 A site walk-over survey was undertaken during production of the PEIR in February 2015. The site walk-over survey did not identify any further heritage assets, although it was not possible to inspect the entirety of the river embankment or foreshore within the study areas. Modern day construction activities at each end of the application site, particularly construction of the Silvertown Way flyover to the north of the river and the residential and commercial development to the south of the river on the Greenwich Peninsula, may have resulted in negative impacts on any sub-surface archaeological remains that may exist. These developments may also have impacted on the settings of any design assets within the vicinity.
- 8.4.23 A survey of the Silvertown Thames foreshore was undertaken by Museum of London Archaeology and the Thames Discovery Partnership during September 2015 in order to identify any potential archaeological remains that may be exposed in the Silvertown foreshore zone at low tide. The survey concluded that the visible portions of foreshore consisted of riverine silts and dumped deposits of 20<sup>th</sup> and 21<sup>st</sup> century dates. No archaeologically significant features or deposits were identified. The survey report is contained within Appendix 8-C (Document Reference 6.3.8.3).

#### **Future baseline**

- 8.4.24 Whilst new heritage assets may be identified over time, the baseline heritage resource is not anticipated to alter significantly in the future in the absence of the Scheme.

### **8.5 Scheme design and mitigation**

- 8.5.1 It is not considered that there will be any foreseeable direct impacts to the settings of any heritage assets during the construction and operation of

the Scheme. Direct physical impacts to currently unknown sub-surface archaeological remains may occur during the construction phase of the Scheme. It is not possible to avoid these impacts by changes to the Scheme design. [If unknown archeological remains of national importance are identified during any works associated with the Scheme, appropriate procedures are in place for the identification and treatment of such assets, as set out in the CoCP.](#)

### **Construction**

- 8.5.2 It would be possible to mitigate any adverse impacts to sub-surface archaeological remains caused during the construction phase of the Scheme through archaeological recording. This would take the form of archaeological excavation and watching briefs prior to and/or during construction, secured as a requirement of the DCO. The archaeological recording would be followed by an appropriate programme of assessment, analysis and reporting.
- 8.5.3 Archaeological excavations would be undertaken in advance of construction excavations in areas where relatively significant archaeological remains have been identified as being present or as likely to be present (either through archaeological trial trenching or predictive modelling). Watching briefs, whereby an archaeologist monitors construction excavations in order to identify and record archaeological remains uncovered during the works, would be undertaken on areas where low value archaeological remains may be present.
- 8.5.4 These measures would form part of a Written Scheme of Investigation (WSI), which would be produced in consultation with GLAAS / Historic England [and approved by the relevant planning authority](#) at the detailed design stage and updated as works progress as required by Paragraph 5.141 on the NN NPS.
- 8.5.5 Mitigation solutions would be developed for the management of any settlement impact that may potentially occur as a result of the construction of the Scheme, as set out in the Code of Construction Practice (CoCP) (Document Reference 6.10). In terms of cultural heritage assets, potential effects would be limited to the Grade II listed Blackwall Tunnel entrance building (**10** on Drawing 8.1 – *Heritage Asset Location Plan* (Document Reference 6.2)), as described in Paragraph 8.6.9 below. Appropriate mitigation measures would be developed during detailed design based on the predicted effects on the structure and may include

ground engineering solutions including injection grouting and remedial repairs.

- 8.5.6 It would be possible to mitigate impacts of dredging within the area of the proposed jetty on currently unknown archaeological remains through the monitoring of material dredged from the river bed, in order to identify and record any archaeological materials that are recovered. No mitigation is proposed for any potential impacts from scour associated with the proposed jetty and associated river traffic. However, should significant archaeological remains be identified during monitoring of the dredging, within the areas subject to scour, and if deemed necessary through further consultation with HE/GLAAS, scour protection measures may be considered.
- 8.5.7 All proposed mitigation, including those measures to be developed further at the detailed design stage will be secured through the Code of Construction Practice (CoCP) (Document Reference 6.10).

### **Operation**

- 8.5.8 No impacts caused to cultural heritage assets are anticipated during the operation phase of the Scheme; therefore no design/mitigation measures are required.

## **8.6 Assessment of impacts**

### **Construction impacts**

- 8.6.1 The Scheme has the potential to cause direct physical impacts to sub-surface archaeological remains in the locations of the tunnel portals, cut-and-cover sections of the tunnels, and other areas of construction excavation both to the south and north of the river.
- 8.6.2 To the north of the river, sub-surface archaeological remains may consist of the remains of post-medieval and modern period industrial structures and deeply buried evidence of activity during the Mesolithic, Neolithic and Bronze Age, such as artefacts, timber fish traps and walk-ways or the remains of river craft. Remains may also consist of preserved organic remains of plants or evidence of episodes of flooding that are valuable resources for the reconstruction of former landscapes and climate and could date from the Mesolithic period onwards.

- 8.6.3 To the south of the river, sub-surface archaeological remains are likely to be confined to deeply buried evidence of activity during the Mesolithic, Neolithic and Bronze Age.
- 8.6.4 The two main areas where sub-surface archaeological remains may be subject to direct physical impacts during the construction phase are the tunnel approaches, cut-and-cover sections and Tunnel Boring Machine (TBM) chambers. These are located at either end of the tunnel and will extend to a depth of -20m Above Ordnance Datum (AOD) at the deepest sections. Other areas where impacts to sub-surface archaeological remains may occur are the areas of road and associated construction works within the Order Limits and the locations of the tunnel services and ventilation buildings, although excavations at these locations are anticipated to be much shallower, as the maximum depth of excavation is likely to extend to a maximum of approximately 3m below current ground level (subject to detailed design).
- 8.6.5 The currently unknown sub-surface archaeological remains are considered to be of medium value due to their potential regional importance and the impacts are considered to be of moderate magnitude as the remains will be altered. Therefore, the significance of effect on these remains is predicted to be Moderate Adverse. This would constitute a significant effect in EIA terms, but it would be mitigated through ~~'preservation by record' during archaeological excavation and recording prior to construction (details of which can be found in Section 8.5 above).~~ a programme of archaeological evaluation within the WSI and appropriate archaeological mitigation, as set out in the CoCP. Following appropriate mitigation, the residual significance of effect is predicted to be **Neutral**.
- 8.6.6 The Scheme also has potential to cause direct physical impacts to sub-surface archaeological remains contained within the riverbed through scour as a result of the construction and operation of the proposed temporary jetty and associated river craft, described in Chapter 4 of the ES (Document Reference 6.1.4). The value of these currently unknown remains is considered to range from low to medium, the latter due to their potential regional significance. Prior to the construction of the jetty, the jetty area will be dredged to a depth of up to 3m below the current river bed level. The dredging has the potential to impact on currently unknown archaeological remains located within the deposits that make up the river bed. The magnitude of impact is considered to be moderate. The significance of effect is therefore predicted to be Slight to Moderate Adverse. Following the application of appropriate mitigation, through

monitoring of material dredged, as set out in Section 8.5, the residual significance of effect is predicted to be **Neutral**.

- 8.6.7 The hydrodynamic modelling undertaken for the Scheme (Volume 3, Appendix 16.B of the ES, (Document Reference 6.3.16.2) has predicted that that the maximum scour depth around the jetty piles will be a further 0.46m. Given the relatively limited depth and extent of the scour around the jetty piles, the magnitude of impact is considered to be Minor. The significance of effect is therefore predicted to be Neutral to Slight Adverse.
- 8.6.8 The hydrodynamic modelling has also predicted that the maximum depth of scour of the river bed as a result of propeller wash from ships berthed at the jetty will be a further 0.8m. It should be noted that this scour would be very localised to the immediate area under the moored vessel's propeller. This section of the Thames is also subject to regular vessel movement e.g. from the Thames clipper which docs just opposite the proposed Silvertown jetty. Due to the greater depth of scour the magnitude of impact is considered to be moderate. The significance of effect is therefore predicted to be Slight to Moderate Adverse. Following appropriate mitigation, through monitoring of material dredged, as set out in Section 8.5, the residual significance of effect of scour is predicted to be **Neutral**.
- 8.6.9 The Settlement Assessment Report (Document Reference 6.3.12.2) has identified that the Grade II listed Blackwall Tunnel entrance building, an asset of medium value, is at potential risk of direct physical impacts due to settlement as a result of tunnel construction works. Initial assessment of the potential impacts has predicted that the area of structure may be subject to ground settlement of between 1mm and 25mm. In order to fully understand construction effects on the structure, it will be necessary to undertake further assessment during the detailed design stage. This will allow a damage category to be assigned to the structure and an appropriate mitigation strategy undertaken. As discussed above, this process will be secured through the CoCP (Document Reference 6.10). Given the limited potential settlement, the significance of effect is predicted to be Slight Adverse. Following appropriate mitigation, the residual significance of effect is predicted to be **Neutral**. No potential direct impacts to the setting of heritage assets have been identified during the construction phase of the Scheme. With the exception of the Grade II listed Blackwall Tunnel entrance, the settings of the listed buildings identified as being of relevance in this assessment are not considered to be at risk of impacts as a result of the Scheme due to their distance from

the Scheme and the relatively limited extent of their respective settings. [Similarly, the Cold Harbour Conservation Area and the East Greenwich Conservation Area are not considered to be at risk of impacts as a result of the Scheme due to their distance from the Scheme and the relatively limited extent of their respective settings.](#) With regard to the Blackwall Tunnel entrance, the setting of this structure already includes modern highways infrastructure. The additional above ground visual elements that will be introduced as a result of the Scheme including tunnel service buildings and gantries will not have a material impact on the contribution that the structure's setting makes to its heritage significance and the magnitude of impact with regard to its setting will, accordingly be No Change. The significance of effect will be **Neutral**.

- 8.6.10 The additional visual elements that will be introduced as a result of the Scheme will also not impact on the contribution that the setting of the Maritime Greenwich World Heritage Site makes to its significance and the magnitude of impact as a result of the Scheme will be No Change. Due to its distance from the Scheme and the presence of intervening buildings, the magnitude of impact on key views from the Greenwich World Heritage Site as a result of the Scheme will be No Change. Assessment of changes in traffic flow identified in Chapter 11 - Effects on All Travellers of the ES (Document Reference 6.1.11) have not identified any increases above 10%. As this increase will have no discernible effects, there will be no impact to the significance of the Greenwich World Heritage site as a result of increased traffic flows associated with the Scheme. As a result, the magnitude of impact will be No Change and the significance of effect will be **Neutral**.

### **Operational impacts**

- 8.6.11 No potential direct physical impacts to cultural heritage assets have been identified as likely due to the operation of the Scheme.
- 8.6.12 With regard to likely potential impacts to the setting of heritage assets, these are considered to be the same as those for the construction phase, as described above.

### **8.7 Cumulative impacts**

- 8.7.1 As regards cumulative impacts caused to heritage assets as a result of the combination of impacts of the Scheme and other developments no material impacts to the settings of heritage assets have been identified as a result of the Scheme either during construction or operation.

8.7.2 There may be a risk of other developments causing direct physical impacts to sub-surface archaeological remains predicted by the geoarchaeological model to be present within the Order Limits. However, the extent of these archaeological remains is currently unknown and it is not certain that they extend beyond the model, which is confined to the Order Limits. In addition, whilst a number of developments have been identified in the vicinity of the Order Limits, detail on the extent of the sub-surface impacts, if any, is not currently available and it is not possible to predict any cumulative effects they might have in combination with the Scheme.

8.7.3 No impacts on sub-surface archaeological remains have been identified during operation; therefore there will be no cumulative effects.

## **8.8 NPS compliance**

8.8.1 Paragraph 5.124 of the NN NPS requires that non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments should be considered subject to the policies for designated heritage assets. This assessment has not identified any such non-designated assets.

8.8.2 Paragraph 5.129 of the NN NPS requires that in considering the impact of a proposed development on any heritage asset, the Secretary of State should take into account the significance of the heritage asset. This assessment enables an informed judgement to be reached as to the likely impact, if any, on the significance of the heritage asset as all the identified heritage assets of interest are given a relative value by reference to objective criteria.

8.8.3 Paragraph 5.131 of the NN NPS states that substantial harm to or loss of Grade II listed buildings and Grade II registered parks and gardens should be exceptional and that substantial harm to, or loss of, scheduled monuments, Grade I and II\* listed buildings and Grade I and II\* registered parks and gardens should be wholly exceptional. This assessment demonstrates that none of these classes of heritage asset will experience substantial harm or loss as a result of the Scheme.

8.8.4 Paragraph 5.132 states that any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss. This assessment has demonstrated that the proposed mitigation will

reduce the predicted significance of effect on the Grade II listed Blackwall Tunnel entrance building to Neutral, there will be no harmful impact on the significance of this designated asset.

- 8.8.5 Paragraph 5.141 provides that the Secretary of State may add requirements to the DCO to ensure that any archaeological mitigation that has been identified in relation to the Scheme is undertaken in accordance within an agreed timetable and to appropriate standards. This assessment has identified archaeological mitigation that is required and which will be secured through the DCO. The mitigation will be undertaken in accordance with a WSI produced in consultation with GLAAS during the detailed design stage and updated as works progress
- 8.8.6 The assessment has also identified potential impacts to the Grade II listed Blackwall Tunnel entrance building as a result of settlement. A requirement for further assessment of construction effects on this structure during the detailed design stage has been identified.
- 8.8.7 A tabular summary of the significance of overall effects is provided in Table 8-6 below.

**Table 8-6 Cultural heritage significance of effect summary table**

<b>Impact description</b>	<b>Temporary/permanent</b>	<b>Residual significance of effect</b>
<b>Construction</b>		
Removal of sub-surface archaeological remains during Scheme construction works	Permanent	Neutral
Removal of sub-surface archaeological remains during construction and operation of the jetty	Permanent	Neutral
Potential damage to the Grade II listed Blackwall Tunnel entrance building caused by settlement resulting from Scheme construction works	Permanent	Neutral

## References

- Ref 8-1 National Planning Policy Framework, Department for Communities and Local Government, 2012
- Ref 8-2 Royal Greenwich Local Plan: Core Strategy with Detailed Policies, Royal Borough of Greenwich, 2014
- Ref 8-3 Newham 2027: Newham's Local Plan – The Core Strategy, Borough of Newham, 2012
- Ref 8-4 Core Strategy 2025: Development Plan Document, Borough of Tower Hamlets, 2010
- Ref 8-5 Design Manual for Roads and Bridges, Highways Agency, 2008
- Ref 8-6 Standard and guidance for historic environment desk-based assessment, Chartered Institute for Archaeologists, 2014
- Ref 8-7 Conservation Principles, English Heritage, 2008
- Ref 8-8 The Setting of Heritage Assets, English Heritage, 2011