

Lower Thames Crossing

6.1 Environmental Statement

Chapter 6 – Cultural Heritage

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Chapter 6 – Cultural Heritage

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6 Cultural Heritage

6.1 Introduction

- 6.1.1 This chapter presents the assessment of the likely significant effects of the A122 Lower Thames Crossing (the Project) on cultural heritage during construction and operation. The assessment considers four sub-topics, namely archaeological remains, built heritage, historic landscapes, and the paleoenvironmental and geoarchaeological resource.
- 6.1.2 The assessment follows the policies set out within the National Policy Statement for National Networks (NPSNN) (Department for Transport, 2014) and the Overarching National Policy Statement for Energy EN-1 (Department of Energy and Climate Change, 2011); and the methodology set out in Design Manual for Roads and Bridges (DMRB) LA 106 Cultural Heritage Assessment (Highways England, 2020a), DMRB LA 104 Environmental Assessment and Monitoring (Highways England, 2020b), and relevant guidance including Historic England publications.
- 6.1.3 This chapter is supported by Figures 6.1 to 6.9 (Application Document 6.2):
- a. Figure 6.1 Archaeological Baseline and Assets Assessed as Likely to Experience an Effect
 - b. Figure 6.2 Built Heritage Baseline and Assets Assessed as Likely to Experience an Effect
 - c. Figure 6.3 Historic Landscape
 - d. Figure 6.4 Geophysical and Aerial Mapping Survey Results
 - e. Figure 6.5 Locations of Representative Heritage Viewpoints
 - f. Figure 6.6 Representative Heritage Viewpoints
 - g. Figure 6.7 Archaeological Trial Trench Evaluation Carried Out by LTC
 - h. Figure 6.8 Archaeology and Geology
 - i. Figure 6.9 Palaeolithic Archaeology
- 6.1.4 This chapter is also supported by additional information contained in the following appendices (Application Document 6.3):
- a. Appendix 6.1: Cultural Heritage Desk-Based Assessment (DBA)
 - b. Appendix 6.2: Aerial Investigation and Mapping Report
 - c. Appendix 6.3: Archaeological Desk-Based Assessment of 20th Century Military Archaeology
 - d. Appendix 6.4: Coastal Fortifications Statements of Significance

- e. Appendix 6.5: Lower Thames Crossing, Palaeolithic and Quaternary Deposit Model (PQDM) and Desk-Based Assessment of Archaeological Potential
- f. Appendix 6.6: Lower Thames Crossing: Standalone Palaeolithic Archaeological Assessment and Research Framework (SPAA-&-RF)
- g. Appendix 6.7: Geophysical Survey Reports
- h. Appendix 6.8: Results of Archaeological Trial Trenching
- i. Appendix 6.9: Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation
- j. Appendix 6.10: Assessment Tables
- k. Appendix 6.11: Scheme-wide Written Scheme of Investigation for Trial Trenching south of the River Thames
- l. Appendix 6.12: Scheme-wide Written Scheme of Investigation for Trial Trenching north of the River Thames
- m. Appendix 6.13: Holocene Geoarchaeological Desk Based Assessment of the Route of the Lower Thames Crossing
- n. Appendix 6.14: Timeline
- o. Appendix 6.15: Gazetteer and Schedules of Heritage Assets
- p. Appendix 6.16: Historic Buildings Recording
- q. Appendix 6.17: Cultural Heritage Legislation and Policy

6.1.5 This chapter also relies on the evidence from the following chapters and documents which are cross-referenced within the chapter, listed here for the purposes of signposting:

- a. Chapter 7: Landscape and Visual (Application Document 6.1) for landscape assessment, Lighting Figure 7.18 (Application Document 6.2) and Appendix 7.9, Table 3.3 (Application Document 6.3)
- b. Chapter 12: Noise and Vibration (Application Document 6.1) for Noise monitoring (Figure 7.5, Application Document 6.2 and Appendix 12.9: Effects of Vibration from Road Traffic (National Highways Ref. 1-457 Noise Support 2017-2021) (Application Document 6.3)

6.2 Legislative and policy framework

6.2.1 This assessment has been undertaken in accordance with relevant legislation and having regard to national and local plans and policies.

6.2.1 Appendix 6.17 sets out how the Applicant has considered and addressed those policies in the NPSs which relate to the assessment of effects considered in this chapter of the Environmental Statement. Policies in the NPSs which relate to decision making in relation to matters of relevance to this topic of the ES are addressed in the Planning Statement (Application Document 7.2).

Legislative requirements

6.2.2 Relevant cultural heritage legislation that has been considered during the assessment is presented in Appendix 6:17 Cultural Heritage Legislation and Policy.

National policy framework

6.2.3 Nationally Significant Infrastructure Projects (NSIPs) are determined in accordance with the decision-making framework in the Planning Act 2008 and relevant National Policy Statements (NPSs), as well as any other matters that are both important and relevant (which may include the National Planning Policy Framework (NPPF)) (Ministry of Housing, Communities and Local Government, 2021a).

6.2.4 The National Policy Statement for National Networks (NPSNN) sets out the Government's policies to deliver NSIPs on the national road and rail networks in England. Modifications to the nationally significant energy infrastructure are required as part of the Project. Four utilities diversions constitute NSIPs in their own right, and therefore the Project has also been assessed against the following energy policy statements:

- a. Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change, 2011a)
- b. National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011b)
- c. National Policy Statement for Electricity Network Infrastructure (EN-5) (Department of Energy and Climate Change, 2011c).

6.2.5 However, the NPSNN forms the 'case-making' basis for the Project, and the need for nationally significant utilities diversions arises solely from the need for the road element of the Project.

6.2.6 The Applicant has taken these policy requirements into account during the development and design of the Project and the preparation of this ES.

6.2.7 The NPPF, sets out the Government's planning policies. It provides a framework within which locally prepared plans for housing and other development can be produced.

6.2.8 The NPPF does not contain specific policies for NSIPs. However, the NPPF advises that local authorities' planning policies should take into account NSIPs

which are located within their local areas. Paragraph 1.17 of the NPSNN states that the NPS and NPPF are consistent, and paragraph 1.18 explains that the NPPF is an important and relevant consideration, 'but only to the extent relevant to [the] project'.

6.2.9 Appendix 6:17 Cultural Heritage Legislation and Policy (Application Document 6.3), lists the planning policies at a national level and the Project response.

6.2.10 Further information on how the Application responds to national planning policies is available in the Planning Statement (Application Document 7.2).

Local policy framework

6.2.11 Consideration has been given to county policies within Essex, the updated London Plan and local policies relating to cultural heritage within the following local authorities within the study area: Maidstone, Tonbridge and Malling, Gravesham, Thurrock, Havering, and Brentwood. These are outlined in Appendix 6:17 Cultural Heritage Legislation and Policy (Application Document 6.3) and are considered further within the Planning Statement (Application Document 7.2). Kent County Council does not have specific policy for cultural heritage, this is covered at the local authority level in Kent.

6.2.12 The study area for the cultural heritage assessment extends into the Medway Council and Dartford Borough Council areas, so consideration has also been given to local policy relating to cultural heritage from those local authorities. The relevant policies are outlined in Appendix 6:17 Cultural Heritage Legislation and Policy (Application Document 6.3) and are considered further in the Planning Statement (Application Document 7.2).

6.3 Assessment methodology

Standards and guidance

6.3.1 The following standards and guidance documents have been used in devising the methodology for data collection and assessment of cultural heritage impacts:

- a. DMRB LA 106 Cultural Heritage Assessment (Highways England, 2020a)
- b. DMRB LA 104 Environmental Assessment and Monitoring (Highways England, 2020b)
- c. Principles of Cultural Heritage Impact Assessment in the UK (IEMA, IHBC, CIfA, 2021)
- d. Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008)
- e. Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning: 2 (GPA 2) (Historic England, 2015)

- f. The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (GPA 3) (Historic England, 2017b)
- g. Preserving Archaeological Remains: Decision-taking for Sites under Development (Historic England, 2016a)
- h. Land Contamination and Archaeology Good Practice Guidance (Historic England, 2017a)
- i. Standard and guidance for historic environment desk-based assessment (Chartered Institute for Archaeologists, 2014 (updated 2020))
- j. Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (Chartered Institute for Archaeologists, 2014 (updated 2020))
- k. East of England Regional Historic Environment Research Framework (Association of Local Government Archaeological Officers East of England/Historic England, 1997, 2000, 2011 and 2021 website)
- l. Greater Thames Estuary Historic Environment Research Framework (Essex County Council et al., 2010a; 2010b)
- m. South East Research Framework (East Sussex/Kent/Surrey/West Sussex/Historic England, 2007/2019)
- n. Statements of Heritage Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12 (Historic England, 2019)

Scope of the assessment

- 6.3.2 The scope of the cultural heritage assessment comprises archaeological remains, built heritage, historic landscapes, and the palaeoenvironmental and geoarchaeological resource. Data collected through desk-based research, field surveys and evaluation, have been used to establish the cultural heritage baseline in line with these categories.
- 6.3.3 No aspects of the cultural heritage resource (archaeological remains, built heritage, historic landscape) have been scoped out of the assessment of impacts on cultural heritage as a result of the Project. Whilst no aspects of the cultural heritage resource have been scoped out of the assessment, some specific assets identified in the wider baseline in the DBA (Appendix 6.1, Application Document 6.3, Appendix 6.1) have not been taken forward for assessment in this chapter, these are the assets listed in Tables [A47] and [A112] of the DBA. The DBA identifies those assets for which no potential is identified for physical impacts resulting from the Project. It also identifies and describes the settings of heritage assets and identifies those that have no potential to be affected by the Project, or whose settings make no contribution to their value.

- 6.3.4 The assessment has scoped out decommissioning of the Project from assessment due to the intended long-term operation of the Project.
- 6.3.5 This chapter has interrelationships with the following ES chapters:
- a. Chapter 7: Landscape and Visual
 - b. Chapter 8: Terrestrial Biodiversity
 - c. Chapter 10: Geology and Soils
 - d. Chapter 12: Noise and Vibration
 - e. Chapter 14: Road Drainage and the Water Environment
- 6.3.6 These chapters are relevant because the cultural heritage assessment considers these interrelationships and takes into account the results of other topic assessments and proposed mitigation, including any effects such mitigation could have on cultural heritage assets, in the assessment of likely significant effects (Section 6.6 of this chapter). The interrelationships are included in the main assessment as this is intrinsic to the assessment of effects on heritage assets and cannot be separated. The assessment considers impacts from all potential sources and on all aspects of the historic environment. For example, the impact of ecological mitigation on the setting of heritage assets has been accounted for and results of landscape and noise assessment considered where relevant in determining level of impact.
- 6.3.7 The methodology for the noise assessment is presented in Chapter 12: Noise and Vibration of this ES (Application Document 6.1). The construction noise assessment study area extends 300m from the Order Limits and the operation noise assessment study area extends 600m from affected routes and includes selected receptors beyond these study areas where required.
- 6.3.8 The methodology for assessing construction vibration, presented in Chapter 12: Noise and Vibration, states that research has indicated there would not be vibration impacts on sensitive receptors from general construction activities. However, vibration impacts from piling and tunnel boring machine (TBM) activities, which could have the potential for significant effects, are considered within the scope of the construction noise and vibration assessment. The study area for this assessment is 100m from the identified activities.
- 6.3.9 Chapter 12: Noise and Vibration has assessed effects occurring due to ground-borne vibration during the operational phase of the Project. It has concluded that there would be no significant levels of ground-borne vibration during operation. This is further supported in Appendix 12.9: Effects of Vibration from Road Traffic (National Highways Ref. 1-457 Noise Support 2017-2021) (Application Document 6.3). Therefore, no further assessment of operational ground-borne vibration impacts is required for cultural heritage assets.

Temporal scope

- 6.3.10 The environmental assessment uses defined temporal scopes to characterise the duration of potential effects. The temporal scope refers to the time periods over which impacts may be experienced by receptors.

- 6.3.11 Temporary (short- and medium-term) effects are typically those associated with demolition and construction works, and permanent (long-term) effects are typically those associated with the completed and operational development. Therefore:
- a. Short term is defined as temporary effects occurring due to construction works.
 - b. Long term is defined as permanent effects occurring due to construction or operation of the Project.

Limits of deviation and Rochdale envelope

- 6.3.12 The Projects application of the Rochdale Envelope is summarised in Chapter 2: Project Description. The Limits of Deviation (LOD) for the project are defined in the (Draft DCO (Application Document 3.1) represent an 'envelope' within which the Project would be and have informed the reasonable worst case approach to assessment for the purposes of this chapter.
- 6.3.13 For the purposes of the cultural heritage assessment it has been assumed that physical impacts to buried archaeological remains could occur anywhere within the LOD for the Project.

Use of the River

- 6.3.14 Vessel movements on the River Thames are not relevant to this assessment. This is because there is no vector between vessel movements and any heritage assets identified in the baseline. Use of the river is therefore excluded from the scope of this chapter.

Scoping Opinion

- 6.3.15 A Scoping Report (Highways England, 2017) was submitted to the Planning Inspectorate on 2 November 2017, setting out the proposed approach to this Environmental Impact Assessment (EIA). A Scoping Opinion was received from the Secretary of State on 13 December 2017, which included comments on the scope of assessment from the Planning Inspectorate and statutory environmental bodies. These comments have been taken into account in the preparation of this chapter, and the Project response is set out in Appendix 4.1: The Inspectorate's Scoping Opinion and National Highways' Response (Application Document 6.3).
- 6.3.16 The Scoping Opinion from Historic England highlighted the potential for important geoarchaeological and Palaeolithic remains to be present within the Order Limits and the potential for deep excavations to impact this resource. Consequently, following the request from Historic England and further consultation with heritage stakeholders, a specialist assessment, including production of a deposit model has been undertaken in Appendix 6.5: Palaeolithic and Quaternary Deposit Model and Report; and Appendix 6.6: Palaeolithic Archaeological Assessment and Research Framework (Application Document 6.3). The deposit model represents deposition of sediments during the Middle and Late Pleistocene (approximately 500,000 years before present (BP) to 12,000 BP) and Holocene (12,000 BP to present) deposited by the previous and current routes of the River Thames. A Holocene

Geoarchaeological Desk Based Assessment of the Route of the Lower Thames Crossing has also been produced (Appendix 6.13, Application Document 6.3).

- 6.3.17 Comments were received from heritage stakeholders requesting that viewpoints and photomontages from specific heritage assets be produced and included in the assessment. This has been undertaken in collaboration with the landscape and visual assessment and is illustrated in Figures 6.5 and 6.6 (Application Document 6.2).

Consultation

Project consultation

- 6.3.18 Statutory Consultation under Section 42 of the Planning Act 2008 was undertaken on the Project from 10 October 2018 to 20 December 2018. This provided an opportunity for consultees to comment on the Preliminary Environmental Information Report (PEIR) (Highways England, 2018). A summary of the responses can be found in the Consultation Report (Application Document 5.1). Consultees comprised prescribed bodies, local authorities, people with an interest in land affected by the Project, and local communities.
- 6.3.19 The Project design continued to be developed, which resulted in changes in the Project. These formed the basis for the Supplementary Consultation, which was undertaken from 29 January 2020 to 2 April 2020. The Design Refinement Consultation was then undertaken from 14 July 2020 to 12 August 2020.
- 6.3.20 A Community Impacts Consultation was undertaken from 14 July 2021 to 8 September 2021. This sought feedback on the impacts of the Project at a local ward level, as well as the mitigation proposed for those impacts. Changes to the Project since the Design Refinement Consultation were also presented, along with a summary of how feedback to earlier consultation had shaped the development of the Project.
- 6.3.21 Prior to the submission of this DCO application, Local Refinement Consultation was held between 12 May 2022 and 20 June 2022. This provided local communities with the opportunity to comment on proposed refinements to the Project.
- 6.3.22 The Consultations all included information about the environmental impacts associated with the refinement presented for consultation. A summary of the responses to these consultation stages can also be found in the Consultation Report (Application Document 5.1).

Stakeholder engagement

- 6.3.23 A summary of the stakeholder engagement specific to cultural heritage during the EIA process is provided in Table 6.1.
- 6.3.24 Following the preference of heritage stakeholders, and as requested in the Scoping Opinion, heritage stakeholders have been engaged as a group to enable them to provide a consensus on the approach. A summary of National Highways engagement with various stakeholders after the Preferred Route Announcement specific to cultural heritage, is provided in Table 6.1.

6.3.25 Essex Place Services (EPS) are acting as the heritage stakeholder on behalf of Thurrock Burrough Council and Brentwood Borough Council. The Greater London Archaeological Advice Service (GLAAS) is an archaeological stakeholder for Greater London and is in addition to the London Borough of Havering, which represents its own views on heritage matters.

Table 6.1 Stakeholder consultation

Stakeholder	Date of meeting / communication	Summary of discussions
Historic England	12 October 2017	The following matters were discussed: <ul style="list-style-type: none"> • Programme of engagement • Terrestrial and marine archaeology • Historic buildings • Pre-DCO consents briefing
Historic England	12 December 2017	<ul style="list-style-type: none"> • Framework of regular engagement • Governance structure
Historic England, EPS, GLAAS	29 June 2018	Site visit in Thurrock/Havering: <ul style="list-style-type: none"> • The visit addressed the assessment of setting within the historic environment. • A selection of heritage assets potentially affected by the Project were visited to establish the degree of Project intervisibility and the key viewpoints to the Project from the surrounding landscape. • The visit was an opportunity to agree the key areas for addressing setting issues and to raise any concerns regarding the Project design or specific heritage assets.
Historic England, GLAAS	31 August 2018	<ul style="list-style-type: none"> • Project update • Project Order Limits • Land use
Historic England, GLAAS, EPS	05 October 2018	<ul style="list-style-type: none"> • Cultural heritage assessments – DBA and ES • Archaeological investigation • Archaeological mitigation
Historic England, Gravesham Borough Council (GBC), Kent County Council (KCC)	18 February 2019	Site visit in Kent: <ul style="list-style-type: none"> • The visit addressed the assessment of setting within the historic environment. • A selection of heritage assets potentially affected by the Project were visited to establish the degree of Project intervisibility and the key viewpoints to the Project from the surrounding landscape. • The visit was an opportunity to agree the key areas for addressing setting issues

Stakeholder	Date of meeting / communication	Summary of discussions
		and to raise any concerns regarding the Project design or specific heritage assets.
Historic England, GLAAS, EPS	14 March 2019	<ul style="list-style-type: none"> • Analysis of aerial photography • Analysis of archaeological investigations
Historic England, KCC, GBC	8 May 2019	<ul style="list-style-type: none"> • Agreement of viewpoints from a heritage perspective and referencing to landscape viewpoints • Agreement of viewpoints list and images
KCC	3 December 2019	<ul style="list-style-type: none"> • A site visit at the Church of St Mary Magdalene in Cobham was undertaken to obtain a viewpoint from the church tower
Historic England, GLAAS, EPS	6 December 2019	<ul style="list-style-type: none"> • Introducing Project archaeology specialists • Update on Order Limits • Outstanding archaeological matters
Historic England, EPS, GLAAS, KCC	7 February 2020	<ul style="list-style-type: none"> • <u>Regular Cultural Heritage Stakeholder Meeting</u> • Brief on Supplementary Consultation • DBA update • Presentation of North and South Portal landscape proposals • Update on utility diversion proposals (particularly around the A13 and Ashenbank Wood) • Initial result and assessment of priority archaeological trial trenching surveys • Palaeolithic and geoarchaeological update • Assessment update
Historic England, EPS, GLAAS, KCC	6 March 2020	<ul style="list-style-type: none"> • <u>Regular Cultural Heritage Stakeholder Meeting</u> • Project and assessment update • Update on trial trenching • Update on Palaeolithic and geoarchaeological work • Mitigation and Statement of Common Ground
Historic England, EPS, GLAAS, KCC	3 April 2020	<ul style="list-style-type: none"> • <u>Regular Cultural Heritage Stakeholder Meeting</u> • Project update on COVID-19 • Supplementary Consultation deadline extension • Overall Project timeline • Cultural heritage assessment update

Stakeholder	Date of meeting / communication	Summary of discussions
		<ul style="list-style-type: none"> Update on trial trenching and Palaeolithic & geoarchaeological work
Historic England, EPS, GLAAS, KCC	9 April 2020	<ul style="list-style-type: none"> Update on Project's progress on built heritage assessment, specifically listing proposed building demolition, methodology, mitigation and future work
Historic England, GLAAS, KCC	29 April 2020	<ul style="list-style-type: none"> Meeting to discuss next steps on Palaeolithic and Quaternary archaeology assessment
Historic England, EPS, GLAAS, KCC	5 June 2020	<ul style="list-style-type: none"> <u>Regular Cultural Heritage Stakeholder Meeting</u> Project update on Design Refinement Consultation A review of engagement including the issue of relevant ES chapters (in phased approach) Issue of draft Code of Construction Practice (CoCP) Discussion on DBA Update on surveys, including trial trenching, Palaeolithic surveys, geophysical surveys and built heritage
Historic England, GLAAS, KCC, EPS	7 August 2020	<ul style="list-style-type: none"> <u>Regular Heritage Stakeholder Meeting</u> Request for appropriate individuals for Project heritage research framework academic group.
Historic England, GLAAS, KCC, EPS	6 November 2020	<ul style="list-style-type: none"> <u>Regular Cultural Heritage Stakeholder Meeting</u> Concerns over wording of the DCO Schedule 2 Requirement raised. Confirmed that wording of the Archaeological Mitigation Strategy (AMS) has been revised. Presentation to be made available to assist stakeholders navigating through the DCO documents. Update of Archaeological Trial Trenching (ATT) sites and photographs provided via the trench plan. All accessible field parcels, which incorporated approximately 3,000 trenches, have been completed. Additional geophysical survey had been completed.

Stakeholder	Date of meeting / communication	Summary of discussions
		<ul style="list-style-type: none"> Change to two-monthly stakeholder meetings proposed and agreed as adequate.
Historic England, KCC, EPS, GLAAS	11 November 2020	<ul style="list-style-type: none"> To agree format of Holocene report, which will sit alongside existing PQDM. WSIs for ATT north of river being prepared by Oxford Archaeology (OA). Timing of the ATT.
Historic England, GLAAS, KCC, EPS	5 February 2021	<ul style="list-style-type: none"> <u>Regular Cultural Heritage Stakeholder Meeting</u> Project recap regarding the decision to withdraw the DCO application and advice received from Planning Inspectorate on improving the application. Consideration of another round of public consultation. Concerns raised over the recording of buildings proposed for demolition. Need for appropriate detail to inform the application. Intention to record buildings before DCO submission. Wording of DCO to be discussed with legal team. ATT reporting issued, with one outstanding to be issued late February 2021. 2,870 trenches completed and reflects good coverage. Stakeholders noted that there needs to be a move away from 'land parcel' format for archaeological works. Focus on 'sites' will be used for reporting in the AMS. Request to stakeholders to identify areas of concern.
Historic England, GLAAS, KCC, EPS	9 April 2021	<ul style="list-style-type: none"> <u>Regular Cultural Heritage Stakeholder Meeting</u> Discussion of whether the Project is part of 'Project Speed' with the Planning Inspectorate. Concern from stakeholders that it could impact upon the assessment. Revised Tilbury Fields landscape proposals presented. The change from previous design noted with green infrastructure – more formal landscaping not considered appropriate by stakeholders.

Stakeholder	Date of meeting / communication	Summary of discussions
		<ul style="list-style-type: none"> • Register of Environmental Actions and Commitments (REAC) to be updated to address stakeholder concerns. • Tunnel portal meetings proposed. • Peat strategy proposed. • ATT further WSI issued for approval. • Ground Investigation (GI) phase 3 completed. • Confirmation received to proceed with WSI for Palaeolithic survey work. Waiting on GI data to complete.
KCC, Historic England,	6 April 2021	<ul style="list-style-type: none"> • Discussed impacts from the South Portal as well as impacts away from the tunnel – i.e., ponds and gas mains diversion towards main drive valley • Discussed fact that fieldwork is not yet finished. Informed KCC that Palaeolithic testing north of A226 was yet to be completed and the Project’s Palaeolithic specialists were producing a method statement for this. • Tunnel construction approach including grouting was outlined to stakeholders. Discussed that extensive archaeological assessment has been completed: GI and evaluation. Request to reduce land take as much as possible.
EPS, Historic England	7 April 2021	<ul style="list-style-type: none"> • Impacts from the North Portal • Constraints including contamination and overburden. If accepted, nothing can be achieved in advance and a very defined strategy is required before construction. • Concern with design and build contract for tunnels. Needs certainty of approach in the REAC or the CoCP. • Consideration of peat strategy.
Email from the Project team	22 June 2021	<ul style="list-style-type: none"> • Notification of Order Limits changes as part of the Community Impacts Consultation. Geographic Information System (GIS) format data provided to heritage stakeholders.
Historic England, GLAAS, KCC, EPS	4 June 2021	<ul style="list-style-type: none"> • <u>Regular Cultural Heritage Stakeholder Meeting</u> • Update on recent meetings: Shorne Woods car park proposals; Tilbury Fields landscaping.

Stakeholder	Date of meeting / communication	Summary of discussions
		<ul style="list-style-type: none"> • Progress on buildings survey. • Stakeholders are in agreement that no further work is required on the DBA as it is a 'point in time' document. • ATT planned phase of work for 330 trenches starting. • Palaeolithic surveys/monitoring being carried out. • Project archaeology research strategy still being worked on. Discussion of committee approach
GBC	13 July 2021	<ul style="list-style-type: none"> • Discussed terminology and extent of Darnley Estate and the need for distinction between Cobham Park and Cobham Hall Estate
Historic England, GLAAS, KCC, EPS	8 September 2021	<ul style="list-style-type: none"> • Regular Cultural Heritage Stakeholder Meeting • The Community Impacts Consultation closed on 8th September 2021 with an initial count of over 2,700 responses. Stakeholders were informed that the large number of responses could delay the submission date.
Historic England, GLAAS, EPS	15 October 2021	<ul style="list-style-type: none"> • Palaeolithic and deep Holocene deposits in areas of potential ground treatment around the northern portal and CA5.
Historic England	20 October 2021	<ul style="list-style-type: none"> • To update Historic England on the proposed changes at Tilbury Fields
Historic England, GLAAS, KCC, EPS	5 November 2021	<ul style="list-style-type: none"> • Regular Heritage Stakeholder Meeting
Historic England, EPS	14 January 2022	<ul style="list-style-type: none"> • Proposed mitigation on the Orsett Cropmark scheduled monument
Historic England, GLAAS, KCC, EPS	4 February 2022	<ul style="list-style-type: none"> • Regular Cultural Heritage Stakeholder Meeting • Update on alternative Tilbury Fields earthworks design • Presentation on nitrogen deposition compensation sites including discussion of assessment methodology • Update from OCA on ATT reporting • Agreement from EPS that internal survey of locally listed buildings prior to submission would not be proportionate • Update on Legacy and Benefits work

Stakeholder	Date of meeting / communication	Summary of discussions
Historic England, GLAAS, KCC, EPS	1 April 2022	<ul style="list-style-type: none"> • Regular Cultural Heritage Stakeholder Meeting • Update on latest public consultation from 12 May to 20 June 2022 • Update on commissioning geophysical survey for nitrogen deposition compensation sites in Kent • Update on assessment process including data refresh and Palaeolithic WSI • Update on Legacy and Benefits
GLAAS	28 April 2022	Update on design changes and approach to mitigation in London Borough of Havering including Folkes Farm planting
Historic England, EPS	4 May 2022	<ul style="list-style-type: none"> • To provide an update on the assessment and recording of the Murrells Cottage, Thatched Cottage and 1 and 2 Grays Corner Cottage, all Grade II listed buildings • To discuss the mitigation proposals • Historic England agreed that a level 4 buildings survey would be appropriate mitigation
Historic England, GLAAS, KCC, EPS	6 May 2022	<ul style="list-style-type: none"> • Update on assessment of Palaeolithic and Holocene evidence from the ATT • General discussion around Palaeolithic and Geoarchaeological mitigation, the Ground Investigation results and staged fieldwork and research potential
Historic England, KCC	17 May 2022	<ul style="list-style-type: none"> • To present the changes made by the team to the ES chapter south of the River Thames
Historic England, GLAAS, EPS	24 May 2022	<ul style="list-style-type: none"> • To present the changes made by the team to the ES chapter north of the River Thames
Historic England, GLAAS, KCC, EPS	7 July 2022	<ul style="list-style-type: none"> • Regular Cultural Heritage Stakeholder Meeting • Update on the project and public consultation as well as an update to the current assessment methodology, and legacy and benefits

Study areas

- 6.3.26 The study areas for the assessment of impacts to cultural heritage have been agreed with all key heritage stakeholders.
- 6.3.27 In the Scoping Opinion, the Planning Inspectorate stated that it expects the study area *‘to be determined by the likely extent of impacts’* (Application Document 6.3, Appendix 4.1). The potential impacts of the Project arise from a variety of sources, some caused by physical damage and others by visual or noise intrusion. Four study areas have been identified and defined in accordance with DMRB LA 106 (Highways England, 2020a), which provides the following instructions on the definition of the study area:
- a. *‘3.5 Where the need for further assessment has been established, the assessment shall define a study area according to the sensitivity of the receiving environment and the potential impacts of the project.’*
 - b. *3.6 Where a new road is proposed the study area shall include the footprint of the scheme plus any land outside that footprint which includes any heritage assets which could be physically affected.*
 - c. *3.6.1 The study area should include the settings of any designated or other cultural heritage resource in the footprint of the scheme or within the zone of visual influence or potentially affected by noise.’*
- 6.3.28 Table 6.2 describes the study areas utilised for this assessment.

Table 6.2 Study areas

Study area	Description	Relevance
Order Limits	In line with DMRB LA 106 paragraph 3.6 (Highways England, 2020a), the assessment of heritage assets should include those assets within the footprint of the Project and any others which could be physically affected. The Order Limits identifies all of the land required for the Project and therefore includes all the heritage assets that could be physically affected. Therefore, the Order Limits have been used to assess those heritage assets which could be physically affected by the Project.	Construction, Operation
1km study area	A study area of 1km from the Order Limits was agreed with key heritage stakeholders. This forms the second study area and was used to create the baseline in the DBA (Appendix 6.1 (Application Document 6.3)). It also informs the assessment of the archaeological potential of the land within the Order Limits.	Construction
Landscape study area	The landscape study area for the Project has been determined as part of the landscape and visual impact assessment (Chapter 7: Landscape and Visual). This study area has been defined following review of the extensive Zone of Theoretical Visibility (ZTV) analysis, site survey and collation of baseline photography and consultation with landscape stakeholders. This study area extends up to 2km from the Project but is smaller in some areas to reflect constrained visibility. This is considered to represent the area within which the Project may have an influence with the potential to result in a significant effect on visual amenity. The methodology for the landscape study area is presented in Chapter 7: Landscape and Visual. The landscape study area provided the principal tool for identifying designated heritage assets which may receive adverse effects as a result of change within their setting that affects their value, to be taken forward for impact assessment within this chapter. It is important to note that in some areas the landscape study area is smaller than the 1km study area, but in other areas it extends beyond 1km from the Order Limits.	Operation
Palaeolithic 3km study area	Detailed research of the known Quaternary sediment sequence and associated prehistoric archaeological finds and sites was undertaken using a 3km study area. This was considered to be most appropriate for assessment of the significance of Palaeolithic remains and geoarchaeological deposits.	Construction

6.3.29 Additional consultation with stakeholders along with professional judgement identified any heritage assets located outside the landscape study area (which in some areas extends beyond the 1km study area) or 1km study area that were considered potentially able to experience an impact and therefore required assessment, for example where groups of heritage assets with group value extend beyond the landscape study area. This exercise produced agreement on additional heritage assets to be included in the baseline and impact assessment.

- 6.3.30 The study areas of the Order Limits and the 1km study area are shown in relation to archaeological remains, built heritage and historic landscape on Figures 6.1, 6.2, 6.3 and 6.8 (Application Document 6.2). In addition, the landscape study area is also displayed on these figures. The 3km Palaeolithic study area is shown on Figure 6.9 (Application Document 6.2).

Impact assessment methodology

- 6.3.31 The assessment followed the general approach described in Chapter 4: EIA Methodology. This section provides topic-specific information regarding the methodology used for establishing the baseline, and the methods used for the construction and operational phase assessments.

Method of establishing baseline conditions

Existing baseline

- 6.3.32 The existing baseline in relation to cultural heritage was established based on desk-based studies, fieldwork and modelling.
- 6.3.33 Description of the sources and methods for obtaining desk-based baseline information are contained in Appendices 6.1 to 6.6 (Application Document 6.3). Sources and methods for field evaluation are contained in Appendices 6.7, 6.8, 6.11 and 6.12 (Application Document 6.3).

Desk-based studies

- 6.3.34 A desk-based review of the following data sources has been undertaken to determine the baseline conditions across the Project study area:
- a. Historic England's (2020b) National Heritage List for England, for information on designated heritage assets (scheduled monuments, listed buildings, Registered Parks and Gardens, registered battlefields, protected wrecks, World Heritage Sites and assets on the Heritage at Risk Register). This comprised Geographic Information System (GIS) data and associated factual descriptions available through the website. The Heritage at Risk programme identifies those sites that are most at risk of being lost because of neglect, decay or inappropriate development. Historic England updates the Heritage at Risk Register every year and considers Grade I and II* listed buildings, Grade II listed places of worship, Grade II listed buildings in London and all other designated heritage assets. Information used in this assessment has been updated throughout the pre-application phase of the Project, to ensure any changes to the data are considered in the assessment and design development. The most recent information, and that contained in this chapter, was obtained in June 2021.
 - b. Local planning authorities' Conservation Area boundary data and appraisals and information on 'local lists' of heritage assets. This comprised reports and maps and was obtained in 2017, with a check to ensure the data were still current in April 2021. Revisions to the boundaries for Thong Conservation Area (CA10) and Chestnut Green, Shorne Conservation Area

(CA12) were noted and revised following review in April 2021. All other Conservation Areas remained unchanged.

- c. HERs (Kent, Essex and Greater London) for information on non-designated heritage assets, previous investigations of archaeology and historic buildings, historic landscape characterisation and area-specific aerial mapping studies. This comprised GIS data and associated reports. Data was obtained on several occasions through the pre-application phase of the Project to ensure any changes to the data were considered in assessment and design development. The most recent information, and that contained in this chapter, was obtained in March 2022.
- d. Historic England Archive for additional information regarding non-designated heritage assets, previous investigations, cropmarks (National Mapping Programme) and aerial photographs. This comprised GIS data, reports and photographs. Data were obtained on several occasions through the pre-application phase of the Project to ensure any changes to the data were considered in assessment and design development. The most recent information, and that contained in this chapter, was obtained in May 2019.
- e. Relevant archives/record offices have been consulted to obtain information (Kent History and Library Centre, Medway Archives and Local Studies Centre, Rochester Guildhall Museum, Essex Record Office, British Library). This comprised historic maps, including tithe maps and apportionments, original documents and local history publications and was obtained in 2018.
- f. British Geological Survey (2020) website has been consulted for borehole and geological data. Due to the nature of the geological resource the information is accurate and will not have changed and therefore provides a robust baseline on which the assessment in this chapter is based.

6.3.35 In addition, the following three desk-based studies have been undertaken to supplement the information derived from the sources above, as agreed with relevant stakeholders:

- a. The section of the route to the south of the River Thames was largely covered by an existing recent aerial mapping study as part of the Hoo Peninsula Historic Landscape Project (Historic England, 2013). The results of that study have been incorporated into the Kent HER. A specialist aerial mapping study has been undertaken for the section of the route north of the River Thames, presented in Appendix 6.2 (Application Document 6.3) and results shown on Figure 6.4 (Application Document 6.2). This consisted of rectification of historic aerial photographs and an analysis of Light Detection and Ranging (LiDAR) data. This study complemented and built on the existing National Mapping Programme data (a 1980s and 1990s aerial mapping study carried out with more basic

techniques). An initial study was undertaken in 2019 for the Order Limits set out in the Statutory Consultation and an update to this was undertaken in 2020 to cover gaps in this for the Order Limits. The study includes the Order Limits and identifies buried archaeology in detail in areas where non-intrusive geophysical survey has proven unreliable. The LiDAR images also define areas where alluvial soils mask buried historic landscapes.

- b. Specialist military archaeological studies have been undertaken and are presented in Appendix 6.3 and Appendix 6.4 (Application Document 6.3). These present an assessment of the value of the military archaeology of the study area and are focused on two key topics. Firstly, the value of the late Medieval – Post-Medieval defences of the Thames Estuary in the study area, between Gravesend, Tilbury, Coalhouse and Cliffe Forts (Application Document 6.3, Appendix 6.4). Secondly, the value of the remains of the 20th century military activity within the study area, including Gravesend Airfield, the scheduled anti-aircraft battery at Bowaters Farm and two First World War (WWI) landing grounds at Orsett and North Ockendon (Application Document 6.3, Appendix 6.3). These studies were required to understand the value of these heritage assets, due to the potential impact of the Project on the high-value coastal forts and the impact the Project could have on understanding of the importance of the area in relation to the defence of London since the late Medieval period and the physical remains of this activity.
- c. A Historic Landscape Characterisation (HLC) study has also been undertaken and is presented in full in the DBA (Appendix 6.1, Application Document 6.3). As there is no single, fixed methodology for this process, the assessment used the methodologies employed for non-road schemes, such as the Hoo Peninsula Historic Landscape Project (Historic England, 2013) as recommended by heritage stakeholders. The study describes:
 - d. the 'time-depth' profile of the landscape (i.e. how long it has been subject to human activity)
 - e. past landscape change and land use
 - f. the chronology and process of land enclosure
 - g. the present land use

6.3.36 Detailed research of the known Quaternary sediment sequence and associated prehistoric archaeological finds and sites for the Order Limits including a 3km Palaeolithic study area has been undertaken. This area is, therefore, larger than the 1km study area (see Table 6.2) in order to provide sufficient Palaeolithic baseline evidence. Three reports which collate the known geological sequence, relevant archaeological finds with reference to the

national and regional research frameworks, and ongoing fieldwork, can be found at: Appendix 6.5 Lower Thames Crossing: Palaeolithic and Quaternary Deposit Model (PQDM) and Desk-based Assessment of Palaeolithic Potential; Appendix 6.6 Lower Thames Crossing: Stand-alone Palaeolithic Archaeological Assessment and Research Framework (SPAA-&RF); and Appendix 6.13 Holocene Geoarchaeological Desk Based Assessment of the Route of the Lower Thames Crossing (Application Document 6.3).

Fieldwork

- 6.3.37 The following fieldwork surveys and evaluations have been undertaken to inform the baseline for the cultural heritage assessment:
- a. Archaeological walkover of the Order Limits and a surrounding 50m survey area. The additional 50m buffer from the Order Limits was used to facilitate flexibility during survey access. This comprised a visual inspection of the above-ground remains to identify any unrecorded heritage assets that can be observed from above-ground evidence, the condition and above-ground visibility of recorded heritage assets, and to identify/confirm the presence of historic landscape features and the current ground conditions, including evidence for disturbance or made ground. The findings inform assessment of the value of heritage assets and the potential for unknown archaeological assets to be present. The results of this are presented in Appendix 6.1: DBA(Application Document 6.3).
 - b. Heritage asset setting survey, focused on designated and medium-high-value non-designated heritage assets predominantly located within the Order Limits and the 1km study area with some additional assets included as described in paragraphs 6.3.27 to 6.3.28. The purpose of this survey was to determine the nature and extent of an asset's setting and to inform an assessment of the degree to which the setting contributes to its value, if at all. The results of this are presented in the DBA (Appendix 6.1, Application Document 6.3) and are considered in the impact assessment in this chapter where relevant.
 - c. The listed buildings considered to be at risk of significant physical effects from the Project due to demolition were subject to level 4 building recording surveys, in accordance with Historic England's (2016b) Understanding Historic Buildings, A Guide to Good Recording Practice, including detailed/enhanced Statements of Significance (value). This included documentary research regarding the buildings and surveys comprising detailed internal and external visual inspections.
 - d. The listed buildings considered to be at risk of significant physical effects from the Project due to demolition were subject to level 4 building recording surveys, in accordance with Historic England's (2016b) Understanding Historic Buildings, A Guide to Good Recording Practice, including detailed/enhanced Statements of Significance (value). This included

documentary research regarding the buildings and surveys comprising detailed internal and external visual inspections.

- e. The listed buildings considered to be at risk of significant physical effects from the Project due to demolition were subject to level 4 building recording surveys, in accordance with Historic England's (2016b) Understanding Historic Buildings, A Guide to Good Recording Practice, including detailed/enhanced Statements of Significance (value). This included documentary research regarding the buildings and surveys comprising detailed internal and external visual inspections.
- f. Geophysical survey was undertaken in targeted areas suitable for survey within the Order Limits. South of the River Thames, this comprised an initial detailed magnetometer survey of the Order Limits (Application Document 6.2, Figure 6.4; and Application Document 6.3, Appendix 6.7, Geophysical Survey Reports) and further targeted surveys using magnetometer survey and other techniques comprising electro-magnetic and ground-penetrating radar. North of the River Thames, the geological and superficial deposits and the presence of large areas of energy infrastructure in the form of overhead and buried power lines, meant that only certain areas within the Order Limits were suitable for survey, with the aerial mapping study providing information for the other areas. This was undertaken with a range of techniques to determine the most suitable for the geological conditions, as mentioned above. The purpose of these surveys was to identify the location and nature of currently unknown archaeological remains and add to existing knowledge of known archaeological remains, through non-intrusive means that do not alter the condition of the assets identified. These results are presented in Application Document 6.2, Figure 6.4 and Application Document 6.3, Appendix 6.7, Geophysical Survey Reports and assessed in this chapter.
- g. Trial trenching has been undertaken within the Order Limits (Application Document 6.2, Figure 6.7; and Application Document 6.3, Appendix 6.8 Trial Trenching Reports). This comprised targeted trenches, based on the results of the aerial mapping study and geophysical survey, and non-targeted sample trenches to test the potential for buried archaeology in areas where remote sensing methods have not revealed any remains. The targeted trenches tested the reliability of the other assessment methodologies in the specific area and both targeted and sample trenches provide further detail regarding the nature and significance of any identified heritage assets. The results of the work are assessed in this chapter and the final ATT reports are presented in Appendix 6.8 (Application Document 6.3).

h. Geotechnical ground investigations cover both terrestrial and marine environments and have been subject to archaeological monitoring and geoarchaeological investigations (AECOM 2020a; 2020b). They were undertaken to develop the Project design and the results used to inform a geoarchaeological deposit model to understand the development of the landscape and historic environment. Based on this model it is possible to identify areas of potential for currently unknown archaeological remains, particularly those dating to earlier prehistory. This is presented in Appendix 6.5: PQDM and Report; and Appendix 6.6: Palaeolithic Archaeological Assessment and Research Framework (Application Document 6.3), both of which use the information derived from the ground investigation works.

6.3.38 Methodologies for the archaeological walkover and setting survey are contained in Appendix 6.1: Cultural Heritage Desk-Based Assessment; the geophysical survey in Appendix 6.7: Geophysical Survey Reports; the trial trenching in Appendix 6.11: Scheme-wide Written Scheme of Investigation for Trial Trenching south of the River Thames and Appendix 6.12: Scheme-wide Written Scheme of Investigation for Trial Trenching north of the River Thames; and the geoarchaeological assessment is in Appendix 6.5: Palaeolithic and Quaternary Deposit Model and Report (all Application Document 6.3).

6.3.39 The scope of field surveys for assessment has been discussed with and agreed by heritage stakeholders (Historic England, KCC, EPS, GLAAS). The scope of geophysical survey, trial trenching and geoarchaeological investigation has been subject to detailed and repeated discussions as new information has become available and the Project design has evolved. All of these investigations were located within the Order Limits at the time that the WSIs were produced. However, some early investigations were carried out on land that is now located outside the Order Limits due to boundary changes. For the archaeological trial trenching, WSIs have been prepared for all land parcels within the Order Limits and were produced to explain the scope and methodology of the trial trenching and to obtain approval from the archaeological advisors to the local planning authorities (Application Document 6.3, Appendices 6.11 and 6.12). The WSIs for trial trenching and geophysical survey have been approved by the relevant heritage stakeholders.

6.3.40 Archaeological walkover, setting survey, geophysical survey and trial trenching are all best practice in determining baseline and asset value. They are recommended and required by the NPSNN, DMRB and other heritage assessment guidance.

6.3.41 The need for geoarchaeological and palaeoenvironmental investigation was identified from the completion of a deposit model (Appendix 6.5, Application Document 6.3). The deposit model was created by specialist sub-consultants from historical ground investigation data and newly available soil profiles recorded from the Project's geotechnical ground investigations and trial trenching. The modelling, and a wider detailed desk-based data review, produced a baseline for geoarchaeological and Palaeolithic potential which has informed the assessment in this chapter (Appendices 6.5 and 6.6, Application

Document 6.3). Areas particularly at risk of impact from the Project include deeply stratified deposits during deep excavation, particularly at the tunnel portals and other areas of deep excavation. These deposits could contain evidence of Palaeolithic activity, which if present is rare and of high to very high value.

Modelling

6.3.42 A PQDM was developed (Appendix 6.5, Application Document 6.3). The PQDM is a staged process:

- a. The current version is based on historical ground investigation data and newly available information recorded from the Project's geotechnical ground investigations and trial trenching (existing British Geological Survey data, results from completed Phase 1, 2 and 3 geotechnical investigations for the Project in 2018/2019/2020/2021, and results from trial trenching completed in 2019/2020/2021).
- b. The deposit model provides an overview of varying Quaternary deposit character and Palaeolithic archaeological potential across the area of the Project. This was produced to support the cultural heritage assessment in this chapter. The model also presents an outline of suitable approaches to field investigation to inform a robust mitigation strategy. This forms part of the geoarchaeological PQDM report submitted with this ES (Appendix 6.5, Application Document 6.3) and informed the Draft Archaeological Mitigation Strategy and Outline Written Scheme of Investigation (Appendix 6.9, Application Document 6.3).
- c. A walkover survey has been carried out during March 2020 and was reported in the Standalone Palaeolithic assessment (Appendix 6.6, Application Document 6.3).

Future baseline ('Without Scheme' scenario)

6.3.43 The future baseline has been determined through a consideration of other developments that are consented, submitted applications, and development identified in relevant Development Plans (following the methodology in Chapter 16: Cumulative Effects Assessment) within the cultural heritage 1km study area and assumes the Project is not built. In areas with no other relevant proposed development, the current land and property use has been assumed to continue. Predicted climate change and potential for unusual weather events are also considered. This scenario is then assessed in relation to the current cultural heritage baseline to predict the future baseline at the Project opening year of 2030.

Method of assessment – construction

6.3.44 Construction activities have the potential to cause adverse permanent physical impacts to heritage assets, including buried archaeology, built heritage and historic landscape features. This could be through direct physical destruction,

truncation (removal of part), or through associated impacts including ground movement, vibration or changes such as dewatering.

- 6.3.45 Construction activities also have potential to cause both temporary and permanent impacts to heritage assets through changes to their setting, that affect their value. This could arise through visual intrusion, construction access routes passing through a Conservation Area and therefore introducing construction traffic, changes in noise levels or by altering the functional relationship between heritage assets.
- 6.3.46 Potential construction impacts were identified by comparing the current condition and nature of heritage assets, the do minimum (without scheme) scenario, to the condition and nature predicted should construction of the Project occur, the do something (with scheme) scenario, and the degree of change is reflected in the assessment. The nature of the change is based on design information and other assessments undertaken by the Project, including the noise and vibration, landscape and visual impact, hydrogeological and ground movement assessments.
- 6.3.47 An individual heritage asset can experience multiple impacts arising from different aspects of construction activity. For example, an archaeological asset could be partially removed by physical construction activity and its setting could change to a degree that affects its value. The assessment considered the potential combined effect on heritage assets from all aspects of the Project construction activity.

Method of assessment – operation

- 6.3.48 The method of assessment for the operational phase is the same as that for the construction phase assessment.
- 6.3.49 The operational phase of the Project has the potential to cause impacts to heritage assets through permanent changes to their setting that affect their value. These could arise through visual intrusion, traffic passing close to Conservation Areas on the A122 Lower Thames Crossing, changes in noise levels or by altering the functional and historic relationships between heritage assets. In addition, the introduction of associated highways infrastructure, including lighting and signage, may cause changes to setting. The nature of the change to setting, and consequently the change to an asset's value, may alter between construction and operation due to the difference in the nature of activities occurring during each phase. The magnitude of this impact may decrease or increase depending on the specific situation and the manner in which an asset derives value from its setting.
- 6.3.50 Physical impacts have not been considered in the operational phase assessment, as they would have occurred during the construction phase and cannot be repeated as the heritage asset would have already been partially or completely removed. The exception to this is historic landscapes which would suffer a permanent physical impact from construction and potentially a further permanent impact as a result of the replacement of part of the historic landscape with the Project's landscaping. In order to provide a holistic assessment, impacts on the historic landscape from construction and operation have been considered cumulatively within the operational phase assessment.

Determining significance of effects

- 6.3.51 As described in Chapter 4: EIA Methodology, the significance of environmental effects was determined by taking into account the value (sensitivity) of the receptor and the magnitude of the impact.
- 6.3.52 The following paragraphs set out the value) and impact magnitude criteria used in this assessment, based on DMRB LA 104 (Highways England, 2020b). Significance of effect was then determined using the matrix approach shown in Table 4.3 of Chapter 4: EIA Methodology.
- 6.3.53 Effects can be beneficial, adverse or neutral, and permanent or temporary. The assessment used professional judgement, aligned with the requirements of the NPSNN, to identify the significance of effect on heritage assets through assessment of the magnitude of impact in conjunction with the value of the asset. This was determined based on the degree to which the impact would affect the value (significance in the NPSNN/NPS-EN1) of heritage assets.
- 6.3.54 The assessment of significance undertaken in this chapter is used as the basis for identifying effects which are considered significant in the context of the EIA Regulations.

Defining importance/value of resources and/or receptors

- 6.3.55 The importance of heritage assets is based on their heritage significance (referred to as ‘value’ in this assessment to avoid confusion with ‘significance of effect’) and is determined in line with guidance provided by Historic England in Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008) and GPA 3 (Historic England, 2017b), which also considers the contribution that an asset’s setting can make to its value. This methodology is described below and in Appendix 6.1: DBA (Application Document 6.3). The heritage assets included in the assessment have been identified as described in paragraphs 6.3.34 to 6.3.42.
- 6.3.56 The value of a heritage asset derives from the asset’s physical presence, the knowledge derived from the asset and the potential for the asset to provide new knowledge to contribute to the understanding of the past (such as records of various archaeological deposits drawn together to demonstrate the former presence of an Iron Age village). Heritage assets also encompass key characteristics, features, or elements such as the setting of buildings within Conservation Areas or buried remains or earthworks within an archaeological site.
- 6.3.57 The value of the identified cultural heritage assets was determined using the criteria presented in Table 6.3, derived from DMRB LA 104 and LA 106. For non-designated heritage assets (buildings, archaeology and historic landscapes), value has been assigned using a combination of Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008); GPA 3 (Historic England, 2017b) and professional judgement. The terminology provided by Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008) is used to describe the characteristics of a heritage asset’s value. This information is then used to

inform the assignment of one of the values derived from DMRB LA 104 and LA 106 to the heritage asset, which provide a scale of values from negligible to very high. Both stages are essential to appropriately describe the value of heritage assets for the purposes of EIA.

Table 6.3 Assessment criteria for the value of heritage assets

Value of heritage asset	Typical description	Typical example of cultural heritage resource
Very high	Very high importance and rarity, international scale and very limited potential for substitution	World Heritage Sites Assets identified as being of very high value through stakeholder consultation
High	High importance and rarity, national scale, and limited potential for substitution	Scheduled monuments Most Listed buildings Some Conservation Areas (those of national value with the highest special architectural and historical value) Grade I and Grade II* Registered Parks and Gardens Protected wrecks Nationally important non-designated heritage assets
Medium	Medium importance and rarity, regional scale, limited potential for substitution	Some Conservation Areas (those with a special architectural and historic value which is of less than national value which contain a small number of Listed Buildings or have been subject to decay or sustained neglect) Regionally important heritage assets Some Listed buildings whose value has been eroded e.g. through the re-location of the asset or have been subject loss of key architectural or historic elements or subject to decay or sustained neglect Grade II Registered Parks and Gardens
Low	Low importance and rarity, local scale	Locally listed buildings Locally important heritage assets
Negligible	Very low importance and rarity, local scale	Heritage assets with very little or no surviving archaeological or historic interest

Detailed description of the value of heritage assets

6.3.58 Paragraph 5.122 of the NPSNN and paragraph 5.8.2 of the NPS EN-1 states that heritage assets '*hold value to this and future generations because of their historic, archaeological, architectural or artistic interest*'. These interests can be used in conjunction with the values set out in Historic England's Conservation Principles in order to describe the elements that comprise or contribute to an asset's overall value, including its setting.

- 6.3.59 Historic England’s ‘GPA 2’ provides advice on the description of value. GPA 2 advises understanding the nature and extent of the value of a heritage asset by considering the four types of heritage value an asset may hold. As identified in the conservation principles, these values are:
- a. evidential (which in the NSPNN equates to archaeological interest)
 - b. historical (which in the terms of the NPSNN can equate to historic or architectural interest)
 - c. aesthetic (which in the terms of the NPSNN can equate to architectural or artistic interest)
 - d. communal
- 6.3.60 Historic England’s Conservation Principles expand further on the heritage values, summarised in paragraphs 6.3.65-6.3.68 below.
- 6.3.61 Evidential value is the potential of a place to yield evidence about past human activity. This includes the physical remains of past human activity, such as archaeological remains or the fabric of historic buildings. Geology, landforms, species and habitats associated with human activity have the potential to hold evidential value.
- 6.3.62 Historical value derives from the ways in which past people, events and aspects of life can be connected through a place to the present. Historical value tends to be either ‘illustrative’ or ‘associative’. A building with illustrative value may be one of many such similar examples and therefore may provide little unique evidence about the past, however, it may clearly illustrate the intentions of its creators. Illustrative value has the ability to aid interpretation of the past through making connections with and providing insights into past communities and their activities. Illustrative value tends to be greater where the asset incorporates the first, or only surviving example of an innovation of consequence. Associative value can derive from a notable family, person, event or movement, or the development of other aspects of cultural heritage such as literature, art, music or film.
- 6.3.63 Aesthetic value. This is derived from the ways in which people draw sensory and intellectual stimulation from a place. Aesthetic values can be the result of deliberate design or can derive from the fortuitous manner in which a place has evolved and been used over time. Some places can combine both of these aspects, such as an attractive natural landscape which has been enhanced by deliberate human intervention.
- 6.3.64 Communal value. The meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. This can derive from commemorative or symbolic values that reflect the meanings of a place for those who draw identity from or have emotional links to it, for example a war memorial. However, communal value may derive from more informal social value, such as the perception of a place as a source of identity, distinctiveness or social interaction. Spiritual value can also form an aspect of communal value.

- 6.3.65 This assessment will use varying combinations of the above terminology regarding interest and value, in order to most accurately describe the value of a heritage asset.

Assessing setting

- 6.3.66 The contribution of the setting to the value of an individual heritage asset has been assessed within this report in accordance with the guidance set out in GPA 3. In determining the contribution of setting to value, GPA 3 advocates the clear articulation of ‘what matters and why’. The initial stage is to identify which heritage assets and settings are affected. Following this, an assessment is carried out of whether, how, and to what degree settings make a contribution to the value of the heritage assets or allow value to be appreciated, which can then be clearly articulated.
- 6.3.67 The guidance includes a (non-exhaustive) checklist of elements of the physical surroundings of an asset that might be considered when undertaking the assessment including, among other things: topography, other heritage assets, green space, functional relationships, and degree of change over time. GPA 3 also sets out factors associated with the experience of the asset which might be considered during an assessment, including views, intentional intervisibility, tranquillity, sense of enclosure, accessibility, rarity and land use.

Defining impact magnitude

- 6.3.68 The magnitude of impacts on cultural heritage assets was determined based on the criteria outlined in Table 4.3 of Chapter 4: EIA Methodology (Application Document 6.1).
- 6.3.69 The loss of a heritage asset or a severe loss of value, through severe damage to key characteristics, features or elements, constitutes a major adverse magnitude of impact. The partial loss of a heritage asset and/or the partial loss of or damage to key characteristics, features or elements can constitute a moderate adverse magnitude of impact, depending on the scale of the loss.
- 6.3.70 While NPSNN paragraph 5.139 states that the ability to make a record of heritage assets should ‘*not be a factor in deciding whether consent should be given*’ para 5.140 goes on to state that the Secretary of State should ‘*require the applicant to record and advance understanding*’ of any heritage asset before it is lost. Where a designated asset or a non-designated asset of archaeological interest that is demonstrably of equivalence to a scheduled monument experiences substantial harm, a full and proper record should be made through archaeological excavation or historic buildings recording, but the substantial harm the heritage asset experiences cannot be reduced through that recording.
- 6.3.71 Where a designated asset or a non-designated asset of archaeological interest that is demonstrably of equivalence to a scheduled monument experiences less than substantial harm the magnitude of impact has potential to be reduced through mitigation to record the heritage asset to unlock its evidential value and advance the understanding of the past.
- 6.3.72 For all heritage assets, including designated assets where less than substantial harm is predicted, the magnitude of impact has potential to be reduced through

mitigation to record the heritage asset to unlock its evidential value and advance the understanding of the past.

- 6.3.73 As the assessment presented in this Environmental Statement is residual and presents the assessment of impacts following mitigation, any potential reduction is accounted for in the magnitude of impact.

Defining significance of effect

- 6.3.74 The significance of effect is determined in accordance with Table 4.4 of Chapter 4: EIA Methodology. An effect of moderate adverse significance or higher is considered to constitute a significant effect (Table 4.5 of Chapter 4: EIA Methodology). The assessment in Section 6.6 of this chapter identifies whether an effect is significant in EIA terms.
- 6.3.75 Appendix 6.1: DBA (Application Document 6.3) identifies those assets for which no potential is identified for physical impacts as a result of the Project. It also identifies and describes the settings of heritage assets and identifies those that have no potential to be affected by the Project, or whose settings make no contribution to their value. Where no potential for impact is identified, these are recorded in the DBA but not described in this chapter.

Accordance with the National Policy Statement for National Networks

- 6.3.76 To identify any designated heritage assets, or non-designated heritage assets that are demonstrably of equivalent significance to scheduled monuments that would experience 'substantial harm' in NPSNN terms, the following approach has been implemented to convert the impact assessment terminology of DMRB LA 104 (Highways England, 2020b) to correlate with the NPSNN. In NPSNN terms, substantial harm or total loss of significance to a designated heritage asset, or asset of equivalent value, is considered to constitute the total loss of value of the heritage asset. Therefore, in the terms used in DMRB LA 104 this would be described as a major adverse impact and large or very large adverse significance of effect. Substantial harm or total loss of value can occur due to a physical impact to a heritage asset or due to changes to the setting of a heritage asset that cause a severe enough reduction in its value. The assessment in Section 6.6 of this chapter identifies whether an effect is significant in EIA terms and whether it constitutes substantial harm or less than substantial harm to a designated, or equivalent value, heritage asset.
- 6.3.77 National Planning Policy Guidance (NPPG) (Ministry of Housing, Communities and Local Government, 2021b). sets out three types of non-designated asset of archaeological interest that could fall under this category i.e.:
- a. those that have yet to be formally assessed for designation;
 - b. those that have been assessed as being nationally important and therefore, capable of designation, but which the Secretary of State for Digital, Culture, Media and Sport has exercised his/her discretion not to designate; and
 - c. those that are incapable of being designated by virtue of being outside the scope of the Ancient Monuments and Archaeological Areas Act 1979 because of their physical nature.

- 6.3.78 Notwithstanding that some non-designated heritage assets of archaeological interest have been assessed as High value, using the criteria set out in paragraph 041 of the NPPG, no non-designated heritage assets of archaeological interest have been determined to be of equivalent significance to a scheduled monument.

Assumptions and limitations

- 6.3.79 General assumptions used throughout the ES, and limitations affecting the assessments are set out in Chapter 4: EIA Methodology. Relevant assumptions and any other limitations encountered during the Cultural Heritage assessment are as described below. Acknowledging the assumptions and limitations identified below and in Chapter 4: EIA Methodology, the ES is considered robust and in line with relevant legislation, policy and guidance.

Assumptions

- 6.3.80 Based on archaeological investigations, it is assumed that unknown archaeological remains are located within the Order Limits. The information obtained to date from desk-based assessment and field investigations provides sufficient detail to characterise the likely nature and extent of any unknown remains. If currently unrecorded archaeological remains are discovered during construction of the Project, appropriate and proportionate mitigation measures would be carried out in accordance with the Draft AMS-Outline Written Scheme of Investigation (Draft AMS-OWSI) (Appendix 6.9 Application Document 6.3). This is likely to take the form of archaeological excavation and recording.
- 6.3.81 Appendices 6.1 to 6.6 (Application Document 6.3) contain detailed desk-based information, produced between February 2019 and September 2020, and used to develop the baseline assessed in this chapter. Given the lack of development or other change within the study areas of the Project since September 2020, this information is still considered to be accurate and therefore provides robust baseline information on which the assessment in this chapter is based.
- 6.3.82 The construction modelling undertaken using the Project's transport model provides an extensive quantitative assessment of the forecast impact of construction works on the road network, using the same traffic baseline and forecasting work that informs the operational modelling. The 1km cultural heritage study area includes the construction and operational noise study areas. The ARN and Cultural Heritage will be addressed by a Defensive Brief.
- 6.3.83 The DCO application has been developed on the basis of a 2030 opening year. This assumes consent is granted in 2024. Following the DCO Grant there would be preparatory works, referred to in the draft DCO as preliminary works taking place in 2024. The main construction period for the Lower Thames Crossing would start in early 2025, with the road being open for traffic in late 2030. Construction may take approximately six years, but as with all large projects there is a level of uncertainty over the construction programme, which will be refined once contractors are appointed and as the detailed design is developed. The 2030 opening year has been selected as the basis for the assessments and is representative of the reasonable worst-case scenario. This has been used consistently across the environmental assessments, transport assessments and the economic appraisal of the Project.

6.3.84 For the purposes of the Cultural Heritage assessment, it is assumed that standard construction methods will be employed for creation of main works areas, access routes and compounds, utility logistics hubs, working areas and access routes, unless this is otherwise stated in the assessment. Standard construction methods are assumed to cause removal of all near-surface archaeology within the footprint of the works, but no impacts to deeply buried remains. In areas where the only works are those required for ecological or landscape mitigation it is assumed that creation of ponds or areas of tree planting would cause disturbance of all near-surface archaeology.

Limitations

- 6.3.85 This assessment was compiled using heritage data obtained from third-party sources and the prediction of effects in this chapter is based on the accuracy of the data. However, this information was supplemented with an archaeological walkover, archaeological investigations, archive research and a Project-commissioned study of LiDAR and aerial photography and therefore is considered to present a robust basis for assessment.
- 6.3.86 The aerial mapping study (Appendix 6.2, Application Document 6.3) was carried out by Essex Place Services. It reviewed available LiDAR and aerial photography coverage of the Order Limits north of the River Thames. A geophysical survey of part of the Order Limits was undertaken in Essex, although the results were largely inconclusive due to the magnetic properties of the local geology.
- 6.3.87 To the south of the River Thames, with the agreement of archaeological stakeholders, a different approach was undertaken to produce optimal results taking into account the local archaeological and geological context. Large-scale geophysical survey of the Order Limits was undertaken. This was supplemented with review of the partial available LiDAR data, Historic England's National Mapping Programme (NMP) data and aerial photographs accessed at the Britain from Above website (<https://britainfromabove.org.uk/>).
- 6.3.88 The archaeological record can contain evidence of varying reliability. Antiquarian excavations (excavations carried out prior to the establishment of modern scientific methods) were conducted to standards that differ from modern investigations. The results of these investigations can no longer be verified where the remains no longer exist.
- 6.3.89 The archaeological walkover was carried out within the Order Limits and 50m survey area beyond this, as detailed in paragraph 6.4.73, where access was granted by landowners. Permission to carry out the walkover was sought for the whole of the Order Limits and access was taken for all areas where this was granted, and land was suitable for survey. This covered approximately 95% of the Order Limits and the results are detailed within Appendix 6.1: DBA (Application Document 6.3).
- 6.3.90 Geophysical survey did not take place across the whole of the area within the Order Limits. Essex County Council requested an aerial mapping study rather than geophysical survey, except in areas of deeper deposits such as the Mar Dyke. South of the River Thames, a targeted geophysical survey took place within the Order Limits as agreed with Kent County Council (Application Document 6.3, Appendix 6.7). The areas agreed for survey with appropriate

heritage stakeholders have been completed. A sufficiently large proportion of the Order Limits was surveyed or assessed by other methods such as aerial photograph analysis, that it is unlikely that unknown significant remains would be identified in the remaining area.

Nitrogen deposition compensation sites

- 6.3.91 The DCO application documents identify the locations of habitat creation sites proposed as compensation for the effects of nitrogen deposition. The design and management regimes for these locations will be developed as part of the detailed design, in accordance with the control plan documents including the Outline Landscape and Ecology Management Plan (OLEMP) (Application Document 6.7), Design Principles (Application Document 7.5) and the Environmental Masterplan (ES Figure 2.4: Application Document 6.2).
- 6.3.92 The environmental assessment of these habitat creation areas has reflected a reasonable worst case, for both construction and operation phases. This is described in Chapter 2: Project Description (Application Document 6.1). The assumptions detailed in paragraphs 6.3.83-6.3.84 have been made in the assessment of cultural heritage effects associated with the nitrogen compensation sites.
- a. South of the River:
 - i. Henhurst Hill site
 - ii. Fenn Wood site
 - iii. Court Wood site
 - iv. Blue Bell Hill site
 - v. Burnham site
 - b. North of the River:
 - i. Hole Farm East site
 - ii. Hoford Road site
 - iii. Buckingham Hill site

6.4 Baseline conditions

Existing baseline

- 6.4.1 The baseline conditions for the cultural heritage study area are described from the south to north of the Order Limits. For the areas south of the River Thames and north of the River Thames the designated heritage assets are discussed first, followed by non-designated heritage assets. For the area within the River Thames only non-designated assets are discussed, as no designated assets are located within this section of the Project.
- 6.4.2 Full descriptions of all heritage assets are either provided in Appendices 6.1 to 6.4 and 6.6 to 6.8 (Application Document 6.3) or within this chapter.

The detailed descriptions of heritage assets identified from desk-based sources and assessment of their value, including the contribution made by their settings, is contained in the DBA (Application Document 6.3, Appendix 6.1) and this chapter. The descriptions of heritage assets identified through trial trenching and assessment of their value are included in full in this chapter.

- 6.4.3 Where a listed building or scheduled monument is identified by the exact name used in the National Heritage List, including the original use of upper-case letters and punctuation, it is identified by italics.
- 6.4.4 The locations of heritage assets are presented on Figures 6.1, 6.2, 6.3, 6.4, 6.8 and 6.9 (Application Document 6.2). Assets are identified as scheduled monuments (SM), listed buildings (LB), Registered Parks and Gardens (RPG), Conservation Areas (CA) and non-designated heritage assets (numerical reference only) to aid identification on the figures and within the chapter text.
- 6.4.5 A summary of the general location and value of heritage assets included in the assessment is presented in Table 6.4 below:

Table 6.4 Summary of cultural heritage assets

Heritage assets	Value	South of the River Thames	River Thames	North of the River Thames
Archaeological remains	Very high	n/a	n/a	2 (SM)
	High	12 (SM) 4 (non-designated)	12 (non-designated)	12 (SM) 11 (non-designated)
	Medium	123 (non-designated)	8 (non-designated)	145 (non-designated)
	Low	377 (non-designated)	52 (non-designated)	359 (non-designated)
	Negligible	789 (non-designated)	87 (non-designated)	183 (non-designated)
Built heritage	High	1 (RPG) 3 (CA) 105 (LB)	n/a	2 (RPG) 6 (CA) 177 (LB)
	Medium	2 (CA) 1 (LB) 22 (non-designated)	n/a	2 (CA) 7 (non-designated)
	Low	86 (non-designated)	n/a	35 (non-designated)
	Negligible	1 (non-designated)	n/a	2 (non-designated)
Historic landscapes	Medium	4	n/a	6
	Low	3	n/a	3

- 6.4.6 In addition to the above, 29 heritage assets referred to as Palaeolithic-Quaternary Zones (PQ-Zones) are included within the assessment. Due to their extensive nature, they cannot be separated into the geographical zones outlined in the table above. Within this assessment there is one high-value PQ Zone, 16 of medium value and 12 of low value.

South of the River Thames

Archaeological remains – South of the River Thames

Summary

- 6.4.7 In the 1km study area south of the River Thames (including the landscape study area and specifically included assets beyond 1km) there are 9 scheduled monuments which are all of high value (SM8, SM10, SM20, SM21, SM22, SM23, SM24, SM26, SM27). No scheduled monuments are located within the Order Limits. Three further high-value scheduled monuments located outside the 1km study area, landscape study area and the Order Limits have been included within this assessment (SM15, SM16, SM17)
- 6.4.8 To the south of the River Thames there are four high value non-designated archaeological sites within the Order Limits and no high value non-designated archaeological site outside the Order Limits and within the 1km study area.
- 6.4.9 To the south of the River Thames there are 59 medium value non-designated archaeological sites within the Order Limits and 64 medium value non-designated archaeological sites outside the Order Limits and within the 1km study area.
- 6.4.10 To the south of the River Thames there are 90 low value non-designated archaeological sites within the Order Limits and 287 low value non-designated archaeological sites outside the Order Limits and within the 1km study area.
- 6.4.11 To the south of the River Thames there are 312 negligible value non-designated archaeological sites within the Order Limits and 477 negligible value non-designated archaeological sites outside the Order Limits and within the 1km study area.
- 6.4.12 *Gravesend Blockhouse* (SM16) and *New Tavern Fort* (SM17), including *Milton Chantry* (LB21), are located in Gravesend on the opposite bank of the river to *Tilbury Fort* (SM13). The scheduled monuments in Gravesend are located outside the 1km study area to the west of the Order Limits but have been included in the assessment because of their visual and historic relationships with *Tilbury Fort*.
- 6.4.13 *Cliffe Fort* (SM15) and the medium value non-designated Shornemead Fort(1878) are also associated with the defence of the river approach to London Cliffe and Shornemead Forts are located on the south bank of the river, opposite *Coalhouse Fort* (SM14) and to the east of Order Limits. *Coalhouse Fort* is within the 1km study area (and partially within the Order Limits) but the other two are not. Their inclusion in the assessment is due to their clear historic relationship with *Coalhouse Fort* and their mutual intervisibility with it. These assets are of high value (apart from Shornemead Fort which is medium value) due to the evidential and historical value of their built fabric and below-ground remains, and their setting and group value. Shornemead Fort is considered to be of lower value due to its poorer state of preservation.

- 6.4.14 It is also noted that *Cliffe Fort* (SM15) is on Historic England’s (2020a) Heritage at Risk Register due to its poor condition. The interior of *Cliffe Fort* (SM15) is flooded and vulnerable to decay, vandalism, and erosion. Its setting and group value with the sites described above also make an important contribution to its value.
- 6.4.15 The value of the forts is principally derived from their group association with each other. Key associations include the pattern of crossfire between *New Tavern Fort*, *Gravesend Blockhouse* and *Tilbury Fort*, which were of strategic importance at the mouth of the Thames Estuary on the river approach to London. Similarly, *Cliffe Fort* is a contemporary fortification with *Coalhouse Fort* (SM14) and *Shornemead Fort* (1878) and crossed fire with both to form a first line of defence on the river approach to London. These assets hold an illustrative historical and functional association with each other and the other forts within 1km study area. Their values (including the contribution made by their setting) are discussed in greater detail in Appendix 6.1: DBA and Appendix 6.4: Coastal Fortifications Statement of Significance (Application Document 6.3).
- 6.4.16 *Springhead Roman Site* (SM22) is located 160m west of the Order Limits and the *Roman enclosure SE of Vagniacae* (SM21) is located 200m south of the Order Limits. The former is a Roman town and multi-period ritual landscape surrounding the springhead of the River Ebbsfleet; the latter is a Roman cemetery located south-east of the former town. These assets are of high value primarily due to the evidential and historical value of their below-ground archaeological remains. The setting of both assets is influenced by their spatial relationship to each other, and their historical association to Watling Street Roman Road (1680) and the association of SM22 with the Ebbsfleet Springhead. The presence of Iron Age and Roman activity known along the A2 contributes to the understanding of SM22 within the local landscape, with these settlements likely forming the hinterlands for the religious centre. Therefore, the setting of both SM21 and SM22 includes the Order Limits in a non-visual manner due to their historical associations with Watling Street (the former route of the Roman Road now known as Watling Street, medium value non-designated archaeological asset 1680) and the presence of Iron Age and Roman sites in the vicinity.
- 6.4.17 A scheduled *World War II Heavy Anti-aircraft gunsite* (TS15), 250m east of *Cobhambury Farm* (SM24) is located 260m south-east of the Order Limits. The scheduled monument is known as Thames South 15 (TS15) and formed part of a chain of anti-aircraft batteries positioned to defend military and industrial targets in the Thames and Medway gun-defended areas. The setting of the anti-aircraft battery (SM24) is influenced by its location to the south of Lodge Lane and its location within agricultural land to the east of Cobham village. Its primary views are to the south-east, where the guns pointed across the Kent North Downs; however, this view has been altered through the presence of woodland located on and around the scheduled area in the present day. The asset also has non-visual historic functional associations with other anti-aircraft batteries within the wider area. Although no further designated anti-aircraft batteries are located within the 1km study area south of the River Thames, there are several non-designated anti-aircraft battery sites within the 1km study area (748, 1429, 1431, 1432, 2475, 1454, 1617).

- 6.4.18 The scheduled bowl barrow in Ashenbank Wood south of Cobham Park (SM8) is located 185m to the south of the Order Limits within the Grade II* registered *Cobham Hall Registered Park and Garden* (RPG1). The barrow mound is 22m in diameter and stands 1.8m high. The diameter of the mound and encircling ditch together is 26m. The asset derives its value primarily from the evidential and historical value of the above-ground earthworks and below-ground archaeological remains. It also derives some value from its setting. Limited evidence of contemporary funerary activity is known in this area apart from the location of a barrow (3382) located around 1.8km east of SM8. The barrow and SM8 are located on the same area of undulating upland although they overlook separate dry valleys, and it is unclear if they were once associated. A Bronze Age funerary landscape is located within a dry valley crossed by the A226, around 2km north of SM8. This area represents a different topographical landscape compared to the location of SM8 and (3382) on a ridge on the northern edge of the Kent Downs. They appear to be funerary monuments in separate landscape areas and therefore probably reflect different social groups. However, the topographical location of the bowl barrow at the highest ridge within Ashenbank Wood overlooking a dry valley to the south-west means that it would have originally been a highly visible feature within the landscape, which makes a minor contribution to its illustrative historical value as a prehistoric funerary monument. The potential former site of stone circle (2265) in Cobham around 850m to the south-west also makes a minor contribution to its illustrative historical value as a Neolithic/Bronze Age funerary monument. Assets (2265) and SM8 are likely to have formerly been intervisible, although the stone circle has been removed and the view is now screened by built form on the edge of Cobham and woodland.
- 6.4.19 The high value scheduled monument *Romano-British villa and 19th-century reservoir in Cobham Park* (SM10) is located 80m south of the Order Limits and is located within RPG1. The villa lies around 275m south of Watling Street and was in use from the mid-1st century AD to the 4th century AD. Although included within the same scheduled monument, the reservoir is unrelated to the villa and relates to Humphry Repton's 19th-century landscaping of 'Cobham Hall' Grade II* registered park and garden (RPG1). The reservoir is located 70m south of the Roman villa and sits within the wider Roman archaeological site, as identified through investigations, which partly accounts for the reservoir's inclusion in the same scheduled area. The reservoir was created to collect spring water so that it could be transferred via culverts to the grounds and kitchens of the Grade I listed *Cobham Hall* (LB122). As part of Repton's redesign of the parkland, the new reservoir was carefully designed to be hidden from view. The scheduled monument derives its value from the evidential, aesthetic and historical value of its below-ground archaeological remains and above-ground earthworks. It also derives some value from its setting. The reservoir formed part of a wider water management system, some of which survives today, such as the ponds and Grade II listed *Engine house around 40m to the east* (LB79). The wider parkland and the associated water management system makes a minor contribution to the illustrative historical value of the overall scheduled monument as a disguised parkland water management feature. The setting of the villa is influenced by the close proximity of the former Roman route of Watling Street and its location on the western side of a low ridge of the Kent Downs. This geographical location makes a minor

contribution to the overall value of the scheduled monument through its illustrative historical value as a high-status Roman settlement site.

- 6.4.20 The *Deserted medieval manorial settlement of Cossington* (SM23) is a scheduled monument and a high value asset. This asset is of high value largely due to the evidential and historical value of its below-ground archaeological remains. The surrounding rural landscape makes a minor contribution to its illustrative historical value as a Medieval rural settlement site. It is located within Cozendon Wood, approximately 1.3km to the south of the Order Limits. Although the northernmost edge of the asset is located within the 1km study area, the land within the Order Limits does not contribute to the value of this asset.
- 6.4.21 Two high-value scheduled monuments are located within the 1km study area and outside the landscape study area in the vicinity of the Blue Bell Hill nitrogen deposition compensation site part of the Order Limits. Kit's Coty House Long Barrow (SM27) and The White Horse Stone, Aylesford (SM26) are located c. 635m south-west and c. 830m south of the Order Limits respectively. These assets, along with the nearby scheduled monument Little Kit's Coty House Megalithic Tomb (located outside the 1km study area and landscape study area) are part of a larger group known as the 'Medway Megaliths'. This is a group of Neolithic funerary monuments situated around the valley of the River Medway. SM26 is a megalithic standing stone 2.9m high and 1.6m wide, which may represent the remnants of a chambered tomb. SM27 is a long barrow including a burial mound, flanking ditches and a large and well-preserved burial chamber. Both assets derive much of their value from the aesthetic, historical and evidential value of their above-ground remains and from the evidential value of their below-ground remains. Their setting also makes an important contribution to their value, principally their group value with the other Medway Megaliths and associated Neolithic sites. Their valley side location also contributes to their aesthetic and historical value. While the land within the Order Limits forms a small part of the wider valley (Burham) and land on the plateau above the valley (Blue Bell Hill) there is no specific historic or visual connection between the assets and the land within the Order Limits which therefore does not make a tangible contribution to their value.
- 6.4.22 The below-ground remains of a Neolithic mortuary enclosure or long barrow (1662) are recorded in the south-western part of the Order Limits, east of the A2/A227 junction. The site was identified through aerial photographs and subject to trial trench evaluation in 1995, which confirmed the nature and date of the feature. This asset is located within the green verge between the existing A2 and High Speed 1 rail line (HS1) approximately 75m to the south. Located between two substantial pieces of modern infrastructure, it no longer derives value from its setting. Asset (1662) derives significance from its evidential and historical value; although it is not a scheduled monument, the asset provides evidence of Neolithic funerary activity and has potential palaeoenvironmental deposits within its ditches. Asset (1662) is assessed as high value.
- 6.4.23 Middle Palaeolithic rolled struck flints were identified within colluvial deposits (3767) in a north-east/south-west-aligned dry valley to the south of the A226 within the Order Limits. The Palaeolithic flints were identified in "gravelly" deposits suggestive of being redeposited from higher ground. However, the

presence of the Middle Palaeolithic artefacts also indicates the presence of deposits of this date somewhere in the Order Limits. Within this area, fine slopewash deposits containing Late Upper Palaeolithic fresh flint were recorded below the deposits containing Middle Palaeolithic material. Further north along the dry valley within the Order Limits, a Late Upper Palaeolithic horizon (3768) containing Palaeolithic flint was identified, the date of which was confirmed by analysis of a molluscan assemblage. Assets 3767 and 3768 hold evidential value due to the information they hold on Palaeolithic activity within northern Kent. As a result, (3767) and (3768) are of high value.

- 6.4.24 Two areas of buried soils were encountered to the north of Claylane Woods, in trenches excavated in a dry valley. One area was overlain by chalky slope deposits (3640) likely representing soils of Late Glacial/Upper Palaeolithic date. The second area was recorded under a considerable depth of colluvium and contained an early assemblage of flintwork indicating a potential horizon of Mesolithic to Neolithic activity (3643). Both (3640) and (3643) hold evidential and historical value for their potential to yield further evidence of Early Prehistoric interaction with the landscape between the A2 and west of Thong (CA10) and are therefore of medium value.
- 6.4.25 Trial trench evaluation west of Thong (Appendix 6.8, Trial Trenching of Land Parcels 80 and 81, Application Document 6.3) identified three areas of Early Prehistoric activity (3641, 3663, 3667). Trench 267 revealed a pit of Neolithic date (3641) which contained over 30 flints and 15 sherds of pottery of possible Plain Bowl of Early Neolithic date; a date range of 3640-3365 cal BC at 95% confidence was obtained on charred hazelnut shell from the fill. Asset 3663 comprised a concentration of early flintwork within a later pit in Trench 141 and smaller assemblages in otherwise undated pits in Trench 142, suggesting a former area of Neolithic or Mesolithic activity in the immediate vicinity. A pit in Trench 144 revealed struck flint including a Neolithic platform bladelet core and a flake, indicating an area of Neolithic activity (3667). Although all three pits (3641, 3663 and 3667) appeared isolated, their presence in a wider context can contribute to an understanding of potential seasonal and transitional usage of the landscape by hunter gatherers in the Neolithic period. All three assets (3641, 3663 and 3667) hold evidential and historical value to potentially yield evidence of Early Prehistoric activity to the west of Thong Lane and are therefore assessed as medium value.
- 6.4.26 A Mesolithic flint scatter site of medium value partially extends into the eastern part of the Order Limits, on high ground within the Shorne Woods (3545). This non-designated archaeological flint scatter site does not derive value from its setting. The lower-lying areas of former floodplain to the north of the South Portal within the Order Limits have potential to contain waterlogged organic remains dating from the Mesolithic period onwards. Many of these floodplain areas are also evidence of Post-Medieval land reclamation, comprising the draining of the marshes and construction of sea defence walls. The gravel terraces on either side of the river have very high potential to contain evidence of human activity. Previous work in this area, such as construction of the HS1 rail line south of Gravesend, shows evidence of human activity from all periods. This included find spots of Palaeolithic artefacts indicating that some of these deposits will be of Palaeolithic date (approximately 800,000 – 11,000 years ago). Asset (3545) derives significance from the evidential value of its surface-level

artefacts and below-ground archaeological remains and is therefore assessed as medium value.

- 6.4.27 To the north of this, in the area between Thong Lane and the A226 within the Order Limits, several assets have been identified by cropmark evidence, geophysical survey and trial trench evaluation, indicating various probable prehistoric remains, such as ring ditches and barrows (1584, 1362, 1474, 1595, 1620, 1622, 1813), probable Bronze Age enclosures (1608), Iron Age enclosures (774, 775, 1579, 1604, 2308), Bronze Age to Iron Age settlement (3742), possible Bronze Age/Iron Age/Roman enclosed settlement (1396), known and probable Iron Age/Romano-British enclosures and occupation sites (701, 1372, 1600, 1606, 1607, 2291, 2298). Due to their evidential and historical value, these assets are assessed as medium value.
- 6.4.28 Within the Order Limits to the north of the Cascades Leisure Centre, cropmark evidence (4611) suggests the presence of a fragment of an enclosure with an entrance. Most of the enclosure appears to have extended outside the Order Limits to the west although this area has been developed which may have destroyed this feature outside the Order Limits. Asset (4611) is likely to be of Prehistoric or Roman date and is assessed as low value for its remaining evidential value for Prehistoric/Roman-period occupation or agricultural activity. In the field surrounding (4611) are a series of linear cropmarks on different alignments (4612). The origins and function of these cropmarks is unclear – they may be related to (4611) or they may represent later activity from multiple periods. Asset (4612) is assessed as low value due to its evidential value.
- 6.4.29 The area between Thong Lane and the A226 within the Order Limits also contains two groups of pits of uncertain date, recorded as cropmarks: (675); and (1609). To the west of the pit groups are cropmarks of a field system of probable Iron Age or Roman date (779), potentially forming a concentric system around enclosure (1604). As these assets are of uncertain date, they are assessed as low value.
- 6.4.30 Of the above assets, archaeological trial trenching conducted as part of the scheme (Sources and methods for field evaluation are contained in Appendices 6.7, 6.8, 6.11 and 6.12 (Application Document 6.3)) has corroborated and or enhanced the understanding of some assets, discussed below:
- 6.4.31 Trial trench evaluation south of Gravesend Road (Appendix 6.8, Trial Trenching of Land Parcels 71, 72 and 75, Application Document 6.3) covered an area of known archaeological assets, previously identified through the DBA (Appendix 6.1, Application Document 6.3). The most extensive asset identified was a series of rectilinear enclosures, (2291), which was confirmed to have developed from the Early Roman and into the middle Roman period. It was established on the site of previous Iron Age and Bronze Age activity and activity may well have been continuous from the Late Iron Age into the Roman period. Recovered material, including building material, and previously mapped find spots and the size of the boundary ditches are thought to illustrate an enclosure of high status, potentially associated with the Roman villa in Chalk. While numerous Roman roof tiles have been found, no masonry or brick foundations have been located and it is therefore possible that a timber structure was present, likely of Roman date although a sub-Roman date for a

structure utilising material from the Chalk villa should not be ruled out. Briquetage vessels/fragments associated with saltworking have also been identified here from trial trench evaluation, suggesting a potential industrial use or at least functional links with salterns on the former marshes to the north. Part of a neonatal skeleton recovered from a ditch at the south-eastern part of (2291), with no further artefactual evidence identified. Past archaeological works have taken place for a gas pipeline which was excavated through asset (2291) which recorded Roman-period inhumation burials. However, the LTC trial trench evaluation did not record evidence of burials apart from the partial neonatal remains. Trial trenching has established the evidential value of the site of multi-period Prehistoric and Roman activity asset (2291) as medium value.

- 6.4.32 Chalk parish boundary (4619), mentioned above, is assessed as Medieval in origin although parts of it could potentially be Prehistoric. Due to its likely long time depth and its evidential value for Prehistoric, Roman and Medieval land division/organisation it is assessed as medium value.
- 6.4.33 Two further enclosures (1607 and 1608) were excavated by trial trench evaluation (Appendix 6.8: Trial Trenching of Land Parcels 71, 72 and 75 Application Document 6.3) to the west of the primary enclosure (2291). Both enclosures were confirmed to be of Roman date and hold evidential value for further evidence of Roman occupation within the landscape, and possible relationships with the primary site of activity of 2291. No occupation activity was identified by trial trenching within (1607) although animal bone and Roman pottery was recovered from the enclosure ditch. Enclosure 1608 has been reassessed as Iron Age to Roman date, superseding a previous interpretation date of Bronze Age from the DBA (Appendix 6.1, Application Document 6.3). The Iron age pottery from (1608) was residual material in the top fill of the enclosure ditch, interpreted as coming from the remains of the bank. However, this does show that Iron Age activity was taking place within the vicinity of the Roman enclosure. Both (1607) and (1608) both remain assessed as medium value for their evidential value on Iron Age and Roman settlement and agricultural activity.
- 6.4.34 To the north of enclosure (1607) is a linear feature (788), which may represent a boundary of Roman date. Asset (788) is assessed as low value for its evidential value as a probable Roman (or Late Prehistoric) boundary.
- 6.4.35 Trackway (703) curves around the southern and western sides of multi-period site (2291) although it does not appear to form part of an enclosure. Trial trench evaluation revealed an Early Iron Age to Early Roman date for trackway (703). Contemporary trackway (796) forms a junction with (703) to the south of the area of multi-period activity (2291). Trial trenching of (796) revealed it to be the buried remains of a holloway which was in use from at least the Early Iron Age to the Early Roman period. Holloway (796) continues in a south-westerly direction along the northern side of a dry valley, following the northern side of the parish boundary (4619) and the line of barrows. It has not been possible to trace the alignment through the Southern Valley Golf Course although cropmarks of possible trackways (4608) or (4609) may represent potential continuations of the holloway. Holloway (796) could also potentially be related to trackway (677) in the Order Limits to the west of Thong. Assets (703) and (796) derive significance from their evidential value for Prehistoric and Roman

period communications and travel. However, the evidential value of asset (703) and (769) is limited at this stage and they are therefore assessed as low value.

- 6.4.36 An undated rectilinear enclosure (1596) is located to the south of the A226 and c. 400m south-east of (2291) and extends partially within the Order Limits. It is recorded only as cropmarks showing the northern and western side of the enclosure, which appears to be respected by trackway (703) which passes immediately to the west on a southerly alignment. Asset (1596) is assessed as medium value due to its evidential value as a probable Prehistoric or Roman-period enclosure. On the eastern side of multi-period site (2291), holloway (703) meets holloway (4610). Holloway (4610) is wider than (703) and sections of it, particularly where it crosses a dry valley, appear to have been repeatedly metallised with layers of flint. It also yielded artefacts of Early Iron Age to Early Roman date, although it is possible that some of the pottery may have been Late Bronze Age in origin. Asset (4610) derives significance from its evidential value for Prehistoric and Roman period communications and travel. However, at this stage, the evidential value is limited and therefore asset (4610) is assessed as low value.
- 6.4.37 To the east of (2291) is an area of dispersed features comprising pits and ditches (4429). Apart from a ditch at the southern extent of the area in Trench 362 which contained sherds of Late Bronze Age or Early Iron Age pottery, the asset group is undated. Asset (4429) is assessed as low value for its evidential value for probable Prehistoric activity peripheral to the settlements in the surrounding areas.
- 6.4.38 To the west of asset (2291) are a series of ditches and a pit which are likely to be of Iron Age date (1423), based on pottery recovered from some of the features. Some the east-west-aligned ditches may represent a trackway. A larger undated ditch, 5.2m in width, may be a land boundary feature or a holloway. One pit was recorded to the south of the large ditch, which contained Late Iron Age pottery, charred wheat grains, animal bone and part of a saddle quern. Asset (1423) has evidential value of Iron Age land division, agricultural activity and communications. However, the evidential value is limited at this stage and therefore asset (1423) is assessed as low value.
- 6.4.39 Trial Trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 80 and 81, Application Document 6.3) corroborated the presence previously mapped cropmarks by Kent HER (1600), which were also picked up by geophysical survey. Trenching confirmed a trackway of Roman date with a series of ditches located to the north of the trackway. The ditches, representing likely enclosures, originate from the Late Bronze Age to early Iron Age and were recut in the Roman period. As a result of the dating evidence, which included a range of deliberately placed cattle vertebrae including some worked remains, have resulted in the reassessment of (1600) from being of unknown period to a date of Iron Age to Roman. Asset (1600) holds evidential value for its potential to yield evidence of further Iron Age to Roman activity, north of the A2 and for it to demonstrate relationships between areas of activity such as asset (3650) to the south. Asset (1600) remains assessed as medium value.
- 6.4.40 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 76 and 77, Application Document 6.3) was located over the cropmarks of an enclosure (2298) which was also mapped through geophysical survey in the

area. Trenching provided an earlier date than previously thought, with pottery dating from the early Iron Age to the middle Iron Age and the recut of the ditch on the west side suggested the enclosure had been in use for some time. An assemblage of animal bone suggested the use of the enclosure for settlement activity, with a potential field system identified surrounding it. Enclosure (2298) is reassessed as an earlier Iron Age feature, with the feature holding evidential value of Iron Age settlement north of the A2 and on higher ground around the dry valley. Asset (2298) remains assessed as medium value. Directly to the east of (2298), outside of the Order Limits, is medium value asset (4412) which is of probable Iron Age or Roman date.

- 6.4.41 The possible site of a Roman building (4427) is located c. 250m south of enclosure (2291). Geophysical survey recorded a spread of highly--response magnetic material which was interpreted as potentially archaeological. However, the area of geophysical anomalies could not be directly covered by trial trenches due to the presence of overhead power lines. Immediately to the west, Trench 388 recorded a north-west/south-east-aligned ditch which contained Roman brick, roof tile and pottery. Immediately to the south of the anomalies, further trial trenches recorded a Roman metalled trackway which was perpendicular to the ditch in Trench 388. The geophysical anomalies therefore probably represent a demolition/abandonment layer associated with a Roman building which was the source of the brick and roof tile deposited in the nearby ditch. Asset (4427) It has evidential and historical value for Roman settlement in this area of chalk hills above the River Thames marshes and is assessed as medium value.
- 6.4.42 To the north-east of (4427) geophysical survey recorded an anomaly of possible archaeological origin, potentially representing the northern half of a ring ditch 10m in diameter. It was not subject to trial trench evaluation. This feature may represent a roundhouse, another archaeological feature or it may well be natural in origin. It is assessed as low value for its evidential value for archaeological activity in this area.
- 6.4.43 Trial trench evaluation recorded a Roman-period enclosure to the north of the Shorne-lfield Road, which was not detected by the geophysical survey (3751). Roman Enclosure. A corner of the enclosure was recorded in Trench 155 and a large pit was also recorded in Trench 156 to the east. The pit was at least 2m deep and contained a quantity of early Roman pottery and a fragment of Roman brick. It may have been a quarry or a well and also contained a sherd of possible medieval pottery together with an iron knife of medieval or later date within the upper fill. Due to its nature and evidential value, asset (3751) is assessed as medium value.
- 6.4.44 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 71, 72 and 75, Application Document 6.3) was located over known areas of cropmarks:
- a. The cropmark enclosures of (2308) had previously been identified through geophysical survey. Trial trenching illustrated the larger enclosure is of Early Iron Age through to Roman date, later than the Bronze Age date assigned in the DBA (Appendix 6.1, Application Document 6.3). The smaller circular enclosure adjoining the southern part of the enclosure was also

covered by the evaluation, however the homogeneity of the fills of the intercutting ditches could not date the smaller enclosure or establish a relationship although it is likely to be of Iron Age origin. A probable midden was also recorded immediately to the east of the larger enclosure. Asset (2308), for its evidential value of Iron Age and Roman domestic occupation in this area, is assessed as medium value.

- b. Further trenches were located over two ring ditches (1620) recorded as cropmarks by Kent HER. Trenching identified a ring ditch and the terminus of a curvilinear ditch, along with a further undated ditch terminus to the south-east in trench 110. No dating evidence was recovered from any of the features, and the trial trenches did not identify burials although none were centrally located across the features. Asset (1620) could represent an 'open settlement' dating to the Iron Age, although without firm evidence, a Bronze Age barrow cemetery interpretation remains possible. Trenching has illustrated 1620 has evidential value as either settlement or funerary activity and it is assessed as medium value.

6.4.45 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 80 and 81, Application Document 6.3) identified several new archaeological sites and corroborated several known archaeological assets to the west of Thong:

- a. A non-designated rectilinear enclosure (1820) measuring approximately 37m by 34m is recorded south of Thong within the Order Limits. The enclosure was identified by geophysics and appears to contain several discrete internal features which may represent a series of pits. Although the trial trenching planned to target the enclosure, these were unexcavated. Despite a lack of relative dating evidence, the enclosure is tentatively dated to the Roman period based on its proximity to nearby settlement activity and similarity in size and form of other Roman enclosures in this area; however, dating could change post-excavation. Asset 1820 has strong evidential value for potential archaeological remains as well as historical value in relation to settlement activity in this area to the north of the A2 and west of Thong Lane. Asset (1820) is assessed as medium value.
- b. The remains of a substantial ditch (1821) was mapped for over 160m and represented a substantial land boundary. Trenching has reassessed the feature to be of Bronze Age to Iron Age date, earlier than the previously assigned Roman date. A concentration of earlier flintwork was recovered from the ditch, suggesting a possible former area of Mesolithic/Neolithic in the immediate vicinity. The ditch feature (1821) remains assessed as low value.
- c. An extensive site of multiperiod settlement activity (3650) spanning the Bronze Age to Roman periods was identified through a combination of geophysical survey and trial trench evaluation. The western part of this area

has been interpreted as a Bronze Age to Iron Age transition site; activity included a series of postholes which due to limitations of trenching were not identifiable structures but indicative of likely settlement or possible agricultural practice of the period. Other pits yielded a quantity of briquetage from salt production, dated by radiocarbon to the 6th to 4th century BC (Iron Age). Features containing Roman pottery were located on the far-western edge of the site, to the south of a probable Late Iron Age/Roman cremation cemetery, indicating Roman occupation within this particular area. A flint-built wall of a likely former building was also identified here but remains undated. The eastern part of (3650) suggests a later phase of occupation (Late Iron Age to Roman) represented by a large 'B-shaped' rectilinear enclosure with internal divisions which had been previously identified by geophysical survey. A cremation burial was located inside a pit within the enclosure, along with two brooches dated AD20-80. Pottery confirmed continuous activity within the enclosure through the 1st and 2nd centuries. A Late Iron Age/Roman trackway/Holloway (4596) along the northern edge of the enclosure likely had a relationship with this phase of settlement activity and appeared to arc towards the enclosure. Further Roman activity within the eastern part of (3650) identified quarry pits and an enclosure ditch containing significant quantities of Roman building material, suggesting a former building with hypocaust once existed within the vicinity. A further cremation burial of Late Iron Age-Early Roman date was recorded in the north-eastern part of 3650 and included iron nails. The significance of 3650 is informed by the density of past human settlement activity of evidential and historical value; this along with the importance of the site's potential to yield further evidence of Bronze Age to Iron Age transition including early industrial activity, and of Iron Age to Roman transition inform the rationale for which asset 3650 is assessed as high value.

- d. An extensive Bronze Age/Iron Age trackway (677) to the west of Thong and within the Order Limits was identified which corroborated previously known cropmarks and geophysics. The double-ditched trackway extended NNW to SSE for approximately 400m before turning east to form a right-angle and continued eastwards along the southern extent of the enclosure complex identified within asset (3650). Trench 115 indicated that trackway (677) continued in an easterly direction to the edge of the Order Limits and geophysics suggest that it continued beyond the Order Limits towards Thong Lane. Dating evidence from finds date the trackway as being of Bronze Age and Iron Age date. The trackway was likely related to the earlier phases of occupation of the multiperiod settlement site west of Thong (3650). Due to its evidential and historical value in relation to past human movement within the landscape and its potential to yield further

evidence in relation to settlement activity to the west of Thong, asset 677 is of low value.

- e. Trial trenches were located over an east-west aligned linear anomaly, thought to be a trackway/Holloway (4596), which had been previously identified by geophysics. The linear feature is located adjacent to and within the area of multiperiod settlement activity west of Thong (3650) on its north-western side. A continuation of a large ditch/trackway/Holloway was identified across three trenches (81, 82, 87, 88) which corroborates with the east-west linear anomaly. A sherd of pottery of possible Roman date and a fragment of Roman tile were recovered from the surface of the ditch in Trench 82. Trench 88 appeared to show the trackway arcing south towards a B-shaped enclosure of Late Iron Age/Roman date. While Trench 87 identified small sherds of pottery of possible medieval date together with fragments of iron slag within the fill. Based on dating evidence and the context of wider settlement activity, the trackway is tentatively dated from the Late Iron Age/Roman period but its use likely continued into the Medieval period. On account of its evidential and historical value in relation to past human movement and relationship with the landscape, and its potential to yield further evidence in relation to settlement activity to the west of Thong, asset (4596) is of low value.
- f. A probable Late Iron Age to Roman cremation cemetery (4558) was identified through the trial trenching. A cremation burial was located within an area of known multiperiod settlement activity nearby to several pits and ditches (containing Roman pottery and tile fragment) and a possible post hole. The burial comprised a shallow pit which contained a small quantity of burnt human bone and burnt flint fragments along with several iron nails (the latter possibly from a wooden box that had contained or accompanied the cremated remains), suggesting a Late Iron Age or Roman date for the burial. The significance of the burial is informed by its historical and evidential value providing evidence of past human occupation and funerary practice at this location. The burial suggests the existence of a cremation cemetery in this area which has potential to yield further evidence of past funerary activity. Based on this, asset (4558) is of medium value.

6.4.46 An in-situ Mesolithic site/campsite (3769) is preserved beneath deeply stratified layers of colluvium present within a dry valley in the Order Limits to the south of the A226 (in the vicinity of Palaeolithic colluvium deposits (3768)). The campsite was identified by the presence of burnt clay interpreted as hearths and worked flint artefacts. Due to its evidential value for in-situ Mesolithic occupation, a relatively uncommon site type, asset (3769) is assessed as high value.

6.4.47 The layers of colluvium extend along the valley on a north-east/south-west alignment from Trench 499 to Trench 478 (and likely extend further north-east beyond the Order Limits). A second short dry valley spur extends off the main valley in a south-easterly direction, with continuing colluvium deposits which

become shallower as the original land surface rises. These colluvium deposits are of Mesolithic, Neolithic, Bronze Age, Iron Age and also likely Roman and medieval date. They contain numerous residual artefacts washed down from higher ground such as a group of 70 Mesolithic or Neolithic flint. The colluvium deposits (3772) are assessed as medium value due to the evidential value of their artefactual and palaeoenvironmental remains. It should be noted that a Late Upper Palaeolithic colluvium horizon was identified in Trench 492. Due to its higher importance, it has been considered as a separate asset of high value (3768).

- 6.4.48 Sealed below some of the colluvium layers is a buried land surface of Bronze Age and possibly Neolithic date. Clusters of activity have been identified such as Bronze Age pits containing possible burnt sarsen stone, an undated posthole, residual sherds of Neolithic and Bronze Age pottery and fragments of animal bone, ditches containing worked flint. Overall, this area of (largely in-situ) Neolithic/Bronze Age activity extends almost 300m along the dry valley within the colluvium. And particularly in context of other activity identified in nearby trenches. In the northern part of this archaeological site, (3782) included a series of layers of rammed chalk and flint which appear to constitute surfaces/metalling. This may represent a metallated trackway, a surface/platform or a foundation. Asset (3782) has evidential value regarding Neolithic and Bronze Age activity of uncertain purpose along this dry valley and is assessed as medium value.
- 6.4.49 A probable burnt mound was within the dry valley south of Gravesend Road, buried beneath colluvium and likely representing a large spread of material. The mound was dated to the Late Neolithic or early Bronze Age through struck flint and a sherd of Beaker pottery. In close proximity to the south-east was an early Bronze Age cremation was also identified. Collectively, this site of Late Neolithic/Early Bronze Age domestic/industrial and funerary activity (3773) is considered to be of medium value due to its historical and evidential value. Asset (3773) contributes to our knowledge of focus of funerary activity along the dry valley in the Bronze Age through proximity to the previously identified barrows (3773, 1362, 1584, 1595, 1813).
- 6.4.50 Immediately to the east of (3773) is a circular cropmark 26m in diameter (4428). It was not detected by the geophysical survey or trial trench evaluation as it is located beneath an overhead electrical line. It is likely to represent a Late Neolithic/Bronze Age barrow and due to its evidential value is assessed as medium value.
- 6.4.51 To the south of (3773), the following features were recorded over a wide area during trial trench evaluation. As a whole, these features are considered to constitute an archaeological asset (4425) with evidential value and low value:
- a. An undated ditch on a north-northwest/south-southeast alignment (also visible on the geophysical survey data)
 - b. An undated ditch containing burnt material on an uncertain alignment

- c. A pit containing burnt animal remains
 - d. A pit or ditch terminus.
- 6.4.52 To the north-east of (3773), geophysical survey and trial trenching recorded an undated ditch (4426). The ditch is visible for approximately 300m in length in the geophysical survey data. The ditch was cut into colluvial layers, however, it was overlain by further colluvial layers and is therefore unlikely to be modern in origin. It has evidential value and is assessed to be a low value asset.
- 6.4.53 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 71, 72 and 75, Application Document 6.3) confirmed the presence of three round barrows (1362, 1595, 1813), as well as the survival of barrow (1362) which was previously excavated in 1899 without confirming a date to the feature. Evaluation has confirmed (1362) and (1595) to be of Bronze Age date and (1813) is assumed to also be of Bronze Age date although no dating evidence was recovered from it. The barrows are located along a dry valley which crosses a chalk plateau either side of Gravesend Road. Barrow (1595) was identified to contain a biconical urn, which is regionally significant for Kent. A probable fourth barrow within the Order Limits was identified as a cropmark on aerial imagery by LTC (4428). All four barrows (1362, 1595, 1813, 4428) are assessed as medium value.
- 6.4.54 Immediately to the west of barrow (1362) is a pair of parallel ditches on a north-northwest/south-southeast alignment (798). They were recorded as cropmarks and confirmed during trial trenching. Although dating material was not recovered, the archaeological excavators noted that the fill of the eastern ditch was identical to the fill of the barrow ditch. It is therefore possible that these ditches relate to Bronze Age activity (e.g. a boundary or trackway) and due to their evidential value they (798) are assessed as of low value.
- 6.4.55 Bronze Age to Iron Age and Roman-period activity (3793) was identified by a group of trial trenches placed on the chalk plateau north of the dry valley, south of the A226. This included a series of intercutting pits were located to the south-west of trackway (796) and yielded Bronze Age to Iron Age pottery with one pit definitively dated to the Iron Age. Other pits and ditches to the north contained a flint assemblage, Another nearby pit contained early Roman pottery and a Roman iron stylus; yet another pit contained middle Roman pottery. A large Roman-period posthole was also recorded suggesting the site of timber structure (the post packing contained a Roman brick and nail). Asset (3793) holds evidential and historical value for its potential to contribute to the understanding of the multi-period activity south of the A226 and peripheral to the main focus of activity at (2291). As a result, asset (3793) is of medium value.
- 6.4.56 Within multi-period site (2291) a number of discrete features containing small numbers of Bronze Age sherds were recorded in the south-eastern part of the archaeological site.
- 6.4.57 Trial trench evaluation was located over a geophysical anomaly south of Gravesend Road and confirmed a 6m-wide boundary ditch on the chalk plateau (3786), heading west-south-west from multi-period site (2291). Middle Iron Age pottery was identified within the fill, with a quantity of Bronze Age pottery

identified residually in a deliberate backfill at the top of the ditch, which may have been derived from a former bank. Asset (3786) is of evidential value for its evidence of Bronze Age and Iron Age land management and division and is assessed as low value.

- 6.4.58 A cremation radiocarbon-dated to the Middle Bronze Age was recorded within a trench south of the A226. This likely represents the site of cremation cemetery (3802). This probable cremation cemetery holds historic value for its contribution to the wider Bronze Age funerary landscape around the dry valley either side of Gravesend Road and is of medium value.
- 6.4.59 A concentration of Bronze Age and Iron Age activity was identified through trial trenching, on behalf of the Project, north of Shorne Ifield Road. Activity included the following, from east to west:
- a. An area of possible settlement activity including: a ditch containing pottery dating to the later Bronze Age or Early Iron Age; a possible Holloway or natural erosion feature containing colluvium and Later Bronze Age or Early Iron Age pottery with struck flint of mixed date including Early Prehistoric blades and Late Prehistoric flakes; several undated postholes.
 - b. Asset (3750), 90m west of (3743): a small square post-built structure identified in an arrangement of four circular postholes, reflective of an Iron Age granary. Evidence of a postpipe with charcoal and a quantity of charred wheat grain supports this interpretation. A likely contemporary pit with early to middle Iron Age pottery and fired clay fragments, was identified in a neighbouring trench and considered together.
 - c. Asset (3742), 170m north-west of (3750): a series of features identified in three trenches and dated to the Middle Bronze Age/Early Iron Age along with cropmarks of a settlement complex extending north outside of the trial trenching area.
- 6.4.60 Assets (3742), (3743) and (3750) all hold evidential and historical value for their potential to contribute to an understanding of early local industrial activity in the Iron Age, as well as an understanding of the transition between the Bronze Age and Iron Age, within the wider context (3742), and density of activity south of Gravesend Road. As a result, (3742), (3743) and (3750) are all of medium value.
- 6.4.61 Trial trenching immediately north of Shorne Ifield Road revealed a pit containing a Bronze Age vessel set upright (3736). An arc of post holes surrounded the vessel, likely representing a roundhouse surrounding the pit. A further ditch located immediately to the east, associated with later Bronze Age to Iron Age pottery, may represent a rectilinear enclosure (3530) surrounding roundhouse (3736). An adze-sharpening flake of possibly late Mesolithic or Early Neolithic date was recovered residually from the same trench as (3530). A ditched trackway (3741) containing a single fill with a single sherd of mid-Bronze Age to early Iron Age pottery was identified 50m to the north and represent associated activity. In the vicinity of the trackway are further undated but potentially associated pits and ditches which are considered to be part of asset (3741).

Assets (3736) and (3741) hold evidential and historical value for their illustration of likely Bronze Age to Iron Age settlement activity. They may also provide a contextual understanding to the other Bronze Age to Iron Age activity, also found through trial trenching (3742, 3743, 3750), 245m east of their location. As a result, (3736) and (3530) are of medium value. As a group of features peripheral to the settlement areas, asset (3741) is considered to be of low value.

- 6.4.62 Trial trenching (south of Gravesend Road and south of the large Late Bronze Age to Middle Iron Age boundary ditch) identified a large but shallow pit containing Late Bronze Age or Early Iron Age pottery, animal bones and fired clay (4415). Asset (4415) is assessed as low value for its evidence on Bronze Age or Iron Age activity within the wider landscape outlying the known settlement and funerary sites.
- 6.4.63 A concentration of multi-period activity (3740) was identified to the north of Shorne Ifield Road. Ditches identified across multiple trenches may indicate a possible multi-phased enclosure. The area yielded evidence for Late Iron Age and Roman settlement and agricultural activity. A small quantity of Bronze Age pottery and a post-medieval was recorded within a ditch although this is likely to have been intrusive. Asset (3740) holds evidential and historical value for potential to yield a range of historic human activity and is therefore of medium value.
- 6.4.64 A ditch of Romano-British date (3752) was identified through trial trench evaluation in close proximity to enclosure (2298) which was also trenched and confirmed to be of an Iron Age to Romano-British date. This ditch may represent part of an agricultural enclosure or field system, suggested by cropmark and geophysical survey evidence although the trial trenching located no internal features or other sides of the enclosure. Asset (3752) holds evidential and historical value to yield information on Roman-period activity and is of low value.
- 6.4.65 An area of dispersed, Prehistoric and Roman activity (3805) was recorded during trial trenching to the south of the A226. The finds included: a Roman-period pit containing charred grain and CBM in Trench 511; a Roman metal trackway on a north-east/south-west alignment in Trenches 508 and 515; an undated pit containing burnt material in Trench 507; an undated curvilinear gully in Trench 433; a ditch on an east-northeast/west-southwest alignment containing flint and a Prehistoric potsherd in Trenches 505 and 507; and an undated pit in Trench 517. Asset (3805) has evidential value regarding Prehistoric and Roman activity within this historic agricultural landscape and is of low value.
- 6.4.66 Trial trench evaluation recorded undated quarry pits and ditches (3806) c. 140m north-west of (3805). Asset (3806) comprises three undated quarry pits and an undated ditch on a north-south alignment. Asset (3806) is assessed as of low value due its evidential value for past activity in this area.
- 6.4.67 A series of Post-Medieval boundaries is recorded in the fields to the south of the A226, surviving variously as hedgerows, the remains of earthen banks mapped by Historic England and a below-ground ditch (787). A section of the bank and below-ground ditch (recorded on 19th-century maps as a trackway) within the Order Limits were subject to trial trench evaluation, which yielded no

artefacts earlier than the Post-Medieval period. However, this does not preclude other sections of the asset being of Medieval origin. Asset (787) is assessed of low value for its evidential and historical value for Post-Medieval (and potentially earlier) land division and communications.

- 6.4.68 Cropmarks of former WWII site (1598) are recorded to the north-west of Thong. The cropmarks were identified in aerial photographs. Although the nature of the site is unclear, it is located within the former footprint of Gravesend Airport (1459); it may be a former aircraft dispersal site associated with RAF Gravesend (1408), several of which are recorded in this area on historical aerial photographs. Assets (1598), (1459) and (1408) are all assessed as low value.
- 6.4.69 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 76 and 77, Application Document 6.3) on behalf of the Project identified a concentration of activity outside the Order Limits and west of Ifield Place (1139) (this land was formerly located within the Order Limits). This included:
- a. A residual Levallois core likely dated to the Neolithic or early Bronze Age (3738) was recovered from Trench 71 and holds some evidential value for potential for further finds to be present in the area is of low value.
 - b. Two ditches (3747 and 3748) containing pottery of Iron Age date. They hold evidential and historical value and are of low value.
 - c. Early Medieval (3753) to Medieval (3754) settlement activity interpreted as a potential former farmstead through the identification of pits representing potential sunken floored structures, along with a range of pottery. Both assets hold evidential and historical value and are of medium value. Approximately 120m north-north-west of the Medieval farmstead activity, LTC trial trenching identified a corn dryer or malting kiln (3755), potentially part of a wider complex. The asset was dated through pottery and carbonised barley likely associated with a beer-brewing process. Asset (3755) holds historical and evidential value as evidence of localised industry in the Medieval period and is of medium value.
 - d. South-west of the Medieval farmstead activity, the remains of Baynards Cottage (1815) identified through historic mapping, were encountered by trial trench evaluation. Asset (1815) is assessed as low value. Immediately to the east of (1815) the former site of an oasthouse (3188) is recorded, which is assessed as low value.
- 6.4.70 Located partially within the Order Limits immediately north of the A226, is a rectilinear enclosure complex (1814). This feature was first recorded by the Project's geophysical survey and was subsequently investigated by trial trench evaluation. The evaluation yielded evidence of agricultural and metal-working activity within the enclosure, with pottery ranging from the Late Bronze Age through the Iron Age and into the Early Roman period. Asset (1814) is assessed as medium value due to its evidential value from Bronze Age, Iron Age and Roman activity in this area and the hinterland of the Chalk Roman villa.

- 6.4.71 To the west of enclosure (1814) is an area of dispersed undated archaeological activity (3798). This may represent ancillary activities taking place outside the main settlement core. The recorded features include various ditches, pits and a line of postholes, along with a large quarry pit or sinkhole backfilled with Prehistoric to Post-Medieval material and a tree throw containing medieval pottery. Asset (3798), as a rough spatial group of archaeological features, is assessed as low value due to its evidential value for Prehistoric and later activity in the vicinity of enclosure (1814).
- 6.4.72 To the north of asset (3798) is asset (3852), an area containing dispersed ditches and pits of Middle Bronze Age to Iron Age date, with no clear focus of activity. This area of low-concentration activity (3852) is assessed as low value due to its evidential value for Bronze Age and Iron Age activity between the chalk plateau to the south and the marshland to the north.
- 6.4.73 Immediately to the east of asset (3852) is asset (4595) which is formed by multiple phases of Prehistoric activity associated with buried land surfaces within colluvial layers. Asset (4595) includes ditches, pits and a stakehole cutting into different colluvial horizons and yielded artefacts such as more than 50 pieces of struck flint and burnt flint, Middle Bronze Age to Iron Age pottery, Iron Age pottery burnt flint, a probable Roman CBM/burnt clay fragment, Medieval pottery and a Post-Medieval brick. Asset (4595) is assessed as medium value for its evidential value on multiple phases of activity within this dry valley from the Prehistoric to Post-Medieval periods.
- 6.4.74 Immediately to the west of asset (4595) is asset (3854) which represents Medieval activity peripheral to a settlement (possibly a predecessor to Filborough Farm) along the southern side of the Higham Road. The activity includes a posthole and multiple pits, some clearly rubbish pits containing oyster shells and medieval pottery. Also recorded was a tree throw containing Medieval finds: pottery; a copper alloy buckle; and a nail. Asset (3854) is assessed of low value due to its evidential value for Medieval settlement-periphery activity.
- 6.4.75 The route of Roman Watling Street is a non-designated asset (1680) which largely follows the modern route of the A2 road through part of the land within the Order Limits. This asset is of medium value due to the evidential and historical value of its below-ground archaeological remains. Due to its nature as a linear infrastructure element, its setting is extensive and encompasses the sites of Roman villages, farms, towns and cities, which make an important contribution to its illustrative historical value as a major Roman road. To the west of Singlewell Primary School, the route of the Roman Road follows the former route of the A2 through the land within the Order Limits, which is now in use as a cycle path and areas of associated landscaping. Asset (1680) is assessed as medium value.
- 6.4.76 To the north of the Gravesend Road and east of Chalk, geophysical survey has recorded an enclosure of medium value and Bronze Age to Roman date partially extending within the Order Limits, above the proposed below-ground tunnel location (1814). As the origin of this asset is unproven, it is uncertain whether it derives value from its setting. Due to the evidential and historical value of its below-ground archaeological remains, asset (1814) is assessed as medium value.

- 6.4.77 The possible site of an Early Medieval burial ground is recorded at Claylane Wood immediately outside, but likely extending within the Order Limits (1599). The ridgeline location of this asset makes a minor contribution to its illustrative historical value as an Early Medieval cemetery site. Due to the evidential and historical value of its below-ground archaeological remains, asset (1599) is assessed as medium value.
- 6.4.78 The medium-value Shorne Woods Country Park (1311) slightly extends within the eastern parts of the Order Limits. The woodland was established in the Post-Medieval period and is associated with Cobham Hall Grade II* registered park and garden (RPG1), although it is now separated from it by the A2 dual carriageway and M2 junction 1. Its setting, namely the association with Cobham Hall (RPG1) to the south, also makes an important contribution to its illustrative historical value. This asset is of medium value due to the evidential, aesthetic and historical value of its landscape features.
- 6.4.79 Within the southern part of the Order Limits is the partially excavated Medieval settlement at Henhurst Dale (1306), an asset of medium value due to the evidential and historical value of its below-ground archaeological remains. Associated remains may survive outside the archaeological excavated area, within the Order Limits. This asset derives some value from its historic association with the nearby route of Watling Street. Within the south-eastern part of the Order Limits is St Thomas' Well (1302), a Medieval holy well. The well is buried beneath a low modern earthwork bank separating Thong Lane from High Speed 1. This asset no longer derives value from its setting. Asset (1306) is assessed as medium value due to the evidential and historical value of its below-ground archaeological remains.
- 6.4.80 Medieval quarrying activity (3658) was identified through trial trench evaluation to the west of Thong (Appendix 6.8, Trial Trenching of Land Parcels 80 and 81, Application Document 6.3). The quarrying was extracted material from the underlying chalk, likely for building material. The activity is of low value but holds evidential and historical value for further evidence of localised industrial activity in Gravesham during the Medieval period.
- 6.4.81 A series of Medieval to Post-Medieval ditches (3756), representing former field boundaries illustrated on the 1897 Ordnance Survey map, were identified by trial trench evaluation to the north of Shorne Ifield Road. Asset (3756) is of low value due to its evidential value of medieval and post-medieval agricultural activity and land division.
- 6.4.82 The site of a probable Post-Medieval chalk pit is recorded to the east of Shorne (4123). This feature has been interpreted by the Kent HER as a possible enclosure, and by Historic England as a probable chalk pit. Historic Google Earth imagery shows cropmarks indicative of a "filled" feature, not enclosure ditches. Asset (4123) is therefore assessed as low value for its evidential value as a large Post-Medieval chalk pit.
- 6.4.83 The sites of five Second World War (WWII) Royal Air Force (RAF) camps (1324 and 1331) are located immediately north and south of the A2, and the remains of the low-value site of Gravesend Airfield (the former RAF Gravesham) (1459) is to the east of Gravesend and north of Thong. Asset (1324) is partially located within the Order Limits, and the majority of the surviving undeveloped parts of 1459 are located within the Order Limits. The airfield was originally a

civilian airfield, established in 1932, and taken over by the RAF and Essex Aero in 1937. The camps to the south were created for the personnel stationed at the airfield and the former Laughing Water Restaurant and Tea Rooms (1280, low value) outside the Order Limits provided entertainment for the personnel. The former site of six Nissen Huts (1557) and a V1 rocket strike site (1558) are recorded within the Order Limits to the south of Shorne, between Fenn Wood and Randall Wood. The setting of these assets contributes to their value, principally their group value with one another and associations with the sites for other former WWII structures and features in the wider landscape. Surviving elements of open landscape to the north-east, east and south of asset (1459) also make a minor contribution to its illustrative historical value as an airfield established on a plateau with long-distance views. Asset 1558 is of negligible value, assets 1280, 1324, 1331 and 1557 are of low value and asset (1459) is of medium value primarily due to the evidential and historical value below-ground archaeological remains (and of their surviving built fabric in the case of 1324 and 1331).

- 6.4.84 In the area between Thong and Gravesend, within the Order Limits, there are several locations where cropmarks have been recorded including a potential enclosure fragment (1398) which is of low value due to its evidential value for below-ground archaeological remains. In this area there are also several probable Post-Medieval field boundaries of negligible value (803) and former chalk pits of low value (792, 793) due to the historical value of their below-ground archaeological remains.
- 6.4.85 Palaeolithic deposits associated with finds of three Palaeolithic handaxes (4330) at Lower Higham, are located outside the Order Limits and within the 1km study area. Their value is derived from the evidential value of the deposits and are assessed as medium value.
- 6.4.86 Peat deposits of Mesolithic to Neolithic date (3292, 4295, 4303, 4306, 4312, 4320) are located outside the Order Limits and within the 1km study area along the River Thames foreshore. Due to their evidential value, these assets are assessed as medium value.
- 6.4.87 An early Mesolithic flint microlith (3737) was recovered from a ditch fill during trial trenching, north of Shorne Ifield Road. Although an isolated find, it contributes to potential for a concentration of early activity within the area, with other Mesolithic finds identified in proximity (1516, 3736). Asset (3737) holds evidential value and is of low value.
- 6.4.88 The following non-designated archaeological sites of Bronze Age date are recorded outside the Order Limits and within the 1km study area. Their value is largely derived from the evidential and historical value of their below-ground archaeological remains, although their setting along a dry valley and their group value makes a minor contribution to their overall value and are of medium value:
- a. Cropmarks of ring ditches and barrows along the dry valley which extend into the Order Limits between Thong and the Gravesend Road, likely to be associated with the barrows within the Order Limits (744, 1393, 2300, 2301, 2302, 3217, 3462, 4224);

b. Enclosures (1646 and 1654).

- 6.4.89 A pit of Middle Bronze Age date (3644) was found as an isolated feature 190m west of (3650). Due to size, it was interpreted as a possible waterhole. Although the asset holds historical and evidential value, due to its isolated nature, it is of low value.
- 6.4.90 The non-designated archaeological site of a Neolithic ditch and flint finds is recorded at Cobham Park outside the Order Limits and within the 1km study area (1323). The possible former site of a possible stone circle is recorded in Cobham village within the 1km study area (2265). The topographical location of (2265) also makes an important contribution to its illustrative historical value as a Neolithic site. These sites hold evidential and historical value of their below-ground archaeological remains and are of medium value.
- 6.4.91 The following Iron Age non-designated archaeological sites are located outside the Order Limits and within the 1km study area Due to the evidential and historical value of their below-ground archaeological remains they are of medium value:
- a. Asset (3216) cropmarks of a rectangular enclosure
 - b. Asset (4283) enclosures at Queen's Farm
- 6.4.92 The following Roman non-designated archaeological sites are located outside the Order Limits and within the 1km study area They hold evidential and historical value of their below-ground archaeological remains and due to this are medium value:
- a. Asset (664) settlement and burial site
 - b. Asset (1610) settlement, burials and pottery kiln
 - c. Asset (1653) cropmarks of a possible enclosure
 - d. Asset (2304) cropmarks of a possible rectilinear settlement enclosure
 - e. Asset (2336) cropmarks of a possible Roman settlement complex including a rectangular enclosure with entrances and internal features
 - f. Asset (4214) burials on the Thames foreshore by Higham Saltings
 - g. Asset (4221) occupation site
 - h. Asset (4228) possible settlement site with recorded pottery finds and floor surfaces
- 6.4.93 A late 1st century cremation burial (3655) was identified on the edge of the Order Limits, west of Thong Lane during trial trench evaluation. The burial may be isolated or could form part of a cemetery, likely associated with the nearby settlement (1597) which was removed by modern housing, to the north and west of the cremation's location. The cremation holds evidential and historical value and is of medium value.

- 6.4.94 An Early Medieval non-designated archaeological site comprising a cemetery (2309) is located outside the Order Limits and within the 1km study area. Due to the evidential and historical value of its below-ground archaeological remains, asset (2309) is assessed as medium value.
- 6.4.95 The following medium value (due to the evidential and historical value of their below-ground archaeological remains) Medieval non-designated archaeological sites are located outside the Order Limits and within the 1km study area:
- a. Asset (1308) site of late Medieval buildings
 - b. Asset (1315) earthworks of a possible deserted Medieval settlement
 - c. Asset (1489) Medieval windmill mound
 - d. Asset (4282) site of a Medieval farmstead at Queen's Farm
- 6.4.96 The non-designated Post-Medieval Higham Tudor Thames defences (4229) is located outside the Order Limits and within the 1km study area. The asset has evidential and historical value of its below-ground archaeological remains and is of medium value.
- 6.4.97 The asset of the Messerschmitt crash site (1540) and potential below-ground archaeological remains is located outside the Order Limits and within the 1km study area has communal, evidential and historical value and is assessed as medium value.
- 6.4.98 The following undated non-designated archaeological sites are located outside the Order Limits and within the 1km study area. The earthworks and below ground archaeological remains hold evidential and historical value and are of medium value:
- a. Asset (783) cropmarks of a ring ditch of uncertain date adjacent to cropmarks of a probable Late Prehistoric trackway
 - b. Asset (4321) a system of drainage ditches associated with reclamation of the Thames Marshes
- 6.4.99 Trial trench evaluation revealed two cremations and two possible cenotaph burials (3745) which formed a group of interments in a single trench. They were likely truncated and disturbed due to their shallow presence and absence of associated remains which have resulted in them being undated. Undated ditches and a posthole were also recorded in the vicinity. The burials still hold evidential and historical value for their potential to yield further information and further burials present along with the potentially associated ditches and further postholes. As a result, asset (3745) is of medium value.
- 6.4.100 Approximately 170m north of (3745), trial trench evaluation recorded two undated ditches on different alignments and an undated pit. This area of undated activity is assessed as low value due to its evidential value.
- 6.4.101 South of Gravesend Road, an undated burnt stone and charcoal layer (3774) was identified within the dry valley bottom. It is likely to represent the site of a Bronze Age burnt mound, although it may have been associated with an

adjacent ditch. The deposit holds evidential and historical value for evidence of historic interaction with the landscape and is of medium value.

- 6.4.102 South of Gravesend Road, trial trench evaluation identified a group of undated pits and postholes (3796). One pit which contained a fragment of iron nail and fragments of cow skull. The postholes do not form a clear arc although could potentially still represent a structure. The pits and postholes appear to have been truncated by ploughing, prior to the Modern/Post-Medieval period. Asset (3796) is of low value and holds evidential value on potential Prehistoric or Roman activity in this area.
- 6.4.103 Trial trench evaluation to the west of Thong (Appendix 6.8, Trial Trenching of Land Parcels 80 and 81, Application Document 6.3) identified a Mesolithic to Neolithic flint assemblage (3642) within a large feature investigated by Trench 11. The assemblage included burnt and worked flints of likely Mesolithic/Neolithic date which were recovered from several layers of the feature. The large feature may have been a prehistoric quarry or shaft or could have been an extensive sinkhole; such features can contain significant horizons of early prehistoric material at depth, and as the feature in Trench 11 was not bottomed, it is possible that early prehistoric horizons exist lower down in the fill. Asset (3667) is of medium value due to its evidential and historical value to potentially yield evidence of Early Prehistoric activity within this area.
- 6.4.104 The Burham nitrogen deposition compensation site is located to the west of Kit's Coty. Two non-designated heritage assets are located within the Order Limits here: asset (4745), the non-designated below ground remains of the Medieval to Modern Great Culand historic farmstead and manor; and asset (4760), a Post-Medieval tramway tunnel which crosses below the nitrogen deposition compensation site on a north-east/south-west alignment. Great Culand (4745) (also known as Great Quiling) had architectural features of mid-16th-century date and could be on the site of an earlier farmstead (although it is unlikely to have originated in the Early Medieval period as it is not recorded in the Domesday Book). The farmstead formerly possessed a treadwheel used to draw water from a deep well; the treadwheel or 'cage wheel' is now in Maidstone Museum. The farmstead was demolished in the latter half of the 20th century. Asset (4745) is assessed as medium value for its historical and evidential value as a Medieval and Post-Medieval farmstead and manor.
- 6.4.105 The former mineral tramway (4760) is recorded on 19th-century OS mapping, connecting the chalk pit immediately north-east of the nitrogen deposition compensation site with the former Burham Brick and Cement Works to the south-west. Within the Order Limits, the mineral tramway was located wholly below ground in a tunnel, with air shafts recorded on the surface within the Order Limits. The above-ground sections of the tramway have been previously removed. Asset (4760) is assessed as medium value for its historical and evidential value as a Post-Medieval industrial tramway tunnel.
- 6.4.106 The Blue Bell Hill nitrogen deposition compensation site is located to the east of Kit's Coty. A findspot of an Iron Age gold coin (4483) is recorded within the Order Limits in this area. As the find has been previously removed, the findspot is assessed as negligible value. Also within the Order Limits in this area, is a group of sarsen stones (4513) is recorded at the northern edge of Westfield Wood. The stones are located within the woodland at the edge of the Order

Limits and do not appear to be located within the open arable field within the Order Limits. Given their location at the boundary between field and woodland they may be the result of field clearance and/or boundary demarcation. However, a cautious approach has been taken in case they represent the remains of a Prehistoric monument, so they have therefore been assessed as medium value.

- 6.4.107 The Blue Bell Hill area of the Order Limits also contains the broad route of a Prehistoric trackway (4553), the North Down's Way. The route is paralalled by (and sometimes merges with the medieval route known as Pilgrim's Way (associated with the veneration of Thomas Beckett). The North Down's Way generally follows higher ground at the top of the valley (as it does within the Order Limits) while Pilgrim's Way generally follows the lower-lying ground at the valley bottom. No Prehistoric above-ground remains are associated with asset (4553), although the HER maps the route following an existing farm trackway. A Medieval holloway (4555) survives within the woodland on the southern slope of Blue Bell Hill and very slightly enters the Order Limits. Asset (4553) and asset (4555) are assessed as medium value and low value for their evidential and historical value as Prehistoric and Medieval routeways respectively.
- 6.4.108 The below-ground remains associated with partially extant and former historic farmsteads are recorded across the 1km study area: (1121), (1122), (1123), (1124), (1125) and (1131). These assets are assessed as low value due to their evidential and historical value for the origins and development of historic farmsteads in the area.

Geological deposits of archaeological interest

- 6.4.109 The Quaternary sediments of the route and surrounding areas are shown on Figure 6.8 (Application Document 6.2). It should be noted that there is disparity in the nomenclature of Pleistocene sediments, a review of which is presented in Appendices 6.5 and 6.6 (Application Document 6.3) with a summary table of nomenclature in Appendix 6.5, Table 2. Also shown on Figure 6.8 (Application Document 6.2) are 102 Palaeolithic archaeological finds and sites identified in the Order Limits and within the 3km Palaeolithic study area, comprising 99 Palaeolithic findspots and sites identified in the desk based reviews (Appendices 6.5 and 6.6) and 3 further Palaeolithic finds uncovered during the ATT. Based upon the sedimentary sequence and the Palaeolithic archaeological finds 34 Palaeolithic and Quaternary (PQ) zones (PQ 1-11, 12a-b, 13-19, 20a-c, 21, 22a-b, 23a-b and 24-29 have been identified (see Figure 6.8, Application document 6.2). A summary of the Pleistocene sediments, archaeological finds and areas of interest and their value, is presented below from south to north:
- a. Within Kent PQ zones 1-7 and PQ-29, Pleistocene and Holocene colluvial deposits infilling depressions and surrounding dry valley networks are noted with north-draining minor dry valleys, and with small patches of Pleistocene terrace outcrops. Sites and finds of note are the Baker's Hole Levallois site (4058) within zone PQ-1, although this area has been subsequently quarried and is of low value. The exact extent of the quarrying is not known and therefore some Quaternary sediments may remain.

- b. Zone PQ-2, is also in the Ebbsfleet Valley with a sediment sequence comprising brickearth overlying fluvial gravels of the palaeo-Ebbsfleet River. Numerous important remains have been found in and beside this area, from deposits likely to extend into it; key sites are the undisturbed HS1 elephant site (4043), handaxes from palaeo-Ebbsfleet gravels (4057), handaxes and flakes from the brickearth (3452, 4049) and palaeo-environmental remains from fluvial/lacustrine sediments (4046, 4047). Zone PQ-2 is of medium value.
- c. Zone PQ-3, contains late Pleistocene Head deposits with three Palaeolithic findspots (1661, 2368, 3197), the former probably representing an undisturbed palaeo-landsurface under older pre-Devensian colluvium on which was found a handaxe and knapping debitage. Other nearby remains from outside the area, but from deposit-types likely to be present in the area, include minimally disturbed Late Upper Palaeolithic knapping scatters (2370, 4045) from fine-grained colluvial sediments infilling dry valleys, as well as various more-derived (not *in situ*) lithic finds (3197, 3370). Zone PQ-3 is of medium value
- d. Zone PQ-4, contains Head deposits. Nearby finds of note include a handaxe and Levallois flakes from the general Shorne area (3374) and two handaxes from a similar high point of Windmill Hill, Gravesend (4051). Zone PQ-4 is of medium value.
- e. Zone PQ-5, contains Head deposits (colluvial and slopewash). There are several records of surface finds of Lower/Middle Palaeolithic artefacts from the general area (4035, 4039, 4050), as well as nearby discovery of a handaxe and debitage from palaeo-landsurface under unmapped colluvium (1661). Zone PQ-5 is of low value.
- f. Zone PQ-6, contains similar Head deposits with recent ATT works uncovering a probable Late Glacial buried soil west of Thong Lane (3640) and a dry valley containing Middle and Late Upper Palaeolithic struck flint (3767, 3768) with an associated molluscan assemblage. One reworked Palaeolithic findspot is recorded within this area (3123). Some important nearby finds from deposit types are likely to occur in this zone, notably a handaxe and knapping debitage from unmapped colluvium (1661), and minimally disturbed Late Upper Palaeolithic knapping scatters (2370, 4045) from fine-grained colluvial sediments infilling dry valleys, as well as several nearby finds of most-likely residual/re-worked material (3197, 4035, 4039, 4055). Zone PQ-6 is of medium value.
- g. Within zone PQ-7, a series of fluvial bodies of sand and gravel as well as Head deposits were recorded. Recent ATT works have identified brick earth and colluvial deposits overlying the Taplow Terrace sands and gravels in the area. No Palaeolithic sites are known within the area although several

Lower/Middle Palaeolithic artefacts known from the nearby area (4052, 4054), and some specifically from gravel deposits that are likely equivalent to the mapped terrace deposits of this zone (4053). Zone PQ-7 is of high value.

- h. Zone PQ-29, contains late Pleistocene Head deposits. Whilst no finds are recorded from this area, Lower/Middle Palaeolithic remains have been found in areas with similar deposits (1661 in PQ-3; and 4039). Zone PQ-29 is of medium value.

Built heritage– South of the River Thames

Summary

- 6.4.110 To the south of the River Thames, there is one high-value Registered Park and Garden which is partially located within the Order Limits – Cobham Hall Grade II* Registered Park and Garden (RPG1). No further Registered Parks and Gardens are located within the Order Limits, 1km study area or landscape study area to the south of the River Thames.
- 6.4.111 To the south of the River Thames there are three Grade I listed buildings, all of which are located outside of the Order Limits:
 - a. Cobham Hall (LB122), which is located within Cobham Hall Grade II* Registered Park and Garden (RPG1).
 - b. Cobham College (LB196) which is located within Cobham Village Conservation Area (CA11, high value).
 - c. Gadshill Place (LB241) which is located immediately to the south of the A226 and the Order Limits in Higham.
- 6.4.112 South of the River Thames there is one Grade II listed building of medium value, a *Parish Boundary Stone* (LB105) which is located within the Order Limits.
- 6.4.113 Outside the Order Limits and within the 1km study area and landscape study area south of the River Thames there are a total of 105 listed buildings of high value due to the varying combinations of their individual aesthetic, historic, evidential and communal values plus the contribution of their settings (LB1, LB2, LB3, LB4, LB12, LB13, LB14, LB15, LB16, LB17, LB18, LB19, LB20, LB21, LB22, LB23, LB24, LB25, LB26, LB27, LB28, LB29, LB30, LB31, LB78, LB79, LB99, LB100, LB101, LB102, LB103, LB104, LB105, LB106, LB112, LB114, LB117, LB118, LB122, LB123, LB124, LB125, B126, LB173, LB174, LB175, LB176, LB178, LB179, LB180, LB182, LB183, LB184, LB185, LB186, LB187, LB190, LB191, LB192, LB193, LB194, LB195, LB196, LB197, LB198, LB199, LB200, LB201, LB202, LB218, LB219, LB220, LB221, LB222, LB223, LB224, LB225, LB227, LB230, LB236, LB241, LB242, LB247, LB248, LB252, LB254, LB263, LB264, LB265, LB266, LB302, LB306, LB307, LB310, LB311, LB312, LB313, LB321, LB323, LB324, LB326, LB333, LB334, LB335, LB337).
- 6.4.114 The five Conservation Areas south of the River Thames which are included in this assessment are Cobham Village (CA11, high value), Thong

(CA10, medium value), Shorne Village (CA9, high value), Queen’s Farm (CA8, medium value), and Gravesend Riverside (CA14, high value). Thong (CA10) and Cobham Village (CA11) partially extend within the Order Limits.

- 6.4.115 Queen’s Farm Conservation Area (CA8) is located outside the 1km study area, although it is included within the landscape study area. Gravesend Riverside Conservation Area (CA14) is located within the 1km study area, but it is not included in the landscape study area.
- 6.4.116 Non-designated built heritage assets have been assigned a value based on the methodology set out at Section 6.3. South of the River Thames, outside the Order Limits and within the 1km study area, there are 24 non-designated built heritage assets of medium value (1119, 1132, 1133, 1134, 1135, 1139, 1140, 1142, 1146, 1147, 1157, 1304, 1310, 1311, 1352, 1422, 1449, 1720, 3146, 3208, 3209, 3210, 4217, 4348).
- 6.4.117 South of the River Thames within the Order Limits is one low value built heritage asset (1562): ‘Caves converted to air raid shelters, Thong Lane, Shorne, Gravesham’.
- 6.4.118 South of the River Thames outside the Order Limits but within the 1km study area there are 96 non-designated buildings, building groups or built heritage assets (e.g. a railway) of low value (769, 772, 1120, 1126, 1136, 1143, 1149, 1154, 1152, 1282, 1341, 1410, 1424, 1435, 1438, 1455, 1462, 1519, 1525, 1526, 1561, 1666, 1842, 1874, 1875, 2258, 2277, 2281, 2383, 2460, 2462, 2464, 3052, 3054, 3055, 3056, 3057, 3058, , 3059, 3060, 3061, 3062, 3063, 3153, 3155, 3156, 3158, 3159, 3162, 3179, 3180, 3181, 3182, 3187, 3268, 3291, 3332, 3334, 3336, 3403, 3404, 3448, 4160, 4161, 4162, 4210, 4216, 4272, 4279, 4293, 4344, 4345, 4347, 4346, 4348, 4349, 4401, 4402, 4403, 4404, 4405, 4406, 4407, 4408, 4592, 4597, 4598, 4599, 4600, 4601, 4602, 4603, 4604, 4605, 4606, 4607).
- 6.4.119 South of the River Thames outside the Order Limits and within the 1km study area there is one non-designated built heritage asset (3053) of negligible value.
- 6.4.120 The built heritage assets are discussed in further detail below, following in geographical order, beginning at Cobham Hall. Where a Conservation Area is discussed, the listed buildings within that Conservation Area will also be mentioned. Assets which are not being potentially impacted by the Project are briefly mentioned, whereas those which are being potentially impacted by the Project are discussed in more detail.

Baseline Details

- 6.4.121 The high value ‘Cobham Hall’ Grade II* Registered Park and Garden (RPG1), partly designed by Humphry Repton, is located south of the A2 and east of the village of Cobham, and forms the setting for a group of seven high-value listed buildings. The designation includes approximately 22ha of formal gardens and pleasure grounds, surrounded by 316ha of parkland, 120ha of which are wooded. Two scheduled monuments are located within the western half of the park (SM8) and (SM10). The medium value Grade II listed

Parish Boundary Stone (LB105) is located within the Registered Park and Garden (RPG1), along with several high value listed buildings comprising:

- a. LB122 Grade I listed *Cobham Hall (including Kitchen and Stable Court)*
- b. LB189 Grade I listed *The Mausoleum*
- c. LB176 Grade II* listed *The Dairy, Cobham Hall*
- d. LB79 Grade II listed *The Engine House, Cobham Hall*
- e. LB123 Grade II listed *The Temple, Cobham Hall*
- f. LB31 Grade II listed *The Mount, Cobham Hall*
- g. LB175 Grade II listed *The Aviary, Cobham Hall*

- 6.4.122 The Grade II listed *Parish Boundary Stone* (LB105) in the northern part of Cobham Park, which was originally located along Watling Street (A2), is of medium value as it has been moved from its original location, losing its historic context. It is now located within a grassy strip of land between woodland and HS1. LB105 is located within the Order Limits.
- 6.4.123 *Cobham Hall* (LB122) is a high value Grade I listed building, one of the largest and most important houses in Kent and the seat of the De Cobham family since 1208, located 670m south of the Order Limits. The hall was altered and extended in the 19th century in the ‘Jacobean Revival’ style and has significant aesthetic value for its internal and external architectural features. The setting of the hall (LB122) is influenced by its location within Cobham Park (RPG1) and its relationship to the associated buildings within the estate. The hall sits on the southern side of a low ridge of the Kent Downs within the park which provides some screening towards the north and location of HS1 and A2. The surrounding park (RPG1) contributes to the hall’s aesthetic value through the picturesque pleasure grounds and ornamental gardens by Humphry Repton which were devised entirely for the sole use of the hall’s occupants. The historical connection between the hall and Cobham Village (CA11) is still legible despite the intrusion of traffic. The setting of *Cobham Hall* (LB122) is largely formed by the park and extends into the southern edge of the Order Limits.
- 6.4.124 *The Mausoleum* (LB189) within the grounds of Cobham Hall (LB122/RPG1) is also a high-value Grade I listed building, located 1km south from the Order Limits. Designed by James Wyatt in 1783 for the 4th Earl of Darnley, its setting is influenced by its location within Cobham Park and the wider views through Cobham Wood provide glimpses of its original setting prior to the park’s redesign. However, the value of the asset is derived primarily from its aesthetic and historical value, both of which are high. Due to the redesign and screened location of the asset, its setting does not extend to the land within the Order Limits.
- 6.4.125 The nearby Grade II* listed *Dairy* (LB176), the setting of which is also influenced by Cobham Park (RPG1), is of high value. The *Dairy*, located within RPG1, is on Historic England’s (2020a) Heritage at Risk Register as it is in poor condition. However, since the Dairy is currently in the process of being

renovated, it is anticipated that this will result in its removal from the Risk Register as it may no longer be deemed as vulnerable.

- 6.4.126 The high value Grade II listed *Engine House* (LB79) located in Cobham Hall (RPG1) is located around 130m south of the Order Limits. This octagonal structure was constructed in 1789 by Samuel Lapidge, an associate of Lancelot ‘Capability’ Brown. It is built of red brick in irregular bond with a Roman cement parapet, cornice and buttresses. The structure has a number of lancet windows and is roofed in slate and lead. It is an exceptionally rare example of an early pump house which utilised horse power, which contributes to its evidential, historical and architectural value. It also derives value from its setting, principally the surroundings of Cobham Hall’s parkland and the associated fishponds which it overlooks to the north, and which contribute to its historical and aesthetic value. The area within the Order Limits includes the northern edges of the parkland and the Public Right of Way (PRoW) at the opposite (northern) end of the fish pond, and so makes a minor contribution to its value.
- 6.4.127 The high value Grade II listed *The Mount* (LB31) is located within RPG1 around 130m south of the Order Limits. This 16th-century brick house is located to the south of Watling Street and east of Halfpence Lane, within Ashenbank Wood. The house was substantially rebuilt in the 19th century although it still contains an original stone moulded doorway and the remains of a 16th-century oak staircase. It is an example of an outlying 16th-century house within a Post-Medieval park which saw significant 19th century alterations likely to have been associated with modifications to the wider park at that time (including RPG1 and other areas beyond it which were once historically part of the parkland). It derives aesthetic and historical value from this and from its setting, principally the surrounding park woodland, and it has group value with the other listed buildings within the park. The area within the Order Limits includes the northern edge of the park woodland within the wider area to the north of the asset, although there is no visual connection between the asset and the land within the Order Limits.
- 6.4.128 The medium value Grade II listed *Parish Boundary Stone* (LB105) has been moved from its original location, the contribution to its heritage value made by its historic setting has been reduced. It is therefore considered to be of medium rather than high value.
- 6.4.129 The medium value Shorne Woods Country Park (1311) slightly extends within the eastern parts of the Order Limits. This asset is of medium value due to the evidential, aesthetic and historical value of its landscape features. The woodland was established in the Post-Medieval period and is associated with Cobham Hall Grade II* registered park and garden (RPG1), although it is now separated from it by the A2 dual carriageway and M2 junction 1. Its setting, principally its historic associations with Cobham Hall (RPG1) to the south and with Thong to the west (CA10 make important contributions to its historical legibility and aesthetic value.
- 6.4.130 *The George Inn* (LB29) is a Grade II listed high value asset located approximately 50m north of the Order Limits. The asset has group value with three listed buildings (LB3 *Chapel Farmhouse*, LB4 *Orchard House*, LB101 *Corner Cottage*) dating to the 18th century, located along Hever Court Road. The inn has a front elevation of outwardly 18th century date, but there is a

timber-framed portion to the rear which has been interpreted as belonging to an earlier phase of building. The inn is a good example of a Kentish vernacular building of traditional style from which it derives aesthetic and historical value. The asset faces north onto Hever Court Road, which runs parallel to Watling Street (A2); this roadside location, close to busy thoroughfares on the edge of Singlewell, forms part of its setting and contributes to its value. Being sited just north of the current alignment of the A2, the setting of this asset includes some land within Order Limits.

- 6.4.131 The high value Grade II listed *Chapel Farmhouse* (LB3) dates to the 18th century. The exterior is pebble-dashed and timber framing has been applied to the first floor. Despite this timber framing, the massing of the building, sash windows and central six-panelled door reflect its 18th century origins. It derives aesthetic and historical value from its 18th century form and features. The asset faces north onto Hever Court Road around 40m north-west of The George Inn and has a similar setting, which contributes to its value. The setting of this asset includes some of the land within the Order Limits.
- 6.4.132 The high value Grade II listed *Orchard House* (LB4) dates to the 18th century and its side elevation faces onto Hever Court Road. It is built of redbrick alternated with grey headers, with a weatherboarded first floor separated by a moulded cornice. It presents a three-bay sash window front to the road and has a hipped tiled roof. It is a good example of an 18th century country house from which it derives aesthetic and historical value. It is located around 15m north-west of Corner Cottage and has a similar setting, which contributes to its value. The setting of this asset includes some of the land within the Order Limits.
- 6.4.133 The high value Grade II listed *Corner Cottage* (LB101) dates to the 18th century or potentially earlier and is set endwise to Hever Court Road. This redbrick building is weatherboarded above the ground floor, with a half-hipped, tiled roof and 19th century gable casement window. To the south is a two-storey wing of stock brick with a 19th century weather porch. It is a good example of an 18th century vernacular building with 19th century additions, from which it derives aesthetic and historical value. It is located around 45m north-west of Chapel Farmhouse and has a similar setting, which contributes to its value. The setting of this asset includes some of the land within the Order Limits.
- 6.4.134 Gravesend Riverside Conservation Area (CA14) is of high value and is located around 650m west of the Order Limits, on the southern bank of the River Thames, outside the landscape study area but partially within the 1km study area. It is designated as an area of special architectural and historic interest, principally due to a combination of its maritime, military, industrial and recreational heritage associated with the River Thames and its formal Victorian terraces. Its built heritage primarily dates from the 18th and 19th centuries, although its medieval origins are reflected by the Grade II* listed Milton Chantry. CA14 contains the following high-value Grade II listed buildings which are also located within the 1km study area:
- a. LB321 Barrelled Lock Chamber, Sea Walls, Swing Bridge, Locks and Canal Basin.
 - b. Statue of General Gordon.

- 6.4.135 CA14 also contains the following high-value designated heritage assets which are located outside the 1km study area:
- a. SM16 *Gravesend blockhouse* scheduled monument.
 - b. SM17 the Grade II* listed and scheduled *New Tavern Fort*.
 - c. Grade II listed *Obelisk*.
 - d. Grade II listed *HM Customs and Immigration Office*.
 - e. Grade II listed *Gazebo in Grounds of HM Customs and Immigration Office*.
 - f. Grade II listed *The Royal Terrace Pier, including the pavilions flanking the entrance*.
 - g. Grade II listed *The Royal Clarendon Hotel and 1-4 Royal Pier Mews*.
 - h. Grade II listed *Thames House*.
 - i. Grade II listed *The Mission House*.
 - j. Grade II listed *St Andrew's Art Centre*.
- 6.4.136 The value of the Conservation Area can be attributed to its historical development, the character of its built form and open spaces, and its relationship with the River Thames and riverfront setting. Key focal points for the Conservation Area include: the Gordon Pleasure Gardens and the adjacent fortifications of the Grade II* listed and scheduled *New Tavern Fort* (SM17); Gordon Promenade; the Canal Basin; the pier; and historic residential streets of Clarendon Road, Royal Pier Road, Commercial Place and the Royal Pier, along with parts of The Terrace and Canal Road.
- 6.4.137 Historically, this area of Gravesend has had a long association with the River Thames and associated activities scheduled *Gravesend blockhouse* (SM16) and *New Tavern Fort* (SM17) are examples of 16th- and 18th-century defensive fortifications, built in this location as part of a network of forts along the River Thames including with the non-designated Milton Blockhouse (2290) also within CA14 and *Tilbury Fort* (SM13) on the opposite bank. These assets reflect the connection of the area with maritime, military history. Commercial activities are reflected in the Royal Terrace Pier and the wharves, with the Port of London Authority located within the Area. Historic recreational activities are represented within the Conservation Area, with the Promenade, Pleasure Gardens and parks all a reflection of the 19th-century prosperity of the town. Since the 19th century, a large amount of residential housing has also been built within the Area, demonstrating success and growth of Gravesend into modern times.
- 6.4.138 As mentioned above, the setting of Gravesend Riverside Conservation Area is a crucial part of its character which contributes greatly to its value. The historical relationship of CA14 with the River Thames and riverside activities underpins its value. The Order Limits does not form part of the

setting of the asset due to the intervening built form and does not contribute to its value.

- 6.4.139 Cobham Village Conservation Area (CA11) is of high value. It is designated as an area of special architectural and historic interest, principally due to its eclectic mixture of polite and vernacular buildings dating, in the most part, from the 18th and 19th centuries, but extending back to the medieval period in the case of the Grade II Listed *Church of St Margaret* (LB106). The village is approached downhill along Halfpenny Lane from the A2 with Cobham Hall's Park to the east and modern orchards to the west. The village is screened by peripheral trees and hedges down Halfpence Lane with an external cloak of greenery screening the church.
- 6.4.140 Halfpence Lane, included within the Order Limits, makes a minor contribution to the setting and character and appearance of CA11, as it forms a historic routeway and an approach to the village from Watling Street (A2). However, it should be noted that whilst a section of Halfpence Lane is within the Order Limits, only the southern extent of the road, which is included within the Conservation Area, contributes meaningfully to its value. The majority of the area within the Order Limits does not contribute to the value of the asset as it is largely screened by intervening woodland and undulating topography. From the very north-eastern corner of the Conservation Area, within the Cobham Hall Registered Park and Garden (RPG1), distant glimpses as far as Brewers Road are possible within the Order Limits although such distant glimpses in themselves do not contribute to the value of the Conservation Area (CA11).
- 6.4.141 The village is well-preserved with most historic buildings being faced in local red brick or render over brickwork facades. However, a small number of uncoursed ragstone and flint buildings are also prominent as well as some timber-framed buildings with rendered, weather-boarded or tile-hung facades; roofs are generally of red plain tiles. Twenty-eight high-value listed buildings are located within CA11), comprising:
- a. LB196 Grade I listed *Cobham College*
 - b. LB222 Grade I listed *Parish Church of St Mary Magdalene*
 - c. LB184 Grade II* listed *Owletts*
 - d. LB227 Grade II* listed *Meadow House*
 - e. LB183 Grade II listed *Owletts' Cottage*
 - f. LB185 Grade II listed *Cottage belonging to the Leather Bottle Inn*
 - g. LB186 Grade II listed *36 and 38, The Street*
 - h. LB187 Grade II listed *26-30, The Street*
 - i. LB190 Grade II listed *Rose Cottage*
 - j. LB191 Grade II listed *Rookery Farm Thatched Barn*
 - k. LB192 Grade II listed *Rookery Farm Granary*

- l. LB193 Grade II listed *Cadmans, Dillywood Cottage, Murrells Cottages, Old Post Cottage, White Cottage*
- m. LB194 Grade II listed *The Old Post Office*
- n. LB195 Grade II listed *63, The Street*
- o. LB197 Grade II listed *The Terrace*
- p. LB198 Grade II listed *The Ship Inn*
- q. LB199 Grade II listed *Forge Cottages*
- r. LB200 Grade II listed *The Village School*
- s. LB201 Grade II listed *Crockers Place*
- t. LB202 Grade II listed *Meadow Cottages*
- u. LB219 Grade II listed *The Village Pump*
- v. LB220 Grade II listed *Owletts' Well House*
- w. LB221 Grade II listed *The Stone House*
- x. LB223 Grade II listed *Mill Farmhouse*
- y. LB224 Grade II listed *Forge Cottages*
- z. LB225 Grade II listed *The Leather Bottle Inn*
- aa. LB230 Grade II listed *Cobham War Memorial*
- bb. LB236 Grade II listed *Cobhambury House*

6.4.142 *Cobham College* (LB196) is a high value Grade I listed building, within Cobham Conservation Area (CA11), and is located immediately to the south of the Grade I listed Medieval *Church of St Mary Magdalene* (LB222, high value) and to the south of the Order Limits. The setting of the college is influenced by its location behind the *Church of St Mary Magdalene* (LB222) and on the southern edge of Cobham Conservation Area (CA11). The college and church have a historic and functional association with one another and mutually contribute to their aesthetic, historic and communal values. The wider setting of Cobham College is influenced by the agricultural land to the south with views across this landscape. However, the setting of *Cobham College* (LB196) is limited to land south of The Street and does not extend to the land within the Order Limits. The views to and from the tower of *St Mary Magdalene's church* (LB222) extends to the setting of the church across the wider landscape which adds, in part, to its value. The setting of LB222 extends to the land within the Order Limits.

6.4.143 Several listed buildings (LB191, LB200, LB192, LB220, LB183, LB184, LB185, LB186, LB187, LB227, LB194, LB195, LB196, LB197, LB200, LB202, LB219,

LB221, LB222, LB223, LB225) along 'The Street' in Cobham Village (CA11) have group historical, communal and aesthetic value. The setting of these assets within the historic core of Cobham Village and alongside The Street, contributes to their heritage value. However, the setting does not extend to the land within the Order Limits. These assets (LB221, LB194, LB193, LB185, LB186, LB187, LB223, LB225, LB198) are of high value.

- 6.4.144 *The Stone House* (LB221) is a high value Grade II listed building located south of the Order Limits. The house dates to the 14th century although it was much altered in the early 19th century, the asset (LB221) retains its aesthetic and historical value. The north elevation faces directly onto The Street and its appearance makes an important contribution to the local character giving it communal value. The setting, which is formed by the churchyard (LB222), which it overlooks and the collegiate complex (LB196), contributes strongly to its overall heritage value.
- 6.4.145 *Rose Cottage* (LB190) is a high value Grade II listed building in Cobham Conservation Area (CA11) situated at the junction of The Street and Halfpence Lane, approximately 25m south of the Order Limits. It was formerly a gate lodge to Cobham Park and is of historical value. Several outbuildings of low value including asset (3448) are sited behind *Rose Cottage* (LB190). Although these buildings are not included in the listing description for the cottage, they sit within the garden and could be considered curtilage listed, and also form part of the setting of the cottage, contributing to its heritage value. As a former toll house, its location alongside Halfpence Lane and the junction is crucial to understanding its history and former uses. This setting and the proximity to Cobham Park makes an important contribution to its value as it is directly related to its former function as a gate lodge. The cottage arguably still stands as an entrance marker to the Park, a relationship which can be appreciated from the junction. The setting of asset LB190 extends to the land within the Order Limits towards Halfpence Lane.
- 6.4.146 Immediately to the south of LB190 is *Cobham War Memorial* (LB230), a high value Grade II listed war memorial located approximately 40m south of the Order Limits. The memorial stands on the junction of Cobhambury Road and Lodge Lane, with open fields to the south and houses to the north. The asset has group value as it stands opposite *Rose Cottage* (LB190; Grade II) and due to its setting adjacent to the south-west entrance to the Grade II* Registered Park of Cobham Hall (RPG1). It also has historical and communal value as it commemorates 19 residents of Cobham and the surrounding area who lost their lives in the First World War. The setting of the memorial, including the southern extent of Halfpence Lane within the Cobham Conservation Area (CA11), contributes towards the memorial's value.
- 6.4.147 *Ifield Court* (LB218) is a high value Grade II* listed building located to the north-west of Cobham Conservation Area (CA11), around 615m south-west of the Order Limits. *Ifield Court* is a three-storey, brown brick Georgian house based around a remodelled 15th century manor house of buttressed flint and ragstone walls. The secluded, rural setting of this asset within its own grounds, contributes to its value. The asset sits within its own gardens, with lawns and dispersed trees on three sides. Outbuildings and farm buildings located to the east, an orchard to the south and paddock, all formed part of a former historic estate. The wider setting comprises large agricultural fields, with HS1 and the

A2 located 730m north of the asset. The primary setting of Ifield Court is its enclosed historic setting which contributes to its value as a former manor house. The land within the Order Limits forms a part of the setting of large agricultural fields, an element of the setting which contributes to the asset's value.

- 6.4.148 Sited to the north of *Ifield Court* (LB218) is *Court Cottage Garden Cottage* (LB12), a high value Grade II listed pair of semi-detached cottages under a single designation. LB12 is located around 560m south-west of the Order Limits. These two-storey cottages are built of red brick with blue headers and a clay-tiled mansard roof. They are a good example of vernacular 18th century cottages which contributes to their value. They also have group value with *Ifield Court* (LB218). Their setting is similar to that of LB218 and contributes to their value. The land within the Order Limits forms a part of the setting of large agricultural fields, an element of the setting which contributes to the asset's value.
- 6.4.149 To the east of LB218 and LB12 is the high value Grade II Listed *Church of St Margaret* (LB106), located around 170m south of the Order Limits. The original medieval church was re-built in 1596 and then repaired in 1638 with new windows added in 1838. The church is roughcast with a tiled roof and a wooden bell turret on west gable end. The church is situated along Church Road and within the hamlet of Ifield, which is to the south of Watling Street (A2) and Singlewell. The asset has aesthetic value and historical value through its connection with religious activity focused round a rural Medieval settlement. The rural setting of the asset contributes to its aesthetic value. The church is located within its own churchyard and is surrounded by open fields on all sides which are relatively flat and intervisible with Watling Street (A2). The setting of the asset extends towards the land within Order Limits where the A2 intersects the landscape to the north, dividing the church from Singlewell village.
- 6.4.150 There are twelve high value listed buildings (LB1, LB2, LB13, LB14, LB15, LB16, LB17, LB18, LB20, LB21, LB104, LB112) located in the village of Shorne and within the high value Conservation Area of Shorne Village (CA9), on the eastern edge of the study area. The listed buildings located within CA9 are as follows:
- a. LB13 Grade II* listed *Church of St Peter and St Paul*
 - b. LB17 Grade II* listed *Little St Katherine's*
 - c. LB1 Grade II listed *Chapel of St Katherine*
 - d. LB2 Grade II listed *Harmony Hill and the Post Office*
 - e. LB14 Grade II listed *The Old Parsonage*
 - f. LB15 Grade II listed *Pipe's Place*
 - g. LB16 Grade II listed *Front Garden Wall and Gate Piers to Pipe's Place*
 - h. LB18 Grade II listed *St Katherine's House*
 - i. LB20 Grade II listed *8 and 10, The Street*

- j. LB21 Grade II listed *Prospect Cottage*
- k. LB104 Grade II listed *The Old Vicarage*
- l. LB112 Grade II listed *Shorne War Memorial*

- 6.4.151 A number of key views contribute to the value of Shorne Conservation Area (CA9) – one such external view (identified in the Conservation Area Appraisal (Gravesham Borough Council, 2017d)) overlooks the land within the Order Limits (Application Document 6.2, Figure 6.6, Viewpoint S-32). This wide-ranging panoramic view encompasses the arable chalk landscape in its foreground (small arable fields, followed by the open prairie fields and golf course within the Order Limits), reclaimed marshland and the River Thames in the middle distance, and distant views of the wider Essex landscape beyond. The view contains a wide-ranging mix of agricultural, industrial, infrastructure and residential elements. The foreground is predominantly agricultural, apart from prominent electricity pylons and the ‘Thames View Crematorium’ (immediately to the north of the Order Limits). This view makes a minor contribution to the overall value of the Conservation Area, through its aesthetic value.
- 6.4.152 The Grade II listed *Chapel of St Katherine* (LB1) was a chantry chapel suppressed during the Dissolution in 1545 and was in use as a malthouse by the 18th century. The chapel is located on Malthouse Lane and attached to *St Katherine’s House* (LB18). The area around St Katherine’s Chapel originally formed a northern satellite to the village until it later merged with the main village of Shorne. The chapel (LB1) shares group value with *St Katherine’s House* (LB18) and *Little St Katherine’s* (LB17). They all form an important group within Shorne Conservation Area (CA9) and contribute to the village’s character and appearance which has aesthetic and historical value. These assets (LB1, LB17, LB18) are of high value. Their setting is influenced by their location within Shorne and by their relationships and intervisibility with each other. The setting of this group of assets is focused on Forge Lane and Malthouse Lane, along with the surrounding rural landscape of the steep north-facing slope on which they are situated. This setting contributes to their aesthetic value. The topography allows some long-distance views to the Thames to the north and north-west, due to the undulating topography of the land within the Order Limits. However, while potentially visible in seasonal glimpsed views from the upper storeys of some buildings, glimpses of land within the Order Limits is not considered to contribute to the value of these assets.
- 6.4.153 *The Church of St Peter and St Paul* (LB13) is a high value Grade II* listed 13th century church located at the south-west end of Shorne (CA9) Conservation Area, approximately 620m to the east of the Order Limits. Located just off Butchers Hill, the church is surrounded by its own churchyard. This forms its immediate setting, which contributes to its value through its functional relationship with Shorne Village. Although tall trees enclose the eastern side of the churchyard, the church has views south across the valley sides. This setting is more constrained to the west by intervening vegetation and does not extend to the land within the Order Limits. The setting of the associated Grade II listed *Old Parsonage* (LB14) is a 19th century replica of an

18th century building which burnt down. Its setting is more constrained by surrounding trees and is influenced by its close proximity to the Church of St Peter and St Paul which contributes to its high value.

- 6.4.154 The high value Grade II listed *Baynards Cottage* (LB78) is located in the hamlet of Upper Ifield between Shorne and Thong. This asset dates to the 17th century or earlier although it was re-clad in the early 19th century and new windows were put in during the 20th century. It is built of red brick with grey headers, with a weatherboarded first floor and a half-hipped clay-tiled roof (although the rear slope has modern pantiles), and, is located immediately south-east of the Order Limits on the Shorne Ifield Road, to the north of Randall Wood. It has evidential, historical and aesthetic value for its use of traditional materials and vernacular architecture. The rural setting of the asset contributes to its aesthetic value and the principal elevation of the asset directly overlooks the land within the Order Limits, which forms part of the rural landscape to the north-west.
- 6.4.155 The northern edge of the medium value Thong Conservation Area (CA10) extends within the Order Limits. It is located outside the south-eastern suburbs of Gravesend and comprises a small historical settlement located along Thong Lane, a north-south aligned minor road. The A2 road, the Roman Watling Street, lies 500m to the south. CA10 contains one listed building, the high-value Grade II listed *White Horse Cottage* (LB22). This house dates to the 17th century or earlier and is a two-storey timber-frame and brick structure with an oversailing first floor supported on brackets and a pillar. The ground floor is rendered, the first floor is weatherboarded and it has a half-hipped clay-tiled roof. Where visible, the red brick is laid in a Flemish bond with lime mortar. It has evidential, historical and aesthetic value for its use of traditional materials and vernacular architecture. The rural setting of White Horse Cottage, which includes the land within the Order Limits to the east, south and west, contributes to its value.
- 6.4.156 Thong Conservation Area (CA10) contains both working modern farm buildings and traditional former farm buildings along with estate cottages and modern residences. The northern half of the Conservation Area features a small, planned settlement ('Homes for Heroes') which is discussed further below (see descriptions of assets 1561, 4401 to 4403, 4597 to 4600). The built form and open spaces within Thong contribute to its historical and aesthetic value as a Post-Medieval agricultural hamlet, expanded with an early 20th century post-war social housing scheme with an agricultural focus.
- 6.4.157 Thong is located within a "Low Brightness" Mapped Lighting Area which contributes to its rural character and sense of visual tranquillity at night, and it is located adjacent to the "Dark Landscape" of Shorne Woods Country Park. This makes a minor contribution to its illustrative historical value as a rural settlement. However, it should be noted that the night sky does already contain light glow from Gravesend (Figure 7.18, Application Document 6.2).
- 6.4.158 In terms of noise and tranquillity, CPRE tranquillity mapping shows that Thong is not located in an area considered "most tranquil" (Figure 7.5, Application Document 6.2). Noise monitoring carried out by the Project shows noise levels of 60 to 65dB in the vicinity of Thong Lane due to road traffic. However, the countryside surrounding Thong is largely quiet (below 45dB) apart from the southern part of the Conservation Area in the direction of the A2 (55 to 60dB).

The somewhat tranquil atmosphere of Thong makes a minor contribution to its aesthetic value.

- 6.4.159 Thong Conservation Area (CA10) also derives value from its setting, which includes the land within the Order Limits in all directions and contributes to its aesthetic value. It is surrounded by a gently rolling agricultural landscape, with open arable land on all sides (although the suburbs of Chalk encroach to the north-west) and external views of these areas are apparent to the east and west when travelling through Thong (although this landscape contributes to the value of the Conservation Area regardless of whether it is visible or not). In particular, the higher ground of Shorne Woods Country Park forms a prominent green backdrop to the east. The Conservation Area Appraisal (Gravesham Borough Council, 2017e) also identifies key internal and external views such as along Thong Lane within the village and looking into Thong from the north and south. There are also key views looking towards the village from Claylane Wood to the west, from Watling Street to the south-west and from the edge of Shorne Woods Country Park to the east. These views and approaches contribute to the character of the asset, particularly its key characteristic of appearing “islanded” (ibid) within a wider landscape.
- 6.4.160 A set of semi-detached houses with barns and gardens (1561, 4401, 4402, 4403, 4597, 4598, 4598, 4599, 4600) are present along Thong Lane in Thong Conservation Area (CA10). They are non-designated assets of low value. Built around 1922–1923 by London County Council as part of the ‘Homes for Heroes’ scheme, a number of other such buildings are present within the study area. The houses were intended to provide homes and smallholdings for soldiers who had been injured during WWI. The houses were each built within a 10-acre plot of land with an associated barn. They derive much of their value from the architectural interest and historical value of their physical fabric. They also derive value from their setting which consists of the rural landscape to the east and west. The landscape setting makes an important contribution to their illustrative historical value as planned rural homesteads, as does their location within the semi-rural village of Thong. The land within the Order Limits includes rural land encircling Thong which contributes to the value of its built heritage.
- 6.4.161 A solitary pair of semi-detached former ‘Homes for Heroes’ are located on the Shorne Ifield Road around 200m east of the Order Limits (4404). Two further groups of ‘Homes for Heroes’ are located to the east of Chalk: the second group comprising a mixture of surviving houses and barns is dispersed along Chalk Lane around 230m east of the Order Limits (4405, 4344, 4345, 4346, 4347, 4601, 4602, 4605, 4607); and the smaller third group which is located along Castle Lane around 90m west of the Order Limits (4406, 4407, 4408, 4603, 4604, 4606). These groups of assets are non-designated assets of low value and they are not considered to be sensitive to development within the Order Limits. For (4404), the Order Limits does not form part of the immediate surrounding or associated land which contributes to its value. For (4344, 4345, 4346, 4347, 4405, 4406, 4407, 4408 and 4601 to 4607), the land within the Order Limits does form part of the adjacent land which is marked on the 1933 25-inch Ordnance Survey map as ‘Smallholdings’. The land within the Order Limits therefore has a former historic functional association with these assets and makes a minor contribution to their historical value.

- 6.4.162 The low value non-designated Thong Mead (4349) is situated on the eastern side of Thong Lane, c. 170m south of Thong Conservation Area (CA10) and c. 30m to the east of the Order Limits. This two-and-a-half storey house is built of redbrick with a hipped clay-tiled roof, dormers and a pair of axial redbrick chimney stacks. It is a good example of a well-to-do 1920's/1930's rural residence. It was, at one point, the home of A. G. Baker, who was appointed Forest Surveyor in Kenya in 1907 and subsequently gave evidence to the Kenya Land Commission in 1933. In addition to its architectural value, it also derives historical value from its associations with 20th-century British colonialism.
- 6.4.163 The medium value, non-designated Thong Lodge (4348) is located c. 140m north-east of Thong Mead. Thong Lodge was constructed in the 1820s to a design by the son of prominent landscape architect, Humphry Repton. It was previously known as Park Keeper's Lodge and it was located adjacent to a former drive between Thong Village Conservation Area (CA10) and Cobham Hall (RPG1). Thong Lodge is roughly rectangular in plan. To the south is a single-storey element and to the north is a two-storey octagonal tower with a taller brick chimney stack. The building is constructed of brick with a slate roof and features moulded stone window surrounds and hoods, a single-storey projecting porch in the northern elevation, and stone crests high on the tower elevation which is surmounted by crenelations and stone finials. As a fine example of an early 19th-century parkland lodge, it derives its value largely from the historical, aesthetic and architectural value of its built fabric and ornamental features. It also derives some value from its setting, notably Shorne Woods Country Park and Cobham Hall (RPG1) with which it formerly had a historic functional association. The surviving section of the drive to the west and views north-west to Thong also contribute to its historical value, as does the associated former stable to the south and matching brick walls to the north. The Order Limits forms part of the agricultural landscape to the west and north-west which makes a minor contribution to its aesthetic value.
- 6.4.164 The medium value Queen's Farm (CA8) Conservation Area is located outside the eastern edge of the 1km study area but is within the landscape study area. The asset is located approximately 1.1km east of the Order Limits (the below-ground element) and approximately 1.7km north-east of the South Portal. There are no listed buildings within this Conservation Area (CA8), but its interest derives from the aesthetic, evidential and historical value of the farmhouse, farm buildings, yards and workers' houses that survive within their historic rural setting. Key views into and out of the asset, identified within the Conservation Area Appraisal (Gravesham Borough Council, 2017c), do not include the area within the Order Limits. These key views are primarily focused northward, toward the River Thames.
- 6.4.165 Around the north of the South Portal, there are three groupings of high value listed buildings, located at Chalk (LB23, LB24, LB26, LB100), along Lower Higham Road/Lower Road (LB19, LB25, LB30, LB99, LB103) and around Church Lane (LB27, LB28). The buildings are as follows:
- a. LB27 Grade II* listed *Church of St Mary*
 - b. LB28 Grade II listed *East Court Farmhouse*

- c. LB19 Grade II listed *Green Farm Granary*
- d. LB103 Grade II listed *Green Farm House*
- e. LB23 Grade II listed *54-58, Vicarage Lane*
- f. LB24 Grade II listed *Readers*
- g. LB25 Grade II listed *Filborough Farmhouse*
- h. LB26 Grade II listed *1, Chalk Road*
- i. LB30 Grade II listed *Granary at Little Filborough Farm*
- j. LB99 Grade II listed *Barn to North West of Filborough Farmhouse*
- k. LB100 Grade II listed *44, Chalk Road*

- 6.4.166 The high value Grade II listed *1, Chalk Road* (LB26) has a plaque over the front door commemorating a visit by Charles Dickens, for which it has artistic and historical value. Assets LB23 (*54-58 Vicarage Lane*), LB26 (*1, Chalk Road*), and LB100 (*44, Chalk Road*) are all high-value Grade II listed buildings and have historical value as rural, vernacular buildings. LB23 (*54-58 Vicarage Lane*) faces west onto Vicarage Lane, which adds to the historical character of the area. However, the original setting of these assets has been largely eroded by modern suburban housing. The settings of these listed buildings do not extend to the land within the Order Limits.
- 6.4.167 The high value Grade II listed *Readers* (LB24) is a late 15th- or early 16th-century hall house with later modifications. It principally derives its value from its historical and architectural value as a Late Medieval hall house. It is T-shaped in plan and two storeys in height. Originally a rectangular-plan timber-framed building it has since been infilled with brick with a projecting northern extension added in the early 20th century. The clay-tiled roof retains smoke louvres which suggests its medieval origin. The northern extension has an external brick chimneystack, a part-tile-hung upper storey and a stone Tudor-style doorway. The Order Limits historically formed part of the rural landscape to the north and east of the asset. However, the building does not have a surviving functional link with the surrounding landscape and the spatial relationship has been greatly reduced by the construction of the surrounding 20th-century residences. The setting of *Readers* is now largely suburban in character. While glimpses of the landscape to the north (including the Order Limits) are possible from *Readers*, between the houses on the northern side of the Lower Higham Road, these glimpsed views do not contribute to the value of the asset.
- 6.4.168 The high value Grade II listed buildings LB25 (*Filborough Farmhouse*), LB30 (*Granary at Little Filborough Farm*), LB99 (*Barn to North West of Filborough Farmhouse*) are located adjacent to the Order Limits on Lower Higham Road and approximately 0.8km north-east of the South Portal. The *Granary at Little Filborough Farm* (LB30) is sited next to *Filborough Farmhouse* (LB25) and the barn (LB99). They share historical group value as a historic farmstead which is enhanced by the immediate agricultural setting of

the assets. The surrounding landscape is largely flat and open and their settings extend to the land within the Order Limits.

- 6.4.169 The high value Grade II listed *Green Farm House* (LB103) and *Green Farm Granary* (LB19) represent a historic farmstead which is of aesthetic and historical value. The assets are sited in a group to the east of Green Farm Lane with which they share their name; this too contributes to their historical value and forms part of the assets' setting. The immediate flat, open agricultural landscape also contributes to their value through its historical and functional association with the farmstead. However, the setting does not extend to the land within the Order Limits.
- 6.4.170 The high value Grade II listed *East Court Farmhouse* (LB28) is located off Church Lane between the A226 and Lower Higham Road. This two-storey L-shaped farmhouse dates to the 18th century and is built of red brick with a hipped clay-tiled roof. It presents three-bay sash window fronts to the west and south. The building has an 'unusual' doorcase with pilasters, a moulded surround, projecting cornice and a rectangular fanlight. The house is a fine example of a sizeable 18th century vernacular farmhouse from which it principally derives its aesthetic and historical value. Its setting also contributes to its value, principally from the associated curtilage buildings (although some have been adapted for business use) and the surrounding landscape of small and large rectilinear fields. The land within the Order Limits forms part of the agricultural landscape around 285m to the west, although due to a slight rise in topography combined with intervening vegetation, there is not a strong visual connection.
- 6.4.171 The high value Grade II* listed *Church of St Mary* (LB27) is also located on Church Lane, around 425m south of East Court Farmhouse and around 175m north of the Order Limits. The chancel is the earliest part of the building and dates to the late 11th or early 12th century. Other elements of the interior date to the late 12th and mid-13th centuries. The tower and porch were constructed in the 15th century. The tower, of three stages with a prominent south-west stair turret and embattled parapets, is 'an important landmark'. The church was restored in the 19th and 20th centuries. Overall, it is constructed of flint rubble with stone dressings. There are a number of surviving Medieval internal fixtures and windows.
- 6.4.172 The *Church of St Mary* (LB27) is an example of an early post-Conquest parish church with a late 12th century aisle and evidence for a 13th century south nave aisle; a 15th century tower and porch with a grotesque sculpture; rare evidence of a south aisle, removed in the late 18th century; and a 13th century trefoiled piscina and single sedilia in the chancel. These architectural elements contribute to its aesthetic, historical and evidential value. It also has communal value as a parish church and local landmark. The asset derives some value from its setting, principally the surrounding churchyard, its location on Church Lane and the surrounding rural landscape of small and large rectilinear fields and woodland to the south. However, the Thames View Crematorium to the east detracts from its setting. Views of the church tower within the landscape contribute to its aesthetic and historical value, to varying degrees. The land within the Order Limits form part of the surrounding agricultural landscape and there are views of the church tower from PRoWs along the higher ground within the Order Limits.

- 6.4.173 To the south-east of the South Portal the high value Grade II listed *Crutches Gate Cottage and Farmhouse* (LB126) is located around 80m to the north and 180m to the north-east of the existing routes of the A2 and M2 respectively. The asset is around 100m north-east of the Order Limits. This 18th-century two-storey building fronts onto Old Watling Street to the south and is constructed of red brick with grey headers. It is subdivided into two properties and its clay-tiled roof is half hipped on one side. It is an example of a local vernacular 18th-century farmhouse, from which it derives aesthetic and historical value. It also derives some value from its setting, primarily from its location on Old Watling Street nearby former farm buildings of Crutches Farm and the surviving open landscape to the north and north-west. Although the land within the Order Limits forms part of its setting (as the A2/M2 and roadside planting) it does not contribute to the value of the asset.
- 6.4.174 A number of other high value assets are located south of the River Thames within the 1km study area. Please refer to Annex A of the DBA (Appendix 6.1, Application Document 6.3) for additional information on their location, setting, and value. They comprise:
- a. LB124 Grade II listed *Jeskyns Court*
 - b. LB125 Grade II listed *Jeskyns Court Granary*
 - c. LB180 Grade II listed *Knights Place Farmhouse*
 - d. LB312 Grade II listed *Dovecot at Lodge Farm*
 - e. LB321 Grade II listed *Barrelled Lock Chamber, Sea Walls, Swing Bridge, Locks and Canal Basin*
 - f. LB327 Grade II listed *The Obelisk*
 - g. LB328 Grade II listed *Tudor Cottage*
- 6.4.175 The low value North Kent Railway (1282) and the low-value Thames and Medway Canal (1449), are located north of Lower Higham Road close to the south bank of the River Thames. They are both aligned east to west and cross the land within the Order Limits. The canal was built with the intention of preventing coastal attacks on shipping, but part of the canal quickly fell into disuse with the building of the railway.
- 6.4.176 The medium-value 19th-century Milton Rifle Range (1422) is located partially within the Order Limits, located between the Thames and Medway Canal and the River Thames.
- 6.4.177 A number of non-designated built heritage assets are located along the Shorne Ifield Lane:
- a. Medium value (1135) Randall Bottom (farmstead)
 - b. Medium value (1140) Outfarm in Upper Ifield
 - c. Medium value (1139) Ifield Farm (Ifield Place)

- d. Low value Second World War spigot mortar emplacements (1424) and (1455) located on Shorne Hill overlooking the former Gravesend Airfield site and with views towards the River Thames.

6.4.178 Adjacent to the A226 in close proximity to the Order Limits are a number of non-designated built heritage assets of low value:

- a. Asset (1143) Court Lodge Farm, from which only the farmhouse survives
- b. Asset (3052) a Milestone on Gravesend Road
- c. Asset (4592) Barrett's Folly, a 19th-century house

6.4.179 In the wider area north of the A226, located outside the 1km study area but within the landscape study area, are three low-value built heritage assets:

- a. Asset (4279) Queen's Farm – assessed as low rather than medium value due to the degree of loss of historic structures, located within Queen's Farm Conservation Area (CA8)
- b. Asset (4272) King's Farm, in a ruinous state.
- c. Asset (4293) the British Uralite Factory.
- d. Assets (4216) and (4217), two bridges over the Thames and Medway Canal

Historic landscape – South of the River Thames

6.4.180 The historic landscape of the Project has been considered using a holistic approach aligned with the European Landscape Convention's (ELC) definition of landscape as '*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*' (ELC, Chapter I, Article 1). This approach makes use of nationally recognised Historic Landscape Characterisation (HLC) data to identify 'Historic Landscape Types' (HLTs) within the Project and its surrounding areas, which have been divided into individual 'Historic Landscape Units' (HLUs) across the Project (see Figure 6.3, Application Document 6.2). Using this approach, HLTs and HLUs within the Order Limits and study area south of the River Thames have been organised thematically in to the following historic landscape categories which are assessed:

- a. Reclaimed land
- b. Woodland
- c. Parkland, commons and recreational land uses
- d. Farming
- e. Settlement
- f. Industry and infrastructure
- g. Military activity and defence

Reclaimed land

- 6.4.181 This landscape is of medium value. Land within the vicinity of the Project has been adapted and managed through farming for thousands of years and continues to dictate the landscape today. Much of this is low-lying marshland reclaimed from the flow of the River Thames and protected from the tide by flood defences. There are four areas within the Project which compose this character:
- Reclaimed marshland in the form of small rectilinear enclosures (Medieval to Post-Medieval); Eastcourt Marshes, part of Westcourt Marshes, Great Clayne Marshes, part of Filborough Marshes (HLT ref. V)
 - Reclaimed marshland in the form of small irregular enclosures (Medieval to Post-Medieval); part of Filborough Marshes (HLT ref. U)
 - Other reclaimed land (20th century): north-east of Eastcourt Marshes (HLT ref. Q).
 - Mud flats (natural deposits): land along the coastline not in the marshes (HLT ref. P).
- 6.4.182 The medium valuation of reclaimed land is based on its historical value for how land has been reclaimed and domesticated, as well as for evidential value based on techniques for the management of the land. For example, the layout and location of drainage ditches and sewers on the marshland.

Woodland

- 6.4.183 This landscape is of medium value. The Project study area within Kent contains several pockets of woodland, varying in size and date. In the vicinity of the Project, woodland areas are made up of the following main landscape types:
- Pre-19th century coppices; Great Crabbles Wood, Randall Wood, north and south of Randall Heath, Court Wood (HLT ref. I)
 - Pre-19th century woodland; Ashenbank Wood, Claylane Wood (HLT ref. F 'Other pre-1810 woodland')
 - 19th century plantations; Shorne Woods Country Park, (HLT ref. T)
 - 19th century coppices; Brewers Wood, Randall Heath (HLT ref. B)
- 6.4.184 Woodland archaeology, historic mapping and woodland naming origins define the historical and evidential value of woodland landscape types within the vicinity of the Project. These landscape types provide information on human interaction with the woodland south of the River Thames, through exploitation of resources for industry and recreational use.

Parkland, commons and recreational land uses

- 6.4.185 This landscape is of medium value. South of the River Thames it is largely focused in the parkland of Cobham Park, which was created prior to 1810 (HLT ref. J). The existing extent of the parkland is designated as a Grade II*

listed Registered Park and Garden (RPG1) and is characterised as late 18th and early 19th century ornamental gardens and pleasure grounds. The parkland is likely of 16th century origin with mapping available from the 17th century.

- 6.4.186 The wider Cobham estate originally extended beyond the boundaries of the RPG with the land being under the same ownership. However, division of the estate over time has resulted in dispersed land ownership and modern alterations, with the RPG remaining as the main recognisable feature of this landscape today. The existing parkland is illustrative of the character of how land has been managed, including woodland, for leisure purposes at the southern extent of the Project.
- 6.4.187 Cobham Park (RPG1) has been assessed as a high-value designated asset within the built heritage section of this report. From a historic landscape perspective, the valuation is reflected by the park's time depth and is illustrated as an isolated HLU on Figure 6.3 (Application Document 6.2). However, the historical value of the wider landscape overall has diminished when considering the amount of division and modern alteration of the land previously occupied by the much larger Cobham estate, which extended to the north of RPG1. Therefore, the medium valuation of this landscape as a whole is justified by its lack of time depth across the southern part of the Project.

Farming

- 6.4.188 This landscape is of low value. Farming of the land has been a continuous means of managing the landscape south of the River Thames for centuries. Although evidence as early as the Mesolithic is present within the study area for human interaction with the landscape, an understanding of farming is present from the Medieval period onwards. Character types within farming are influenced by field patterns formed of five identifiable types:
- a. Medium regular fields with straight boundaries (parliamentary type enclosures, boundary changes in 19th and 20th century – HLT ref. D); south of the A2 and around Cobham Village.
 - b. Prairie fields (19th century enclosures with extensive boundary loss – HLT ref. H); large areas of agricultural land around Shorne, east of Thong and north of the A226 Gravesend Road. Land at Blue Bell Hill and Burnham where nitrogen deposition compensation sites are located.
 - c. Fields predominantly bounded by tracks, roads and other rights of way (resulting from Post-Medieval informal enclosures – HLT ref. A); land around Henhurst, Singlewell, Thong and south of the A226 Rochester Road, including Southern Valley Golf Course.
 - d. Small rectilinear fields with wavy boundaries (17th and 18th century enclosures – HLT ref. L); land immediately around Shorne and extending north of A226 Gravesend Road.
 - e. Small regular fields with straight boundaries (parliamentary type enclosures formed by 19th and 20th century enclosure – HLT ref. M); north of the A2/M2 junction to the east of Brewers Wood.

6.4.189 The farming landscape south of the River Thames has historical value for understanding how the land has been managed in the past. However, its low valuation reflects the lack of time depth evident in changes to field systems.

Settlement

- 6.4.190 This landscape is of medium value. Settlement activity and associated municipal parishes provide an understanding of how communities have designed and managed their landscapes. South of the River Thames, there are three distinct settlement character types:
- a. Scattered settlement with paddocks (Post-1800 extent – HLT ref. K); Thong, Shorne Ifield Road, south of Shorne either side of Peartree Lane, north of A226 Rochester Road
 - b. Post-1810 settlement (HLT ref. G); Cobham village, Singlewell, Shorne, Higham, Chalk, Denton, Gravesend
 - c. Village/hamlet 1810 extent (HLT ref. X); Shorne and Higham.

6.4.191 Some settlement areas of earlier villages/hamlets or pre 1801 settlement areas, such as Singlewell, Ifield and Denton have been consumed by Gravesend's expansion in the modern period. However, the presence of Thong, Shorne, Cobham and Higham provide the time depth of settlement activity south of the River Thames. These settlements have all seen internal expansion but characteristically maintain their isolated location within the landscape and as identifiable small villages or hamlets. Equally, the scattered settlement activity focused around the marshland areas further to the north, such as along Green Farm Lane, illustrates an early 19th century industrial settlement type within the landscape.

6.4.192 The medium valuation of the settlement landscape is derived from its time depth and contribution to understanding how the landscape has been shaped by past communities.

Industry and infrastructure

6.4.193 The industrial landscape is of low value. It holds historical and evidential value for its contribution to the local economy of settlements, but its presence is limited within the character of the Project's landscape, south of the River Thames.

6.4.194 Evidence of early industrial extraction of materials and minerals (such as chalk, stone, gravel, sand, and clay) is now no longer visible in the landscape, hidden by the infilled or overgrown nature of former extraction pits. These pits are now shrouded either by woodland or field systems and it is these latter character types that are the dominating landscape character today. In relation to the Project, the industrial landscape type south of the River Thames is represented by industrial complexes and factories (HLT ref. O), such as an industrial works located on Lower Higham Road to the south-east of Filborough Marshes.

6.4.195 Historic infrastructure, such as Watling Street Roman Road (1680) (now the A2), the Thames and Medway Canal (1449) and North Kent Railway (1282) illustrate great time depth within the current landscape. These examples of infrastructure have contributed to the expansion of settlement and industry over time and still

influence the character of the landscape today. These assets are assessed in the archaeological remains and built heritage sections of this report.

Military activity and defence

- 6.4.196 This landscape is of low value. Despite the area south of the River Thames having a rich military history from the Post-Medieval period, the presence of military activity in the landscape within the vicinity of the Project is limited. An example of this would be Milton Rifle Range (1442) located at Eastcourt Marshes and within the Order Limits. Although the prolonged use of the rifle range has contributed to the landscape's time depth, it seemingly assimilates into the wider landscape character of small rectilinear enclosures (HLT ref. V) and does not have a prominent influence on the current landscape in the same way that extant military forts do in other areas of the Project. Another example is the former site of Gravesend Airport and RAF base (1459) which has been largely engulfed by the urban development of Riverview Park to the west of Thong Lane.

River Thames

Archaeological remains

Summary

- 6.4.197 No designated archaeology remains are located within the Order Limits, and none are located within 1km study area in the River Thames, apart from a timber jetty on the north bank of the Thames which forms part of the scheduled area of *Coalhouse Fort* (SM14).
- 6.4.198 Within the River Thames outside the Order Limits, there are 12 high-value non-designated archaeological assets; 8 medium-value non-designated archaeological assets, 52 low-value non-designated archaeological assets; and 87 negligible-value non-designated archaeological assets.
- 6.4.199 The 12 high value non-designated archaeological sites relate to shipwrecks associated with the 1667 Dutch attack on the Hope. Their exact locations are unknown but are considered of high value for their potential to yield evidence of military ships of the 17th century.
- 6.4.200 Eight non-designated medium value assets are recorded within the River Thames and the 1km study area. The majority of these are peat bogs along the southern foreshore considered for their archaeological potential, including environmental evidence.
- 6.4.201 A total of 52 non-designated archaeological sites of low value are recorded within the River Thames and the 1km study area. The majority of these are Roman pottery vessel findspots, Post-Medieval and Modern wreck sites and WWII sites. Many non-designated wrecks and hulks are recorded within the Thames and along the banks, but none are recorded within or immediately adjacent to the Order Limits.
- 6.4.202 A total of 87 non-designated archaeological sites of negligible value are recorded within the River Thames and the 1km study area. These include Neolithic and Roman findspots, the speculated site of a deserted Medieval village (670) and Modern beacon sites.

Geological deposits of archaeological interest

- 6.4.203 Within the Thames floodplain and tidal Thames, zones PQ-8 and PQ-9 of medium value contain deep Holocene alluvium and associated peat deposits overlying late Devensian fluvial gravels and isolated fluvial channel-fill deposits from the late Middle and Late Pleistocene, partly cut through by the current water-filled Thames channel. Recent geoarchaeological assessment of 25 boreholes has confirmed this sequence with Holocene peat deposits recorded in five boreholes (OWO6015, OWO6016, OWO5002, OWO5004 and OWO6013).
- 6.4.204 Zone PQ-8 contains Holocene alluvium from the Mid-Late Holocene overlying a buried land surface. Sediments beneath the Holocene are likely to be Pleistocene in age and probably form part of the East Tilbury Marshes Gravel. Late Upper Palaeolithic remains are known from the base of alluvium at several sites along the southern side of the Thames floodplain (e.g. 3406). Also, nearby records of Mousterian *bout coupé* handaxes from Tilbury (4028) suggest there may be unrecognised deposits and remains of this era in this zone. Zone PQ-8 is of high value.
- 6.4.205 Within zone PQ-9, thick intercalated sequences of Holocene peats (3292, 4295, 4303, clay/silts and occasional sands resting on coarse flint Devensian (Shepperton) gravels have been recorded. Late Upper Palaeolithic remains known from base of alluvium at several sites along southern side of Thames floodplain (e.g. 3406). Also, nearby records of Mousterian *bout coupé* handaxes from Tilbury (4028) suggest there may be unrecognised deposits and remains of this era in places, although most Palaeolithic remains are most likely derived and transported (4036). The Holocene alluvial and peat deposits are predominantly Late Prehistoric to Recent in date and are discussed in detail in Appendix 6.14 (Application Document 6.3). Zone PQ-9 is of medium value.

Built heritage

- 6.4.206 There are no built heritage assets located within the River Thames part of the study area of the Project.

Historic landscape

- 6.4.207 There are no historic landscape character areas within the River Thames part of the study area of the Project.

North of the River Thames

Archaeological remains – North of the River Thames

Summary

- 6.4.208 In the 1km study area north of the River Thames (including the landscape study area) there are 12 scheduled monuments, of which ten are high value (SM1, SM2, SM3, SM4, SM5, SM6, SM7, SM9, SM11, SM12) and two are very high value (SM13, SM14). A large proportion of the high-value Orsett cropmark complex (SM1) is within the Order Limits. A very small part of the very high -value Coalhouse Fort Battery and Artillery Defences (SM14) extends within the Order Limits.

- 6.4.209 To the north of the River Thames there are ten high value non-designated archaeological sites within the Order Limits, and one high value non-designated archaeological site outside the Order Limits within the 1km study area.
- 6.4.210 To the north of the River Thames there are 107 medium value non-designated archaeological sites within the Order Limits, and 38 medium value non-designated archaeological sites outside the Order Limits within the 1km study area.
- 6.4.211 To the north of the River Thames there are 247 low value non-designated archaeological sites within the Order Limits, and 112 low-value non-designated archaeological sites outside the Order Limits within the 1km study area.
- 6.4.212 To the north of the River Thames there are 62 negligible value non-designated archaeological sites within the Order Limits, and 121 negligible-value non-designated archaeological sites outside the Order Limits within the 1km study area.
- 6.4.213 Two scheduled monuments are on the Heritage at Risk Register (Historic England, 2020a). *Coalhouse Fort* (SM14) which is of very high value is on the register because it has suffered severe water damage to the gun emplacements and the barrack blocks are in severe disrepair. The high value Orsett cropmark complex (SM1) designated area straddles the A13 corridor and most of the rest of the area is under arable cultivation. Historic England's Heritage at Risk Register identifies ploughing as the principal vulnerability of (SM1) and describes its condition as "declining" and "generally unsatisfactory with major localised problems". Both of these scheduled monuments are partially located within the Order Limits.
- 6.4.214 *Tilbury Fort* (SM13) is on the north bank of the river, opposite Gravesend. It is located around 230m south of the Order Limits. *Coalhouse Fort* (SM14) is located opposite *Cliffe Fort* (SM15) and the non-designated Shornemead Fort (1878) on the south bank of the river. *Coalhouse Fort* is located on the north bank of the river to the east of the Order Limits. *Tilbury Fort* (SM13) and *Coalhouse Fort* (SM14) are of very high value. SM15 and (1878) are of high value. The value of these assets derives in large part from the evidential, historical and aesthetic value of their built fabric and below-ground archaeological remains, along with their communal value as heritage tourism sites for SM13 and SM14 in particular. Their setting and group value also make a very important contribution to their overall value.
- 6.4.215 Inland from *Coalhouse Fort* (SM14) there are two further scheduled monuments with a former military defence purpose. These are *East Tilbury Battery* (SM11) and the *Second World War anti-aircraft battery at Bowaters Farm* (SM9). These assets are of high value due to their evidential and historical value.
- 6.4.216 The fortifications along the River Thames (SM11, SM13, SM14, SM15, SM17, 1878) hold historical and group value, and illustrate the manner in which the River Thames was fortified from the 16th century through to the 19th century. Their value (including the contribution made by their setting) is discussed in greater detail in Appendix 6.1: DBA and Appendix 6.4: Coastal Fortifications Statement of Significance (Application Document 6.3).

- 6.4.217 The setting of the WWII anti-aircraft battery at Bowaters Farm (SM9) contributes to the value of the monument through its illustrative historical value. The setting is influenced by its location within open agricultural land with clear 360-degree views towards the sky and visibility towards and above the River Thames. The monument also holds group value as part of an extensive network of anti-aircraft military defences in the area, providing a pattern of crossfire with other batteries including *East Tilbury Battery* (SM11) and *Coalhouse Fort* (SM14).
- 6.4.218 The scheduled earthworks to the west of the Church of St James in West Tilbury (SM5) are located immediately outside the Order Limits. The churchyard is located on the edge of a terrace and there is a length of bank and ditch, thought to be a former rampart and an indication of the site of a camp where, in 1588, Elizabeth I reviewed the preparation of her troops for the arrival of the Spanish Armada. The site is also reported to be the location of the Anglo-Saxon Bishop Cedda's palace. This asset is of high value primarily due to the evidential and historical value of its earthworks and below-ground archaeological remains. The adjacent 11th or 12th century Church of St James makes a minor contribution to its illustrative historical value as a site of Medieval activity, and the nearby Grade II listed Tilbury Hall also makes a minor contribution to this value as a site with great time-depth. The views over the lower-lying landscape to the south and south-west make a minor contribution to the asset's illustrative historical value as a possible high-status Medieval site and make a minor contribution to its overall value through its aesthetic value.
- 6.4.219 The high value cropmark complex at Orsett (SM1) is a multi-period site with activity primarily dating from the Bronze Age, Iron Age and Roman periods. A large part of SM1 has been subject to trial trench evaluation which identified a focus of activity along the northern edge of the scheduled area, extending northward out of the scheduled area across Stifford Clays Road. It is of high value primarily due to the evidential and historical value of its below-ground archaeological remains. The complex also includes 'ring ditches', most of which represent roundhouses although at least one is a ploughed-out ring barrow (confirmed by trial trenching). Several large pit-like cropmarks were identified which were previously thought to indicate the sites of Early Medieval sunken-floored buildings. However, most of the large pit-like cropmarks in WSI areas K and M proved to be of natural origin during the trial trench evaluation and no Early Medieval activity has been recorded. Previous geomorphological investigation of some natural pits close to Grey Goose Farm in 1980 concluded that they were periglacial features resulting from the injection of subsurface material into the surface layer of the ground during a period of cold periglacial climate.
- 6.4.220 The Bronze Age activity within SM1 appears to comprise occupation in the form of roundhouses and associated features, concentrated in the northern part of the scheduled area with an outlying round barrow to the south-west. An undated urnless cremation of a juvenile (either heavily truncated or a token deposit) was also recorded within SM1 outlying the settlement to the south. During the Late Iron Age, SM1 form an agricultural and industrial area associated with a farmstead located somewhere in the wider area. The majority of the rectilinear enclosures and linear boundaries appear to have originated during the Iron Age although a number appear to have been created during the Roman period.

Many enclosure ditches appear to have filled by natural silting and many have been recut multiple times, indicating long periods of Iron Age and Roman activity. The more substantial ditches in some areas of the asset include evidence for waterlogging (in some cases periodic, demonstrated by ‘gleying’ of some ditch fills), which means that there is potential for well-preserved organic remains to be present towards the base of some ditches. Trial trenching recorded some well-preserved animal bones.

- 6.4.221 The industrial activity includes evidence for pottery kilns and briquetage associated with salt-working. This activity appears to have continued through much of the Roman period, and artefactual evidence such as fragments of Spanish Amphora and Gaulish Samian ware indicate that the inhabitants of the nearby farmstead adopted a Romanised lifestyle and were part of a wider international trade network (although it should be noted that the majority of the artefacts indicate that internal trade within Britain formed the bulk of such activity).
- 6.4.222 The Iron Age and Roman activity at SM1 (and to a lesser extent the Bronze Age activity) continues north out of the scheduled area to the north of Stifford Clays Road for approximately 100m, recorded separately as high value non-designated heritage asset (247). An urned cremation of Roman date was also recorded within (247). Asset (247) includes evidence for what appears to be Roman possible industrial activity of unknown purpose comprising six parallel short but deep and shallow ditches. Another area of similar activity was recorded c. 300m of Stifford Clays Road (3615).
- 6.4.223 SM1 also derives value from its setting, including the associated archaeological remains described above. It is located within a wider landscape of Bronze Age, Iron Age and Roman occupation and agricultural activity. The surrounding non-designated archaeological sites make a minor contribution to its overall value (high value) through its historical and evidential value to add to the wider understanding of the Prehistoric and Roman settlement and funerary activity in the area of the Thames Terrace Gravels.
- 6.4.224 Three scheduled monuments are located within the 1km study area outside the Order Limits to the east of the proposed A13/A1089/ A122 Lower Thames Crossing junction. The first is the Neolithic causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6), which derives its high value primarily from the evidential and historical value of its below-ground archaeological remains. This asset has been identified from cropmarks and comprises below-ground archaeological remains only. It also derives some value from its setting. The monument is located on a natural platform on a terrace of Thames Gravels, overlooking the lower Thames Valley. More locally, it also overlooks a small north-west to south-east aligned valley; the monument is located at the edge of a plateau on the northern valley side. Archaeological trial trenching carried out by LTC has shown this value to have been a focus of activity through the Neolithic, Bronze Age, Iron Age and Roman periods, with some of the archaeological sites in the vicinity likely to have been associated in some way with SM6. The valley (which is readily appreciable from the asset) and the associated archaeological activity along it make a moderate contribution to its overall value through its historical and evidential value.

- 6.4.225 The setting of the causewayed enclosure (SM6) is also influenced by its location on a natural platform above the Thames terraces, which provides some views to the wider landscape and making an important contribution to its illustrative historical value as a Neolithic ritual site and Early Medieval burial ground. Views may once have been possible from this monument to the former site of a causewayed enclosure at Mucking around 2km to the south-east, on another hill separated by a small dry valley. However, these views are now screened by multiple intervening areas of vegetation.
- 6.4.226 Trial trench evaluation identified a range of Neolithic activity 340m to the south of the Neolithic causeway (SM6) and within the Order Limits. Contemporary activity to SM6 is marked by Essex HER and noted as asset (7). Enhancement of asset (7) was achieved through the identification of a concentration of activity which included a pit containing Plain Bowl pottery and struck flint of an Early Neolithic date; a further large pit of similar date, partly exposed by trenching; and an oval pit containing a small assemblage of Late Neolithic pottery. Enhanced understanding of Neolithic activity in proximity to SM6 has the potential to further contextualise the ceremonial landscape around the enclosure. Through association with the scheduled monument and its evidential value to contextualise the immediate landscape for SM6, trenching features identified as part of asset (7) remain assessed as high value.
- 6.4.227 The second is the *Springfield style enclosure and Iron Age enclosures south of Hill House, Baker Street (SM7)*. This asset has been identified from cropmarks and comprises below-ground archaeological remains only. Its value is primarily derived from the evidential and historical value of its below-ground archaeological remains. It also derives some value from its setting. The monument is located on a low flat-topped ridge on a sand and gravel terrace overlooking Orsett Fen to the north. Its location on a ridge is likely a strategic defensive location for the occupants, which makes a minor contribution to its illustrative historical value. Contextually, the monument sits towards the northern edge of an extensive Bronze and Iron Age landscape between West Tilbury and Orsett. This archaeological landscape makes a minor contribution to its evidential and historical value.
- 6.4.228 The third scheduled monument is *Bishop Bonner's Palace, Orsett (SM4)*, a ring and bailey earthwork which is speculated to be the site of a palace owned by the Medieval Bishop of London. This asset consists of earthworks visible as banks and depressions in the ground, and below-ground remains and derives its value primarily from the evidential and historical value of the earthworks and below-ground archaeological remains, although it also derives some value from its setting. The association of the cropmarks of a lost Medieval field system (1788), 830m north-west of SM4, is illustrative of the likely original Medieval setting of the asset, amongst agricultural land of Orsett Fen. The asset also has associative historical value with the *Church of St Giles and All Saints (LB135)* in Orsett; material from the palace was used to repair the church. Modern development has encroached within the setting to the south-east. The remaining rural land surrounding the asset makes a minor contribution to its illustrative historical value as a high-status Medieval site outlying the settlement of Orsett.
- 6.4.229 Within the study area associated with the Ockendon link section of the Project there are two scheduled monuments. The first, to the south-west of the Order

Limits, is a Roman barrow (SM12). It is located on a very slightly raised area of land to the west of the Mardyke and Orsett Fen and so could possibly be located on the edge of a territorial boundary. This 2nd century Roman burial mound is oval in plan with a rounded profile rising to a flat summit at a height of about 5m. It has a maximum diameter of 50m at the base where it is surrounded by a largely buried ditch, visible as a slight depression measuring up to 10m in width. It derives its value primarily from the historical and evidential value of its earthworks and below-ground archaeological remains. It also derives some value from its setting. It originally stood as one of three such barrows (along with asset (517) c. 430m to the south and asset (2074) c. 1.5km to the south) sited along the valley side at intervals of about 500m. The other two barrows have been destroyed, including their below-ground remains. However, one was archaeologically excavated and dated to the late 2nd century AD. SM12 now stands in isolation, but the valley topography and former sites of the other barrows (although visually screened due to the low-lying topography and intervening buildings) make a minor contribution to its overall value through its historical value.

- 6.4.230 The *Gatehouse and moat of South Ockenden Old Hall* (SM2) is located within the Order Limits. This scheduling covers a larger area than the Grade II listed *Moat Bridge and Gatehouse at South Ockendon Hall* (LB65). This asset derives its value primarily from the aesthetic, evidential and historical value of its built fabric, earthworks and below-ground archaeological remains. The setting of SM2/LB65 also contributes to its value, of which the associated buildings form an important part through a shared historical value. SM2/LB65 have group value with the later 19th century farmstead also named South Ockendon Hall to the west (which are not listed or scheduled). The asset's wider setting is mostly formed by agricultural land (including Medieval ridge and furrow earthworks approximately 300m to the north-east) interspersed with areas of woodland which makes a minor contribution to its illustrative historical value as a rural manorial site. Furthermore, the development of settlement activity in Essex during the Medieval period is believed to be focused around church and hall combinations. The historical associations between SM2/LB65 and the *Church of St Nicholas* (LB36), 822m to the west, also contributes to its value.
- 6.4.231 Within the Order Limits there are ten high-value non-designated archaeological sites which include some areas of non-designated remains associated with scheduled monuments. Asset (7) is a site which includes ditches, postholes, palisades, a possible structure, pits and a portal associated with the causewayed enclosure SM6; and (210) is an Early Medieval ring ditch and coffin inhumations and Bronze Age round barrows and post holes also recorded adjacent to SM6. These assets derive their value primarily from the evidential and historical value of their below-ground archaeological remains. They also derive value from their group value with SM6 and the surrounding below-ground prehistoric archaeological landscape.
- 6.4.232 Within the Order Limits approximately 870m south-west of SM6 is a non-designated Neolithic long barrow or mortuary enclosure (325). This asset derives most of its value from the evidential and historical value of its below-ground archaeological remains. The surrounding rural landscape containing extensive below-ground Prehistoric archaeological remains, makes a minor contribution to its overall value through its evidential and illustrative

historical value as an important funerary site. Asset (325) is assessed as high value.

- 6.4.233 Essex HER noted a range of Iron Age activity (207) within the land parcel containing the Neolithic causewayed enclosure of SM6. Trial trench evaluation within 207 identified a limited amount of Iron Age evidence which included an L-shaped ditch of middle Iron Age date, matching cropmark evidence and further middle Iron Age pottery from the surface of an unexcavated feature, a pit cluster of five pits, illustrating a circle feature of c.7m. Although the pits are undated, they could be a continuation of Iron Age activity. Asset (207) remains assessed as medium value.
- 6.4.234 Partially extending within the Order Limits to the south-west of Mucking is the high value asset (333), a substantial Bronze Age settlement enclosure. This asset derives most of its value from the evidential and historical value of its below-ground archaeological remains. The surrounding rural landscape, particularly the marshes and the River Thames to the south-east, makes a minor contribution to its overall value through its illustrative historical value as a Bronze Age settlement on a ridge overlooking marshy ground and waterways.
- 6.4.235 South Ockendon Old Hall (514) is a non-designated archaeological site of Medieval and Post-Medieval date within the Order Limits which includes and surrounds SM2. This asset derives its value largely from the evidential and historical value of its earthworks and below-ground archaeological remains. The surrounding agricultural land makes a minor contribution to its illustrative historical value as Medieval and Post-Medieval manorial complex. Asset (514) is assessed as high value.
- 6.4.236 A non-designated cropmark complex (2078) surrounds and includes SM7 and extends partially within the Order Limits to the west of Orsett. This asset derives its value largely from the evidential and historical value of its earthworks and below-ground archaeological remains as an important site which shows development from the Late Bronze Age through to the Late Iron Age. It also has group value with SM7 and other below-ground Prehistoric archaeological sites in the vicinity such as SM1, (261) and (268). The Bronze Age or Early Iron Age Springfield Enclosure SM7 appears to have been incorporated within a later Iron Age settlement enclosure (2078) and as such holds important archaeological evidence for the transition from the Bronze Age to the Iron Age and Late Iron Age. Asset 2078 is assessed as high value.
- 6.4.237 The non-designated churchyard of St Mary Magdalene in North Ockendon (2010) is located outside but immediately adjacent to the Order Limits. The churchyard abuts the former moated manor house, North Ockendon Hall (2090), part of whose 16th century garden wall borders the churchyard to the south. It derives significance from its evidential value for its Medieval archaeological remains and historical value through its relationship with the grade I listed church. Asset (2010) is assessed as high value.
- 6.4.238 As with the areas of former floodplain on the south bank of the River Thames, those areas on the north bank near the North Portal have potential to contain waterlogged organic remains dating from the Mesolithic period onwards. Many of these floodplain areas are also evidence of Post-Medieval land reclamation, comprising the draining of the marshes and construction of sea defence walls. The gravel terraces on either side of the river have very high

potential to contain evidence of human activity. Previous work, such as extensive aggregate extraction at Mucking near East Tilbury, shows evidence of human activity from all periods. This included find spots of Palaeolithic artefacts indicating that some of this will potentially be Palaeolithic (approximately 800,000 – 11,000 years ago).

- 6.4.239 A multi-period site is located on a gravel promontory above the West Tilbury Marshes (496). Originally recorded by the HER as an Early Medieval settlement site west of Gravel Pit Farm, archaeological trial trenching has found evidence for an extremely dense (amongst the highest density of settlement sites excavated by LTC) area of multi-period activity including: an undated unurned cremation which was not excavated; a Middle Neolithic pit with a sherd of Peterborough ware pottery; Middle Bronze Age to Iron Age settlement, an enclosure and salt-making activity; Roman settlement and salt-making activity; Early Medieval settlement including possible sunken-feature buildings and 5th to 8th-century pottery; and Medieval ditches suggesting agricultural activity and the presence of a settlement somewhere in the wider area. The highest density of remains is concentrated in the area alongside the woodland surround Buckland to the south-east, although it should be noted that activity of some periods (primarily Early Medieval settlement) appears dispersed over a wide area. It should also be noted that on the lower ground to the south-west the trial trenches did not reach the bottom of colluvium (which elsewhere on the site sealed Bronze Age activity beneath it). The Roman period finds also showed evidence of trade links with Kent and Gaul (the latter in the form of a small amount of Samian ware). It should be noted that all of the salt-making activity recorded on the site was in the form of finds of briquetage potentially ranging from the Bronze Age to the Early Medieval period; no salterns were recorded.
- 6.4.240 The site (496) also included some “unusual” finds (according to the excavators), principally chalk fragments in the surface of a number of large pits which were not excavated (which would have had to be imported from Kent or elsewhere) and a piece of organic-tempered Early Medieval pottery (part of a jar) incised with lattice-like decoration. Asset (496) has evidential value for multi-period settlement, salt-making industry and funerary activity across a huge depth of time and in the hinterland of important sites such as Mucking (c. 2.6km north) and SM6 (Causewayed enclosure and Anglo-Saxon cemetery 500m ENE of Heath Place, c. 3.6km north-west). Asset (496) also has evidential and historical value for important transitional periods; certainly the Bronze Age to Iron Age transition and perhaps most importantly from the Roman to Early Medieval transition, given the hints of potential 4th-century Roman activity and subsequent increase in 5th – 8th-century activity. The latter is an area which is under-studied nationally. Asset (496) is therefore assessed as high value for its evidential and historical value.
- 6.4.241 There are 107 medium-value non-designated archaeological sites within the Order Limits in the area to the north of the River Thames, which are listed below in chronological order. All of these assets derive their value principally from the evidential and historical value of their below-ground archaeological remains.
- a. Asset (3904) Findspot of a late Upper Palaeolithic long blade

- b. Asset (3903) a late Upper Palaeolithic long blade along with several other unusually large blades which may also date from this period
- c. Asset (3905) A very substantial assemblage of Mesolithic flint from buried soils, later pottery or other finds also present
- d. Asset (3908) Findspots of Mesolithic flints
- e. Asset (3599) Findspot of a Late Mesolithic backed flint bladelet redeposited in colluvium along with Bronze Age and Iron Age pottery
- f. Asset (3906) A small scatter of struck flints of Mesolithic character on a buried land surface
- g. Asset (3907) Tree throw holes and pits containing Mesolithic, Neolithic and Early Bronze Age flint and Neolithic and later prehistoric pottery
- h. Asset (3926) Poorly preserved crouched inhumation burial associated with small amount of Neolithic/late prehistoric worked flint and pottery
- i. Asset (167) – Late Neolithic to Medieval findspots from the M25 – Codham Hall Bund, Tank 1762 and Strip Widening
- j. Asset (330) – Neolithic pit and rubbing stone findspot, Mucking
- k. Asset (3619) Late Neolithic to Bronze Age funerary and possible ritual activity
- l. Asset (3914) Pits containing later Neolithic worked flint and middle Bronze Age pottery
- m. Asset (245) – Neolithic, Bronze Age, Iron Age, Roman features near Heath Place recorded during trial trench evaluation including trackways, pits, ring ditches, linear feature, a rectilinear enclosure and settlement activity
- n. Asset (335) – Neolithic to Roman activity including Roman rural settlement; industrial and funerary activity near Mucking including a double-ditched enclosure, granary, pottery kiln, metal working site, cemetery, and Neolithic mortuary enclosure and round barrows
- o. Asset (3572) – Bronze Age features
- p. Asset (219) – Bronze Age ring ditch at Nevilles Farm
- q. Asset (332) – Early to Middle Bronze Age barrow and burials, Mucking
- r. Asset (365) – Bronze Age, Linford – Cremation Cemetery (H)

- s. Asset (447) – Bronze Age cropmarks to the north of Mill House Farm. Including ring ditches, circular and rectangular enclosures, pits and trackways
- t. Asset (3553) – Bronze Age to Iron Age enclosed settlement
- u. Asset (3916) Bronze Age and Undated salt-making and other industrial activities
- v. Asset (104) – Bronze Age & Roman sites of Land at East Tilbury and Linford Area of Prehistoric ritual landscape and Roman field boundaries, which extends along the eastern side of a dry valley leading towards (SM6)
- w. Asset (160) – Bronze Age & Roman features at land adjacent to Walton Hall Farm, Linford, Stanford-le-Hope, including ditches and ring ditches.
- x. Asset (262) – Bronze Age and Early Medieval features west of Whitecrofts Farm including (3565) and (3566) recorded during trial trench evaluation and sunken-feature buildings, linear features, pits, postholes, gully, ditches.
- y. Asset (379) – Bronze Age to Iron Age features including ditches and field boundaries recorded during the Horndon to Barking Gas Pipeline – Site 4 archaeological works
- z. Asset (604) – Late Bronze Age to Roman farmstead settlement site at Ockendon Road, (Manor Farm), North Ockendon including enclosures; metal working and cremations
- aa. Asset (3918) Early or Middle Iron Age settlement activity, including some undated features that are likely to be related
- bb. Asset (207) – Iron Age features in the vicinity of Orsett – Causewayed Enclosure including pits, post-built structures and hollows
- cc. Asset (270) – Iron Age settlement including pits and post holes at Boyn Hill terrace, Orsett
- dd. Asset (334) – Iron Age hillfort settlement near Mucking including hut circles and a cemetery with cremations and inhumations
- ee. Asset (404) – Iron Age settlement including a granary at Sandy Lane, Chadwell St Mary
- ff. Asset (508) – Iron Age settlement at Orsett Cock

- gg. Asset (509) – Iron Age activity at Orsett Cock including square, rectangular and palisaded enclosures, hut circles and industrial activity
- hh. Asset (3601) Iron Age to Roman possible industrial activity
- ii. Asset (213) – Prehistoric features in the vicinity of Orsett – Causewayed Enclosure including 3574 recorded during trial trench evaluation. The features included a rectangular enclosure, ring ditches and post-built structures.
- jj. Asset (342) – Prehistoric activity north-west of High House recorded during trial trench evaluation, including two ring ditches, pits and linear ditches.
- kk. Asset (446) – Prehistoric features at East Tilbury – Muckingford Lane including a trackway, ditches and ring ditches
- ll. Asset (477) – Prehistoric and Early Medieval activity at West Tilbury – Gun Hill, including sunken-feature buildings, trackways, ring ditches and rectangular and circular enclosures
- mm. Asset (482) – Prehistoric activity at Orsett including ring ditches, trackways, a rectilinear enclosure and post-built structures
- nn. Asset (3575) – a Prehistoric feature recorded during trial trench evaluation in the vicinity of Orsett Causewayed Enclosure (SM6). Described as a continuous roughly linear feature containing much burnt material, which may represent a boundary marker.
- oo. Asset (3959) Tree throw containing Late Prehistoric flint and pit containing charcoal
- pp. Asset (3920) Ditches of Roman date potentially forming enclosures
- qq. Asset (232) – Roman settlement and cemetery at Holme Farm, Bulphan Fen
- rr. Asset (239) – Roman activity at Orsett Cock including ditches and field systems
- ss. Asset (412) – Roman settlement on the East Tilbury Foreshore including hut circles, preserved wood and ovens
- tt. Asset (442) – Roman saltern at East Tilbury – Bowaters Farm
- uu. Asset (484) – Roman Road near Mucking, East Tilbury

- vv. Asset (493) – Roman activity at Linford including a trackway and rectilinear enclosure
- ww. Asset (510) – Roman settlement and industrial site at Orsett Cock including an enclosure, structures, pottery kilns, and industrial activity and furnaces
- xx. Asset (643) – Roman salt works and pottery findspot
- yy. Asset (682) – Roman cremation and inhumation cemetery
- zz. Asset (38) – Early Medieval possible settlement at Great Warley
- aaa. Asset (205) – Early Medieval settlement at Mucking-Linford-Holford Wood Road-Rainbow Shaw Pits, including a village with sunken-feature buildings, hearths, enclosures and palisade enclosures and a workshop
- bbb. Asset (240) – Early Medieval settlement including sunken-feature buildings at Orsett Cock
- ccc. Asset (336) – Early Medieval settlement and cemetery at including sunken-feature buildings, inhumations and cremations
- ddd. Asset (337) – Early Medieval field systems and ditches, Mucking
- eee. Asset (511) – Early Medieval settlement at Orsett Cock including sunken-feature buildings and a boundary marker
- fff. Asset (2024) – Early Medieval to Medieval manor house site, Warley Franks Manor
- ggg. Asset (29) – Medieval site of manor and possible moat and Post-Medieval pond at Grove Barns, South Ockendon
- hhh. Asset (338) – Medieval site of a field system, windmill and aisled barn, Mucking
- iii. Asset (366) – Medieval earthwork banks, ditches, boundary markers and parish boundary at Codham Hall Wood, Codham Hall Estate, Great Warley
- jjj. Asset (512) – Medieval field system at Orsett Cock
- kkk. Asset (633) – Medieval site of St Marys Hospital and Chapel
- lll. Asset (761) – Medieval to Modern settlement site at East Tilbury
- mmm. Asset (553) – Medieval to Modern rural estate remnants at Ockendon Road/North Ockendon Road (Stubbers Adventure Centre), Havering

- nnn. Asset (144) – Medieval to Post-Medieval Mucking Marshes
- ooo. Asset (145) – Medieval to Post-Medieval West Tilbury Marshes
- ppp. Asset (91) – Post-Medieval relict sea-wall and saltings, East Tilbury
- qqq. Asset (339) – Post-Medieval field systems at Mucking
- rrr. Asset (290) – Modern war memorial at Church Green, East Tilbury Battery
- sss. Asset (288) – Modern Allan Williams Turret, Love Lane/Princess Margaret Road, East Tilbury
- ttt. Asset (194) - Orsett Baker Street
- uuu. Asset (117) - Middle Bronze Age to Middle Iron Age settlement and sporadic Roman activity
- vvv. Asset (479) - North of Holford Farm
- www. Asset (584) - Folkes Lane (west of cropmark)
- xxx. Asset (3940) - Iron Age timber structure possible footbridge
- yyy. Asset (3936) - Late Bronze Age unurned cremation (possible cemetery)
- zzz. Asset (3841) - Late Bronze Age/Iron Age/Roman occupation site
- aaaa. Asset (3902) - Possible Medieval farmstead
- bbbb. Asset (3835) - Later Prehistoric occupation site, domestic and funerary activity
- cccc. Asset (3675) - Middle to Late Bronze Age occupation site with pits, ditches, pottery and fired hearth clay
- dddd. Asset (3671) - Round barrow and possible associated flat cemetery south of Muckingford Road
- eeee. Asset (3624) - A ringditch with a Bronze Age or Early Iron Age pottery vessel within the ditch, West of Nevilles Farm
- ffff. Asset (3713) - Middle Bronze Age and undated possible ritual and/or domestic activity
- gggg. Asset (3836) - Bronze Age to Iron Age settlement and ritual activity bisected by railway
- hhhh. Asset (3832) - Early Bronze Age to Early Iron Age occupation and craftworking

- iiii. Asset (3848) - Early Medieval to Post-Medieval activity including Tudor kiln and pond
- jjjj. Asset (356) - Cropmarks W of Field House Farm, Middle Bronze Age to Middle Iron Age occupation
- kkkk. Asset (3677) – Area of Bronze Age settlement activity
- llll. Asset (3627) - Concentration of Prehistoric activity
- mmmm. Asset (3589) – Potential Medieval site
- nnnn. Asset (3733) - Concentration of activity predominately of Prehistoric date but with some Anglo-Saxon to Medieval
- oooo. Asset (3726) - Features dating to the late Bronze Age to Iron Age
- pppp. Asset (3723) - Spread of Neolithic pottery including pit.
- qqqq. Asset (3722) – Undated, Neolithic, Bronze Age, Iron Age, Roman and Early Medieval activity including ditches, pits, an undated pyre material deposition in a tree throw and Early Medieval pottery in a tree throw. Possible ritual activity
- rrrr. Asset (3952) – Mesolithic/Neolithic flint assemblage
- ssss. Asset (3732) - Ditch of probable Roman enclosure
- tttt. Asset (3820) - Earlier prehistoric flint scatters
- uuuu. Asset (595) - Cropmarks of a rectilinear enclosure, pits and ringditches
- vvvv. Asset (3598) - Neolithic, Bronze Age, Iron Age and Undated settlement activity
- wwww. Asset (3670) - Rectilinear enclosure of possible Early Medieval date south of Muckingford Road
- xxxx. Asset (3682) - Late Bronze Age or Early Iron Age possible occupation or industrial activity
- yyyy. Asset (3870) - Early Medieval enclosure ditches
- zzzz. Asset (4763) - Pair of circular enclosures, likely Bronze Age or Iron Age although technically undated
- aaaaa. Asset (3729) - Enclosed Roman settlement, with possible Iron Age origins

6.4.242 Of the above assets, the archaeological knowledge has been enhanced through trial trench evaluation (see Appendix 6.8, Application Document 6.3).

Enhancement has included the revaluation of assets' assigned archaeological period and/or their value. The following assets have been enhanced by trial trench evaluation within the Order Limits, north of the River Thames.

- 6.4.243 Low-value assets which have been identified or enhanced by trial trench evaluation include:
- a. Asset (3833) - Pit containing Middle Bronze Age pottery
 - b. Asset (3678) – Ditch of late Prehistoric date
 - c. Asset (3679) - Pit of late Prehistoric date
 - d. Asset (3573) - Iron Age to Roman ditch - continuation of trackway
 - e. Asset (3588) - Undated Trackway
- 6.4.244 Trial trench evaluation immediately south of the A13 were located over cropmarks associated with asset (219), catalogued by Essex HER. Trenching has confirmed the assets as being of Bronze Age to Iron Age date following the identification of a range of material in excavated ditches. Some of this activity was discovered west of the HER polygon and may have associations with the Late Prehistoric activity identified under (3733). Asset (219) holds evidential value for the potential to yield evidence of a concentration of Bronze Age to Iron Age activity, contributing to the contextualisation of (3733) and vice versa. Asset (219) remains assessed as medium value.
- 6.4.245 Trial trench evaluation trenches were located over a series of cropmarks, catalogued by Essex HER as asset (220). Trenching was focused within the area south of asset (220), as mapped by Essex HER, and within the Order Limits. Trenching confirmed the Prehistoric activity as being of Late Bronze Age to Early Iron Age date through pottery recovered from a ditch and pit feature. Roman pottery was also recovered from a ditch marking a rectilinear enclosure on cropmarks, although continuous use from the Bronze Age cannot be confirmed now. A series of undated ditches were also identified whose evidential value could yield evidence of periods of concentrated activity within the site. A cropmark also proved to be Medieval pit, with corresponding ditch of a potential Medieval enclosure. Post-Medieval evidence through field boundaries was also identified; however, the predominant date of asset (220) remains Prehistoric to Roman. Asset (220) remains assessed as medium value.
- 6.4.246 Trial trench evaluation was located over asset (231), catalogued by Essex HER. Trenching identified that the principal activity was located within the east of the site, as mapped by Essex HER. The previous Essex HER date of broad Prehistoric and possibly Early Medieval has been refined to Bronze Age and Iron Age, although overall very little dating evidence was recovered. This is likely due to the fact that the archaeological remains in this area appear to have been heavily truncated by ploughing and in many cases only survive as shallow features (e.g. c. 0.08m – 0.20m in depth). While a number of long linear features (many corresponding with cropmarks) were excavated, it is unclear if these form an enclosure, particularly as no boundary ditches have been identified to the east and north. Pits and postholes have also been recorded outside the linear ditches to the south and west, suggesting perhaps that the

Prehistoric settlement was unenclosed in nature with the ditches representing later boundaries and trackways.

- 6.4.247 A number of potential ring ditches (thought to be roundhouses) were recorded although no dating evidence was recovered from these. The only secure dating evidence was recovered from a large ring ditch thought to represent a barrow (3624), located within the core of the settlement which contained 52 sherds from a single vessel of Middle Bronze Age or Early Iron Age date. Other ditches in the vicinity of the barrow contained a small number of sherds of Middle Bronze Age and Iron Age pottery. Asset (231) holds evidential value for its information on Bronze Age and Iron Age settlement activity. Asset (231) is assessed as low rather than medium value due to the poor preservation and condition of its archaeological remains. Asset (3624) is assessed as medium value due to its evidential value for Bronze Age to Iron Age funerary activity and its better state of preservation (surviving to a depth of 0.48m, presumably because the former barrow mound offered a degree of protection to the below-ground remains).
- 6.4.248 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcel 3 Hornsby Lane, Orsett Heath, Essex and Trial Trenching of Land Parcels 3 (North), 30 and 35, Application Document 6.3) was located over an area of known Roman settlement (245) to the west of Heath Place (LB41). Settlement activity within the Order Limits identified a likely multi-purpose rural/industrial site with a diverse range of activities. This included pottery production (two kilns recorded), domestic activity, and a possible cremation cemetery. Several enclosures may have formed large livestock pens, with industrial-scale butchery present through chopped cattle bone. Settlement activity principally started from the Late Iron Age to Early Roman period, with the main period of activity dating to the 2nd to 3rd century with dating evidence also continuing into the 4th century. Some earlier activity within the site included pottery dating to the Neolithic to early Bronze Age, possibly indicating an earlier settlement or funerary landscape in proximity, as well as some Bronze Age to Iron Age activity which remains open to interpretation as to functionality. Asset (245) holds evidential value to yield evidence of an extensive Roman settlement, with the potential to study earlier use of the site and influences on the later Roman settlement. Activity within the site has been considered similar to the activity of Roman Mucking (335) and therefore could contextualise local hierarchical systems in the Roman period, north of the Thames. Asset 245 remains assessed as medium value.
- 6.4.249 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 3 (North), 30 and 35, Application Document 6.3) was located over cropmarks mapped by Essex HER as (257). Trenching did not cover the entire area of (257) and was concentrated within the Order Limits. However, evidence of activity was identified through the form of a concentration of ditches, one yielding Roman pottery, alongside two small pits/postholes which remain unexcavated, and a ditch not mapped by cropmarks which yielded material of a Late Bronze Age to Iron Age date. Limitations in the trial trenching have not allowed for a firm identification through interpretation of functionality. Asset (257) is reassessed as being of Bronze Age to Roman date. Asset (257) holds evidential value for its potential to yield further evidence of activity of the periods and contribute to an understanding of the wider landscape interaction within an area of dense

activity. However, due to the fact that only part of the asset was covered by trenching combined with the asset's location away from identified focal points of activity (245/247/SM1), asset (257) remains assessed as low value.

- 6.4.250 Trial trenching (Appendix 6.8, Trial Trenching of Land Parcel 1 Masons Corner, Application Document 6.3) targeted asset (262). Trenching identified activity principally dating to the Late Bronze Age, through three features of a ditch, pit and posthole. One vessel had an unusual pinched cordon, although this remained consistent with Late Bronze Age assemblages. Asset (262) could potentially hold associations with (3627), identified adjacent to the south of (262) and represents a new asset identified through trial trenching. The date of asset (262) can be refined from Prehistoric to Bronze Age. Asset (262) remains assessed as medium value for its evidential value to yield a concentration of Bronze Age activity, in context to (3627).
- 6.4.251 Trial trench evaluation targeted cropmarks associated with asset (342) (Appendix 6.8, Trial Trenching of Land Parcel 4 Old House, Chadwell St Mary, Application Document 6.3). Excavations confirmed the presence of a ringditch (barrow) along with a primary burial and satellite internments. Small fragments of pottery provided an Early Prehistoric date, but nothing firmer. A series of undated (but likely associated and of Prehistoric date) ditches were also identified, continuing to the east across Brentwood Road where a second ringditch c. 12m in diameter is recorded as a cropmark (but which was not excavated). Asset (342) has evidential value for Prehistoric funerary activity and remains assessed as medium value.
- 6.4.252 Trial trench evaluation west of Baker Street and north of the A13 targeted a range of cropmarks associated with asset (356). Trenching identified a series of features including postholes, pits and ditches, yielding pottery of Middle Bronze Age to Middle Iron Age date and Late Prehistoric worked flint. Primary features included two ring ditches which likely represent roundhouses. However, the cropmarks which appeared to indicate a large rectilinear enclosure proved to be natural in origin. Trenching has provided a new understanding of the evidential value of (356) for Middle Bronze Age to Middle Iron Age settlement, as well as the potential to further contextualise the Bronze Age to Iron Age activity in this area. Following trenching results, asset (356) is assessed as medium value, an increase from the previous desk-based assessment.
- 6.4.253 To the north of asset (356), trial trenching in an area of recorded linear cropmarks recorded a field system of Late Medieval to Post-Medieval date (357), on the same alignment as the current field system. Asset (357) is assessed as low value for its evidential and historical value as a field system.
- 6.4.254 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcel 5 Brook Farm, Application Document 6.3) targeted a range of previously identified cropmarks to the east of Brentwood Road. Assets (449) and (459) were originally recorded by the Essex HER as general records covering large areas. LTC trial trench evaluation has identified a number of separate new assets within the original extent of assets (449) and (459); as a result of these discoveries, assets (449) and (459) has been reduced in size and are now

assessed as low value for their evidential value for Prehistoric activity.
The following new assets have been identified:

- a. Asset (3598), an area containing evidence of Neolithic, Bronze Age, Iron Age and Undated settlement/domestic activity, which is assessed as medium value for its evidential value for multi-period Prehistoric settlement activity.
- b. Asset (4767) which is assessed as low value and includes dispersed pits, ditches and gullies, some likely Modern in origin but some potentially of Prehistoric date, with no definite dating evidence found. This asset is likely to represent settlement-periphery activity associated with asset (3598).
- c. Asset (4768) which represents activity peripheral to settlement (3598) and comprises Middle or Late Bronze Age dispersed pits, ditches and a posthole. This asset is assessed as low value for its evidential value for Bronze Age activity.
- d. Asset (4769) located to the east of asset (4768), comprising Undated pits, a ditch terminus and tree throws, assessed as low value for its evidential value.
- e. Asset (3619), an area of Late Neolithic to Bronze Age funerary and possible ritual activity which includes an Undated ringditch, Beaker cremation and two parallel rows of pits or tree throws containing flint artefacts. This asset is assessed as medium value for its evidential value for Neolithic to Bronze Age funerary activity.
- f. Asset (3599), the findspot of a Late Mesolithic backed flint bladelet redeposited in colluvium along with Bronze Age and Iron Age pottery and asset (4770), findspot of Late Mesolithic rod microlith, residually deposited within a later ditch. These findspots are assessed as low value and indicate the presence of Mesolithic activity higher up the valley slope to the south.
- g. Asset (3554), a pit containing Bronze Age or Iron Age pottery and nearby undated ditches, of low value for its evidential value for Prehistoric settlement-periphery activity.
- h. Asset (3553) a Bronze Age to Iron Age enclosed settlement which yielded large amounts of Middle Bronze Age pottery, assessed as medium value for its evidential value for Bronze Age to Iron Age enclosed settlement activity.
- i. Asset (3602) a pit with flint-tempered late Bronze Age to Iron Age pottery, charcoal and charred wheat grain and an undated ditch outlying settlement (3553). Asset (3602) is assessed as low value for its evidential value for Bronze Age or Iron Age settlement-periphery activity.

- j. Asset (3601), an area of possible Iron Age to Roman industrial activity to the south-east of settlement (3553). Asset (3601) is assessed as medium value for its evidential value for Iron Age to Roman-period industrial activity.
- k. Asset (3559), a pair of quarry pits containing 12th to 13th-century pottery, assessed as low value for their evidential value for medieval extraction activities.

6.4.255 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcels 6-8 Land West of Linford, Application Document 6.3) clarified the extent of previously recorded assets and recorded additional new assets, comprising:

- a. Asset (4773) Undated ditch terminus and asset (4774) Pit containing CBM fragment, both assessed as low value.
- b. Asset (3914) Pits containing later Neolithic worked flint and middle Bronze Age pottery, assessed as medium value for its evidential value for Neolithic and Bronze Age activity.
- c. Asset (3918) Early or Middle Iron Age settlement activity, including some undated features that are likely to be related, assessed as medium value for its evidential value for Iron Age settlement activity.
- d. Asset (3904) Findspot of a Late Upper Palaeolithic long blade, assessed as medium value for its evidential value for Palaeolithic activity.
- e. Asset (3903) A late Upper Palaeolithic long blade was recorded in Trench 107 along with several other unusually large blades which may also date from this period, assessed as medium value for its evidential value for Palaeolithic activity.
- f. Asset (3905) A very substantial assemblage of Mesolithic flint from buried soils, later pottery or other finds also present, assessed as medium value for its evidence of Mesolithic activity.
- g. Asset (3908) Findspots of Mesolithic flints, assessed as medium value for its evidence of Mesolithic activity.
- h. Asset (3906) A small scatter of struck flints of Mesolithic character on a buried land surface, assessed as medium value for its evidence of Mesolithic activity.
- i. Asset (3911) Findspot of Early Neolithic leaf shaped arrowhead, assessed as low value for its evidential value for Neolithic activity.
- j. Asset (3926) Poorly preserved crouched inhumation burial associated with small amount of Neolithic/later prehistoric worked flint and pottery, assessed as medium value for its evidential value for Neolithic/Prehistoric funerary activity.

- k. Asset (3907) Tree-throw holes and pits containing Mesolithic, Neolithic and Early Bronze Age flint and Neolithic and later prehistoric pottery, of medium value for its evidential value for Mesolithic Neolithic and Bronze Age craftworking, domestic or ritual activity.
- l. Asset (3916) Bronze Age and Undated salt-making and other industrial activities, assessed as medium value for its evidential value for Bronze Age industrial activity.
- m. Asset (3917) Bronze Age or Iron Age pit, assessed as low value for its evidential value for Bronze Age or Iron Age activity.
- n. Asset (3957) Undated ditches and ditch terminus or pit, Prehistoric buried soil horizons and occasional struck flint (no defined scatters), of low value for its evidential value for Prehistoric activity.
- o. Asset (3959) Tree-throw containing Late Prehistoric flint and pit containing charcoal, of medium value for its evidential value for Prehistoric craftworking, domestic or ritual activity.
- p. Asset (4771) Several Undated and Prehistoric features including a pond, ditches forming a field system or enclosure and a pit, assessed as low value for its evidential value for Prehistoric and Undated agricultural activity.
- q. Asset (3921) Heavily truncated Roman enclosure and outlying Prehistoric pits and ditches, of low value due to its poor condition.
- r. Asset (3920) Ditches of Roman date potentially forming enclosures assessed as medium value for its evidential value for Roman domestic or agricultural activity.
- s. Asset (3922) Low-intensity multi-period activity including Undated pits and ditches, a pit with Early Medieval pottery, pit with Roman pottery and possible Bronze Age or Iron Age craftworking and Post-Medieval track with Medieval pottery in the fill, assessed as low value for its evidential value for multi-period settlement-periphery/agricultural activity.
- t. Asset (3923) Three perpendicular roadside ditches containing Early Medieval to Post-Medieval pottery and roof tiles, of low value for its evidential value for Early Medieval to Post-Medieval activity in the area.
- u. Asset (3924) Late Medieval activity comprising a large ditch and multiple pits containing 11th-13th-century pottery, assessed as low value for its evidential value for Medieval domestic activity.

- v. Asset (4772) Medieval perpendicular ditches and a pit, assessed as low value for its evidential value for Medieval activity.
- w. Asset (3925) Bone-lined drains, assessed as low value for its evidential value for Post-Medieval agricultural activity.

6.4.256 Trial trench evaluation (Appendix 6.8, Trial Trenching of Land Parcel 37, Application Document 6.3) targeted the cropmark site of asset (496), as mapped by Essex HER. Trial trenching has provided additional information regarding asset (496), particularly its multi-period nature. Asset (496) was assigned solely to the Medieval period during the desk-based assessment, however, trenching identified activity from the following periods:

- a. Neolithic, through a single pit yielding Neolithic pottery with additional unexcavated features potentially dating to this period.
- b. A concentration of activity, including enclosures, dating to the Late Bronze Age to Iron Age located on the elevated gravel geology.
- c. Continuation of activity into the Roman period on the high ground, with features indicating domestic activity.
- d. Limited evidence of Late Roman period activity, but widespread Early Medieval activity was identified across the site in the form of possible sunken feature buildings/
- e. Medieval activity was limited with a small quantity of material found, likely indicating peripheral activity related to settlement sites in the wider area.

6.4.257 Asset (496) can be described as a multi-period site and reassessed to be predominately of a Bronze Age to Early Medieval date. The site holds evidential value for its potential to yield further understanding of multi-period historic activity on the high ground. Asset (496) remains assessed as medium value.

6.4.258 Trial trench evaluation (Appendix 6.8, Trial trenching of Land Parcel 4, Old House, Application Document 6.3) identified the likely remains of the former Seaborough Hall (1808) to the west of Brentwood Road. Walls matching the plan of the building from Ordnance Survey (OS) mapping were identified, as well as a possible beam slot. A pit provided dating evidence from 1480 to 1600, illustrating a suggestive lifespan of the building. The remains hold evidential value for further material of this high-status house to be present, and asset (1808) remains assessed as low value.

6.4.259 Trial trench evaluation (Appendix 6.8, Application Document 6.3) within the Order Limits has also identified further assets of medium value, in addition to the previously identified desk-based assets. Assets identified through trenching are discussed below from south to north.

6.4.260 A dispersed area of Early Neolithic, Bronze Age and undated ditches and pits (3669) is recorded south of Muckingford Road, c. 100m north-east of Bronze Age occupation site (3675). These features sit within a wider landscape of Prehistoric activity including Bronze Age (365, 444, 3677) south of

Muckingford Road and Prehistoric to Roman activity (3678) to the east of Low Street Lane. Although the ditches within asset (3669) are generally on the same alignment or perpendicular to the modern field system, it should be noted that a Bronze Age coaxial field system excavated c. 250m to the north-east (104), was on the same alignment (north-east to south-west). Asset (3669) holds evidential and historical value to further contextualise the Prehistoric ritual and agricultural landscape in this area and is assessed as low value.

- 6.4.261 Approximately 75m south of asset (3669) trial trenching recorded two undated ditches and a tree throw containing Late Bronze Age or Iron Age pottery. While undated, it is considered that the ditches may be related to activity of this period. The ditches and tree throw (3704) is assessed as low value for its evidential and historical value for Prehistoric activity within the corridor of ritual and domestic activity along the dry valley in which they are located.
- 6.4.262 Trial trenching c. 75m north-west of enclosure (3670) recorded two undated parallel ditches (potentially a section of a truncated trackway) and another undated ditch on the same alignment to the north (4624). As an undated but possibly Prehistoric trackway, (4624) is assessed as low value for its evidential value.
- 6.4.263 Immediately to the north-east of asset (4624), trial trenching recorded a dispersed area of Bronze Age occupation (3677), comprising mainly undated pits and ditches along with a small number of securely-dated features. This included a ditch with 17 sherds of Middle Bronze Age pottery and a pit with 47 sherds of Middle to Late Bronze Age pottery, charred grains and two substantial fragments of fired clay from a portable oven or hearth. Asset (3677) is assessed as medium value for its evidential and historical value for Bronze Age occupation within this wider landscape of Prehistoric ritual and settlement activity within this dry valley.
- 6.4.264 Trial trenching also recorded Mesolithic or Early Neolithic worked flints (3703) within the northerly undated ditch forming part of asset (4624). The flints were considered to be residual finds not associated with the ditch, although they are indicative of Mesolithic/Neolithic activity somewhere in the vicinity. Findspot (3703) is assessed as low value for its evidential value for Mesolithic or Neolithic activity in the area.
- 6.4.265 Trial trenching c. 90m north-west of Bronze Age occupation site (3677) recorded two parallel north-west/south-east aligned ditches, containing no dating evidence. The ditches are widely spaced and unlikely to represent a trackway, and they do not continue into adjacent trenches. However, a perpendicular ditch was recorded in a nearby trench which contained two tiny fragments of Bronze Age pottery. This asset, comprising all three ditches (4625) is assessed as low value for its likely evidential value as part of a Bronze Age field system.
- 6.4.266 On the northern side of the Muckingford Road, trial trenching recorded Early Neolithic flint and Bronze Age pottery (3668). The artefacts appear to have been redeposited in colluvium and subsequently deposited in a ditch and tree throw respectively which cut the two colluvium layers. Similar flint was also recovered from the colluvial layers. The flint assemblage includes a high proportion of blade-like flakes and is different in character from other flint recovered from trenches in the dry valley deposits to the east. The flint is “fresh”

in character indicating that it may have come from a nearby location. While not in situ, the artefacts do appear to indicate the presence of Early Neolithic and Bronze Age activity in close proximity. Asset (3668) is assessed as low value for its evidential value for Neolithic/Bronze Age activity in this area – it is cautiously assessed as medium value as it is uncertain if the flint assemblage is in situ or not.

- 6.4.267 Immediately to the west of asset (3668) is a high-value asset (450) which covers a wide area, predominantly outside the Order Limits. The site has been identified from cropmark evidence and includes large penannular enclosures, rectilinear enclosures, ring ditches, pits and field systems. Only a small portion of the asset, comprising field system ditches, extends within the Order Limits either side of Muckingford Road. Two trial trenches which were excavated across the ditches on the northern side of the road did not yield any dating evidence, although they did discover additional ditches and two pits that were not visible as cropmarks. Due to its evidential and historical value for Prehistoric to Roman-period settlement activity in this area, asset (450) is currently assessed as high value
- 6.4.268 Further artefacts were recovered from the colluvial layers by trial trenching around the dry valley, north of Muckingford. These remains dated to the Late Bronze Age to Iron Age (3599) and suggest a concentration of activity dating to the period. 3599 holds evidential value for its potential to yield a density of Bronze Age to Iron Age activity within the area and further contextualise the density of Prehistoric activity within the landscape. Asset (3599) is assessed to be of medium value.
- 6.4.269 A pit containing 10 sherds of Medieval pottery and a nearby undated ditch (3673) were identified during trial trench evaluation 200m north of Polwicks (LB48). This asset is assessed as low value for its evidential value for Medieval settlement-periphery activity or agricultural activity.
- 6.4.270 Approximately 560m south of Muckingford Road, trial trenching recorded a Middle to Late Bronze Age occupation (3675) site with pits and ditches containing Middle and Late Bronze Age pottery, fragments of fired hearth surface and evidence of grain and barley cultivation. The site is located on the eastern side of a dry valley leading to a causewayed enclosure (SM6), near the valley bottom. In the southern part of asset (3675), trial trenching recorded a possible in-situ Bronze Age flint scatter within an erosion gully buried beneath colluvial layers. Asset (3675) is assessed as medium value due to its evidential and historical value regarding Middle and Late Bronze Age occupation/settlement activity.
- 6.4.271 Immediately north of occupation site (3675), archaeological trial trenching recorded an area of dispersed Bronze Age (Middle or Late Bronze Age) and undated pits and ditches (3676). Asset (3676) is assessed as low value for its evidential value on Bronze Age activity peripheral to nearby funerary and potentially settlement activity.
- 6.4.272 Immediately east of asset (3676) two medium-value assets were recorded on the eastern side of the dry valley by cropmark and trial trenching evidence: a round barrow and possible surrounding flat cemetery (3671); and a rectangular enclosure of Prehistoric and/or Early Medieval date (3670). The round barrow, originally identified as a cropmark, did not yield any dating evidence when trial

trenches investigated the ringditch. However, the ringditch (15m in diameter) was revealed to have included a second phase of activity when the ditch was recut. Within the centre of the barrow four pits were discovered, two of which may be unurned cremations. The relationship between the round barrow (3671) and the rectangular enclosure (3670) is unclear, as the enclosure has not been firmly dated, although the fact that the enclosure has an entrance on the side facing the barrow is telling. A number of pits within the enclosure were discovered but not excavated, including one with a broken but complete Late Bronze Age pottery vessel embedded in the surface fill. It is therefore considered that these pits could represent a flat cemetery outlying or surrounding the round barrow – therefore the barrow and putative cemetery are assessed as a single funerary asset (3671) of medium value for Bronze Age funerary activity.

- 6.4.273 The rectangular enclosure (3670) yielded little dating evidence from its enclosure ditches, apart from a single sherd of possible Early Medieval date and a second sherd of either Early Roman or Early Medieval date. It is possible that the enclosure was established in the Bronze Age and reused in the Early Medieval period – it is not unusual for Early Medieval sites to have deliberate spatial relationships with Prehistoric remains. The enclosure could represent a ditched Early Medieval cemetery established adjacent to the round barrow. Alternatively Early Medieval activity may have taken place here which was unrelated to the enclosure and the pottery is intrusive within Bronze Age contexts. No occupation activity of either period was recorded within the enclosure, although only a small area within it was subject to trial trench evaluation. Asset (3670) is assessed as medium value as a Bronze Age and/or Early Medieval enclosure of uncertain function.
- 6.4.274 A concentration of Prehistoric activity (3627) was identified by trial trench evaluation to east of Heath Road. The trenching identified multi-period Prehistoric activity which included the following:
- a. A pit of Neolithic date was dated through pottery and worked flint. Environmental samples from the pit identified charcoal, grain and weed seeds likely representing a dump of burnt material. It holds evidential value to contribute to an understanding of the interaction with the landscape in the Neolithic period and further contextualise SM6.
 - b. Pit containing remnants of two Early Bronze Age decorated beakers, as well as a second pit containing Middle Bronze Age to Iron Age activity and nearby ditches also yielded Prehistoric pottery. All hold evidential value to further contextualise Bronze Age and Iron Age activity in the area, particularly the isolated Bronze Age activity identified during trenching).
 - c. A pit and posthole were identified, with the sub-rectangular posthole containing a single fill of charcoal and baked clay with fragmentary pottery of possible Prehistoric date. The features hold evidential value for their potential to yield further information on Prehistoric activity and contribute to the contextualisation of the wider Prehistoric landscape around Orsett Heath.

- d. A range of undated features were also identified within the concentration of activity under (3625). These include a possible natural hollow, mapped through several trenches, of which one trench also yielded a possible quern or sharpening stone.
- e. A further series of undated ditches were also identified across the area of concentrated activity. The ditches could potentially be a later Post-Medieval field system and not Prehistoric. However, the earliest OS map available does not map the boundaries, although one may correspond to a division illustrated on 1840s tithe mapping. The ditches hold evidential value to yield further evidence of historic human activity within the area.

- 6.4.275 Collectively, the concentration of activity under (3627) is of medium value for its combined evidential value to yield evidence of multi-period activity. The Prehistoric evidence holds evidential value to further characterise and contextualise early interactions with the landscape and potential relationships between potential settlements (219, 231, 262) or establish areas of nomadic activity.
- 6.4.276 West of Brentwood Road and 300m south-east of Heath Place (LB41), trial trenching identified features dating to the Late Bronze Age (3572) and to the Late Iron Age to Roman period (3573). The activity was identified through a ditch feature which yielded tentatively dated Late Bronze Age pottery, with two undated intercutting pits in proximity to the ditch containing charcoal and burnt unworked flint. The Bronze Age activity illustrates an additional time period of activity in proximity to the Neolithic causewayed enclosure (SM6), with Essex HER previously noting Neolithic (7), Iron Age (207), Early Medieval (210), Medieval (211) and Post-Medieval (212) dated activity.
- 6.4.277 A further ditch (3573) located within the same trench as the Bronze Age ditch yielded pottery of a late Iron Age to Roman date. The Iron Age to Roman ditch (3573) is believed to be a continuation of a trackway, also identified through trial trenching to the north-west and contextualising known existing Romano-British settlement activity (245, 257) around Heath Place. Both (3572) and (3573) hold evidential value for their potential to yield further information to contextualise the Bronze Age to Roman landscape including potential communication links between settlements and their potential relationships. Asset (3572) and (3573) are of medium and low value respectively.
- 6.4.278 A potential Medieval site (3589) was identified by trial trenching to the south of Hornsby Lane and within the Order Limits. A series of pits and a possible kiln/oven were uncovered. One pit was excavated and found to contain pottery of the late 13th to mid-14th century, while the remaining pits and possible kiln remain unexcavated. The potential Medieval site (3589) is of medium value for its evidential value to yield evidence of Medieval settlement activity and potential local industrial craft through the excavation of the kiln and therefore potential relationships with surrounding Medieval settlements.
- 6.4.279 An undated trackway (3588) was identified on the edge of the Order Limits and immediately south of Hornsby Lane. The trackway was mapped across three trenches in a north-west to south-east alignment towards a cello-shaped enclosure mapped by Essex Place Services aerial mapping study

(Appendix 6.2, Application Document 6.3) and catalogued by Essex HER (482). Although the trackway is undated, it is of likely Prehistoric date if associated with (482). As a result, it is of low value for its evidential value on human activity and movement/relationships of settlements across the landscape around Orsett Heath.

- 6.4.280 Trial trench evaluation was undertaken on land between the A13 and Stanford Road, opposite Whitecroft's Farmhouse (LB37). The combined features illustrate a density of activity of multi-period activity which all hold evidential value for their potential to illustrate historic settlement activity. They also hold potential to further contextualise the relationships of activity and different uses of the wider landscapes, containing other areas of dense activity, also reflective of the same archaeological periods identified immediately south of the A13. Features identified include the following:
- a. Asset (3733) – A concentration of activity predominantly of Prehistoric date which included a pit with possible Iron Age pottery; a ditch yielding Neolithic or Bronze Age to Iron Age pottery, as well as a further ditch yielding a single sherd of Early Roman pottery. A single Early Medieval pit, alongside a feature of possible ditch or pit yielding Medieval pottery and residual Roman pottery were also found in proximity to the earlier activity. A series of undated ditches were also identified across the area of concentrated activity. Asset (3733) is of medium value for its evidential value to yield evidence of multi-period human activity, within the landscape of multi-period activity.
 - b. Asset (3726) – West of the concentration of Prehistoric activity, a series of features were identified dating to the Late Bronze Age to Iron Age. Features included ditches and pits which yielded sherds of pottery which provided dating evidence. Asset (3726) is of medium value for its evidence of Bronze Age to Iron Age activity.
 - c. Asset (3723) – The earliest features within the site included a pit which produced several sherds of Early Neolithic pottery. A further spread of material including struck flint and pottery was also recovered from the area. Asset (3723) is of medium value for its evidential value as a site of Early Neolithic date which could provide further context to Neolithic finds identified within the same trenching location, to the west (3733), as well the wider Neolithic landscape associated with SM6, 765m to the south-east.
 - d. Asset (3734) – A single pit yielded nearly 1kg of 13th to 14th century pottery, north of Stanford Road. The pit was disturbed by modern ploughing, and it is unclear how or why the substantial material was deposited in the location. The pottery dates to the same century as the pottery identified as part of the Medieval activity to the west (3733). There is the potential for a Medieval farmstead to be in proximity to the activity identified through trenching, south of the A13. Asset (3734) is of low value for its evidential value.

- 6.4.281 North of Stifford Clays Road, trenching identified a series of short east-west ditches (3615) which yielded small fragments of Roman pottery. The activity is similar to features recorded within asset (247) in association with SM1, c. 115m south of asset (3615). Asset (3615) may represent a site of unknown industrial or agricultural activity and is assessed as low value for its evidential value to contextualise the immediate landscape associated with the concentration of Romano-British activity to the south and for its evidence on industrial or agricultural activity of this period.
- 6.4.282 Trial trenching within the Order Limits c. 65m south-west of asset (3615) recorded a Roman ditch and a parallel undated ditch and pit (3617). This area of low-density Roman-period activity, possibly agricultural in nature, is assessed as low value for its evidential value for Roman-period activity in the landscape surrounding (SM1).
- 6.4.283 Trenching within the Order Limits in WSI area H, immediately west of the M25 and west and north-west of North Ockendon, identified sites from multiple periods. The new assets identified in this area comprise:
- a. Asset (4627), the findspot of a Mesolithic blade residually deposited within a Prehistoric to Roman-period ditch, of low value for its evidential value implying Mesolithic activity in the vicinity.
 - b. Asset (3722) Undated, Bronze Age, Iron Age, and Roman activity including ditches and pits, an undated pyre material deposition in a tree throw, Early Medieval pottery deposited in a tree throw and Neolithic pottery residually deposited in a Roman-period ditch. The activity is spread across an arcing zone around Hobbs Hole spring and may include ritual and industrial activities. A piece of potential briquetage was recovered from the surface of an unexcavated ditch which suggests salt-working of Prehistoric or Roman date. Asset (3722) is assessed as medium value for its evidential value on multi-period activity (possibly ritual activity) in the vicinity of Hobbs Hole spring.
 - c. Asset (3713), an area of Middle Bronze Age settlement or ritual activity comprising two short undated ditches (one cut by a Middle Bronze Age pit), two Middle Bronze Age pits and an undated posthole. The pits both contained Middle Bronze Age pottery suggesting deliberately placed vessels. There was no burnt material suggesting cremations, and one of the pits appeared to have been lined with clay. It is unclear if this activity was ritual or domestic in nature (or both). Asset (3713) is assessed as medium value for its evidential and historical value for ritual/domestic activity in the vicinity of the Hobbs Hole spring.
 - d. Asset (3721) which includes a number of ditches and pits, concentrated in the western part of the field in which they are situated, contained pottery, CBM and butchered animal bone of Late Medieval to Post-Medieval date including 13th-14th-century pottery and a late 15th-17th-century roof tile. The evidence suggests the presence of a rural dwelling or farmstead in

close proximity but outside the Order Limits, which is not recorded on historic mapping. Asset (3721) is assessed as low value for its historical and evidential value for activity peripheral to a previously unknown dwelling or farmstead.

- e. Asset (3836) Middle or Late Bronze Age to Iron Age settlement and ritual activity, bisected by a railway. This site includes a pit with a Late Bronze Age/Early Iron Age inverted vessel which did not contain a cremation (east of the railway), ditches of Late Bronze Age date, a possible Iron Age enclosure associated with undated ditches and postholes potentially forming parts of two structures (west of the railway), and potentially associated ditches in the area south of the enclosure. Middle Bronze Age evidence was in the form of abraded pottery which could alternatively have been of Iron Age date. Asset (3836) is assessed as medium value for its evidential value for Bronze Age to Iron Age settlement and ritual activity.
- f. Asset (3712) which includes several undated ditches and two pits. A find of a fragment of a possible Mayen Lava rotary quern from a ditch suggests a Roman or later date. A residual abraded sherd of Middle Neolithic Peterborough Ware was found in the same ditch, which also cut a pit containing fired clay and charcoal. The undated ditches included terminals and curvilinear features. A sherd of Early to Middle Neolithic pottery was recovered from the topsoil, further suggesting Middle Neolithic activity in close proximity. Asset (3712) is assessed as low value for its evidential and historical value for possible Neolithic activity and probable Roman agricultural activity.
- g. Asset (3846) Medieval and undated ditches containing 13th to 14th-century pottery and evidence for nearby arable farming (wheat, oat and legume remains). The ditches are largely parallel to the existing field system, assessed as low value for its evidential value for Medieval agricultural activity.
- h. Asset (3837) a Prehistoric occupation site including ditches, pits and postholes and stakeholes forming a structure in the western part of the asset, a charred grain and goosefoot seeds and indeterminate fragments of fired clay. Due to the ambiguous nature of the pottery the dates of the activity are unclear, potentially Neolithic to Iron Age or Bronze Age to Iron Age. Asset (3837) is assessed as medium value for its evidential value for Prehistoric settlement activity.

6.4.284 Trenching within the Order Limits in WSI area H, immediately east of the M25 and south-west of North Ockendon, identified sites from multiple periods. The new assets identified in this area comprise:

- a. Asset (3832) Early Bronze Age to Early Iron Age occupation and evidence of craft-working (possibly hide preparation) including flint

tools diagnostic of Beaker/Early Bronze Age date. Some of the features (e.g. ditches and gullies) appear to have been truncated by later ploughing and in some cases finds assemblages have survived within tree throws (or tree throws have disturbed Bronze Age pits). The majority of the evidence was dated to the Early Bronze Age, with some evidence for Middle/Late Bronze to potentially the Early Iron Age being recorded towards the southern end of the asset. A ditch in trench 204 contained two fills which were separated vertically, suggesting a former division such as a fence or palisade was present in the base of the ditch. A sherd of pottery found in the ditch was considered to be either of Prehistoric or Early Medieval (400-600 AD) date. Considering the location of the ditch within a confirmed area of Bronze Age activity, the sherd is likely to date from this period, although an Early Medieval origin cannot be completely ruled out. Asset (3832) is assessed as medium value for its evidential value for Bronze Age to Iron Age occupation and Bronze Age craft-working in this area.

- b. Asset (3848) which includes Early Medieval, Medieval and Post-Medieval activity. The Early Medieval activity comprises ditches containing pottery dated to 1000 – 1225 AD and 1100 – 1350 AD. This is likely to be associated with medieval features previously excavated during works in advance of construction of the M25 (assets 191 and 192) and Medieval pits (containing slag fragments and pottery) and ditches identified during LTC ATT within asset (191) in an area west of the M25 (now outside the Order Limits). However, the bulk of activity in asset (3848) is dated to the 15th to 17th century and includes a large pond, a kiln and various ditches. The pond was c. 12m in diameter and 1.45m deep. The kiln was a soil-cut feature, although it had been backfilled with material such as 15th-17th-century bricks. It is unclear if it was a brick kiln or was merely backfilled with bricks. Overall, asset (3848) is assessed as medium value for its evidential value for Early Medieval to Post-Medieval agricultural and industrial activity.
- c. Asset (3840) comprising low-density Roman activity comprising a small number of pits and ditches, with pottery dating to 200 – 400 AD. This asset is assessed as low value for its evidential value for Roman-period activity, possibly agricultural or peripheral to a settlement in the wider area.

- 6.4.285 Archaeological trial trenching took place on the West Tilbury Marshes to the south of Low Street. This recorded four new archaeological sites:
- a. Asset (4621), the findspot of redeposited piece of broken blade-like flint flake of Mesolithic or Early Neolithic date, recovered from later alluvial deposits. The site of this findspot is assessed as low value.
 - b. Asset (4620), two flakes of struck flint and one piece of burnt flint recorded within a peat deposit also containing naturally-split and eroded tree trunks. This small flint assemblage was dated to the Late Neolithic or Early Bronze Age based on typological dating of the flint and carbon-dating of the wood within the deposit. The asset is assessed as low value due to its evidential as a possible transient resource-gathering site.
 - c. Asset (4623), a surface or trackway of flint cobbles recorded beneath a buried soil horizon, possibly corresponding with a similar soil deposit in a nearby trench which was dated to the Early Iron Age. This asset is assessed as low value due to its evidential value as a probable trackway or working surface of Prehistoric date.
 - d. Asset (4622), a series of parallel drainage ditches of Late Medieval or Early Post-Medieval origin, dated by finds of tile and brick within their fills. This asset is assessed as low value due to its evidential value for evidence relating to the early stages of the drainage and reclamation of the West Tilbury Marshes.
- 6.4.286 Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Trial Trenching of Land Parcel 48B and 48C Mar Dyke Valley, between South Ockendon and Orsett, Application Document 6.3) identified archaeological features within the Order Limits. The new assets identified in this area comprise:
- a. Post-Medieval field boundaries and possible hollow way (3898); wide shallow double ditches were recorded in Trenches 234, 235 and 239 follow the line of a former field boundary marked on a late 19th century OS map; Post-Medieval finds consistent with this period were found within the excavated features. The double ditches possibly represent a ditch on one side of a hedge and a worn track or hollow way on the other. Ditches corresponding to a former field boundary on historic mapping in Trench 233 also produced Post-Medieval finds. As this pattern of field boundaries is well-documented through historic mapping and is corroborated by excavation, asset 3898 has limited historical and evidential value. Asset (3898) is assessed as negligible value.
 - b. Linear features including Post-Medieval field boundaries (3899); trenching targeted linear features to the north of Green Lane. The trenches recorded several ditches on similar alignments to those recorded further to the south (3898), mentioned above, and are likely associated chronologically; this is

indicated by historic mapping and cropmark data. None of these ditches contained any finds. However, Trench 163 and Trench 203 identified ditches aligned with field boundaries displayed on a late 19th century OS map. As this pattern of field boundaries is well-documented through historic mapping and is corroborated by excavation, asset 3899 has limited historical and evidential value. Asset 3899 is assessed as negligible value.

- c. A Mesolithic worked flint (3879) was recovered from the infill of a Late Iron Age to Roman cultivation ditch. The ditch was part of much larger system, interpreted as a late Iron Age to Roman agricultural site (3897) – mentioned above. The flint has limited evidential value due to its residual nature, located within a later feature. Asset (3879) is assessed as low value.
- d. A Mesolithic worked flint (3878) was recovered from the infill of a periglacial crack in Trench 136. Due to the isolated and residual nature of the find, asset 3878 has limited historical and evidential value and is assessed as low value.
- e. Post-Medieval agricultural activity (3883); Trench 254 contained a single sinuous ditch (ditch 25403), running on an NNW-SSE alignment. A large, square shafted iron spike or tent peg of Post-Medieval or Modern date was recovered from its naturally accumulated fill. This ditch corresponded to a former field boundary evident on 19th century historic maps. This asset has limited historical and evidential value due to its nature. Furthermore, the location of the field boundary is well-documented on historic mapping, and it is unclear if the metal object was contemporary with this feature. Asset 3883 is assessed as negligible value.
- f. A Late Iron Age to Roman agricultural site (3897); trenching targeted linear cropmarks on the Mar Dyke valley, to the north of Green Lane. The evaluation revealed a network of ditches (3897) within trenches 217, 218, 219, 230 and a probable continuation of the same network in trenches 174, 180, 181, 182, 188, 190 further to the north. Several of these ditches contained late Iron Age and Roman pottery and are believed to represent a wider area of agricultural use in the late Iron Age to early Roman period on the slopes of the Mar Dyke valley. This site may form part of the hinterlands of a dense area of Late Iron Age/Roman activity further to the south along Stifford Clays Road, which itself is associated with Romano-British activity around SM1 and 247. Asset (3897) derives significance from its historical and evidential value, contextualising past use of the Mark Dyke valley landscape for agriculture in the Late Iron Age and Roman periods. However, it does not form part of the immediate landscape associate with the scheduled monument (SM1/247). Asset (3897) is assessed as low value.

- 6.4.287 Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 47 and 48f-h, Mar Dyke Valley between South Ockendon and Orsett, Essex, Application Document 6.3) identified archaeological features within the Order Limits. The new assets identified in this area comprise:
- a. A substantial area of Early Prehistoric to Late Prehistoric activity (4626) was recorded in Land Parcel 48F. The investigations revealed a raised promontory around which a series of former palaeochannels had formed. The site indicates zones of past human activity along the floodplain edges of the promontory which is characteristic of Early Prehistoric occupation patterns within wetland environments. On the southern edge of the raised promontory a dense scatter of (1254) worked flints was found concentrated in Trench 86 in situ and extending south into Trench 90; these were mainly diagnostic of Later Mesolithic to Early Neolithic date although some flint blades may date as early as the Late Upper Palaeolithic. A small quantity of Early Neolithic pottery was also recovered from the top of the flint scatter in Trench 86. Further flint scatters were recorded on the north and east edges of the promontory and floodplain in Trenches 20 and 72, along with smaller groups of flint in trenches along the north edge. These included a high proportion of later Mesolithic/early Neolithic technologies, although some flints were mixed with later prehistoric material. Recorded evidence of Bronze Age activity included a perforated plate from a portable oven or hearth found in Trench 44, as well as a small group of struck flint flakes and a core. Along the eastern edge of the promontory a sequence of alluvial deposits within Trench 37 revealed a buried soil and horizon containing thirteen struck flints and a piece of briquetage, the latter indicating possible salt working activity. A cremation of possible Late Bronze Age date was found in a pit in Trench 90 on the south edge of the promontory, its placement potentially alluding to a practice of deliberate deposition of human remains within wetland environments. It is possible that further cremations exist within the surrounding area. Asset 4626 derives its significance from having strong historical and evidential value: the density and range of diagnostic Early Prehistoric technologies, evidence for transitional zones of occupation, and contextualisation of past human activity within wetland environments. Asset 4626 is assessed as high value.
 - b. The remains of an Iron Age timber structure (3940) thought to be a footbridge was recorded in trench 14 within Land Parcel 48F. This comprised a line of six waterlogged wooden piles set within alluvial silt traversing a palaeochannel immediately north of the raised land promontory associated with asset 4626 (described above). One of the timbers has been radiocarbon dated to the early Iron Age. The full extent of the structure is unknown, but it may have formed a footbridge across the channel linking the raised promontory at its narrowest point with land to the north.

- c. Waterlogged timber remains from this period are rare within the archaeological resource in South-East England, from which asset (3940) derives its key significance. The structure may also prove to be more complex than the single short line of stakes found at evaluation stage with potential for it to extend further northwards. Asset (3940) holds strong evidential and historical value and is assessed as medium value.
- d. An unurned cremation of likely Bronze Age date (3936) was recorded in a small pit in Trench 6 within Land Parcel 48F. It was located on the edge of a paleochannel of the same period to the north of asset (4626) (described above). The placing of the cremation and its stratigraphic position below a sequence of alluvial deposits towards the edge of the Mar Dyke valley base indicates that this area may have been seasonally dry and the floodplain less extensive. Similar to the cremation associated with asset (4626) to the south, cremation (3936) may represent deliberate placement of remains in and around wetland environments. This suggests a likelihood that further human remains are present within this area, possibly a cremation cemetery. The significance of the burial is informed by its historical and evidential value, providing evidence of past occupation and funerary practice on the wetlands and floodplains of the valley funerary practice at this location. Furthermore, the possible existence of a cremation cemetery in this area has potential to yield further evidence of past funerary activity. Asset (3936) is assessed as medium value.
- e. A Mesolithic to Neolithic flint assemblage (3952) was recorded in an alluvial layer in Trench 281 within Land Parcel 47. The assemblage comprised 7 struck flints and was located within a floodplain area of a former palaeochannel on the eastern side of the Mar Dyke. The assemblage represents a minimally disturbed scatter and indicates the presence of human activity within the wetland areas of the valley. It derives significance from its evidential and historical value to yield evidence of Early Prehistoric activity within this area. Asset (3952) is assessed as medium value.
- f. Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 43, 45A-E and 46 Mar Dyke Valley, between South Ockendon and Orsett, Application Document 6.3) identified archaeological features within the Order Limits. The new assets identified in this area comprise:
- g. A Late Bronze Age to Roman occupation site (3841) was recorded in Land Parcel 45B. Trenches identified a high density of archaeological features including several ditches, postholes, and a pit in Trenches 452, 454 and 455. These features contained later Prehistoric to Roman pottery, struck flint animal bone, fired clay/daub, and part of an oven brick or loomweight of likely Iron Age date. Three postholes in Trench 454 were

tentatively interpreted as part of a four-post structure and a sherd of Roman pottery was found within one of the postholes. The site was located west of the Mark Dyke and may represent part of a small settlement. The site would have lay on a promontory immediately north of a palaeochannel dated to the Bronze Age and Iron Age which would have made it a suitable location for settlement. The site holds evidential and historical value for Late Prehistoric/Romano-British settlement activity and is assessed as medium value.

- h. A pit containing Middle Bronze Age pottery (3833) was recorded at the east end of Trench 409 in Land Parcel 45C. The feature contained a large number of sherds of pottery from a single bucket shaped jar in the Deverel Rimbury tradition sometimes referred to as 'bucket urns'. No evidence of a cremation was found although the pit also produced some charred barley, suggesting that domestic activity was taking place nearby. Asset (3833) holds historical value based on the regional diagnostic nature of the pottery along with evidential value to yield potential further evidence for Bronze Age activity in this area. Asset (3833) is assessed as low value.
- i. A site of Late Bronze Age/Early Iron Age activity (3874) was recorded In Trench 445 within Land Parcel 45B. An alluvial deposit contained four sherds of late Bronze Age/early Iron Age pottery, a fragment of a probable triangular oven brick or loomweight of likely Iron Age date, and a fragment of daub. The site was located on an area of former floodplain to the north of a raised promontory. It is not known if the material was washed in or represents surface activity on the floodplain. Linear cropmarks located immediately north and east of Trench 445 were not targeted by trenching, but another to the south was confirmed as genuine and contained a single flint chip of unknown date. It is possible that the Late Prehistoric finds from Trench 445 were associated with these cropmarks, although further excavation would be needed to confirm this. At this stage, the significance of asset (3874) is informed by its limited historical and evidential value due to a lack of contextual evidence and is assessed as low value. However, there is potential for the value of asset (3874) to increase following future excavation if associated archaeological features are identified.
- j. A possible Medieval farmstead (3902) was recorded in Land Parcel 45D, to the west of the Mar Dyke. A rectangular cropmark enclosure were investigated by Trenches 374 and 375 and contained substantial assemblages of Medieval pottery dating between the 11th and 15th centuries and a late medieval horseshoe. Other undated ditches in Trenches 376 and 379 shared the same alignment as the enclosure and may also be associated. Asset (3902) derives significance from its historical and

evidential value through its potential to yield evidence of Medieval activity in the Mar Dyke area and is assessed as medium value.

- k. A possible Roman cultivation system (3949) was recorded in Land Parcel 46. Trenches 487 and 494 revealed ditches containing Late Iron Age/Roman and Roman pottery. Trenches 488 and 492 both contained ditches of a similar profile to the Roman ditches but were undated. It is likely that the undated ditches were associated with the Roman ones and formed part of a Roman cultivation system. Asset (3949) derives significance from its historical and evidential value through its potential to yield evidence of Romano-British activity and agricultural use of the landscape and is assessed as low value.
- l. A later Prehistoric occupation site of domestic and funerary activity (3835) was recorded in trenches within Land Parcel 46. The site comprised a concentration of late Bronze Age/early Iron Age and middle to late Iron Age material including pottery, fired clay, worked flints, charcoal and cremated human bone. A hearth or firepit was probably used here and the evidence suggests a wider area of associated activity in the vicinity. Asset (3835) derives significance from its historical and evidential value through its potential to yield evidence of later Prehistoric domestic and funerary activity and is assessed as medium value.
- m. The remains of a possible structure and later Prehistoric/Roman/Medieval activity (3847) were recorded in trenches within Land Parcel 45E. Four postholes were recorded in Trench 311, three of which were in a line. Two ditches also crossed both Trench 311 and Trench 306 adjacent. Most features contained Iron Age pottery and one ditch contained only flint flakes, suggesting a focus of later Prehistoric activity. However, one ditch contained a sherd of Medieval pottery, and one of the postholes contained Roman pottery, making the dating of the structure more tentative. Asset 3845 derives significance from its historical and evidential value although the tentative dating of the structure limits this to a degree. Asset (3845) is assessed as low value.
- n. Possible later Prehistoric cultivation ditches (3845) were recorded in Land Parcel 43, east of The Wilderness. Several small ditches in Trenches 519 and 521 contained later Prehistoric pottery. Another sherd of pottery was recovered in a residual context in Trench 526. The ditches may have been used for cultivation. Due to its nature, asset (3845) has limited historical and evidential value and is assessed as low value.

6.4.288 Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 54 and

126 land north of North Ockendon and east of the M25, identified archaeological features. The new assets identified in this area comprise:

- a. Asset (3892), three parallel ditches of Roman date identified in trenches 6, 9 and 14. Their shallow survival and morphologically dissimilar appearance make a certain interpretation difficult, but the parallel nature suggests evidence of a Roman field or enclosure system at this location. If the ditches formed part of a Roman cultivation system, the asset derives significance from its historical and evidential value through its potential to yield evidence of Romano-British activity and agricultural use of the landscape and is assessed as low value.
- b. Asset (3887) comprised an isolated area of late Bronze Age or early Iron Age activity with associated pottery recovered from a pit and a posthole excavated in trenches 19, 24 and 28 along with some less certain features. The posthole also contained some charcoal and CBM which could be intrusive, or the pottery may be residual in this feature. Asset 3887 derives significance from its historical and evidential value although the tentative dating of the features limits this to a degree. Asset 3887 is assessed as low value.
- c. Asset (3886), two parallel ditches, both aligned north-south some 4m apart, and both contained late Bronze Age – early Iron Age pottery were identified in trench 62. The dating evidence and alignment suggest that they probably belonged to the same phase of the site. They may possibly have bounded a trackway or driveway, but unfortunately no other trenches coincided with their projected alignment. Their significance derives from the historical and evidential value through the potential to yield evidence of late Bronze Age – early Iron Age activity and agricultural use of the landscape and is assessed as low value.
- d. Asset (3891) was recorded in trench 72. A single ditch aligned east-west contained mid to late Roman pottery. Whilst recorded in isolation this asset may belong to the same phase of activity identified to the south, within WSI O. The significance derives from the historical and evidential value through the potential to yield evidence of mid to late Roman activity and agricultural use of the landscape and is assessed as low value.
- e. Asset (3885) was identified outside of the Order Limits in trenches 87, 88, 91, 92, 93, 96, 97, 98, 99, 101, 102, 103, 104 and represents a concentration of multi-period activity identified to the east of the M25, north of North Ockendon. The area yielded evidence for Mesolithic or early Neolithic struck flints. The flints are residual, recovered in association with pottery of Roman or medieval date. Although the assemblage was very small, it occurred in three adjacent trenches at the south end of the site, perhaps likely that this was a surface scatter since reworked. Evidence of

late Bronze Age/early Iron was quite widespread here. Comprised a moderate assemblage of pottery, concentrated in the southern portion of Land Parcel 126, in Trenches 92-3, 97-8 and 101-3 included four pits and a ditch and was also recovered as residual material. Low intensity activity within site continued into the middle to late Iron Age and was represented by pottery recovered from trenches 99 and 101-3, but no feature contained sufficient material to be dated firmly to the middle Iron Age period. Features containing only pottery of potentially late Iron Age date in the south-east in trenches 88 and 101. The Roman period was represented by an intensive activity in the form of a series of ditches in trenches 87-8, 91. The phase of occupation could only be dated broadly to the Roman period, as the bulk of the pottery assemblage does not allow more precise dating. One single sherd of early/mid Saxon pottery was recovered from a narrow gully in trench 91, along with three even smaller sherds of Roman pottery. This feature may well have been of Anglo-Saxon date its function is unclear. Although an isolated occurrence in the evaluation, it demonstrates the presence of activity of this period within the site. Asset 3885 holds evidential and historical value for potential to yield a range of historic human activity and is therefore of medium value.

- f. Asset (3895) was recorded in trench 83, located outside the Order Limits. A shallow ditch was recorded containing a single sherd of post medieval pottery and corresponded with a field boundary depicted on the 1888-1913 OS map. The asset derives significance from its historical and evidential value through its potential to yield evidence of agricultural activity and is assessed as low value.

6.4.289 Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 55, 56 and 58 to the west and east of the M25, south- of Junction 29 with the A127, identified archaeological features. The new assets identified in this area comprise:

- a. Asset (3696), an area of prehistoric activity. Three pits recorded across Trenches 130 and 133 each contained small quantities of pottery of either Bronze Age or Iron Age date. A number of undated pits also recorded within these trenches may have been associated with prehistoric land use. Undated features in Trench 135 adjacent may be associated. Tiny fragments of prehistoric pottery were found alongside a flake and two blades of Mesolithic or early Neolithic date in pit in Trench 130. In addition, a large undated ditch in Trench 99 and was on a roughly E-W alignment, continuing beyond the trench limits. Its continuation was not identified within nearby trenches. No finds were recovered from its single fill. Together these features provide limited evidence of low-level activity on site during the Early Prehistoric, Bronze Age and Iron Age periods.

Overall, asset (3696) is assessed as medium value for its evidential value for Early Prehistoric to Iron Age activity.

- b. Asset (4759), a linear ditch was identified in several trenches across Land Parcel 55 corresponding with last post-medieval field boundaries on historic OS mapping. The asset derives significance from its historical and evidential value through its potential to yield evidence of agricultural activity and is assessed as low value.
- c. The evaluation revealed the remains of several ditches (3699) in Land Parcel 56 across Trenches 54, 63, 124, 127 and 140, corresponding with late post-medieval field boundaries on historic OS mapping. They are largely location outside the Order Limits but do extend into the Order Limits in the south of Land Parcel 56. The asset derives significance from its historical and evidential value through its potential to yield evidence of agricultural activity and is assessed as low value.
- d. Evidence of Late Saxon and medieval activity, asset (3698) was largely concentrated in trenches 46, 47, 50 and 120 in the northern part of Land Parcel 56 and located outside the Order Limits. Small quantities of 10th- to 14th-century pottery were recovered from both ditches and pits, which were probably related to agricultural activity associated with a potential settlement nearby. The asset derives value from its historical and evidential value through its potential to yield evidence of activity in the vicinity and is assessed as low value.
- e. Asset (3697), a narrow E-W aligned ditch in Trench 39 and a large pit/ditch terminal in Trench 37, both at the north end of Land Parcel 56, contained substantial quantities of Roman pottery, most of it late Roman, and other finds. These trenches are close to the Roman settlement excavated to the north at Hobbs Hole (168), and probably represent a continuation of this site but both asset (168) and asset (3697) are located outside the Order Limits. It derives value from its evidential and historical value to yield evidence of Roman activity within this area and its association with the nearby settlement activity. Asset (3697) is assessed as medium value.
- f. Asset (3760) is an undated ditch feature located outside the Order Limits. The ditch yielded a piece of residual Iron Age pottery. It hold evidential value for its potential to illustrate past human activity in the area, although it is an isolated feature and of low value.
- g. A Medieval or early Post-Medieval pit (3759) was identified but lies outside of the Order Limits. The pit contained two sherds of broad 10th to 13th century date with ceramic building material of a later date, possibly early Post-Medieval. The pit, although holds some evidential

value for potential further Medieval to Post-Medieval activity, is an isolated find and of low value.

- h. Asset (3700), a large feature excavated in Trench 138 appears to be related to a pond depicted on 19th-century OS maps and may have been a former quarry or clay extraction pit. The asset lies outside the Order Limits and derives significance from historical and evidential value through its potential to yield evidence of Post-Medieval activity and agricultural use of the landscape and is assessed as low value.

6.4.290 Trial trenching within the Order Limits also identified a series of assets of low value. These are discussed here in the baseline, from south to north, to capture their influence on the baseline understanding of the historic environment, north of the River:

- a. An isolated ditch (3672), tentatively dated to the Roman period through a single sherd of pottery was identified to the south of Muckingford Road and west of Low Street Lane. It holds evidential value for potential further activity to be present. It is of low value.
- b. Post-Medieval quarrying (3674) was identified to the east of Low Street Lane and 30m north of Polwicks (LB48). Quarrying in the form of gravel pits was identified alongside an east-west boundary ditch which yielded 16th- and 18th-century CBM, a Georgian chimneypot, animal bone, oyster shells and a 15th or early 16th century copper alloy sheet with a 'paperclip' rivet. Asset 3674 is of low value for its evidential value and evidence of historic local industry and waste material associated with nearby rural Tudor and later settlement.
- c. To the south of Long Lane, a series of heavily truncated ditches and small number of pits and postholes were recorded, probably representing Prehistoric field systems and settlement-periphery activity (3623). The features were largely heavily truncated by ploughing and no secure dating evidence was found. Within (3623) two flint flakes of Late Prehistoric date and a blade of probable Neolithic date were recovered from the topsoil. In another location within (3623) a retouched flint flake of possible Neolithic date was found within a shallow deposit filling a natural hollow. These finds hint at a possible Prehistoric date for the features within (3623) although they could also be unrelated to the flint finds. Asset (3623) is assessed as low value for its evidential and historical value as a field system.
- d. In close proximity to asset (3623) trial trenching recorded below-ground remains of a Late Medieval to Post-Medieval field system extending over a wide area (3625). Asset (3625) is assessed as low value for its evidential and historical value as a field system.

- 6.4.291 Linear cropmarks and other cropmark features are recorded in fields north and south of Collingwood Farm (520). These features are currently undated and little information is known about their nature and context as they have not been archaeologically investigated. Only a small part of the mapped asset is located within the Order Limits to the south. Presently, the asset has limited historical value but derives significance from the evidential value of its archaeological remains. This asset (520) is assessed as low value.
- 6.4.292 A series of cropmarks are recorded to the east of the M25 and south of North Ockendon within the Order Limits. These comprise a rectilinear enclosure and adjacent ringditches and pits (595), a small partial rectilinear feature (4761) and a trackway (598). Asset (595) is likely to be of Prehistoric to Roman date and is assessed as medium value for its evidential value for funerary and potentially settlement activity of these dates. Asset (4761) is assessed as low value for its evidential value for possible Prehistoric or Roman activity of uncertain character. Asset (598) is assessed as low value and is likely to represent a Medieval or Post-Medieval trackway associated with North Ockendon. An asset recorded by the HER (605) encompasses the field containing these assets – this area may contain further unrecorded activity and is assessed as low value for its evidential value.
- 6.4.293 Trial trench evaluation conducted on behalf of the Project (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 41, 42, 44 and 60) identified a number of non-designated archaeological assets or refined the understanding of existing assets recorded by the HER:
- a. Asset (3682) Late Bronze Age or Early Iron Age possible occupation or industrial activity, of medium value for its evidential value.
 - b. Asset (117) Middle Bronze Age to Middle Iron Age settlement and sporadic Roman activity, of medium value for its evidential value.
 - c. Asset (4763) Pair of circular enclosures, likely Bronze Age or Iron Age although technically undated. This asset is of medium value for its evidential value
 - d. Asset (3870) Early Medieval enclosure ditches, of medium value for its historical and evidential value.
 - e. Asset (3876) Late Medieval to Early Post-Medieval debris spread with 15th-16th-century brick fragments, of low value for its evidential value.
 - f. Asset (611) Dispersed Iron Age to Roman pits and ditches, of low value for its evidential value.
 - g. Asset (594) Medieval agricultural and settlement-periphery activity, of low value for its evidential value.
 - h. Asset (3680) Bronze Age perpendicular ditches and pottery, of low value for its evidential value.

- i. Asset (3688) Ditches with 11th to 12th-century pottery and unstratified Roman pottery, of low value for its evidential value.
 - j. Asset (3683) Post-Medieval ditch and undated pit, of low value for its evidential value.
 - k. Asset (4762) Two undated pits containing charcoal and burnt flint, of low value for its evidential value.
 - l. Asset (361) Dispersed undated pits and ditches, of low value for its evidential value.
 - m. Asset (3685) Roman and undated pits and ditches, of low value for its evidential value.
 - n. Asset (3687) Roman ditches, of low value for its evidential value.
 - o. Asset (3691) Undated ring ditch and ditch which were truncated by ploughing and of 0.16m and 0.10m depth respectively, of low value for its evidential and historical value.
 - p. Asset (3866) Roman ditch, of low value for its evidential value.
 - q. Asset (3689) Medieval enclosure, of low value for its evidential and historical value.
 - r. Asset (3857) Mid Bronze - Mid Iron Age possible pit/enclosure, of low value for its evidential and historical value.
 - s. Asset (184) Circular enclosure of probable Prehistoric date, very heavily truncated by ploughing, of low value for its evidential value.
 - t. Asset (3865) Roman and Early Medieval Ditches, of low value for its evidential value.
 - u. Asset (1802), the site of partial circular cropmark, with no archaeological features recorded by trial trenches targeted on it, of negligible value.
- 6.4.294 The location of a WWII bomb crater (9) is recorded inside the Order Limits at Tooks Farm, near Great Warley. There is little known information from Kent HER records about this asset or the type of bombing event other than that the crater was visible on aerial photographs in 1946 and later as a cropmark. The recorded location is now covered by trees and the feature is unintelligible within the landscape; prior to this, the area was likely subjected to heavy ploughing given the surrounding agricultural land. Based on the lack of contextual information and the current nature of its form, the asset (9) is of limited significance and is assessed as negligible value.
- 6.4.295 The medium-value Bronze Age round barrow and cremations, East Tilbury, Muckingford Lane (444) is located immediately outside the Order Limits, on the western side of Linford

- 6.4.296 The following medium-value assets are located outside the Order Limits and within the 1km study area within and in the vicinity of North Ockendon. These assets derive their value primarily from the evidential and historical value of their below-ground archaeological remains (and earthworks remains in some cases). The surrounding rural land makes a minor contribution to their illustrative historical value as rural sites of various historical periods.
- a. 2090 – Medieval to Post-Medieval moated manorial site at Church Lane, North Ockendon which includes the site of North Ockendon Hall, a moat, Hall Farm, and a levelling deposit.
 - b. 566 – Medieval settlement at Church Lane
 - c. 610 – probable Post-Medieval moat at Church Lane, North Ockendon, Havering
 - d. 619 – Post-Medieval manorial site at Hall Farm, North Ockendon (including farmhouse 573 and well 620)
 - e. 710 – Iron Age and Roman enclosed settlement consisting of two rectangular enclosures and two small ditched enclosures
 - f. 1912 – Spring and site of Medieval St Cedd's Well, Church Lane, North Ockendon
- 6.4.297 The following Medieval medium-value assets are also located outside the Order Limits and within the 1km study area:
- a. 392 – Possible site of a chapel at St Mary's Hospital, East Tilbury. This asset derives its value from the historical and evidential value of its potential below-ground archaeological remains. The setting of the asset is limited to its general location within East Tilbury and its historical association with the village. This aspect of its setting includes land within the Order Limits and makes a minor contribution to its value.
 - b. 603 – Medieval to Modern common land at Nags Head Lane/Warley Road (Tylers Common), Havering. This asset derives its value from its evidential value and from its illustrative historical value as common land. The surrounding rural landscape, farmsteads and hamlets make a minor contribution to its illustrative historical value.
 - c. 40 – Early Medieval to Post-Medieval historic settlement at Great Warley, including a manor house, church, hospital, vicarage, common land, settlement and barracks. This asset includes numerous areas of historic settlement over a wide area, which derive their value from various physical elements and derive varying degrees of value from their setting.
 - d. The site of the Modern medium-value asset (322) is located outside the Order Limits and within the 1km study area. This asset is a WWII Allan

Williams Steel Turret, located at Love Lane. It derives its value from its evidential value and illustrative historical value, along with its group value with other WWII and associated military assets in the area such as the adjacent former gun turret (288) and SM11 approximately 490m to the south-east. The adjacent roads also make an important contribution to its illustrative historical value as junction defence emplacement. The Order Limits include these roads and therefore land within the Order Limits contributes, in part, to the asset's value.

- e. The medium-value (2086) undated cropmark features of unknown date including a possible rectilinear enclosure are located near Great Palmer's Shaw to the west of SM1. Adjacent to 2086 is 2111, an undated cropmark enclosure south of Middle Farm. These assets derive their value primarily from the evidential and historical value of their below-ground archaeological remains. The setting of these assets is informed by the immediate agricultural landscape around them which makes a minor positive contribution to their overall value.
- f. On the bank of the River Thames to the south-east of the Order Limits is (488), a ditch and buried land surfaces of unknown date at Ferris Aggregate Gravel Pit, East Tilbury. This site derives its value primarily from the evidential value of its below-ground remains and palaeoenvironmental deposits. The asset's historical association with the river foreshore and surrounding marshland forms part of its setting and has enabled the preservation of archaeological material; this makes a minor positive contribution to its value.
- g. The medium-value (1683) is located outside the Order Limits within the 1km study area in the vicinity of Orsett, to the north-east of SM4. This asset is a 3rd and 4th century Roman building and a Medieval rectangular enclosure excavated at Cherry Orchard Farm, Orsett, in 1964. Its setting has been altered by modern development and does not contribute to its value.

6.4.298 The following medium-value assets are also located outside the Order Limits within the 1km study area in the vicinity of South Ockendon:

- a. 180 – Roman pits and latrine pits at Little Belhus Farm to the north-west of South Ockendon. This asset derives its value from the evidential and historical value of its below-ground archaeological remains – its setting does not contribute to its value.
- b. 185 – Cropmarks of two ring ditches, ditches, linear features, and pits of unknown date east of South Ockendon. Derives its value largely from the evidential and historical value of its below-ground archaeological remains although it also has group value with other surrounding sites recorded as cropmarks.

- c. 214 – Linear features, ditches and pits of unknown date at South Ockendon; and 264 – Linear features, ditches and pits of unknown date south of South Ockendon Hall. They derive their value primarily from the evidential value of their below-ground archaeological remains, but also from their group value with other cropmark sites in the vicinity.

6.4.299 The following medium-value assets are located outside the Order Limits in the vicinity of SM1. These assets derive their value primarily from the evidential and historical value of their below-ground archaeological remains, but they also derive a minor degree of value from their group association as a landscape of extensive Prehistoric and Roman activity:

- a. 27 – a Mesolithic to Iron Age possible lithic working site, pits and ditches recorded at William Edwards School
- b. 215 – Bronze Age to Iron Age features at Stifford Clays-Primrose Island, including pits, ring ditches, a former farmstead, post holes and ditches
- c. 216 – Roman enclosed farmstead, cremations and corn-drying kiln
- d. 218 – Ditches, pits and linear feature of unknown date at Stifford Clays-Primrose Island

6.4.300 The following medium-value assets are located outside the Order Limits and within the 1km study area in the vicinity of SM7. These assets derive their value primarily from the evidential and historical value of their below-ground archaeological remains, but they also derive a minor degree of value from their group association as a landscape of extensive Prehistoric and Roman activity:

- a. 687 – The faint cropmarks of a Bronze Age circular enclosure, circa 70 metres in diameter
- b. 1807 – Cropmarks of a possible Bronze Age ring-ditch 32m in diameter located to the north of Grey Goose Farm

Geological deposits of archaeological interest

6.4.301 Within Essex, PQ zones 10-29, Pleistocene terrace deposits have been recorded on the north side of the River Thames floodplain, overlying Tertiary deposits ranging in age from early post-Anglian (Black Park Gravel) down to early-mid Devensian (Taplow Gravel). Further north within the Mar Dyke basin, Holocene alluvium and marginal dry valleys containing colluvial deposits (that may be of mixed Pleistocene/Holocene age), which merge and interdigitate with the lower-lying alluvial deposits were recorded. Thames terrace deposits on the west side of the Mar Dyke basin, west of North Ockendon range in age from early post-Anglian (MIS 12, Black Park Gravel) down to MIS 9 (Lynch Hill Gravel). Higher ground at the northern side of the Mar Dyke basin, east of Upminster, comprise depressions in an undulating landscape of London Clay which are infilled with Head deposits (that may be of mixed Pleistocene/Holocene age). This area also includes Early Pleistocene Stanmore Gravel and occasional minor outcrops of Lowestoft Till from the Anglian glaciation (MIS 12) and Black Park Gravel.

- 6.4.302 Palaeolithic archaeological finds of note within these zones include:
- a. Zone PQ-10. Late Upper Palaeolithic remains recovered from the base of alluvial sediments at several sites along the southern side of the Thames floodplain (eg. 3406). Also, nearby records of Mousterian bout coupé handaxes from Tilbury (4028) and another ovate handaxe from the Tilbury dock enlargement (4029) suggest there may be unrecognised deposits/remains of this era in places, although most finds from the floodplain and its margins are probably residual/transported (430, 466, 4036). Zone PQ-10 is of high value.
 - b. Zone PQ-11, where an outcrop of Corbets Tey gravel (equivalent to the Lynch Hill terrace dating to MIS 10-8) includes one findspot, a handaxe found on the marsh surface at its south-east corner (441) although may be derived (not in situ). Zone PQ-11 is of medium value.
 - c. Zones PQ-12a and 12b, , contain fluvial sediments of the Taplow/Mucking Gravel with a possible outcrop of Corbets Tey gravel with nearby associated findspots including moderately common Lower/Middle Palaeolithic handaxes and debitage found in the late 19th century from unspecified gravel pits in the West Tilbury and Mucking area (395, 464, 4034). Zones PQ12a and 12b are of medium value.
 - d. Zone PQ-13, contains periglacial features (248) and sands and gravels of the Orsett Heath/Boyn Hill gravel with numerous records of well-provenanced handaxe and debitage finds from the Boyn Hill/Orsett Heath deposits in this zone (414, 468, 506, 4018) and around it (503, 4017), as well as further afield (427, 2119, 4030, 4031). Zone PQ-13 is of medium value.
 - e. Zone PQ-14, contains gravel deposits which have been variously attributed as Black Park, Orsett Heath and Dartford Heath gravel. There is one Palaeolithic findspot recorded near to this zone (328). Zone PQ-14 is of medium value.
 - f. PQ-15, contains Head deposits with no recorded Palaeolithic findspots. PQ-16, of medium value, contains no mapped record of Pleistocene sediments of interest and one surface find of a handaxe from Saffron Garden Farm (2079). Zone PQ-15 is of low value.

- g. Zone PQ-17, contains Holocene fine grained sediments and peat deposits with palaeoenvironmental potential overlying gravels of the Corbets Tey/Lynch Hill terrace formation. Whilst no findspots are recorded within PQ-17, nearby equivalent deposits have produced good and minimally-disturbed archaeological remains, including fresh condition artefacts (181, 2182, 4014, 4020, 4021) Zone PQ-17 is of medium value.
- h. Zones PQ-18 and 19, contain fine-grained sediments and peat with high palaeoenvironmental potential (in PQ-19 the Belhus Organic Channel/Aveley Silts and Sands) and in addition gravels of the Corbets Tey/Lynch Hill terrace formation. Whilst no findspots are recorded within PQ-18 and 19, nearby equivalent deposits have produced good and minimally-disturbed remains, including fresh condition artefacts (181, 2182, 4014, 4020, 4021). Zones PQ-18 and 19 are of high value.
- i. Zones PQ-20a, 20b and 20c contain clay, sand and gravel Head deposits with no known findspots recorded in or near the area. Zones PQ-20a, 20b and 20c are of medium value.
- j. Zone PQ-21, contains Holocene alluvium and peat with no known sites or findspots recorded. Zone PQ-21 is of low value
- k. Zones PQ-22a and 22b, contain alluvial and Head deposits with no known sites or findspots recorded in or near the area. Zones PQ-22a and 22b are of low value.
- l. Zones P23a and 23b are within the Mar Dyke basin contain Holocene alluvium and Peat deposits of high palaeoenvironmental potential. These deposits are filling lower lying areas and palaeochannels of the Mar Dyke basin. The palaeochannels are shown on Figure 6.8 (Application Document 6.2). The Holocene deposits have been dated as part of the ATT works to the Bronze age or later, however older Palaeolithic landsurfaces and potential sites may be buried beneath. The ATT works uncovered a very dense and minimally disturbed flint scatter (4626) on a promontory (between two palaeochannels) mostly comprising Mesolithic flint although a predominance of backed bladelets within the assemblage indicate Late Upper Palaeolithic activity also. PQ-23a and 23b are of medium value.
- m. Zone PQ-24 contains alluvial and Head deposits with no known sites or findspots recorded in or near the area. Zone PQ 24 is of medium value.
- n. Zone PQ-25, contains laminated sands, silts and gravels of the Orsett Heath/Boyn Hill Terrace and Black Park Gravel. There is one handaxe record from this zone (4007) and palaeoenvironmental deposits with associated flint artefacts recovered in situ (173, 4020, 4021). Zone PQ-25 is of high value.

- o. Zone PQ-26, contains sands and gravels possibly of Black Park Gravel, Dartford Heath Gravel and Orsett Heath Gravel. No findspots or sites were recorded within or near this zone. Zone PQ-26 is of medium value.
- p. Zones PQ-27 and PQ-28, contain glacio-fluvial sands and gravels of the Stanmore Gravel Formation and no known findspots or sites are recorded. Zones PQ-27 and PQ-28 are of medium value

Built heritage – North of the River Thames

Summary

- 6.4.303 North of the River Thames there are four high value Grade II listed buildings located within the Order Limits:
- a. LB58 *Thatched Cottage*
 - b. LB65 *Moat Bridge and Gatehouse at South Ockendon Hall*
 - c. LB89 1 and 2 Grays Corner Cottages
- 6.4.304 LB96 Murrells Cottages
- 6.4.305 North of the River Thames outside of the Order Limits and within the 1km study area and landscape study area there are 173 further high-value listed buildings, of which eight are Grade I listed (LB36, LB69, LB135, LB142, LB169, LB205, LB276, LB297) 13 are Grade II* listed (LB33, LB47, LB90, LB127, LB140, LB141, LB149, LB177, LB181, LB273, LB274, LB287, LB292) and the remaining 152 are Grade II listed: LB5, LB6, LB7, LB8, LB9, LB10, LB11, LB32, LB32, LB35, LB37, LB38, LB39, LB40, LB41, LB42, LB43, LB44, LB45, LB46, LB48, LB49, LB50, LB51, LB52, LB53, LB54, LB55, LB56, LB57, LB59, LB60, LB61, LB62, LB63, LB64, LB66, LB67, LB68, LB70, LB71, LB72, LB73, LB74, LB75, LB76, LB77, LB80, LB81, LB82, LB83, LB84, LB85, LB86, LB87, LB88, LB91, LB92, LB93, LB94, LB95, LB97, LB98, LB107, LB108, LB109, LB110, LB111, LB115, LB116, LB128, LB129, LB130, LB131, LB132, LB133, LB134, LB135, LB136, LB137, LB138, LB139, LB143, LB144, LB145, LB146, LB147, LB148, LB150, LB151, LB152, LB153, LB157, LB158, LB159, LB160, LB161, LB162, LB163, LB164, LB165, LB166, LB167, LB168, LB170, LB188, LB203, LB204, LB206, LB207, LB208, LB209, LB210, LB211, LB212, LB213, LB214, LB215, LB216, LB217, LB226, LB228, LB229, LB238, LB268, LB269, LB270, LB271, LB272, LB275, LB277, LB278, LB279, LB281, LB283, LB284, LB285, LB286, LB288, LB289, LB290, LB291, LB293, LB294, LB295, LB296, LB299, LB300, LB301, LB304, LB305, LB319.
- 6.4.306 Eight Conservation Areas are located north of the River Thames. Of these, three partially extend within the Order Limits: Great Warley (CA2), North Ockendon (CA4) and West Tilbury (CA7); all three are of high value.
- 6.4.307 Three further high value Conservation Areas are located within the 1km study area and landscape study area: Orsett (CA5) and East Tilbury (CA6).
- 6.4.308 The medium-value Cranham Conservation Area (CA3) is located within the 1km study area and partially within the landscape study area. With the agreement of Historic England and Essex Place Services, this asset has also been

scoped out of further impact assessment due to no impacts being predicted on its value.

- 6.4.309 The high-value Weald Park (CA15) and the medium-value Warley Place (CA1) are all located within the 1km study area and outside the landscape study area. With the agreement of Historic England and Essex Place Services, these have been scoped out of further impact assessment due to no impacts being predicted on their value.
- 6.4.310 Two high-value Registered Park and Gardens are located to the north of the River Thames: Warley Place (RPG2) located within CA1; and Weald Park (RPG4) located within CA15. As with the Conservation Areas in which they are located, these assets have also been scoped out of further impact assessment due to no impacts being predicted on their value.
- 6.4.311 Non-designated built heritage assets have been assigned a value based on the methodology set out in Section 6.3. Within the Order Limits and study areas there are:
- a. Seven medium-value non-designated buildings (11, 43, 49, 89, 90, 116, 622)
 - b. 34 low-value non-designated buildings (2, 57, 314, 321, 535, 575, 577, 692, 693, 737, 738, 739, 1830, 4145, 4153, 4154, 4155, 4156, 4157, 4158, 4159, 4163, 4164, 4165, 2160, 623, 1703, 2014, 2027, 2037, 128, 2169, 1704, 607)
 - c. Two negligible-value non-designated buildings (59, 581)
- 6.4.312 The built heritage assets are discussed in further detail below, following in a geographical order, beginning in the Tilbury Area. Where a Conservation Area is discussed, the listed buildings within that Conservation Area will also be mentioned. Assets which are not being potentially impacted by the Project are briefly mentioned, whereas those which are being potentially impacted by the Project are discussed in more detail.

Baseline details

- 6.4.313 *Riverside Station* (LB127) is a high-value Grade II* listed building south of the Order Limits at Ferry Road, fronting onto the Thames Estuary at Gravesend Reach. The building was designed in a neo-Georgian style as a railway station with a unique floating landing stage in 1924 by Sir Edwin Cooper for the Port of London Authority. The complex closed in 1990, but re-opened in 1995 for leisure cruise use. The estuarine setting of the station contributes to its overall value and includes its location on the north bank of the Thames which informs its connection to the Port of London and association with river transport. Historic and current access is along Ferry Road, which forms part of Riverside Station's (LB127) setting and extends to the land within the Order Limits. The estuarine setting and the station's historic value contribute to the asset's high value.
- 6.4.314 *The World's End Inn* (LB133) is a high-value Grade II listed building of late 17th century or early 18th century date, of timber framing with weatherboarded cladding, located 220m east of the Order Limits in Tilbury. The value of the

asset derives from its vernacular architectural style as a timber-framed building and its communal value as a public house. The setting of the building is informed by its location close to Tilbury Fort (SM13) and Tilbury docks, two communities it historically served. The approach to the inn is through Fort Road. This setting and historic value contribute to the asset's overall value.

- 6.4.315 *The Officers Barracks at Tilbury Fort* (LB181) is a high-value Grade II* listed building 640m south of the Order Limits. The barracks were built in 1772 of yellow stock brick with a slate, hipped roof in a mid-Georgian style. The setting of the barracks provides historic legibility due to its location within Tilbury Fort (SM13) which has 16th century origins and contributes to its overall value as part of one of the most complete 17th century forts in England. This setting does not extend to the land within the Order Limits. LB181 is of high value due to its architectural value and historic association and setting within Tilbury Fort.
- 6.4.316 A non-designated Second World War pillbox (314) is located immediately south of the Order Limits on the northern bank of the River Thames. It is built to the Essex Lozenge design, unique to the Essex coastline and designed to command the flat low-lying land around the estuaries. Only 36 surviving examples of this pillbox type are known in Britain. They are an elongated octagon in shape, allowing the pillbox to straddle low sea defence walls and banks. Asset (314) is now located within the foreshore and is filled and partially buried by mud. It is assessed as medium value for its historical and evidential value (although this has been somewhat compromised by its poor preservation) as well as its group value with other Second World War defence assets in the wider area. Its setting also contributes to its value, primarily the adjacent river and the wider defence network of which they are part, including pillboxes in Tilbury Fort (SM13), in Gravesend across the River Thames and pillbox (321) c. 1.8km to the east on the northern bank of the River Thames. The reclaimed marshland setting of asset (314) is no longer present due to the expansion of Tilbury Docks and construction of the former power station immediately to the north (which includes land within the Order Limits). However, part of the land within the Order Limits c. 1.1km east of the asset does include part of the River Thames foreshore which contributes to its value.
- 6.4.317 Asset (321) (mentioned above) is a non-designated Second World War pillbox located c. 130m east of the Order Limits on the northern bank of the River Thames. The pillbox is partly buried on its landward side as the flood defence bank has been raised since its construction. It is an octagonal concrete pillbox with a long firing aperture at each end with steel shutters (although the shutters on one side have collapsed). Inside the pillbox are two machine-gun tables. Asset (321) is assessed as low value for its historical and evidential value as well as its group value with other Second World War defence assets in the wider area. Its setting contributes to its value, primarily the River Thames to the south and the reclaimed marshland setting to the north, and other defence assets in the wider area such as Coalhouse Fort (SM14) c. 995m to the north-east, pillbox (314) c. 1.8km to the west and other pillboxes on the southern bank of the River Thames. The land within the Order Limits to the west of the asset forms part of the reclaimed marshland setting that contributes to its historical value as a riverside defence.
- 6.4.318 A non-designated, medium-value sea wall (90) is located adjacent to the Order Limits and west of *Coalhouse Fort* (SM14). The wall is mapped from 1777 but a

precise construction date is unknown. Its date contributes to the value as a significant example of 18th century or earlier marine engineering. The setting of the asset is informed by its shoreline location which contributes to its overall value.

- 6.4.319 The site of the non-designated, medium-value Coalhouse Wharf, Coastguard lookout and radar station (89) is located south-west of Coalhouse Fort (SM14). The station is of likely Post-Medieval date and also holds evidential value as the potential site of a 1540 blockhouse associated with *Coalhouse Fort* (SM14). The setting of the asset is informed by its shoreline location which contributes to the legibility of its historic functional use and overall value. The coastguard lookout and radar station (89) is of medium value.
- 6.4.320 The high-value Grade I listed *Church of St Katherine* (LB169) is located south of East Tilbury. The Order Limits are located in close proximity to both the north and the south of this heritage asset. The church dates to the 12th century with significant alterations in the 13th and 17th centuries. Its flint and rubble walls contain some Roman and Medieval brickwork. The unfinished west tower was started in 1917 by the London Electrical Engineers in memory of the men, non-commissioned officers (NCO) and officers of *Coalhouse Fort* (SM14). The church holds architectural, evidential and historic value due to its multi-period fabric which illustrates the historical narrative of the building and evolution of rural ecclesiastical architecture. The setting of the church is influenced by its location on Princess Margaret Road and by the higher ground of the surrounding area, providing views of the wider landscape which includes land within the Order Limits. This is illustrated by viewpoint N-(CH)09, taken from the roof of *Coalhouse Fort* (SM14), which is around 75m to the south-east and also contributes to the church's value. This setting contributes aesthetically and historically to the asset's overall value.
- 6.4.321 *The Old Rectory* (LB128) is a Grade II listed building located just north of the Order Limits and north-west of Coalhouse Fort (SM14). The building holds architectural value as a late Georgian country house, built of yellow stock brick with surviving sash windows. The setting of the house is informed by its location on the edge of open fields and opposite the *Church of St Katherine* (LB169) with which, the name Old Rectory suggests a historic association. This setting contributes to the asset's overall high value.
- 6.4.322 *Buckland* (LB66) is a Grade II listed building, located in the countryside to the south-east of West Tilbury and south of East Tilbury, on a low ridgeline overlooking the Tilbury Marshes. Although it is not located within the Order Limits, the Order Limits are in close proximity to the asset in all directions. *Buckland*, a late 18th or early 19th-century building holds historical, aesthetic and architectural value as an example of a grey gault brick-built country house. It is two storeys in height with a parapeted front, stucco band and a slate roof. The building has a three-window range with double-hung vertical sliding sash windows with glazing bars.
- 6.4.323 The setting of (LB66) also contributes to its value. The principal elevation faces north-east to a short drive and the garden elevation faces south-east. The 19th-century mapping shows that the setting formerly included an orchard to the north-east and open gardens to the south-west which likely facilitated deliberate long-range views across the Tilbury Marshes to the River Thames.

The gardens appear to have been heavily planted in the latter half of the 20th century, which has curtailed the former long-distance views (although potentially the views are somewhat open during the winter months). This may have been done to screen views of waste disposal and industrial activity taking place on the Tilbury Marshes. Nonetheless, the associated grounds make a minor contribution to the aesthetic value of the asset. The wider low-lying landscape to the south-west (including land within the Order Limits), and the River Thames beyond, also make a minor contribution to the aesthetic value of the asset. The agricultural landscape to the west, north and east also makes a very minor contribution to its aesthetic value.

- 6.4.324 Approximately 260m south-east of Buckland (LB66) is the non-designated low-value remains of Bowaters Farm (1830), located within the Order Limits. The farmhouse does not survive, but the barn range in a courtyard arrangement is still present, albeit in an overgrown condition. Bowaters Farm is located downslope from the ridge on which Buckland and the *Second World War anti-aircraft battery at Bowaters Farm* (SM9) are situated; the scheduled monument is located c. 80m east of the farm. Bowaters Farm (1830) has historical and architectural value as an example of a partially surviving Post-Medieval barn range and is assessed as having low value. It also derives some value from its setting, primarily the surrounding rural landscape which makes a minor contribution to its aesthetic value (which includes land within the Order Limits surrounding the asset, although much of this landscape is in use as landfill which has reduced its contribution to the value of the asset).
- 6.4.325 The northernmost part and a small area of the south-east of the high-value West Tilbury (CA7) Conservation Area is within the Order Limits. The West Tilbury Conservation Area (CA7) is a dispersed rural settlement located on an historic escarpment. The settlement is surrounded by historic agricultural land on all sides which contributes to its overall value through a functional relationship as a rural farming settlement. In the Medieval period West Tilbury was a small agricultural settlement and some of the surrounding ‘open field’ system survives in the area of The Great Common Field bounded by Rectory Road, Turnpike Lane, Blue Anchor Lane and Muckingford Road. A Medieval market and fair were both held from the 14th century on the area now known as ‘The Green’, which now forms the historic core of the Conservation Area and is framed by groups of historic buildings.
- 6.4.326 There are 13 listed buildings within the Conservation Area and the architectural and historic value of these buildings, along with the large open spaces of the setting, form part of its character. There has been little adverse physical development within West Tilbury to detract from the settlement, adding to its overall value.
- 6.4.327 Within West Tilbury Conservation Area (CA7) there are 13 high-value listed buildings of Medieval to Post-Medieval date that contribute to the understanding of the development of West Tilbury settlement. Of these 13 listed buildings, the Church of St James (LB33) and *Marshall’s Cottage* (LB90) are both Grade II* listed and of Medieval date. The Grade II listed *Walnut Tree Cottage* (LB49) is also of Medieval origin. The remaining 10 listed buildings are Grade II listed and of Post-Medieval date:
- a. LB48 Grade II listed *Polwicks*

- b. LB50 Grade II listed *West Tilbury Hall*
- c. LB54 Grade II listed *Kings Head Public House*
- d. LB55 Grade II listed *The Bakery*
- e. LB62 Grade II listed *Granary to North East of Manor Farmhouse*
- f. LB83 Grade II listed *Post House*
- g. LB85 Grade II listed *Well House*
- h. LB87 Grade II listed *Barn to North West of Tilbury Hall*
- i. LB92 Grade II listed *Manor Farmhouse*
- j. LB93 Grade II listed *The Cottages*

- 6.4.328 The Grade II* listed Marshall's Cottage (LB90) is located on Blue Anchor Lane in the northern part of the Conservation Area (CA7). The Order Limits are located approximately 400m to the north, 600m to the east and 570m to the south. Marshall's Cottage (LB90) originated as a timber-framed, early 15th-century hall house with cross-wings; it is of one storey with an attic in the centre range and two storeys in the cross-wings which are gabled and jettied. Externally it is part-plastered and part-weatherboarded with a red tile roof and double hung vertical sliding, sash windows. Internally, a great deal of original features survive, such as crown post roofs and a late 15th-century mantel beam with elaborate roll mouldings.
- 6.4.329 Marshall's Cottage is a well-preserved example of a late Medieval hall house, which retains historical, architectural and evidential value. It also derives some value from its location off the historic Blue Anchor Lane and the views of the cluster of buildings around 'The Green', to the south, contributes to its historical value as a Medieval building associated with West Tilbury. Its rural setting of large, open fields contribute to its aesthetic value and historic legibility, particularly the open expanse of the Great Common Field immediately to the west, a surviving example of a Medieval open field.
- 6.4.330 The Order Limits in the vicinity of the asset comprises the existing Muckingford Road and the northern edge of the Great Common Field c. 400m to the north, while the open areas of the land within the Order Limits c. 600m to the east are more distantly located and partly screened by buildings at Holford Farm. Overall, the land within the Order Limits that forms part of the Great Common Field does contribute to the high value of Marshall's Cottage, although the land within the Order Limits elsewhere does not.
- 6.4.331 The Grade II* listed *Church of St James* (LB33) is located off Church Road in West Tilbury, in a semi-isolated location to the south of the cluster of buildings around The Green. LB50 and LB87 are located in the adjoining plots to the north-west and the *Scheduled Earthworks Near Church, West Tilbury* (SM5) are located immediately to the south. The church dates to the late 11th or early 12th century, with alterations in the 14th and 19th centuries. It is built of flint and ragstone rubble with limestone dressings and a tiled roof. The nave dates to the

12th century although it was largely refaced in the 19th century. Other Medieval features survive, such as 11th to 14th century windows (or partial window elements). The west tower dates to the 1879 restoration phase.

- 6.4.332 The building (LB33) is an example of a Medieval church with Post-Medieval elements, which has historical, architectural and evidential value. It also derives some value from its setting, principally the churchyard and Scheduled earthworks (SM7), the adjacent former manorial buildings (LB50, LB87) and the wider settlement of West Tilbury which contribute to its historical legibility. However, the church is currently in use as a private residence which has severed some of its historic functional relationship with West Tilbury.
- 6.4.333 The *Church of St James* (LB33), located on the edge of the escarpment, forms a prominent landmark in the surrounding landscape with extensive views to the church tower from various directions, which contribute to its aesthetic, communal and historical value. This is illustrated by viewpoint N-(CH)01 from *Tilbury Fort* (SM13) towards the church (Application Document 6.2, Figure 6.6). The land within the Order Limits is located around c. 180m to the east of the asset, including part of Church Road/Low Street Lane. Further land within the Order Limits is located c. 180m south of the asset in the open land at the foot of Hall Hill. These areas of land within the Order Limits a very minor contribution to the historical high value of the asset. Areas of land within the Order Limits further afield from 600m to c. 2.5km to the south-east of the asset may be distantly visible but do not make a tangible contribution to its value.
- 6.4.334 The high-value Grade II listed *West Tilbury Hall* (LB50) and Grade II listed *Barn to north of West Tilbury Hall* (LB87) are located off Church Road within West Tilbury Conservation Area (CA7), immediately south-west of the Order Limits. West Tilbury Hall is a 17th century or earlier timber-framed house, which is part-plastered and part-weatherboarded, with a red plain tile roof. It historically was the manor house of West Tilbury and had a farmyard and several outbuildings. One of the surviving farm buildings, is a 16th century barn (LB87), which is timber-framed and weather-boarded, has been converted into a dwelling. Together LB50 and LB87 have group value as examples of a 16th century agricultural buildings and an associated 17th century manor house, which have historical and architectural value.
- 6.4.335 Their setting also contributes to their value, particularly their group value as they are located in a prominent hilltop position on the site of the Medieval manor house and early Medieval earthworks (SM7), and adjacent to the Medieval *Church of St James* (LB33). These buildings make an important contribution to their historical and aesthetic value. The wider setting is formed by the cluster of buildings around 'The Green' to the north, with the surrounding large arable fields, the built form of Chadwell St Mary to the north-west and the long-distance views over the Thames Marshes to the south contributing to their aesthetic value. The wider setting of assets LB50 and LB87 extends to the land within the Order Limits, which includes Church Road/Low Street Lane c. 240m to the east and part of the open landscape c. 140m to the south at the foot of Hall Hill.
- 6.4.336 *The Kings Head Public House* (LB54), *The Bakery* (LB55), *Granary to North East of Manor Farmhouse* (LB62), *Post House* (LB83), *Well House* (LB85), *Manor Farmhouse* (LB92) and *The Cottages* (LB93) are clustered around

'The Green' in West Tilbury, immediately adjacent to the Order Limits which in this area are limited to the existing Church Road and Rectory Road.

Together the assets form a mixture of houses, agricultural buildings and service buildings, dating to the Post-Medieval period, which contribute to their historical and architectural value. The building's setting is largely formed by their location on 'The Green' around the junction of Blue Anchor Lane, Church Road and Rectory Road which contributes to their historical, and aesthetic value and group value.

- 6.4.337 The high-value Grade II listed *Polwicks* (LB48) is located immediately south of the Order Limits, in a semi-rural setting on the northern side of Station Road in a part of West Tilbury Conservation Area (CA7) which forms a physically separate zone from that described above. The high-value Grade II listed Walnut Tree Cottage (LB49) is located around 110m south-west of *Polwicks* (LB48), on the southern side of Station Road within CA7, immediately outside the Order Limits.
- 6.4.338 *Polwicks* is a 17th century or earlier house and *Walnut Tree Cottage* (LB49) is a 15th century house with a jettied cross-wing. Both assets have timber frames and red clay tiled roofs. The exterior of *Polwicks* has been clad with yellow stock brick, whilst *Walnut Tree Cottage* (LB49) has been plastered and weatherboarded; three examples of vernacular materials which are common within the area. As examples of vernacular 15th century and 17th century houses they derive historical and architectural value from their built fabric and in the case of *Walnut Tree Cottage*, its internal features such as its crown post roof. They also derive some value from their setting, formed by the surrounding small hamlet and crossroads which contribute to their aesthetic and historical value. Their relationships with Church Road and the hamlet of Low Street, the wider settlement of West Tilbury and the surrounding agricultural landscape of small paddocks, large arable fields and woodland areas also contribute to their historical and aesthetic value. These aspects of their setting include some of the nearby land within the Order Limits to the north, east and south.
- 6.4.339 West of West Tilbury Conservation Area (CA7) are the high-value Grade II listed Post-Medieval farmhouses of *Biggin farmhouse* (LB208) and *Gun Hill farmhouse* (LB134). Both farmhouses are located to the west of the Order Limits. Their value is influenced by their individual vernacular architectural styles: *Biggin farmhouse* (LB208) is built of timber framing with brick; and *Gun Hill* (LB134) is clunch-built. The setting of both listed buildings is informed by the surrounding agricultural land with which they both hold a functional historic relationship. However, their location in the lee of *Gun Hill* screens their setting from the land within the Order Limits on *Gun Hill*. Both LB208 and LB134 are of high value for their architectural value and the contribution of their historic functional connection to the immediate agricultural land surrounding them.
- 6.4.340 The high-value East Tilbury Conservation Area (CA6) is described as being in poor condition and is on the Heritage at Risk Register (Historic England, 2020a). The Conservation Area is located east of the Order Limits and derives its historical value from a connection to the Bata shoe company which partly reflected ideas of social organisation in the 1930s. This is illustrated by the communal and aesthetic qualities of the master-planning of the town which contributes to its overall value. The setting of East Tilbury (CA6) is informed by

flat open countryside to the north, south and west, which includes the land within the Order Limits. This setting makes a minor contribution to the overall high value of the Conservation Area.

- 6.4.341 The Conservation Area (CA6) covers the social housing and factories of the Bata Estate, including 11 high-value Grade II listed buildings with modernist designs in the ‘International Style’ (LB70, LB71, LB72, LB73, LB74, LB75, LB76, LB80, LB81, LB110, LB111). The listed buildings consist of three factory buildings (LB76, LB110, LB111) and eight associated workers’ houses:
- a. LB76 *Building 13, Bata Factory*
 - b. LB110 *Bata Industrial Buildings Numbers 24 and 34, Victory House and Nelson House*
 - c. LB111 *Bata Industrial Building Number 12*
 - d. LB70 2, *Bata Avenue*
 - e. LB71 4 and 6, *Bata Avenue*
 - f. LB72 12 and 15, *Bata Avenue*
 - g. LB73 24 and 26, *Bata Avenue*
 - h. LB74 32 and 34, *Bata Avenue*
 - i. LB75 28 and 40, *Bata Avenue*
 - j. LB80 8 and 10, *Bata Avenue*
 - k. LB81 16 and 18, *Bata Avenue*
- 6.4.342 The values of the individual listed buildings derive from their architectural design as part of the International Style movement and they mirror the design of Bata’s parent company town of Zlín, now in the Czech Republic. The setting of the buildings is informed by their group value with each other and their suburban location within East Tilbury. This setting and architectural value contributes to the listed building’s overall high value.
- 6.4.343 The high-value *Chadwell Place* (LB206) is located north of the Order Limits. The house is Grade II listed and dates to between the 16th and 17th centuries. The house holds architectural value as a rendered brick and timber-framed building in a vernacular style. The setting of the house is informed by the surrounding small complex of agricultural buildings which, together with agricultural land with which it has a historic functional relationship, provides historic legibility to the house. This setting contributes to the asset’s overall value but does not extend to the land within the Order Limits.
- 6.4.344 The high-value *Chadwell House* (LB211) and *Sleeper’s Farmhouse* (LB213) are located adjacent to the Order Limits on Chadwell Hill. Both assets are Grade II listed and hold architectural value for their vernacular building styles associated dating from the 15th century (LB213) and 18th century (LB211) respectively. Their settings are influenced by their location on Chadwell Hill and within

the suburb of Chadwell St Mary. This setting contributes to their overall value through their historic association with the 12th century *Church of St Mary* (LB205) although modern suburbanisation has partly eroded this aesthetic value.

- 6.4.345 The *Church of St Mary* (LB205) is a high-value Grade I listed building located east of the Order Limits, which dates from the 12th century. The church holds architectural, evidential, communal and historic value for its landmark quality and multi-period fabrics which illustrate the historical narrative of the building and the evolution of rural ecclesiastical architecture. The setting of the church is informed by its location at the junction of Linford Road, Brentwood Road and River View, at the top of Chadwell Hill. The setting, although partly eroded by suburbanisation, includes some land along the Brentwood Road which is within the Order Limits. This small part of the setting within the Order Limits contributes in a minor way to the overall historical value of the heritage asset due to its roadside location within the Chadwell St Mary suburb and its continued historic accessibility to, and relationship with, the community.
- 6.4.346 *Mill House* (LB42) and *High House* (LB94) are both high-value Grade II listed Post-Medieval farmhouses, located north of Muckingford Road and west of the Order Limits. Both assets hold architectural, historic and evidential value for their construction as brick-built farmhouses in the 18th and 19th centuries. Despite their proximity, their historic relationship is weak, with both using separate access tracks from Muckingford Road. Their settings are informed by the immediate flat and largely open agricultural land which surround them and which forms part of the land within the Order Limits. This setting contributes to the overall value of both assets through their historic and functional relationship as farms.
- 6.4.347 Within the villages of Linford and Walton Hall Farm, there are five high-value listed buildings (LB35, LB203, LB204, LB212, LB217). Four of the buildings form part of the Walton Hall farmstead: *Walton Hall* (LB203); *Sutton's Farmhouse* (LB204); *Turners Farm* (LB212); and *a weatherboarded barn at Waltons Hall* (LB217). All four buildings, which are Grade II listed and of Post-Medieval date, have architectural and historic value as surviving examples of vernacular farm buildings and group value as a farmstead. The agricultural setting of the buildings defines their physical relationship to each other as well as their historic functional association as a farmstead. This setting contributes to their high overall value and extends to the land within the Order Limits north of Walton Hall Road.
- 6.4.348 The fifth listed building, located in the village of Linford, is *Smithy Cottage* (LB35), a high-value Grade II listed cottage which is 17th century in origin and holds architectural and evidential value as a timber-framed building. The setting of the asset is defined by its location at the junction of Princess Margaret Road and Muckingford Road. However, encroachment from modern housing has eroded the contribution of the setting to the cottage's overall value. *Smithy Cottage* (LB35) is of high value for its architectural and historic value.
- 6.4.349 *Heath Cottage* (LB40) is a high-value Grade II listed building located off Hornsby Lane in Orsett Heath, with modern houses to the west, allotments to the south and rural land to the north and east. The asset is located immediately to the south of the Order Limits. *Heath Cottage* is a late 18th century cottage.

It is built of red brick and timber framing with weatherboarding, a thatched roof and a brick chimney stack. As an example of a vernacular dwelling built of local materials it has architectural and historic value. Its setting contributes to its aesthetic value, principally through the surviving rural landscape to the north and east. This element of the setting includes land within the Order Limits.

- 6.4.350 The Grade II listed high-value *Heath Place* (LB41) is located around 680m north-east of Heath Cottage within open agricultural land between Chadwell St Mary to the south and the A13 dual carriageway to the north. The asset is located immediately to the south of the Order Limits. It is a late 18th century timber-framed and red brick house with a plastered exterior and a red clay tiled roof. It has aesthetic, architectural and historical value as an example of a rural vernacular farmhouse. Its setting is formed by the surrounding landscape of large arable fields which contributes to its aesthetic value. This rural setting extends to the land within the Order Limits.
- 6.4.351 *Coppid Hall* (LB285) and the *Former Granary Now House North of Coppid Hall* (LB277) are both high-value Grade II listed Post-Medieval buildings at the eastern edge of North Stifford. Both hold architectural value for their building styles and age. Both assets provide historic legibility for understanding the Post-Medieval development of settlement within North Stifford. The setting of both assets is informed by their proximity to each other which contributes to their group value through a historic and functional relationship. The surrounding agricultural land also contributes to the setting of the former granary, by providing legibility for its historic functional association. Due to proximity, this setting extends to the land within the Order Limits.
- 6.4.352 *Europa Hotel* (LB304), known as Stifford Hall Hotel is a high-value Grade II listed building. Early 19th century in date, the elegant three-storey hotel is built of rendered brick with grey slate roof and verandah for which it holds architectural value. The setting of the hotel is enhanced by its location within its own walled grounds and well-manicured gardens. The wider setting is informed by the hotel's location on the edge of North Stifford which provides legibility for North Stifford's Post-Medieval development. This wider setting extends to the land within the Order Limits.
- 6.4.353 *Numbers 1 and 2 Grays Corner Cottage* (LB89) are high-value Grade II listed pair of cottages located within the Order Limits. The cottages date from the early 19th century and were built in grey gault brick with a grey slate roof. During the 20th century the building was substantially altered to a white render finish which has eroded some of its architectural and historic value. They do still retain some evidential, aesthetic and historical interest as 19th century cottages which are associated with LB58. The cottages are located on the west side of Baker Street, south-west of the centre of Orsett, where the setting has been highly eroded and truncated by the surrounding junction between the A1089 and A13. This setting detracts from the building's aesthetic value although its group value with *Thatched Cottage* (LB58) partly contributes to its high value.
- 6.4.354 *Thatched Cottage* (LB58) is a high-value Grade II listed building which is also located within the Order Limits adjacent to *Numbers 1 and 2 Grays Corner Cottage* (LB89). The cottage is located within private grounds between two intersections in Baker Street, south-west of the centre of Orsett. The building is

a 17th century timber-framed cottage with weatherboarding, a thatched roof and some painted brickwork elements. The cottage is a one storey building with an attic lit by a single dormer window. The ground floor has a three-window range of 19th century casement windows. An off-centre brick chimney is located on the pitch of the roof. Despite the proximity of the nearby junction between the A1089 and A13, the setting is primarily dominated by the surrounding flat agricultural land which contributes to its historic value.

- 6.4.355 The high-value *Whitecroft's Farmhouse* (LB37) is a Grade II listed building close to the junction of the new road with the A13 and A1089 intersection, adjacent to the Order Limits. The building is a late 18th century two-storey house, built in red brick with a timber frame and single-storey flanking wings. It has original red brick gable-end chimney stacks, a pedimented doorcase with panelled pilasters and sash windows. It holds architectural, aesthetic and historical value as an example of a fine 18th century farmhouse (although it now functions as a care home). The setting is partly formed by its proximity to Stanford Road, the new houses to the rear, but with a surrounding agricultural setting which contributes to its value. The setting has been somewhat eroded by the embanked A13 dual carriageway to the north and the A1089 dual carriageway to the west.
- 6.4.356 Two high-value Post-Medieval Grade II listed buildings are located along Stifford Clays Road. These are *Greygoose Farmhouse* (LB38), around 90m south of the Order Limits, and *Little Wellhouse* (LB67), around 25m west of the Order Limits. *Little Wellhouse* is a late 16th or early 17th century timber-framed and weatherboarded two-storey house with a plain red tile roof. *Greygoose Farmhouse* is a mid-17th century timber-framed and plastered two-storey house with a modern tiled roof. They primarily derive their historical, evidential and aesthetic value from their historic built fabric. Their settings, which also contribute to their value, are informed by the adjacent farm buildings and surrounding agricultural land with which they hold a historic functional relationship and which contributes to their illustrative historical value as farmhouses. These elements of their setting, along with their historic spatial relationship with one another, contribute to their group value, extends to the land within the Order Limits. However, their agricultural setting has been encroached upon by residential development to the south-west and the A13 dual carriageway to the north and north-east.
- 6.4.357 The weatherboarded barn at *Barehams Boarding Kennels* (LB88) is a high-value Grade II listed building located adjacent to the eastern extent of the Order Limits, with Orsett Golf Course to the south and the Southfields housing estate to the north. The barn was constructed in the 17th century of timber-framing and clad in weatherboarding. However, it has a modern roof and now forms part of a commercial garden centre. The building holds architectural value as an example of a traditional farm building, built with local materials in the vernacular tradition. The setting of the asset is informed by the surrounding farm buildings, commercial buildings, mixed woodland and golf course. The land within the Order Limits forms part of the agricultural land and woodland, an element of the setting which contributes to the value of the asset.
- 6.4.358 Two high-value Grade II listed buildings are located at Stifford Clays Farm. *Stifford Clays Farmhouse* (LB91) and the nearby thatched barn (LB39) are both of Post-Medieval date. The 17th century timber-framed barn holds historic

value for its association with an earlier farm at the site and evidential and architectural value for its vernacular style, although it has lost its thatched roof. The rendered brick, double-range farmhouse is of 19th century date and contains neo-classical elements which contribute to its architectural value. Their setting is informed by a rural landscape, altered by the presence of the A13 and modern housing. Although some agricultural land remains, this setting does not extend to the land within the Order Limits.

- 6.4.359 *Murrells Cottages* (LB96) are located on the south side of A13 Stanford Road, south of Orsett, and are within the Order Limits. These high-value Grade II listed cottages date from the 18th century and are built of timber-framing. The cottages are single-storey dwellings with attics, pebble-dashed walls and a thatched roof. The attics accommodate four, flat-topped dormer windows. Externally an original red brick chimney stack survives. The building is located on the south side of Stanford Road, south of Orsett, although the traffic on the A13 disturbs the tranquillity of the setting, harming the building's aesthetic value. The cottages are well enclosed to the rear, which borders open agricultural land, with the dwellings immediately to the east of the cottages visually enclosing this side of the asset's setting. The surrounding agricultural land makes a minor contribution to the cottage's aesthetic value and to their illustrative historical value as a former agricultural worker's dwelling .
- 6.4.360 The high-value Grade II Listed *Baker Street Windmill* (LB57) is located to the east of the small settlement of Baker Street. The Order Limits are around 55m west of the asset. *Baker Street Windmill* is an octagonal two-storey weatherboarded smock mill on a two-storey red brick base. The windmill dates from 1674 and is attached to a mid-19th century yellow brick engine shed with a slate roof. Both the windmill and the engine shed are included in the listing. Although the structures had declined to a ruinous state by the mid-20th century, they have since been restored and converted to private residential use. This asset is a good example of a Post-Medieval smock mill with an attached engine shed illustrating the development of the wind-powered milling, over time, as technology changed. As a result, it has historical, architectural, evidential and aesthetic value.
- 6.4.361 *Baker Street Windmill* also derives some value from its setting, principally its location outside of the settlement, in open land, which contributes to its aesthetic value and its illustrative historical value as a windmill. However, the extensive A13/A1089 junction, around 235m to the south-west, has partially eroded the open and rural historic character of the landscape. The land within the Order Limits includes part of the surrounding rural landscape which contributes to the value of Baker Street Windmill. The adjacent hamlet of Baker Street also makes a small contribution to its historical value.
- 6.4.362 Four further high-value Grade II listed buildings are located within the small Baker Street settlement:
- a. LB52 *Thatched Barn at Whitfields*
 - b. LB53 *The Wilderness*

c. LB56 *Mill House*

d. LB60 *Whitfields*

- 6.4.363 All of the above are high value Listed Buildings of Post-Medieval date. Each holds architectural value for their individual vernacular building styles and historic value for their associations. They also have a group value in combination with each other and together with the historic ribbon development of the village of Baker Street. The setting of the five assets (including *Baker Street Windmill*) is informed by their association to each other and intervisibility which contributes to their group value. All assets have views over the wider agricultural land which contributes to the historic legibility of the *Thatched Barn* (LB52) and *Baker Street Windmill* (LB57) through a functional relationship. The setting of all five assets extends to the land within the Order Limits.
- 6.4.364 A medium-value post-mill roundhouse (116) is located on the west side of Mill Lane, Orsett. Post-mills are an early form of windmill, built around a single wooden post. Although the windmill does not survive, the roundhouse which was built around the base of the trestle posts and which supported the windmill, still stands. Historic mapping indicates that a windmill has existed on Mill Lane since the 17th century, although the mill had been demolished by the 20th century. Sited within an extensive complex of farm buildings, the farmyard setting of this asset does not extend to the land within the Order Limits.
- 6.4.365 *Slades Hold Cottages* (LB45) is a high-value Grade II listed building, located adjacent to the Order Limits. The 17th century terrace of cottages is constructed of rendered timber frame with a thatched roof, for which contributes to its architectural value. The setting of the asset is informed by its discrete setting on High Road, which includes the land within the Order Limits, between Baker Street and Orsett.
- 6.4.366 *Loft Hall* (LB59) is a late 18th century high-value Grade II listed house, located 270m north of the Order Limits. The house, located to the east of the village of Orsett on the Brentwood Road, is red brick two-storey building, with a grey slate roof for which it holds architectural value. The hall is part of an historic farmstead which gives it and group value and contributes to its historical value. The setting of the house is informed by its immediate farm buildings and the surrounding agricultural land with which it holds a historic functional relationship. Due to the screening of trees and surrounding buildings, this setting does not extend to the land within the Order Limits.
- 6.4.367 *St Clere's Hall* (LB273) is a high-value Grade II* listed farmhouse east of the Order Limits. The two-storey farmhouse, with attics and a crenelated parapet, was built in 1735 of red brick in an early Georgian style with a picturesque influence, for which it holds architectural and historic value. The wider setting, although it includes views north over nearby agricultural land, is dominated by the adjacent A1013 Stanford Road and the southern setting includes a landscape repurposed for modern leisure activity as a golf driving range. This setting does not contribute to overall value or extend to the land within the Order Limits.

- 6.4.368 There are 16 high-value, listed buildings located within the Orsett (CA5) Conservation Area. Of these, one listed building, the *Church of St Giles* (LB135) is Grade I listed, being Medieval in origin with Post-Medieval additions. The remaining 15 are all Grade II listed and of Post-Medieval date:
- a. LB46 *Village Lock Up or Cage*
 - b. LB84 *Old North's Cottage*
 - c. LB129 *Birch Cottage*
 - d. LB130 *Stable Range to North of the Larches*
 - e. LB131 *15, High Road*
 - f. LB132 *29 and 31, High Road*
 - g. LB136 *Numbers 11 and 13 and Post Office*
 - h. LB137 *33 and 35, High Road*
 - i. LB138 *The Larches*
 - j. LB163 *2, High Road*
 - k. LB164 *8 and 10, High Road*
 - l. LB165 *Monument 20 Yards East of Church of St Giles and All Saints*
 - m. LB166 *39 and 41, High Road*
 - n. LB167 *6, High Road*
 - o. LB170 *Whitmore Arms Public House*
- 6.4.369 These 16 listed buildings each hold architectural value for their individual building styles, as well as historic value for their contributions to the settlement development of Orsett. The setting of the listed buildings within Orsett (CA5) Conservation Area is informed by their association to each other and location within Orsett. Their setting does not extend to the land within the Order Limits which is 155m to the west of the closest building: the *Village Lock Up* (LB46).
- 6.4.370 The high-value Orsett (CA5) Conservation Area is located approximately 125 m to the east of the Order Limits at its closest point. Its designation is based on the special character and appearance of its built heritage which has a strong vernacular character and is of architectural and historic value. Although the village is Medieval in origin, centred around the Grade I listed church of St Giles and All Saints (LB135), it saw rapid expansion in the early 20th century principally along High Road, Rowley Road and Rectory Road. Whilst the village retains its semi-rural character, the setting of the Conservation Area (CA5) is characterised by modern expansion to the north and south, with flat, open countryside beyond this. This setting does not extend to the land within the Order Limits.

- 6.4.371 *Orsett House* (LB47) is a Grade II* listed house within its own grounds, with an associated Grade II listed garden wall with two gate-piers and a gate (LB34), located to the north-west of the Conservation Area (CA5). Both designated assets date to the 18th century and hold architectural value for their construction style and historic value for their association to each other. The setting of these assets is informed by their inter-relationship with each other, as well as the associated gardens. This setting does not extend to the land within the Order Limits. Both LB47 and LB34 are of high value.
- 6.4.372 *Poplars Farmhouse* (LB61) is a high-value Grade II listed building located adjacent to the Order Limits. The farmhouse is of an early 17th to late 18th century date and constructed of rendered timber frame with a plain red tile roof, for which it holds architectural interest. The setting of the asset is informed by the associated farm buildings and large open arable fields around it. This setting contributes to the asset's overall value and extends to the land within the Order Limits.
- 6.4.373 *Nos. 1 and 2 Maltings Cottages* (LB98) are high-value Grade II listed cottages which were built in the 17th century. The architectural value of the house is evident in its red brick construction with a central chimney stack although the roof has been replaced by a modern tile roof. The setting of the asset is informed by its location to the north of Orsett (CA5) Conservation Area where it has been subsumed into modern residential developments; however, this setting does not extend to the land within the Order Limits.
- 6.4.374 *Old Hall Farmhouse* (LB44) is a high-value Grade II listed building, north of Orsett. The house is timber-framed and of late 15th to early 16th century date which strongly contributes to its architectural and historic value. The setting of the asset is informed by its location west of Pound Lane and surrounding agricultural land with which it holds a historic functional relationship. This setting does not extend to the land within the Order Limits.
- 6.4.375 *Church of St Nicholas* (LB36) is a high-value Grade I listed building in South Ockendon. The church dates primarily to the 15th century with some earlier 12th and 13th century fabric remaining, as well as later 19th century restorations. The church holds architectural and historic value for its multi-period fabric which illustrates the historical narrative of the building and evolution of rural ecclesiastical styles. The setting of the church is informed by its location within the historical core of South Ockendon, which contributes to its overall value. This setting does not extend to the land within the Order Limits.
- 6.4.376 *Street Farmhouse* (LB32) is a high-value Grade II listed, late 16th century timber-framed farmhouse. Due to the farmhouse's date and vernacular style it holds architectural and historic value. The setting of the farmhouse is dominated by the surrounding mixed modern development which does not contribute to its overall value, or extend to the land within the Order Limits.
- 6.4.377 *Royal Oak Inn* (LB95) is a high-value Grade II listed building, located south of the Order Limits. The inn is a rendered timber-framed 15th or 16th century vernacular building which holds architectural and historic value. The setting of the asset is informed by its location on South Road, fronting a village green and surrounded by mixed development. This setting contributes to the overall value and legibility of the asset through a functional historic relationship with the community but the setting does not extend to the land within the Order Limits.

- 6.4.378 The moat bridge and gatehouse at *South Ockendon Hall* (LB65) is a high-value Grade II listed building which is located within the Order Limits and forms part of a scheduled monument (SM2). The listing comprises an 18th century red-brick bridge with three round arches and a ruinous gatehouse. The lower part of the outer wall of the gatehouse is built in finely dressed Medieval ashlar stone and the upper part in 18th century red brick with a round arch over the carriageway. The asset (LB65) has evidential value for its potential to reveal more information about the Medieval hall and historic use of the landscape. The moat does survive to the south-west (SM2) and has historical group value with the bridge and gatehouse (LB65). The setting of the asset, next to the scheduled moat (SM2) contributes to its significance. In addition, its proximity to South Ockendon Hall Farm, the remains of the mill ponds, and the agricultural buildings, forms part of its setting and contributes to its legibility and significance. The setting of the asset (LB65) extends to the land within the Order Limits.
- 6.4.379 *Kemps* (LB51) and *Kemps Cottage* (LB86) are high-value Grade II listed buildings located between North and South Ockendon. The buildings were built between the 18th and 19th centuries with LB51 constructed in brick with a hipped roof and LB86, built in timber framing, finished in plaster. Both hold architectural and historic value for their building styles. The setting of the assets is informed by their location on Dennis Road and the intrusion of the M25 and modern buildings has eroded their settings. However, agricultural land continues to form part of their immediate setting, with which they have a historic functional relationship as former farmsteads. Their settings extend to the land within the Order Limits.
- 6.4.380 *Parkers Farmhouse* (LB210) is high-value Grade II listed building. Built in the late 18th century of red brick with a red, plain tile, hipped roof, the asset holds architectural and historic value. The setting of the asset is informed by its isolated location and surrounding agricultural land, with views towards the land within the Order Limits.
- 6.4.381 *The Former Gateway at Groves Barn* (LB64) is a high-value Grade II listed building located immediately south of the Order Limits between North Ockendon and South Ockendon. The asset, which was built in the late 16th or early 17th century of brick and is now incorporated into a late 18th century implement shed, holds aesthetic, architectural and historic value. The setting of the asset is principally formed by its location between Groves Farm and the laneway to the north and its functional relationship with the remaining flanking walls which contribute to its historical and aesthetic value. The surrounding wooded landscape to the north and south and open agricultural land to the east and west make a minor contribution to its aesthetic value. The land within the Order Limits includes the laneway to the north of the asset and the rural landscape to the east and south-west.
- 6.4.382 The garden walls, entrance gate and brick piers to the former *Stubbers House* (LB9) are Grade II listed and of high value. They are located north of the Order Limits and hold architectural value for their typical East Anglian ‘crinkle crankle’ building style. The limited setting of the walls and gate has been disturbed by modern activity and does not extend to the land within the Order Limits.

- 6.4.383 There are eight, high-value listed buildings within North Ockendon Conservation Area (CA4). Of these, the *Church of St Mary Magdalene* (LB69) is Grade I listed and of Medieval date. The remaining seven are Grade II listed and of Post-Medieval date:
- a. LB5 *Kilbro*
 - b. LB6 *Russell Cottage*
 - c. LB7 *The Forge*
 - d. LB8 *Castle Cottages*
 - e. LB11 *The Rectory*
 - f. LB77 *Farmyard Wall to Former North Ockendon Hall*
 - g. LB82 *Garden Walls of the Former North Ockendon Hall*
- 6.4.384 The listed buildings within North Ockendon each hold architectural value for their individual building styles, as well as historic value for their contribution to the settlement development of North Ockendon. Their setting is informed by their association to each other as well as the surrounding agricultural land, of which the land within the Order Limits forms a part.
- 6.4.385 North Ockendon (CA4) Conservation Area, a high-value asset, is designated for its special character and appearance, which is illustrated through the settlement's historic development around the *Church of St Mary Magdalene* (LB69). The village is divided into two distinct parts, an eastern and western hamlet, joined by a single bridleway. The individual form of the settlement has been maintained and not encroached on by the nearby suburban form. Therefore, the rural and discrete setting of the Conservation Area (CA4), formed by mostly flat open farmland, contributes to its overall value.
- 6.4.386 Five low-value locally listed buildings are located within the Order Limits on Ockendon Road, to the west of North Ockendon and the M25. These comprise:
- a. Asset (4153) Estate House, Ockendon Road, Upminster. This asset was constructed c. 1800 as a two-storey T-plan house of yellow stock brick with a double-Roman tiled roof. It also has arched window lintels and a red brick string course on the front elevation. The main entrance is located on the left side of the front elevation, with a small porch covering. The Estate House is an example of a simple and attractive rural vernacular house built, which contributes to its historic and aesthetic value. A linear range is located to the east (Yellow Brick Mews) which is not part of the local listing although it may be part of the historic curtilage of Estate House. Yellow Brick Mews is single-storey, built of yellow stock brick with slate roofs and weatherboarding to north and east elevations.
 - b. 1 and 2 Bridge Cottages, Ockendon Road, Upminster (4154 and 4155). These assets were constructed in the late 19th century as a two-storey pair of semi-detached cottages with two gables fronting the road, with entrances

between, covered by a tiled mono-pitch porch. The building has casement windows, two brick chimney stacks on the ridge line and a plain, pitched clay-tile roof. The symmetrical design of this pair of late-19th century cottages lends the building high aesthetic value. Assets (4154) and (4155) are an example of a simple and attractive rural pair of vernacular cottages from which they derive historic and aesthetic value. The ridged roof is a striking feature which makes a particular contribution to their aesthetic value.

- c. 3 and 4 Bridge Cottages, Ockendon Road, Upminster (4156 and 4157). The LBH 'Heritage Asset Register, Buildings of Local Interest' (2014) identifies these buildings as 5 and 6 Bridge Cottages although they in fact appear to be 3 and 4 (confirmed by the photograph in the Register, which shows 3 and 4). This pair of semi-detached mid-19th-century two-storey cottages are built of yellow stock brick with a clay-tiled roof, with much later alterations and extensions. 3 and 4 Bridge Cottages are an example of simple but good-quality vernacular rural cottages, which contributes to their historic and aesthetic value.

6.4.387 Two non-designated low-value buildings (which are not locally listed) are also located on the Ockendon Road within the Order Limits, immediately to the east of asset (4157):

- a. Asset (4775) Larwood Cottage, a late 19th or early 20th century pair of semi-detached cottages, two storey, built of yellow stock brick with a clay tiled roof and two chimney stacks on the ridgeline. Larwood Cottage is an example of a simple but good-quality vernacular rural pair of c. 1900 cottages, which contributes to its historic and aesthetic value.
- b. Asset (4776) The Rosery, a late 19th or early 20th century rural house, L-shaped in plan with a projecting porch with a pitched roof in the south-west corner, two-storeys in height with a clay-tiled roof and a tall single chimney-stack. Steeply pitched gables with bargeboards are present on the southern and western elevations. The Rosery is an example of turn-of-the-century rural house with some basic ornamental features, which contributes to its historic and aesthetic value.

6.4.388 The low-value locally listed Manor Farm including buildings adjoining farmhouse (4165) and Banks (or Bankes) House (4158) are located on Ockendon Road immediately outside of the Order Limits to the west and east respectively.

6.4.389 *Blankets Farmhouse* (LB216) is a high-value Grade II Listed farmhouse, located north of Fen Lane. The farmhouse is 18th century in date and holds evidential, historic and architectural value for the survival of its fabric and historic association with the land. Its setting is formed by its location within agricultural land with which it holds a historic functional relationship. Its setting contributes to its overall value but does not extend to the land within the Order Limits.

- 6.4.390 The Grade II Listed *Bullens and Herds* (LB188) is also recorded to the north of Fen Lane. However, aerial imagery shows that this building was demolished in the 2010s and is no longer present (this was confirmed by a site visit) although it is still recorded on the National Heritage List for England.
- 6.4.391 The Grade II Listed *Barn and stable block to the north of Broadfields Farmhouse* (LB109) is of high value. Probably of 17th century date, the barn is in a vernacular tradition of timber framing with weatherboard cladding which contributes to its architectural value. The setting of the farmstead has been eroded from its historic agricultural use through the introduction of the M25, 200m to the east and an area of modern woodland, planted as part of the Thames Chase Community Forest. However, due to the proximity of the asset, its setting does extend to the land within the Order Limits.
- 6.4.392 *Franks Farmhouse* (LB115) is a high-value 15th to 17th century house, located 90m west of the Order Limits on Upminster Lane. The Grade II listed building is constructed of brick and timber framing with render. Although the interior has been altered it still retains some original internal features, notably a crown post roof, for which it holds historic and architectural value. The contribution of the setting to the heritage asset is enhanced by its location within a moated area and its association with the surrounding farm buildings. The wider setting has been altered by the M25 to the east and railway to the north but does still maintain some rural aspects which contribute to its legibility as a historic building. This setting extends to the land within the Order Limits.
- 6.4.393 A non-designated large barn (622) of medium value is located to the north-east of *Franks Farmhouse* (LB115). Few details are known about the barn but it is considered to hold historic connections to LB115 as well as evidential value due to the age of the structure. The setting of the barn has been altered through the introduction of the M25 and the modern use of the former farmyard as car parking to support commercial businesses at the site.
- 6.4.394 Four high-value Grade II listed Post-Medieval listed buildings are located north of the A127:
- a. LB152 *Hulmers*
 - b. LB153 *Hole Farmhouse*
 - c. LB157 *Brick House Hotel*
 - d. LB160 *Stony Hills Farm*
- 6.4.395 All four listed buildings hold architectural, evidential and historic value due to their built fabric. The settings of the farmhouses LB153 and LB160 are enhanced by the surrounding agricultural land with which they share an historic functional relationship, and which extends to the Order Limits. The closed private residential settings of LB152 and LB157 do not extend to the land within the Order Limits.
- 6.4.396 Great Warley (CA2) Conservation Area, a high-value asset, is designated for its special character and appearance, which is illustrated through the settlement's historic development around a crossroads (the B186, Warley Road and Dark Lane) with a second area of development around Tooks Farm to the south.

The individual form of the settlement has been maintained and not encroached on by suburban form. Therefore, the rural and discrete setting of the Conservation Area (CA4), formed by the settlement's hilltop location and a heavily wooded setting with some open farmland, contributes to its overall value. Warley Place Conservation Area (CA1) and Grade II Registered Park and Garden (RPG2) is located immediately to the north of Great Warley (CA2) and forms a vital part of its setting, with which it has strong historic associations.

6.4.397 Eight high-value listed buildings are located within Great Warley (CA2), all in the northern part of the settlement situated around the crossroads:

- a. LB141 Grade II* listed *Two Door Cottage*
- b. LB143 Grade II listed *Walletts*.
- c. LB144 Grade II listed *Blake House*
- d. LB145 Grade II listed *The Red House*
- e. LB148 Grade II listed *Oak Beam Cottage*
- f. LB150 Grade II listed *Thatchers Arms Inn*
- g. LB158 Grade II listed *Post Office*
- h. LB159 Grade II listed *K6 Telephone Kiosk Adjacent to Post Office*

Historic landscape – North of the River Thames

6.4.398 The historic landscape of the Project has been considered using a holistic approach aligned with the European Landscape Convention's (ELC) definition of landscape as '*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*' (ELC, Chapter I, Article 1). This approach makes use of nationally recognised Historic Landscape Characterisation (HLC) data to identify 'Historic Landscape Types' (HLTs) within the Project and its surrounding areas which have been divided into individual 'Historic Landscape Units' (HLUs) across the Project (see Figure 6.3, Application Document 6.2). Using this approach, HLTs and HLUs within the Order Limits and study area north of the River Thames have been organised thematically in to the following historic landscape categories which are assessed:

- a. Woodland
- b. Marshland and reclaimed marshland
- c. Sea walls and sea defences
- d. Open land, commons, heaths and fens
- e. Leisure and recreation
- f. Farming

- g. Settlements
- h. Industry and infrastructure
- i. Military activity and defence

Woodland

- 6.4.399 This landscape is of low value. There are three main woodland types across the landscape north of the River Thames, primarily associated with areas of agricultural land with which they interact. In the vicinity of the Project, woodland areas are made up of the following main landscape types:
- a. 18th- 20th century Woodland Plantation (HLT ref. AA); located in Linford, West Tilbury, Chadwell St Mary, North Stifford, Orsett, M25 corridor.
 - b. 21st century Woodland Plantation (HLT ref. GGG); located between Orsett and North Ockendon
 - c. Ancient Woodland (HLT ref. CC); located in North Stifford, Linford, Orsett Heath (Terrels Heath, Old House Wood), M25 corridor (Codham Hall Wood), Great Warley (Coombe Wood, Foxburrow Wood).
- 6.4.400 Although some areas of ancient woodland survive, notably along the M25 corridor and at Great Warley, the historic woodland presence in the vicinity of the Project is limited within the character of the landscape and has made way for agricultural land over time; this is reflected in its low value. There is some limited evidential and historical value derived from the presence of later woodland plantation, which contribute some understanding to the overall development of the landscape.

Marshland and reclaimed marshland

- 6.4.401 The marshland landscape is of medium value as a historic landscape north of the River Thames. This is largely due to its rarity and regional historical importance as it holds historical value for the way the land has historically been managed and the manner in which the land has been reclaimed and repurposed for grazing land.
- 6.4.402 The marshland landscape as a whole covers the low-lying land around the Tilbury area from the northern Thames foreshore to Chadwell St Mary. Historically, the marshland has held many different functions resulting in several landscape characteristics which are represented by the following most prominent HLTs:
- a. Mineral extraction (HLT. ref RR)
 - b. Boundary loss (HLT ref. DD)

- c. Piecemeal enclosure by agreement (TT)
- d. Built-up areas – urban development (FF)

6.4.403 Reclaimed marshland is focused on the northern Thames foreshore at East and West Tilbury Marshes and comprises:

- a. Drained reclamation – curvilinear – pre-18th century (HLT ref. II); Tilbury and West Tilbury, immediately north of Tilbury Fort (SM13)
- b. Drained reclamation – rectilinear – 19th-20th century (HLT ref. JJ); Tilbury and West Tilbury, immediately west and south-west of Tilbury Fort (SM13)

6.4.404 The marshlands north of the River Thames have seen alterations to their character in the modern period, namely the Tilbury power station area. The uses and management of the marshland have changed contextually over time as the land has been divided through enclosure and used for industry, infrastructure, and settlement. However, as a whole, the marshes remain a prominent part of the landscape north of the River Thames.

6.4.405 A unit of drained reclaimed land of Tilbury Marshes is located to the west on the eastern edge of Dock Road and forms prominent marshland amongst an otherwise urban area. Land adjacent to Coalhouse Fort (SM14) has been unaltered by mineral extraction or landfill, and the late 19th – 20th century reclamation and drainage activity is apparent in the layout of the landscape, but this has overlaid the earlier pattern of sinuous watercourses.

Sea walls and sea defences

6.4.406 This historic landscape north of the River Thames is of medium value. The sea walls and sea defences are intrinsically associated with the regionally significant marshland north of the River Thames through their role in reclaiming these areas for historic grazing marshland. This important relationship between landscape types is reflected by their medium value, which is an increase in value from the DBA (Appendix 6.1, Application Document 6.3) where it was assessed as low to medium value.

6.4.407 This landscape is represented by the following HLT ref. WW Sea Defences. The sea walls and sea defences form key features of the marshland on the northern foreshore of the River Thames and were fundamental flood defences in the process of reclamation from the Medieval period. As a landscape type, they hold historical value for the way land was managed, and for human interaction with the River Thames, to reclaim land. Where defences survive as earthworks, they hold evidential value for their construction methods and location.

Open land, commons, heaths and fens

6.4.408 This landscape is of medium value as historic landscape north of the River Thames. The significance of common land is that it has remained largely undisturbed through the centuries. It is a remnant of Medieval times when people relied on the resources of commons for survival. Historically, the rights of common land include the grazing of animals, or collection of natural materials such as wood and bracken. These rights still exist in the present day, though

they are not exercised as they were in the past. The public has the right to walk on all commons, which is an important characteristic of this landscape.

- 6.4.409 There are several areas of open space for common use. The three categories of this landscape within the Project study area are fens (Bulphan and Orsett Fens), commons (Tyler’s Common), and heaths (Mucking and Orsett Heaths)
- 6.4.410 These are represented by the following HLTs north of the River Thames:
- a. Commons with an open margin (HLT ref. GG)
 - b. Piecemeal enclosure by agreement (HLT ref. TT)
- 6.4.411 The most prominent of these within the vicinity of the Project are the fens of Orsett and Bulphan (HLT ref. GG). The fens here are of particular historical significance, as they have remained relatively unchanged in their appearance and function for centuries and are a rarity in the landscape.
- 6.4.412 Other commons at West Tilbury Marshes (Walton Common, Tilbury Fort Common, Parsonage Common, Hallhill Common, and Fort Road Common) are categorised as units of piecemeal enclosure by agreement (HLT ref. TT), which historically removed the common rights of people to access and use the land and they were enclosed by hedge boundaries. However, these units are still referred to as commons and function as such in the present day.
- 6.4.413 Development during the 20th century has seen changes to the character of open spaces; Walton’s Common now lies adjacent to Tilbury Power Station and Terrels Heath has seen gradual decline in size due to the urban expansion of Chadwell St Mary. However, where urban growth has not encroached into the Project study area, namely at Tyler’s Common and the heaths and fens north of the A13, the open spaces have mostly remained intact and unchanged.

Leisure and recreation

- 6.4.414 This landscape is of low value. There are pockets of leisure and recreational activity which form elements of the landscape, north of the River Thames. This activity has expanded within the Project study area during the 19th and 20th centuries and has benefited from the reuse of land for recreational use. Leisure and recreation is represented by the following HLTs in the northern part of the Project:
- a. Golf courses (HLT ref. N)
 - b. Water reservoir (HLT ref. ZZ)
 - c. 20th-21st century woodland plantation (HLT ref. DDD)
- 6.4.415 Golf courses form much of the leisure use in the northern part of the Project and are located in the areas of Orsett, Stanford-le-Hope, North Ockendon, and North Stifford. There are also areas of leisure constructed in the present day. Grange waters to the east of South Ockendon is a modern quarry filled with water for water sports. Furthermore, Thames Chase, at the northern end of the Project, comprises 20th century woodland planting which provides green space for walkers and cyclists to use at their leisure. These have some historical value

derived from the reuse of the landscape for leisure but contribute little to the overall historic character of the landscape.

Farming and field layout

- 6.4.416 This landscape is of medium value. The proliferation of farming in the Medieval period has shaped the agricultural landscape in Essex, and farmland is the dominant landscape north of the River Thames; north of the low-lying Tilbury marshlands, the land continues to rise, and farmland becomes the prominent character up to the Project's northern extent. Much of this landscape is indicative of planned division of the land which has influenced the way that fields and roads have been laid out over the centuries. The current farming landscape reflects the time depth of planned division of the land for agricultural purposes, while the more irregular aspects are indicative of the earlier agricultural landscape. The farming landscape in this part of the Project is represented by the following HLTs:
- a. Pre 18th century enclosure (dual-axis rectilinear 'co-axial fields' – HLT ref. KK)
 - b. Pre 18th century enclosure (irregular enclosure – HLT ref. U)
 - c. Pre 18th century enclosure (irregular sinuous enclosure – HLT ref. PP)
 - d. 18th-19th century enclosure (piecemeal enclosure by agreement – HLT ref. TT)
 - e. 18th-19th century agricultural land (HLT ref. AAA)
 - f. 20th century agriculture (boundary loss – HLT ref. DD)
 - g. Enclosed agricultural land with 20th century boundary loss (HLT ref. NNN)
 - h. Boundary loss with relict elements (HLT ref. EE)
 - i. 20th century enclosure (HLT ref. Z)
- 6.4.417 Urban expansion (Grays, North and South Ockendon), increased industrial activity (East Tilbury, Linford), and the establishment of large infrastructure (A13, M25) has led to extensive boundary loss in the northern part of the Project during the Modern period, as well as many historic farms being either demolished or repurposed. This has resulted in the re-establishment of large open arable fields (seen in earlier periods) and the establishment of 20th century enclosures. However, elements of earlier land divisions are still present (around East Tilbury, North Ockendon, Hole Farm) and are closely linked to historic parish cores, properties, and the road/track network within the Project study area. Therefore, field layout across the northern part of the Project holds historical and evidential value for illustrating the evolution of how land has been managed and farmed throughout a range of periods.

Settlements

- 6.4.418 This landscape is of medium value. Multi-period settlement activity has contributed to the shaping of the landscape within the northern part of the Project. This includes the multi-period cropmark site at Orsett (SM1) either side of the A13 and the nationally significant site of Mucking, excavated in the east of the study area which included remains from the Bronze Age, Iron Age,

Roman, and Early Medieval periods. However, within the present landscape, settlement is categorised as the following two HLTs:

- a. Built-up areas - Historic (HLT ref. HHH)
- b. Built-up areas - Modern (HLT ref. JJJ)

6.4.419 Historic settlements within the landscape are identifiable as small villages or hamlets. The location of historic settlements within Essex, especially in the Medieval period, is closely tied to the Thames terraces and their location on higher ground. These include East and West Tilbury, Chadwell St Mary, Orsett, North and South Ockendon, Bulphan, Cranham and Great Warley. Historically, these settlements are centred around churches or manor houses.

6.4.420 The process of settlement expansion, accelerated in the 20th century, occurred at Tilbury, Linford, Southfield, Chadwell St Mary, Orsett, Orsett Heath and Cranham. This growth expanded outwards from the historic nucleus of small settlements and has given these smaller historic cores greater settlement definition within the landscape. The area of Grays, incorporating Little Thurrock and Chafford Hundred, expanded in the mid to late 1940s. The establishment of the Bata factory in the mid-20th century resulted in the development of Bata Avenue and further settlement growth; Bata Primary School/Bata Technical College and Bata Dairy Farm depicted on OS maps from the 1950s illustrate the influence the factory had on the landscape of East Tilbury. In the 1960s, gaps were filled within Orsett, and South Ockendon has seen expansion adjacent to and west. Cranham and Upminster, at the northern extent of the Project have seen expansion as Greater London continues its development in the east. The settlement landscape derives its medium value for its illustration of time depth through historical and evidential value in the current landscape.

Industry and infrastructure

6.4.421 This landscape is of medium value. The establishment of industry has contributed to the growth of settlement activity and a reliance on infrastructure networks. Historic infrastructure within the northern part of the Project can be categorised as the following:

- a. Roads (Roman Roads, roads visible on historic maps from the 17th century onwards, modern M25/A13)
- b. Railways (London, Tilbury and Southend Railway)
- c. Water (River Thames and associated infrastructure)

6.4.422 Overall, infrastructure north of the River Thames shows good time depth. The road network, particularly in areas where land use remains predominantly rural and agricultural, illustrates the communication and trade network between historical settlements such as West Tilbury, Orsett, Stifford, North and South Ockendon, and Great Warley. Some of these roads illustrate further time depth through Roman origins. The railways and M25/A13 subsequently illustrate the later growth of travel networks and the River Thames had a direct impact on the development of late Post-Medieval to Modern industry.

- 6.4.423 The industry north of the River Thames, which is supported by the infrastructure, is represented by the following HLTs:
- a. Mineral extraction (HLT ref. RR) - East Tilbury Marshes, north and west of Coalhouse Fort)
 - b. Disused mineral extraction (HLT ref. HH) - West Tilbury, Linford, west of Orsett Fen)
 - c. Industrial complexes and factories (HLT ref. O) - Tilbury Docks, Tilbury Power Station, Bata factory)
 - d. Boundary loss (HLT ref. DD) – Buckingham Hill former landfill site

6.4.424 The industrial landscape north of the River Thames is mainly focused in the Tilbury area and along the northern Thames foreshore. Overall, the landscape provides a range of time depth; this is reflected in its historical and evidential value from early salt production of the Roman period in the marshland, the industrial use of Tilbury marshes in Post-Medieval and into the Modern period through the Bata factory and Tilbury power station. The docks at Tilbury represent the earliest evidence for industrial activity in the current landscape and continue to be a prominent part of the area's present character. The importance of the docks and the rarity of the Bata model settlement contribute significantly to the medium value of the industrial landscape north of the River Thames.

Military activity and defence

- 6.4.425 This landscape is of low value. Military activity and defence is focused around the northern foreshore of the River Thames and has a limited overall presence within the wider landscape across the northern part of the Project. This is due to the strategic importance of the River Thames historically. Military activity north of the River Thames can be categorised by the following:
- a. 15th -19th century defensive activity (Historic earthwork – HLT ref. NN; Tilbury Fort, Coalhouse Fort)
 - b. First World War activity (Orsett landing ground – military airfield)
 - c. Second World War activity (Orsett landing ground – military camp, scheduled anti-aircraft battery at Bowaters Farm, scheduled bombing decoy in Bulphan, anti-glider ditches earthworks between East Tilbury and Tilbury Fort)
- 6.4.426 *Tilbury Fort* (SM13) and *Coalhouse Fort* (SM14) represent the earliest military activity, established on the northern Thames foreshore between the 16th and 19th centuries. Both are visible as scheduled earthworks and are prominent within the landscape along the foreshore. During the First World War, three landing sites were located across the central part of the Project study area at Horndon on the Hill, North Ockendon, and Orsett; the latter was reused as a military camp during the Second World War. However, these former sites have no military or defensive presence within the current landscape. Visible Second

World War earthworks do survive (scheduled anti-aircraft battery at Bowaters Farm SM9, scheduled bombing decoy in Bulphan SM25, anti-glider ditches earthworks between East Tilbury and Tilbury Fort) although their presence within the overall landscape of the Project, north of the River Thames, is scattered and limited. These provide only glimpses of past military activity within the landscape in the present day.

- 6.4.427 The importance of many of these assets is reflected in their scheduled status. However, the overall military presence within the wider landscape of the Project, north of the River Thames, is fragmented and limited.

Future baseline ('Without Scheme' scenario)

- 6.4.428 The future baseline identifies anticipated changes to the existing baseline over time in the absence of the Project and is used as a basis against which to predict the potential impacts of the Project. A description of how the future baseline has been considered within the assessment is provided in Chapter 4: EIA methodology.
- 6.4.429 The future baseline of heritage assets in the Order Limits and study area would be expected to remain in the same condition as at present without the implementation of the Project at the time of the Project opening year (2030). Assuming there are no changes in land use, then the condition of any buried archaeological remains would stay as they are currently for an indefinite period within areas of pasture. Within arable fields, it is possible that they may suffer a slow deterioration, given the impacts of periodic deep-ploughing regimes. Equally, features of the historic landscape would remain in their current condition if there were no changes in land use or management regime. In the case of built heritage assets, they would be more susceptible to slow deterioration in their condition, without regular maintenance. However, if they were maintained then they too would be expected to remain in their current condition for an indefinite period.
- 6.4.430 As assessed in Chapter 16: Cumulative Effects Assessment (Application Document 6.1), there are two proposed developments within the Order Limits between the north bank of the River Thames and the Tilbury Loop railway line. Should these developments be granted permission, then they would impact the buried archaeological remains within their development areas and affect the settings of *Tilbury Fort* (SM13), West Tilbury Conservation Area (CA7) and East Tilbury Conservation Area (CA6).
- 6.4.431 Climate change or unusual weather events could change the condition of heritage assets. For example, a change in water table could change the conditions of buried archaeological remains. If this were a change from wet to dry, then any preserved organic material would deteriorate very quickly. If the change were from dry to wet this could also cause a deterioration in condition.

6.5 Project design and mitigation

- 6.5.1 Environmental considerations have influenced the Project throughout the design development process, from early route options assessment through to refinement of the Project design. An iterative process has facilitated design updates and improvements, informed by environmental assessment and input from the Project engineering teams, stakeholders and public consultation.

- 6.5.2 The Project as applied for includes a range of environmental commitments. Commitments of relevance to cultural heritage; these are set out in this section under the following categories:
- a. Embedded mitigation: measures that form part of the engineering design, developed through the iterative design process summarised above.
 - b. Good practice: standard approaches and actions commonly used on infrastructure projects to avoid or reduce environmental impacts, typically applicable across the whole Project.
 - c. Essential mitigation: any additional Project-specific measures needed to avoid, reduce or offset potential impacts that could otherwise result in effects considered to be significant in the context of the EIA Regulations. Essential mitigation has been identified by environmental topic specialists, taking into account the embedded and good practice mitigation.
- 6.5.3 Embedded mitigation is included within the Design Principles (Application Document 7.5) or as features presented on ES Figure 2.4: Environmental Masterplan (Application Document 6.2). Design Principles relevant to mitigation of effects on cultural heritage are described below, each with an alpha-numerical reference code (e.g. LSP.XX). Good practice and essential mitigation are included in the Register of Environmental Actions and Commitments (REAC). The REAC forms part of ES Appendix 2.2 the Code of Construction Practice (CoCP) (Application Document 6.3). Each entry in the REAC has an alpha-numerical reference code (e.g. REAC Ref. CH0XX) to provide cross reference to the secured commitment. Relevant good practice and essential mitigation to reduce cultural heritage effects are identified below.
- 6.5.4 The Design Principles (Application Document 7.5), Environmental Masterplan (Application Document 6.2), CoCP and REAC (Application Document 6.3), all form part of the Project control plan. The control plan is the framework for mitigating, monitoring and controlling the effects of the Project. It is made up of a series of ‘control documents’ which present the mitigation measures identified in the application that must be implemented during design, construction and operation to reduce the adverse effects of the Project. Further explanation of the control plan and the documents which it comprises is provided in the Introduction to the Application (Application Document 1.3).
- 6.5.5 Enhancement measures have been directly incorporated into the Project as part of the application of ‘good design’ principles. Enhancements are measures that are considered to be over and above any measures to avoid, reduce or remediate adverse impacts of the Project. Relevant beneficial effects arising as a consequence of this good design process are provided below.
- Embedded mitigation**
- 6.5.6 The engineering and landscape design for the Project seeks to avoid or reduce adverse impacts on designated and non-designated heritage assets as a result of change within their setting that would negatively affect their significance. This landscape design mitigation would include earthworks and planting as shown on Figure 2.4: Environmental Masterplan (Application Document 6.2).

Construction phase

- 6.5.7 Construction phase embedded mitigation of relevance to cultural heritage has been developed throughout the construction design process. This process included review of construction compound locations and resulted in the movement of Medebridge compound to the west to avoid a recorded area of archaeological remains and a slight change to the shape of Brentwood Road compound to place this slightly further away from the scheduled causewayed enclosure and Anglo-Saxon cemetery (SM6). Review of the construction methodology for utility works has resulted in changes required to avoid works in the scheduled area of the *Springfield style enclosure and Iron Age enclosures south of Hill House, Baker Street* (SM7). Review of the proposed construction routes (as shown in ES Figure 2.5 'Construction Information') has been informed by the locations of Conservation Areas and resulted in alignment alterations to avoid archaeological sites such as the medium value non-designated archaeological asset (2298).

Operational phase

- 6.5.8 Operational phase embedded mitigation of particular relevance to cultural heritage is discussed in this section. The main alignment has avoided, where possible, designated heritage assets such as scheduled monuments, Conservation Areas and listed buildings. Where this has not been possible, efforts have been made to minimise the physical impacts on these assets as much as possible and remaining impacts have been accounted for in the assessment. Other embedded mitigation measures relate to the mitigation of permanent visual or noise impacts during the operational phase, which affect the setting of designated and non-designated heritage assets.
- 6.5.9 Other embedded mitigation measures have arisen during the course of the assessment and relate to other operational features of the Project. For example: the relocation of proposed attenuation ponds to preserve a non-designated high value Mesolithic archaeological site discovered during trial trenching (3769).
- 6.5.10 Project-wide Design Principles relevant to cultural heritage are specified in the following sections of the Design Principles (Application Document 7.5):
- a. Connecting People, which includes a design principle to celebrate local heritage and to provide interpretation material for selected historic features (PEO.07).
 - b. Structures, which includes design principles aimed at integrating components within the landscape (STR.01); the creation of green bridges (STR.08); and balancing the requirements for noise barriers against visual impact (STR.10).
 - c. Lighting, which aims to preserve historic rural character of the landscape at night as far as possible (LST.02, LST.03).
 - d. Landscape which includes design principles to minimise removal of existing vegetation (LSP.01); integration of earthworks with the local topography (LSP.03); planting to minimise the visual impact of the Project (LSP.04);

reinstatement of land used for construction (LSP.05); and landscape design which reflects the local historic landscape (LSP.07).

- 6.5.11 Area-specific Design Principles for Sections 1 to 5 and 7 to 14 of the Project route, include:
- a. Planting to the south of the A2 corridor to reduce the visual impacts to Cobham Park (S1.02).
 - b. Brewers Road and Thong Lane over A2 overbridges (S1.04).
 - c. New woodland east of Shorne Woods Country Park (S1.08).
 - d. New landforms between the Project and HS1 within the setting of Cobham Hall (S1.16).
 - e. Wooded circle around Thong to retain an open rural setting (S2.01).
 - f. Retain open views across the landscape north of Thong Lane (S3.01).
 - g. Reinstatement of construction compounds east of the cutting (north of Thong Lane) to avoid disturbance to hedgerows and the historic parish boundary (S3.05).
 - h. Reinstatement of historic hedgerows (S3.09).
 - i. New sculptural landscape earthworks on Goshems Farm to create vistas across the Thames Estuary and guide views to features such as Tilbury Fort and Coalhouse Fort that reflect the military history of the Thames (S9.02).
 - j. Heritage interpretation along the Two Forts Way (S9.05).
 - k. Baker Street and Orsett Conservation Area – earthworks associated with A13 southbound slip road shall be carefully planted to reduce visual intrusion and integrate the design of acoustic barriers (S11.05).
 - l. Baker Street Windmill, to limit the land required an earth bund shall be designed to provide visual and noise mitigation without impacting on access with woodland planting where possible on the outward slope (S11.09).
 - m. Woodland planting to field boundaries between FP151 and B186 to strengthen the rectilinear field pattern (S14.02).
 - n. Franks Farm retaining wall to limit the land required adjacent to the listed Franks Farmhouse. Either soft landscaping shall be provided to soften the visual impact of the structures or planted green walls shall be provided (S14.09).

- 6.5.12 Area-specific Design Principles for Section 6 – Tunnel, are not relevant to cultural heritage mitigation.

Good practice

Construction phase

- 6.5.13 Construction phase good practice of particular relevance to cultural heritage comprises:
- a. Noise reduction measures (REAC Ref. NV007).
 - b. Dust reduction measures (REAC Ref. AQ002, AQ003, AQ004, AQ005)
- 6.5.14 Further construction phase good practice mitigation which is relevant to cultural heritage is set out in Chapter 7: Landscape and Visual (Application Document 6.1), comprising the following:
- a. 'Work compounds, access tracks, haulage routes, material storage areas, generators and other construction activities would not be located within areas of retained woodland, trees and hedges shown on the Environmental Masterplan (Figure 2.4, Application Document 6.2) unless the SoS agrees that any variation does not result in new or materially different significant environmental effects to those reported in the ES.' (REAC Ref. TB003).
 - b. 'Lighting will also be designed, positioned and directed to prevent or minimise light disturbance to nearby residents, ecological receptors, as well as motorists and rail and marine operations. This provision will apply particularly to sites where night working or security lighting will be required' (CoCP section 6.12.3).
 - c. 'Land temporarily impacted by works to divert utilities would be reinstated to its former condition and composition upon completion, as far as reasonably practicable, unless otherwise specified in the Environmental Masterplan (Figure 2.4, Application Document 6.2) or under the terms of article 35 of the draft DCO (Application Document 3.1), which sets out the temporary possession powers.' (REAC Ref. LV002).
 - d. 'Earth bunds of approximately 2-3m in height formed from material excavated on site would be sited along the boundary of the compound, as material becomes available to facilitate visual screening for residential properties on Thong Lane and Rochester Road (A226) during construction.' (REAC Ref. LV008).
 - e. 'Earth bunds of 3m in height would be formed from material excavated and retained on site, as material becomes available to facilitate visual screening for residential properties on Castle Lane, Chalk.' (REAC Ref. LV011)
 - f. 'Where soil is excavated and retained on site temporarily, it would be stockpiled in the form of earth bunds to facilitate visual screening for

residential properties along Church Road and Station Road.’
(REAC Ref. LV015).

- g. ‘Where soil is excavated and retained on site temporarily, it would be stockpiled in the form of earth bunds to facilitate screening for Hobletts to the north-east.’ (REAC Ref. LV021).
- h. ‘Where soil is excavated and retained on site temporarily, it would be stockpiled as earth bunds on the north-eastern boundary of the compound to facilitate visual screening for the North Ockendon Conservation Area.’ (REAC Ref. LV024).
- i. ‘Where soil is excavated and retained on site temporarily, it would be stockpiled in the form of earth bunds on the south and west boundaries of the compound, where required to facilitate screening for Ockendon Road and the nearest residential properties at the static caravan park.’ (REAC Ref. LV026).

Operational phase

- 6.5.15 Good practice mitigation which is specific to cultural heritage comprises Cultural Heritage Asset Management Plans. These ‘would be implemented by National Highways in accordance with DMRB LA 116 Cultural heritage asset management plans, (Highways England, 2019b) for any heritage assets that remain within its ownership following construction of the Project (REAC Ref. CH008). Currently this includes a very small part of Coalhouse Fort SM14 where the designated area does not follow existing land ownership boundaries.

Essential mitigation

Potentially significant effects

- 6.5.16 An iterative appraisal of the Project design taking into account the design principles and good practice was undertaken to identify any potentially significant effects that would require essential mitigation. Effects on cultural heritage that could be significant and therefore require further consideration for essential mitigation were identified as follows:
- a. Physical impacts to designated heritage assets during the construction phase
 - b. Physical impacts to non-designated near-surface archaeological remains and palaeoenvironmental deposits during the construction phase
 - c. Physical impacts to non-designated deeply buried archaeological remains and palaeoenvironmental deposits during the construction phase
 - d. Physical impacts to built heritage, both designated and non-designated, during the construction phase
- 6.5.17 A high-level framework for cultural heritage mitigation is set out within the Draft Archaeological Mitigation Strategy and Outline Written Scheme of

Investigation (Draft AMS-OWSI), which is provided as Appendix 6.9 (Application Document 6.3) and secured as a commitment of the REAC within the CoCP (REAC Ref. CH001). The good practice and essential mitigation measures secured in the REAC include:

- a. REAC Ref CH001 provides for the production of the AMS-OWSI
- b. REAC Ref Ch002 ensures that land taken for archaeological investigations does not extend beyond the limits of deviation of the Project
- c. REAC Ref CH003 ensures that a detailed project design for the archaeological investigation of the cropmark complex at Orsett (SM1) is prepared in line with the Management of Research Projects in the Historic Environment (MoRPHE) procedural model (Historic England, 2015)
- d. REAC Ref CH004 ensures that a Level 4 Historic Building Recording (Understanding Historic Buildings: A Guide to Good Recording Practice (Historic England, 2016)) of the three listed buildings at 1 and 2 Grays Corner (LB89), Thatched Cottage (LB58) and Murrells Cottage (LB96) is carried out, and that the relevant archaeological contractor shall apply to Historic England for removal of the three buildings from the official list of protected historic sites
- e. REAC Ref CH005 ensures the protective fencing of heritage assets
- f. REAC Ref CH006 ensures the burial of potentially sensitive archaeological remains beneath fill material to ensure they are not disturbed during construction
- g. REAC Ref CH007 ensures that SSWSIs shall set out the arrangements and responsibilities for implementing, monitoring and auditing the mitigation measures identified in the SSWSIs
- h. REAC Ref CH008 ensures that Cultural Heritage Asset Management Plans would be implemented by National Highways in accordance with DMRB LA 116 Cultural heritage asset management plans, (Highways England, 2019b) for any heritage assets that remain within its ownership following construction of the Project

6.5.18 The Draft AMS-OWSI contains appropriate essential mitigation measures for both archaeological remains and built heritage affected by the Project. The Draft AMS-OWSI has been produced for DCO submission, although during the DCO examination period the document may be updated to address stakeholder requests, so that a finalised document would be agreed by time that a DCO is granted.

6.5.19 The final AMS-OWSI would set out the scope, guiding principles and methods for the planning and implementation of essential cultural heritage mitigation across the Project. In line with Schedule 2, Requirement 9 of the draft DCO, a Site Specific WSI (SSWSI) for each area of archaeological interest would be

prepared that outlines specific measures that would apply to particular pieces of archaeological fieldwork, to be carried out as part of the programme of archaeological mitigation works.

Construction phase

- 6.5.20 The locations of construction compounds, Utility Logistics Hubs and construction access routes (on-line and proposed) are shown on Figure 2.5 (Application Document 6.2).
- 6.5.21 Essential mitigation measures for cultural heritage during the construction phase are set out and discussed in the Draft AMS-OWSI (REAC Ref. CH001; Application Document 6.3, Appendix 6.9). Paragraph 5.140 of the NNNPS states that ‘*the Secretary of State should require the applicant to record and advance understanding of the (sic) heritage asset, before it is lost (wholly or in part)*’. Recording is an important principle of cultural heritage mitigation and comprises the survey, excavation and reporting of heritage assets. The recording of the heritage asset captures the information that contributes to the understanding of the past. The mitigation measures are described in the context of the heritage assets to which the mitigation measures apply in Section 6.6 of this chapter. They are identified by specific reference numbers that correspond to the detail within Table 3.1 of the AMS-OWSI and are listed in brief summary form below in Table 6.5.

Table 6.5 Draft AMS-OWSI Mitigation

Mitigation Reference	Description
AMS-OWSI No. 1	Preservation <i>in situ</i> : for example, the protection of heritage assets through fencing or protective matting
AMS-OWSI No. 2	Recording of upstanding heritage assets: for example, a written, drawn or photographic description and interpretation of a building or a monument that is above the ground
AMS-OWSI No. 3	Non-intrusive archaeological fieldwork: for example, geophysical survey, controlled metal detecting or fieldwalking
AMS-OWSI No. 4	Intrusive archaeological fieldwork: for example, full archaeological excavation or strip map and sample excavation
AMS-OWSI No. 5	Archaeological monitoring and recording during construction: for example, attendance on site, during construction activity, by an archaeologist who can stop works to record any archaeological features and retrieve any archaeological material uncovered during construction
AMS-OWSI No. 6	Outreach and engagement: for example, a programme of activities, lectures, regular briefings and engagement activities as set out in the “Public Archaeology and Community Engagement Plan”
AMS-OWSI No. 7	Post excavation: for example, the interpretation of the site archive created during the mitigation phases, the analysis and conservation of materials recovered during the archaeological work, the production of text figures and plates, preparing a number of reports

Mitigation Reference	Description
AMS-OWSI No. 8	Publication: for example, preparing notes for relevant journals, popular reports and full excavation reports with specialist reports to “advance understanding” (NNNPS) of those heritage assets lost (wholly or in part) as a result of the Project
AMS-OWSI No. 9	Palaeolithic and geoarchaeological mitigation: for example, a programme of boreholes and sampling to recover sediments for further archaeological analysis and scientific dating, or excavations into Palaeolithic deposits, some of which may be deeply buried.

6.5.22 A number of other mitigation measures which are relevant, but not solely related to cultural heritage, are set out within the Design Principles (Application Document 7.5) and Chapter 7: Landscape and Visual (Application Document 6.1). Chapter 7: Landscape and Visual also sets out mitigation measures which are site-specific for the following construction compounds that are relevant to the mitigation of construction impacts on the setting of the heritage assets, and include retention of screening vegetation, careful siting of compound facilities, and establishment of visual screening earthworks:

- a. Southern Tunnel Entrance compound
- b. A226 Gravesend Road compound
- c. Station Road compound
- d. Mardyke compound
- e. M25 compound
- f. Ockendon Road compound

Operational phase

6.5.23 No operational phase essential mitigation is proposed for cultural heritage. Mitigation for heritage assets during this phase is presented in the embedded and good practice mitigation sections.

Enhancement

6.5.24 There are no specific enhancement measures included in the Project for Cultural Heritage, but a number of design principles that have the potential to enhance heritage assets are presented in 6.5.11.

6.6 Assessment of likely significant effects

6.6.1 This section presents the assessment of likely significant effects on cultural heritage receptors resulting from the construction and operational phases of the Project. This is based on the design of the Project and takes into account the mitigation as presented in Section 6.5.

6.6.2 The assessment considers the value/sensitivity as presented in in Table 6.3 and impact magnitude criteria based on DMRB LA 104 (Highways England, 2020b), and the significance of effects has been determined in accordance with

the matrix provided in Table 4.4 of Chapter 4: EIA Methodology and through the use of professional judgement.

- 6.6.3 All impacts and effects on heritage assets are summarised in Table 6.7 and Table 6.8 of this chapter, apart from those that would experience no change. It should be noted that the principal document which details all of the impacts and effects on heritage assets, is the Assessment Tables (Appendix 6.10, Application Document 6.3). The Assessment Tables must be referred to in conjunction with this chapter, which is not intended to be read in isolation.
- 6.6.4 Baseline information for the assets considered here is presented in Section 6.4 above and in more detail within the DBA (Appendix 6.1, Application Document 6.3). The assessment considers the value as presented in Table 6.4 of this chapter and the impact magnitude criteria set out in Table 4.3 of Chapter 4: EIA Methodology (Application Document 6.1). The significance of effects has been determined in accordance with the matrix provided in Table 4.4 of Chapter 4: EIA Methodology, and through the use of professional judgement.
- 6.6.5 Where appropriate the effects are presented in this chapter following archaeological recording. All heritage assets hold information about the past and archaeological investigation and recording is the only method of releasing that information. Without archaeological investigation and recording the assets and its ability to tell us about the past is totally lost, with recording the physical asset is lost but the information is retained and will form part of our collective heritage that can be studied and enjoyed in the future. Archaeological excavation, recording the results and using them to “advance understanding of the significance of the heritage asset before it is lost (wholly or in part)” (NN-NPS para 5.140), will reduce the magnitude of impact on all non-designated heritage assets by one level of magnitude. Thus, without recording a moderate adverse effect would be a major adverse effect. However, as explained in paragraphs 6.3.74, where a designated asset or a non-designated asset of archaeological interest that is demonstrably of equivalence to a scheduled monument experiences substantial harm, a full and proper record should be made through archaeological excavation or historic buildings recording, but the substantial harm the heritage asset experiences cannot be reduced through that recording.
- 6.6.6 The text within this chapter presents the significant effects on heritage assets, separated into the following categories: construction (Temporary and Permanent) and operation (Permanent). Assets assessed as likely to experience a not significant effect are all included in Appendix 6.10 (Application Document 6.3) and are summarised in this Section.
- 6.6.7 Effects on heritage assets can result from physical impacts, setting impacts, or both. Setting impacts to heritage assets (that affect their value) can be temporary, permanent or reversible. Physical impacts to heritage assets are permanent and non-reversible.
- 6.6.8 Any assets predicted to experience both physical impacts and temporary construction impacts resulting from a change to setting are included in the permanent impacts subsections, to avoid double counting and to provide a holistic assessment of impacts to heritage assets. Permanent setting impacts will be reported in the operational phase section. Impacts to historic landscapes are assessed for the operational phase and described in that section (with the

exception of Registered Parks and Gardens which are considered within both the construction and operational phases under Built Heritage).

- 6.6.9 Those assets that would be completely removed by construction of the Project are listed in the Assessment Tables (Appendix 6.10, Section 1.9 (Application Document 6.3)). The Project would result in substantial harm (in NPSNN terms) to a number of designated heritage assets following mitigation, identified in the assessment text below and summarised in Table 6.6 of this chapter. Where the Project would result in less than substantial harm to a heritage asset following mitigation, this has not been stated explicitly in the text.

Assessment of vibration on heritage assets

- 6.6.10 Assessment by the vibration specialists for the Project has considered whether any built heritage assets would experience an impact due to construction vibration caused by piling activities associated with the construction of the Project (Chapter 12: Noise and Vibration, Application Document 6.1)). With maximum predicted peak particle velocity (ppv) considerably below the 12.5mm/s threshold at which cosmetic or structural damage to the fabric of any of the built heritage assets is likely, the vibration impact assessment demonstrates that neither percussive nor vibratory piling techniques are likely to physically affect any built heritage assets.
- 6.6.11 At predicted ppv levels (below 2mm/s) the impact of vibration generated from piling activities (percussive or vibratory) is assessed to be of negligible magnitude and is **not significant** for the identified built heritage assets. Therefore, the vibration impacts arising from the piling activities associated with the construction of the Project would not constitute a significant adverse environmental effect on the heritage value of any of the identified built heritage assets.
- 6.6.12 The assessment of ground-borne vibration at land-based receptors (full results presented in Appendix 12.6 (Application Document 6.3)) has also demonstrated that there would be no impacts on built heritage assets resulting from the operation of the tunnel boring machinery during construction.

Construction phase

South of the River Thames

Temporary effects

Archaeological remains: significant effects

- 6.6.13 No temporary significant effects have been predicted on archaeological remains south of the River Thames during the construction of the Project.

Archaeological remains: non-significant effects

- 6.6.14 The high value scheduled monuments of the *Romano-British villa and 19th century reservoir in Cobham Park (SM10)*, *New Tavern Fort (SM17)*, the Roman Town of Vagniacae (SM21) and the *Springhead Roman Site (SM22)* are predicted to experience a change to their setting during construction which would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.15 The setting of the medium value Iron Age Enclosure (2298) would change as a result of utility works in close proximity, with associated noise, lighting and visible construction activity. This would result in temporary impact of minor adverse magnitude and a **slight adverse** effect which is assessed as **not significant**.
- 6.6.16 The low value Outfarm South-South-West of Queen’s Farm (1148) and the below-ground remains of the Outfarm North of White Horse Cottage (1153) are located in proximity to the Order Limits. A change to the setting of the assets is predicted through the temporary introduction of additional noise, lighting and visible construction activity and machinery associated with the A226 Gravesend Road compound and the main alignment respectively. This would result in temporary impacts of minor adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.17 The low value non-designated below-ground remains of Chapel Farm historic farmstead (1122) Orchard House historic farmstead (1123) and outfarm to Orchard House (1124) are within the vicinity of the Order Limits. A change to the setting of these assets is predicted through the temporary introduction of additional noise, lighting and visible construction activity and machinery. This would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.18 The low value quarry (1851) is located adjacent to the Order Limits. A change in the setting of the asset is predicted through the temporary introduction of additional noise, lighting and visible construction activity and machinery, associated with utility works. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- Built heritage: significant effects*
- 6.6.19 Thong Conservation Area (CA10) is predicted to experience a temporary change to its setting from construction of the main alignment and associated earthworks and landscaping, the A2 compound and the southern tunnel entrance compound. This would temporarily introduce additional noise, lighting and visible construction activity and machinery to the asset’s settings (Application Document 6.2, Figure 6.6, Viewpoint S-25). This would be mitigated by screening of construction compounds with hoarding (S325.08), and good practice construction procedures to reduce the impact of noise, dust and lighting. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect on the medium value Thong Conservation Area (CA10) which is assessed as **significant**.
- 6.6.20 The high value Grade II listed *Filborough Farmhouse* (LB25), the Grade II listed *Granary at Little Filborough Farm* (LB30), and the Grade II listed *Barn to North West of Filborough Farmhouse* (LB99) are predicted to experience a temporary change to their setting (Application Document 6.2, Figure 6.6, Viewpoint S-(CH)06). The works for the ground preparation tunnel would include tall construction machinery that would be visible from these assets and intrusive in the otherwise gently undulating surrounding landscape, an area with which they have a historical connection as adjacent farmland. Due to the presence of tall construction machinery the good practice mitigation measure to screen construction compounds would not be effective in this location. This is

assessed to result in a moderate adverse impact, rather than a large impact, due to the temporary nature of the construction activities and because the relationship between the three buildings, which is a key component of their setting that contributes to their value, would not be affected. The temporary impact of moderate adverse magnitude would result in a **moderate adverse effect**, which is assessed as **significant**.

- 6.6.21 Associated with the high value listed buildings at Filborough, the non-designated medium-value historic farmyard at *Filborough Farm* (1147) is predicted to experience a temporary change to its setting. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse effect**, which is assessed as **significant**.
- 6.6.22 The high value Grade II listed *Baynards Cottage* (LB78) is predicted to experience a temporary change to its setting. During construction, the Shorne Ifield Road Utility Logistics Hub would be established around 100m to the west and Ancient Woodland Mitigation Planting LE8.2 would subsequently take place to the south and east of the asset. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse effect**, which is assessed as **significant**.
- 6.6.23 The high value Grade II listed *White Horse Cottage* (LB22) is sited within the medium-value designated Thong Conservation Area (CA10) is predicted to experience a temporary change to its setting. Construction activity for the main alignment to the west of the asset, including major earthworks and structures, would temporarily introduce additional noise, lighting and visible construction machinery to the otherwise rural setting of this asset. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse effect**, which is assessed as **significant**.
- 6.6.24 The construction of the Project would temporarily change the setting of the medium value non-designated asset Thong Farmstead (1132), Cheney's Farm (1133) and White Horse Cottage Farmstead (1134) which would result in temporary impacts of moderate adverse magnitude and **moderate adverse effects** which are **significant**.
- 6.6.25 The construction of the Project would temporarily change the setting of the low value non-designated asset Marling Manor (4160) which would result in a temporary impact of major adverse magnitude and a **moderate adverse effect** which is **significant**.
- 6.6.26 The medium value non-designated Thong Lodge (4348) would receive non-physical impacts from the construction of the Project which is assessed to result in a temporary impact of moderate adverse magnitude and a **moderate adverse effect**, which is **significant**.
- 6.6.27 A ground protection tunnel shaft would be excavated within the base of the medium value asset the Thames and Medway Canal (1449). This would be mitigated by the restoration of this area of the canal to its current condition following completion of construction. The construction works are assessed to result in a temporary impact of moderate adverse magnitude and a **moderate adverse effect**, which is **significant**.

Built heritage: non-significant effects

- 6.6.28 The noise, visual intrusion and dust caused by construction activity would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect on the high value Grade I listed *Cobham Hall* (LB122), which is assessed as **not significant**.
- 6.6.29 The high value Grade II* listed *Church of St Mary* (LB27) and Grade II listed *East Court Farmhouse* (LB28), are predicted to experience a temporary change to their setting from the A226 Gravesend Road compound through an increase in noise intrusion. The distance to the construction activity and their settings being largely enclosed by vegetation mean (despite a slight topographical rise to the west of (LB28) that little change to their visual surroundings is predicted (Application Document 6.2, Figure 6.6, Viewpoint S-(CH)03a). The A226 would remain operational and the *Church of St Mary* (LB27) would not be functionally separated from the community it serves to the west of the Order Limits. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.30 The high value Grade II listed *The George Inn* (LB29), *Chapel Farmhouse* (LB3) and *Orchard House* (LB4) are located on Hever Court Road, which runs parallel to Watling Street (A2) and north of the Order Limits. These assets are predicted to experience a temporary change to their setting through construction activity along the route of the A2 and utility works between the A2 and the assets. This would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.31 The high value Grade II listed *Church of St Margaret* (LB106), located to the south of the Order Limits and the A2, is predicted to experience a temporary change to its setting through construction activity along the route of the A2. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.32 The medium value Grade II listed *Parish Boundary Stone* (LB105) in Cobham Hall park and garden is located within the Order Limits, adjacent to the route of a PRoW that would be upgraded as part of the walking, cycling and horse-riding works for the Project. These works do not entail the movement of or physical impacts to the asset. To ensure no accidental damage occurs during construction, the asset would be temporarily fenced (REAC Ref. CH001; AMS-OWSI No. 1). This asset has previously been moved from its original location for construction of HS1, and consequently its precise location makes little contribution to its significance. The boundary stone is predicted to experience a temporary change to its setting through construction activity taking place in close proximity. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.33 The high value designated Cobham Village Conservation Area (CA11) is located partially within the Order Limits and is predicted to experience a temporary change to its rural character from proposed utilities works along Halfpence Lane within and adjacent to the Cobham Village Conservation Area (CA11). This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.34 The high value designated Shorne Conservation Area (CA9) is located approximately 500m south-east of the Order Limits and is predicted to

experience a temporary change to its setting. During the construction phase, the Southern Tunnel Entrance compound, utility diversion works, and the construction of the main alignment would occupy much of the middle ground of one key external view identified in the Conservation Area Appraisal (Gravesham Borough Council, 2017d). Given the high elevation of the vantage point (Application Document 6.2, Figure 6.6, Viewpoint, S-32) it would not be possible to mitigate this impact. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.35 The asset is screened from the Project by built form and does not derive any value from the land within the Order Limits. A short-term online main construction route will pass through the Conservation Area along Canal Road. ‘Short-term – Online – Main’ routes would generally be used for initial access, primarily for site setup works. Once the appropriate offline accesses are created, the short-term routes would not be used for HGV construction traffic other than for very specific works (see Outline Traffic Management Plan for Construction, Application Document 7.14). This would temporarily introduce additional traffic and noise within the asset and its setting. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.36 The high value Grade II listed *Crutches Gate Cottage and Farmhouse* (LB126) and *The Mount* (LB31) would be affected by construction activity. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.37 The medium value designated Queen’s Farm Conservation Area (CA8) is outside the 1km study area but has been included in this assessment as it is located within the landscape study area. Key views into and out of the asset, identified within the Conservation Area Appraisal (Gravesham Borough Council, 2017c), do not include the area within the Order Limits. These views are primarily focused northward, toward the River Thames. The areas within the Order Limits that would contain construction compounds and groundworks are distant from the asset, located across a gently rising landscape. While parts of the Order Limits are distantly visible from the asset, they do not contribute to its value and construction work is unlikely to be intrusive within the views at this distance. The asset would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.
- 6.6.38 The high-value Gravesend Riverside Conservation Area (CA14) would experience an impact from the use of Canal Road within the asset as a short-term online main works construction access route linking the Milton Compound with the Southern Tunnel Entrance Compound. The increase in traffic (within this already urban area) would result in a temporary impact of minor adverse magnitude and a slight adverse effect, which is **not significant**.
- 6.6.39 One medium value non-designated built heritage asset, Shorne Woods Country Park (1311), located partially within the Order Limits would potentially be subject to non-physical impacts from the construction of the Project. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.40 The medium value non-designated Outfarm in Upper Ifield (1140) and Ifield Farm (Ifield Place) (1139), East Court Farm (1146) would potentially be subject to temporary non-physical impacts from the construction of the Project. This would result in temporary impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.41 The low value non-designated WWI ‘Homes for Heroes’ houses (1561, 4401, 4402, 4403, 4597, 4598, 4598, 4599, 4600) are located in Thong; (1561) and (4597) are located within the Order Limits, the others are located outside the Order Limits. All are predicted to experience a temporary change to their setting from construction of the main alignment and associated earthworks, landscaping and utility diversions. These would temporarily introduce additional noise, lighting and visible construction activity and machinery to the assets’ settings. This would result in temporary impacts of moderate adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.42 Other low value non-designated WWI ‘Homes for Heroes’ houses and barns (4344, 4345, 4346, 4347, 4405, 4406, 4407, 4408, 4601, 4602, 4603, 4604, 4605, 4606, 4607) are located to the east and south of Chalk and are predicted to experience a temporary change to their setting. Construction would temporarily introduce additional noise, lighting and visible construction activity and machinery to the assets’ settings. This would result in temporary impacts of moderate adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.43 The low value non-designated WWI ‘Homes for Heroes’ house and barn (4404) is predicted to experience a temporary change to its setting during construction. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect which is assessed as **not significant**.
- 6.6.44 The low value non-designated The Nook (4162) and Thong Mead (4349) are predicted to experience temporary changes to their setting during construction. This would result in temporary impacts of moderate adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.45 The low value non-designated Early 19th-century Wash House, Rose Cottage, Cobham (3448) is predicted to experience a temporary change to its setting during construction. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect which is assessed as **not significant**.
- 6.6.46 Construction of the project would result in non-physical impacts to the low value spigot mortar emplacements (1424) and (1455). This would result in temporary impacts of moderate adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.47 Construction traffic within its setting would impact on the low value non-designated Court Lodge Farm (1143) and Barrett’s Folly (4592). This would result in temporary impacts of minor adverse magnitude and **slight adverse effects** which are assessed as **not significant**.
- 6.6.48 There are no further solely temporary impacts to heritage assets, as any other impacts would result from a combination of physical impacts and impacts resulting from a change to setting and are therefore discussed in the permanent impacts section.

Permanent effects

Archaeological remains: significant effects

- 6.6.49 Thirty-three medium value non-designated archaeological assets of Prehistoric, Roman or unknown date are recorded within the Order Limits and would be removed or truncated by the Project: through the construction of the main alignment, associated earthworks, landscaping, the Southern Tunnel Entrance compound, temporary storage stockpiles 1 and 2, and utility diversion works. They are located between the A2 west of Thong and the A226 Gravesend Road to the south of Chalk.
- 6.6.50 The assets that would be impacted by construction of the main alignment and associated earthworks, earthworks to create Chalk Park, construction of haul routes and the Southern Tunnel Entrance compound, comprise:
- a. (1579) Late Iron Age occupation site, Thong lane
 - b. (1600) Roman trackway and multiperiod enclosure, south-east of Gravesend
 - c. (1606) Cropmarks of a rectangular enclosed settlement of possible Roman date
 - d. (1608) Sub-circular Iron Age to Roman settlement enclosure
 - e. (2308) Sub-circular Iron Age to Roman enclosure and smaller circular enclosure
 - f. (1620) Prehistoric funerary or settlement activity
 - g. (1622) Enclosures and cropmarks of probable Prehistoric date
 - h. (1372) a group of rectilinear enclosures of probable Iron Age or Roman date
 - i. (1396) cropmarks of an enclosed settlement including trackways, ringditches and pits (of probable Bronze Age/Iron Age/Roman origin) recorded approximately 250m north of (1584) and Bronze Age to Iron Age settlement complex (3742).
 - j. (775) Cropmarks of a probable Late Prehistoric enclosure and boundary ditch located south of Gravesend Road. The enclosure, situated on the eastern edge of a coombe, is incomplete but encloses an area 42m by 37m.
 - k. (1604) Cropmarks of a circular enclosure east of Thong Lane. The enclosure is a probable Iron Age settlement measuring 45m by 50m.
 - l. (1607) Roman rectangular enclosure
 - m. (4152) Complex of sub-rectilinear enclosures identified during 2019 geophysical survey

- n. (774) The incomplete cropmark of a possible Late Prehistoric or Roman enclosure to the north of Harts Hill, an undated ditch possibly representing the southern extent of which was recorded during trial trenching
- o. (1362) Early Bronze Age barrow
- p. (2291) Site of multi-period Prehistoric and Romano activity
- q. (1595) Bronze Age barrow with a biconical urn
- r. (1813) Barrow of probable Bronze Age date
- s. (1584) Probable Bronze Age round barrow approximately 20m in diameter with concentric ditches
- t. (2298) A small rectangular settlement enclosure of Early Iron Age origin, approximately 32m across with possible internal features, located north-west of Upper Ifield
- u. (3773) Burnt mound of Late Neolithic to early Bronze Age date and Bronze Age cremation
- v. (4428) circular cropmark of a probable Late Neolithic/Bronze Age barrow
- w. (4558) probable Late Iron Age to Roman cremation cemetery west of Thong
- x. (3793) Multi-period Bronze Age, Iron Age and Roman activity
- y. (4427) site of a possible Roman building
- z. (3742) Bronze Age to Iron Age settlement complex

6.6.51 The activity associated with these utility works, compound construction works and establishment of landscaping would require at least the removal of or excavation into topsoil, and in some areas deeper excavation exposing any archaeological remains present. Consequently, the works would permanently impact these medium-value non-designated archaeological assets. This impact would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

6.6.52 In addition, asset (3742) would not be completely removed by the construction of the Southern Tunnel Entrance compound. The part of the asset which is not mitigated by archaeological excavation and recording would be temporarily fenced (REAC Ref. CH001; AMS-OWSI No. 1) to ensure no accidental damage occurs during construction.

- 6.6.53 Assets that would only be impacted by utility diversions and/or Utility Logistics Hubs south of A226 Gravesend Road and north of the existing A2, comprise:
- a. (3743) Possible Late Bronze Age to Early Iron Age settlement activity – ditch, possible 173 potential/natural erosion feature and undated postholes and ditches
 - b. (3750) Potential Iron Age Granary
 - c. (3802) Probable Middle Bronze Age cremation cemetery
 - d. (3745) Possible undated cemetery site following identification of two cremations and two cenotaph burials, along with undated ditches and a posthole
- 6.6.54 The activity associated with these utility and compound construction works would require at least the removal of topsoil, and in some areas deeper excavation exposing any archaeological remains present. Consequently, the works would permanently impact these medium-value non-designated archaeological assets. This impact would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.55 Medium value assets that would be impacted by a mixture of utility diversions and/or Utility Logistics Hubs and landscape mitigation south of A226 Gravesend Road and north of the existing A2, comprise:
- a. (3740) medium value Iron Age and Roman multi-period settlement activity
 - b. (3640) Buried soils north of Claylane Woods comprising horizons dating to the Upper Palaeolithic
 - c. (3751) medium-value Roman enclosure
 - d. (3643) Buried soils north of Claylane Woods comprising horizons dating to the Mesolithic and Neolithic
- 6.6.56 Medium value assets that would be impacted only by utility diversions and/or Utility Logistics Hubs south of A226 Gravesend Road and north of the existing A2, comprise:
- a. (3740) medium-value Iron Age and Roman multi-period settlement activity
- 6.6.57 Medium value assets that would be impacted only by landscape mitigation south of A226 Gravesend Road and north of the existing A2, comprise:
- a. (3655) Romano-British cremation burial, isolated with possible association to former settlement 1597.
- 6.6.58 The activity associated with these utility and landscape mitigation works would require at least the removal of topsoil, and in some areas deeper excavation exposing any archaeological remains present. Consequently, the works would

permanently impact these medium-value non-designated archaeological assets. These impacts would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of moderate adverse magnitude and **moderate adverse** effects, which is assessed as **significant**.

- 6.6.59 Low value assets that would be impacted by a mixture of utility diversions and/or Utility Logistics Hubs and landscape mitigation south of A226 Gravesend Road and north of the existing A2, comprise:
- a (3741) Bronze Age ditched trackway and potentially associated undated pits and ditches
- 6.6.60 Two medium value non-designated archaeological assets, area of Mesolithic to Neolithic activity (3663), and Neolithic activity pit and flint (3667) would be impacted through the main route alignment. These would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of major adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.61 A medium value asset, Mesolithic/Neolithic flint assemblage (3642) within a large feature west of Thong would be impacted and totally removed by utilities diversions within the utilities working area and associated landscaping. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impact of major adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.62 A high value non-designated site of multiperiod settlement activity (3650) including a Late Iron Age/Roman enclosure complex and evidence of Bronze Age to Iron Age local industry through salt production was recorded to the west of Thong and within the Order Limits. The western part of this asset containing the enclosure complex lies within the main works construction area, footprint of the main alignment and within gas utilities working areas; the parts of the asset located within the footprint of these activities would be removed. The remaining part of asset 3650 within the Order Limits (approximately one quarter of the original asset) would be preserved *in situ* as no construction activity is proposed in the identified south-eastern extent of the asset. The impact would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) of the areas of the asset to be removed during construction. Following mitigation, this would result in a permanent impact of major adverse magnitude and a **large adverse** effect, which is assessed as **significant**.
- 6.6.63 The medium-value non-designated rectilinear enclosure (1820) measuring approximately 37m by 34m is recorded south of Thong within the Order Limits. This would be completely removed during the establishment of the A2 Compound. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

- 6.6.64 The medium value non-designated archaeological asset, an early Medieval settlement (1306) is recorded within the Order Limits. Construction of the M2/A2/Lower Thames Crossing junction and adjacent landscaping would result in the removal of potential associated remains. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) resulting in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.65 The medium value non-designated possible Anglo-Saxon Burial Ground, Claylane Wood (1599) is recorded immediately outside the Order Limits in Claylane Wood, although the exact location is uncertain and the asset is likely to extend within the Order Limits. The below-ground remains would potentially be at least partially removed upon by the establishment of utilities access routes, mains works construction access routes and mains works area, utility working area and gas utility diversion works. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.66 The medium value asset (4595), comprising multiple phases of Prehistoric and later activity associated with buried land surfaces within colluvial layers (4594), is located within the Order Limits between the A226 and Higham Road. Asset (4595) would be completely removed as a result of a combination of the mains works area, utility working area and establishment of the A226 Gravesend Road compound. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.67 The medium value non-designated Medieval St Thomas' Well (1302) is located within the Order Limits, currently beneath a low modern earthwork bank separating Thong Lane from HS1. The asset is likely to be physically removed or truncated by activity in the utility working area and multi-purpose utility works, the mains works area and construction of the main alignment. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.68 The establishment of the nitrogen deposition compensation site to the south of Shorne (Fenn Wood) would result in the complete removal of the medium-value non-designated barrow, asset (1474). This impact is assessed based on the worst-case scenario and it is anticipated that it should be possible to preserve this asset in situ a woodland glade or similar open space. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.69 The establishment of the nitrogen deposition compensation site at Burham, to the west of Kit's Coty, would result in the complete removal of the medium-value Great Culand (asset 4745, below-ground remains of the former Medieval to Modern manor and farmstead). This impact is assessed based on

the worst-case scenario and it is anticipated that it should be possible to preserve this asset in situ a woodland glade or similar open space. Assessing worst-case, which would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), this would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

Archaeological remains: non-significant effects

- 6.6.70 Construction of the Project would not result in any temporary or permanent impacts to the designated high value Deserted Medieval manorial settlement of Cossington (SM23). The asset would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.
- 6.6.71 The high value non-designated archaeological asset, Palaeolithic horizon (3767), was identified on high ground along the dry valley to the south of the A226 during trial trench evaluation. The uppermost elements of the deposits may be removed during establishment of the utility working area and a utility access route. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impact of minor adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.72 The high value non-designated below-ground remains of a Neolithic mortuary enclosure or long barrow (1662) are recorded in the south-western part of the Order Limits, east of the A2/A227 junction. Although this asset is located within the Order Limits, the construction information demonstrates that this asset would not experience any impacts during construction. However, protective fencing would be erected during the construction phase in order to protect the buried remains of the asset from accidental damage, such as from over-tracking or storing material on top of it (REAC Ref. CH001; AMS-OWSI No. 1). The asset would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.
- 6.6.73 The high value non-designated in-situ Mesolithic campsite (3769), although located within the Order Limits, would not experience any impacts during construction. The asset would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.
- 6.6.74 The medium value non-designated rectilinear enclosures (1814) and (1596) are recorded as partially within the Order Limits. The parts impacted by the Project would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.75 The medium value of area of Neolithic, Bronze Age and undated activity (3782) is buried colluvium in a dry valley within the Order Limits. The establishment of utility access routes would removal part of these archaeological remains in areas where the depth of colluvium is shallower, on the eastern side of the asset (on the assumption that deep soil mixing will not be required). That part impacted by the Project would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.76 The deeply stratified colluvium layers themselves (3772) would also be partially impacted upon by the utility access routes, working areas and the establishment of the Southern Tunnel Entrance compound. This would likely remove the upper parts of the colluvium only for a part of its extent. That part impacted by the Project would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.77 Medium value asset (3641) Neolithic activity, pit containing large flint assemblage and pottery is only located partially within the utilities working area. The impacts to the part of this asset located within the utilities working area would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). Due to its significance, the part of asset 3641 located outside of the utilities working area would be preserved by protective fencing erected during the construction phase in order to protect the buried remains of the asset from accidental damage (REAC Ref. CH001; AMS-OWSI No. 1). The fencing would remain in place during subsequent Species Rich Chalk Grassland LE1.31 and Annual Wildflower Grassland LE132 planting to signal the presence of the asset during environmental landscape mitigation works. Overall, asset 3641 would experience permanent impacts of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.78 Eight medium value non-designated archaeological assets of Bronze Age date (744, 783, 1393, 2300, 2301, 2302, 3217, 3462) recorded outside the Order Limits would experience a setting impact. This would be due to the loss, during construction works, of associated archaeological remains within the Order Limits that contribute to their value as part of their setting and with which they have group value. The eight assets are located to the north of the A226 and north-east of the A226 Gravesend Road compound, between approximately 265m and 1.04km from the Order Limits. This would be mitigated by archaeological excavation and recording of the associated barrows within the Order Limits (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.79 Construction of the Project would result in the removal of part of the medium value non-designated Chalk parish boundary (4619), which is recorded crossing part of the Order Limits. This would be mitigated by archaeological excavation and recording of the Roman remains associated with Watling Street (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.80 Construction of the Project would result in the removal of archaeological remains of Roman origin which contribute to the value of the medium value non-designated Watling Street Roman Road (1680), which is recorded crossing part of the Order Limits, as part of its setting. This would be mitigated by archaeological excavation and recording of the Roman remains associated with Watling Street (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.81 At the low value non-designated Gravesend Airfield (1459), including RAF Gravesend (1408), the extent of preservation of buried archaeology within the airfield is uncertain. On the basis of geophysical survey results it is likely that some features associated with the infrastructure of the airfield, such as trackways, are preserved. The majority of the surviving open area of the former airfield is recorded within the Order Limits and would be impacted by construction of the main alignment, the Southern Tunnel Entrance compound, associated haul roads and utilities diversions. Establishment of woodland around the edge of surviving open areas of the former airfield would further enclose what remains of its open character and potentially impact buried remains of the airfield. The remaining sections of the airfield would also be bisected by the new road. However, the majority of the surviving section of the outer dispersal trackway of the airfield, to the west of Thong, would be retained as part of the PRoW network. The setting of the airfield would also be significantly altered by the construction activity, with the open character of the immediate landscape changed from arable use to infrastructure and landscape planting areas, for which there is no suitable mitigation. The physical impact to the buried remains of the airfield due to construction of the main alignment, the Southern Tunnel Entrance compound, haul roads, utilities diversions and woodland planting would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.82 The low value assets (675), (779), (1609), (3786), (3796), (4415), (4429) and (4430) would be completely removed by the establishment of the Southern Tunnel Entrance compound. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in permanent impacts of moderate adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.83 The low value asset (677) is an extensive Bronze Age to Iron Age trackway which is located to the west of Thong and south-east of Gravesend. The majority of this asset would be removed through the establishment of the A2 West Utility Logistics Hub (ULH 14), the LTC A2 Junction (main alignment), associated landscaping, utilities working areas, and the A2 Construction Compound. Only a small southern portion of the asset is likely to be retained within the Order Limits to the east of the main alignment where no construction proposals are planned. However, the trackway may extend beyond the Order Limits to the east. The impacts within the Order Limits would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.84 The low value asset (4596) comprises a Late Iron Age/Roman to Medieval trackway/Holloway and would be completely removed by the establishment of the LTC A2 Junction. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.

- 6.6.85 The low value asset (3644) Bronze Age pit/possible water hole would be completely removed by the establishment of the LTC A2 Junction. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.86 The low value asset (1821) Bronze Age and Iron Age boundary ditch would be completely removed by the establishment of the LTC A2 Junction. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.87 The low value asset (1598) cropmark of former WWII site would be completely removed through construction of the main route alignment and inclusion within the main works construction area. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.88 The low value asset (3741) comprises a Bronze Age to Iron Age trackway and undated pits and ditches would receive impacts from utility works and establishment of LE8.2 Ancient Woodland Mitigation Planting. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.89 The medium value Bronze Age enclosure identified through geophysical survey and LTC trial trenching north of Shorne Ifield Road (3530) is located within the Order Limits. However, no works which would cause a permanent direct impact are proposed within the area of the enclosure. A change to the setting of the asset is predicted through removal of associated asset 3741. This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.90 The medium-value assets of the Prehistoric North Downs Way/Pilgrims Way (4553) located within the Order Limits to the east of Kit's Coty (within the Blue Bell Hill nitrogen deposition compensation site) would experience direct impacts as a result of the establishment of woodland planting. This would be mitigated through archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4). Following mitigation, this would result in a permanent impact of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.91 Three low value non-designated archaeological assets recorded within the Order Limits (776, 777, 805) where mitigation is not appropriate due to the origin of these features as Post-Medieval chalk pits. This would result in permanent impacts of major adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.92 There are 67 low value non-designated archaeological assets recorded within the Order Limits (1398, 3806), which would experience, following mitigation (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.93 There are seven low value non-designated archaeological assets recorded within the Order Limits (781, 789, 1324, 1469, 1547, 3126, 4180) which would experience following mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.94 Two low value non-designated archaeological assets recorded outside the Order Limits and within the 1km study area (1287, 3387) would experience impacts as the result of the removal of associated archaeological sites within the Order Limits. Following mitigation in the form of archaeological excavation and recording of the associated sites (REAC Ref. CH001; AMS-OWSI No. 4), this would result in permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.95 Two low value non-designated archaeological assets recorded within the Order Limits (3752, 4425) would experience, following mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.96 A low value non-designated archaeological asset recorded within the Order Limits, area of built infrastructure for Cobham claypit (1998) would experience, following mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of minor adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.97 A low value non-designated archaeological asset recorded within the Order Limits, Post-Medieval chalk pit (4123) would experience, following mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.98 Ten low value non-designated archaeological assets recorded outside the Order Limits and within the 1km study area (1284, 1307, 1317, 1326, 1328, 1353, 1672, 1673, 1884, 2271) would experience impacts as the result of the removal of associated archaeological sites within the Order Limits. Following mitigation in the form of archaeological excavation and recording of the associated sites (REAC Ref. CH001; AMS-OWSI No. 4), the assets would experience permanent impacts of negligible adverse magnitude and **neutral** effects which are assessed as **not significant**.
- 6.6.99 8 negligible value non-designated archaeological assets recorded within the Order Limits, (763, 792, 1865, 1997, 4170, 4182, 4189) would experience permanent impacts of major adverse magnitude and **slight adverse** effects, which are assessed as **not significant**. Due to the negligible value and the nature of these sites (extraction pits, Post-Medieval field boundaries, Post-Medieval well, former drainage channel, sheep wash and the site of a 20th century golf clubhouse), mitigation is not considered to be necessary.
- 6.6.100 There are 6 negligible value non-designated archaeological assets recorded within the Order Limits (801, 802, 1558, 1852, 4185, 4190) which would experience a permanent impact of moderate adverse magnitude and a **neutral** effect, which is assessed as **not significant**.

- 6.6.101 One negligible value non-designated archaeological asset recorded within the Order Limits (768) would experience a permanent impact of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.102 There are 292 negligible value non-designated archaeological assets recorded within the Order Limits which would experience no change and a **neutral** effect, which is assessed as **not significant**.
- Geological deposits of archaeological interest: significant effects*
- 6.6.103 Tunnel boring would remove areas of Pleistocene deposits from the high-value zones PQ-7 and PQ-8. Following the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) these assets would experience permanent impacts of minor adverse magnitude and **moderate adverse** effects, which is assessed as **significant**.
- 6.6.104 No further significant effects on geological deposits of archaeological interest have been identified to the south of the River Thames.
- Geological deposits of archaeological interest: non-significant effects*
- 6.6.105 The Ebbsfleet Valley is a known area containing geological deposits of archaeological interest (including the nearby HS1 Elephant Site 4043, which would not be affected by the Project). The deposits are analogous to the Boyn Hill Terrace and would be affected by the main alignment works. These deposits are extensive and widespread across zone PQ-3 (medium value). With the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) this asset would experience a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.106 Head deposits within the medium-value PQ-4 may contain reworked Palaeolithic material which would be physically affected by the main alignment works. These deposits are widespread and would be minimally impacted upon. With the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) this asset would experience a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.107 Head deposits within the low-value PQ-5 may contain reworked Palaeolithic material which would be physically affected by the main alignment works. These deposits are widespread and would be minimally impacted upon. With the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) this asset would experience a permanent impact of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.108 Head deposits within the medium-value PQ-29 may contain reworked Palaeolithic material which would be physically affected by the main alignment works. These deposits are widespread and would be minimally impacted upon. With the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) this asset would experience a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.109 Within the medium value zone PQ-6 a reworked Levallois flake findspot (3123) is recorded. Recent ATT works within zone PQ-6 have revealed a Late Glacial/Upper Palaeolithic soil (3640) and finds of Middle Palaeolithic (3767) and Late Upper Palaeolithic (3768) flint. The deposits are analogous to the Boyn Hill Terrace and would be affected by the main alignment works. The finds have been excavated and the deposits are extensive and widespread across zones PQ-6. With the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) they would experience a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- Built heritage: significant effects*
- 6.6.110 No significant effects to built heritage south of the River Thames have been identified.
- Built heritage: non-significant effects*
- 6.6.111 The Order Limits extend slightly into the northern edge of the high-value Cobham Hall Grade II* Registered Park and Garden (RPG1). Long-term online main construction routes would be present along the A2 and M3. Construction activity would take place along the A2 and the Brewers Road overbridge would be replaced. The visual impact of construction activity along the A2 would be mitigated by the use of hoarding of a sensitive appearance, such as a plain and dark green style (REAC Ref CH001; AMS-OWSI No. 1, Application Document 6.3).
- 6.6.112 During the construction phase, a cycleway would be constructed along the northern edge of RPG1 parallel to HS1 and the park boundary (partially along an existing PRoW) (Application Document 6.2, Figure 6.6, Viewpoint S-(CH)02), which would result in the removal of small areas of trees and vegetation immediately to the south of HS1 and to the east and west of Brewers Road within RPG1. Multiple utility works would take place along Brewers Road and Halfpence Lane within RPG1 but would not cause removal of trees within the park. Other multi-purpose utility works would take place within the park south of the A2, east and west of Park Pale, and a Park Pale-A2 link would be constructed, resulting in the removal of trees in these areas. The removal of trees would take place in a strip of land located between the A2 and HS1, already physically severed from the rest of the park. However, this would still be mitigated by vegetation replanting west of Park Pale to restore the screening of the A2 (Linear Belt Shrubs and Trees LE2.4). Mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) would also be carried out during groundworks within RPG1 to mitigate the physical impact to below-ground archaeological remains associated with RPG1, such as the park pale. Overall, this would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.113 During the construction phase, the medium value designated Thong Conservation Area (CA10) would experience a limited physical impact, from the widening of Thong Lane at the northern edge of the area and slight encroachment within the gardens of the Homes for Heroes buildings on the western side of the road. This would result in a permanent impact of slight adverse magnitude and a **slight adverse** effect which is **not significant**.

- 6.6.114 There would also be no permanent construction impacts (no change) and a **neutral** effect, which is assessed as **not significant**, on the following assets:
- Shorne (CA9) Conservation Area (high value)
 - Cobham Village (CA11) Conservation Area (high value)
 - Queen’s Farm (CA8) Conservation Area (medium value)
 - Gravesend Riverside (CA14) Conservation Area (high value)
- 6.6.115 No significant permanent construction effects are predicted on listed buildings south of the River Thames as a result of the construction of the Project.
- 6.6.116 The medium value Milton Rifle Range within the Order Limits (1422) would experience, following mitigation in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.117 The low value ‘Caves, converted to air raid shelters, on Thong Lane, Shorne, Gravesham’ (1562) is located within the Order Limits. Construction of the Project would completely remove this asset and result, with mitigation in the form of Historic Building Recording (AMS-OWSI No. 2), in a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.118 The eastern edge of the garden plot of the low-value Homes for Heroes asset (1561) would be removed for the realignment of Thong Lane. This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect from partial loss of their setting, which is **not significant**.

River Thames

Temporary effects

- 6.6.119 There are no solely temporary impacts to heritage assets located within the River Thames.

Permanent effects

Archaeological remains: significant effects

- 6.6.120 No significant effects to archaeological remains within the River Thames have been identified.

Archaeological remains: non-significant effects

- 6.6.121 The outfall from the Northern Tunnel Entrance compound on the north bank of the river would cross the recorded site of a medium value non-designated archaeological asset, a Roman settlement (412). This would have a permanent physical impact on any archaeological remains within this area and cause a minor change to the setting of this asset by introducing permanent infrastructure into the foreshore and intertidal area. The temporary construction activity would not affect the whole area of the asset but would introduce temporary intrusive features into the foreshore and intertidal area, causing a small change to the setting of the asset. Therefore, the combination of permanent impacts arising

from physical changes to archaeological remains and the permanent presence of new infrastructure within the setting would have an overall permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

Geological deposits of archaeological interest: significant effects

- 6.6.122 No significant effects to geological deposits of archaeological interest within the River Thames have been identified.

Geological deposits of archaeological interest: non-significant effects

- 6.6.123 The tunnelling works within the River Thames, within the medium value zone PQ-9 would predominantly affect deeper Tertiary and Chalk bedrock deposits which are of no archaeological interest. The outfall from construction of the Station Road compound may affect the surface of the Quaternary sediment sequence (Holocene alluvial deposits) although there are no known recorded Palaeolithic or prehistoric assets associated with the Quaternary sediment sequence that would be impacted in that area. The Holocene alluvial and peat deposits in the river and surrounding floodplain are extensive and widespread and with the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) this would result in a permanent impact of negligible adverse magnitude and a **slight adverse** effect which is assessed as **not significant**.

Built heritage

- 6.6.124 There are no built heritage assets located solely within the River Thames. Built heritage assets bordering the river are discussed in the relevant section.

North of the River Thames

Temporary effects

Archaeological remains: significant effects

- 6.6.125 The high value designated causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6) is located outside the Order Limits, but immediately to the north of the proposed Brentwood Road Compound and Brentwood Road Utility Hub, and c. 100m west of an online mains works construction access route. Utility diversion works for multi-utility networks would also take place c. 65m east of the asset. The main alignment and false cutting earthworks would be constructed from c. 275m to the south of the asset. These activities would introduce noise and visual intrusion into the setting of the asset, introducing intrusive features in views from the asset to the south, which contribute to its value. The good practice mitigation of appropriate screening of construction compounds, and dust and noise reduction measures, would reduce the impact but would not fully mitigate it due to the close proximity between the Brentwood Road Compound and SM6. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

Archaeological remains: non-significant effects

- 6.6.126 The very high value designated Tilbury Fort (SM13) is located c. 230m to the south of the Order Limits. There would be an aural and visual impact from construction traffic on Fort Road within the Order Limits and mains works area

c. 230m to north of the asset, and a similar impact from the road immediately north of Fort Road which would be used as a long-term online main works construction access route. The presence of construction traffic on this existing road between industrial areas would result in a temporary impact of negligible adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.

- 6.6.127 The high value designated East Tilbury Battery (SM11) is located immediately to the east of the Order Limits. The establishment of ecological mitigation LE8.1 Open Mosaic Habitat immediately south, east and north of the asset would result in no change and a **neutral** effect, which is assessed as **not significant**.
- 6.6.128 The very high-value *Coalhouse Fort* battery and artillery defences (SM14) is located immediately east and south of the Order Limits. The land within the Order Limits immediately to the west of the asset would be used as a light vehicle access route, which will not involve excavation of a fixed trackway (although vehicle matting may be placed). Groundworks would take place in the fields immediately west and north of the asset to establish ecological mitigation areas. Construction of the North Tunnel Portal would take place c. 1.3km west of the asset and associated earthworks and new landforms of Tilbury Fields would be constructed (within the southern tunnel entrance compound) c. 1.1km west of the asset. Overall, the noise, lighting and visual intrusion caused by construction activities would result in a negligible magnitude of impact. This would result in a temporary **slight adverse** effect, which is assessed as **not significant**.
- 6.6.129 The high value designated earthworks near church, West Tilbury (SM5) is located approximately 55m south of the Order Limits. The aural and visual impact of construction activity from compounds and utilities would introduce intrusive features into views from the asset to the south (Application Document 6.2, Figure 6.6, Viewpoint N-(CH)07) but would not affect all aspects of setting. This would result in a temporary impact of negligible magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.130 The high value designated *Second World War anti-aircraft battery at Bowaters Farm* (SM9) would be located approximately 165m east of the Northern Tunnel Entrance compound, utilities diversion works, and immediately to the west of an area of the Order Limits in which works would be carried out to establish ecological mitigation areas. These activities would introduce noise and visual impacts to the setting of the asset. Although the overgrown nature of the asset means that direct views would be limited (Application Document 6.2, Figure 6.6, Viewpoint N-(CH)08 and N-06), construction activity is likely to be clearly audible. This would alter the setting of the asset but would not change its most important characteristics. This would result in a temporary impact of minor magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.131 The high value designated gatehouse and moat of South Ockendon Old Hall (SM2) is located within the Order Limits. The moat bridge and gatehouse are also designated as a Grade II listed building (LB65). The gatehouse and moat are located within the Order Limits, where the installation of bat boxes on existing trees would provide ecological mitigation. The proposals would cause no physical impact to the asset and would not change the setting of SM2/LB65.

The major construction activity would be located at least 600m from the asset and beyond the elements of its setting that contribute to its value. Therefore, this high-value asset would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.

- 6.6.132 The high value non-designated churchyard of St Mary Magdalene in North Ockendon (2010) is located outside but immediately adjacent to the Order Limits and close to construction works associated with utility diversions and the A122 Lower Thames Crossing/M25 junction. Construction activity would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would cause a minor magnitude temporary impact to this high-value asset, resulting in a slight adverse effect, which is **not significant**. There would be no change to the relationship between the churchyard and church, which is a key aspect of its setting that informs its value. The result would be a temporary impact of minor magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.133 Two high value non-designated assets Mucking: Late Bronze Age (333) and South Ockendon Old Hall (514) would not be impacted by construction works; the recorded features from asset (333) have been removed and cannot experience a physical impact, and the ecological mitigation within the footprint of asset (514) would not break ground or impact the upstanding structures. Both assets (333, 514) would experience no change, resulting in a **neutral** effect, which is assessed as **not significant**.
- 6.6.134 The outfall from the Northern Tunnel Entrance compound on the north bank of the river would cross the recorded site of a medium value non-designated archaeological asset, a Roman settlement (412). This would have a permanent physical impact on any archaeological remains within this area and cause a minor change to the setting of this asset by introducing permanent infrastructure into the foreshore and intertidal area. The temporary construction activity would not affect the whole area of the asset but would introduce temporary intrusive features into the foreshore and intertidal area, causing a small change to the setting of the asset. Therefore, the combination of permanent impacts arising from physical changes to archaeological remains and the permanent presence of new infrastructure within the setting would have an overall permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.135 There are seven medium value non-designated archaeological assets recorded within the Order Limits (270, 444, 508, 509, 510, 511, 512), where construction activity would result in temporary impacts of minor adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.136 There are four medium value non-designated archaeological assets recorded within the Order Limits (232, 500, 682, 2090) where construction activity would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.137 There are eight medium value non-designated archaeological assets recorded outside the Order Limits and within the 1km study area (218, 566, 610, 619, 687, 1807, 1912, 2090), where construction activity would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.

- 6.6.138 One medium value non-designated archaeological asset recorded within the Order Limits (145) would experience construction activity which would result in a temporary impact of negligible magnitude and a **neutral** effect which is assessed as **not significant**.
- 6.6.139 One medium value non-designated archaeological asset recorded outside the Order Limits and within the 1km study area (392), would experience construction activity which would result in a temporary impact of negligible magnitude and a **neutral** effect which is assessed as **not significant**.
- 6.6.140 There are 23 low value non-designated archaeological assets recorded within the Order Limits where construction activity would result in temporary impacts of moderate adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.141 There are 35 low value non-designated archaeological assets recorded within the Order Limits where construction activity would result in temporary impacts of minor adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.142 Two non-designated archaeological assets of low value outside the Order Limits and within the 1km study area (2061, 2063) would experience construction activity which would result in temporary impacts of minor adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.143 There are three low value non-designated archaeological assets recorded within the Order Limits (235, 237, 238) where construction activity would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.144 There are 13 low value non-designated archaeological assets recorded outside the Order Limits and within the 1km study area (261, 268, 383, 555, 576, 578, 597, 599, 630, 684, 1793, 1806, 2091) where construction activity would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects which are assessed as **not significant**.
- 6.6.145 There are six low value non-designated archaeological assets recorded within the Order Limits (258, 342, 714, 716, 2080, 2116), where construction activity would result in temporary impacts of negligible adverse magnitude and **neutral** effects which are assessed as **not significant**.
- 6.6.146 Two low value non-designated archaeological assets recorded outside the Order Limits and within the 1km study area (393, 711) would experience construction activity which would result in a temporary impact of negligible adverse magnitude and a **neutral** effect which is assessed as **not significant**.
- 6.6.147 One negligible value non-designated archaeological asset recorded outside the Order Limits within the 1km study area (388) would experience construction activity which would result in a temporary impact of negligible magnitude and a **neutral** effect which is assessed as **not significant**.
- Built heritage: significant effects*
- 6.6.148 The high value Grade II listed *Baker Street Windmill* (LB57) is located on the outskirts of the settlement of Baker Street, c. 60m to the east of the Order Limits. Utility diversion works for multi-utility networks would take place in the closest part of the Order Limits to the asset. Extensive construction activity

for the A13/A1089/A122 Lower Thames Crossing junction, including the creation of earthwork embankments, would take place c. 75m to the south-west of the asset within a rural part of its setting that contributes to its value. The construction activity would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

- 6.6.149 The high value Grade I listed *Church of St Mary Magdalene* (LB69) is located within North Ockendon Conservation Area (CA4) immediately east of the Order Limits and c. 350m east of the M25. Construction activity for the A122 Lower Thames Crossing/M25 junction, including the construction of the M25 Compound c. 270m to the south and utility working areas immediately to the west would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery (Application Document 6.2, Figure 6.6, Viewpoint N-39). This would result in a temporary impact of minor adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.150 The high value Grade II listed *Polwicks* (LB48) is located immediately south of the Order Limits, in a semi-rural setting on the northern side of Station Road in West Tilbury Conservation Area (CA7). Temporary construction activities would impact upon the setting of this asset, comprising: Low Street Lane Utility Logistic Hub around 35m to the north; main works construction traffic on Station Road immediately to the south; utilities groundworks for multiple utility networks taking place around 135m to the north-east and construction of the Tilbury Viaduct around 260m to the north-east. These activities would cause varying degrees of aural and visual change to the setting of the asset. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect which is assessed as **significant**.
- 6.6.151 The high value Grade II listed building *Buckland* (LB66) is located in close proximity to the Order Limits. Construction activity associated with the Northern Tunnel Entrance compound, construction of the main alignment including the Tilbury Viaduct and junction to the south, and multi-utility network works in close proximity would cause temporary changes to the setting of this listed building by introducing additional noise, lighting, and visible construction machinery. This would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.152 The high value designated West Tilbury (CA7) Conservation Area, which is of high value, is partially located within the Order Limits. A number of temporary construction activities would affect the asset, comprising the following:
- a. Creation of a utility access route and associated utility working area across the northern edge of the Great Common field within the asset
 - b. A utility access route across open land immediately south of the Conservation Area
 - c. Establishment of the Northern Tunnel Entrance compound immediately to the south-east of the asset

- d. Construction of the main alignment approximately 185m to the east of the asset
- e. Utility access route across the fields immediately to the south of the asset between Gun Hill and Coopers Shaw Road
- f. Mains works construction access route (secondary access) along Coopers Shaw Road and Church Road immediately east of the asset

- 6.6.153 These temporary construction activities would be mitigated through screening of construction compounds with hoarding, good practice measures to reduce the impact of dust, noise and lighting, and by reinstatement of the agricultural land used for the construction compounds (as shown on Figure 2.4: Environmental Masterplan (Application Document 6.2) and REAC Ref. No. GS012). Overall, with the implementation of mitigation, this would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.154 The high value Grade II listed *Walnut Tree Cottage* (LB49) is located around 110m south-west of *Polwicks* (LB48), on the south side of Station Road/Church Road within CA7 immediately outside the Order Limits. Construction activities including secondary access traffic along Church Road, the Northern Tunnel Entrance Compound and Low Street Lane Utility Hub in close proximity, along with construction of the Tilbury Viaduct to the east would cause additional noise and visual disturbance to the semi-rural setting of (LB48) and (LB49). This would result in temporary impacts of moderate adverse magnitude and **moderate adverse** effects, which are assessed as **significant**. Given the character of the impacts, their temporary nature and the lack of harm to the physical fabric of the buildings and their grounds, the effect is assessed as moderate rather than large.
- 6.6.155 The high-value designated East Tilbury Conservation Area (CA6), is located approximately 30m east of the Order Limits and main works area and approximately 510m east of the proposed location of the main alignment and associated earthwork embankments. The Tilbury Viaduct would be constructed approximately 550m to the south-west of the asset, and the Northern Tunnel Entrance Compound would be established approximately 135m to the south of the asset. The Muckingford Road Utility Hub would be established c. 400m west of the Conservation Area. Multi-utility network works would take place within the agricultural land between East Tilbury and the main alignment. These construction activities would cause visual and auditory disturbance to the rural setting to the south-west of the Conservation Area, which makes a minor contribution to its high value. However, the works would be large in scale and intrusive in nature. These temporary construction activities would be mitigated through screening of construction compounds with fencing and good practice measures to reduce the impact of dust, noise and lighting. Following the implementation of mitigation, construction of the Project is assessed to result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.156 The high-value designated North Ockendon Conservation Area (CA4), is partially located within the Order Limits, approximately 250m east of the M25.

During the construction phase, the M25 compound would be established immediately to the south and south-west of the asset. A short-term online main construction route would be established through the Conservation Area (CA4), along Ockendon Road and the B186. Multi-utility network works would also take place areas along the B186. Construction of the main alignment and associated earthworks would take place c. 270m west of the asset. These activities would be mitigated through the good practice mitigation of appropriate screening of construction compounds and measures to reduce dust, noise and light (S326) and reinstatement of the agricultural land used for the construction compounds. Overall, with the implementation of mitigation this would result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

6.6.157 The high-value Grade II listed *Heath Place* (LB41) is located immediately to the south of the Order Limits. Other areas of the Order Limits are also located between 150m to 200m east, west and south of the asset. The Brentwood Road compound would be established c. 160m east of the asset, the Stanford Road Compound c. 290m to the west and Hornsby Lane Utility Hub c. 370m to the south. The main alignment would be constructed c. 200m south of the asset and multi-utility network works would take place immediately to the north of the asset. The visual and aural impact of construction, taking place within the rural setting of the asset that contributes to its value, is assessed to result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

6.6.158 The high-value Grade II listed *Whitcrofts Farmhouse* (LB37), now a care home, is located immediately south of the Order Limits, adjacent to the A1013. The main alignment (A13 junction) and associated earthworks would be constructed immediately to the north and west of the asset, with associated visual and aural disturbance to its setting. The Stanford Road Compound would also be established c. 300m to the south-east of the asset. Overall, construction of the Project is assessed to result in a temporary impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

6.6.159 The high value Grade II listed *Whitfields* (LB60) and Grade II listed *Thatched Barn at Whitfields* (LB52) are sited at Baker Street to the north of Stifford Clays Road. The Stifford Clays Road Compound East would be located c. 170m and c. 110m west of the assets respectively. Construction of the main alignment would take place c. 260m and 210m west of the assets, with construction of the Stifford Clays Road overbridge taking place in slightly closer proximity. Fen Lane to the east of the assets would be used as an online utilities access route and Stifford Clays Road to the south would be used a short-term online main works construction access route. The combination of these construction activities would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. Overall, this would result in temporary impact of moderate adverse magnitude and **moderate adverse** effects, which is assessed as **significant**.

Built heritage: non-significant effects

6.6.160 The high value Grade II listed *Mill House* (LB56) is sited in Baker Street immediately to the south of Stifford Clays Road and the Order Limits. As such, construction activity would cause temporary changes, due to the

A13/A1089/A122 Lower Thames Crossing junction construction and utility diversions for multi-utility networks, to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.161 The high value Grade II listed *The Wilderness* (LB53) is sited east of Fen Lane and surrounded by the land within the Order Limits in all directions. Construction activity principally associated with utility diversions would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.162 The high value Grade II listed *Greygoose Farmhouse* (LB38), and *Little Wellhouse* (LB67) are located on the urban fringe between Grays and the A13. Construction activity would cause temporary changes by introducing additional noise, lighting and visible construction machinery to their setting. This would result in permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.163 The high value Grade II listed *Mill House* (LB42) and is located north of Muckingford Road and immediately north of the Order Limits. Construction activity would cause temporary changes to the setting of the asset by introducing additional noise, lighting, and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.164 The high value Grade II listed *Poplars Farmhouse* (LB61) is sited to the south of Green Lane. The Order Limits is located directly adjacent to the asset along Green Lane and also in open land c. 50m to the south. Utility diversion works for multi-utility networks would take place along Green Lane and further utility diversions for gas networks would take place in the land to the south. This construction activity would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would affect its relationship with the arable fields that inform its setting. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.165 The high value Grade II listed *Slades Hold Cottages* (LB45) is within Baker Street, on the southern side of High Road which would be used as to an online construction access route. Utility diversions for multi-utility networks would also take place along High Road. This would introduce additional noise and visible construction activity into the asset's setting. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.166 The high value Grade II listed *High House* (LB94) is located north of Muckingford Road and west of the Order Limits. Construction activity would cause temporary changes to the setting of the asset by introducing additional noise, lighting, and visible construction machinery. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.167 The high value Grade II listed *Old Rectory* (LB128) is located north of the Order Limits and north-west of Coalhouse Fort (SM14). Construction works for the ecological mitigation to the south would temporarily alter the rural setting of this asset. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.168 The high value Grade II listed *West Tilbury Hall* (LB50), and the *Barn to north of West Tilbury Hall* (LB87) are located off Church Road adjacent to the Order Limits. Construction activity including utility works c. 140m south of the assets would cause temporary changes to the setting of the assets by introducing additional noise, lighting, and visible construction machinery. This would result in temporary impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.169 6.6.164 The high-value Grade I listed *Church of St Katherine* (LB169) and the high-value Grade II listed *Old Rectory* (LB128) are located immediately outside the Order Limits in East Tilbury. Construction activity associated with establishment of an NMU route, ecological mitigation areas and a light vehicle access route and the more distant northern tunnel entrance compound would cause temporary changes to the setting of these assets by introducing additional noise, lighting and construction traffic/machinery. This would result in temporary impacts of minor adverse magnitude and slight adverse effects, which are assessed as not significant.
- 6.6.170 The high value Grade II listed *Gun Hill Farmhouse* (LB134) is located off Gun Hill c. 100m west of the Order Limits. Construction activity comprising an online utility access route and multi-utility network works c. 100m east of the asset would cause temporary changes to its setting by introducing additional lighting, and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.171 The high value Grade II listed *Walton Hall* (LB203), *Sutton's Farmhouse* (LB204), *Turners Farm* (LB212), *Weatherboarded barn at Waltons Hall* (LB217) are located adjacent to the Order Limits along Walton Hall Road in Linford. Construction activity associated with OHL restringing and the establishment of associated utilities offline access routes would cause temporary changes to the setting of these four listed buildings by introducing additional noise, lighting, and visible construction machinery. This would result in a temporary impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.172 The high value Grade II listed *Franks Farmhouse* (LB115) is sited approximately c. 55m west of the Order Limits. Construction activity for the A122 northbound link road and enlargement of the M25 would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.173 The high-value Grade II listed *Heath Cottage* (LB40) is located on the edge of open countryside on the fringes of Orsett Heath. The Project would cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary

impact of minor adverse magnitude and a **slight adverse effect** which is assessed as **not significant**.

- 6.6.174 The high-value Grade II listed *The Rectory* (LB11) is located within North Ockendon Conservation Area (CA4). The Project cause temporary changes to the setting of this asset by introducing additional noise, lighting and visible construction machinery. This would result in a temporary impact of minor adverse magnitude and a **slight adverse effect** which is assessed as **not significant**.
- 6.6.175 The high-value Grade II listed *Church of St Mary* (LB205), Chadwell House (LB211) and Sleepers Farmhouse (LB213) are located within Chadwell St Mary. Utility diversions for multi-utility networks along Brentwood Road would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects to these assets, which are assessed as **not significant**.
- 6.6.176 The high-value Grade II listed *Kilbro* (LB5), *Russell Cottage* (LB6), *The Forge* (LB7) and *Castle Cottages* (LB8) are located either side of the B186 within North Ockendon Conservation Area (CA4) and immediately adjacent to the Order Limits which include the B186. The B186 would be used as a short-term online main construction access route and utility diversions for multi-utility networks would also take place within the road. This would introduce additional noise and visible construction activity into the assets' settings. This would result in temporary impacts of negligible adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.177 The low-value non-designated Bowaters Farm (1830) is located within the Order Limits between East Tilbury and West Tilbury. Construction of the Project would result in a temporary impact of moderate adverse magnitude and a **slight adverse effect**, which is assessed as **not significant**.
- 6.6.178 The construction of the Project would result in negligible impacts and **slight adverse effects**, which are assessed as **not significant**, on 14 high-value Grade II listed buildings: LB5, LB6, LB7, LB8, LB45, LB75, LB90, LB94, LB128, LB153, LB203, LB204, LB212, LB217.
- 6.6.179 The construction phase would not result in any temporary impacts to the value of the high-value designated Orsett Conservation Area (CA5). There would therefore be no change to this asset, and a **neutral** effect, which is assessed as **not significant**.

Permanent effects

Archaeological remains: significant effects

- 6.6.180 The high-value designated Orsett cropmark complex (SM1) is partially located within the main route alignment and would be affected by construction activity associated with construction of the main alignment, multiple utility networks and OHL diversion works, utilities access routes, utility drainage compound connections, mains work construction access routes and the establishment of Stifford Clays Road compound West and Stifford Clays Road Utility Logistics Hub. The majority of the scheduled area is within the Order Limits and would be physically impacted by construction, which would remove the buried archaeological remains from this multi-period site. The cropmark complex would also experience change to its setting due to the visual and noise disturbance of

construction activity within the scheduled area and in adjacent areas to the north and south. The permanent physical impact of construction activity would be mitigated by archaeological excavation and recording of the whole of the affected scheduled area (AMS-OWSI No. 4, see Table 6.5 for details, see Section 6.5 for details). However, given the scale of impact to this nationally important high value asset, even after mitigation, this would have a permanent impact of major adverse magnitude, resulting in a **large adverse** effect, which is assessed as **significant** and substantial harm to the designated asset.

- 6.6.181 The high value non-designated area of cropmarks identified at Greygoose Farm (247) surrounding and extending the area of SM1. Some of this area has been evaluated by trial trenching (Application Document 6.3, Appendix 6.8) which has identified the remains of Bronze Age occupation, Iron Age to Roman agricultural and industrial activity and enclosures and a Roman cremation. This area of archaeological remains is of high value and is largely located within the Order Limits. A large proportion of asset (247) (and the directly associated SM1) would be removed by utility working areas and diversion works for multi-utility networks and electricity networks, establishment of Stifford Clays Road Compound West, Stifford Clays Road Compound East and Long Lane Compound A, the main works area and the main alignment and earthworks at the A13/A1089/A122 Lower Thames Crossing junction. Outlying parts of asset 247 to the south-west and north-west, outside the Order Limits, would remain in situ. After mitigation in the form of archaeological excavation and recording (AMS-OWSI No. 4), this would result in a permanent impact of major adverse magnitude and **large adverse** effect, which is assessed as **significant**. The effect is assessed as large rather than very large, as the asset would not be completely removed.
- 6.6.182 The high value non-designated possible long barrow or mortuary enclosure (325) recorded in the dry valley south-west of the causewayed enclosure and within the Order Limits has been evaluated by trial trenching (Application Document 6.3, Appendix 6.8) but this did not provide any diagnostic material to aid dating and interpretation. This would be completely removed by construction of the main alignment at the southern end of the A13/A1089/A122 Lower Thames Crossing junction and even after mitigation (AMS-OWSI No. 4), would result in a permanent impact of major adverse magnitude and **large adverse** effect, which is assessed as **significant**.
- 6.6.183 The high value designated causewayed enclosure and Anglo-Saxon cemetery (SM6), includes additional features dating to the Neolithic (7) and early Medieval (210) periods. This grouping of associated non-designated assets outside of the scheduled area is located partially within the Order Limits and would be physically impacted by construction of the main alignment, the Brentwood Road compound and utility diversions, which would remove a proportion of the recorded remains. These activities would introduce noise and visual intrusion into the setting of these high-value assets. The partial removal of the remains would, after mitigation in the form of archaeological excavation and recording (AMS-OWSI No. 4), result in a permanent impact of moderate adverse magnitude and **moderate adverse** effect, which is assessed as **significant**.

- 6.6.184 The high value non-designated Bronze Age and Iron Age (2078) cropmark complexes to the south of Hill House, Baker Street would be physically impacted upon by utility diversion works within the Order Limits that would impact the eastern part of the assets. The construction works would also have a temporary noise and visual impact on the setting of these assets, causing some impact to their value. This would result after mitigation (AMS-OWSI No. 4) in an impact of moderate adverse magnitude and **moderate adverse** effect, which is assessed as **significant**.
- 6.6.185 The medium-value non-designated cropmarks of a rectilinear enclosure, pits and ringditches (595) to the south of North Ockendon within the Order Limits would be completely removed during the establishment of the M25 Compound. The removal of this asset would, after mitigation in the form of archaeological excavation and recording (AMS-OWSI No. 4), result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.186 The high value non-designated Neolithic to Medieval multi-period site of settlement, industrial, funerary and agricultural activity (496) south of Gravelpit Farm would be physically impacted upon by the mains works area, utility working areas for multi-utility networks, gas network TFGP1, the main alignment and earthworks, and landscape mitigation LE6.2 Banks and Ditches. The asset would not be completely removed although the area with the greatest density of archaeological remains would be removed. This would result after mitigation (AMS-OWSI No. 4) in a permanent impact of moderate adverse magnitude and **moderate adverse** effect, which is assessed as **significant**. The effect is assessed as moderate rather than large as a sizeable area of the archaeological site will not be directly physically impacted upon.
- 6.6.187 The following medium-value non-designated archaeological assets within the Order Limits would be completely removed, experience physical impacts to a proportion of the recorded area of the assets or receive associated impacts caused by changes to setting which affect their value. This would result after mitigation of archaeological excavation and recording (AMS-OWSI No. 4) in permanent impacts of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**. The assets are as follows:
- a. Asset (207) Iron Age features associated with the Orsett causewayed enclosure
 - b. Asset (482) Prehistoric features including ring ditch, trackway, rectilinear enclosure at Orsett
 - c. Asset (220) Prehistoric to Roman features including enclosures, ring ditch, trackway, house at Orsett Barrington's Farm
 - d. Asset (245) Roman features including trackway, rectilinear enclosure, ring ditch near Heath Place
 - e. Asset (29) Grove Barn, South Ockendon – site of probable Medieval manor house, possible moated site and Post-Medieval fishpond

- f. Asset (3575) An undated linear feature filled with burnt material, possibly a boundary feature, approximately 200m south of Orsett Causewayed Enclosure (SM6)
- g. Asset (219) Ring ditch at Nevilles Farm
- h. Asset (262) Early Medieval settlement West of Whitecrofts Farm
- i. Asset (342) Prehistoric funerary activity north-west of High House including a barrow, unexcavated ringditch and a series of linear ditches
- j. Asset (117) Middle Bronze Age to Middle Iron Age settlement and sporadic Roman activity
- k. Asset (3682) Late Bronze Age or Early Iron Age possible occupation or industrial activity
- l. Asset (4763) Pair of circular enclosures, likely Bronze Age or Iron Age although technically undated
- m. Asset (3870) Early Medieval enclosure ditches
- n. Asset (104) Land at East Tilbury and Linford Area of Prehistoric ritual landscape and Roman field boundaries would be affected by the construction of the main alignment, Muckingford Road Utility Logistics Hub, utility groundworks (multi-utility and electrical) and Northern Tunnel Entrance compound and flood alleviation works.
- o. Asset (3624) a probable round barrow of Bronze Age to Iron Age date, west of Neville's Farm
- p. Asset (356) Middle Bronze Age to Middle Iron Age occupation, west of Field House
- q. Asset (3598) Neolithic, Bronze Age, Iron Age and Undated settlement activity
- r. Asset (3619) Late Neolithic to Bronze Age funerary and possible ritual activity
- s. Asset (3553) Bronze Age to Iron Age enclosed settlement
- t. Asset (3601) Iron Age to Roman possible industrial activity

6.6.188 Trial Trench evaluation within the Order Limits between Baker Street and the B186 identified a series of archaeological assets not previously identified through desk-based means. One of these assets has been assessed as high value, principally for its evidential value. This is asset (4626) Early Prehistoric to Late Prehistoric activity associated with wetland occupation on the Mark Dyke Valley which would be completely removed by the main route alignment, environmental landscape design, and flood compensation area. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI

No. 4), in a permanent impact of major adverse magnitude and a **large adverse effect**, which is assessed as **significant**.

- 6.6.189 Trial Trench evaluation within the Order Limits between Baker Street and the B186 identified a series of archaeological assets not previously identified through desk-based means. Several of these assets have been assessed as medium value, principally for their evidential value. A variety of Project design elements would result in their complete or partial removal. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in permanent impacts of moderate adverse magnitude and **moderate adverse effects**, which are assessed as **significant**. These assets are listed as follows, divided (with the respective design components) identified through trial trenching.
- 6.6.190 Affected by main route alignment:
- a. Asset (3572) Bronze Age features
 - b. Asset (3726) Features dating to Late Bronze Age to Iron Age
 - c. Asset (3677) Area of Bronze Age settlement activity
 - d. Asset (3733) Concentration of activity predominantly of Prehistoric date with some Early Medieval to Medieval features
 - e. Asset (3723) Spread of Neolithic pottery including pit
- 6.6.191 Affected by utilities:
- a. Asset (3627) Concentration of Prehistoric Activity
 - b. Asset (3589) Potential Medieval site
 - c. Asset (3841) Late Bronze Age/Iron Age/Roman occupation site on the Mar Dyke Valley
- 6.6.192 Affected by main route alignment/working area and construction compound:
- a. Asset (3848) Early Medieval to Post-Medieval activity including Tudor kiln and pond.
- 6.6.193 Affected by main route alignment/working area and utilities:
- a. Asset (3599) Bronze Age to Iron Age activity associated with colluvial layers north of Muckingford Road
 - b. Asset (3670) Rectilinear enclosure of possible Early Medieval date south of Muckingford Road
 - c. Asset (3671) Round barrow and possible associated flat cemetery south of Muckingford Road
 - d. Asset (3675) Middle to Late Bronze Age occupation site with pits, ditches, pottery and fired hearth clay, south of Muckingford Road

- e. Asset (3837) Prehistoric occupation site (Neolithic to Iron Age or Bronze Age to Iron Age)
 - f. Asset (3902) Possible Medieval farmstead
 - g. Asset (3713) Middle Bronze Age and undated possible ritual and/or domestic activity
 - h. Asset (3835) Later Prehistoric occupation site of domestic and funerary activity
- 6.6.194 Affected by environmental landscape design and flood compensation area:
- a. Asset (3940) Iron Age timber structure, a possible footbridge, associated with a former palaeochannel on the Mar Dyke Valley
- 6.6.195 Affected by flood compensation area:
- a. Asset (3936) Late Bronze Age un-urned cremation (possible cemetery) on the former Mar Dyke Valley floodplain
- 6.6.196 Affected by main route alignment/working area, utilities, construction compound and environmental landscape design:
- a. (3703) Ditch of possible Mesolithic to early Neolithic date affected by main route alignment
 - b. (3668) Mesolithic to Neolithic flint assemblage affected by utilities diversion
 - c. Asset (3722) Undated, Neolithic, Bronze Age, Iron Age, Roman and Early Medieval activity including ditches, pits, an undated pyre material deposition in a tree throw and Early Medieval pottery in a tree throw. Possible ritual activity
 - d. Asset (3836) Bronze Age to Iron Age settlement and ritual activity bisected by railway
- 6.6.197 The medium-value non-designated asset (3914), Pits containing later Neolithic worked flint and middle Bronze Age pottery, would be completely removed by utility working areas associated with OHL diversions. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.198 The medium-value non-designated assets: (3918) Early or Middle Iron Age settlement activity including some undated features that are likely to be related; and (3920) Ditches of Roman date potentially forming enclosures, would be completely removed by utility working areas (multi-utility networks and OHL diversions), construction of the main alignment and the mains works area. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in permanent impacts of moderate adverse magnitude and **moderate adverse** effects, which are assessed as **significant**.

- 6.6.199 The medium-value non-designated asset (3908), Findspots of Mesolithic flints, would be completely removed by utility working areas for multi-utility network diversions and by landscaping (LE6.11 Water Bodies - Standing Water). This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.200 The medium-value non-designated asset (3926), Poorly preserved crouched inhumation burial associated with small amount of Neolithic/late prehistoric worked flint and pottery, would be completely removed by the mains works area, construction of the main alignment, and by landscaping (LE6.11 Water Bodies - Standing Water). This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.201 The medium-value non-designated assets (3904), Findspot of a late Upper Palaeolithic long blade and (3907) Tree throw holes and pits containing Mesolithic, Neolithic and Early Bronze Age flint and Neolithic and later prehistoric pottery; and (3903) A late Upper Palaeolithic long blade recorded in Trench 107 with several other unusually large blades which may also date from this period, would be completely removed by utility working areas (for OHL diversions), construction of the main alignment and the mains works area. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in permanent impacts of moderate adverse magnitude and **moderate adverse** effects, which are assessed as **significant**.
- 6.6.202 The medium-value non-designated asset (3959) Tree throw containing later prehistoric flint and pit containing charcoal, would be completely removed by extensive utility working areas. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.203 The medium-value non-designated asset (3906), a small scatter of struck flints of Mesolithic character on a buried land surface, would be completely removed by the construction of the main alignment and associated mains works area. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.204 The majority of the medium-value non-designated asset (3905) would be removed by utility working areas for OHL diversions, establishment of utilities offline access routes, watercourse diversion plan local earthworks, and the mains works area and construction of the main alignment. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.205 The majority of the medium-value non-designated asset (3916) would be completely removed by utility working areas, the mains works area and construction of the main alignment. This would result, after mitigation by archaeological excavation and recording (AMS-OWSI No. 4), in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.

Archaeological remains: non-significant effects

- 6.6.206 The high value Springfield' style enclosure and Iron Age enclosures south of Hill House, Baker Street (SM7) is located adjacent to the Order Limits. The working area for buried utility diversions would be located directly adjacent to the eastern end of the scheduled area. Consequently the asset would be preserved *in situ*. This would result in a permanent impact of no change and **neutral** effect, which is assessed as **not significant**.
- 6.6.207 The associated non-designated high value Bronze Age and Iron Age cropmark complex (2078) that surrounds the scheduled area would be physically impacted by the utility diversion (as assessed above). The loss of part of these associated archaeological remains would negatively affect the setting of the scheduled monument as they form part of the same wider area of activity and make a key contribution to its value. The loss of the majority of the Orsett cropmark complex (SM1) to the west would also affect the setting of this asset by removing additional archaeological remains which are broadly contemporary with elements of SM7. Other Late Prehistoric archaeological remains would survive unharmed within the setting of this asset, such as 261 and 268. Overall, the removal of some associated archaeological remains of 2078 and SM1 would have a permanent impact of minor adverse magnitude on this high-value asset, resulting in a **slight adverse** effect after mitigation, which is **not significant**. A slight rather than a moderate adverse effect is considered appropriate due to the limited area of associated remains which would be disturbed and the fact that the core concentrations of settlement activity would not be harmed.
- 6.6.208 A high value group of non-designated cropmarks, possibly representing Prehistoric to Roman settlement and funerary activity, is located on the eastern side of Mill House Farm partially within the Order Limits (450). The southern edge of the asset would be impacted upon by widening of Muckingford Road and utility working areas for multi-utility networks. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of negligible magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.209 Fourteen medium value non-designated archaeological assets recorded within the Order Limits (91, 144, 194, 213, 239, 240, 288, 365, 442, 446, 493, 643, 761, 3952) would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.210 Because of change within its setting, one medium value non-designated archaeological asset recorded outside the Order Limits (444) would experience a permanent impact of minor adverse magnitude and a **slight adverse** effect which is assessed as **not significant**.
- 6.6.211 One medium value non-designated archaeological asset recorded within the Order Limits (3832) would be impacted upon during construction. Mitigation would be applied in the form of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) and protective fencing erected during the construction phase in order to protect the buried remains of the asset from accidental damage (REAC Ref. CH001; AMS-OWSI No. 1). This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.212 One medium value non-designated archaeological asset recorded within the Order Limits (379) would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.213 Two medium value non-designated archaeological assets recorded within the Order Limits (477, 479) would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.214 There are 90 low value non-designated archaeological assets recorded within the Order Limits (186, 187, 231, 267, 312, 355, 357, 361, 410, 586, 594, 598, 605, 611, 690, 804, 1789, 1804, 1810, 1832, 1864, 3554, 3559, 3572, 3573, 3577, 3599, 3602, 3615, 3617, 3623, 3625, 3669, 3672, 3673, 3674, 3676, 3680, 3683, 3685, 3687, 3688, 3689, 3691, 3699, 3703, 3712, 3759, 3840, 3847, 3846, 3857, 3865, 3866, 3876, 3886, 3887, 3891, 3892, 3897, 3917, 3920, 3921, 3922, 3924, 3925, 3949, 3957, 4194, 4620, 4621, 4622, 4623, 4624, 4625, 4759, 4761, 4762, 4767, 4769, 4770, 4771, 4772, 4773, 4774) which would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), a permanent impact of moderate adverse magnitude and **slight adverse** effect, which is assessed as **not significant**.
- 6.6.215 There are 299 low value non-designated archaeological assets within the Order Limits (109, 118, 161, 184, 189, 195, 196, 197, 211, 212, 229, 246, 236, 257, 358, 360, 452, 637, 715, 741, 1790, 1798, 1805, 1808, 2062, 3576, 3704, 3721, 3756, 3845, 4177, 4627) which would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.216 There are 97 low value non-designated archaeological assets within the Order Limits which would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), permanent impacts of negligible adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.217 One low value non-designated archaeological asset recorded within the Order Limits (717) would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) a permanent impact of minor adverse magnitude and a **neutral effect**, which is assessed as **not significant**.
- 6.6.218 Six low value non-designated archaeological assets recorded within the Order Limits (342, 449, 487, 520, 2057, 4768) would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) permanent impacts of negligible adverse magnitude and a **neutral** effect, which is assessed as **not significant**.
- 6.6.219 There are four negligible value non-designated archaeological assets within the Order Limits (1833, 4172, 4198, 4203) which would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4) permanent impacts of moderate adverse magnitude and **neutral** effects, which are assessed as **not significant**.

- 6.6.220 Three negligible value non-designated archaeological assets recorded inside the Order Limits within the 1km study area (3898, 3899, 3883) would experience construction activity resulting in their complete removal; as these assets are common in nature and form and already well documented, no mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI. 4) would be required. These assets (3898, 3899, 3883) would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.221 Trial Trench evaluation within the Order Limits identified two low-value non-designated archaeological assets (3878, 3879) not previously identified through desk-based means. These assets would experience construction activity resulting in their complete removal. Both assets are residual find locations contained within the infill of other features: Mesolithic worked flints recovered from a natural feature (3878) and a Late Iron Age/Roman cultivation ditch (3879). The artefacts themselves were removed during trial trenching (Appendix 6.8, Trial Trenching of Land Parcel 48B and 48C Mar Dyke Valley, between South Ockendon and Orsett). Following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI. 4), asset 3878 would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**; asset 3879 would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.222 Trial Trench evaluation within the Order Limits (Appendix 6.8, Archaeological Evaluation Report for Trial Trenching of Land Parcels 43, 45A-E and 46 Mar Dyke Valley, between South Ockendon and Orsett) identified a low value non-designated archaeological asset (3874) not previously identified through desk-based means. Asset 3874, Late Bronze Age/Early Iron Age activity, located on the Mar Dyke Valley would be totally removed due to its location within utilities working area. Following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI. 4), asset 3874 would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.223 There are three negligible value non-designated archaeological assets within the Order Limits (173,1831, 4204) which would experience, following mitigation of archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI. 4), a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- Geological deposits of archaeological interest: significant effects*
- 6.6.224 No significant effects on geological deposits of archaeological interest have been identified to the north of the River Thames.
- Geological deposits of archaeological interest: non-significant effects*
- 6.6.225 North of the River Thames within medium value zone PQ-9 and high value zone PQ-10, the tunnelling, main alignment and cut and cover works would affect gravel deposits of the East Tilbury Marsh and Shepperton formations and Holocene alluvial and peat which may contain reworked and *in situ* archaeological finds respectively although none are recorded in the area of the proposed works. The extensive nature of the deposits and proposed

programme of specific Palaeolithic mitigation (AMS-OWSI No. 9), indicate they would experience permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.

- 6.6.226 Medium-value zones PQ-11 and PQ-12 which are minimally affected by the main alignment works, contain deposits of the Lynch Hill/Corbets Tey and Taplow terrace formations. Within the proposed main alignment route, a handaxe (441) from PQ-11 has been recorded. The Lynch Hill/Corbets Tey terrace and equivalent deposits are extensive on the eastern side of the Order Limits within medium value zone PQ-17 and high value zones PQ-18 and PQ-19. Elsewhere, Palaeolithic finds and associated palaeoenvironmental remains are known, especially in proximity to Chalk bedrock, as is the case in zone PQ-17. The recorded finds have been recovered, and the extensive nature of the deposits and the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) of the deposits indicate they would experience permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.227 Handaxes and associated debitage (4018) and periglacial geological features (248) from medium value zone PQ-13 are associated the Boyn Hill/Orsett Heath deposits. These deposits are also recorded within medium value zone PQ-14 and high value zone PQ-25. These zones (PQ-13, PQ 14 and PQ 25) would be impacted by the main alignment works. The extensive nature of the deposits and the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) indicate they would experience permanent impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.228 For medium-value zone PQ-26, the findspots and deposits would be affected minimally by the main alignment works in these areas. The Boyn Hill/Orsett Heath deposits are extensive within and beyond the Order Limits and have further afield produced more numerous Palaeolithic finds. The extensive nature of the deposits, the fact that the known finds have been recovered and the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) indicate they would experience a permanent impact of negligible magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.229 No other non-designated archaeological assets of Palaeolithic origin that would be directly impacted by the works, are recorded. The main alignment works and Orsett flood attenuation scheme would affect Head and alluvial deposits of archaeological and palaeoenvironmental interest in the Mar Dyke Basin in low value zones PQ-15, PQ-21 and PQ-22 and medium value zones PQ-20a, PQ-20b and PQ-23. A dense partly Late Upper Palaeolithic flint scatter (4626) was recovered during the ATT works in medium value zone PQ-23. Medium-value zones PQ-24 and PQ-27 also affected by the main alignment works contain Head and glaciofluvial deposits. The extensive nature of the deposits and the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) indicate they would experience a permanent impact of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.230 Medium-value zone PQ-16 and medium value zone PQ-28, minimally affected by the main alignment works, contain Black Park and Stanmore gravel respectively which are unlikely to contain archaeological finds and none are

recorded from the impacted areas in these zones. The extensive nature of the deposits and the proposed programme of specific Palaeolithic mitigation (AMS-OWSI No. 9) indicate PQ-16 would experience a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**. PQ-28 would experience a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.

Built heritage: significant effects

- 6.6.231 The high value Grade II listed *Nos. 1 and 2 Grays Corner Cottages* (LB89), *Thatched Cottage* (LB58) and *Murrells Cottages* (LB96) are all located within the Order Limits and would be demolished during construction to enable construction of the A13/A1089/A122 Lower Thames Crossing junction and associated link roads. Following the mitigation through building recording (REAC Ref. CH001; AMS-OWSI No. 2) the total removal of these assets would result in a permanent impact of major adverse magnitude, and a **large adverse** effect, which is assessed as **significant** and substantial harm to the designated heritage assets.
- 6.6.232 The low value *Nos. 1 and 2 Whitfield Cottages* (4159) between Grays and Orsett would be demolished to enable construction of the Project. Following mitigation through building recording (REAC Ref. CH001; AMS-OWSI No. 2) the total removal of this asset would result in a permanent impact of major adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.233 Five low-value locally listed buildings within the Order Limits near North Ockendon would be demolished to enable construction of the A122 Lower Thames Crossing/M25 junction. The total demolition of these assets would result, following mitigation through building recording (REAC Ref. CH001; AMS-OWSI No. 2) in permanent impacts of major adverse magnitude and **moderate adverse** effects, which are assessed as **significant**. No other locally listed buildings would be physically impacted upon by the Project. The assets are as follows:
- a. Estate House, Ockendon Road (4153);
 - b. 1 Bridge Cottages (4154);
 - c. 2 Bridge Cottages (4155);
 - d. 3 Bridge Cottages (4156);
 - e. 4 Bridge Cottages (4157).

- 6.6.234 Two low-value non-designated buildings (not locally listed) within the Order Limits near North Ockendon would be demolished to enable construction of the A122 Lower Thames Crossing/M25 junction. The total demolition of these assets would result, following mitigation through building recording (REAC Ref. CH001; AMS-OWSI No. 2) in permanent impacts of major adverse magnitude and **moderate adverse** effects, which are assessed as **significant**. The assets are as follows:
- a. Larwood Cottage (4775);
 - b. The Rosery (4776);

Built heritage: non-significant effects

- 6.6.235 Construction of the Project would result in a permanent physical impact to the high-value West Tilbury (CA7) Conservation Area. Construction of a utility access route and following that in the same location, an NMU route, would result in the removal of the hedgerow and bank that forms the northern boundary of the Great Common Field and of the Conservation Area itself. This would be mitigated by archaeological excavation and recording (REAC Ref. CH001; AMS-OWSI No. 4), resulting in a permanent impact of minor magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.236 The Project would not result in any permanent construction impacts on the high value built heritage assets of East Tilbury (CA6) Conservation Area, Orsett (CA5) Conservation Area or North Ockendon (CA4) Conservation Area. The Project would not result in any permanent construction impacts to further built heritage assets north of the River Thames.

Use of the River

- 6.6.237 Vessel movements on the River Thames are not relevant to this assessment and is excluded from the scope of this chapter.

Operational phase

- 6.6.238 This section presents the assessment of permanent impacts on the setting of cultural heritage assets, due to the presence of the Project during its operation.
- 6.6.239 In relation to physical impacts, those that would occur during construction have been reported earlier in this chapter. During operation, the only potential route by which a physical impact could occur is through ground-borne vibration. However, the assessment presented in Chapter 12: Noise and Vibration (Application Document 6.1) has concluded there would be no significant levels of ground-borne vibration during operation. Therefore, no physical impacts would occur during operation, and no assessment of this type of impact is required for cultural heritage assets.
- 6.6.240 Similarly, temporary impacts are considered to occur only during construction. Due to the proposed long-term operation of the Project, all the impacts of operation are considered to be permanent.

- 6.6.241 Impacts to the historic landscape from construction and operation have been considered holistically. For example, the removal of part of a historic landscape during construction and the permanent presence of replacement landscaping in that same area during operation have been considered as a single impact.

South of the River Thames

Permanent effects

Archaeological remains: significant effects

- 6.6.242 No significant effects on archaeological remains south of the River Thames have been predicted during the operation of the Project.

Archaeological remains: non-significant effects

- 6.6.243 The high value designated Romano-British Villa and 19th century reservoir in Cobham Park (SM10) is approximately 135m south of the operational alignment along the A2; and the Bronze Age bowl barrow in Ashenbank Wood (SM8) is approximately 350m south of the realigned Brewers Road. They are separated from the Project by intervening vegetation. Although their setting is rural, it already includes the existing A2, and the operation of the Project would not result in a discernible change to their setting, beyond the establishment of a cycleway approximately 80m north of SM10 at the northern edge of Cobham Park and the redesign of the existing Halfpence Lane/Thong Lane roundabout in the north-western part of the park. This would not have an impact on these high-value assets, and the Project would therefore have a **neutral** effect, which is assessed as **not significant**.
- 6.6.244 Operation of the Project would impact the high value non designated area of multiperiod settlement activity west of Thong (3650). This asset would experience a change in setting due to the establishment of the LTC A2 Junction and associated infrastructure resulting in a change of character from rural to urban. However, some elements of rural character will be retained within the south-eastern part of this asset and remains preserved *in situ* will benefit from space provided for Thong Conservation Area. Overall, the operational impact to asset 3650 would be of minor adverse magnitude, constituting a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.245 Gravesend Blockhouse (SM16) and New Tavern Fort (SM17), including Milton Chantry (LB120) in Gravesend are high value heritage assets. They are located approximately 940m and 1km from the Order Limits respectively and their settings are formed by Gravesend, which partially surrounds the assets; the River Thames to the north; views across the river to Tilbury Fort; views downriver towards Coalhouse Fort (SM14); and historic association with the site of Milton Blockhouse (2290). There would be no change to the setting of these assets and the Project would therefore have a **neutral** effect, which is assessed as **not significant**.
- 6.6.246 Operation of the Project would not result in any impacts to the high value designated deserted Medieval manorial settlement of Cossington (SM23). There would be no change to elements of the setting of this asset that contribute to its value and the Project would therefore have no change and a **neutral** effect, which is assessed as **not significant**.

- 6.6.247 The high value non-designated Shornemead Fort (1878) is located on the south bank of the River Thames, opposite Coalhouse Fort. It is located over 1km from the Order Limits. Its setting is formed by its immediate surroundings, its riverside location and views across the river to Coalhouse Fort and downriver. There would be no change to its setting as a result of the operational alignment and therefore this asset would experience no change and a **neutral** effect, which is assessed as **not significant**.
- 6.6.248 The low value non-designated site of Gravesend Airfield (1459) would be crossed by the main alignment during operation. The setting of the airfield would be significantly altered by the main alignment and associated earthworks and cutting, which would alter the topography of the area which forms an important aspect of its setting. The woodland planting around the edge of surviving open areas of the former airfield would further enclose what remains of its open character, and this along with the change to topography would mean that the setting of the airfield would be changed. The widening of the A2 and increase in the size of the infrastructure corridor would further sever the relationship between the airfield and dispersal camps (1331, 1324). Mitigation measures would include wildflower meadow planting that references the historic layout and runways of the airfield (Figure 2.4: Environmental Masterplan (Application Document 6.2) S02-05-021, EFF, LE1.3), reinstatement of much of the open space within the former airfield, and reinstatement of agricultural land within the setting of the asset. After mitigation, this would result in a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.249 The operation of the Project would result in permanent impacts of minor adverse magnitude to the following medium value assets as a result of the replacement of the open landscape with Ancient Woodland Mitigation Planting LE8.2:
- a. multi-period enclosure and settlement activity (3740)
 - b. area of Late Bronze Age and Early Iron Age activity (3743)
 - c. Bronze Age enclosure and site of urned cremation (3530)
 - d. Romano-British cremation burial, isolated with possible association to former settlement 1597 (3655)
- 6.6.250 This would result in **slight adverse** effects which are assessed as **not significant**.
- 6.6.251 The operation of the Project would result in minor impacts to medium value asset Neolithic activity, pit containing large flint assemblage and pottery (3641) within the Order Limits due to change within its setting. This would result in a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.252 The operational alignment would create a large modern element cutting across the associated landscape either side of the medium value Chalk Parish Boundary (4619). This would cause a permanent impact of minor adverse magnitude on this medium-value asset, resulting in a **slight adverse** effect, which is **not significant**.

- 6.6.253 The operation of the Project would result in a permanent impact of moderate adverse magnitude to one low value non-designated archaeological asset with the Order Limits (3704) due to change within its setting, which would result in a **slight adverse** effect which is assessed as **not significant**.
- 6.6.254 Only the southern part of asset 3845 lies within the Order Limits. The operation of the Project would result in a permanent impact of moderate adverse magnitude to this asset (3845) due to change within its setting and removal of associated archaeological remains, which would result in a **slight adverse** effect which is assessed as **not significant**.
- 6.6.255 The operation of the Project would result in permanent impacts of minor adverse magnitude to four low value non-designated archaeological assets within the Order Limits (677, 1153, 3535, 3741, 3756) due to change within their setting, which would result in **slight adverse** effects which are assessed as **not significant**.
- 6.6.256 The operation of the Project would result in a permanent impact of moderate adverse magnitude to three negligible value non-designated archaeological assets within the Order Limits (801, 1852, 4185) due to a change within their setting which would result in a **slight adverse** effect which is assessed as **not significant**.

Built heritage: significant effects

- 6.6.257 The northernmost part of the medium value designated Thong (CA10) Conservation Area extends within the Order Limits. Utility diversions to the west of Thong would require the movement of an existing electricity pylon closer to the edge of Thong Conservation Area, placing it approximately 75m west of the Conservation Area, as opposed to the current distance of approximately 200m. This would add to the change to the setting of the Conservation Area, introducing additional infrastructure in close proximity that would increase the enclosure of the current open setting, and consequently affect its value. In addition, the existing key northern approach to the Conservation Area (identified in the Conservation Area Appraisal (Gravesham Borough Council, 2017e)) on the historic route of Thong Lane would be altered with new woodland planting screening along a new curving road alignment.
- 6.6.258 This would alter the historic approach to the Conservation Area and screen the existing key views towards the asset on the approach from the north. No mitigation has been identified that could reduce these impacts to the Conservation Area. The alteration of the northern approach into the Conservation Area and the large changes to elements of its setting that contribute to its value would affect the value of the Conservation Area. During the operational phase, the main alignment would be located approximately 50m to the west of Thong (CA10) Conservation Area, passing to the west of the asset to meet the rising earthworks of the M2/A2/Lower Thames Crossing junction approximately 125m south-west of the asset. The landscape earthworks to screen the M2/A2/Lower Thames Crossing junction would raise the ground level significantly to the south-west, and the M2/A2/Lower Thames Crossing junction would include flyover bridges. The character of the open agricultural land to the north-west, west and south-west of the asset would be changed to infrastructure and landscaping, and key external views towards the asset across the agricultural land to the west would be adversely altered.

- 6.6.259 The landscape to the west of the asset does not form as prominent a background in views out of the Conservation Area as does Randall Wood to the east. However, glimpsed views westward from along Thong Lane within the Conservation Area would be slightly altered. The view out of Thong (CA10) Conservation Area from the PRow heading west from Thong Lane would be far more noticeably altered when viewed from the western edge of the Conservation Area. The key view looking south to the asset when approached from the north along Thong Lane would also be altered, with the realignment of the historic route of Thong Lane, and woodland planting which would screen views to the Conservation Area.
- 6.6.260 While views looking east from Thong (CA10) Conservation Area to Randall Wood would not be altered, the external views westward towards the asset from the edge of the wood itself would be altered, with the Project visible in the background. Therefore, all of the key long-distance views of the Conservation Area identified within the Conservation Area Appraisal (Gravesham Borough Council, 2017e) would be adversely altered. Apart from the views from the north, key internal views within the Conservation Area would not be altered. However, a key characteristic of the Conservation Area, appearing ‘islanded’ within a rural landscape, would be compromised by the shrinking of the ‘island’ within which it sits.
- 6.6.261 The long-term operational noise change from the existing baseline would not be discernible from most parts of the Conservation Area (Figure 12.8, Application Document 6.3). In the western part of the Conservation Area, west of Thong Lane and in most cases to the rear of the properties along the lane, the operational noise would be 5 to 9.9dBA higher than the present which Chapter 12 assesses as a moderate adverse change. The introduction of additional traffic noise which was not previously present in the rural setting would cause a degree of harm to its aesthetic value.
- 6.6.262 Regarding Lighting, Appendix 7.9 (Application Document 6.3) states “there would be a perceived change in the night-time environment due to new sources of lighting (LED luminaires) and vehicle lights at the M2/A2/Lower Thames Crossing junction, in particular on the elevated main alignment southbound to A2 westbound viaduct structure. Additional light sources would also be present along Thong Lane and on the Thong Lane green bridge south. The street lighting along the A2 corridor would change to LED luminaires. Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of the new lighting would be limited and perceived in the context of existing lighting. However, due to the widened corridor, the extent of lighting would be increased, with additional lanes of traffic and vehicle lights evident. The perception of lighting would be greatest further north in the LLCA away from existing lighting along the A2 corridor”, i.e. in the vicinity of Thong Conservation Area.
- 6.6.263 The impacts to the Conservation Area would be mitigated by the Thong Lane green bridge to reduce visibility of the main alignment, a wooded circle around Thong helping to retain part of the rural setting (Design Principle S2.01, Application Document 7.5), native woodland planting on the slopes of the M2/A2/Lower Thames Crossing junction earthworks to the south-west to screen the infrastructure of the junction (Figure 2.4: Environmental Masterplan (Application Document 6.2) LE2.1, 2.2, 2.3, 2.4) and establishment of new

woodland planting at the M2/A2/Lower Thames Crossing junction to help reduce the effects of new lighting on the night-time environment.

- 6.6.264 Overall, these impacts to its views and setting would adversely affect the Conservation Area, although it would still be understandable as a linear village with no further change (after construction) to the relationships between the buildings and it would maintain its relationship with Thong Lane and the land to the west. Therefore, this would result in a permanent impact of moderate adverse magnitude to this medium-value asset and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.265 The operation of the Project would change the setting of the high value Grade II listed *White Horse Cottage* (LB22), with the main alignment visible in the formerly open agricultural land to the west. While there would be no discernible change to existing noise levels, the low brightness night-time setting of the asset (see baseline assessment for CA10) would see increased light as a result of the Project which would slightly harm its rural character. Overall, the Project would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect which is **significant**.
- 6.6.266 The operation of the Project would adversely alter the setting of the medium value Cheney's Farm (1133) and White Horse Cottage Farmstead (1134) with the main alignment visible in the formerly open agricultural land to the west. This would result in permanent impacts of moderate adverse magnitude and **moderate adverse** effects which are **significant**.

Built heritage: non-significant effects

- 6.6.267 The high-value designated Cobham Hall Grade II* Registered Park and Garden (RPG1) would be impacted by the presence of the widened A2 and realigned Thong Lane and Brewers Road bridges over the A2, which border the northern edge of the park. The reduction in vegetation along the northern edge of the park with the loss of trees from the centre of the A2 corridor, and the increase in the size of the existing infrastructure corridor in this location would increase the visibility of modern infrastructure within and immediately adjacent to the Registered Park and Garden. Mitigation measures would include planting (LE2.1 Native Woodland) around the new LTC/A2 junction to reduce the visual impacts to Cobham Park and the construction of a green bridge for the Brewers Lane overbridge. The majority of the woodland along the northern edge of the park south of HS1 would be retained, which would maintain some visual screening.
- 6.6.268 According to the LVIA Chapter 7 Appendix 7.9, Table 3.3 (Application Document 6.3) there would be “a perceived change in the night-time environment” within the Local Landscape Character Area that includes Cobham Park “due to the change in street lighting (LED luminaires). Installed on lower columns, emitting reduced light spill and skyglow compared with the existing luminaires, the prominence of new lighting would be limited and perceived in the context of existing lighting. Additional light sources would be present at the Thong Lane green bridge south in the Higham Arable Farmland (sub area Thong) LLCA. However, this would be seen in the context of existing lighting along the A2.” By 2045, “the establishment of tree and shrub belt planting along the southern edge of the modified A2 corridor would to some extent help reduce the effects of new lighting on the night-time environment.”

Given that the existing A2 corridor is already lit, it is not assessed that the lighting associated with the Project would result in adverse impacts in heritage terms.

- 6.6.269 The permanent alterations to the asset would be minimal and would occur within peripheral areas, such as the strip between the A2 and HS1 which has already been physically severed from the rest of the park. The vast majority of the park would not experience a physical impact and the peaceful, rural character would be largely preserved. While the presence of infrastructure to the north of the park would be increased, this is on the line of existing infrastructure. Furthermore, the creation of the green bridges would create a green link between the park and Shorne Woods with which the asset is historically associated. Overall, the Project would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.270 Shorne (CA9) Conservation Area is located approximately 500m south-east of the Order Limits. Shorne (CA9) Conservation Area derives its high value primarily from the historical, evidential and aesthetic value of its built form and historic open spaces, although it also derives some value from its setting, including a number of key internal and external views. One such key external view (identified in the Conservation Area Appraisal (Gravesham Borough Council, 2017d)) overlooks the area within the Order Limits (Application Document 6.2, Figure 6.6, Viewpoint S-32), and is from a PRow immediately west of the Conservation Area boundary, although similar views (somewhat filtered by seasonal vegetation) are likely to be possible with the adjacent parts of the Conservation Area. This wide-ranging panoramic view encompasses a foreground of the arable chalk landscape (small arable fields, followed by the open prairie fields and golf course within the Order Limits), a middle ground of reclaimed marshland and the River Thames, to distant views of Essex beyond. The view contains a wide-ranging mix of agricultural, industrial, infrastructure and residential elements. The foreground is predominantly agricultural, apart from prominent electricity pylons and the Thames View Crematorium (immediately to the north of the Order Limits). In itself, this view makes a minor contribution to the overall value of the Conservation Area, through its aesthetic value.
- 6.6.271 Part of the landscape mitigation would be to establish woodland in the nitrogen deposition compensation sites c. 210m to the south-east (Court Wood) and 220m to the south (Fenn Wood) of Shorne Conservation Area. As the setting of the Conservation Area (CA9) in these directions is enclosed and already contains a large amount of woodland, this is not assessed to result in harm to the value of the asset.
- 6.6.272 During the operational phase the main alignment and South Portal area would be visible within the middle ground of this view. Large areas of the land inside the Order Limits within the view would be returned to landowners, and other areas would see a change in use from arable to areas of new contoured earthworks with woodland edge planting (Figure 2.4: Environmental Masterplan (Application Document 6.2) LE2.2), woodland with non-native species (EMP element LE2.11) and species-rich grassland (Figure 2.4: Environmental Masterplan (Application Document 6.2) LE1.3). Given the high elevation of the vantage point, it would not be possible to mitigate these changes to the key

view. However, while the Project would introduce new elements within the middle ground, it should be noted that this would be in the context of a wide-ranging panoramic view which already contains a mix of rural, industrial, infrastructure and residential elements. The changes to this key view would result in a permanent impact of minor adverse magnitude to Shorne (CA9) Conservation Area, a high-value asset, and a **slight adverse** effect, which is assessed as **not significant**.

- 6.6.273 The high value Cobham Village (CA11) Conservation Area is located partially within the Order Limits, at an area proposed for utilities works along Halfpence Lane, which will have been completed prior to the Operational Phase. The main alignment and associated landscaping would be located approximately 925m north of the asset. Halfpence Lane, included within the Order Limits, makes a minor contribution to the setting and character and appearance of the asset, as it forms a historic routeway and an approach to the village from the A2. The main alignment area within the Order Limits does not contribute to the value of the asset and is largely screened by intervening woodland and undulating topography. From the very north-eastern corner of the Conservation Area within Cobham Hall (RPG1), distant glimpses of the main area within the Order Limits are possible in the vicinity of Brewers Road but in themselves do not contribute to the value of the asset.
- 6.6.274 During operation, the remainder of the area within the Order Limits would be largely screened from the asset by vegetation. However, there is potential for distant glimpsed views of the tallest elements of the M2/A2/Lower Thames Crossing junction (approximately 1.1km to the north-west) from the upper stories of buildings within the Conservation Area during the winter months (Application Document 6.2, Figure 6.6, Viewpoint S-(CH)07). Such distant glimpsed views would not affect the value of the Conservation Area. Overall, it is considered that operation of the Project would result in no change to Cobham Village (CA11) Conservation Area, a high value asset and a **neutral** effect, which is assessed as **not significant**.
- 6.6.275 Sited outside the 1km study area, Queen's Farm (CA8) Conservation Area has been included in this assessment as it is located within the landscape study area. Queen's Farm (CA8) Conservation Area is of medium value. The asset is located approximately 1.1km east of the Order Limits (the below-ground element) and approximately 1.7km north-east of the South Portal. Key views into and out of the asset, identified within the Conservation Area Appraisal (Gravesham Borough Council, 2017c), do not include the Order Limits. These views are primarily focused northward, toward the River Thames. The areas of the land within the Order Limits which would contain above-ground development are distant from the asset, across a gently rising landscape with a number of intervening hedge- or tree-lined field boundaries; the dominant element of the view in the direction of the Order Limits is the line of electricity pylons. While parts of the land within the Order Limits are distantly visible from the asset, they do not contribute to its value and the Project is unlikely to be prominent or intrusive within the views at this distance. Operation of the Project would result in no change to Queen's Farm (CA8) Conservation Area, a medium value asset, and therefore a **neutral** effect, which is assessed as **not significant**.

- 6.6.276 The area within the Order Limits does not contribute to the value of Gravesend Riverside Conservation Area (CA14), which is of high value. This Conservation Area is located approximately 650m west of the Order Limits and is screened from the Project by built form. Operation of the Project would not result in any impacts on the value of this asset. Therefore, there would be no change to Gravesend Riverside Conservation Area (CA14) and a **neutral** effect, which is assessed as **not significant**.
- 6.6.277 The operation of the Project would change the setting of the high value Grade II* listed *Church of St Mary* (LB27). This asset is located over 500m to the north-east of the South Portal. The main alignment is unlikely to be visible, although the new landform in Chalk Park will be visible. The Project would not result in a discernible increase in traffic noise. At night, the increased lighting would not be directly visible, but may increase the background lighting perceptible in the area (against the backdrop of existing light spill from Gravesend). Overall, the Project would result in a permanent impact of minor adverse magnitude and **slight adverse** effect which is **not significant**.
- 6.6.278 Ancient Woodland Mitigation Planting within the setting of the high value Grade II listed *Baynards Cottage* (LB78) would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.279 The operation of the Project would change the setting of the high value Grade II listed *Parish Boundary Stone* (LB105) which would result in a permanent impact of negligible adverse magnitude and a **neutral** effect which is **not significant**.
- 6.6.280 One medium value non-designated built heritage asset Shorne Woods Country Park (1311) located partially within the Order Limits would receive impacts from the operation of the expanded road infrastructure within its setting to the south and south-west. The asset is already separated from the historically associated Cobham Park (RPG1) by the extensive road infrastructure of the existing A2, and therefore this increase in infrastructure is considered to result in a permanent impact of minor adverse magnitude and a **slight adverse** effect, which is **not significant**.
- 6.6.281 The operation of the Project would result in a permanent impact of minor adverse magnitude on the non-designated medium value Thong Lodge (4348) resulting in a **slight adverse** effect which is assessed as **not significant**.
- 6.6.282 The operation of the Project would result in a permanent impact of moderate adverse magnitude on the non-designated low value WWI ‘Homes for Heroes’ houses (1561, 4401, 4402, 4403, 4597, 4598, 4599, 4600) within Thong (CA10) Conservation Area. This impact would result from the presence in close proximity of the operational alignment and the visual and aural change this would cause to the setting of the assets, which would result in **slight adverse** effects which are assessed as **not significant**.

- 6.6.283 The operation of the Project would result in a permanent impact of moderate adverse magnitude on the non-designated low value Thong Mead (4349). This impact would result from the presence in close proximity of the operational alignment and the visual and aural change this would cause to the setting of the asset, which would result in a **slight adverse** effect which is assessed as **not significant**.
- 6.6.284 The operation of the Project would change the setting of medium value non-designated asset (11321139, 1140) which would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.
- 6.6.285 The operation of the Project would change the setting of the low value non-designated built assets (1424, 1455, 4160) which would result in permanent impacts of moderate adverse magnitude and **slight adverse** effects which are **not significant**.
- 6.6.286 The operation of the Project would change the setting of low value non-designated assets (1874, 1875) which would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.
- 6.6.287 The operation of the Project would change the setting of low value non-designated assets (4161, 4162) which would result in permanent impacts of negligible adverse magnitude and **neutral** effects which are **not significant**.
- Historic landscape: significant effects*
- 6.6.288 There are no impacts to historic landscapes south of the River Thames which result in significant effects.
- Historic landscape: non-significant effects*
- 6.6.289 Impacts to designated historic landscapes such as RPGs are assessed within the built heritage section.
- Reclaimed land*
- 6.6.290 Reclaimed land, as a historic landscape, is of medium value in the southern part of the Project. Overall, the Project would result in a permanent impact of negligible adverse magnitude to this landscape and a **slight adverse** effect, which is **not significant**.
- 6.6.291 There are four areas of reclaimed land within the Project which are represented by the following HLTs:
- a. Reclaimed marshland in the form of small rectilinear enclosures (Medieval to Post-Medieval); Eastcourt Marshes, part of Westcourt Marshes, Great Clayne Marshes, part of Filborough Marshes (HLT ref. V)
 - b. Reclaimed marshland in the form of small irregular enclosures (Medieval to Post-Medieval); part of Filborough Marshes (HLT ref. U)

- c. Other reclaimed land (20th century): north-east of Eastcourt Marshes (HLT ref. Q).
- d. Mud flats (natural deposits): land along the coastline not in the Marshes (HLT ref. P).

6.6.292 A historic landscape unit (HLU) of small rectilinear enclosures (HLT ref. V) on reclaimed marshland is located above the operational tunnel alignment between Lower Higham Road and the River Thames. This would be impacted by the addition of a section of drainage connecting to an existing watercourse. Furthermore, the creation of a wet grassland habitat adjacent to the Thames and Medway Canal would alter the original intended function of the reclaimed land, but on the other hand would restore some of its past marshland character.

6.6.293 A unit of 20th century reclaimed marshland (HLT ref. Q) is located above the operational tunnel alignment between Lower Higham Road and the River Thames. However, the Project would have little or no impact on this landscape unit due to the bored tunnel being located below ground.

Farming landscape

6.6.294 Farming, as a historic landscape, is of low value in the southern part of the Project. Overall, the Project would result in a permanent impact of moderate adverse magnitude to this landscape and a **slight adverse** effect, which is **not significant**.

6.6.295 Landscapes within farming are influenced by field patterns formed of five identifiable HLTs:

- a. Medium regular fields with straight boundaries (parliamentary type enclosures, boundary changes in 19th and 20th century – HLT ref. D)
- b. Prairie fields (19th century enclosures with extensive boundary loss – HLT ref. H)
- c. Fields predominantly bounded by tracks, roads and other rights of way (resulting from Post-Medieval informal enclosures – HLT ref. A)
- d. Small rectilinear fields with wavy boundaries (17th and 18th century enclosures – HLT ref. L)
- e. Small regular fields with straight boundaries (parliamentary type enclosures formed by 19th and 20th century enclosure – HLT ref. M)

6.6.296 The historic landscape at the Blue Bell Hill nitrogen deposition compensation site is characterised by 19th century prairie fields with extensive boundary loss (HLT ref. H). Mitigation works in the form of habitat creation would be designed to reflect the historic characteristics of the Blue Bell Hill site where appropriate, such as historic field boundaries. This would be beneficial to the historic landscape, being a closer representation of the site's historic character prior to extensive boundary loss. However, any benefit gained would not change the overall assessed impact to the farming landscape across the Project due to its

scale. Furthermore, the finalisation of mitigation design would need to be agreed following consultation with relevant stakeholders.

- 6.6.297 Nitrogen deposition mitigation at a compensation site in Burham would adversely alter the landscape's historic character from that of agricultural prairie fields (HLT ref. H) due to an estimated 70% of tree planting within the site.
- 6.6.298 Two further nitrogen deposition compensation sites are located at Court Wood and Fenn Wood. Both sites are characterised by farming HLT's (Court Wood by prairie fields – HLT ref: H, and Fenn Wood by small rectilinear with wavy boundaries – HLT ref: L). The agricultural elements of this landscape would be adversely impacted by an estimated 70% mitigation tree planting, although the surrounding woodland would benefit. However, due to the scale of these landscape types across the southern part of the Project, the respective adverse and beneficial impacts would not change the overall assessed impact in the ES (moderate adverse/slight adverse).
- 6.6.299 The vast majority of the agricultural landscape between the A2 and Lower Higham Road is characterised by 19th century prairie fields with extensive boundary loss (HLT ref. H). Most of this HLT affected by Project construction works would be reinstated as agricultural land. The operational tunnel alignment crosses underneath a unit of prairie fields located between the A226 and Lower Higham Road. However, the Project would have little or no impact on this landscape unit due to the bored tunnel being located below ground.
- 6.6.300 A further unit of 19th century prairie fields is located around M2 junction 1 at the south-eastern end of the Project. The operational alignment would extend slightly either side of the existing road alignment but would not significantly affect this landscape unit due to the already established presence of the A2/M2.
- 6.6.301 A large unit of Post-Medieval fields bounded predominantly by tracks, roads and other rights of way (HLT ref. A) is located between the M2/A2/Lower Thames Crossing junction and the A226. The construction of the main alignment, earthworks, landscaping and utility diversions would remove part of this landscape and permanently change the layout and character of other parts of this landscape.
- 6.6.302 Nitrogen deposition mitigation at Henhurst would alter the historic landscape here (HLT ref. A) through the introduction of tree planting but would retain an established trackway across the centre of the compensation site, maintaining a public right of way that forms part of this landscape's historic function.
- 6.6.303 An area of small regular enclosures with straight boundaries (HLT ref. M) is recorded north of the A2 and north-west of M2 junction 1. This area would be planted with woodland (ancient woodland mitigation) which would permanently alter the historic character of this landscape.

Woodland

- 6.6.304 Woodland, as a historic landscape, is of medium value in the southern part of the Project. Overall, the Project would result in a permanent impact of minor adverse magnitude to this landscape and a **slight adverse** effect, which is **not significant**.

- 6.6.305 A unit of pre-1810 woodland (HLT ref. F) at Claylane Wood is located immediately west of the M2/A2/Lower Thames Crossing junction. This unit would be impacted by the Project, and the main alignment, earthworks, and cycleways would be present during operation.
- 6.6.306 A unit of 19th century plantations (HLT ref. C) incorporates parts of Ashenbank, Shorne, and Brewers Woods adjacent to the operational alignment and would be impacted by landscaping, utility diversions and earthworks.
- 6.6.307 A unit of 19th century coppices (HLT ref. B) in Brewers Wood, and pre-19th century coppices (HLT ref. I) in Shorne Woods are located to the north of the A2. These units would be impacted by landscaping and earthworks, but vegetation is to be largely retained along woodland edges where they interact with the Project.

River Thames

- 6.6.308 By the operational phase, the temporary construction works within the river would have been completed and the East Tilbury jetty decommissioned. There would therefore be no operational effects resulting from this.

Archaeological remains: significant effects

- 6.6.309 There are no archaeological assets identified to experience a significant effect within the river. Archaeological assets bordering the river are discussed in the relevant section.

Archaeological remains: non-significant effects

- 6.6.310 There are no archaeological assets identified to experience a non-significant effect within the river. Archaeological assets bordering the river are discussed in the relevant section.

Built heritage

- 6.6.311 There are no built heritage assets located solely within the river. Built heritage assets bordering the river are discussed in the relevant section.

North of the River Thames

Permanent effects

Archaeological remains: significant effects

- 6.6.312 The remaining elements of the high-value scheduled Orsett cropmark complex (SM1) and the associated high-value non-designated archaeological asset (247) would experience permanent impacts of moderate adverse magnitude due to the change to their setting caused by the introduction of further large road infrastructure within the scheduled area, further physically separating the surviving elements of the scheduled monument and associated non-designated asset. This would result in permanent impacts of moderate magnitude and **moderate adverse** effects which are **significant**.
- 6.6.313 The high-value designated causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6) would be located upslope from the false cutting earthworks (c. 275m to the south) and the operational alignment (c. 325m to the south). The Project design has avoided the use of tall noise barriers at this location to reduce the visual impact to the asset. However, there

would be clear views from the location of the asset towards the Project, although this would be located within a false cutting that would somewhat restrict views to the road and associated traffic. Traffic along the operational Project would be clearly audible from the asset, with a noise increase of 3db – 5db. The operational alignment would also be located along the base of the dry valley with which the asset is associated. As a result of the Project, some Prehistoric to Roman archaeological sites associated with the asset within the Order Limits would have been removed and replaced by the operational alignment. This change to the setting of the asset would have a permanent impact of moderate adverse magnitude and a **moderate adverse effect**, which is assessed as **significant**.

6.6.314 The remaining element of the high value non-designated Neolithic to Medieval multi-period site of settlement, industrial, funerary and agricultural activity (496) south of Gravelpit Farm would experience an impact caused by the operation of the Project. The aural and visual impact of the completed Project that would introduce intrusive features into the setting and impact the relationship with associated features in the vicinity and the wider landscape. The adjacent main alignment including Tilbury Viaduct and Tilbury link junction would greatly curtail the spatial and visual relationship between this promontory salt-working site and the West Tilbury Marshes with which it was formerly historically associated. This would result in a permanent impact of minor adverse magnitude and a **moderate adverse effect** which is **significant**. The effect is assessed to be moderate rather than slight due to the large scale of change to the setting of the asset.

6.6.315 The medium value non-designated archaeological assets (104) and (3832) located inside the Order Limits, due to changes in their setting, would experience permanent impacts of moderate adverse magnitude and **moderate adverse effects** during operation, which are assessed as **significant**.

Archaeological remains: non-significant effects

6.6.316 The very high value designated *Tilbury Fort* (SM13) is located c. 1.9km west of the proposed North Tunnel Portal, although this would be obscured by pylons and structures at the Tilbury Sewage Treatment Works (Application Document 6.2, Figure 6.6, Viewpoint N-01 and N-(CH)01-06) and screened by landscape earthworks. The remaining open landscape view from the fort to West Tilbury would not be obstructed by the Project, the closest element of which would be located approximately 865m east of West Tilbury. The landscape earthworks proposed to the south of the North Portal would increase the height of the land in this area. This land has already been raised by landfill, obscuring views between Tilbury Fort (SM13) and Coalhouse Fort (SM14) to the east. The landscape earthworks would increase this height by approximately 8.5m from the current height at their maximum (and by approximately 4.5m from the permitted height of the current landfill operation) but would create no further change to the setting of *Tilbury Fort*. The operation of the Project would result in no change and a **neutral effect**, which is assessed as **not significant**.

6.6.317 The very high value designated *Coalhouse Fort battery and artillery defences* (SM14) are located approximately 1.3km to the east of the proposed North Portal. The main alignment and tunnel portal c. 1.3km to the west of the asset

would be screened from view by the Tilbury Fields and other landscape earthworks which would be slightly visible from the upper parts of the fortifications, as glimpsed views through trees beyond the raised ground of East Tilbury landfill against a backdrop of Tilbury substation and Tilbury Port (Application Document 6.2, Figure 6.6, Viewpoint N-(CH)09). Ecological mitigation areas would be present immediately west of the asset: and north of the asset, which would maintain the current open areas which contribute to the value of the asset. The new habitat to the west requires a range of water depths which will be fed from the River Thames. REAC commitment HR010 allows for a regulated tidal exchange, which will be achieved through a water inlet with a self-regulating valve or through agreement with Thurrock Council to release water from the Coalhouse Fort moat. This is the current method where the Coalhouse Fort Rangers release water when required. Whichever method is used the moat is recharged on a daily basis from the River Thames and there would be no predicted impact on the setting of the fort and moat.

- 6.6.318 The main alignment and earthworks would not harm the relationship between the asset (SM14) and associated defence features or major topographical features such as the surrounded reclaimed marshland, the River Thames and the southern bank. The Project would not impact the value of the asset, resulting in a **neutral effect**, which is assessed as **not significant**.
- 6.6.319 The high value designated *Second World War Anti-Aircraft Battery at Bowaters Farm* (SM9) would be located approximately 450m from the operational alignment and would have no clear views towards it (Application Document 6.2, Figure 6.6, Viewpoint N-(CH)08 and N-06). Views in this direction are not a key aspect of its setting. Traffic on the operational main alignment would be audible (a moderate adverse change in noise terms, a 5db – 10db increase), and this would constitute an adverse change in its setting. The ecological mitigation area to the east would comprise open mosaic habitat and would not impede views in this direction or alter the relationship between the anti-aircraft battery and contemporary defences at Coalhouse Fort (SM14). The asset would experience a permanent impact of minor adverse magnitude and a **slight adverse effect**, which is assessed as **not significant**.
- 6.6.320 The high value designated *East Tilbury Battery* (SM11) would be located approximately 1.2m to the east of the operational alignment and would be screened from it by built form immediately to the west along Princess Margaret Road. The presence of ecological mitigation LE8.1 Open Mosaic Habitat immediately south, east and north of the asset would result in no change and a **neutral effect**, which is assessed as **not significant**.
- 6.6.321 The high value designated *Springfield style enclosure and Iron Age enclosures south of Hill House, Baker Street* (SM7) would not experience any change to their setting during operation from the diverted utilities as these would be buried and located to the east of the scheduled area, and most of the associated cropmarks. The operational alignment would be located approximately 600m away and would not be clearly visible. The noise from the road would be only c. 1 decibel more than the noise from the existing A13. This would cause a small change to the setting of the asset. Overall, there would be no impact to SM7 and a **neutral effect** which is assessed as **not significant**.

- 6.6.322 The high value designated *Roman barrow 260m north east of South Ockendon Hall* (SM12) is located approximately 500m south of the operational alignment. The Project would cause an increase in noise at this location, causing a small change to the setting of the asset but not greatly affecting its value. This would result in a permanent impact of negligible adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.323 The high value designated *Gatehouse and moat of South Ockendon Old Hall* (SM2), which is also Grade II listed (LB65), is located approximately 700m from the operational alignment. Its setting would not change as a result of the presence of the road, as the road would not be visible or audible from the asset, and therefore it would experience an impact of no change and a **neutral** effect, which is assessed as **not significant**.
- 6.6.324 There are three high value non-designated archaeological assets (7, 210, 2078) located inside the Order Limits that, due to changes to their settings, would experience permanent impacts of minor adverse magnitude and **slight adverse** effects during operation, which are assessed as **not significant**.
- 6.6.325 There are 8 medium value non-designated archaeological assets located inside the Order Limits (29, 30, 194, 207, 245, 442, 482, 643) that, due to changes in their setting, would experience permanent impacts of minor adverse magnitude and **slight adverse** effects during operation, which are assessed as **not significant**.
- 6.6.326 There is one medium value non-designated archaeological asset located inside the Order Limits (213) that, due to changes to its setting, would experience a permanent impact of negligible adverse magnitude and **slight adverse** effect during operation, which are assessed as **not significant**.
- 6.6.327 There are six medium value non-designated archaeological assets located inside the Order Limits (232, 379, 500, 761, 682, 2024) that, due to changes to their settings, would experience permanent impacts of negligible adverse magnitude and **slight adverse** effects during operation, which are **not significant**.
- 6.6.328 One low value non-designated archaeological asset (3576) located within the Order Limits as a result of being bisected by the main alignment would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.329 One low value non-designated archaeological asset (1789) located outside the Order Limits and within the 1km study area due to changes within its setting would experience a permanent impact of moderate adverse magnitude and a **slight adverse** effect during operation, which is assessed as **not significant**.
- 6.6.330 There are 19 low value non-designated archaeological assets within the Order Limits (342, 449, 3924) that due to changes to their settings, would experience a permanent impact of minor adverse magnitude and **slight adverse** effect during operation, which are assessed as **not significant**.
- 6.6.331 There are eight low value non-designated archaeological assets within the Order Limits that due to changes to their settings, would experience a permanent impact of minor adverse magnitude and neutral effect during operation, which are assessed as **not significant**.

- 6.6.332 There are 14 low value non-designated archaeological assets within the Order Limits that due to changes to their settings, would experience a permanent impact of negligible adverse magnitude and **slight adverse** effect during operation, which are assessed as **not significant**.
- 6.6.333 There are two low value non-designated archaeological assets (451, 715) within the Order Limits that due to changes to their settings would experience a permanent impact of negligible adverse magnitude and **neutral** effect during operation, which are assessed as **not significant**.
- 6.6.334 One negligible value non-designated archaeological asset (1831) within the Order Limits would experience a permanent impact of minor adverse magnitude and a **slight adverse** effect as a result of change to its setting, which is assessed as **not significant**.

Built heritage

Built heritage: significant effects

- 6.6.335 The high value designated West Tilbury (CA7) Conservation Area's south-eastern extent would be approximately 195m to the west of the operational main alignment and Tilbury Viaduct. The Muckingford Road bridge over the A122 and earthworks would be located approximately 560m to the east of the northern part of the asset (Application Document 6.2, Figure 6.6, Viewpoints N-08, N-09 and N-11). These would greatly change the character of the agricultural land to the east of the asset, with the introduction of raised road infrastructure (Tilbury Viaduct) which would alter the views and the skyline and reduce the rural landscape between West and East Tilbury. The impact would be mitigated through the reinstatement of agricultural land between the asset and the Project (Figure 2.4: Environmental Masterplan (Application Document 6.2) LE9.1). However, key views southward over the former marshes to the historically associated common land would remain, as would views to the west and north. Key views towards West Tilbury and the tower of the Church of St James from the landscape to the south-west would also be preserved. The introduction of the landscape earthworks to the south of the North Portal would not prevent views across the river to Kent.
- 6.6.336 Several areas within CA7 would see a noticeable increase in noise levels due to the operational Project, largely in open land away from existing roads. The eastern part of the Great Common Field, around the Grade II* listed *Marshall's Cottages* (LB90) would see an increase of 5db to 10db (a moderate adverse change in noise terms). The southern part of the Conservation Area, to the south of the Grade II* listed *Church of St James* (LB33) would see a similar increase. Much of the eastern part of the Conservation Area at Low Street would also see a 5db to 10db increase (in the rural land away from the existing Church Road). These noise changes would noticeably reduce the rural character of the Conservation Area. Overall, the operation of the Project would result in a permanent impact of moderate adverse magnitude on the high value West Tilbury (CA7) Conservation Area and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.337 East Tilbury (CA6) Conservation Area, which is of high value, is located approximately 510m east of the main alignment and associated earthwork embankments. The Tilbury Viaduct would be located approximately 550m to the

south-west of the asset. As a settlement built as a 'garden village', the surviving rural landscape to the west, south and south-east of the Conservation Area makes a minor contribution to its value, through its aesthetic and illustrative historical value. However, it should be noted that a 299-unit housing development has recently been constructed on the western side of the asset, further reducing its connections with the agricultural landscape (planning reference 09/50045/TTGOUT). A 50-home development has also been constructed at Bata Mews immediately south of the Conservation Area (13/01163/FUL). The majority of the Conservation Area's value is derived from the evidential, historical and aesthetic value of its built form, features and open spaces, and from its associative historical value with Thomas Bata and its sister settlement in Zlín, in the Czech Republic, where the Bata company originated.

- 6.6.338 The Project would result in the visible presence of tall infrastructure (Tilbury Viaduct) and earthworks through the agricultural landscape to the south-west of the Conservation Area, further eroding the rural setting in combination with the recently constructed developments mentioned above. While this would reduce the agricultural landscape in this direction, it would not be completely severed and several rural fields would remain adjacent to the south-western side of the asset. Noise levels would increase in the south-western part of the Conservation Area, although it should be noted that this area is historically industrial in character. Overall, the operation of the Project would result in a permanent impact of minor adverse magnitude on the high value East Tilbury (CA6) Conservation Area, and a **slight adverse** effect, which is not **significant**.
- 6.6.339 The high-value Grade II listed *Whitcrofts Farmhouse* (LB37), now a care home, is located immediately south of the Order Limits, adjacent to the A1013. The main alignment (A13 junction) and associated earthworks would be present immediately to the north and west of the asset, altering the character of the formerly associated agricultural and in these directions and in very close proximity to the asset. Overall, operation of the Project is assessed to result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect, which is assessed as **significant**.
- 6.6.340 North Ockendon (CA4) Conservation Area, which is of high value, is located approximately 250m east of the M25. The rural landscape surrounding the asset (albeit compromised to the west by the M25) makes a minor contribution to its overall value through its aesthetic and illustrative historical value as a rural settlement (Application Document 6.2, Figure 6.6, Viewpoint N-38). Operation of the Project would result in the presence of a new road c. 250m south-west of the asset, passing under the M25, and 222urvingg eastward through the currently rural landscape approximately 600m south of the asset. This would be mitigated by false cutting earthwork embankments along the main alignment to the south-east and south of Ockendon. The false cutting earthworks and overbridges would be visible in southward views out of the Conservation Area, from the PRoW in the western hamlet and the B186 in the eastern hamlet. However, key Internal views identified in the Conservation Area Character Appraisal (London Borough of Havering, 2008c) would not be altered. Overall, the Project would result in a permanent impact of moderate adverse magnitude on the High value North Ockendon (CA4) Conservation Area, and a **moderate adverse** effect, which is **significant**.

- 6.6.341 A significant effect is predicted due to the operation of the Project on *Baker Street Windmill* (LB57), a Grade II listed building located c. 70m east of the northern part of the A13/A1089/ A122 Lower Thames Crossing junction. The existing rural land to the west of the asset would be replaced by the junction, including the roads themselves, earthwork embankments and ditches and landscape mitigation planting. This would greatly change the character and topography of a part of the setting of the asset that makes a contribution to its value. However, it should be noted that earthwork embankment adjacent to the main alignment would be at their lowest point in closest proximity to the asset, increasing in height towards the south as they continue away from the asset. This would retain a degree of openness in the vicinity of the asset, although this would be slightly lessened by planting on the embankment (LE2.11 Woodland with Non-Native Species).
- 6.6.342 The noise levels in the vicinity of the asset would not greatly increase as a result of the operation of the Project. Night-time light levels are likely to increase, due to the presence of 10m, 12m and 15m-tall Post Top lighting columns along the junction alignment. An overhead gantry would be located c. 166m to the south-west of the asset, although this would be screened by intervening tree planting (LE2.11 Woodland with Non-Native Species). As a windmill, the asset was built in open countryside which would enable strong winds to power its sails. This connection with the open countryside has already been somewhat eroded by the existing A13 junction c. 240m to the south-west and it would be further eroded by the operation of the Project. Consequently, the operation of the Project would cause a permanent impact of moderate adverse magnitude to this high value asset and a **moderate adverse effect**, which is **significant**.
- 6.6.343 The high-value Grade II listed *Hole Farmhouse* is located south of Great Warley and is largely surrounded by land within the Order Limits (although the asset itself is outside the Order Limits). The majority of the fields around the asset would change in use from arable land to LE8.7 Nitrogen Deposition Planting Mitigation (which would include a mixture of woodland and open glades). The asset would become largely divorced from its agricultural setting and lose its functional historical connection with the surrounding farmland. The operation of the Project would result in a permanent impact of moderate adverse magnitude and a **moderate adverse effect**, which is **significant**.
- Built heritage: non-significant effects*
- 6.6.344 The high-value Grade II listed building *Buckland* (LB66) is located in close proximity to the Order Limits. The setting of the asset to the south-west and west would be greatly altered from an open landscape to road infrastructure including a viaduct and junction. This includes the principal view south-west across the Tilbury Marshes (although this has been previously eroded by vegetation within the grounds and Industrial/waste activity on the former marshes). The noise levels would also be greater than 10db, a major adverse change in noise terms. Overall, the operation of the Project would result in a permanent impact of minor adverse magnitude and a **slight adverse effect** which is **not significant**.
- 6.6.345 The high-value Grade II listed *Heath Cottage* (LB40) is located on the edge of open countryside on the fringes of Orsett Heath. The construction of the Project would cause temporary changes to the setting of this asset by introducing

additional noise, lighting and visible construction machinery. This would result in a permanent impact of minor adverse magnitude and a **slight adverse effect** which is **not significant**.

- 6.6.346 The high value Grade II listed *Whitfields* (LB60) and Grade II listed *Thatched Barn at Whitfields* (LB52) are sited at Baker Street to the north of Stifford Clays Road. The operational alignment would be located c. 260m and c. 210m west of the assets respectively. While this would be visible to the north-west of the assets, their relationship with the agricultural land to the north would remain, as would their key relationships with one another and the other buildings forming the courtyard farmstead, and with the settlement of Baker Street. Overall, operation of the Project would result in temporary impacts of minor adverse magnitude and **slight adverse** effects, which are assessed as **not significant**.
- 6.6.347 The high-value Grade II listed *Mill House* (LB56) is located in Baker Street immediately to the south of Stifford Clays Road and the Order Limits. The operational alignment and associated earthworks would be located c. 170m to the south-west of the asset, although views in this direction are somewhat restricted by vegetation in the grounds of the asset and it does not have a strong connection with the agricultural land within the Order Limits. Therefore, there would be a limited aural intrusion, although the noise levels around the asset would not be affected. Overall, operation of the Project would result in a negligible adverse impact and a slight adverse effect which is **not significant**.
- 6.6.348 The barn and stable block to the north of *Broadfields Farmhouse* (LB109) and *Franks Farmhouse* (LB115) are both Grade II listed buildings located adjacent to the existing route of the M25. The Project would slightly increase the scale of the existing motorway infrastructure adjacent to both of these heritage assets (Application Document 6.2, Figure 6.6, Viewpoint N-4). To limit the land required adjacent to *Franks Farmhouse* (LB115) and the property of St Mary's Lane, a retaining wall rather than earthworks would be provided. Either soft landscaping would be provided to soften the visual impact of the structures or planted green walls would be provided (Design Principle S14.09). With this embedded mitigation in place, the operation of the Project would cause a permanent impact of minor adverse magnitude to these high-value assets resulting in **slight adverse** effects, which are **not significant**.
- 6.6.349 The high value Grade II listed *Street Farmhouse* (LB32) and *Royal Oak Inn* (LB95) and Grade I listed *Church of St Nicholas* (LB36) are all located in South Ockendon. Their settings are informed by the settlement in which they are located and do not extend to the proposed alignment. Consequently, they would experience an impact of no change and **neutral** effect, which is **not significant**.
- 6.6.350 The high value Grade II listed *Greygoose Farmhouse* (LB38), and *Little Wellhouse* (LB67) are located in rural or semi-rural areas, close to the A13 and M25 respectively, and would experience a slight change to their settings as a result of increased traffic noise resulting from the Project. This would cause a permanent impact of negligible adverse magnitude to these high-value assets, resulting in a **slight adverse** effect, which is **not significant**.

- 6.6.351 The high-value *Kemps* (LB51) and *Kemps Cottage* (LB86) are located in a rural area but close to the M25. These assets would experience minor beneficial changes to their setting as a result of decreased traffic noise (between 3db and 5db reduction) resulting from the operation of Project. This would result in permanent impacts of minor beneficial magnitude, resulting in **slight beneficial** effects, which are **not significant**.
- 6.6.352 The high value Grade II listed *Polwicks* (LB48) is located immediately south of the Order Limits, in a semi-rural setting on the northern side of Station Road within West Tilbury (CA7) Conservation Area. The main alignment would be located approximately 250m east of the asset and would introduce additional noise and modern infrastructure including the Tilbury Viaduct into its setting, along with new lighting along Station Road c. 50m to the south-east. This would cause a permanent impact of minor adverse magnitude to this high-value asset, resulting in a **slight adverse** effect, which is **not significant**.
- 6.6.353 The high value Grade II listed *Walnut Tree Cottage* (LB49) is located around 110m south-west of *Polwicks* (LB48), on the southern side of Station Road within West Tilbury (CA7) Conservation Area immediately outside the Order Limits. LB49 is set back further from the Project than LB48 and its setting is less sensitive to change due to the surrounding structures between it and the Project. The main alignment (Tilbury Viaduct) would be located approximately 375m east of the asset and would introduce additional noise and modern infrastructure into its setting. This would cause a permanent impact of minor adverse magnitude to this high-value asset, resulting in a slight adverse effect, which is not significant. The operation of the Project would result in harm to the setting of the medium value non-designated Large Barn to North East of Franks Farmhouse (622) which would affect its value. This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.
- 6.6.354 The high-value Grade II listed *High House* (LB94) would be located c. 750m south-west of the operational alignment. Given the distance and the relatively flat topography around the asset, the visual intrusion to its setting would not be great. However, the noise levels at the asset would increase by more than 10db, a major adverse impact in noise terms. However, in heritage terms the elements of the assets setting which make the greatest contributions to its value will not be harmed and it should be noted that a quarry is located immediately to the south-east of the asset. The operation of the Project would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.
- 6.6.355 The high-value Grade II listed *Heath Place* (LB41) is located immediately to the south of the Order Limits, on the northern slope of an east-west dry valley. Other areas of the Order Limits are also located between 150m to 200m east, west and south of the asset. The operational alignment and associated false cutting earthwork banks would be located c. 200m south of the asset, at the bottom of the valley in which it is located. This would represent a large erosion of the remaining agricultural landscape around the asset, which has already been encroached upon by the A13 c. 550m to the north, the A1089 c. 900m to the west and suburban development on the fringes of Chadwell St Mary c. 600m to the south-east. Overall, the operation of the Project would result in

a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.

- 6.6.356 The high-value Grade I listed *Church of St Mary Magdalene* (LB69) is located within North Ockendon Conservation Area (CA4) immediately east of the Order Limits and c. 350m east of the M25. The operational alignment and associated earthworks would be located c. 320m to the west of the asset. While road infrastructure in the form of the M25 is already located within the setting of the asset, this would be brought closer which would impact upon the rural landscape that makes a minor contribution to the aesthetic value of the asset. The Project would not harm the Conservation Area setting of the asset or alter its relationship with the other buildings in the village. Overall, the operation of the Project would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect which is **not significant**.
- 6.6.357 The low-value non-designated Bowaters Farm (1830) is located within the Order Limits between East Tilbury and West Tilbury. The operation of the Project would result in an impact of moderate adverse magnitude and a **slight adverse** effect, which is assessed as **not significant**.
- 6.6.358 The operation of the Project would result in harm to the setting of seven low value non-designated buildings (577, 737, 738, 739, 4163, 4164, 4165) which would affect their value. This would result in a permanent impact of minor adverse magnitude and a **slight adverse** effect to 577 and 4164 which is assessed as **not significant**. There would be a permanent impact of negligible adverse magnitude and **neutral** effect on 737, 738 and 739 which is **not significant**. There would be a permanent impact of negligible adverse magnitude and a **slight adverse** effect to 4165 which is **not significant**.

Historic landscape: significant effects

Marshland and reclaimed marshland

- 6.6.359 The marshland landscape north of the River Thames is of medium value. Overall, the Project would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect on this landscape, which is **significant**.
- 6.6.360 This landscape is represented by the following HLTs:
- Drained reclamation – curvilinear – pre-18th century (HLT ref. II); Tilbury and West Tilbury, immediately north of Coalhouse Fort
 - Drained reclamation – rectilinear – 19th- 20th century (HLT ref. JJ) Tilbury and West Tilbury, immediately west and south-west of Coalhouse Fort
 - Mineral extraction (HLT. Ref RR)
 - Boundary loss (HLT ref. DD)
 - Piecemeal enclosure by agreement (TT)
 - Built-up areas – urban development (FF)

- 6.6.361 The construction of the North Portal and the main alignment would permanently alter this historic landscape. The operational alignment and creation of landscaping and ecological habitat would alter the appearance and function of the landscape at the North Portal. However, agricultural land would be reinstated either side of the main alignment between Tilbury and Chadwell St Mary which is in keeping with the historic character of the reclaimed marshland.
- 6.6.362 Land focused round the Tilbury marshes includes HLUs of reclaimed marshland (HLC ref. II and JJ). Construction compounds would be established within three areas, while utilities works and access would take place across a fourth. During operation, these areas would revert to open land as ecological mitigation areas such as grassland or scrub with banks and ditches. This would result in permanent changes to the existing historic field pattern.
- 6.6.363 A unit of drained reclamation adjacent to Coalhouse Fort (SM14) would revert to open land as an area of ecological mitigation comprising a wetland habitat with areas of standing water. This would fundamentally change the appearance and use of the historic landscape including the loss of field boundaries.
- Open land, commons, heaths and fens*
- 6.6.364 The open land, commons, heaths and fens landscape north of the River Thames is of medium value. Overall, the Project would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect to this landscape, which is **significant**.
- 6.6.365 The three categories of this landscape within the Project study area are fens, commons, and heaths. These are represented by the following HLTs north of the River Thames:
- a. Commons with an open margin (HLT ref. GG)
 - b. Piecemeal enclosure by agreement (HLT ref. TT)
- 6.6.366 The most historically significant of these within the vicinity of the Project are the fens of Orsett and Bulphan; and several units of commons with an open margin (HLT ref. GG) are located around this area.
- 6.6.367 A unit of open commons lies within the Order Limits at Orsett Fen and would be impacted by construction of the Project and the operational alignment. This would effectively sever part of this open landscape that has been relatively unchanged for centuries, which is significant. Furthermore, the creation of a wetland habitat as part of ecological mitigation either side of the operational alignment would result in a change of function to this landscape which fundamentally changes its relationship with the past as an area of accessible common land.
- Farming landscape*
- 6.6.368 The farming landscape north of the River Thames is of medium value. Overall, the Project would result in a permanent impact of moderate adverse magnitude and a **moderate adverse** effect on this landscape, which is **significant**.

- 6.6.369 The agricultural landscape is represented by the following HLTs:
- a. Pre-18th century enclosure (dual-axis rectilinear co-axial fields – HLT ref. KK)
 - b. Pre-18th century enclosure (irregular enclosure – HLT ref. U)
 - c. Pre-18th century enclosure (irregular sinuous enclosure – HLT ref. PP)
 - d. 18th-19th century enclosure (piecemeal enclosure by agreement – HLT ref. TT)
 - e. 18th-19th century agricultural land (HLT ref. AAA)
 - f. 20th century agriculture (boundary loss – HLT ref. DD)
 - g. Enclosed agricultural land with 20th century boundary loss (HLT ref. NNN)
 - h. Boundary loss with relict elements (HLT ref. EE)
 - i. 20th century enclosure (HLT ref. Z)
- 6.6.370 The Project, including associated earthworks and landscape planting, would impact several HLUs. A large construction compound and a smaller construction compound located at the North Portal would be established across several HLUs of 20th century agriculture (boundary loss – HLT ref. DD). During operation, these areas would revert to open land as ecological mitigation areas such as grassland or scrub with banks and ditches, thus changing the landscape's character from that of an agricultural one. This HLT would be impacted by construction of the Project between West Tilbury and North Ockendon; the operational alignment would adversely affect the historic character of this agricultural landscape through the establishment of infrastructure along the route.
- 6.6.371 A medium-sized unit of boundary loss (HLT ref. DD) located adjacent to Orsett Golf Course is the proposed site of a nitrogen deposition compensation site (Hoford Road). Proposed nitrogen deposition mitigation in the form of habitat creation would alter a large part of this site's agricultural character through the introduction of planting (woodland planting and mosaic habitat/grassland). However, the north-western part of this landscape unit is currently occupied by scrubland, the character of which would be relatively unaffected by this mitigation.
- 6.6.372 The site of Hole Farm East is characterised by several farming HLTs comprising boundary loss (HLT ref. DD), irregular enclosure (HLT ref. U), and 20th century enclosure (HLT ref. Z). The farm is the proposed site of compensatory nitrogen deposition planting, ancient woodland compensation measures and replacement open space land as part of a proposed new community woodland. Compensatory woodland planting at the site would see a change from agriculture to afforestation at Hole Farm, thus permanently altering the historic character of this landscape.
- 6.6.373 A small part of a unit of boundary loss with relict elements (HLT ref. EE) would be impacted by construction and operation of the main alignment to the west of Linford and vegetation would be removed.

- 6.6.374 A unit of piecemeal enclosure by agreement (HLT ref. TT) located within the Order Limits at East Tilbury Marshes would be used for ecological mitigation in the form of open mosaic habitat. This would have little impact on the character of this enclosure landscape.
- Historic landscape: non-significant effects*
- Industry and infrastructure*
- 6.6.375 The industrial landscape north of the River Thames is of medium value. Overall, the Project would result in a permanent impact of minor adverse magnitude to this landscape and a **slight adverse** effect, which is **not significant**. The industrial landscape is represented by the following HLTs:
- Mineral exploitation (HLT ref. RR)
 - Disused mineral extraction (HLT ref. HH)
 - Industrial complexes and factories (HLT ref. O)
 - Boundary loss (HLT ref. DD)
- 6.6.376 Immediately to the west of the proposed site of the North Portal is a unit of former mineral extraction (HLT ref. RR). Construction and operation of the Tilbury Link and its associated earthworks would permanently change the character of this area. A small amount of vegetation would be removed within this HLU to facilitate the establishment of a large construction compound, but this would not impact the overall character of this landscape.
- 6.6.377 An irregular-shaped unit of boundary loss (HLT ref. DD) located along Buckingham Hill Road is the proposed site of a nitrogen deposition compensation site. The unit is a former landfill site which is today characterised by scrubland. Proposed nitrogen deposition mitigation in the form of habitat creation would not adversely impact the historic character of this site which has been previously impacted by landfill activities in the Modern period.
- Woodland*
- 6.6.378 The woodland landscape north of the River Thames is of low value in terms of heritage value. Overall, the Project would result in a permanent impact of minor adverse magnitude to the woodland landscape and a **slight adverse** effect, which is **not significant**.
- 6.6.379 The woodland landscape north of the River Thames includes the following types:
- Ancient woodland (HLC ref. CC)
 - 18th to 20th century woodland plantation (HLC ref. AA)
 - 21st century woodland plantation (HLC ref. GGG)
- 6.6.380 Ancient woodland is defined as an irreplaceable habitat and is designated as of national importance and high value for its wildlife, soils, recreational value and cultural, historical and landscape value. This value is reflected in Chapter 8: Terrestrial Biodiversity. However, the examples of ancient woodland assessed

here are considered to be low value for their heritage interest, not their biodiversity and landscape characteristics.

- 6.6.381 The Project would result in the removal of three small pockets of ancient woodland (HLC ref. CC) along the Ockendon Link section of the main route alignment at Rainbow Wood, Ashen Shaw, and The Wilderness, resulting in an adverse impact.
- 6.6.382 Further north, a small unit of ancient woodland at Parker's Shaw is located within the proposed Hole Farm nitrogen deposition mitigation site. Proposed ancient woodland compensation planting at Hole Farm as part of a proposed new community woodland would be slightly beneficial to the woodland landscape here despite the change from agricultural to afforestation. However, the benefit, although considered in the overall assessed impact for this historic landscape, would not be as great to offset the accumulative adverse impact from woodland loss in other areas north of the River Thames.
- 6.6.383 A small area of 18th to 20th century woodland plantation located within the Order Limits would be removed but then replaced by replanting.

6.7 Cumulative effects

Intra-project effects

- 6.7.1 Cumulative effects of the Project can occur as a result of interrelationships between different environmental topics, which are referred to as 'intra-project effects'. For cultural heritage, interrelationships are identified with landscape and visual (Chapter 7), terrestrial biodiversity (Chapter 8), noise and vibration (Chapter 12) and road drainage and the water environment (Chapter 14) (Application Document 6.1), and are summarised below:
- Landscape and visual – effects on heritage assets as a result of changes to the visual aspects of assets' settings, resulting from temporary changes during construction activity and permanent changes due to the presence of the operational Project.
 - Terrestrial biodiversity – effects on heritage assets resulting from the loss of existing habitats that inform the value of heritage assets and from the introduction of ecological mitigation, causing physical impacts to heritage assets through its implementation and change to setting.
 - Noise and vibration – effects on heritage assets as a result of increased audibility of the Project during construction and operational phases and impacts resulting from ground-borne vibration during construction activity.
 - Hydrogeology – dewatering from tunnelling and other Project activities resulting in groundwater alteration that in turn could affect hydrologically-sensitive heritage assets, affecting the preservation of archaeological remains.
 - Road drainage and the water environment – alteration of watercourses affecting historic landscape features.

- 6.7.2 The above interrelationships have been considered as part of the assessment reported in this chapter, and no additional cumulative impacts are identified.

Inter-project effects

- 6.7.3 In addition to intra-project effects, cumulative effects can also occur due to the Project in combination with other proposed developments. These are known as ‘inter-project’ effects, and are considered separately in Chapter 16: Cumulative Effects Assessment (Application Document 6.1).

6.8 Monitoring

Construction

- 6.8.1 Appendix 2.2: The REAC (Application Document 6.3) documents the monitoring that would be required during the construction phase. Archaeological and built heritage mitigation, including protection measures for upstanding heritage assets and preservation in situ of archaeological remains, non-intrusive archaeological fieldwork, intrusive archaeological fieldwork and building recording would be undertaken during pre-construction works or prior to the aspects of construction that would affect the heritage asset. These mitigation works would be monitored to ensure compliance with the AMS-OWSI (Application Document 6.3, Appendix 6.9; REAC Ref. CH001) and relevant WSI and to ensure works are undertaken to appropriate standards.

Operation

- 6.8.2 Operational phase heritage mitigation secured through the Environmental Masterplan (Application Document 6.2, Figure 2.4) and Design Principles (Application Document 7.5) would be monitored in accordance with those documents. For any heritage assets that survive within National Highways’ ownership, Cultural Heritage Asset Management Plans would be prepared (REAC Ref. CH008) and they would include requirements for monitoring.

6.9 Summary

- 6.9.1 The assessment of effects on cultural heritage considered construction and operation effects on archaeological remains, built heritage, historic landscapes, and the palaeoenvironmental and geoarchaeological resource. Assessments were undertaken in accordance with DMRB LA 104 (Highways England, 2020b) and DMRB LA 106 (Highways England, 2020a) and took account of best practice advice produced by Historic England and the Chartered Institute for Archaeologists.
- 6.9.2 The Project would be located in a landscape with a variety of heritage assets. South of the River Thames, archaeological remains include extensive Roman period activity, associated with Watling Street on the approximate route of the A2. These include a villa, settlement and temple, which are scheduled monuments, and non-designated settlement, agricultural and funerary remains. This activity was predated by prehistoric activity, evidenced by Neolithic funerary remains, Bronze Age settlement and funerary remains and Iron Age settlement evidence. More recently in the Post-Medieval period the area has been characterised by the formal parkland of Cobham Park, designed by Humphry Repton, and the agricultural landscape associated with the villages to

the south and east of Gravesend. The modern period saw the development of military activity, including the conversion of Gravesend Airfield to an RAF base and the development of associated camps and defensive features.

- 6.9.3 The River Thames has influenced the character of the area considerably, both as a route for trade and travel and as an important defensive location on the river approach to London, as demonstrated by the coastal forts.
- 6.9.4 North of the River Thames there is evidence of a multi-period landscape on the gravel terrace between Tilbury and the A13. This includes Neolithic ritual and funerary remains, Bronze Age settlement and funerary activity and more extensive Iron Age and Roman settlement, agricultural and funerary remains. There is also unusually extensive evidence for Early Medieval settlement and funerary activity overlying the earlier prehistoric and Roman sites. The Medieval and Post-Medieval periods are characterised by developments in the agricultural management of the landscape with principal residences evidenced by moated manor sites. As in Kent, the modern period saw an expansion in military activity, including two WWI landing grounds and a WWII D-Day embarkation camp along with a variety of temporary defensive features.
- 6.9.5 Mitigation has been proposed to avoid, reduce or compensate for adverse impacts to heritage assets. This includes preservation *in situ*, recording of upstanding heritage assets, including historic building recording, non-intrusive archaeological fieldwork, intrusive archaeological fieldwork and archaeological monitoring during construction.
- 6.9.6 Table 6.7 and Table 6.8 provide a summary of impacts and resulting significance of effect. These tables take into consideration the mitigation measures outlined above and in more detail in Section 6.5. The tables identify those assets that would experience significant (Table 6.7) and not significant (Table 6.8) effects. Table 6.6 identifies those heritage assets that would experience substantial harm. Assets that would experience no change are omitted from these tables.

Table 6.6 Cultural heritage substantial harm summary table

Impact description	Value	Impact magnitude	Significance of effect	Substantial harm
Permanent construction impact to Orsett cropmark complex (SM1)	High	Major	Large adverse	Yes
Permanent construction impact to Grade II listed buildings 1 and 2 Grays Corner Cottages (LB89), Thatched Cottage (LB58) and Murrells Cottages (LB96)	High	Major	Large adverse	Yes

Table 6.7 Cultural heritage significant effects summary table

Impact description	Value	Impact magnitude	Significance of effect	Significance
Construction				
South of the River Thames:				
<i>Temporary Impacts</i>				
Temporary impact to Thong (CA10) Conservation Area	Medium	Moderate	Moderate adverse	Significant
Temporary impacts to five Grade II listed buildings (LB22, LB25, LB30, LB99, LB78)	High	Moderate	Moderate adverse	Significant
Temporary impacts to five non-designated buildings (1132, 1133, 1134, 1147, 1449)	Medium	Moderate	Moderate adverse	Significant
<i>Permanent Impacts</i>				
Permanent impact to non-designated archaeological asset (3650)	High	Major	Large adverse	Significant
Permanent impacts to 44 non-designated archaeological assets (774, 775, 1302, 1306, 1362, 1372, 1396, 1474, 1579, 1584, 1595, 1599, 1600, 1604, 1606, 1607, 1608, 1620, 1622, 1813, 1820, 2291, 2308, 3640, 3642, 3643, 3655, 3663, 3667, 3740, 3742, 3743, 3745, 3749, 3751, 3773, 3774, 3793, 3802, 4427, 4428, 4558, 4595, 4745)	Medium	Moderate	Moderate adverse	Significant
Permanent impacts to two geological deposits of archaeological interest (PQ-7,PQ-8)	High	Minor	Moderate adverse	Significant
River Thames:				
No significant impacts	-	-	-	-
North of the River Thames:				
<i>Temporary Impacts</i>				

Impact description	Value	Impact magnitude	Significance of effect	Significance
Temporary impact to Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6)	High	Moderate	Moderate adverse	Significant
Temporary impacts to North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas	High	Moderate	Moderate adverse	Significant
Temporary impacts to Grade II listed buildings: Whitecrofts Farmhouse (LB37), Heath Place (LB41), Polwicks (LB48), Walnut Tree Cottage (LB49), Thatched Barn at Whitfields (LB52), Baker Street Windmill (LB57), Whitfields (LB60), Buckland (LB66)	High	Moderate	Moderate adverse	Significant
Temporary impacts to one Grade I listed building Church of St Mary Magdalene (LB69)	High	Minor	Moderate adverse	Significant
<i>Permanent Impacts</i>				
Permanent impact to Orsett cropmark complex (SM1)	High	Major	Large adverse	Significant
Permanent impact to three non-designated archaeological assets (247, 325, 4626)	High	Major	Large adverse	Significant
Permanent impact to two non-designated archaeological assets (496, 2078)	High	Moderate	Moderate adverse	Significant
Permanent impact to two non-designated assets (7, 210)	High	Minor	Moderate Adverse	Significant
Permanent impacts to 54 non-designated archaeological assets (29, 104, 117, 219, 342, 356, 482, 595, 3553, 3567, 3572, 3575, 3589, 3592, 3594, 3598, 3601 3619, 3624, 3627, 3670, 3671, 3675, 3677, 3682, 3713, 3722, 3723, 3726, 3729, 3732, 3733, 3820, 3835, 3836, 3841, 3848, 3870, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3914, 3916, 3918, 3920, 3926, 3936, 3940, 3959, 4763)	Medium	Moderate	Moderate adverse	Significant
Permanent impact to Grade II listed buildings 1 and 2 Grays Corner Cottages (LB89), Thatched Cottage (LB58) and Murrells Cottages (LB96)	High	Major	Large adverse	Significant
Permanent impact to eight built heritage assets (4153, 4154, 4155, 4156, 4157, 4159, 4775, 4776)	Low	Major	Moderate adverse	Significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Operation				
South of the River Thames:				
Permanent impact to Thong (CA10) Conservation Area	Medium	Moderate	Moderate adverse	Significant
Permanent impacts to non-designated Cheney's Farm, White Horse Cottage Farmstead (1133, 1134)	Medium	Moderate	Moderate adverse	Significant
North of the River Thames:				
Permanent impacts to two Scheduled Monuments - Orsett cropmark complex (SM1) and Causewayed enclosure and Anglo-Saxon cemetery 500m east-north-east of Heath Place (SM6)	High	Moderate	Moderate adverse	Significant
Permanent impacts to one non-designated archaeological asset (247)	High	Moderate	Moderate adverse	Significant
Permanent impacts to one non-designated archaeological asset (496)	High	Minor	Moderate adverse	Significant
Permanent impacts to three non-designated archaeological assets (104, 3832, 3952)	Medium	Moderate	Moderate adverse	Significant
Permanent impacts to North Ockendon (CA4), East Tilbury (CA6) and West Tilbury (CA7) Conservation Areas	High	Moderate	Moderate adverse	Significant
Permanent impacts to three Grade II listed buildings: Whitecrofts Farmhouse (LB37), Baker Street Windmill (LB57), Hole Farmhouse (LB153)	High	Moderate	Moderate adverse	Significant
Permanent impact to three historic landscape categories – Marshland and reclaimed marshland (HLT ref. II, JJ), Open land, commons, heaths and fens (HLT ref. GG) and Farming landscape (HLT ref. DD, EE, TT, U, Z)	Medium	Moderate	Moderate adverse	Significant

Table 6.8 Cultural heritage not significant effects summary table

Impact description	Value	Impact magnitude	Significance of effect	Significance
Construction				
South of the River Thames:				
<i>Temporary Impact</i>				
Temporary impacts to four Scheduled Monuments	High	Negligible	Slight adverse	Not significant
Temporary impacts to two non-designated archaeological assets	Low	Minor	Slight adverse	Not significant
Temporary impact to one Grade I listed building	High	Minor	Slight adverse	Not significant
Temporary impact to two non-designated archaeological assets	Low	Negligible	Slight adverse	Not significant
Temporary impacts to three Conservation Areas	High	Minor	Slight adverse	Not significant
Temporary impact to one Grade I listed building	High	Negligible	Slight adverse	Not significant
Temporary impacts to one Grade II* listed building and one Grade II listed building	High	Minor	Slight adverse	Not significant
Temporary impact to nine Grade II listed buildings	High	Negligible	Slight adverse	Not significant
Temporary impact to one Grade II listed building	Medium	Negligible	Slight adverse	Not significant
Temporary impacts to three non-designated buildings	Medium	Minor	Slight adverse	Not significant
Temporary impacts to 28 non-designated buildings	Low	Moderate	Slight adverse	Not significant
Temporary impacts to four non-designated buildings	Low	Minor	Slight adverse	Not significant
<i>Permanent Impact</i>				
Permanent impact to one non-designated archaeological asset	High	Minor	Slight adverse	Not significant
Permanent impacts to eight non-designated archaeological assets	Medium	Minor	Slight adverse	Not significant
Permanent impacts to one non-designated archaeological asset	Medium	Negligible	Neutral	Not significant
Permanent impacts to two non-designated archaeological assets	Low	Major	Slight adverse	Not significant
Permanent impacts to 55 non-designated archaeological assets	Low	Moderate	Slight adverse	Not significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Permanent impacts to 10 non-designated archaeological assets	Low	Minor	Slight adverse	Not significant
Permanent impact to two non-designated archaeological assets	Low	Minor	Neutral	Not significant
Permanent impacts to 13 non-designated archaeological assets	Low	Negligible	Neutral	Not significant
Permanent impacts to six non-designated archaeological assets	Negligible	Major	Slight adverse	Not significant
Permanent impacts to five non-designated archaeological assets	Negligible	Moderate	Slight adverse	Not significant
Permanent impacts to three non-designated archaeological assets	Negligible	Moderate	Neutral	Not significant
Permanent impact to two non-designated archaeological assets	Negligible	Negligible	Neutral	Not significant
Permanent impacts to one geological deposits of archaeological interest	Medium	Minor	Slight adverse	Not significant
Permanent impacts to four geological deposits of archaeological interest	Medium	Negligible	Slight adverse	Not significant
Permanent impacts to one geological deposit of archaeological interest	Low	Negligible	Neutral	Not significant
Permanent impact to Grade II* Cobham Hall Registered Park and Garden (RPG1)	High	Minor	Slight adverse	Not significant
Permanent impact to Thong (CA10) Conservation Area	Medium	Minor	Slight adverse	Not significant
Permanent impact to one non-designated building	Medium	Minor	Slight adverse	Not significant
Permanent impact to three non-designated buildings	Low	Moderate	Slight adverse	Not significant
Permanent impact to five non-designated buildings	Low	Minor	Slight adverse	Not significant
River Thames:				
Permanent impact one non-designated archaeological asset	Medium	Minor	Slight adverse	Not significant
Permanent impact to one geological deposit of archaeological interest	Medium	Minor	Slight adverse	Not significant
North of the River Thames:				
<i>Temporary Impacts</i>				
Temporary impacts to two Scheduled Monuments	Very high	Negligible	Slight adverse	Not significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Temporary impacts to two Scheduled Monuments	High	Minor	Slight adverse	Not significant
Temporary impact to non-designated archaeological asset	High	Minor	Slight adverse	Not significant
Temporary impacts to 11 non-designated archaeological assets	Medium	Minor	Slight adverse	Not significant
Temporary impacts to 12 non-designated archaeological assets	Medium	Negligible	Slight adverse	Not significant
Temporary impacts to three non-designated archaeological assets	Medium	Negligible	Neutral	Not significant
Temporary impacts to 11 non-designated archaeological assets	Low	Minor	Slight adverse	Not significant
Temporary impacts to 24 non-designated archaeological assets	Low	Negligible	Slight adverse	Not significant
Temporary impacts to two non-designated archaeological assets	Low	Negligible	Neutral	Not significant
Temporary impacts to one non-designated archaeological site	Negligible	Negligible	Neutral	Not significant
Temporary impacts to one Grade I, two Grade II* and 14 Grade II listed buildings	High	Minor	Slight adverse	Not significant
Temporary impacts to one Grade I and 14 Grade II listed buildings	High	Negligible	Slight adverse	Not significant
Temporary impact to two non-designated buildings	Medium	Minor	Slight adverse	Not significant
Temporary impact to two non-designated buildings	Low	Moderate	Slight adverse	Not significant
Temporary impact to eight non-designated buildings	Low	Minor	Slight adverse	Not significant
Temporary impact to one non-designated buildings	Low	Negligible	Slight adverse	Not significant
<i>Permanent Impacts</i>				
Permanent impact to one Scheduled Monument	High	Minor	Slight adverse	Not significant
Permanent impacts to one non-designated archaeological asset	High	Negligible	Slight adverse	Not significant
Permanent impacts to 17 medium-value non-designated archaeological assets	Medium	Minor	Slight adverse	Not significant
Permanent impact to one non-designated archaeological assets	Medium	Negligible	Slight adverse	Not significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Permanent impacts to two non-designated archaeological assets	Medium	Negligible	Neutral	Not significant
Permanent impacts to 105 non-designated archaeological assets	Low	Moderate	Slight adverse	Not significant
Permanent impacts to 38 non-designated archaeological assets	Low	Minor	Slight adverse	Not significant
Permanent impact to two non-designated archaeological asset	Low	Minor	Neutral	Not significant
Permanent impacts to two non-designated archaeological assets	Low	Negligible	Slight adverse	Not significant
Permanent impacts to 12 non-designated archaeological assets	Low	Negligible	Neutral	Not significant
Permanent impact to four non-designated archaeological assets	Negligible	Moderate	Slight adverse	Not significant
Permanent impacts to four non-designated archaeological assets	Negligible	Moderate	Neutral	Not significant
Permanent impact to three non-designated archaeological assets	Negligible	Minor	Slight adverse	Not significant
Permanent impact to one non-designated archaeological asset	Negligible	Negligible	Neutral	Not significant
Permanent impacts to four geological deposits of archaeological interest	High	Minor	Slight adverse	Not significant
Permanent impacts to eight geological deposits of archaeological interest	Medium	Minor	Slight adverse	Not significant
Permanent impacts to five geological deposits of archaeological interest	Medium	Negligible	Slight adverse	Not significant
Permanent impacts to three geological deposits of archaeological interest	Low	Negligible	Slight adverse	Not significant
Permanent impact to West Tilbury Conservation Area (CA7)	High	Minor	Slight adverse	Not significant
Operation				
South of the River Thames:				
Permanent impact to one non-designated archaeological asset	High	Minor	Slight adverse	Not significant
Permanent impacts to seven non-designated archaeological assets	Medium	Minor	Slight adverse	Not significant
Permanent impact to two non-designated archaeological assets	Low	Moderate	Slight adverse	Not significant
Permanent impacts to five non-designated archaeological assets	Low	Minor	Slight adverse	Not significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Permanent impact to one non-designated archaeological asset	Negligible	Moderate	Slight adverse	Not significant
Permanent impact to two non-designated archaeological assets	Negligible	Moderate	Neutral	Not significant
Permanent impact to one Grade II* Registered Park and Garden	High	Minor	Slight adverse	Not significant
Permanent impact to one Conservation Area	High	Minor	Slight adverse	Not significant
Permanent impact to one Grade II* listed building and one Grade II listed building	High	Minor	Slight adverse	Not significant
Permanent impacts to five non-designated buildings	Medium	Minor	Slight adverse	Not significant
Permanent impacts to 12 non-designated buildings	Low	Moderate	Slight adverse	Not significant
Permanent impacts to three non-designated buildings	Low	Minor	Slight adverse	Not significant
Permanent impacts to three non-designated buildings	Low	Negligible	Neutral	Not significant
Permanent impact to one historic landscape	Medium	Minor	Slight adverse	Not significant
Permanent impact to one historic landscape	Medium	Negligible	Slight adverse	Not significant
Permanent impact to one historic landscape	Low	Moderate	Slight adverse	Not significant
River Thames:				
Permanent impact to one non-designated archaeological asset	Medium	Negligible	Slight adverse	Not significant
North of the River Thames:				
Permanent impact to one Scheduled Monument	High	Minor	Slight adverse	Not significant
Permanent impact to one Scheduled Monument	High	Negligible	Slight adverse	Not significant
Permanent impacts to three non-designated archaeological assets	High	Minor	Slight adverse	Not significant
Permanent impacts to 15 non-designated archaeological assets	Medium	Minor	Slight adverse	Not significant
Permanent impact to seven non-designated archaeological assets	Medium	Negligible	Slight adverse	Not significant
Permanent impacts to four non-designated archaeological assets	Low	Moderate	Slight adverse	Not significant

Impact description	Value	Impact magnitude	Significance of effect	Significance
Permanent impacts to 21 non-designated archaeological assets	Low	Minor	Slight adverse	Not significant
Permanent impacts to six non-designated archaeological assets	Low	Minor	Neutral	Not significant
Permanent impacts to seven non-designated archaeological assets	Low	Negligible	Slight adverse	Not significant
Permanent impacts to four non-designated archaeological assets	Low	Negligible	Neutral	Not significant
Permanent impact to one non-designated archaeological asset	Negligible	Minor	Neutral	Not significant
Permanent impacts to one Grade I and ten Grade II listed buildings	High	Minor	Slight adverse	Not significant
Permanent impacts to two Grade II listed buildings	High	Minor	Slight beneficial	Not significant
Permanent impacts to one Grade II* and three Grade II listed buildings	High	Negligible	Slight adverse	Not significant
Permanent impact to one non-designated building	Medium	Minor	Slight adverse	Not significant
Permanent impact to one non-designated building	Low	Moderate	Slight adverse	Not significant
Permanent impact to three non-designated buildings	Low	Minor	Slight adverse	Not significant
Permanent impact to one non-designated building	Low	Negligible	Slight adverse	Not significant
Permanent impact to three non-designated buildings	Low	Negligible	Neutral	Not significant
Permanent impact to one historic landscape	Medium	Minor	Slight adverse	Not significant
Permanent impact to one historic landscape	Low	Minor	Slight adverse	Not significant

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